

PAS 79-1:2020

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



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ISBN 978 0 539 06259 5

ICS 13.220.20

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Publication history

First published as PAS 79, February 2005

Second edition June 2007

Third edition August 2012

Fourth (present) edition as PAS 79-1, December 2020

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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 It will be withdrawn upon publication of its content in, or as, a British Standard.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Together with PAS 79-2, this part of PAS 79 supersedes PAS 79:2012, which is withdrawn.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.

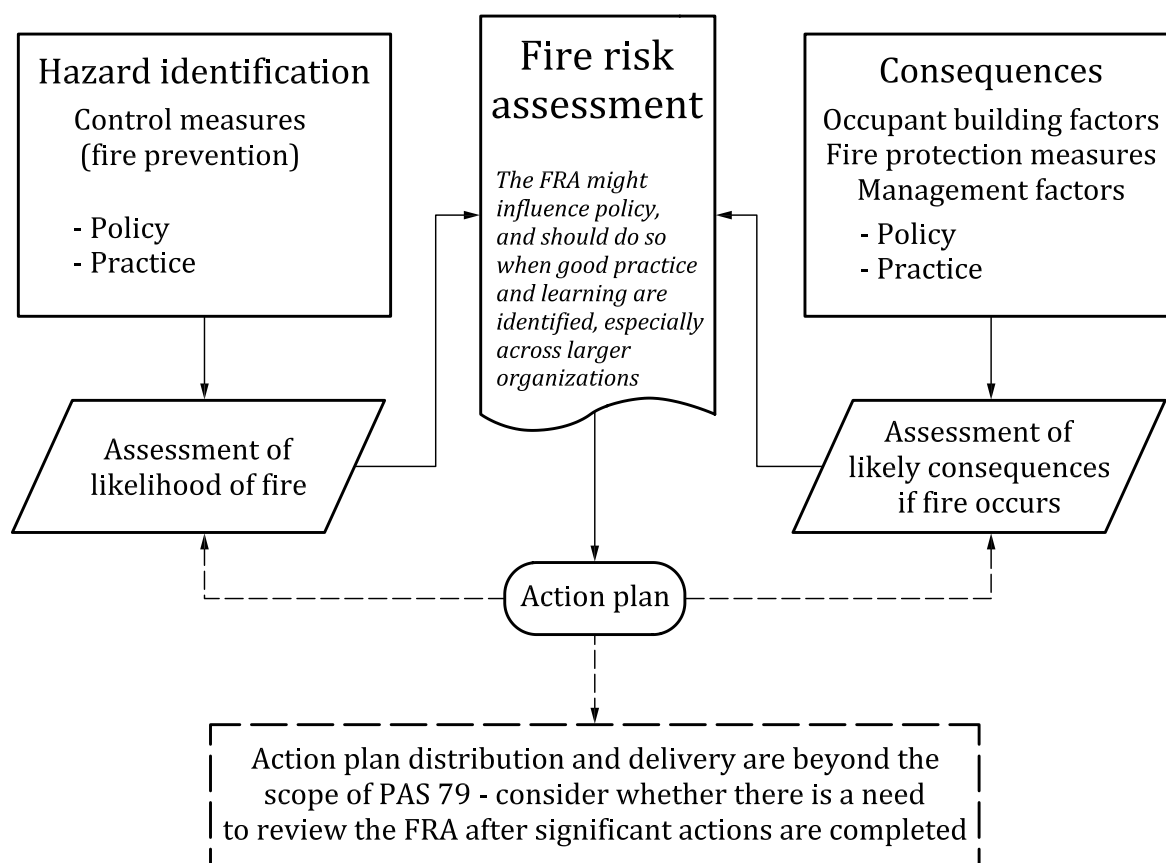
Although the above factors cannot (or cannot readily) be changed, their effect on fire risk (primarily as a result of their effect on the consequences of a fire) needs to be taken into account in the FRA, so that they are reflected in the level of fire risk expressed in the FRA. The level of fire precautions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

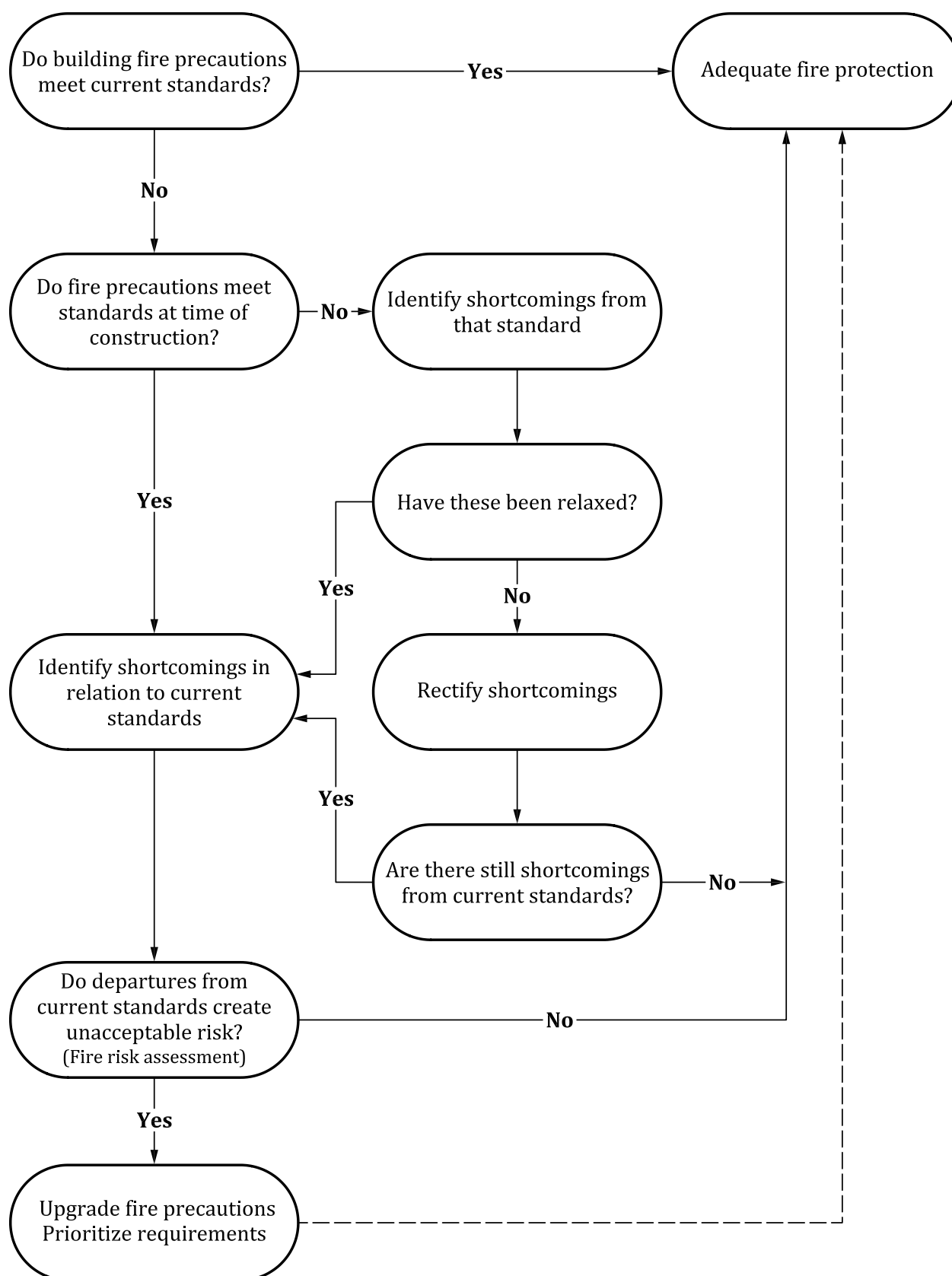
On the other hand, in 1999, the level of illuminance of emergency escape lighting on defined escape routes, specified in the relevant British Standard, was increased by a factor of five in the process of European harmonization. The original level of illuminance of a system installed prior to 1999 might 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).

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).

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).

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.*

14 Assessment of the likelihood of fire

COMMENTARY ON CLAUSE 14

Once all relevant fire hazards have been identified, and measures for their control or elimination have been determined, the fire risk assessor is in a position to make an assessment of the likelihood of fire. It would be possible, in theory, to associate a likelihood of fire with each of the identified fire hazards. However, this would make the FRA process unnecessarily complex and unduly lengthy. Usually, it is sufficient to assess the overall likelihood of fire on the premises; this can be regarded as the summation of likelihoods of fire associated with each and every one of the fire hazards identified.

The likelihood of fire need not, and usually cannot, be expressed in a meaningful numeric manner, such as in terms of a statistical probability of fire or a quantified number of "points". All that is required is a subjective judgement that classifies likelihood of fire into one of several predetermined categories. Since the assessment of these factors is subjective, the use of numbers to express likelihood of fire does not confer any greater accuracy to the assessment of fire risk.

The predetermined categories of likelihood of fire may be described in the form of words, such as "low", "medium" and "high", or in the form of numbers (e.g. 1, 2 and 3), but there is a need for at least three categories. However, if likelihood is expressed in the form of numbers, care is necessary to ensure that it is not implied, for instance, that a likelihood of "2" indicates that fire is twice as likely to occur compared to a likelihood of "1".

There is no upper limit to the number of categories of likelihood that can be adopted in the FRA process. However, if too many categories are adopted, the distinctions between categories are meaningless. Moreover, if the same FRA process is then applied to numerous different buildings (e.g. within the estate of a single organization), particularly by different fire risk assessors, assessments of likelihood of fire are likely to be inconsistent, and the benefits of comparing the fire risk in different buildings (e.g. for the purpose of prioritizing improvements on a building-by-building basis) are then lost.

If likelihood of fire is judged to be typical for premises of the type in question, it is normally appropriate to ascribe to the premises the middle category of the predetermined categories of likelihood of fire. Higher categories can then be used to indicate serious shortcomings in elimination or control of fire hazards (i.e. fire prevention), while lower categories can be used in cases where the likelihood of fire is abnormally low (e.g. because the premises are secure and not normally occupied). Minor shortcomings in fire prevention measures need not be regarded as changing the category ascribed to the premises, but need to be addressed in the action plan (see Clause 19).

14.1 In the process of every FRA, an assessment should be made of the likelihood of fire.

NOTE It is usual and acceptable for the likelihood of fire to be expressed subjectively (e.g. "low", "normal" or "high").

14.2 If, in the FRA methodology adopted, likelihood of fire is expressed in terms of one of several predetermined categories, the number of predetermined categories should be an odd number, so that the middle category can be adopted for premises that are typical for premises of the type and occupancy in question. There should be at least three predetermined categories.

15 Assessment of fire protection measures

COMMENTARY ON CLAUSE 15

The following considerations are relevant to this clause.

a) General

In this step of the FRA, consideration is given to those physical measures incorporated within the premises that are intended to mitigate the consequences of fire (and, hence, limit fire risk) in terms of harm to occupants of the premises in the event of fire. These measures are, by definition, fire protection measures, and their effect is to limit fire exposure (see 3.28). Particular care needs to be taken where dangerous substances, as defined in the relevant fire safety legislation, are present; their presence might influence the need for, and nature of, fire protection measures.

When fire occurs, the first requirement is to warn people, who can then use suitably designed means of escape (see 3.62). To enable people to use means of escape safely and efficiently, there is often a need for appropriate signs and for emergency escape lighting (see 3.19). Harm to occupants might also be mitigated, and safe escape facilitated, by appropriate measures to control or extinguish the fire (whether by use of portable fire extinguishers or hose reels by occupants, or by activation of an automatic fire suppression system, such as an automatic sprinkler system). In some premises, there is also a need for access for, assistance to, or protection of, firefighters in the event of fire.

It follows, therefore, that the fire risk assessor needs to take account of, and assess the adequacy of, the fire protection measures recommended in 15.1.

Adequacy of the engineering design, installation and commissioning of fire protection systems and products can often be certified by organizations that are themselves third-party certificated as competent in their specialist field by an appropriate third-party certification body. More generally, there is a need for all fire protection systems to be designed, installed, commissioned and maintained by engineers competent in this specialist field.

Fire development and spread can be passively limited by fire protection measures (see 3.35), such as fire-resisting walls and floors (over and above any required to protect means of escape), which can be used to subdivide the premises into a number of separate fire compartments [e.g. to satisfy the requirements of building regulations for compartmentation (see 3.13)]. It is often relevant, therefore, for the fire risk assessor to take account of such fire-resisting construction and to address its maintenance [e.g. the adequacy of fire stopping (see 3.50)], often by inspecting sample areas of construction. The spread of fire can also be actively limited by means for fighting fire, such as fire extinguishing appliances or automatic fire suppression systems.

On the other hand, fire development can be assisted by, for example, flammable linings on walls or ceilings, or by readily flammable furniture and furnishings, and by the accumulation of combustible material, including waste material. The fire risk assessor needs to take into account the presence and location of these features and, sometimes, their physical state. For example, damage to upholstered furniture can result in exposure of foam fillings, which might be easily ignited and result in rapid development of fire.

Since the earliest effect of fire on occupants is often loss of visibility on escape routes as a result of smoke, there is also a need to take account of measures to limit spread or build-up of smoke. These can range from fire doors (see 3.25) to active smoke control systems, such as those designed to ventilate or extract smoke, or to maintain a positive pressure within escape routes to prevent the ingress of smoke.

In the sections of commentary that follow, the key fire protection measures that affect the consequences of fire are discussed separately. The measures are not, however, independent. In assessing the likely consequences of fire (see Clause 17), a judgement needs to be made regarding the overall effect of each of the fire protection measures discussed below in combination, and of a number of the management issues discussed in Clause 16, on the RSET (see 3.78) or on the ASET (see 3.6).

b) Fire detection and warning

The arrangements for detection of fire, and the means for warning occupants of the premises, ought to be taken into account. Fire can be detected by people or by automatic fire detectors. If people are present in the area of fire origin, they normally detect fire before it is detected automatically by, for example, smoke or heat detectors.

Traditionally, therefore, automatic fire detection has only been considered necessary in the following premises and situations:

- 1) premises in which people sleep (e.g. hotels, boarding houses, hostels, residential care premises and hospitals);
- 2) covered shopping complexes, and large or complex places of public assembly;
- 3) premises with phased evacuation (see 3.69);
- 4) as compensation for a reduction in the standards of certain other fire protection measures below the norms prescribed in prescriptive codes of practice [e.g. extended travel distances (see 3.87) or reduction in the fire resistance of construction protecting escape routes];
- 5) in lieu of vision between an inner room (see 3.55) and its associated access room; and
- 6) as a means of operating other fire protection systems (e.g. automatic closure of fire doors, automatic release of electronically locked doors, or initiation of smoke control systems).

In general, therefore, automatic fire detection has not traditionally been considered necessary in common places of work where no one sleeps (e.g. offices, shops, factories and warehouses) and most other non-residential premises (e.g. libraries, schools and community premises), except for the purpose of property protection. Normally, if automatic fire detection is not required for compliance with current building regulations, it is unusual (but not unknown) for the FRA to identify a requirement for automatic fire detection. However, this could arise, for example, from a low level of occupancy of an area of the premises, from which there could be extensive fire spread before detection.

NOTE 1 Attention is drawn to guidance that supports national building regulations (e.g. in England and Wales, Approved Document B [45]) and to guidance that relates to existing buildings [e.g. in England and Wales, "Fire safety risk assessment" ([2] to [15])].

Notwithstanding the above, since the FRA does not involve rigid application of guidance or prescriptive codes of practice (see Clause 8), it is appropriate to determine whether particular circumstances dictate the need for automatic fire detection in premises in which such detection was traditionally deemed unnecessary. Such circumstances might be related to likely shortcomings in the reliability of management standards or fire procedures, levels of surveillance that are unusually low for an occupancy of the type in question, or processes that constitute an abnormal fire hazard for the occupancy. For example, even if people detect a fire before an automatic fire detector does so, there is often a delay before they operate the fire alarm system, albeit that the delay might be reduced by training and fire drills (see Clause 16); automatic fire detection might then reduce the overall delay between ignition and giving warning to occupants.

Moreover, since the FRA involves a holistic assessment of fire precautions, rather than independent prescription of a number of fire protection measures in isolation, there is sometimes scope, in the FRA, for greater use of automatic fire detection to compensate for existing standards of structural fire precautions that are lower than the prescribed norm.

Where automatic fire detection is considered necessary, the areas in which it is installed, and the types of detection used, need to take into account the objective of the fire detection and the importance of avoiding false alarms (see 3.22). A system that produces too many false alarms can result in a reduction in the level of fire safety, as people then become reluctant to evacuate when the evacuation signal is given. A high number of unwanted fire alarm signals that involve summoning the fire and rescue service might also bring the premises into conflict with the policies of many fire and rescue services relating to their operational responses to fire alarm signals.

In some occupancies (e.g. student halls of residence), the provision of smoke detectors, rather than heat detectors, in bedrooms might cause an untoward level of false alarms, such that, in providing enhanced protection for the occupant of the room of fire origin, complacency as a result of false alarms would create a risk to other occupants. It is appropriate for the FRA to take account of this, particularly as the relevant fire safety legislation requires that collective protective measures are given priority over individual protective measures.

Fire detection and fire alarm systems installed prior to 2017 might not conform in full to current standards, particularly in respect of certain aspects of engineering design. In many cases, this is perfectly acceptable, but it is expected that new systems and new work associated with the modification of existing systems, recommended in the action plan, will conform to current standards.

NOTE 2 Recommendations for design and installation of fire detection and fire alarm systems, including guidance on types of fire detectors, their application and limitation of false alarms, are given in BS 5839-1. The equivalent recommendations in BS 5839-6 are not appropriate for the types of premises included in this part of PAS 79, other than those of a domestic nature, such as peer-to-peer rented accommodation and flats within a building used solely for short-term letting of flats, as the scope of BS 5839-6 is limited to domestic premises.

NOTE 3 Normally, domestic smoke alarms (see 3.82) are unsuitable for most non-domestic premises, and any use of these devices would need to be fully justified in the FRA; to the extent that smoke alarms are suitable in places of work, this would relate only to very small premises. The interconnecting wiring (or radio transmission) between smoke alarms is not monitored, so failures in the interlinking can be identified only by routine testing, which becomes difficult or burdensome if an inappropriate number of interlinked smoke alarms are installed.

If the FRA identifies that the provision of automatic fire detection is necessary to compensate for standards of other fire protection measures that are below the relevant norm, the fire risk assessor needs to verify that early detection is sufficient to compensate for this. As a minimum, this will necessitate a subjective consideration of likely fire scenarios. In such a case, the fire risk assessor normally needs significant experience in the practice of fire safety, or might need specialist advice. The automatic fire detection needs to conform to current recommendations, at least in terms of types of fire detectors and their location. The fire risk assessor needs to specify carefully the areas of the premises in which any additional detectors are to be provided.

NOTE 4 The relevant recommendations are those in BS 5839-1:2017 referring to Category L5 systems, where the areas in which automatic fire detection is provided are tailor-made to achieve a specific fire safety objective.

Most premises in which automatic fire detection is not required need a manual ("break glass") electrical fire alarm system, so that the fire alarm can be raised by anyone who discovers a fire. Only in very small premises

will word of mouth (i.e. shouting "Fire") or mechanical devices, such as rotary gongs, be a sufficient means of giving warning to other occupants. As part of the FRA, it needs to be determined whether the number and siting of manual call points (see 3.60) are sufficient, on the basis that it ought not to be possible to leave any storey of the premises, or leave the premises by means of a final exit (see 3.23), without passing at least one manual call point. Additional manual call points might be necessary in close proximity to areas of high fire hazard.

Consideration might need to be given to the nature of fire warning signals. Usually, these are given by bells or electronic sounders. However, a voice alarm system (see 3.88) might be more appropriate, or even necessary, in some premises, such as those in which the public are present in large numbers and premises with phased evacuation. In an FRA, it might also be appropriate to take account of the fact that the presence of a voice alarm system can reduce evacuation time.

If it has been identified in an FRA that Deaf or hard of hearing occupants are, or are likely to be, present in the premises, consideration needs to be given to means for warning them in the event of fire. This might simply comprise suitable managerial arrangements, but could necessitate flashing beacons or even special means of warning, such as vibrating pagers or digital messaging systems.

Although a facility can be provided for fire alarm signals to be transmitted automatically to an alarm receiving centre (see 3.3) from where the fire and rescue service is summoned, this is not normally necessary for the purpose of life safety. However, there are certain occupancies in which the early summoning of the fire and rescue service is so critical, and staff levels at certain times might be so low, that there is an advantage in such a facility. Examples include residential care premises and certain hospitals.

NOTE 5 This is not intended to imply that the evacuation strategy in residential care premises ought to rely on assistance from the fire and rescue service for evacuation of residents.

Normally, in an FRA, the functionality of a fire detection and fire alarm system is checked [i.e. by a simple visual check of the control and indicating equipment (CIE) display], but it does not involve any detailed engineering evaluation of the system. It needs, however, to be confirmed that the fire detection and fire alarm system is subject to routine testing and maintenance, so that faults and major shortcomings are identified by this means (see Clause 16). Moreover,

it is normally appropriate for the fire risk assessor to consider whether the fire alarm signal is likely to be audible in all relevant areas of the premises, based on a visual inspection of the locations of sounders or loudspeakers, even though shortcomings are normally identified by routine testing. The FRA might then recommend, within the action plan, that an engineering evaluation, including measurement of sound pressure levels in “suspect” areas, be carried out. Where visual alarms are necessary, some consideration of their visibility is appropriate.

c) Means of escape

In considering the likely consequences of fire, the fire risk assessor needs to determine the likely effects of fire on escape routes (see 3.21) during the RSET (see 3.78), taking into account the time for detection of fire and raising the alarm [see item b) of the Commentary on Clause 15]. This requires a thorough evaluation of means of escape.

If the means of escape conform to the requirements of modern building regulations, it is unlikely that a need for major improvements will be identified in the FRA. Suitable benchmark standards for means of escape include guidance that supports legislative requirements for fire safety in existing buildings.

However, means of escape are just one of the fire protection measures that affect the consequences of fire and, hence, the fire risk. Therefore, a departure from one or more recommendations given in the relevant codes of practice regarding means of escape might be acceptable when all other fire precautions are taken into account. Such other fire precautions include early warning of fire, rapid response to the warning by occupants, and measures to increase the ASET (see 3.6). Departures from traditionally quoted travel distances and exit widths could also have arisen when the premises were designed if the designer used the approach given in BS 9999. Where the premises are complex and departures from conventional design principles are significant, there might have been a need for a fire engineering solution of the type to which BS 7974 is relevant; the fire risk assessor will need to be given information regarding such a solution, as it is difficult to “reverse engineer” the principles of, and assumptions made within, a fire engineering solution simply from an inspection of the premises.

The first effect of a fire on the safety of occupants is often the presence of smoke in escape routes. This results in loss of, or reduction in, visibility. Thus, in general, adequate means of escape are provided if people can immediately, or within a short distance of

travel, turn their back on any fire and move towards a place of relative safety (see 3.70) and ultimately a final exit (see 3.23) along smoke-free escape routes.

Five critical factors in the assessment of means of escape are therefore:

- 1) the maximum distance occupants need to travel to reach a place of relative or ultimate safety (see 3.70 and 3.71 respectively), such as an exit to a protected stairway (see 3.75), or to a final exit (see 3.23);
- 2) the avoidance of long dead ends (see 3.16) in which escape is possible in only one direction;
- 3) the number, distribution and widths of storey exits and final exits;
- 4) the means of protecting escape routes from ingress or build-up of smoke that prevent occupants' escape; and
- 5) the ability of occupants to use the escape routes.

It can normally be anticipated that disabled occupants are, or are likely to be, present on the premises, and consideration needs to be given to arrangements for their evacuation in the event of fire. In most multi-storey premises, designated refuges (see 3.76) are likely to be necessary, and arrangements are needed to assist some occupants to escape from the refuges using staircases and/or specially designated evacuation lifts (see 3.57.1), fire-fighting lifts or firefighters lifts. The last two can be used by persons within the premises to evacuate disabled people at least until arrival of the fire and rescue service. Firemen's lifts (see 3.57.4) are not usually suitable for evacuation of disabled people, unless these lifts have been upgraded to an appropriate extent; recommendations for upgrading lifts in this manner are given in BS 8899.

An evacuation strategy ought not to rely on rescue of disabled people by the fire and rescue service. Assistance with their evacuation is expected to be provided by persons within the premises. A two-way speech communications system within the refuge might be necessary so that disabled people can make their presence known and receive reassurance. It might also be necessary for fire doors to be held open by automatic door release mechanisms (see 3.5) to make the premises more accessible for people with mobility impairments.

In developing a strategy for evacuation of disabled people, it is not appropriate for the focus to rest solely on physical fire precautions. There is a need for adequate managerial arrangements to assist disabled people in evacuating the premises in the event of fire. The individual needs of a regular building user

(principally employees) need to be addressed in a tailored personal emergency evacuation plan (PEEP). In addition, there is a need for generic plans in anticipation of a range of unknown visitor evacuation needs (e.g. hotel guests and museum visitors). This is known as a generic emergency evacuation plan (GEEP).

The subject of design of, and arrangements for, means of escape is outside of the scope of this PAS. It is assumed that the fire risk assessor has sufficient knowledge of the principles of means of escape to assess the adequacy of the means of escape in the premises in question. Moreover, the number of component factors that need to be taken into account is greater than in the case of other fire protection measures. Accordingly, Annex C sets out the key factors to consider when assessing means of escape.

There is commonly a need for fire doors to be held in the open position, but to self-close automatically on operation of the fire alarm system. Similarly, there is often a perceived need for electronic locking of fire exit doors, which are unlocked automatically on operation of the fire alarm system. The reliability of the arrangements for automatic operation of door release mechanisms and electronic locks in the event of fire needs to be taken into account in the FRA; electronic locks, particularly those of an electromechanical nature, can potentially introduce an additional risk, and the potentially conflicting requirements of security and fire safety need to be carefully balanced. Recommendations on the interface between a fire detection and fire alarm system and these types of door release mechanism are given in BS 7273-4.

Sometimes, protection of escape routes can depend on automatic operation of fire-resisting shutters and fire or smoke curtains to close openings in the event of fire, such as to separate escape routes from a fire in adjoining accommodation. Guidance on the interface between the shutters or curtains and the fire detection that initiates their operation is given in BS 7273-6, which also provides recommendations for testing and maintenance, the arrangements for which need to be taken into account in the FRA.

A common issue to arise in an FRA is the fire resistance of doors that protect escape routes, such as those forming part of the enclosure of protected stairways and corridors. Older doors are not fitted with intumescent strips (and so do not achieve 30 min fire resistance), nor are they fitted with smoke seals (see also Clause 9). Whether this materially impacts on fire risk is a matter for judgement by the fire risk assessor, taking all relevant factors into account. It is inappropriate to make generic recommendations for

upgrading, or replacement, of doors to satisfy current standards, without proper consideration of risk and cost benefit. In many cases (particularly where there is extensive automatic fire detection and/or RSET is short), doors that satisfied requirements for fire resistance at the time the building was constructed, or the doors were manufactured, will continue to afford adequate fire resistance to protect escape routes. Recommendations for generic upgrading or replacement of doors without proper justification of the risk associated with existing doors ought to be challenged by dutyholders.

d) Signs and notices

In order for occupants, particularly those who are unfamiliar with the premises, to use the premises safely, there is normally a need to provide fire exit signs to direct people towards alternative means of escape. It is, therefore, important to take account of the adequacy of such signage in the FRA.

NOTE 6 It is a requirement of the Health and Safety (Safety Signs and Signals) Regulations 1996 [54] that these signs incorporate the appropriate pictogram. Recommendations on escape route signs are given in BS 5499-4.

In the course of the FRA, there is also a need to determine whether other forms of fire safety signs and notices are necessary, and whether those provided are adequate. Examples include:

- 1) other safe condition signs (see 3.79) (e.g. indicating use of escape hardware or location of a refuge);
- 2) signs on fire doors, indicating the need for the doors to be kept shut, kept locked shut or kept clear (in the case of automatically closing fire doors), as appropriate;
- 3) other mandatory signs (see 3.59), such as those indicating the need to keep a fire exit clear;
- 4) fire equipment signs (see 3.27), primarily where, for example, fire extinguishers, fire alarm call points or hose reels are hidden from direct view;
- 5) "no smoking" signs;
- 6) fire procedure notices;
- 7) storey and/or stair identification signs; and
- 8) warning signs (e.g. explosive material, flammable material, oxidizing substance, pressurized cylinder).

Guidance on the selection and use of safety signs (including various fire safety signs) and fire safety notices (but excluding escape route signing) is given in BS 5499-10. Registered safety signs are given in BS EN ISO 7010.

e) Emergency escape lighting

If escape routes require artificial illumination, there is a need to determine whether emergency escape lighting is necessary. It is not appropriate to assume that the absence of a recommendation for emergency escape lighting in the appropriate guidance documents implies that, in all circumstances, emergency escape lighting is unnecessary.

NOTE 7 Attention is drawn to guidance documents that support building regulations (e.g. in England and Wales, Approved Document B [45]) for guidance on the need for emergency escape lighting in new buildings.

In the FRA, a judgement is necessary as to the likelihood that:

- 1) fire will cause failure of the normal lighting on any part of the escape route before all occupants have escaped from the area; and
- 2) the loss of normal lighting will result in injury to occupants as they endeavour to evacuate the premises.

Factors to take into account, therefore, are:

- i) the length and complexity of the escape routes;
- ii) the familiarity of the occupants with the premises;
- iii) the relevant measures to control the development of fire;
- iv) the relevant measures to provide early warning of fire;
- v) the presence of borrowed light (e.g. from street lighting);
- vi) the hours of work in the premises;
- vii) the presence of sleeping occupants, for whom emergency escape lighting is normally necessary; and
- viii) the presence of windowless areas.

If a judgement is made that emergency escape lighting is not necessary in circumstances in which it would normally be recommended in guidance or prescriptive codes of practice, it is appropriate for this to be justified in the documented FRA (see Clause 10).

Normally, the FRA does not involve any detailed engineering evaluation of an emergency escape lighting system. However, it is important to confirm that the system is subject to routine testing and maintenance, so that faults and major shortcomings are identified by this means (see Clause 16).

Moreover, if emergency escape lighting is considered necessary, it is normally appropriate for the fire risk assessor to determine whether the extent of an

existing system appears to be reasonable, based on a visual inspection of the areas of coverage and the provision of luminaires, and whether the duration for which emergency escape lighting can be provided is adequate. There is also a need to determine whether maintained emergency lighting (see 3.58) is provided where required, or whether non maintained emergency lighting (see 3.64) is sufficient. The FRA might, nevertheless, recommend within the action plan that an engineering evaluation be carried out, including verification of the adequacy of levels of illuminance. It is also normally appropriate to confirm that there are suitable facilities for routine testing of the installation.

In some cases, an existing emergency escape lighting system does not conform in full to current recommendations (e.g. in respect of illuminance levels). This might be acceptable, but it is appropriate for new systems, and new work associated with upgrading of existing systems, recommended in the action plan, to conform to the current recommendations.

NOTE 8 Attention is drawn to the recommendations in BS 5266-1 and to the requirements of BS EN 1838 and BS EN 50172.

NOTE 9 Procedures for design of safety lighting in buildings that remain occupied during mains power failure are given in BS 5266-1.

f) Manual firefighting equipment

All fires begin as small fires (other than in the case of explosions). Accordingly, it is normally appropriate for premises to be provided with means for occupants to extinguish a fire. If, very unusually, a fire risk assessor were to decide that there was no need for portable fire extinguishers in premises, there would need to be full and clear justification for this conclusion in the FRA. However, it would not be acceptable to justify the removal of fire extinguishers on the basis of the risks posed to people who might, if fire extinguishers are provided, use them on a fire. Normally, portable fire extinguishers are regarded as the basic provision, while hose reels tend to be regarded as optional supplementary protection.

Care might, however, be necessary to ensure that the presence of hose reels does not encourage occupants of premises to remain within the premises carrying out firefighting beyond the time available for safe escape. Also, hose reels left by retreating employees can obstruct fire doors, allowing smoke and fire to spread throughout the premises. As a result of these considerations, it is now common for hose reels to be decommissioned. However, it then needs to be ensured either that the hose reels are removed or that it be made clear, by marking, that the hose reels are

no longer in use. It also needs to be ensured that the provision of portable fire extinguishers is adequate in the absence of the hose reels.

In the FRA, consideration needs to be given to the need for manual firefighting equipment, the type of equipment that is necessary and the existing provision of such equipment.

NOTE 10 The benchmark code of practice for provision of portable fire extinguishers is BS 5306-8. Guidance on the provision of hose reels is given in BS 5306-1.

In most premises there is the potential for class A fires (see 3.7). Therefore, the most important firefighting equipment is that which is suitable for extinguishing these fires. Normally, additional extinguishers that are suitable for use on live electrical equipment (e.g. portable CO₂ extinguishers) are necessary. Where there is also the potential for class B fires (see 3.8), suitable extinguishers are necessary. In kitchens, extinguishers suitable for class F fires (see 3.11) might be necessary. It is not normal to provide extinguishers specifically for class C fires (see 3.9), as to extinguish these fires can often result in the potential for an explosion. For certain, unusual special hazards, such as class D fires (see 3.10), appropriate extinguishers might be necessary. Multi-purpose fire extinguishers, which can be used on more than one class of fire (see 3.7 to 3.11), are available.

g) Structural and similar passive measures to limit fire spread and development

In the course of the FRA, consideration needs to be given to structural and similar passive measures that are intended to limit the spread and development of fire within the premises (in addition to consideration already given to similar measures that are specifically intended to protect means of escape). In some simple premises in which compartmentation (see 3.13) was not necessary at the time of construction for compliance with the relevant building regulations, there might be no such measures.

However, where compartment walls or floors are provided, some consideration needs to be given to the likely integrity of these. Usually, in the course of the FRA, a detailed examination of the construction of the premises is not practicable. For example, the FRA would not normally involve opening up work, such as cutting holes in, or removal of, walls, ceilings, partitions, etc. Normally, there can only be visual inspection of a sample of reasonably accessible areas [e.g. to check visually for any obvious inadequacies in fire stopping (see 3.50)]. However, as many areas where service penetrations could lead to breaches of

compartmentation might be hidden, such sampling might need to include areas above false ceilings (or even below false floors), where many services often run. More generally, since any structural barrier will resist the passage of smoke or fire for at least some time, obvious shortcomings in fire stopping of service penetrations need to be addressed in the action plan (see Clause 19).

Roof voids are a potential area through which fire can spread if a fire either starts in the roof void or spreads into it from below (e.g. directly, via ventilation ductwork or via the eaves). It is not uncommon to find that compartment walls do not extend through the roof void, thereby enabling unlimited fire spread. Issues can also arise in the design and maintenance of low-rise pitched roof buildings, such as commonly found in care homes and other properties. Fire spread within roof voids has led to at least one fatal fire due to the fire spreading rapidly to multiple parts of the building remote from the fire origin, compromising the progressive horizontal evacuation strategy. For these reasons, it is important that the fire risk assessor endeavours to inspect roof voids, particularly for premises with dependent occupiers and extended evacuation strategies. Access to roof voids can be difficult, and, if access is not considered practicable, this needs to be made clear in the documented FRA together with a recommendation for a specific survey of roof voids.

It cannot be assumed that simply because a building has been recently constructed, and that a completion/final certificate has been issued by a building control body, there is a reduced need for consideration of compartmentation and fire stopping. In the few years prior to publication of the current version of PAS 79, numerous cases of poor construction work in newly, or recently, constructed buildings have come to light, including inadequate fire stopping of junctions between fire-resisting barriers, and of service penetrations, etc. and incomplete construction within risers and above fire doors. Some cases have been so serious that it has been necessary for enforcing authorities to consider prohibiting the use of the building under fire safety legislation.

Consideration of compartmentation in the FRA is particularly important in all premises in which, in the event of fire, there is no simultaneous evacuation (see 3.81); in these premises, there is reliance on compartmentation for protection of occupants who are not required by the evacuation strategy to evacuate the premises immediately on operation of the fire alarm system. Such premises comprise hospitals and residential care homes, in which the evacuation

strategy involves progressive horizontal evacuation, and other buildings with phased evacuation (see 3.69) (such as tall office buildings). In all of these buildings, it is of value for the fire risk assessor to ensure that the dutyholder is aware of the importance of compartmentation.

Traditionally, it has been regarded as good practice to enclose areas of high fire hazard in construction of appropriate fire resistance (see 3.36). The need for this is, therefore, normally considered in the FRA.

In new building work, the flammability of wall and ceiling linings is controlled under building regulations. If the linings continue to conform to the original requirements in this respect, they are likely to be satisfactory. However, consideration needs to be given to the issue of linings, as unsatisfactory linings can promote the spread and development of fire. In premises with large areas of drapes, etc., such as cinemas and theatres, their flammability normally needs to be taken into account. Similarly, in some premises, the flammability of furniture and furnishings might need to be taken into account.

Ventilation and air conditioning systems can provide a path for spread of fire and smoke. In the past, particularly under building regulations, the fire protection measures incorporated in these systems have been related primarily to avoidance of breaches in the compartmentation of premises. However, ventilation systems and ductwork can be responsible for accelerating the initial spread of fire, e.g. between rooms within a fire compartment. More importantly, ventilation systems and ductwork can constitute a means for spread of smoke and products of combustion at an early stage in fire development.

Issues to consider include means to prevent fire from entering or leaving the ductwork, means to limit the spread of fire, smoke and products of combustion within the ductwork, and means to prevent a breach in the integrity of a fire-resisting element of construction where penetrated by ductwork. Such measures comprise a combination of fire and smoke dampers (see 3.15.1 and 3.15.3 respectively), or combined fire/smoke dampers (see 3.15.2), fire-resisting ductwork, fire-resisting enclosure of ductwork and adequate fire stopping. Fire detection might need to be provided to operate dampers, shut down systems, etc.

In an FRA, it can be difficult to determine whether the measures incorporated within the design of ventilation and air conditioning systems are adequate. Access to false ceilings within which ductwork runs can be difficult; frequently there is difficulty in determining

whether dampers are fitted at appropriate locations. In general, the appropriate measures are likely to have been required for compliance with building regulations when the premises were constructed.

However, particularly where the age of the premises, or the likely extent of modifications to the premises, might suggest that ductwork could act as a route for spread of smoke into, or within, escape routes, some investigation might be needed, or it might be necessary to recommend further investigation in the action plan, if the siting of visible air extract or supply points suggests that dampers are essential. Greater care is necessary in the case of hospitals, residential care homes, hotels, hostels and other premises where people sleep.

NOTE 11 Guidance on precautions to prevent the spread of smoke and products of combustion by ventilation and air conditioning systems is given in BS 9999.

In considering the mechanisms by which undue fire spread could occur, consideration needs to be given to the fire hazard that can result from inappropriate construction of external walls and the combustibility of any cladding, including rainscreen cladding, attached to the external walls of the building. This can cause an external fire (whether started externally by, for example, a burning car or refuse, or by flames from an internal fire emanating from, for example, windows) to bypass compartment floors and walls. The relevant fire safety legislation defines premises as “any place”, so the external envelope of the building falls within the scope of the FRA.

In 2017, the fire at Grenfell Tower (a high-rise block of flats in London), in which 72 deaths occurred, as well as some other previous, overseas fires, brought to the fore the hazard of rapid vertical (and, to some extent, horizontal) fire spread that can occur as a result of highly combustible external cladding. For the purpose of the consideration of this matter in an FRA, spandrel panels need to be regarded as equivalent to cladding, as, if their fire performance is inadequate, they too have been shown in fires to promote rapid vertical fire spread.

There is a requirement under building regulations throughout the UK that external wall construction be such that spread of fire over external walls is adequately restricted or inhibited. However, for new buildings, material alterations of existing buildings and material change of use of existing buildings, more specific requirements of the building regulations on this matter, as well as the associated current government

guidance on compliance, differ between Scotland, Northern Ireland, England and Wales. Accordingly, it is essential that the fire risk assessor is familiar with current regulations and guidance for new building work as a starting point in consideration of the matter (see Figure 2).

In Scotland and in England and Wales, in consequence of the fire at Grenfell Tower, both the building regulations and the guidance that supports the regulations were amended in relation to external wall construction and cladding, resulting in even greater differences between requirements and guidance in Scotland and those in England and Wales than already existed. New building regulations and associated guidance are not intended to apply retrospectively, but that does not preclude the need for rectification of defects that resulted in non-compliance with the regulations at the time of construction.

In England and Wales, compliance with the guidance in Approved Document B [45] at the time of construction of the building is likely to satisfy the Fire Safety Order [1]. However, since the fire at Grenfell Tower, it has been found that, in respect of the fire performance of cladding and the provision of cavity barriers, a significant number of buildings failed, at the time of construction, to meet the intent of Approved Document B and, hence, the requirements of building regulations in England and Wales.

In addition, in December 2018, by an amendment to Regulation 7 of the Building Regulations 2010 [47], in England, a new requirement was introduced within the Regulations. Under the amended Regulations, in the case of buildings with a storey greater than 18 m above ground level comprising a block of flats, student accommodation, a care home, sheltered housing, a hospital or a dormitory in a boarding school (but, notably, not a hotel), external walls and specified attachments (such as balconies and solar panels) are required to meet the criteria given in BS EN 13501-1:2007+A1 for classification as A2-s1, d0 or A1. This new requirement has applied to Wales from January 2020. At the time of publication of this PAS, there are proposals to make a similar change to the building regulations in Northern Ireland. This is a prescriptive requirement, and does not allow for alternative solutions, such as full-scale fire testing, desktop assessments or fire engineering solutions. At the time of publication of this PAS, there are no plans to make a similar amendment to the building regulations in Scotland.

In Scotland, in 2019, for non-domestic buildings, the guidance in the Non-Domestic Technical

Handbook [55] that supports building regulations was made considerably more stringent in respect of the reaction to fire of cladding and insulation materials exposed within any cavity behind the outer cladding. However, as the Handbook comprises guidance, rather than prescriptive requirements, alternative solutions, such as suitable evidence from the large-scale fire test of BS 8414-1 or BS 8414-2, are acceptable means of demonstrating compliance with the relevant mandatory building standard in the Building (Scotland) Regulations 2004 (as amended) [46].

In the FRA, it might be necessary, in the case of non-domestic buildings, to consider whether, in the light of current knowledge, the fire performance of cladding is likely to be adequate. This is extremely difficult to assess within the scope of the FRA that can reasonably be expected to be carried out under the relevant fire safety legislation. This is because, without intrusive inspection (e.g. cutting out a section of the wall or cladding construction), the wall build-up, insulation and provision of cavity barriers will be totally unknown. Such destructive exposure is beyond the scope of the FRA, and advice on the detailed design of the wall construction is beyond the capability of most competent fire risk assessors. Even the nature of visible cladding might not be possible to determine without cutting out a sample for laboratory examination or test.

Accordingly, the fire risk assessor needs to make a judgement as to whether it is appropriate to recommend further investigation of wall construction and cladding (usually by others) in the action plan. This is the prerogative of the fire risk assessor, taking into account factors such as:

- 1) the height of the building;
- 2) the use of the building;
- 3) information on approval of the building under relevant building regulations (if any);
- 4) appearance of external wall or cladding;
- 5) information on external wall construction or cladding (e.g. in operation and maintenance manuals, or information handed over for compliance with Regulation 38 of the Building Regulations 2010 [47] in England and Wales, or the Fire safety design summary [50] in Scotland);
- 6) exposure of external walls or cladding to an external fire;
- 7) fire protection measures (e.g. compartmentation, automatic fire suppression, automatic fire detection);
- 8) apparent quality of construction, or presence of building defects; and
- 9) anticipated evacuation time.

Only a few of these factors would, alone, enable a fire risk assessor to determine whether further investigation is necessary. For example, a low-rise building, or a building with what is obviously a traditional masonry wall, is unlikely to warrant any further consideration. At the other extreme, a high-rise hospital building that is obviously clad in an unknown form of metal cladding would warrant a recommendation for further investigation, either by consideration of the other factors above, or by a further, more specialist investigation (which might be intrusive) by others. For many other situations, the need for comment, advice or recommendations in the FRA is a matter for the judgement of the fire risk assessor, based on training, experience and a knowledge of current thinking, taking into account guidance produced after the fire at Grenfell Tower in 2017.

It is, therefore, expected that fire risk assessors will be judicious in their recommendations for a fire risk appraisal and assessment of external wall construction by a specialist within the action plan of an FRA. Unnecessary recommendations by fire risk assessors for such appraisals and assessments, contrary to the guidance in this PAS, would make significant demand on the scarce resources available for these appraisals and assessments, thereby diverting attention from buildings in which the public might be at serious risk and that actually do warrant them.

For avoidance of doubt, it is not suggested that, even in the case of a building of a type that would, generically, normally be regarded as low risk (e.g. a four-storey office building of traditional masonry construction), the fire risk assessor will ignore unusual, but visually obvious, material defects that place occupants at undue risk. On the other hand, it is acknowledged that, in determining that the risk to life from fire spread over external walls is not such as to warrant an appraisal and assessment by a specialist, the fire risk assessor is not deemed to be confirming conformity of external wall construction to building regulations (past or present) or the Fire Safety Order [1].

In these circumstances, therefore, latent defects in construction might well continue to be unrevealed. Consultations with the National Fire Chiefs Council at the time of drafting this PAS have confirmed that this principle is accepted. It is simply the case that, in the low-risk circumstances described above, experience has shown, over many years and in some millions of buildings, that the risk to loss of life from defects in external wall construction is so negligible as to be insignificant. It is, therefore, not unreasonable in these cases for the fire risk assessor to assume conformity to the building regulations that were current at the

time of construction, unless there is significant, visually obvious, evidence to the contrary.

It is expected that the dutyholder will take responsibility for making the fire risk assessor aware of any known concerns regarding the fire performance of external wall construction, or any alterations since the time of construction that might be detrimental to the fire performance of external wall construction, including the installation of any new cladding, fenestrations or attachments to the building.

In the case of cladding that is known to pose a major hazard in the event of fire, there is likely to be a need for the fire risk assessor to consider the recommendation of interim measures.

h) Automatic water-based suppression systems

Automatic sprinkler installations are very effective in the control of fire. The presence of an automatic water-based suppression system, such as an automatic sprinkler installation, might therefore enhance life safety, reduce risk and limit the spread of fire from its point of origin. In assessing the overall risk to life, the presence of an automatic fire suppression system needs to be taken into account, and can sometimes compensate for shortcomings in other fire protection measures, such as the fire resistance of doors.

Where suppression systems are part of the life safety measures in any premises, or are taken into account as compensatory features for a reduction in other fire safety measures [see 5.3e)], this needs to be noted in the FRA, and procedures are necessary to manage the resulting increase in risk that would occur if the suppression system were to be taken out of service, or become defective, for any reason.

Provision of sprinklers can also allow a reduction in the performance requirements of elements of construction and compartmentation. In the case of premises designed and managed in accordance with BS 9999, the provision of an automatic sprinkler system can permit increased travel distances and decreased exit widths. While an engineering evaluation of an automatic sprinkler system is not normally appropriate in the course of the FRA, it is normally appropriate to confirm that there are no obvious shortcomings created by, for example, storage of stock too close to sprinkler heads. It is also appropriate to confirm that there are adequate arrangements for testing and maintenance of the system so that faults and major shortcomings can be identified (see Clause 16). Other forms of water-based suppression system include water

mist systems, which can be appropriate in specific circumstances.

i) Other fire protection systems

Other fire protection facilities and systems that, if present or required, need to be taken into account in the FRA include:

- 1) smoke control systems and facilities;
- 2) other localized fire suppression systems;
- 3) measures to assist the fire and rescue service, such as dry or wet fire mains (see 3.17 and 3.90 respectively), firefighters, fire-fighting or firemen's lifts (see 3.57.3, 3.57.2 and 3.57.4 respectively) and firefighters' switches for high-voltage illuminated signs; it is unusual for an FRA to recommend that firemen's lifts be upgraded to the more modern standards of firefighters or fire-fighting lifts, but consideration might be given to an element of upgrading at the time of lift refurbishment or replacement; further guidance can be found in BS 8899; and
- 4) emergency voice communication systems.

While such systems are not present in all premises, they can play an important role in the safety of occupants in certain large or complex premises. Even if the objective of such a system is property protection or assistance to the fire and rescue service, it is still appropriate to note, and take account of, the system in the FRA.

In some (usually complex) premises, smoke control systems can be essential for protection of means of escape. For example, in most shopping complexes, the combination of automatic sprinkler and smoke control systems is an essential part of a fire safety engineering package. Again, although an engineering evaluation of a smoke control system is usually outside the scope of the FRA, it is often vital to ensure that there are adequate arrangements for ongoing control, testing and maintenance of such systems (see Clause 16).

Localized fire suppression systems are often provided primarily for property protection. However, they might contribute to life safety. In some cases, they might even compensate for a reduction in the standards of other fire protection measures. For example, sometimes a cooking area (e.g. within a retail floor of a shop) might require enclosure in fire-resisting construction, but it might be acceptable to omit this construction if a fixed fire extinguishing system is fitted to the cooking equipment. Due account might, therefore, need to be taken of such systems, and arrangements for their testing and maintenance might need to be confirmed (see Clause 16).

In most premises that require dry or wet fire mains, fire-fighting lifts or firefighters lifts, these are already present. It is unusual for a need for such facilities first to be identified in the FRA, or for an FRA to recommend retrofitting of such facilities in premises that were not provided with them at the time of construction. Usually, at the stage that these facilities come into operation, the premises are already evacuated, and they are primarily of assistance to the fire and rescue service. However, since safety of firefighters might depend on the correct operation of these facilities, it needs to be verified that there are adequate arrangements for their testing and maintenance (see Clause 16).

15.1 The FRA should include, as a minimum, details, or a description, of:

- a) means for detecting fire and giving warning to occupants;
- b) means of escape from the premises (including means of escape and arrangements for evacuation of disabled people);

NOTE 1 A short description of the means of escape is of value in subsequent FRAs, in that it can enable changes since the time of the previous FRA to be identified.

- c) fire safety signs and notices;

NOTE 2 Attention is drawn to the Health and Safety (Safety Signs and Signals) Regulations 1996 [54] regarding requirements for signs relating to fire escape and fire extinguishing equipment.

- d) emergency escape lighting;
- e) means to limit spread and development of fire;
- f) any obvious concerns regarding the hazard of fire spread over external walls;
- g) means for fighting fire;
- h) other relevant fire protection systems and equipment (e.g. smoke control systems); and
- i) facilities to assist firefighters.

15.2 The extent to which fire protection measures are necessary, and the adequacy of existing measures, should be determined, and shortcomings in such measures should be addressed within the action plan (see Clause 19).

NOTE 1 It is always necessary for there to be adequate means of escape in the event of fire.

NOTE 2 The FRA does not normally involve a detailed engineering evaluation of fire protection systems and equipment, but a recommendation for such an evaluation might be included in the action plan if there are doubts about the adequacy of the system.

NOTE 3 It is not expected that an FRA will involve opening up the structure of the premises, such as cutting holes in, or removal of sections of, walls, ceilings, partitions, etc. If a dutyholder requires such an “intrusive” inspection, this would need to be made clear to the fire risk assessor. However, such an inspection can be recommended in the action plan of the FRA, subject to justification based on evidence of probable shortcomings in the compartmentation.

NOTE 4 The effects of dangerous substances on the nature of the appropriate fire protection measures need to be taken into account.

15.3 The purpose of assessing the fire protection measures described in 15.1 is to determine their contribution to safety of occupants in the event of fire. However, none of these measures should be assessed in total isolation of the other measures; account should be taken of the effect of the entire package of measures (including relevant managerial arrangements) on the consequences of fire to life safety.

15.4 In the case of fire detection and fire alarm systems, the fire risk assessor should determine the need, or otherwise, for automatic fire detection, and the likely adequacy of the means for warning people in the event of fire.

15.5 Means for warning any Deaf or hard of hearing occupants identified as especially at risk in the event of fire should be addressed.

15.6 Means of escape should be assessed taking into account the factors discussed in Annex C.

15.7 Arrangements for evacuation of any disabled or other occupants identified as especially at risk in the event of fire should be addressed.

15.8 In every FRA, a judgement should be made as to whether there is a need for emergency escape lighting. If emergency escape lighting is considered necessary, subjective judgement should be made to the adequacy of any existing emergency escape lighting.

15.9 The adequacy of fire safety signs, particularly those associated with assistance in use of escape routes, should be determined.

15.10 The adequacy of the type, number and siting of manual firefighting appliances should be determined.

NOTE Normally, the minimum provision is a sufficient number of portable fire extinguishers that are suitable for use on class A fires.

15.11 The adequacy of fire stopping, the flammability of linings and, where appropriate, the flammability of furniture and furnishings should be addressed so far as is reasonably practicable.

NOTE It is not normally practicable to carry out a complete review of fire stopping in premises. Reliance on a visual inspection of a sample of readily accessible areas including, where appropriate, those above false ceilings is normally adequate.

15.12 The FRA should take account of the potential for means of escape to be compromised by ventilation and air conditioning systems, particularly in hospitals and residential care premises, but also in other premises in which people sleep.

NOTE Although a detailed evaluation of the fire protection measures incorporated in such systems might not be practicable in the course of an FRA, where the risk to life from fire is high it might be necessary to recommend further investigation within the action plan (see Clause 19) into the fire strategy and the cause and effect of the fire detection and fire alarm system.

15.13 The FRA should take account of all other fire protection systems, including automatic suppression systems, smoke control systems, localized fire suppression systems, dry or wet fire mains, lifts designed for use by the fire and rescue service, and firefighters’ switches. In the case of smoke control systems, fire risk assessors should ensure that they understand the objective of the system and verify, so far as is practicable, that the original design concept has not been undermined (e.g. by alterations to the premises). Even if the objective of any fire protection systems or facilities is deemed to be property protection, their presence should be noted in the FRA, and due account should be taken of their contribution (if any) to safety of occupants from fire.

15.14 Consideration should be given to the external wall construction and, in particular, cladding. Although it might be acceptable to assume that the wall and any cladding satisfied the relevant building regulations at the time of construction of the building, the fire risk assessor should be alert to any situation in which there is good reason to suspect that the original construction, or subsequent overcladding, failed to conform to the building regulations that were current at the time of construction. In such cases, there should

be further investigation, which might necessitate a recommendation for this in the action plan.

NOTE *Other than in the case of construction that is likely to pose minimal risk, such as traditional masonry construction, any fire risk appraisal and assessment of external wall construction or cladding is likely to need the skills of a specialist as it is beyond the competence of a typical fire risk assessor.*

16 Assessment of fire safety management

COMMENTARY ON CLAUSE 16

The following considerations are relevant to this clause.

a) General

In the FRA, fire safety management (see 3.43) needs to be regarded as of equal importance to fire protection measures. In its broadest sense, fire safety management includes certain policies and procedures designed to prevent the occurrence of fire by eliminating or controlling fire hazards. However, most of these aspects of fire safety management have already been considered in Clause 13.

Fire safety management also includes:

- 1) designated responsibility for fire safety in the premises;
- 2) access to suitable advice on the requirements of fire safety legislation;
- 3) procedures for people to follow in the event of fire, including people with special responsibilities;
- 4) nomination of people to respond to fire and, where appropriate, to assist with evacuation;
- 5) arrangements for liaison with the fire and rescue service, both in respect of planning for fire and at the time of any fire;
- 6) arrangements for routine inspections of the premises and their fire precautions or for more formal fire audits (see 3.24);
- 7) cooperation and coordination between different dutyholders within premises in multiple occupation;
- 8) staff training and fire drills (see 3.26);
- 9) provision of information to third parties;
- 10) testing and maintenance of fire protection systems and equipment;
- 11) documentation of fire safety arrangements and keeping appropriate records;
- 12) implementation of the action plan's recommendations; and
- 13) review of the FRA at appropriate intervals.

Points 1) to 11) are discussed in the sections of commentary that follow. Point 12) is discussed in Clause 19, and point 13) is discussed in Clause 20. It is important that matters in the paragraphs that follow are properly considered in the FRA and that fire safety

management is taken into account in the subjective judgement of overall fire risk (see Clause 18).

Recommendations for fire safety management of occupied buildings can be found in BS 9999:2017, Section 9. BS 9997 provides requirements for an organizational fire risk management system and can be used to audit fire risk management within an organization.

b) Responsibility for fire safety

Although legislation does not demand that a specific, named person be responsible for fire safety within any particular premises, it is of advantage to confirm in the FRA that, within the organization, there is someone who, in at least an administrative sense, is responsible for fire safety within the premises. The intention is not to provide a legal interpretation of responsibility, but to reflect the managerial arrangements in place at the time of the FRA. The person in question might, or might not, have a legal responsibility for breaches of legislation, etc.

According to the manner in which the organization is structured, the person named in this section of the FRA might be a director, building manager, facilities manager, health and safety manager, fire safety manager (see 3.44), estates manager, etc. The person might or might not work within the premises, and the responsibility could even be shared by two or more people. It is, however, important in the management of any organization that someone is, and accepts that they are, responsible for fire safety, particularly in the case of premises in multiple occupation.

c) Access to advice

NOTE 1 Attention is drawn to the requirements of the relevant fire safety legislation for the appointment or nomination of one or more "competent persons" to assist in compliance with that legislation, and to the definition of "competent person" given in the relevant fire safety legislation.

The "competent person" required by the relevant fire safety legislation might, or might not, be the person responsible for fire safety, to which reference is made in item b) of the Commentary on Clause 16. However, the two are often different, since the person having responsibility for fire safety might be a senior manager, while the "competent person" might be a trained

professional in the field of fire safety or health and safety, often based in a remote location, such as a group head office.

The fire safety policy needs to set out the organizational structure and indicate the sources of competent assistance available to the dutyholder. Often, organizations are able to appoint one or more of their own employees for this purpose, while large organizations might appoint whole departments with specific health and safety responsibilities, including specialists in various matters, such as fire safety. Equally, if consultants are used for advice, it is necessary for their activities to be coordinated by the organization, since external consultants are usually appointed in an advisory capacity only, and their appointment does not absolve the organization from its responsibilities (see Clause 6).

d) Fire procedures

In the course of the FRA, there is a need to ensure that there are formal, documented procedures for people to follow in the event of fire, and that these procedures are adequate. Adequate procedures normally address:

- 1) actions to follow on discovery of fire;
- 2) actions to follow on hearing the fire alarm signal;
- 3) the importance of raising the alarm immediately on discovery of fire;
- 4) the importance of evacuating the premises immediately when the fire alarm sounds;
- 5) the arrangements for evacuation of disabled occupants;
- 6) the policy on firefighting by employees;
- NOTE 2** The relevant fire safety legislation requires that, where necessary, dutyholders nominate sufficient competent employees to use fire extinguishing appliances.
- 7) the summoning of the fire and rescue service;
- 8) the location of evacuation assembly points; and
- 9) the importance of not attempting to re-enter the premises until instructed to do so by the fire and rescue service.

NOTE 3 In cases of false alarms that the fire and rescue service do not attend, the decision to re-enter the premises needs to be taken by the person in charge.

Normally, there is a need for special procedures for occupants with special duties in the event of fire. These could include, for example:

- i) switchboard operators (in relation to, for example, summoning of the fire and rescue service);
- ii) fire wardens (see 3.52);

- iii) assembly point wardens;
- iv) those responsible for meeting the fire and rescue service;
- v) security personnel; and
- vi) senior management.

e) Nomination of people with special duties in the event of fire

In carrying out the FRA, there is a need to ensure that there are adequate arrangements for summoning the fire and rescue service in the event of fire. The arrangements are expected to form part of the fire procedures for the premises [see item d) of the Commentary on Clause 16], but it might be the case that summoning the fire and rescue service is the responsibility of a nominated post-holder, such as a switchboard operator. Even if there are means for automatic transmission of fire alarm signals to an alarm receiving centre, when the premises are occupied, arrangements are still needed for summoning the fire and rescue service by means of the public emergency call system.

The fire risk assessor needs to investigate the dutyholder's arrangements, where necessary, for nomination of a sufficient number of competent persons to use the fire extinguishing appliances in the premises, and to ensure that these are adequate. For example, the fire procedures might dictate that anyone who discovers a fire is expected to tackle the fire with fire extinguishing appliances if it is safe to do so; alternatively, only a proportion of the staff in the premises might be authorized and trained to do so. Nominated persons need to be competent (see 3.14).

NOTE 4 Attention is drawn to the requirements of the relevant fire safety legislation regarding arrangements for firefighting, including where necessary the nomination and training of people to use firefighting equipment.

The fire risk assessor also needs to investigate the arrangements for ensuring that the premises are evacuated (e.g. by appointment of fire wardens), and to ensure there is suitable control, coordination and monitoring of evacuation procedures. Information on the status of the evacuation is of importance to the fire and rescue service when they arrive at the premises.

NOTE 5 Attention is drawn to the requirements of the relevant fire safety legislation regarding the nomination of people to assist in evacuation.

In premises such as residential care homes, it is appropriate to determine, within the FRA, whether sufficient levels of staff are present to ensure the

safety of residents during both day and night. This normally necessitates discussions with the premises management. In this connection, there is a need for a suitable emergency plan for evacuation of, at least, the sub-compartment of fire origin. [Except in the case of small care homes, care homes are normally divided into sub-compartments to facilitate evacuation to a place of relative safety (see 3.70) in the event of fire.]

NOTE 6 Attention is drawn to registration conditions relating to staffing levels in registered care homes. These levels might, or might not, be sufficient to facilitate the evacuation of residents.

f) Liaison with the fire and rescue service

In large and complex premises, it is important that there are arrangements for local fire and rescue service crews to familiarize themselves with the premises and with, for example, the facilities for firefighting and potential risks to firefighters. While there are legislative requirements imposed on fire and rescue services in this respect, it can be beneficial for dutyholders to be proactive in inviting the fire and rescue service to carry out familiarization visits. In some such premises, there might be a need for predetermined emergency procedures with the fire and rescue service. In addition, it is important that the fire procedures for the premises include arrangements for summoning of the fire and rescue service in the event of fire and meeting the fire and rescue service on arrival.

Arrangements for meeting and briefing the fire and rescue service on arrival is essential in the case of care homes and hospitals. In these cases, the evacuation of a protected area takes some considerable time and in many cases is likely to still be in progress on the arrival of the fire and rescue service. In these cases, the support of fire and rescue crews to complete this evacuation might be critical before they can commence firefighting operations in the protected area involved. This is because crews might need to enter an area to tackle a fire and that might temporarily allow smoke and heat to spread into areas in which evacuation is in progress, potentially placing occupants at increased risk.

To reduce this risk, it is necessary for crews to be briefed on:

- 1) the exact location of the fire;
- 2) progress with evacuation of the protected area involved and how they could assist with this; and
- 3) if possible, a route to the location for firefighting crews that is separate to any area in use as a place of relative safety.

Similar considerations might apply in the case of prisons and children's homes.

g) Routine inspections

The FRA is somewhat similar to the MOT inspection of a car, in that it reflects the conditions found by an assessor at a particular point in time. There is, however, a need to ensure that, on a more routine basis, there are means for detecting deficiencies in fire precautions. Accordingly, it is appropriate for the fire risk assessor to investigate arrangements for suitably trained or instructed occupants of the premises to carry out routine inspections of the fire precautions.

Such inspections need little or no specialist knowledge, but can make a major contribution towards the maintenance of adequate fire precautions by checking that, for example, manual call points, fire detectors and sprinkler heads remain unobstructed, self-closing fire doors operate correctly, fire exit doors that are not in normal use open easily and there is no storage in escape routes that need to remain relatively sterile (e.g. protected staircases). Sometimes these matters are addressed in the course of health and safety inspections or more specific fire audits. Often, more frequent day-to-day inspections, of a basic nature, can be carried out by, for example, patrolling security officers or, for example, in the case of a hotel, by duty managers. It is important that adequate procedures are in place to enable any deficiencies identified in the course of routine inspections to be reported and subsequently addressed (e.g. within the scope of a maintenance schedule).

h) Staff training and fire drills

Since failure of people to react correctly has been associated with many fires that have resulted in serious loss of life, an important part of the FRA is consideration of arrangements for giving instruction and training to staff on fire safety matters and for carrying out fire drills. Training and information provided need to address not only the fire procedures, but also, to the extent relevant, the fire risks in the premises, including risks associated with dangerous substances, and to enable employees to understand the fire precautions that are in place. Such understanding will facilitate the usefulness and accuracy of routine inspections, as discussed in item g) of the Commentary on Clause 16. In premises to which the public resort, staff training needs to include arrangements in respect of directing the public in the event of fire. Fire safety induction training (see 3.42) for all new staff is particularly important.

There is some evidence to suggest that, in some residential care homes, there are gaps in the planning for, and in staff understanding of, progressive horizontal evacuation. In carrying out an FRA for a care home, there is a need for fire risk assessors to be aware of the potential for such gaps, so that they can be identified by the fire risk assessor within the significant findings of the FRA. The fire risk assessor needs to be aware of the challenges of progressive horizontal evacuation and to have an appreciation of realistic timescales for the evacuation of residents from the protected area of fire origin, taking into account factors such as the maximum number of residents in any protected area (sub-compartment), the nature of residents' impairments, the protection of escape routes, the number of staff available to assist with evacuation during the night and the presence of, or possible need for, automatic fire suppression.

Inevitably, in the case of a care home, the success of a progressive horizontal evacuation strategy depends upon early arrival and action by the fire and rescue service. This makes liaison with the fire and rescue service, both prior to, and at the time of, a fire particularly important [see item f) of the Commentary on Clause 16].

NOTE 7 Attention is drawn to the requirements of the relevant fire safety legislation for adequate training for employees.

Thereafter, fire safety refresher training (see 3.48) needs to be given periodically. The frequency of refresher training needs to take into account the turnover of staff, the complexity of the premises and their fire procedures, and the fire risk.

There is often a need to provide additional training for people who have special responsibilities in the event of fire; this could, for example, include fire wardens.

Generally, fire drills are important in all except the smallest premises. The drills are a means of reinforcing training, and provide feedback on the effectiveness of the training that has been carried out.

NOTE 8 Attention is drawn to the requirements of the relevant fire legislation for fire drills to be carried out where necessary.

i) Provision of information for third parties

Where the employees of third parties work in the premises of a dutyholder, the dutyholder needs to ensure that adequate information on fire procedures and relevant fire precautions is passed on to their employer, and that the employees have been given the relevant information. Such third parties include

contractors working on the premises, contract security staff, contract caterers and contract cleaners.

NOTE 9 Attention is drawn to the requirements of the relevant fire safety legislation for the provision of information to third parties who work, or employ people to work, on the premises.

j) Testing and maintenance of fire protection measures

The fire risk assessor needs to ensure that there are adequate arrangements for testing and maintenance of all fire protection measures. There is also a need to ensure that the workplace itself is adequately maintained in order to avoid certain fire hazards.

NOTE 10 Attention is drawn to the requirements of the relevant fire safety legislation for testing and maintenance of fire precautions required by that legislation, and for testing and maintenance of facilities, systems and equipment required under other legislation (e.g. building regulations) for the use by, or safety of, firefighters. Requirements and recommendations for testing and maintenance of systems are given in the relevant British Standards for the particular systems and equipment.

k) Record keeping

The relevant fire safety legislation requires appropriate arrangements to be put in place for the effective planning, organization, control, monitoring and review of the measures that the FRA identifies as being necessary for compliance with that legislation. Other than in the case of certain small businesses, it is a legal requirement for these arrangements to be recorded. Therefore, there is a need for a fire safety manual for the premises (see 3.45).

It is not necessarily specifically required that records of training, inspection, testing, maintenance, etc. are kept. Nevertheless, such records are an important means of demonstrating, if required, that all legislative obligations have been satisfied. It is, therefore, relevant for the fire risk assessor to consider any records that exist and to make recommendations, where appropriate, for keeping of suitable records. These records can also be important in demonstrating that there have been no breaches of good practice that could result in litigation in the event of injury to an occupant of the premises in the event of fire.

Though not required by the relevant fire safety legislation, it is also good practice (e.g. as espoused in BS 5839-1) to maintain records of false alarms. Dutyholders might be unaware of the value of keeping these records. It is therefore beneficial for fire risk assessors to remind dutyholders of the importance

of such records, particularly in buildings with a large number of smoke detectors. This can enable unacceptable rates of false alarms, and the need for action in respect of these, to be identified.

l) Cooperation and coordination between dutyholders in premises in multiple occupation

Where two or more organizations share a building, adequate fire safety for all occupants can be achieved only if the organizations cooperate with one another and coordinate their fire safety measures. For example, there needs to be coordination of fire procedures, fire drills and fire management strategy. It needs to be ensured that one occupier's activities and practices do not create a risk to those in another occupier's part of the building. In the case of the FRA, it needs to be ensured that there is appropriate cooperation and coordination of the fire safety measures of different occupiers within such premises in multiple occupation.

NOTE 11 Where part of a building is a construction site (e.g. during a refurbishment or partial occupation of a new building), cooperation and coordination is necessary between each occupier and the principal contractor.

16.1 The FRA should record the name(s) or post(s) of the person(s) responsible for fire safety in the premises.

16.2 It should be verified that there are arrangements for obtaining competent advice on the requirements of fire safety legislation. The source of such advice should be recorded in the documented FRA (see Clause 10).

16.3 In the course of the FRA, the following matters should be taken into account. Any shortcomings in these matters should be identified in the documented FRA and should be addressed in the action plan (see Clause 19):

- a) the fire procedures, including procedures for people with special responsibilities in the event of fire;
- b) the arrangements for summoning the fire and rescue service in the event of fire;
- c) the nomination of people to respond to fire, using firefighting equipment if appropriate to do so;
- d) where appropriate, the nomination of people to assist with evacuation;
- e) arrangements for liaison with the fire and rescue service;
- f) arrangements for routine inspections of the premises and their fire precautions;
- g) in the case of premises in multiple occupation, arrangements for cooperation and coordination between different occupiers;
- h) staff training;
- i) fire drills;
- j) provision of information to third parties;
- k) testing and maintenance of fire protection systems and equipment by a competent person (including systems and equipment installed for use by, or for the safety of, firefighters);
- l) maintenance of the premises;
- m) records of false alarm information as described in BS 5839-1:2017, 48.2; and
- n) other appropriate records, including, normally, a fire safety manual.

17 Assessment of likely consequences of fire

COMMENTARY ON CLAUSE 17

After all fire protection measures and all aspects of fire safety management have been assessed, the fire risk assessor is in a position to make an assessment of the likely consequences of fire, taking account of the factors concerning the premises and their occupants discussed in Clause 12. As well as consideration of fire protection measures and matters such as fire procedures, account needs to be taken of human behaviour. It is not, for example, appropriate for the FRA to assume perfection in the response of people to fire alarm signals. Account needs to be taken of the manner in which the known occupants of the premises are likely to behave in the event of fire.

It would be possible, in theory, to associate different consequences of fire with different fire scenarios arising from each of the fire hazards identified in the fire hazard identification step of the FRA (see Clause 13). However, this would make the FRA process unnecessarily complex and unduly lengthy. Usually, it is sufficient to assess the most likely consequences of a fire in the premises, taking into account the range of fire scenarios that can reasonably be anticipated, and assuming that normally only one fire occurs at any one time (i.e. generally discounting multiple seats of fire).

The assessment of likely consequences needs to take into account the extent of injury that would occur to occupants in anticipated scenarios, and the number of occupants likely to be affected. Consequences are more serious if a greater number of occupants are affected. Equally, serious consequences include, for example, a situation in which there is a high likelihood that a small number of occupants (even one) will be subject to serious injury in the event of fire.

The likely consequences of fire need not, and usually cannot, be expressed in a statistical manner (e.g. probability of death or serious injury). All that is required is a subjective judgement that classifies likely consequences of fire into one of several predetermined categories. Since the assessment of these factors is subjective, the use of numbers to express the likely consequences of fire does not confer any greater accuracy to the assessment of fire risk.

The predetermined categories of likely consequences of fire may be described in the form of words, such as “slight harm”, “moderate harm” and “extreme harm”, provided these terms are defined, or in the form of numbers (e.g. 1, 2 and 3), but there is a need for at least three categories. However, if likely consequences are expressed in the form of numbers, care is necessary to ensure that it is not implied, for instance, that a score for likely consequences of “2” indicates that fire is twice as likely to result in casualties compared to a score of “1”.

There is no upper limit to the number of categories of likely consequences that can be adopted in the FRA process. However, if too many categories are adopted, the distinctions between categories are meaningless. Moreover, if the same FRA process is then applied to numerous different premises (e.g. within the estate of a single organization), particularly by different fire risk assessors, assessments of the likely consequences of fire are likely to be inconsistent, and the benefits of comparing fire risk in different premises (e.g. for the purpose of prioritizing improvements on a building-by-building basis) are then lost.

One common practice for the assessment of fire risk (see Clause 18) is for fire risk to be determined by means of combining the assessment of the likelihood of fire and the assessment of the likely consequences of fire, using a matrix. It is this method that is suggested in this PAS. Where such an approach is adopted, it is helpful to use the same number of categories for both likelihood of fire and likely consequences of fire.

In assessing the likely consequences of fire, for the purpose of carrying out the FRA to which this PAS relates, it is not normally necessary, or appropriate, to carry out calculations of the type used in the practice of fire safety engineering (see 3.41). However, the principles of fire safety engineering may be used, in a subjective manner, to assess the likely consequences of fire, using the principle of “timelines” that forms the basis of fire safety engineering (see Figure 3).

In Figure 3, which is a simplified version of a similar figure in BS 7974:2019, the RSET (see 3.78) is broken down into a number of components, namely:

- a) the time between ignition of a fire and detection of the fire (whether by occupants or by an automatic fire detection system);

- b) the time between detection and the giving of the alarm warning to occupants;
- c) the time between the giving of the alarm warning and the recognition by occupants that the alarm warning is a warning of fire;
- d) the time between this recognition and the response by occupants (i.e. the time to begin evacuation); and
- e) the time between response and completion of evacuation of occupants to a place of ultimate safety.

The RSET, so derived, is then compared with the ASET (see 3.6). For safe evacuation of occupants, the ASET needs to be significantly longer than the RSET. In the FRA, Figure 3 is particularly useful in forming the basis for a subjective but analytical approach to situations in which fire protection measures (such as means of escape) do not meet the recommendations of the relevant prescriptive code of practice or guidance.

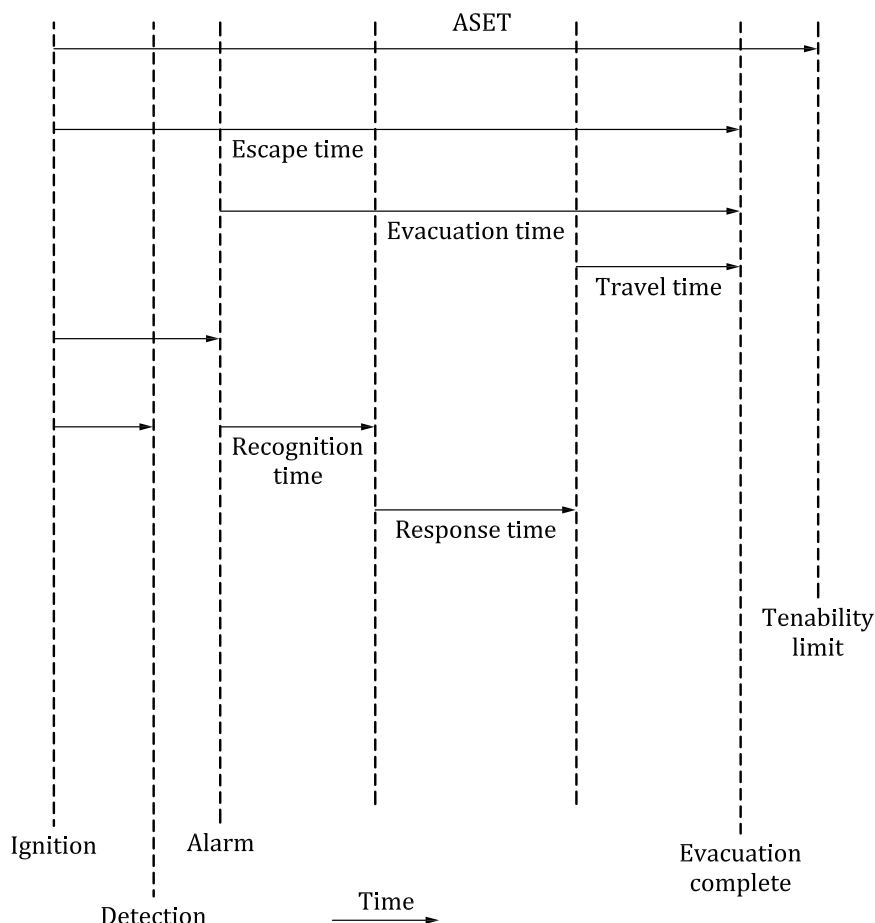
For example, if the travel distances are significantly longer than recommended in the relevant code of practice, thereby extending the travel time and hence the RSET, account can be taken of fire precautions (whether existing or proposed in the action plan) that act to reduce the RSET by a commensurate amount; such fire precautions might be other fire protection measures or various enhancements in fire safety management (e.g. fire procedures, fire training and fire drills). Alternatively, account can be taken of fire precautions (whether existing or proposed in the action plan) that extend the ASET (e.g. measures to control smoke).

17.1 In the process of every FRA, an assessment should be made of the likely consequences of fire.

NOTE It is usual and acceptable for the likely consequences of fire to be expressed subjectively (e.g. "slight harm", "moderate harm" or "extreme harm").

17.2 If, in the FRA methodology adopted, a matrix is used to combine the likelihood of fire and the likely consequences of fire in order to determine the fire risk, the number of predetermined categories of likely consequences of fire should be the same as the number of predetermined categories of likelihood of fire (see Clause 14).

Figure 3 – Example of timeline comparison between ASET and RSET



18 Assessment of fire risk

COMMENTARY ON CLAUSE 18

It is innate to the process of carrying out an FRA that there be an assessment of fire risk, which it is then appropriate to document. The assessment of fire risk enables the (usually subjectively based) fire risk in one premises to be compared with the fire risk in other premises (e.g. within the single estate of one organization), so identifying those premises in greatest need of attention. Even applied to single premises in isolation, the assessment of fire risk can provide a useful descriptor that imparts a sense of the magnitude of fire risk.

The categories for classification of fire risk are derived from those used to determine the likelihood and likely consequences of fire (see Clause 14 and Clause 17). Whereas it is normally sufficient to classify likelihood of fire, or likely consequences of fire, into one of three predetermined categories, a greater number of categories of fire risk is normally appropriate in order to cater for the range of levels of fire risk that can occur. Thus, a minimum of five predetermined categories of fire risk is normally appropriate.

The category of fire risk for any premises can be determined by combination of the likelihood of fire and the likely consequences of fire, using a matrix; this is a method of risk assessment commonly adopted in the field of health and safety.

The advantage of this approach is that it tends to result in relatively consistent assessments of risk (and, hence, fire risk) by different risk assessors; the risk assessor need select from the matrix only one of three levels of likelihood and one of three levels of likely consequences, but can derive thereby any one of five levels of fire risk.

18.1 In the process of every FRA, an assessment should be made of the fire risk in the premises.

NOTE It is usual and acceptable for the fire risk to be expressed in terms of one of a number of predetermined categories of risk (e.g. “trivial”, “tolerable”, “moderate”, “substantial” or “intolerable”).

18.2 If, in the FRA methodology adopted, fire risk is expressed in terms of one of several predetermined categories, there should be at least five predetermined categories.

18.3 The FRA methodology adopted should be such that there is a transparent means for combining the likelihood of fire and the likely consequences of fire to derive the fire risk.

NOTE Table 1 shows an example matrix of categories of likelihood and consequences that can be adopted in assessment of fire risk.

Table 1 – An example of a simple risk level estimator

Likelihood of fire	Classification of fire risk		
	Likely consequences of fire		
	Slight harm	Moderate harm	Extreme harm
Low	Trivial risk	Tolerable risk	Moderate risk
Medium	Tolerable risk	Moderate risk	Substantial risk
High	Moderate risk	Substantial risk	Intolerable risk

19 Formulation of an action plan

COMMENTARY ON CLAUSE 19

The outcome, and indeed the principal *raison d'être*, of the FRA is the action plan. The action plan comprises recommendations that are intended to ensure that the fire risk is reduced to, or maintained at, a tolerable level (see 3.86). Even if the fire risk is already tolerable, there is often a need to make recommendations in the action plan, often involving low cost or changes in managerial arrangements, to address minor deficiencies in fire precautions.

In formulating an action plan for premises in which the fire risk has been assessed as unacceptably high, the subjective but analytical approach to fire risk assessment permits backtracking to determine whether, in effect, the problem arises from inadequate fire prevention (i.e. inadequate means for control or elimination of fire hazards), inadequate fire protection (e.g. unsatisfactory means of escape or fire warning systems), shortcomings in fire safety management, or a combination of these.

The action plan is an inventory of actions, normally prioritized and time-constrained, to devise, maintain or improve controls. Where appropriate, the inventory includes measures to eliminate or control hazards (e.g. better separation of combustible materials from ignition sources). A blend of physical and procedural controls is often necessary.

The adequacy of the action plan needs to be tested, at least in the mind of the fire risk assessor, before it is finalized. At that stage, it is appropriate to ask the following questions.

- a) Will the revised controls lead to tolerable fire risk levels?
- b) Could any of the recommended actions create new hazards to health and safety?
- c) Have the most cost-effective solutions been chosen?
- d) What will occupants affected think about the need for, and practicality of, the revised fire precautions?
- e) Will the revised fire precautions be adopted and maintained in practice and not ignored in the face of, for example, normal use of, and operations in, the premises?

All of these questions have a relevance to any action plan, the objective of which is to achieve tolerable risk, but without the creation of new hazards. The fire precautions proposed ought to be the most cost-effective available; often a single fire safety objective (see 3.46) can be satisfied by a variety of measures.

The practicality of fire precautions, and their acceptability to occupants, are also essential. There is no point in installing self-closing fire doors if discussion with occupants would have revealed that they would be such an impediment to the work process that they would always be wedged in the open position. Equally, if this is clear from discussion with those in the workplace, the problem can be pre-empted by installing fire doors that are held open by automatic door release mechanisms, which release the self-closing doors on operation of the fire alarm system.

It is normally appropriate to allocate priorities to each measure recommended in the action plan, to reflect the urgency of the measure, as determined in the FRA. (This might be unnecessary if, for example, most of the recommended measures are minor in nature and will be implemented in the short term in any case.)

If prioritization is appropriate, it is often helpful to have a scheme of prioritization that is suitable for the way in which the company operates and projects are planned. There is no right or wrong scheme of prioritization, but, whatever scheme is adopted, it needs to be simple to understand, facilitate consistent application, and be relatively unambiguous as far as allocation of priorities is concerned. This suggests that it is appropriate for there to be no more than three or four priorities.

A simple scheme might have only four priorities, such as:

- 1) immediate (to be implemented as soon as possible), including, where relevant, interim measures necessary to ensure the safety of occupants until permanent measures can be implemented;
- 2) short term (to be implemented within, perhaps, three months);
- 3) medium term (to be implemented within, perhaps, three to six months); and

- 4) long term (to be implemented as and when the opportunity arises, such as at the time of replacement of a fire door or refurbishment of premises).

Many other systems of prioritization are possible. For example, priorities might distinguish between matters that constitute breaches of legislation and those that do not.

NOTE Under the relevant fire safety legislation, breach of the requirements of the legislation in respect of fire precautions constitutes a criminal offence only if the breach results in the risk of serious injury or death of one or more persons who are lawfully on the premises, or in the immediate vicinity of the premises, in the event of fire.

Therefore, for example, a possible scheme of prioritization could be:

- i) serious breach of legislation, having the potential for serious injury to occupants;
- ii) matters that breach legislation but are not considered to constitute a serious threat to life safety; and
- iii) matters that need to be addressed as good practice, but that do not constitute a significant threat to occupants.

The implications, in terms of timescales, etc., would naturally flow from this.

Yet another possible scheme could take into account both the cost benefit and the practicality of implementation. For example, minor housekeeping items could be regarded as suitable for immediate implementation, simply because there is no reason to delay doing so, regardless of whether there is a major benefit to the safety of occupants. However, matters that might address a greater threat to occupants might be impossible to implement immediately, in the literal sense of the term, simply because specifications need to be drawn up, tenders obtained, etc.

In some circumstances, the risk to persons might be so serious that the risk assessor needs to ensure that a suitable representative of the dutyholder is informed immediately, before the assessor leaves the premises. A record of the circumstances needs to be recorded in the FRA, with, where relevant, a suitable recommendation to preclude the recurrence of these circumstances.

Where FRAs are carried out for a large number of premises of similar type, on behalf of a single dutyholder, there can be advantage in an analysis of

all the action plans produced, to give an overview to the dutyholder regarding the state of their portfolio of properties, common problems and prioritization of the premises in which capital work might be necessary. In this situation, there is a need for procedures to be in place to ensure the consistency of the FRAs, particularly if they are carried out by more than one fire risk assessor.

19.1 Every documented FRA should incorporate an action plan. If the fire risk and existing fire precautions are such that no recommendations for improvements are necessary, it should be explicit within the FRA that, in the opinion of the fire risk assessor, the only actions necessary are those to maintain the existing standard of fire precautions.

NOTE The action plan is sometimes, more simply, described as “recommendations”, particularly when the FRA is carried out by a third-party fire risk assessor (see 3.85).

19.2 The action plan should be such that, if implemented, it will reduce fire risk to, or maintain fire risk at, a tolerable level.

19.3 Where appropriate, the action plan should address both physical fire precautions and managerial issues.

19.4 The action plan should be both practicable to implement and possible to maintain, taking into account the nature of the premises, the occupants and the work processes carried out.

19.5 The measures recommended in the action plan should be cost-effective in reducing fire risk. They should be “reasonably practicable”, meaning that the cost, time and trouble involved in implementing any measure are not grossly disproportionate to the risk if the measure is not implemented.

19.6 No new significant hazards to health and safety should result from implementation of the action plan.

19.7 The action plan should contain information regarding the appropriate effort and urgency associated with the measures recommended. Effort and urgency should be proportionate to fire risk, but financial considerations should also be taken into account, though only in relation to the fire risk, and not in relation to the ability of the dutyholder to pay for the recommended actions; this avoids a situation in which persons in one premises are placed at greater risk than persons in another premises, simply because the first dutyholder is less able to afford fire precautions than the second dutyholder.

19.8 Where relevant, the action plan should recommend matters for further investigation by the dutyholder, and areas that need to be checked by the dutyholder (e.g. where relevant information and access to certain areas were not available at the time of the FRA).

19.9 Where FRAs are carried out for a number of properties on behalf of a single dutyholder, there should be arrangements in place to ensure the consistency of the FRAs in terms of the assessment of risk and the actions specified in the action plan to address the risk.

NOTE *Such quality assurance procedures are normally required under third-party certification schemes for fire risk assessment companies; this involves independent validation of each FRA by someone other than the person who carried out the FRA.*

19.10 When the FRA is provided to the dutyholder, the attention of the dutyholder should be drawn to the presence of the action plan and the need to implement any recommendations therein.

20 Periodic review of fire risk assessments

COMMENTARY ON CLAUSE 20

The documented FRA is not intended to be a fire safety manual (see 3.45), albeit that such a manual is a valuable asset in the management of fire safety, particularly in large or complex premises. However, the FRA is a living document, in that it cannot remain valid for an unlimited length of time.

The FRA is likely to cease to be valid when, for example:

- a) a material alteration (see 3.61) takes place;
- b) a significant change occurs in the “given” factors that were taken into account when the FRA was carried out (see Commentary on Clause 5);
- c) a significant change in fire precautions occurs.

Significant changes in the “given” factors could, for example, comprise a large increase in the number of occupants of the premises, use of the premises by significantly more disabled occupants, or introduction of a much more hazardous process. Significant changes in fire precautions include major changes in the provision or design of fire protection measures and major changes in the measures for control or elimination of fire hazards, but also include changes resulting from more gradual deterioration of fire precautions as a result of constant use or lack of maintenance (e.g. wear and tear on fire doors). Gradual changes can also occur as a result of changes in management, turnover of employees and minor changes in layout that, after a prolonged period and numerous changes, have a significant effect on means of escape. It is also relevant to review the FRA after any fire.

It follows, therefore, that, when any of the acute step changes described in items a) to c) above occur, the FRA needs to be reviewed. There might also be a need for approval of such changes under building regulations. Approval of changes by the authority that enforces the relevant fire safety legislation is not necessary, unless an “alterations notice” under the legislation requires that proposed alterations to the premises be notified to the enforcing authority. However, as gradual changes over a long period of time can also affect the validity of the FRA, there is a need for regular review of the FRA, even if there are no obvious changes that affect its validity. In FRAs carried out in accordance with this PAS, judgement of the maximum period after which the FRA

needs to be reviewed on a routine basis is actually part of the FRA process.

When the FRA is reviewed, consideration needs to be given to the extent to which the original action plan has been implemented. Work that has not been completed needs to be identified.

There is no correct or incorrect frequency for the regular review of the FRA. This is a matter for the judgement of the fire risk assessor and, to some extent, the organization’s own fire safety policy (see 3.47). It is, however, appropriate to take account of the likely frequency of significant changes. A best practice default is normally that the FRA is reviewed annually.

For example, the FRA for a retail outlet, in which significant changes in sales layout are likely to occur frequently, might need more frequent review than the FRA for a barrister’s chambers that have remained unaltered for many decades. Also, if, at the time of the FRA, there are major shortcomings in fire precautions, the action plan will normally contain proposals for significant changes. These changes are likely to take place within a relatively short time, after which review of the FRA might be warranted.

More frequent reviews might be appropriate where risk to any residents of premises is high as the result of impairments, dependencies and complex evacuation strategies, such as in care homes and hospitals. For the highest risk premises, it might be appropriate to carry out a new, full FRA every year.

NOTE Suitable pro formas for full assessments and reviews are given in Annex A and Annex D respectively.

Review of the FRA is not synonymous with a new assessment. Equally, however, in a regular review, all aspects of the original FRA might need to be revisited to check that they have not been subject to change; this emphasizes the importance of adequate recording of the significant findings of the original FRA, so that the basis for its conclusions can be readily re-examined. On the other hand, if the review has arisen purely as the result of a specific material alteration, it might be the case that a limited review is sufficient.

The original FRA, in conjunction with one or more documented reviews, constitutes a form of audit trail that demonstrates ongoing control of fire safety. After

a period of time in which there have, for example, been several reviews in which significant changes and the need for new risk control measures have been identified, the audit trail is likely to become unwieldy. At that stage, the documentation of a new and complete FRA might be appropriate. Typically, not more than two reviews will be carried out before the next new and complete FRA.

consultation (e.g. for supply of relevant information) at the time of the review. It should also be clear as to the number of reviews that have been carried out since the previous FRA.

20.6 The FRA review should record the date by which the next periodic review is to be carried out.

20.1 The FRA should be subject to review when:

- a) material alterations to the premises take place;
- b) a significant change occurs in the matters taken into account when the FRA was carried out;
- c) a significant change in fire precautions occurs;
- d) there is any other reason to suspect that the original FRA might no longer be valid (this might include the occurrence of a fire); and
- e) a defined period of time, which is expected to have been recorded in the original FRA [see 11.1i)], has elapsed.

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

20.2 When the FRA is reviewed, it should be confirmed whether any work recommended in the original action plan has been carried out.

20.3 When determining the frequency of the FRA review, account should be taken of:

- a) the likely frequency of significant alterations to the premises;
- b) the period after which major changes in fire precautions are likely to have taken place as a result of the measures recommended in the action plan; and
- c) the level of fire risk.

20.4 The FRA review should explicitly address the issues included in the original FRA, albeit that less detail in the record of the significant findings is necessary, particularly in respect of fire precautions that have not changed since the original FRA.

20.5 The FRA review should record the name of the fire risk assessor(s) performing the review, the date(s) on which the review was carried out and the name(s) of the principal person(s) with whom there was

Annex A (informative)

Model pro forma for documentation of a fire risk assessment

A.1 This annex contains a model pro forma for documentation of an FRA in England and Wales. (Electronic versions, including modified pro formas for use in Scotland and Northern Ireland, are available online at <https://documentportal.bsigroup.com> using access code PAS 79:2020.) If the pro forma is properly completed by a competent person, the format and scope of the FRA will be suitable and sufficient to satisfy the recommendations of this PAS. Modifications to this format will be necessary in the case of premises in multiple occupation, for which information about the building, and about the premises of the occupier for whom the FRA is being carried out, both need to be recorded.

NOTE *Enforcement of fire safety legislation is the prerogative of the enforcing authority charged by legislation with the responsibility to do so. Each enforcing authority is autonomous. There is sometimes debate as to the legal interpretation of what constitutes the significant findings of an FRA. However, the format of the pro forma contained in this annex, being part of a BSI PAS, is considered by the National Fire Chiefs Council to be one suitable format for recording the significant findings of a suitable and sufficient FRA, although many other formats would also be acceptable.*

A.2 The format of a documented FRA may vary from that shown in this annex, provided that the recommendations of each clause of this PAS are satisfied. For example, in the case of means of escape, compliance with Annex C necessitates that the key factors in Table C.1 are explicitly addressed in the documented FRA, but not all the specific issues shown in Table C.1 and in the pro forma contained in this annex need necessarily be included in all documented FRAs conforming to the recommendations of this PAS, as they might not all constitute "significant findings". It is, however, necessary for compliance with this PAS, that the specific issues have, at least, been considered by the fire risk assessor while carrying out the FRA.

A.3 Similarly, the prompt-list of fire hazards shown in the pro forma may be expanded. This might be appropriate, for example, if there are significant fire hazards for which no headings are included in the pro forma.

A.4 Where description of any fire hazards or fire precautions is considered appropriate, this can be recorded under the appropriate "Relevant information (including description of arrangements and deficiencies observed)" heading in the pro forma. These sections can also be used to set out justification for acceptance of standards of any fire protection measures that depart significantly from a prescriptive norm (see 10.4). Information recorded can include positive findings as well as deficiencies, as this helps to contextualize the assessment of risk.

A.5 While it might not be essential to record further information in every section of the pro forma, care needs to be taken to ensure that the pro forma does not become purely a tick-list with inadequate supporting information. Such an FRA is unlikely to satisfy fire safety legislation, nor would it meet the recommendations of this PAS.

A.6 Within the pro forma in this annex, for each main topic, the clause within this PAS that provides guidance on that topic is shown in parentheses alongside the topic heading. This is for the guidance of the user of this PAS, and the clause references need not be shown in the documented fire assessment provided to the dutyholder.

A.7 For further guidance on the use of the pro forma, an exemplar of a completed FRA is contained in Annex E.

REGULATORY REFORM (FIRE SAFETY) ORDER 2005 FIRE RISK ASSESSMENT

Responsible person (e.g. employer) or person having control of the premises:

Address of premises:

Person(s) consulted:

Assessor:

Report validated by:

Date of fire risk assessment:

Date of previous fire risk assessment:

Suggested date for review:

This report is intended to assist you in compliance with Article 9 of the Regulatory Reform (Fire Safety) Order 2005 (the 'Fire Safety Order'), which requires that a risk assessment be carried out.

[Date]

GENERAL INFORMATION**1. THE PREMISES** *(Clause 12)*

1.1 Number of floors at ground level and above:

Number of floors entirely below ground level:

Floors on which car parking is provided:

1.2 Approximate floor area:

 m² per floor.

Approximate floor area:

 m² gross.

Approximate floor area:

 m² on ground floor.

1.3 Details of construction and layout:

1.4 Occupancy:

2. THE OCCUPANTS *(Clause 12)*

2.1 Approximate maximum number of employees at any one time:

2.2 Approximate maximum number of other occupants at any one time:

2.3 Approximate total number of people present in the building at any one time:

3. OCCUPANTS ESPECIALLY AT RISK FROM FIRE *(Clause 12)*

3.1 Sleeping occupants:

3.2 Disabled employees:

3.3 Other disabled occupants:

3.4 Occupants in remote areas and lone workers:

3.5 Young persons employed:

3.6 Others:

4. FIRE LOSS EXPERIENCE

5. OTHER RELEVANT INFORMATION

6. RELEVANT FIRE SAFETY LEGISLATION

6.1 The following fire safety legislation applies to these premises:

--

6.2 The above legislation is enforced by:

--

6.3 Other legislation that makes significant requirements for fire precautions in these premises [other than the Building Regulations 2010 (as amended)]:

--

6.4 The other legislation referred to above is enforced by:

--

6.5 Is there an alterations notice in force? Yes ☐ No ☐

Relevant information and deficiencies observed:

--

FIRE HAZARDS AND THEIR ELIMINATION OR CONTROL**7. ELECTRICAL SOURCES OF IGNITION** *(Clause 13 and Annex B)*

7.1 Are reasonable measures taken to prevent fires of electrical origin? Yes ☐ No ☐

7.2 More specifically:

a) Are fixed installations periodically inspected and tested? N/A ☐ Yes ☐ No ☐

b) Is portable appliance testing carried out? N/A ☐ Yes ☐ No ☐

c) Is there suitable control over the use of personal electrical appliances? N/A ☐ Yes ☐ No ☐

d) Is there suitable limitation of trailing leads and adapters? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

8. SMOKING *(Clause 13 and Annex B)*

8.1 Are reasonable measures taken to prevent fires as a result of smoking? Yes ☐ No ☐

8.2 More specifically:

a) Is smoking prohibited in the building? Yes ☐ No ☐

b) Is smoking prohibited in appropriate areas? N/A ☐ Yes ☐ No ☐

c) Are there suitable arrangements for those who wish to smoke? Yes ☐ No ☐

d) Did the smoking policy appear to be observed at time of inspection? Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

9. ARSON (*Clause 13 and Annex B*)

9.1 Does basic security against arson by outsiders appear reasonable¹⁾? Yes ☐ No ☐

9.2 Is there an absence of unnecessary fire load in close proximity to the premises or available for ignition by outsiders? Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

¹⁾ Reasonable only in the context of this fire risk assessment. If specific advice on security (including security against arson) is required, this should be obtained from a security specialist.

10. PORTABLE HEATERS AND HEATING AND VENTILATION INSTALLATIONS (*Clause 13 and Annex B*)

10.1 Is there satisfactory control over the use of portable heaters? N/A ☐ Yes ☐ No ☐

10.2 Are fixed heating and ventilation installations subject to regular maintenance? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

11. COOKING (*Clause 13 and Annex B*)

11.1 Are reasonable measures taken to prevent fires as a result of cooking? N/A ☐ Yes ☐ No ☐

11.2 More specifically, are filters cleaned or changed and ductwork cleaned regularly? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

12. LIGHTNING *(Clause 13 and Annex B)*

12.1 Does the building have a lightning protection system?

Yes ☐ No ☐

Relevant information and deficiencies observed:

--

13. HOUSEKEEPING *(Clause 13 and Annex B)*

13.1 Is the overall standard of housekeeping adequate?

Yes ☐ No ☐

13.2 More specifically:

a) Do combustible materials appear to be separated from ignition sources?

Yes ☐ No ☐

b) Is unnecessary accumulation or inappropriate storage of combustible materials or waste avoided?

Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

--

14. HAZARDS INTRODUCED BY OUTSIDE CONTRACTORS AND BUILDING WORKS
(Clause 13 and Annex B)

14.1 Is there satisfactory control over works carried out in the building?

N/A ☐ Yes ☐ No ☐

More specifically:

a) Where appropriate, are fire safety conditions imposed on outside contractors?

N/A ☐ Yes ☐ No ☐

b) Where appropriate, is a permit to work system used (e.g. for "hot work")?

N/A ☐ Yes ☐ No ☐

c) Are suitable precautions taken by in-house maintenance personnel who carry out works?

N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

NOTE: Suitable guidance documents on control of contractors can be found in the References at the end of the report.

15. DANGEROUS SUBSTANCES²⁾ (Clause 13)

- 15.1 Are the general fire precautions adequate to address the hazards associated with dangerous substances used or stored within the premises³⁾? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

²⁾ For the purpose of this risk assessment and the Fire Safety Order, dangerous substances are primarily explosive, highly flammable or flammable substances and oxidizing agents.

³⁾ Small quantities with negligible impact on the appropriate fire precautions need not be taken into account.

16. OTHER SIGNIFICANT FIRE HAZARDS THAT WARRANT CONSIDERATION

- 16.1 Hazards:

Relevant information (including description of arrangements and deficiencies observed):

FIRE PROTECTION MEASURES

17. MEANS OF ESCAPE [Clause 15c) and Annex C]

- 17.1 Is the design and maintenance of the means of escape considered adequate? Yes ☐ No ☐

17.2 More specifically:

- | | | | |
|---|------------------------------|------------------------------|-----------------------------|
| a) Do staircase and exit capacities appear to be adequate for the number of occupants ⁴⁾ ? | N/A ☐ | Yes ☐ | No ☐ |
| b) Are there reasonable distances of travel: | | | |
| – where there is escape in a single direction? | N/A ☐ | Yes ☐ | No ☐ |
| – where there are alternative means of escape? | N/A ☐ | Yes ☐ | No ☐ |
| c) Is there adequate provision of exits? | N/A ☐ | Yes ☐ | No ☐ |
| d) Do fire exits open in the direction of escape, where necessary? | N/A ☐ | Yes ☐ | No ☐ |
| e) Are there satisfactory arrangements for escape where revolving doors or sliding doors are used as exits? | N/A ☐ | Yes ☐ | No ☐ |
| f) Are the arrangements provided for securing exits satisfactory? | N/A ☐ | Yes ☐ | No ☐ |
| g) Is a suitable standard of protection designed for escape routes? | N/A ☐ | Yes ☐ | No ☐ |
| h) Are there reasonable arrangements for means of escape for disabled people? | N/A ☐ | Yes ☐ | No ☐ |

Relevant information (including description of arrangements and deficiencies observed):

- | | | | |
|---|------------------------------|------------------------------|-----------------------------|
| 17.3 Are the escape routes available for use and suitably maintained? | N/A ☐ | Yes ☐ | No ☐ |
|---|------------------------------|------------------------------|-----------------------------|

More specifically:

- | | | | |
|---|------------------------------|------------------------------|-----------------------------|
| a) Are fire-resisting doors maintained in sound condition and self-closing, where necessary? | N/A ☐ | Yes ☐ | No ☐ |
| b) Is the fire-resisting construction protecting escape routes in sound condition ⁵⁾ ? | N/A ☐ | Yes ☐ | No ☐ |
| c) Are all escape routes clear of obstructions? | N/A ☐ | Yes ☐ | No ☐ |
| d) Are all fire exits easily and immediately openable? | N/A ☐ | Yes ☐ | No ☐ |

Relevant information (including description of arrangements and deficiencies observed):

⁴⁾ Based on current occupancy information provided. Detailed calculations (e.g. using floor space factors to predict maximum occupancy) are not carried out.

⁵⁾ This fire risk assessment will not necessarily identify all minor fire stopping issues that might exist within the building. If you become aware of other fire stopping issues, or are concerned about the adequacy of fire stopping, you might consider arranging for an invasive survey by a competent specialist.

18. MEASURES TO LIMIT FIRE SPREAD AND DEVELOPMENT [Clause 15g]]

18.1 Is it considered that there is:

a) compartmentation of a reasonable standard⁶⁾? Yes ☐ No ☐

b) reasonable limitation of linings that might promote fire spread? Yes ☐ No ☐

18.2 As far as can reasonably be ascertained, are fire dampers provided as necessary to protect critical means of escape against passage of fire, smoke and products of combustion in the early stages of a fire^{6), 7)}? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

⁶⁾ This fire risk assessment will not necessarily identify all minor fire stopping issues that might exist within the building. If you become aware of other fire stopping issues, or are concerned about the adequacy of fire stopping, you may wish to consider arranging for an invasive survey by a competent specialist.

⁷⁾ A full investigation of the design of heating, ventilation and air conditioning systems is outside the scope of this fire risk assessment.

19. EMERGENCY ESCAPE LIGHTING [Clause 15e]]

19.1 Has a reasonable standard of emergency escape lighting system been provided⁸⁾? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

⁸⁾ Based on visual inspection, but no test of illuminance levels or verification of full compliance with relevant British Standards carried out.

20. FIRE SAFETY SIGNS AND NOTICES [Clause 15d)]

20.1 Is there a reasonable standard of fire safety signs and notices? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

21. MEANS OF GIVING WARNING IN CASE OF FIRE [Clause 15b)]

21.1 Is a reasonable fire detection and fire alarm system provided⁹⁾? N/A ☐ Yes ☐ No ☐

21.2 Is there remote transmission of alarm signals? N/A ☐ Yes ☐ No ☐

21.3 Is a zone plan displayed? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

21.4 Relevant information on false alarm experience (if known):

⁹⁾ Based on visual inspection, but no audibility tests or verification of full compliance with relevant British Standard carried out.

22. MANUAL FIRE EXTINGUISHING APPLIANCES [Clause 15f)]

22.1 Is there reasonable provision of manual fire extinguishing appliances? N/A ☐ Yes ☐ No ☐

22.2 What type(s) of appliances are provided?

Portable fire extinguishers: ☐ Hose reels: ☐ Fire blankets: ☐

22.3 Are all fire extinguishing appliances readily accessible? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

23. RELEVANT AUTOMATIC FIRE EXTINGUISHING SYSTEMS¹⁰⁾ [Clause 15h)]

23.1 Type of fixed system:

Relevant information and deficiencies observed:

¹⁰⁾ Relevant to life safety and this risk assessment (as opposed to property protection).

24. OTHER RELEVANT FIXED SYSTEMS AND EQUIPMENT¹¹⁾ [Clause 15i)]

24.1 Type of fixed system:

Relevant information and deficiencies observed:

24.2 Is there suitable provision of firefighters' switch(es) for high voltage luminous tube signs, etc.? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- 24.3 Are there appropriately sited facilities for electrical isolation of any photovoltaic (PV) cells, with appropriate signage, to assist the fire and rescue service? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

¹¹⁾ Relevant to life safety and this risk assessment (as opposed to property protection).

MANAGEMENT OF FIRE SAFETY

25. PROCEDURES AND ARRANGEMENTS *(Clause 16)*

25.1 Safety assistance:

The competent person(s) appointed under Article 18 of the Fire Safety Order to assist the responsible person in undertaking the preventive and protective measures (i.e. relevant general fire precautions) is:

25.2 Fire safety at the premises is managed by¹²⁾:

- 25.3 Is there a suitable record of the fire safety arrangements? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

25.4 Are procedures in the event of fire appropriate and properly documented, where appropriate¹³⁾? Yes ☐ No ☐

More specifically:

- | | | | |
|---|------------------------------|------------------------------|-----------------------------|
| a) Are there adequate procedures for investigating fire alarm signals? | N/A ☐ | Yes ☐ | No ☐ |
| b) Are there suitable arrangements for summoning the fire and rescue service? | N/A ☐ | Yes ☐ | No ☐ |
| c) Are there suitable arrangements to meet the fire and rescue service on arrival and provide relevant information, including that relating to hazards to firefighters? | N/A ☐ | Yes ☐ | No ☐ |
| d) Are there suitable arrangements for ensuring that the premises have been evacuated? | N/A ☐ | Yes ☐ | No ☐ |
| e) Is there a suitable fire assembly point(s)? | N/A ☐ | Yes ☐ | No ☐ |
| f) Are there adequate procedures for evacuation of any disabled people who are likely to be present? | N/A ☐ | Yes ☐ | No ☐ |

Relevant information (including description of arrangements and deficiencies observed):

25.5 Are there persons nominated to use fire extinguishing appliances? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

25.6 If the premises are in multiple occupation, are there adequate arrangements for cooperation between dutyholders to ensure coordination of their fire safety arrangements? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- 25.7 Are there persons nominated to assist with evacuation, including evacuation of disabled people? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- 25.8 Is there appropriate liaison with fire and rescue service (i.e. by fire and rescue service crews visiting for familiarization visits?) N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- 25.9 Are routine in-house inspections of fire precautions undertaken (e.g. in the course of health and safety inspections)? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

¹²⁾ This is not intended to represent a legal interpretation of responsibility, but merely reflects the managerial arrangement in place at the time of this risk assessment.

¹³⁾ Based on brief review of procedures at the time of this fire risk assessment. In-depth review of documentation is outside the scope of this fire risk assessment, unless otherwise stated.

26. TRAINING AND DRILLS [Clause 16h)]

- 26.1 Are all staff given adequate fire safety instruction and training? N/A ☐ Yes ☐ No ☐

More specifically:

- | | | | |
|---|------------------------------|------------------------------|-----------------------------|
| a) Are they trained on induction? | N/A ☐ | Yes ☐ | No ☐ |
| b) Are they given periodic refresher training? | N/A ☐ | Yes ☐ | No ☐ |
| c) Are they given additional training to cover any specific roles and responsibilities? | N/A ☐ | Yes ☐ | No ☐ |
| d) Is the content of training provided considered adequate ¹⁴⁾ ? | N/A ☐ | Yes ☐ | No ☐ |

Relevant information (including description of arrangements and deficiencies observed):

- 26.2 Are fire drills carried out at appropriate intervals? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- 26.3 When the employees of another employer work in the premises, is appropriate information on fire risks and fire safety measures provided? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

¹⁴⁾ Based on brief consideration of the scope of such training. In-depth evaluation is outside the scope of this fire risk assessment.

27. TESTING AND MAINTENANCE [Clause 16j)]

- 27.1 Is there adequate maintenance of the premises? Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- 27.2 Is weekly testing and periodic servicing of the fire detection and fire alarm system undertaken? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- 27.3 Are monthly and annual testing routines in place for the emergency escape lighting? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- 27.4 Is annual maintenance of fire extinguishing appliances undertaken? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- 27.5 Is periodic inspection of external escape staircases and gangways undertaken? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- 27.6 Are six-monthly inspection and annual testing of rising mains undertaken? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- 27.7 Are weekly and monthly testing, six-monthly inspection, and annual inspection and testing undertaken of lift(s) provided for use by firefighters or evacuation of disabled people (evacuation lifts)? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- 27.8 Are weekly testing and periodic inspection of sprinkler installations undertaken? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- 27.9 Are routine checks of final exit doors and/or security fastenings undertaken? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- 27.10 Are annual inspection and testing of the lightning protection system undertaken? N/A ☐ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- 27.11 Other relevant inspections or tests:

Relevant information (including description of arrangements and deficiencies observed):

28. RECORDS *[Clause 16k]*

28.1 Are there appropriate records of:

- | | | | |
|--|------------------------------|------------------------------|-----------------------------|
| a) Fire drills? | N/A ☐ | Yes ☐ | No ☐ |
| b) Fire training? | N/A ☐ | Yes ☐ | No ☐ |
| c) Fire alarm tests? | N/A ☐ | Yes ☐ | No ☐ |
| d) False alarms? | N/A ☐ | Yes ☐ | No ☐ |
| e) Emergency escape lighting tests? | N/A ☐ | Yes ☐ | No ☐ |
| f) Maintenance and testing of other fire protection systems and equipment? | N/A ☐ | Yes ☐ | No ☐ |

Relevant information (including description of arrangements and deficiencies observed):

FIRE RISK ASSESSMENT

The following simple risk level estimator is based on a commonly used risk level estimator:

Potential consequences of fire →	Slight harm	Moderate harm	Extreme harm
Likelihood of fire ↓			
Low	Trivial risk	Tolerable risk	Moderate risk
Medium	Tolerable risk	Moderate risk	Substantial risk
High	Moderate risk	Substantial risk	Intolerable risk

Taking into account the fire prevention measures observed at the time of this risk assessment, it is considered that the hazard from fire (likelihood of fire) at these premises is:

Low ☐

Medium ☐

High ☐

In this context, a definition of the above terms is as follows:

Low: Unusually low likelihood of fire as a result of negligible potential sources of ignition.

Medium: Normal fire hazards (e.g. potential ignition sources) for this type of occupancy, with fire hazards generally subject to appropriate controls (other than minor shortcomings).

High: Lack of adequate controls applied to one or more significant fire hazards, such as to result in significant increase in likelihood of fire.

Taking into account the nature of the premises and the occupants, as well as the fire protection and procedural arrangements observed at the time of this fire risk assessment, it is considered that the consequences for life safety in the event of fire would be:

Slight harm ☐

Moderate harm ☐

Extreme harm ☐

In this context, a definition of the above terms is as follows:

Slight harm: Outbreak of fire unlikely to result in serious injury or death of any occupant (other than an occupant sleeping in a room in which a fire occurs).

Moderate harm: Outbreak of fire could foreseeably result in injury (including serious injury) of one or more occupants, but is unlikely to result in multiple fatalities.

Extreme harm: Significant potential for serious injury or death of one or more occupants.

Accordingly, it is considered that the risk to life from fire at these premises is:

Trivial ☐ Tolerable ☐ Moderate ☐ Substantial ☐ Intolerable ☐

Comments:

A suitable risk-based control plan should involve effort and urgency that are proportional to risk. The following risk-based control plan is based on one advocated for general health and safety risks:

Risk level	Action and timescale
Trivial	No action is required, and no detailed records need be kept.
Tolerable	No major additional controls required. However, there might be a need for improvements that involve minor or limited cost.
Moderate	It is essential that efforts are made to reduce the risk. Risk reduction measures should be implemented within a defined time period. Where moderate risk is associated with consequences that constitute extreme harm, further assessment might be required to establish more precisely the likelihood of harm as a basis for determining the priority for improved control measures.
Substantial	Considerable resources might have to be allocated to reduce the risk. If the building is unoccupied, it should not be occupied until the risk has been reduced. If the building is occupied, urgent action should be taken.
Intolerable	Building (or relevant area) should not be occupied until the risk is reduced.

NOTE THAT, ALTHOUGH THE PURPOSE OF THIS SECTION IS TO PLACE THE FIRE RISK IN CONTEXT, THE ABOVE APPROACH TO RISK ASSESSMENT IS SUBJECTIVE AND FOR GUIDANCE ONLY. ALL HAZARDS AND DEFICIENCIES IDENTIFIED IN THIS REPORT SHOULD BE ADDRESSED BY IMPLEMENTING ALL RECOMMENDATIONS CONTAINED IN THE FOLLOWING ACTION PLAN. THE FIRE RISK ASSESSMENT SHOULD BE REPEATED REGULARLY.

ACTION PLAN

It is considered that the following actions should be implemented in order to reduce fire risk to, or maintain it at, the following level:

Trivial ☐ Tolerable ☐

Definition of priorities (where applicable):

Item	Recommendation	Priority	Timescale
1.			
2.			
Interim measures (where appropriate)			
3.			

REFERENCES

[It is normal practice for the FRA to include a list of relevant references.]

Annex B (informative)

Fire hazard prompt-list

B.1 This annex sets out, in Table B.1, a list of fire hazards that are normally considered in the FRA. Typical key measures for the elimination or control of each hazard are given, along with some relevant codes of practice and guidance documents. Government guidance documents in support of the relevant fire safety legislation also give guidance on those matters.

B.2 This prompt-list is not necessarily exhaustive, particularly in respect of measures for control and elimination of fire hazards, and there might be a need to consider further hazards and measures to prevent fire in the course of the FRA, particularly if work processes give rise to more specific fire hazards. Similarly, the codes of practice and guidance documents referenced are intended only to comprise a representative sample of those available.

Table B.1 – Fire hazards, elimination or control measures and relevant codes of practice

Fire hazard	Typical key measures for control or elimination of the fire hazard	Relevant code of practice or guidance document
Electrical faults	Periodic inspection and testing of fixed electrical installation. Portable appliance testing. Suitable control over employees' and visitors' use of their own electrical appliances. Limitation of trailing leads and adapters.	IET Guidance Note 3 [42]. IET Code of practice for in-service inspection and testing of electrical equipment [56]. HSE HSG 107 [57]. HSE Great health and safety myths No. 4 [58].
Smoking	Prohibition or limitation of smoking. Suitable arrangements for those who wish to smoke.	
Arson	Basic security measures to prevent malicious ignition by outsiders. Avoidance of unnecessary fire load in close proximity to the premises or available for ignition by outsiders.	<i>The prevention and control of arson</i> [59].
Improper use of portable heaters	Avoidance of use of portable heaters as far as practicable. If portable heaters are used, avoidance of the most hazardous types of heater. Suitable measures to minimize the likelihood of ignition of combustible materials.	
Faults in fixed heating installations	Regular maintenance of installations.	
Use of cooking appliances	Suitable design of cooking areas. Availability of suitable fire extinguishing appliances to deal with small fires. Regular replacement of grease filters and deep cleaning of extract ductwork.	<i>Recommendations for fire safety in commercial kitchens</i> [60]. <i>Recommendations for fire risk assessment of catering extract ventilation</i> [61].
Lightning	Provide lightning protection system if likelihood of lightning strike warrants it.	BS EN 62305 (all parts)
Charging of electric vehicles and mobility scooters	See electrical faults.	NFCC Mobility scooter guidance for residential buildings [62].

Table B.1 – Fire hazards, elimination or control measures and relevant codes of practice (*continued*)

Fire hazard	Typical key measures for control or elimination of the fire hazard	Relevant code of practice or guidance document
Contractors' operations and "hot work" by maintenance staff	Suitable fire safety conditions in contracts with outside contractors. Suitable control over outside contractors while on the premises. Suitable control over hazardous activities by in-house maintenance personnel, such as "hot work" involving cutting, welding, use of blowlamps, etc.	<i>Standard fire precautions for contractors engaged on Crown works</i> [63]. <i>Fire prevention on construction sites</i> [64] <i>Fire safety in construction</i> [65].
Poor housekeeping and inadequate control over general fire hazards or specific fire hazards associated with work activities	Separation of combustible materials from ignition sources. Avoidance of unnecessary accumulation of combustible materials or waste. Appropriate storage of hazardous materials. Avoidance of inappropriate storage of combustible materials. Suitable maintenance of the premises. Routine safety inspections.	There are numerous publications on the subject of fire prevention. Most publications on the subject give guidance on housekeeping and maintenance issues. More specific guidance exists for numerous occupancies, work processes and related hazards. See, for example, <i>A comprehensive guide to fire safety</i> [66], and a wide range of publications produced by the Fire Protection Association (www.thefpa.co.uk/shop).

Annex C (normative)

Key factors to consider in assessment of means of escape

C.1 The key factors shown in Table C.1 should always be explicitly considered in assessment of means of escape. Most of the factors are quite broad and encompass a number of more specific issues. These key factors can be used as a form of prompt-list and should, therefore, normally be shown in the documented FRA (see Clause 10), as proof that they have been considered.

C.2 The more specific issues should always be considered in the FRA process, but might or might not be explicitly shown in the documented FRA.

NOTE *Where the experience of the fire risk assessor is limited, it might be of value for at least some of the specific issues to be included in the pro forma used, so that they act as prompts or reminders to the fire risk assessor.*

C.3 Where it is determined that there are significant departures in compliance of any key factor or specific issue with recognized guidance or codes of practice, but it is considered that the departures are acceptable (and, hence, no relevant recommendation needs to be made in the action plan), the reasoning behind the acceptance of each departure should be documented in the FRA (see 10.4).

NOTE C.4 *Guidance on means of escape is contained in government guidance documents that support the relevant fire safety legislation.*

Table C.1 – Key factors and specific issues to consider in means of escape

Key factor	Specific issues to consider	Notes
Design of escape routes	• Do escape routes lead to final exits? • Do doors on means of escape open in the direction of escape where necessary? • Are doors on means of escape fitted with appropriate panic bolts or latches? • Will occupants of inner rooms (see 3.55) be aware of a fire in the access rooms? • Do revolving doors or sliding doors have suitable bypass doors where necessary? • Are there (and is there a need for) alternative escape routes (see 3.4)?	—
Distances of travel	• Are travel distances (see 3.87) reasonable? • Are travel distances in dead ends (see 3.16) suitably limited?	Recommended maximum travel distances are given in all guidance documents and codes of practice on means of escape, but these figures should not be considered in isolation of other fire protection measures (see Commentary on Clause 15). The likely rate of fire development, and the consequent time available for escape, need to be taken into account.
Protection of escape routes	• Are escape routes, such as staircases, dead end corridors, bedroom corridors, etc., protected (see 3.75) where necessary? • Are all fire doors properly self-closing, kept locked shut or only held open by suitable, correctly functioning automatic door release mechanisms (see 3.5)?	Where automatic door release mechanisms are used, it is important to ensure that there is adequate provision of suitably sited smoke detectors and that the interface with the fire alarm system is appropriate. Recommendations are given in BS 7273-4.
Adequate provision of exits and escape routes	• Is there a sufficient number of fire exits and escape routes? • Are the number and widths of fire exits and escape routes sufficient for the number of occupants?	Methods of calculating exit capacity are given in all codes of practice that cover means of escape.

Table C.1 – Key factors and specific issues to consider in means of escape (*continued*)

Key factor	Specific issues to consider	Notes
Exits easily and immediately openable	• Are fire exits easily openable without, for example, the use of a key? • Is there only a single means of securing each fire exit? • Where necessary, do the means of securing fire exits comprise panic bolts (see 3.66) or panic latches (see 3.67)? • Where electronic locking is used, is its use acceptable, and are the means of releasing the locks suitable?	Recommendations on the interface between fire detection and fire alarm systems and electronically secured doors are given in BS 7273-4.
Escape routes unobstructed	• Are escape routes kept unobstructed? • Are adequate widths of corridors and other escape routes maintained at all times?	Escape route widths should be sufficient for the number of people who need to use the escape route.

Annex D (informative)

Model pro forma for documentation of a review of an existing fire risk assessment

D.1 This annex contains a pro forma for documentation of a review of an existing FRA in England and Wales. (Electronic versions, including modified pro formas for use in Scotland and Northern Ireland, are available online at <https://documentportal.bsigroup.com> using access code PAS 79:2020.) If the pro forma is properly completed by a competent person, the format and scope of the review will be suitable and sufficient to satisfy the recommendations in Clause 20.

D.2 The format of the documented review may vary from that shown in this annex, provided the recommendations in Clause 20 are satisfied. For example, the level to which principal issues are broken down into their component factors may vary, provided it is clear that the principal issues addressed in the original FRA have been addressed, or that the scope of the review is limited to, for example, a material alteration that has resulted in the review (see Clause 20).

NOTE *A review of an FRA does not necessarily involve completion of a pro forma, but this annex offers a record of the review that may be made.*

REGULATORY REFORM (FIRE SAFETY) ORDER 2005

PERIODIC REVIEW OF FIRE RISK ASSESSMENT

Responsible person (e.g. employer) or person having control of the premises:

Address of premises:

Person(s) consulted:

Assessor:

Date of this fire risk assessment review:

Date of full fire risk assessment that is under review:

Date(s) of full fire risk assessment review(s):

Review number (e.g. 1 or 2):

Suggested date for next review¹⁾:
OR

Suggested date for next full fire risk assessment:

The purpose of this report is to provide an assessment of the risk to life from fire in these premises and, where appropriate, to make recommendations to ensure compliance with fire safety legislation. The report does not address the risk to property or business continuity from fire.

[Date]

¹⁾ The original fire risk assessment should be reviewed again, or a full fire risk assessment undertaken, by a competent person by the date indicated above or at such earlier time as there is reason to suspect that it is no longer valid or if there has been a significant change in the matters to which it relates, or if a fire occurs.

GENERAL INFORMATION

1. Significant changes identified since the time of the previous fire risk assessment in respect

1.1 The premises:

1.2 The occupancy:

1.3 The occupants (including occupants especially at risk from fire):

1.4 Fire loss experience:

1.5 Application of fire safety legislation:

1.6 Other relevant information:

FIRE HAZARDS AND THEIR ELIMINATION OR CONTROL

2. Significant changes in measures to prevent fire since the time of the fire risk assessment:

3.1 Are there adequate measures to prevent fire? Yes ☐ No ☐

3.2 Comments and hazards observed:

4.1 Are housekeeping and maintenance adequate? Yes ☐ No ☐

4.2 Comments and deficiencies observed:

FIRE PROTECTION MEASURES

5.1 Significant changes in fire protection measures since the time of the fire risk assessment:

6.1 Are the means of escape from fire adequate? Yes ☐ No ☐

6.2 Comments and deficiencies observed:

7.1 Are compartmentation and linings satisfactory?²⁾ Yes ☐ No ☐

7.2 Comments and deficiencies observed:

8.1 Is there reasonable emergency escape lighting?³⁾ Yes ☐ No ☐

8.2 Comments and deficiencies observed:

9.1 Are there adequate fire safety signs and notices? Yes ☐ No ☐

9.2 Comments and deficiencies observed:

²⁾ Based on a sample inspection of readily accessible areas.

³⁾ Based on visual inspection only.

10.1 Are the means of giving warning of fire adequate?⁴⁾

Yes ☐ No ☐

10.2 Comments and deficiencies observed:

11.1 Is the provision of fire extinguishing appliances adequate?

Yes ☐ No ☐

11.2 Comments and deficiencies observed:

12.1 Comments on other fixed fire protection systems:

⁴⁾ Based on visual inspection only.

MANAGEMENT OF FIRE SAFETY

13.1 Significant changes in management of fire safety since the time of the fire risk assessment:

14.1 Are arrangements for management of fire safety adequate? Yes ☐ No ☐

14.2 Comments and deficiencies observed:

15.1 Are fire procedures adequate? Yes ☐ No ☐

15.2 Comments and deficiencies observed:

16.1 Are the arrangements for staff training and fire drills adequate? Yes ☐ No ☐

16.2 Comments and deficiencies observed:

17.1 Are the arrangements for testing and maintenance of fire protection systems and equipment adequate? Yes ☐ No ☐

17.2 Comments and deficiencies observed:

18.1 Are there adequate records of testing, maintenance, training and drills? Yes ☐ No ☐

18.2 Comments and deficiencies observed:

FIRE RISK ASSESSMENT

On the basis of the criteria set out in the original fire risk assessment, it is considered that the current risk to life from fire at these premises is:

Trivial ☐ Tolerable ☐ Moderate ☐ Substantial ☐ Intolerable ☐

ACTION ON PREVIOUS ACTION PLAN

Have all previous recommendations been satisfactorily addressed?

Yes ☐

No ☐

Brief details of recommendations not yet implemented.

1.

NEW ACTION PLAN

It is considered that the following recommendations should be implemented, along with any outstanding actions in the original fire risk assessment/previous review, in order to reduce fire risk to, or maintain it at, the following level:

Trivial ☐

Tolerable ☐

Definition of priorities (where applicable):

Item	Recommendation	Priority	Timescale
1.			

Annex E (informative)

Exemplar of a completed fire risk assessment

E.1 This annex contains an exemplar of the significant findings of an FRA, documented using the pro forma in Annex A. Its purpose is to aid clarity in the use of the pro forma in Annex A.

E.2 For ease of study, the exemplar relates to a fictional, very simple office building. The exemplar is not intended to constitute a model FRA or a counsel of perfection in relation to the level of detail recorded, which, again, for ease of study, has been kept to a relative minimum. Many FRAs, particularly for more complex premises and those with a greater number of deficiencies in fire safety, will warrant recording of more extensive detail.

E.3 Similarly, it is not intended that wording and phraseology comprise samples that are to be copied in FRAs carried out by users of this PAS.

REGULATORY REFORM (FIRE SAFETY) ORDER 2005 FIRE RISK ASSESSMENT

Responsible person (e.g. employer) or person having control of the premises:

ABC Company Limited

Address of premises:

Buccleugh House, Long Road, Anytown

Person(s) consulted:

Mr J. Smith, Office Manager

Assessor:

Mr B. Robinson MIFireE

Report validated by:

Mr C. Charles BEng, CEng, FIFireE

Date of fire risk assessment:

3 February 2020

Date of previous fire risk assessment:

February 2019

Suggested date for review:

February 2021

This report is intended to assist you in compliance with Article 9 of the Regulatory Reform (Fire Safety) Order 2005 (the 'Fire Safety Order'), which requires that a risk assessment be carried out.

February 2020

GENERAL INFORMATION

1. THE PREMISES

1.1	Number of floors at ground level and above:	4: Ground and three upper floors.
	Number of floors entirely below ground level:	1: Basement floor.
	Floors on which car parking is provided:	None.
1.2	Approximate floor area:	2,000m ² per floor.
1.3	Details of construction and layout:	A concrete framed building with brick external walls and a mixture of brick and block internal walls. Concrete floors. The roof is partly pitched and glazed and partly an asphalted flat roof. There is no roof void.
1.4	Occupancy:	Offices.

2. THE OCCUPANTS

2.1	Approximate maximum number of employees at any one time:	2,000 (see Section 5).
2.2	Approximate maximum number of other occupants at any one time:	20
2.3	Approximate total number of people present in the building at any one time:	2,020

3. OCCUPANTS ESPECIALLY AT RISK FROM FIRE

3.1	Sleeping occupants:	None.
3.2	Disabled employees:	Two wheelchair users are located on the first floor.
3.3	Other disabled occupants:	Visitors to offices.
3.4	Occupants in remote areas and lone workers:	Cleaners, maintenance staff, visiting contractors.

3.5 Young persons employed:

None.

3.6 Others:

None.

4. FIRE LOSS EXPERIENCE

None since the last fire risk assessment.

5. OTHER RELEVANT INFORMATION

- The building was constructed in the 1950s. The ABC Company took occupation in 2005.
- The building accommodates the company's head office and call centre.
- The building comprises five floors:
 - The basement is mainly used for plant, with some storage areas.
 - The ground floor comprises office and ancillary accommodation, which includes training rooms, data centre, post room and generator room.
 - The first floor contains office space, and a large call centre.
 - The second floor comprises office accommodation.
 - The third floor contains the staff restaurant, executive offices and the board room.
- Access to the upper floors is via five staircases and three lifts, one of which is a goods lift located adjacent to staircase five.
- Of the five staircases, four are dedicated escape staircases. The fifth is the main staircase from reception.
- The number of employees in 2.1 is based on the number of staff likely to be present, after taking into account shift patterns.
- Security staff are on site on a 24-hour basis.
- The building is open Monday to Friday, from 06:30 to 22:00 hours, and at weekends from 07:30 to 18:30 hours.
- There is an incoming electrical power supply of 11,000V; the main electrical intake room is located in the basement.
- No access was available to the electricity substation in the basement. This is under the sole control of EDF and access is available to authorized persons only.
- Two disabled employees have mobility impairments. Personal emergency evacuation plans (PEEPs) have been prepared.

6. RELEVANT FIRE SAFETY LEGISLATION

6.1 The following fire safety legislation applies to these premises:

Regulatory Reform (Fire Safety) Order 2005.

6.2 The above legislation is enforced by:

Local fire and rescue authority.

6.3 Other legislation that makes significant requirements for fire precautions in these premises [(other than the Building Regulations 2010 (as amended))]:

None.

6.4 The other legislation referred to above is enforced by:

—

6.5 Is there an alterations notice in force?

Yes ☐

No ☒

Relevant information and deficiencies observed:

None.

FIRE HAZARDS AND THEIR ELIMINATION OR CONTROL

7. ELECTRICAL SOURCES OF IGNITION

7.1 Are reasonable measures taken to prevent fires of electrical origin? Yes ☒ No ☐

7.2 More specifically:

a) Are fixed installations periodically inspected and tested? N/A ☐ Yes ☒ No ☐

b) Is portable testing carried out? N/A ☐ Yes ☒ No ☐

c) Is there suitable over the use of personal electrical appliances? N/A ☐ Yes ☒ No ☐

d) Is there suitable limitation of trailing leads and adapters? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- The fixed electrical installation is inspected and tested every five years.
- The last inspection was undertaken in August 2019.
- Portable appliance testing (PAT) is undertaken every year.
- No trailing leads or adapters were observed at the time of the survey.

8. SMOKING

8.1 Are reasonable measures taken to prevent fires as a result of smoking? Yes ☐ No ☒

8.2 More specifically:

a) Is smoking prohibited in the building? Yes ☒ No ☐

b) Is smoking prohibited in appropriate areas? N/A ☒ Yes ☐ No ☐

c) Are there suitable arrangements for those who wish to smoke? Yes ☒ No ☐

d) Did the smoking policy appear to be observed at time of inspection? Yes ☐ No ☒

Relevant information (including description of arrangements and deficiencies observed):

- 'No Smoking' signs are displayed.
- A smoking shelter, with appropriate receptacles, is provided close to the main entrance. However, it was noted that some staff smoke outside this area.

9. ARSON

9.1 Does basic security against arson by outsiders appear reasonable¹⁾? Yes ☒ No ☐

9.2 Is there an absence of unnecessary fire load in close proximity to the premises or available for ignition by outsiders? Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- Security staff are on site on a 24-hour basis.
- A single entrance to the building is provided for visitors. Visitors are required to sign in, with proof of identification, and collect a visitor identification pass. This entrance is closed out of hours.
- A further entrance for staff only is provided at the rear of the building.
- An access-control system is in operation at the main entrance.
- Waste is removed daily and stored in an external bin store. These bins are emptied on a regular basis by an external contractor.

¹⁾ Reasonable only in the context of this fire risk assessment. If specific advice on security (including security against arson) is required, this should be obtained from a security specialist.

10. PORTABLE HEATERS AND HEATING AND VENTILATION INSTALLATIONS

10.1 Is there satisfactory control over the use of portable heaters? N/A ☐ Yes ☒ No ☐

10.2 Are fixed heating and ventilation installations subject to regular maintenance? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- Heating and hot water are provided by low pressure hot water. The gas-fired boilers are located in the basement and are maintained annually.

11. COOKING

11.1 Are reasonable measures taken to prevent fires as a result of cooking? N/A ☐ Yes ☒ No ☐

11.2 More specifically:

Are filters cleaned or changed and ductwork cleaned regularly? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- Cooking in the staff restaurant is undertaken using 'Rational' ovens, an electric hob/grill and deep fat fryers.
- Filters are cleaned weekly.
- Ductwork is deep cleaned every six months by an external contractor. The last recorded cleaning was undertaken on 5 November 2019.
- A wet chemical fire suppression system is installed in the kitchen over the cooking range.
- Fire blankets and a Class F type fire extinguisher are provided in the kitchen.

12. LIGHTNING

12.1 Does the building have a lightning protection system? Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

None.

13. HOUSEKEEPING

13.1 Is the overall standard of housekeeping adequate? Yes ☒ No ☐

13.2 More specifically:

a) Do combustible materials appear to be separated from ignition sources? Yes ☒ No ☐

b) Is unnecessary accumulation or inappropriate storage of combustible materials or waste avoided? Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- Housekeeping is of a very high standard.
- However, there was some storage of boxes within the basement boiler room.

14. HAZARDS INTRODUCED BY OUTSIDE CONTRACTORS AND BUILDING WORKS

14.1 Is there satisfactory control over works carried out in the building? N/A ☐ Yes ☒ No ☐

More specifically:

a) Where appropriate, are fire safety conditions imposed on outside contractors? N/A ☐ Yes ☒ No ☐

b) Where appropriate, is a permit to work system used (e.g. for "hot work")? N/A ☐ Yes ☒ No ☐

c) Are suitable precautions taken by in-house maintenance personnel who carry out works? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

NOTE: Suitable guidance documents on control of contractors can be found in the References at the end of the report.

- Most maintenance is carried out by the in-house building engineers.
- The control of external contractors is carried out in accordance with company health and safety policies and procedures, which include a 'permit to work' scheme for hot work.

15. DANGEROUS SUBSTANCES²⁾

15.1 Are the general fire precautions adequate to address the hazards associated with dangerous substances used or stored within the premises³⁾? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- Approximately 20,000 litres of diesel fuel is stored within a basement storage room for use with the emergency generator.
- A suitable risk assessment has been carried out under the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002.

²⁾ For the purpose of this risk assessment and the Fire Safety Order, dangerous substances are primarily explosive, highly flammable or flammable substances and oxidizing agents.

³⁾ Small quantities with negligible impact on the appropriate fire precautions need not be taken into account.

16. OTHER SIGNIFICANT FIRE HAZARDS THAT WARRANT CONSIDERATION

16.1 Hazards:

None.

Relevant information (including description of arrangements and deficiencies observed):

—

FIRE PROTECTION MEASURES

17. MEANS OF ESCAPE

17.1 Is the design and maintenance of the means of escape considered adequate? Yes ☒ No ☐

17.2 More specifically:

a) Do staircase and exit capacities appear to be adequate for the number of occupants⁴? N/A ☐ Yes ☒ No ☐

b) Are there reasonable distances of travel:

– where there is escape in a single direction? N/A ☐ Yes ☒ No ☐

– where there are alternative means of escape? N/A ☐ Yes ☒ No ☐

c) Is there adequate provision of exits? N/A ☐ Yes ☒ No ☐

d) Do fire exits open in the direction of escape, where necessary? N/A ☐ Yes ☒ No ☐

e) Are there satisfactory arrangements for escape where revolving doors or sliding doors are used as exits? N/A ☐ Yes ☒ No ☐

f) Are the arrangements provided for securing exits satisfactory? N/A ☐ Yes ☒ No ☐

g) Is a suitable standard of protection designed for escape routes? N/A ☐ Yes ☒ No ☐

h) Are there reasonable arrangements for means of escape for disabled people? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- The means of escape for the occupants of the upper floors are provided by five protected staircases.
- All staircases are lobby protected.
- All staircases are approximately 1,750mm in width.
- The sliding doors to the main entrance are linked to the fire detection and fire alarm system. A green 'break glass' manual override control is provided, and alternative exit routes are available nearby.
- Disabled persons' refuge points are located on each floor within all protected staircases for the use of staff and visitors. There is an emergency voice communication system between the refuges and the main reception.
- Six evacuation chairs are provided within the building.
- Generic emergency evacuation plans (GEEPs) have been prepared for visitors to the premises.
- All exit doors are fitted with magnetic locks, which are interfaced with the fire detection and fire alarm system. Green 'break glass' manual override controls have been provided. Also, these doors will open on activation of the fire detection and fire alarm system, and a manual call point is provided adjacent to these doors.

- 17.3 Are the escape routes available for use and suitably maintained? N/A ☐ Yes ☐ No ☒

More specifically:

- a) Are fire-resisting doors maintained in sound condition and self-closing, where necessary? N/A ☐ Yes ☐ No ☒
- b) Is the fire-resisting construction protecting escape routes in sound condition⁵⁾? N/A ☐ Yes ☒ No ☐
- c) Are all escape routes clear of obstructions? N/A ☐ Yes ☒ No ☐
- d) Are all fire exits easily and immediately openable? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

All fire-resisting doors are of an adequate standard. However, it was noted that:

- Some fire-resisting doors had excessive gaps.
- Some fire-resisting doors failed to adequately self-close.
- Some fire-resisting doors had damaged or missing intumescent strips or smoke seals.

⁴⁾ Based on current occupancy information provided. Detailed calculations (e.g. using floor space factors to predict maximum occupancy) not carried out.

⁵⁾ This fire risk assessment will not necessarily identify all minor fire stopping issues that might exist within the building. If you become aware of other fire stopping issues, or are concerned about the adequacy of fire stopping, you may wish to consider arranging for an invasive survey by a competent specialist.

18. MEASURES TO LIMIT FIRE SPREAD AND DEVELOPMENT

18.1 Is it considered that there is:

- a) compartmentation of a reasonable standard⁶⁾? Yes ☒ No ☐
- b) reasonable limitation of linings that might promote fire spread? Yes ☒ No ☐

- 18.2 As far as can reasonably be ascertained, are fire dampers provided as necessary to protect critical means of escape against passage of fire, smoke and products of combustion in the early stages of a fire^{6), 7)}? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- In general, compartmentation and fire stopping appears to be of a good standard.
- However, fire stopping is required for a small number of service penetrations in the basement boiler room.
- No attempt has been made to investigate conformity of the external wall construction against the requirement of relevant benchmark standards including Approved Document B. This would require a specialist survey. However, the external walls comprise brickwork.

⁶⁾ This fire risk assessment will not necessarily identify all minor fire stopping issues that might exist within the building. If you become aware of other fire stopping issues, or are concerned about the adequacy of fire stopping, you may wish to consider arranging for an invasive survey by a competent specialist.

⁷⁾ A full investigation of the design of heating, ventilation and air conditioning systems is outside the scope of this fire risk assessment.

19. EMERGENCY ESCAPE LIGHTING

19.1 Has a reasonable standard of emergency escape lighting system been provided⁸⁾? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- Emergency escape lighting is provided throughout all means of escape by means of self-contained luminaires, which have a duration of three hours.

⁸⁾ Based on visual inspection, but no test of illuminance levels or verification of full compliance with relevant British Standards carried out.

20. FIRE SAFETY SIGNS AND NOTICES

20.1 Is there a reasonable standard of fire safety signs and notices? N/A ☐ Yes ☐ No ☒

Relevant information (including description of arrangements and deficiencies observed):

There are no fire procedure notices on the second floor.

21. MEANS OF GIVING WARNING IN CASE OF FIRE

21.1 Is a reasonable fire detection and fire alarm system provided⁹⁾? N/A ☐ Yes ☒ No ☐

21.2 Is there remote transmission of alarm signals? N/A ☐ Yes ☐ No ☒

21.3 Is a zone plan displayed? N/A ☐ Yes ☐ No ☒

Relevant information (including description of arrangements and deficiencies observed):

- The fire alarm system is of the addressable type and generally meets the recommendations for a Category L1 system as defined in BS 5839-1.
- The main control and indicating equipment (CIE) panel is located in the entrance lobby.
- The system incorporates a staff alarm of three minutes to allow security staff to investigate activations of smoke detectors. If a second smoke detector is activated or the time delay expires, the system will sound the evacuate signal. Activation of a heat detector or operation of a manual call point will give rise to immediate sounding of the evacuate signal.
- There is no remote monitoring of fire alarm signals as the building is staffed at all times.
- A zone plan is not currently provided adjacent to the CIE.
- A high sensitivity aspirating smoke detection system is provided in the data centre.

21.4 Relevant information on false alarm experience (if known):

There have been no unwanted activations of the fire detection and fire alarm system in the last 12 months. Previous false alarms, caused by the high sensitivity aspirating smoke detection system, have been addressed by modification of the alarm thresholds.

⁹⁾ Based on visual inspection, but no audibility tests or verification of full compliance with relevant British Standard carried out.

22. MANUAL FIRE EXTINGUISHING APPLIANCES

22.1 Is there reasonable provision of manual fire extinguishing appliances? N/A ☐ Yes ☒ No ☐

22.2 What type(s) of appliances are provided?

Portable fire extinguishers: ☒ Hose reels: ☐ Fire blankets: ☒

22.3 Are all fire extinguishing appliances readily accessible? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

None.

23. RELEVANT AUTOMATIC FIRE EXTINGUISHING SYSTEMS¹⁰⁾

23.1 Type of fixed system:

- An IG55 gas fire suppression system is provided in the data centre.
- A wet chemical suppression system is provided in the kitchen.

Relevant information (including description of arrangements and deficiencies observed):

None.

¹⁰⁾ Relevant to life safety and this risk assessment (as opposed to property protection).

24. OTHER RELEVANT FIXED SYSTEMS AND EQUIPMENT¹¹⁾**24.1 Type of fixed system:**

None.

Relevant information and deficiencies observed:

—

24.2 Is there suitable provision of firefighters' switch(es) for high voltage luminous tube signs, etc.?N/A ☒ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

—

24.3 Are there appropriately sited facilities for electrical isolation of any photovoltaic (PV) cells, with appropriate signage, to assist the fire and rescue service?N/A ☒ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

—

¹¹⁾ Relevant to life safety and this risk assessment (as opposed to property protection).

MANAGEMENT OF FIRE SAFETY

25. PROCEDURES AND ARRANGEMENTS

25.1 Safety assistance:

The competent person(s) appointed under Article 18 of the Fire Safety Order to assist the responsible person in undertaking the preventive and protective measures (i.e. relevant general fire precautions) is:

The Health and Safety Manager.

25.2 Fire safety at the premises is managed by¹²⁾:

The Building Manager.

25.3 Is there a suitable record of the fire safety arrangements? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

A building fire safety manual is in place.

25.4 Are procedures in the event of fire appropriate and properly documented, where appropriate¹³⁾? Yes ☒ No ☐

More specifically:

a) Are there adequate procedures for investigating fire alarm signals? N/A ☐ Yes ☒ No ☐

b) Are there suitable arrangements for summoning the fire and rescue service? N/A ☐ Yes ☒ No ☐

c) Are there suitable arrangements to meet the fire and rescue service on arrival and provide relevant information, including that relating to hazards to firefighters? N/A ☐ Yes ☒ No ☐

d) Are there suitable arrangements for ensuring that the premises have been evacuated? N/A ☐ Yes ☒ No ☐

e) Is there a suitable fire assembly point(s)? N/A ☐ Yes ☒ No ☐

f) Are there adequate procedures for evacuation of any disabled people who are likely to be present? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- A simultaneous evacuation procedure is in place.
- Security staff are responsible for summoning and meeting the fire and rescue service.
- A sufficient number of fire wardens, with suitable deputies to cater for absence, have been appointed and report to a senior fire marshal at the assembly point. Fire wardens are trained in the use of the evacuation chairs.
- The fire assembly point is located opposite the main entrance.
- PEEPs have been prepared for the two disabled employees.
- Fire wardens are trained in the use of evacuation chairs.

25.5 Are there persons nominated to use fire extinguishing appliances? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

All staff have been trained in the use of fire extinguishers. Fire procedures advise staff to tackle a small fire if it is considered safe to do so.

25.6 If the premises are in multiple occupation, are there adequate arrangements for cooperation between dutyholders to ensure coordination of their fire safety arrangements? N/A ☒ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

—

25.7 Are there persons nominated to assist with evacuation, including evacuation of disabled people? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

Fire wardens are trained in the use of evacuation chairs.

25.8 Is there appropriate liaison with fire and rescue service (i.e. by fire and rescue service crews visiting for familiarization visits?) N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

None.

- 25.9 Are routine in-house inspections of fire precautions undertaken (e.g. in the course of health and safety inspections)? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

Monthly inspections are carried out by health and safety representatives.

¹²⁾ This is not intended to represent a legal interpretation of responsibility, but merely reflects the managerial arrangement in place at the time of this risk assessment.

¹³⁾ Based on brief review of procedures at the time of this fire risk assessment. In-depth review of documentation is outside the scope of this fire risk assessment, unless otherwise stated.

26. TRAINING AND DRILLS

- 26.1 Are all staff given adequate fire safety instruction and training? N/A ☐ Yes ☒ No ☐

More specifically:

- a) Are they trained on induction? N/A ☐ Yes ☒ No ☐
- b) Are they given periodic refresher training? N/A ☐ Yes ☒ No ☐
- c) Are they given additional training to cover any specific roles and responsibilities? N/A ☐ Yes ☒ No ☐
- d) Is the content of training provided considered adequate¹⁴⁾? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- Annual training is carried out by an external training company.
- Fire wardens are given annual training in evacuation of disabled people.

26.2 Are fire drills carried out at appropriate intervals? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

Fire drills are carried out every six months. The date of the last fire drill was 7 December 2019.

26.3 When the employees of another employer work in the premises, is appropriate information on fire risks and fire safety measures provided? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

None.

¹⁴⁾ Based on brief consideration of the scope of such training. In-depth evaluation is outside the scope of this fire risk assessment.

27. TESTING AND MAINTENANCE

27.1 Is there adequate maintenance of the premises? Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

None.

27.2 Is weekly testing and periodic servicing of the fire detection and fire alarm system undertaken? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

The fire detection and fire alarm system is tested every week and is serviced every six months. The system was last serviced in October 2019.

- 27.3 Are monthly and annual testing routines in place for the emergency escape lighting? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

- Emergency escape lighting is tested every month and is maintained on an annual basis.
- The most recent full discharge was completed on 12 February 2020.

- 27.4 Is annual maintenance of fire extinguishing appliances undertaken? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

An annual maintenance contract is in place. The last maintenance visit was carried out in January 2020.

- 27.5 Is periodic inspection of external escape staircases and gangways undertaken? N/A ☒ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

—

- 27.6 Are six-monthly inspection and annual testing of rising mains undertaken? N/A ☒ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

—

- 27.7 Are weekly and monthly testing, six-monthly inspection, and annual inspection and testing undertaken of lift(s) provided for use by firefighters or evacuation of disabled people (evacuation lifts)? N/A ☒ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

—

- 27.8 Are weekly testing and periodic inspection of sprinkler installations undertaken? N/A ☒ Yes ☐ No ☐

Relevant information (including description of arrangements and deficiencies observed):

—

- 27.9 Are routine checks of final exit doors and/or security fastenings undertaken? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

Weekly checks are carried out by security staff.

- 27.10 Are annual inspection and testing of the lightning protection system undertaken? N/A ☐ Yes ☒ No ☐

Relevant information (including description of arrangements and deficiencies observed):

The lightning protection system is inspected and tested every 13 months. The date of the last inspection and testing was 12 August 2019.

- 27.11 Other relevant inspections or tests:

- Kitchen fire suppression system.
- IG55 gas fire suppression system.

Relevant information (including description of arrangements and deficiencies observed):

- The kitchen fire suppression system is serviced annually; the last service was undertaken on 20 March 2019.
- The gas fire suppression system is inspected six-monthly; the date of the last inspection was in October 2019.
- Evacuation chairs are not routinely inspected.
- EVCS tested and maintained in accordance with BS 5839-9.

28. RECORDS

28.1 Are there appropriate records of:

- | | | | |
|--|------------------------------|---|--|
| a) Fire drills? | N/A ☐ | Yes ☒ | No ☐ |
| b) Fire training? | N/A ☐ | Yes ☒ | No ☐ |
| c) Fire alarm tests? | N/A ☐ | Yes ☐ | No ☒ |
| d) False alarms? | N/A ☐ | Yes ☒ | No ☐ |
| e) Emergency escape lighting tests? | N/A ☐ | Yes ☒ | No ☐ |
| f) Maintenance and testing of other fire protection systems and equipment? | N/A ☐ | Yes ☒ | No ☐ |

Relevant information (including description of arrangements and deficiencies observed):

None.

FIRE RISK ASSESSMENT

The following simple risk level estimator is based on a commonly used risk level estimator:

Potential consequences of fire →	Slight harm	Moderate harm	Extreme harm
Likelihood of fire ↓			
Low	Trivial risk	Tolerable risk	Moderate risk
Medium	Tolerable risk	Moderate risk	Substantial risk
High	Moderate risk	Substantial risk	Intolerable risk

Taking into account the fire prevention measures observed at the time of this risk assessment, it is considered that the hazard from fire (likelihood of fire) at these premises is:

Low ☐

Medium ☒

High ☐

In this context, a definition of the above terms is as follows:

- Low:** Unusually low likelihood of fire as a result of negligible potential sources of ignition.
- Medium:** Normal fire hazards (e.g. potential ignition sources) for this type of occupancy, with fire hazards generally subject to appropriate controls (other than minor shortcomings).
- High:** Lack of adequate controls applied to one or more significant fire hazards, such as to result in significant increase in likelihood of fire.

Taking into account the nature of the premises and the occupants, as well as the fire protection and procedural arrangements observed at the time of this fire risk assessment, it is considered that the consequences for life safety in the event of fire would be:

Slight harm ☒

Moderate harm ☐

Extreme harm ☐

In this context, a definition of the above terms is as follows:

- Slight harm:** Outbreak of fire unlikely to result in serious injury or death of any occupant (other than an occupant sleeping in a room in which a fire occurs).
- Moderate harm:** Outbreak of fire could foreseeably result in injury (including serious injury) of one or more occupants, but is unlikely to result in multiple fatalities.
- Extreme harm:** Significant potential for serious injury or death of one or more occupants.

Accordingly, it is considered that the risk to life from fire at these premises is:

Trivial ☐ Tolerable ☒ Moderate ☐ Substantial ☐ Intolerable ☐

Comments:

Overall, a very high standard of fire safety was observed in the premises.

A suitable risk-based control plan should involve effort and urgency that is proportional to risk. The following risk-based control plan is based on one advocated for general health and safety risks:

Risk level	Action and timescale
Trivial	No action is required, and no detailed records need be kept.
Tolerable	No major additional controls required. However, there might be a need for improvements that involve minor or limited cost.
Moderate	It is essential that efforts are made to reduce the risk. Risk reduction measures should be implemented within a defined time period. Where moderate risk is associated with consequences that constitute extreme harm, further assessment might be required to establish more precisely the likelihood of harm as a basis for determining the priority for improved control measures.
Substantial	Considerable resources might have to be allocated to reduce the risk. If the building is unoccupied, it should not be occupied until the risk has been reduced. If the building is occupied, urgent action should be taken.
Intolerable	Building (or relevant area) should not be occupied until the risk is reduced.

Note that, although the purpose of this section is to place the fire risk in context, the above approach to risk assessment is subjective and for guidance only. All hazards and deficiencies identified in this report should be addressed by implementing all recommendations contained in the following action plan. The fire risk assessment should be repeated regularly.

ACTION PLAN

It is considered that the following actions should be implemented in order to reduce fire risk to, or maintain it at, the following level:

Trivial ☐

Tolerable ☒

Definition of priorities (where applicable):

Priorities:

1. High.
2. Medium.
3. Low.

Suggested timescale:

- A. Immediately.
- B. Short term.
- C. Medium term.
- D. Long term.

Item	Recommendation	Priority	Timescale
1.	Some staff are smoking outside of the designated smoking area. It is recommended that the 'no smoking' policy should be reinforced with staff, and the area monitored regularly.	3	A
2.	All storage should be removed from the basement boiler room.	2	B
3.	The following fire-resisting doors should be adjusted so that the excessive gaps between the doors are 4mm or less, as far as possible, to maintain the required degree of fire resistance: - First floor, Staircase 5. - Third floor, Staircase 2.	2	B
4.	The following fire-resisting, self-closing doors should be adjusted to ensure that the doors close fully to their doorstops when not in use: - First floor, cross-corridor door. - Second floor, Staircase 5 lobby.	2	B

Item	Recommendation	Priority	Timescale
5.	The following fire-resisting doors have damaged or missing intumescent strips/smoke seals. The doors should be fitted with an intumescent strip/smoke seal in the frame or alternatively on the door, namely: • Ground floor, Staircase 5 lobby door. • First floor, Staircase 5 door. • First floor, Staircase 3 door. • Second floor, Staircase 3 door. • First floor, Staircase 5 lobby door (no smoke seal). • Second floor, Staircase 4 (damaged smoke seal).	2	B
6.	Three penetrations for services in the walls of the basement boiler room should be fire stopped, such as to maintain a fire resistance of 60 minutes.	2	B
7.	Evacuation chairs are not regularly inspected. It is recommended that six-monthly inspections are carried out in accordance with the manufacturer's instructions. Records of these inspections should be kept.	2	B
8.	A fire alarm zone plan should be provided adjacent to the fire alarm control and indicating equipment (CIE).	3	B
Interim measures (where appropriate)			
9.	None		

REFERENCES

[It is normal practice for the FRA to include a list of relevant references.]

Bibliography

Standards publications

For dated references, only the edition cited applies.
For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 2655, *Specification for lifts, escalators, passenger conveyors and paternosters. General requirements for electric, hydraulic and hand-powered lifts*

BS 5266-1, *Emergency lighting – Part 1: Code of practice for the emergency lighting of premises*

BS 5306-1, *Code of practice for fire extinguishing installations and equipment on premises – Part 1: Hose reels and foam inlets*

BS 5306-8, *Fire extinguishing installations and equipment on premises – Part 8: Selection and installation of portable fire extinguishers – Code of practice*

BS 5499-4, *Safety signs – Part 4: Code of practice for escape route signing*

BS 5499-10, *Guidance for the selection and use of safety signs and fire safety notices*

BS 5588-5 (withdrawn), *Fire precautions in the design, construction and use of buildings – Access and facilities for fire-fighting*

BS 5655, *Lifts and service lifts – Safety rules for the construction and installation of electric lifts*

BS 5839-6, *Fire detection and fire alarm systems for buildings – Part 6: Code of practice for the design, installation, commissioning and maintenance of fire detection and fire alarm systems in domestic premises*

BS 7273-4, *Code of practice for the operation of fire protection measures – Part 4: Actuation of release mechanisms for doors*

BS 7273-6, *Code of practice for the operation of fire protection measures – Part 6: Fire detection and fire alarm systems – Interface with ancillary systems and equipment*

BS 7671, *Requirements for Electrical Installations – IET Wiring Regulations*

BS 7974:2019, *Application of fire safety engineering principles to the design of buildings – Code of practice*

BS 8414-1, *Fire performance of external cladding systems – Part 1: Test method for non-loadbearing external cladding systems fixed to, and supported by, a masonry substrate*

BS 8414-2, *Fire performance of external cladding systems – Part 2: Test method for non-loadbearing external cladding systems fixed to, and supported by, a structural steel frame*

BS 8899:2016, *Improvement of fire-fighting and evacuation provisions in existing lifts – Code of practice*

BS 9997, *Fire risk management systems – Requirements with guidance for use*

BS 9999:2017, *Code of practice for fire safety in the design, management and use of buildings*

BS EN 81-72:2020, *Safety rules for the construction and installation of lifts – Particular applications for passenger and goods passenger lifts – Part 72: Firefighters lifts*

BS EN 1838, *Lighting applications – Emergency lighting*

BS EN 12845, *Fixed fire-fighting systems – Automatic sprinkler system – Design, installation and maintenance*

BS EN 13501-1:2007+A1:2009, *Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests*

BS EN 50172 (BS 5266-8), *Emergency escape lighting systems*

BS EN 62305 (all parts), *Protection against lightning*

BS EN ISO 7010, *Graphical symbols – Safety colours and safety signs – Registered safety signs*

PAS 79-2:2020, *Fire risk assessment – Part 2: Housing – Code of practice*

PAS 9980, *Fire risk appraisal and assessment of external wall construction of existing blocks of flats – Code of practice* ⁶⁾

⁶⁾ In preparation.

Other publications

- [1] GREAT BRITAIN. Regulatory Reform (Fire Safety) Order 2005. London: The Stationery Office.
- [2] DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT (DCLG). *Fire safety – Risk assessment – Offices and shops*. London: The Stationery Office, 2006.
- [3] DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT (DCLG). *Fire safety – Risk assessment – Factories and warehouses*. London: The Stationery Office, 2006.
- [4] DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT (DCLG). *Fire safety – Risk assessment – Sleeping accommodation*. London: The Stationery Office, 2006.
- [5] DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT (DCLG). *Fire safety – Risk assessment – Residential care*. London: The Stationery Office, 2006.
- [6] DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT (DCLG). *Fire safety – Risk assessment – Educational premises*. London: The Stationery Office, 2006.
- [7] DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT (DCLG). *Fire safety – Risk assessment – Small and medium places of assembly*. London: The Stationery Office, 2006.
- [8] DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT (DCLG). *Fire safety – Risk assessment – Large places of assembly*. London: The Stationery Office, 2006.
- [9] DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT (DCLG). *Fire safety – Risk assessment – Theatres, cinemas, concert halls and similar premises*. London: The Stationery Office, 2006.
- [10] DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT (DCLG). *Fire safety – Risk assessment – Outdoor events and venues*. London: The Stationery Office, 2006.
- [11] DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT (DCLG). *Fire safety – Risk assessment – Healthcare premises*. London: The Stationery Office, 2006.
- [12] DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT (DCLG). *Fire safety – Risk assessment – Transport premises and facilities*. London: The Stationery Office, 2007.
- [13] DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT (DCLG). *Fire safety – Risk assessment – Animal premises and stables*. London: The Stationery Office, 2007.
- [14] DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT (DCLG). *Fire safety – Risk assessment – Open air events and venues*. London: The Stationery Office, 2007.
- [15] DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT (DCLG). *Do you have paying guests?* London: Crown Copyright, 2008.
- [16] SCOTLAND. Fire (Scotland) Act 2005. Edinburgh: The Stationery Office.
- [17] SCOTLAND. Fire Safety (Scotland) Regulations 2006. Edinburgh: The Stationery Office.
- [18] SCOTLAND. *Practical fire safety guidance for existing non-residential premises*. Edinburgh: Scottish Government, 2017.
- [19] SCOTLAND. *Fire safety guidance for existing premises with sleeping accommodation*. Edinburgh: Scottish Government, 2018.
- [20] SCOTLAND. *Fire safety guidance for care homes*. Edinburgh: Scottish Government, 2014.
- [21] SCOTLAND. *Fire safety guidance: evacuating disabled people from buildings*. Edinburgh: Scottish Government, 2014.
- [22] NORTHERN IRELAND. Fire and Rescue Services (Northern Ireland) Order 2006. Belfast: The Stationery Office.
- [23] NORTHERN IRELAND. Fire Safety Regulations (Northern Ireland) 2010. Belfast: The Stationery Office.
- [24] NORTHERN IRELAND FIRE & RESCUE SERVICE. *Fire safety risk assessment – Animal premises*. Belfast: NIFRS, 2017.
- [25] NORTHERN IRELAND FIRE & RESCUE SERVICE. *Fire safety risk assessment – Educational premises*. Belfast: NIFRS, 2017.

- [26] NORTHERN IRELAND FIRE & RESCUE SERVICE. *Fire safety risk assessment – Factories and warehouses*. Belfast: NIFRS, 2017.
- [27] NORTHERN IRELAND FIRE & RESCUE SERVICE. *Fire safety risk assessment – Healthcare premises*. Belfast: NIFRS, 2017.
- [28] NORTHERN IRELAND FIRE & RESCUE SERVICE. *Fire safety risk assessment – Large places of assembly*. Belfast: NIFRS, 2017.
- [29] DEPARTMENT OF HEALTH, SOCIAL SERVICES AND PUBLIC SAFETY. *Fire safety risk assessment – Offices and shops*. Crown Copyright, 2013.
- [30] DEPARTMENT OF HEALTH, SOCIAL SERVICES AND PUBLIC SAFETY. *Fire safety risk assessment – Open air events and venues*. Crown Copyright, 2013.
- [31] NORTHERN IRELAND FIRE & RESCUE SERVICE. *Fire safety risk assessment – Residential care premises*. Belfast: NIFRS, 2017.
- [32] DEPARTMENT OF HEALTH, SOCIAL SERVICES AND PUBLIC SAFETY. *Fire safety risk assessment – Sleeping accommodation*. Crown Copyright, 2013.
- [33] DEPARTMENT OF HEALTH, SOCIAL SERVICES AND PUBLIC SAFETY. *Fire safety risk assessment – Small and medium places of assembly*. Crown Copyright, 2013.
- [34] DEPARTMENT OF HEALTH, SOCIAL SERVICES AND PUBLIC SAFETY. *Fire safety risk assessment – Theatres, cinemas and similar premises*. Crown Copyright, 2013.
- [35] NORTHERN IRELAND FIRE & RESCUE SERVICE. *Fire safety risk assessment – Transport premises and facilities*. Belfast: NIFRS, 2017.
- [36] DEPARTMENT OF HEALTH. *Firecode – Fire safety in the NHS – Health Technical Memorandum 05-03: Operational provisions – Part K: Guidance on fire risk assessments in complex healthcare premises*. Crown Copyright, 2013.
- [37] SCOTLAND. NHS Scotland Firecode – *Scottish Health Technical Memorandum 86 – Fire risk assessment*. Edinburgh: Health Facilities Scotland, 2013.
- [38] NORTHERN IRELAND. *HTM (NI Firecode) 84 – Fire risk assessment in residential care premises*. Health Estates Investment Group 2010.
- [39] FIRE INDUSTRY ASSOCIATION. *Fire risk assessors – Standard scope of services*. Hampton: FIA, 2014.
- [40] DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT. *Building a safer future – Independent review of building regulations and fire safety: Final report*. Crown Copyright, 2018.⁷⁾
- [41] HEALTH AND SAFETY EXECUTIVE. *Good practice and pitfalls in risk assessment*. Sudbury: HSE Books, 2003.
- [42] INSTITUTION OF ENGINEERING AND TECHNOLOGY (IET). *Inspection and testing*. Guidance Note 3. Eighth edition. Stevenage: IET, 2018.
- [43] HM PRISON AND PROBATION SERVICE. *Fire safety in HMPPS custodial premises*. London: HM Prison and Probation Service, 2020.⁸⁾
- [44] DEPARTMENT FOR CHILDREN, SCHOOLS AND FAMILIES. *Building Bulletin 100: Design for fire safety in schools*. Crown Copyright, 2007.
- [45] MINISTRY OF HOUSING, COMMUNITIES AND LOCAL GOVERNMENT. *The Building Regulations 2010 – Approved Document B: Fire safety – Volume 1: Dwellings and Volume 2: Buildings other than dwellings*. 2019 edition for use in England. Crown Copyright, 2019.
- [46] SCOTLAND. Building (Scotland) Regulations 2004. Edinburgh: The Stationery Office.
- [47] GREAT BRITAIN. Building Regulations 2010. London: The Stationery Office.
- [48] GREAT BRITAIN. Building (Amendment) Regulations 2018. London: The Stationery Office.
- [49] GREAT BRITAIN. Fire Precautions Act 1971. London: HMSO.⁹⁾

⁷⁾ Available from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/707785/Building_a_Safer_Future_-_web.pdf

⁸⁾ This document is likely to be revised during the lifetime of the PAS.

⁹⁾ Repealed in October 2006.

- [50] SCOTLAND. *Fire safety design summary 2017*. Edinburgh: CEU, 2017.
- [51] SCOTLAND. Building (Procedure) (Scotland) Regulations 2004 (as amended). Edinburgh: The Stationery Office.
- [52] GREAT BRITAIN. Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR). London: The Stationery Office.
- [53] GREAT BRITAIN. Health and Safety at Work, etc. Act 1974. London: HMSO.
- [54] GREAT BRITAIN. Health and Safety (Safety Signs and Signals) Regulations 1996. London: HMSO.
- [55] SCOTTISH BUILDING STANDARDS. *Building Standards Technical Handbook 2019 – Non-domestic – Section 2: Fire*. Edinburgh: Scottish Government, 2019.
- [56] INSTITUTION OF ENGINEERING AND TECHNOLOGY (IET). *Code of practice for in service inspection and testing of electrical equipment*. Fourth edition. Stevenage: IET, 2012.
- [57] HEALTH AND SAFETY EXECUTIVE. *Maintaining portable and transportable electrical equipment. HSG 107*. London: HSE Books, 2004.
- [58] HEALTH AND SAFETY EXECUTIVE. *Great health and safety myths – All office equipment must be tested by a qualified electrician every year. Myth No. 4*. London: HSE, 2007.¹⁰⁾
- [59] LEWIS, Adair. *The prevention and control of arson*. London: Fire Protection Association.
- [60] RISC AUTHORITY. *Recommendations for fire safety in commercial kitchens*. RC16B. Version 03. London: Fire Protection Association, 2013.
- [61] BSRIA in association with InFiReS. *Recommendations for fire risk assessment of catering extract ventilation – Catering extract ventilation*. Bracknell: BSRIA, 2006.
- [62] NATIONAL FIRE CHIEFS COUNCIL. *Mobility scooter guidance for residential buildings*. Birmingham: National Fire Chiefs Council, 2018.
- [63] GREAT BRITAIN STANDING COMMITTEE ON FIRE PRECAUTIONS. *Standard fire precautions for contractors engaged on Crown works applicable to contractors engaged on works for Crown Civil and Defence Estates*. London: HMSO, 1995.
- [64] FIRE PROTECTION ASSOCIATION. *Fire prevention on construction sites*. London: Fire Protection Association, 2015.
- [65] HEALTH AND SAFETY EXECUTIVE. *Fire safety in construction*. HSG 168. Sudbury: HSE Books, 2010.
- [66] TODD, C.S. *A comprehensive guide to fire safety*. London: British Standards Institution, 2008.

¹⁰⁾ Available at <https://www.hse.gov.uk/myth/july.htm>.

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