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Code of practice for the design, installation, commissioning and maintenance of evacuation alert systems for use by fire and rescue services in buildings containing flats

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Foreword

Publishing Information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 30 November 2019. It was prepared by Technical Committee FSH/17, *Fire & Rescue Services Equipment*. A list of organizations represented on this committee can be obtained on request to its secretary.

Information about this document

The recommendations given in this British Standard have been drawn up to encourage uniformity in systems installed to assist the fire and rescue service to initiate evacuation of residents of buildings containing flats or maisonettes.

Although this British Standard makes recommendations for the design, installation, commissioning and maintenance of such systems, it is not implied that there is a requirement in law for these systems to be installed in all blocks of flats. However, at the time of publication of this British Standard, Scottish Government guidance [1] on the Building (Scotland) Regulations 2004 [2] recommends that these systems are installed in all new blocks of flats with a storey more than 18 m above ground level. As a result of that guidance, the publication of this British Standard was appropriate.

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Use of this document

This British Standard 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 British Standard is expected to be able to justify any course of action that deviates from its recommendations.

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

Presentational conventions

The provisions of this standard 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.

The word “should” is used to express recommendations of this standard. 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 standard. Notes give references and additional information that are important but do not form part of the recommendations. Commentaries give background information.

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

Contractual and legal considerations

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

Compliance with a British Standard cannot confer immunity from legal obligations.

Introduction

Modern, purpose-built blocks of flats in the UK are designed on the basis of a strategy that is commonly described as "stay put". (In this British Standard, the term "flat" is generally used to describe dwellings that are either single-storey flats or maisonettes.) In this strategy, because of the compartmentation required for compliance with building regulations, if there is a fire in a flat, the fire will be contained within that flat. Therefore, occupants of all other flats are safe to remain within their own flat unless their flat is affected by fire or smoke, or unless they are instructed to evacuate by the fire and rescue service; they can also leave if they feel threatened and wish to do so. The success of this strategy is well-established. Every day, in England, around 20-30 fires occur in blocks of flats, but the need for occupants of flats, other than that in which the fire occurs, to evacuate is very uncommon.

There is normally no need for any form of communal fire alarm system in a modern block of flats; all that is required is the provision of smoke and heat alarms within each flat to warn residents of a fire in their own flat. Indeed, recognized guidance (e.g. in BS 5839-6 and guidance in England produced by the Local Government Association [3]) is that communal fire alarm systems are not only unnecessary, but also undesirable and might even result in risk to residents. They might result in exposure of residents to smoke that enters the common parts during fire-fighting operations, when the residents would have been safer to remain within their own flats.

If, on rare occasions, the fire and rescue service consider that occupants of other flats do need to evacuate, they will alert these occupants simply by knocking on the doors of their flats. This is only likely to apply to a small number of flats, and so is, normally, readily manageable. On even rarer occasions when more widespread evacuation is necessary, particularly if this is in the early stages of fire-fighting operations, when available resources are limited, there will tend to be a focus on fire-fighting. Accordingly, an evacuation alert system that enables occupants of flats to be alerted by the incident commander can support the operations of the fire and rescue service; the decision to use the evacuation alert system for this purpose will only be made after consideration of the tenability of escape routes, particularly the stairways, for use by occupants of flats.

However, in the UK, the total evacuation of a modern, high-rise block of flats as a result of a fire that started in one flat is extremely rare and, inevitably, poses significant logistical problems for the fire and rescue service. Nevertheless, the Scottish Government formed an expert Review Panel to examine building regulations in Scotland, and guidance thereunder, with a view to advising Scottish Ministers on any need for changes to the Building (Scotland) Regulations 2004, as amended [2], or the Technical Handbooks that support the Regulations [1]. The Review Panel advised Ministers that the Domestic Technical Handbook ought to be amended to advocate that, in new blocks of flats with a storey located at a height of more than 18 m above ground level, facilities have to be provided for use by the fire and rescue service to initiate an evacuation alert signal within flats by means of evacuation alert sounders within the flats, so obviating the need for fire-fighters to manually alert the occupants of the flats.

This recommendation was accepted by Scottish Ministers (along with recommendations for other changes in the guidance that supports the Building (Scotland) Regulations 2004 as amended [2]). The Domestic Technical Handbook [1] was amended accordingly in 2019. The Technical Handbook advocates the provision of such evacuation alert systems for use by the fire and rescue service for compliance with Mandatory Building Standard 2.14 (Fire and Rescue Service Facilities) under the Building (Scotland) Regulations [2], which requires that every building is designed and constructed in such a way that facilities are provided to assist fire-fighting or rescue operations.

The evacuation alert systems are not required for compliance with Mandatory Building Standard 2.11 (Communication), which requires that buildings are designed and constructed in such a way

that, in the event of an outbreak of fire within the building, the occupants are alerted to the outbreak of fire. Evacuation alert systems for use by the fire and rescue service are not to be regarded as a fire detection and fire alarm system; their function is solely to assist the fire and rescue service in the management of a fire incident.

The Scottish Government Technical Handbooks [1], [4] provide guidance on compliance with the Building (Scotland) Regulations, but do not constitute the Regulations themselves, which are set out in functional form (i.e. specified objectives) and do not make prescriptive requirements as to the measures that need to be incorporated within buildings for compliance with the Mandatory Building Standards imposed by the Regulations. However, in Scotland, if the guidance in the Technical Handbooks is followed in full, then this can be accepted by the building control verifier as indicating compliance with the Building (Scotland) Regulations 2004 [2]. Accordingly, proof of compliance with the Technical Handbooks may be relied on in any proceedings as tending to negative liability for an alleged contravention of the Building (Scotland) Regulations 2004 [2].

At the time of publication of this British Standard, legislation and guidance elsewhere in the United Kingdom makes no reference to the systems to which this standard applies. However, it is anticipated that the systems might sometimes be specified as part of fire strategies for new blocks of flats.

It is considered by the Technical Committee responsible for this British Standard, and by the UK Fire and Rescue Service, that critical design features of such systems are that they are totally consistent in visual appearance, functionality and method of operation in all buildings in which they are installed, and that they are both simple and intuitive to operate by fire fighters, who might be unfamiliar with the building and its fire safety measures. Confusion and consequent risk to both residents and fire-fighters, could result from a need for fire fighters to learn the operation of non-standard systems under emergency conditions. This British Standard has been produced in pursuance of the consistency required for all systems.

Systems that enable evacuation of flats by the fire and rescue service are not entirely new. On very rare occasions, in England, such systems have been installed (though sometimes in combination with a fire detection and fire alarm system, which is outside the scope of this standard) in blocks of flats, sometimes retrospectively for compliance with the Regulatory Reform (Fire Safety) Order 2005 [5]. This could, for example, be in circumstances in which the possible need for a simultaneous evacuation of a block of flats was anticipated (e.g. as a result of significant departures from the provisions for means of escape or compartmentation required under modern building regulations).

It is important that evacuation alert systems for use by the fire and rescue service are not confused with (or integrated with) fire detection and fire alarm systems. It is acknowledged that the technology exists to provide the evacuation alert systems to which this British Standard refers within a fire detection and alarm system which might be present to support other safety functions, such as smoke control. However, the reason for the avoidance of such an integrated arrangement within the recommendations of this British Standard is to avoid confusion between fire and rescue service evacuation alert systems and fire detection and alarm systems until the concept, use and management of the former systems is well established and understood. Such confusion could result in inappropriate use of fire detection systems in blocks of flats, so undermining a stay put strategy and resulting in incorrect programming of integrated systems. It is intended that, given that evacuation alert systems are a new form of system, not commonly used within the UK, this British Standard will be reviewed two years after its publication, at which time the recommendations for avoidance of any integration with other systems will be reviewed.

Communal fire detection and fire alarm systems are sometimes installed in old blocks of flats, particularly those converted from original private, single family dwellings before modern building regulations required the compartmentation necessary to support a “stay put” strategy. Where, in these circumstances, a communal fire detection and fire alarm system is provided to support a

simultaneous evacuation strategy, rather than a "stay put" strategy, a separate evacuation alert system for use by the fire and rescue service is not normally necessary, as simultaneous evacuation can be initiated automatically, and the system will also incorporate manual controls that could be used to initiate an evacuation. A correctly designed system normally also includes fire detection and sounders within each flat, incorporated within the communal fire detection and fire alarm system.

In preparing this British Standard, it has been assumed that all fire protection measures in the building, normally provided for compliance with building regulations, are correctly designed, correctly installed and properly maintained. It is not appropriate for the provision of an evacuation alert system for use by the fire and rescue service to be regarded as any form of compensation for reduction in fire protection measures, or as mitigation for defects in construction (such as poor installation of compartmentation).

Designs that support a "stay put" strategy are beneficial to persons with certain disabilities (such as mobility impairment), as they are able to safely remain in their flat. While evacuation arrangements for buildings containing flats are outside the scope of this British Standard, attention is drawn to the benefits of social alarm ("telecare") systems for disabled people. These systems enable two-way speech communication between disabled occupants of a flat and a social alarm monitoring centre, to be triggered by use of a pendant worn by a disabled person, or a pull cord, so that the monitoring centre can inform the fire and rescue service of the presence of disabled people who might need to be rescued by the fire and rescue service.

Nothing in this British Standard is intended to imply that the "stay put" strategy normally adopted in new blocks of flats is inappropriate. On the contrary, the Technical Committee responsible for this British Standard acknowledges that "stay put" remains the appropriate strategy for such blocks of flats. The purpose of the systems described in this British Standard is to provide facilities that can, on occasions, support operational fire-fighting and rescue by the fire and rescue service in blocks of flats that are designed on the basis of a "stay put" strategy. These systems enable fire and rescue service operational commanders to initiate an evacuation alert signal in flats, particularly those on a floor(s) other than the floor of fire origin, e.g. a floor(s) above the level of the fire.

Throughout this British Standard, there are recommendations for consultation with the fire and rescue service in respect of various matters at different stages in the planning, design and commissioning of an evacuation alert system. The importance of this cannot be over-stressed, as such consultation is essential to ensure that the system is fit for purpose in relation to use by fire and rescue service crews. It is also essential that fire and rescue service crews are aware of the existence of the system and are afforded the opportunity to make themselves familiar with its access and use.

1 Scope

This British Standard gives recommendations for the design, installation, commissioning and maintenance of evacuation alert systems for use by the fire and rescue service in buildings containing flats. Within this British Standard, both single-storey flats and maisonettes are described by the generic term "flats", other than when, for the purpose of a specific recommendation, the term maisonette is used. This British Standard does not recommend whether or not an evacuation alert system is to be installed in any given building. Typically, the application for these systems are high-rise blocks of flats, but the scope of this British Standard includes systems installed in any building containing flats, regardless of height.

The evacuation alert systems covered by this British Standard comprise evacuation alert control and indicating equipment (EACIE), which incorporates manual controls by which evacuation alert sounders within each flat can be operated by the fire and rescue service. These systems are not to be regarded as fire detection and fire alarm systems, and the systems do not incorporate automatic

