

BS 8644-1:2022



BSI Standards Publication

Digital management of fire safety information

Part 1: Design, construction, handover, asset management and emergency response – Code of practice

bsi.

Publishing and copyright information

The BSI copyright notice displayed in this document indicates when the document was last issued.

© The British Standards Institution 2022

Published by BSI Standards Limited 2022

ISBN 978 0 7500 0660 9

ICS 35.220.01, 35.240.67; 91.010.01; 93.010

The following BSI references relate to the work on this document:

Committee reference FSB/1/1

Draft for comment 21/30403065 DC

Amendments/corrigenda issued since publication

Date	Text affected
-------------	----------------------

Contents

Foreword	IV
0 Introduction	1
0.1 General	1
0.2 Relationship to the golden thread	1
0.3 Holistic fire safety information management	2
0.4 Information exchange for fire safety information (FIREie)	2
0.5 Relationship to the UK BIM Framework	3
0.6 Fire safety information and inclusive design	3
0.7 The purpose of information as it relates to fire safety	3
<i>Figure 1 — Example of relevant information before, during and after a fire incident</i>	4
1 Scope	6
2 Normative references	6
3 Terms, definitions and abbreviated terms	6
3.1 Terms and definitions	6
3.2 Abbreviated terms	8
4 Fire safety information management framework	8
<i>Figure 2 — Fire safety information management framework</i>	9
4.1 General	10
<i>Table 1 — Example of types of information requirements as they relate to fire safety</i>	11
4.2 Information management using BIM processes/BS EN ISO 19650	12
<i>Figure 3 — Example of application of fire safety properties</i>	14
<i>Figure 4 — Example of geometrical representation of properties relevant to fire safety at concept stage</i>	16
<i>Figure 5 — Example of geometrical representation of properties relevant to fire safety at spatial coordination stage</i>	17
<i>Figure 6 — Example of geometrical representation of properties relevant to fire safety at detail design stage</i>	18
<i>Figure 7 — Example of geometrical representation of fire safety properties within federated information models</i>	19
4.3 Information management without using BIM processes/BS EN ISO 19650	20
4.4 Information exchange points (IEPs)	21
<i>Table 2 — IEPs aligned to plan of work stages</i>	22
<i>Figure 8 — Workflow for FIREie</i>	23
5 Representation of fire safety information in FIREie	34
5.1 Concepts and principles	34
5.2 Completion of FIREie	35
<i>Table 3 — Tab colour meanings</i>	35
<i>Figure 9 — Example of part of an “Instruction” tab</i>	36
<i>Figure 10 — Example of “Contact” tab</i>	37
<i>Figure 11 — Example of “Facility” tab</i>	38
<i>Figure 12 — Example of “Floor” tab</i>	39
<i>Figure 13 — Example of “Space” tab</i>	40
<i>Figure 14 — Example of “Zone” tab</i>	41
<i>Figure 15 — Example of “Type” tab</i>	42
<i>Figure 16 — Example of “Component” tab</i>	43

	<i>Figure 17 — Example of “System” tab</i>	43
	<i>Figure 18 — Example of “Assembly” tab</i>	44
	<i>Figure 19 — Example of “Connection” tab</i>	44
	<i>Figure 20 — Example of “Spare” tab</i>	45
	<i>Figure 21 — Example of “Resource” tab</i>	45
	<i>Figure 22 — Example of “Job” tab</i>	46
	<i>Figure 23 — Example of “Impact” tab</i>	47
	<i>Figure 24 — Example of “Document” tab</i>	48
	<i>Figure 25 — Example of “Attribute” tab</i>	48
	<i>Figure 26 — Example of “Coordinate” tab</i>	49
	<i>Figure 27 — Example of “Issue” tab</i>	50
	<i>Figure 28 — Example of “Event” tab</i>	51
	<i>Figure 29 — Example of “Package” tab</i>	51
	<i>Figure 30 — Example of “Competence” tab</i>	52
Annex A	(informative) Templates for fire safety information	53
	<i>Figure A.1 — Representative part of fire safety information template</i>	54
	<i>Table A.1 — Key to template symbols</i>	54
Annex B	(informative) Suggested fire safety properties for use in building information modelling	54
	<i>Table B.1 — Suggested fire safety properties for use in building information modelling</i>	55
Annex C	(informative) Example of fire safety information as represented in information deliverables	63
	<i>Figure C.1 — Example of fire safety information as represented in information deliverables – High-level view of information model</i>	63
	<i>Figure C.2 — Example of fire safety information as represented in information deliverables – General arrangement plan</i>	64
	<i>Figure C.3 — Example of fire safety information as represented in information deliverables – Occupant load (m² per person)</i>	64
	<i>Figure C.4 — Example of fire safety information as represented in information deliverables – Egress paths</i>	65
	<i>Figure C.5 — Example of fire safety information as represented in information deliverables – Evacuation zones</i>	65
	<i>Figure C.6 — Example of fire safety information as represented in information deliverables – Alarm zones</i>	66
	<i>Figure C.7 — Example of fire safety information as represented in information deliverables – Detection zone</i>	66
	<i>Figure C.8 — Example of fire safety information as represented in information deliverables – Special fire risk</i>	67
	<i>Figure C.9 — Example of fire safety information as represented in information deliverables – Compartment reference</i>	67
	<i>Figure C.10 — Example of fire safety information as represented in information deliverables – Fire resistance requirement</i>	68
	<i>Figure C.11 — Example of fire safety information as represented in information deliverables – Reaction to fire requirement</i>	68
	<i>Figure C.12 — Example of fire safety information as represented in information deliverables – Smoke control zones</i>	69
	<i>Figure C.13 — Example of fire safety information as represented in information deliverables – Fire suppression zones</i>	69

Annex D (informative) Examples of asset in use stage trigger events and possible fire safety information to be produced	70
<i>Table D.1 — Example of asset in use stage trigger events and possible fire safety information</i>	70
Bibliography	72

Summary of pages

This document comprises a front cover, an inside front cover, pages I to VI, pages 1 to 72, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 July 2022. It was prepared by Subcommittee FSB/1/1, *Digital management of fire safety information*, under the authority of Technical Committee FSB/1, *Fire safety and built environment task group*. A list of organizations represented on these committees can be obtained on request to the committee manager.

Relationship with other publications

BS 8644 is expected to be published in the following parts:

- Part 1: *Design, construction, handover, asset management and emergency response – Code of practice*;
- Part 2: *Development and use of fire strategies – Code of practice*¹⁾.

Information about this document

The defining concept leading to the development of this part of BS 8644 originates from the lack of availability of accessible and relevant fire safety information for assets across the built environment. This part of BS 8644 has been developed under the principle of the following three strategic objectives:

- a) provide a safer built environment that is appropriate for the intended end users;
- b) reduce disruption to business operation and property loss from fire; and
- c) enable relevant, accurate and accessible fire safety information to be made available to the right people at the right time.

The use of digital applications to facilitate the management of fire safety information provides several advantages that are further explored throughout this part of BS 8644.

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 British Standard takes the form of recommendations and guidance. It is not to be quoted as if it were a specification. Users are expected to ensure that claims of compliance are not misleading.

Users may substitute any of the recommendations in this British Standard with practices of equivalent or better outcome. Any user claiming compliance with this British Standard is expected to be able to justify any course of action that deviates from its recommendations.

¹⁾ To be developed in due course.

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

Presentational conventions

The provisions in 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 has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient’s own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

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

Attention is drawn to regulatory requirements in respect of the following principal stages in the lifetime of an asset:

- planning – type, size, use, appearance, access and location of a proposed asset;
- works on existing assets, including change of use, material alterations and extensions of existing assets – selection of materials, products, nature and extent of active and passive fire safety features within and external to the asset, and proximity to other assets; changes in fire risk and/or fire safety provisions;
- construction works – correct installation of all fire safety features, and fire safety arrangements to deal with a fire incident during construction;
- use – occupants and their activities, including storage and use of materials, provision of first strike fire-fighting equipment and fire safety training of persons with fire safety duties, and maintaining means of escape and other fire safety systems and equipment;
- end of life – fire safety arrangements during demolition work; and
- vacant or derelict assets – fire safety arrangements and risk presented to persons and assets in the vicinity.

0 Introduction

0.1 General

The management of fire safety information during an asset's life cycle has traditionally been conducted in isolation, with dutyholders responsible for the relevant stage of the development working independently of each other when considering fire safety risk and legislative duties. Asset owners have rarely defined and structured the fire safety information for their assets, or planned the digitization, update and handover of that information at key identifiable stages.

Equally, practices to facilitate the handover of fire safety information to enable the safe and effective management of an asset have been proven to be generally substandard, with a varying degree of standardization across the built environment. Furthermore, such information has traditionally been analogue, largely paper-based, and managed using manual processes, making it difficult for the information to be accessed and updated.

This has led to the management of fire safety information being applied inconsistently, with valuable information being overlooked, miscommunicated or forgotten, in turn preventing the effective, dynamic and active management of fire safety information across the built environment. A digital process to manage fire safety information is an essential part of overcoming these challenges.

The development and management of fire safety information using defined digital processes will, for large parts of the built environment, represent a transformative shift in practice, although some participants already use digital processes to manage this information.

A phased approach to digital management of fire safety information is required, which in turn will enable a pragmatic cultural shift, assisted by interpretable guidance that participants can apply to their practices. There are many practices for digital management of fire safety information, and this part of BS 8644 does not recommend one over the other. Digital platforms, the software used, and the technology deployed to manage fire safety information are at the discretion of the user of this standard.

An information exchange for fire safety information, FIREie, is proposed for the purpose of exchanging predetermined and controlled fire safety information. Further information on FIREie is given in 0.4.

0.2 Relationship to the golden thread

Following the Grenfell Tower tragedy in June 2017, where 72 lives were lost, Dame Judith Hackitt published the *Independent review of building regulations and fire safety: Final report* [1]. Dame Judith concluded that there was “unanimous concern surrounding the ineffective operation of the current rules around the creation, maintenance and handover of building and fire safety information”. She made four recommendations in relation to developing a “golden thread of building information” for higher risk buildings.

Central to these recommendations was the need to create a “digital standard of record-keeping for the design, construction and during the occupation of new High-Risk Residential Buildings (HRRBs)”.

NOTE High-risk residential buildings are now referred to as higher-risk buildings.

The principles of the golden thread, within the context of legislation applicable to higher risk buildings, are set out in the Building Regulations Advisory Committee (BRAC) golden thread working group report, which can be found at <https://www.gov.uk/government/publications/building-regulations-advisory-committee-golden-thread-report/building-regulations-advisory-committee-golden-thread-report>.