BS 12999:2015

BSI Standards Publication

Damage management – Code of practice for the organization and management of the stabilization, mitigation and restoration of properties, contents, facilities and assets following incident damage

bsi.

...making excellence a habit.™

Publishing and copyright information

Published by BSI Standards Limited 2015

ISBN 978 0 580 85622 8

ICS 03.100.01; 13.200

The following BSI references relate to the work on this document:
Committee reference CAR/1
Draft for comment 15/30296351 DC

Publication history

First published November 2015

Amendments issued since publication

Date	Text affected

Contents

Summary of pages

This document comprises a front cover, an inside front cover, pages i to ii, pages 1 to 34, 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 30 November 2015. It was prepared by Technical Panel CAR/1/-/6, *Damage management*, under the authority of Technical Committee CAR/1, *Continuity and resilience*. A list of organizations represented on this committee can be obtained on request to its secretary.

Relationship with other publications

This code of practice builds on the existing BDMA Standards: Guidelines relating to the protocols and procedures for dealing with incidents or perils that damage properties [1].

Use of this document

As a code of practice, 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.

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.

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.

0 Introduction

0.1 General

This British Standard document aims to provide recommendations for good practice in organizing and managing stabilization, mitigation, remediation and restoration procedures necessary to control and recover such damage and restore equilibrium to those affected.

The recommendations can be used in cases of property damage or contamination caused by a wide range of incident types such as fires, floods, explosions and trauma scenes. It identifies generic processes applicable to specific incident types but does not advocate specific technologies or methodologies.

The standard does not extend to providing guidance on building repair and reinstatement. However, it is recognized that damage management is the primary phase of the overall repair and reinstatement process and is likely to involve interaction with other parties involved at various stages.

The standard's structure ensures it is relevant to all interested parties and covers all activities from incident occurrence to completion of the recovery phase (see Figure 1). It also provides users with a means of establishing whether these activities have been carried out and ensures those aiming to comply with the standard can demonstrate they have done so by means of the project records. Additionally, it will facilitate communication between those who might need to be aware of an incident's status at any stage of the process.

Depending on the type of incident, such interested parties might include government departments, the Environment Agency, emergency responders, local authorities, insurance industries, risk and facilities management sectors, emergency planners, surveyors, business continuity managers, recovery/restoration and damage management practitioners, building and property sectors, property owners or occupiers, managing agents and members of the public.

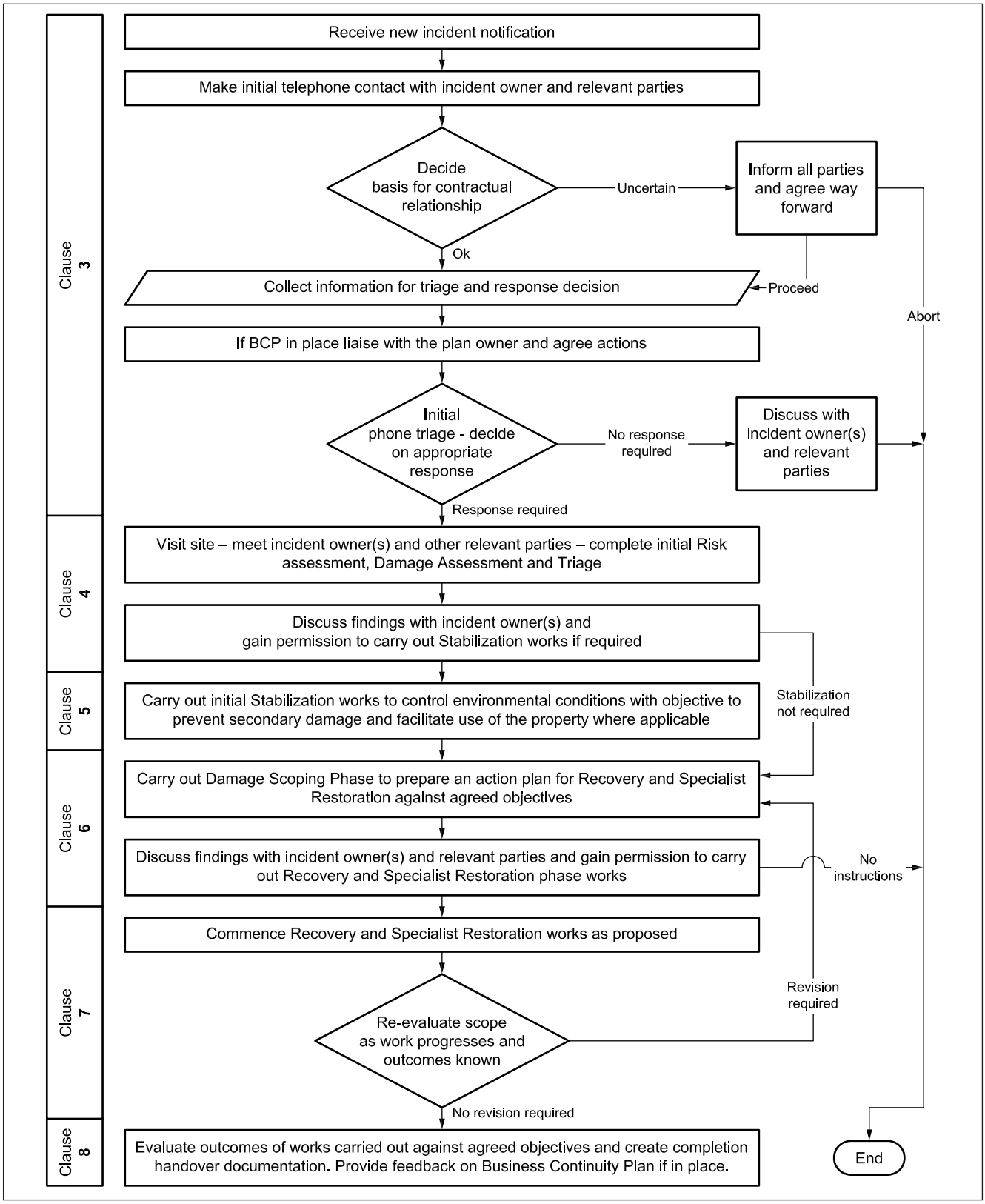
This standard encompasses the relevant information and current generic best practice in a format that is transparent, accessible and supports the consistent and systematic management of post-incident activities.

0.2 Damage management

Damage management encompasses the activities undertaken to assess and manage damage to properties and contents following an incident or peril in order to mitigate, stabilize, remediate, recover and restore said properties and contents to their pre-incident condition, up to the point of reinstatement works if these are required.

Professional damage management practitioners are expected to have the knowledge and expertise to deliver these activities in accordance with current best practice and available technology, aiming to provide solutions that are cost effective for the incident owner and restore normality for the affected parties. Damage management might be referred to alternatively by some sectors as damage restoration/disaster restoration (DR) or recovery and restoration (R&R).

Figure 1 **Overview of generic incident stages (flowchart)**



1 Scope

This British Standard gives recommendations for the organization and management of assessment, stabilization, mitigation and restoration of properties, contents, facilities and assets following incident damage.

This standard is intended to provide recommendations to individual damage management practitioners and organizations involved in carrying out damage management. It is applicable to domestic, commercial and public buildings.

*NOTE This standard might be of interest to property owners, their insurers and their respective agents; risk and business continuity managers and other interested parties identified in **0.1**.*

2 Terms, definitions and abbreviations

2.1 Terms and definitions

For the purposes of this British Standard, the following terms and definitions apply.

2.1.1 asbestos register
pre-existing document that contains information about asbestos containing materials that have been identified within a building

2.1.2 beyond economic restoration
category or item that is considered not able to be restored cost effectively when compared to the insurer's liability or the full replacement cost

2.1.3 completion
point at which agreed outcomes have been achieved

2.1.4 contractual relationship
basis on which the damage management company or the damage management practitioner (DMP) is employed and remunerated

2.1.5 customer
instructing party and/or the owner(s), occupier(s) or managing agent of the property (buildings and/or contents)

2.1.6 damage management
management of damage to properties and contents resulting from an incident or peril

NOTE Referred to by some sectors as damage restoration/disaster restoration (DR), or recovery and restoration (R&R).

2.1.7 damage management practitioner
individual carrying out damage management activity

2.1.8 environmental stabilization
to bring environmental conditions under control so that secondary damage is avoided or reduced, and that environmental conditions are suitable to return normal use to the property

2.1.9 handover
returning the property or part of the property and/or content items to an authorized third party

NOTE This could be the incident owner or it could be other parties contracted to carry out further work such as reinstatement.

2.1.10 incident owner(s)
customer or individual/organization appointed by the customer to act on their behalf

2.1.11 mitigation
steps to reduce the risk of further loss or damage occurring

2.1.12 peril
specific risk or cause of loss covered by an insurance policy

NOTE Examples include fire, flood, escape of water, windstorm or theft.

2.1.13 reinstatement
work carried out to replace structural materials, fixtures and fittings, services, and finishes damaged beyond economic restoration

2.1.14 restoration
act of returning the property or content item to acceptable or pre-incident condition

NOTE Acceptability is agreed by the DMP and the incident owner.

2.1.15 secondary damage
damage resulting from the residual effects of the original incident or peril but not directly caused by the incident itself at the time of occurrence

EXAMPLE Damage, such as mould growth and timber distortion, caused by continued elevated humidity, or corrosion or staining caused by extended exposure to highly acidic fire residues.

2.1.16 sign off
agreement by the customer that agreed outcomes have been achieved

2.1.17 stabilization
successful control of the post incident environment to reduce or eliminate the likelihood of secondary damage occurring

*NOTE See **6.1** for information on damage scoping.*

2.1.18 strip out
removal of interior structural materials, fixtures and fittings, services, finishes and contents damaged beyond economic restoration

NOTE Might also be required to give access to damaged areas.

2.1.19 subrogated recovery
financial recovery of losses where a third party is held legally liable for causing the damage

2.1.20 targeted drying
process by which drying conditions are locally controlled and directed at a specific part of the building structure

2.1.21 triage
process for categorizing and prioritizing the most urgent actions to be taken, when delay is likely to lead to further deterioration, especially when resources are limited

2.1.22 utilities
supply of water, gas, electricity, telecommunications, and storm/waste water removal

2.2 Abbreviations

For the purposes of this British Standard, the following abbreviations apply.

BCP	business continuity plan
BER	beyond economic restoration
BIA	business impact analysis
CMC	claims management company
DM	damage management
DMP	damage management practitioner
MAO	maximum acceptable outage
MTPD	maximum tolerable period of disruption
OEM	original equipment manufacturer
R&R	recovery and restoration
SOW	scope of work

3 Damage incident instructions, intake and response planning

*COMMENTARY ON CLAUSE **3***

*In order for the project to be correctly completed, certain essential information is required (**3.1**). It is essential that this is amongst the first information to be gathered to enable the early response decisions to be made. These unexpected incidents are very disruptive to the incident owner/building occupants and users so the DMP needs to be prepared to respond promptly to each incident and to respond in a systematic and orderly manner.*

3.1 Initial information

The following initial information should be obtained by the DMP:

a) contact details for the incident owner;

b) evidence of any special circumstances/vulnerabilities that might necessitate a prioritized response;

c) contact details for a representative if one has been nominated by the incident owner;

d) the property address;

e) the usage and type of property;

f) incident date and details (including incident type, date, nature of event, what has been affected and any site access issues);

g) existence and nature of any insurance policy (if applicable);

h) contact details for relevant interested parties and references with their relationship to the incident and incident owner identified;

i) details of BCP if one exists; and

j) risk register if one exists.

NOTE 1 This information may come from intermediaries or directly from the incident owner. It could be partly available from an intermediary before the first contact is made with the incident owner.

NOTE 2 See Annex A for information on interested parties and intermediaries and their roles.

NOTE 3 See Annex B for information on BCPs.

3.2 Initial contact with the incident owner and relevant parties

Contact should be made with the incident owner or their nominated representative, to enable the initial information to be checked and further details clarified (see **3.4**).

NOTE In particular the details of the incident owner's experience of the impact of the incident on their personal, or working life, and on the operation of the entity involved in the incident if a non-domestic property. Knowledge of this impact and of the incident owner needs at this time is essential to inform the initial response plans; and to ensure the most effective response is provided to all parties involved.

3.3 Basis for a contractual relationship

The incident owner should be made aware at the start of the engagement who the DMP is, who they work for, what role they play in the damage incident, who they report to and how they can be contacted.

Instructions to proceed with any work required can only be received, and the required work progressed, with the consent of the incident owner.

NOTE 1 Any work carried out would normally be based on a commercial contractual relationship for the services being provided and the service provider remunerated accordingly.

NOTE 2 It is possible that this standard could be followed under a non-commercial, non-contractual relationship. It is essential that the nature and the potential character of the relationship are established at an early stage so that all parties can agree on what basis the service provider is employed and remunerated.

3.4 Information for desk-top triage and response decision

During the initial contact with the incident owner (see **3.2**), the DMP should evaluate the incident owner's current situation, the way in which they have been affected by the incident, the disruption that they are experiencing, and an early indication of their priorities and expectations for resolution and timescales.

NOTE 1 This information could include but is not limited to:

a) more information on the incident to understand the general disruption that the incident owner is experiencing; and

b) the current perceived levels of damage/contamination/disruption according to the incident owner (or their nominated representative or involved parties) in respect of:

1) the building (especially any effect that is preventing use of an area);

2) the contents (especially to items of significant value or function);

3) the business (especially in their ability to continue in operation).

The DMP should gather the following information (for desk-top triage purposes):

i. the current environmental conditions within the affected property;

NOTE 2 In order to determine the control measures required to mitigate the damage and prevent the onset of secondary damage.

ii. information on the extent of the damage;

NOTE 3 Number of rooms affected, number of floors, etc.

iii. the observable damage to the building in the areas affected;

iv. any access restrictions;

v. ongoing business/trading requirements;

vi. dangerous structures;

vii. listed or historic building status;

viii. the nature of the contents affected, and the observable damage or contamination;

ix. information on any observed or known environmental contamination issues;

x. if a commercial building, the existence and availability of its buildings health and safety file, asbestos register and details of other hazardous substances known to be present;

xi. for commercial and public properties, the existence of a BCP and whether it prioritizes any damage response issues;

xii. if a tenanted property, either residential or commercial, the nature of the tenancy agreement and liabilities/obligations under that agreement;

xiii. if an owned apartment within an apartment block, where the incident has had an effect on the building structure in any way, information on the management company and contact details for the persons who is dealing with the incident;

xiv. the likely financial impact of the incident disruption on the incident owner;

xv. a re-statement of the needs and priorities of the incident owner;

xvi. the potential for storage on-site of contents from the affected area, i.e.: upstairs, when the ground floor is water damaged;

xvii. any pre-existing defects or disrepair affecting the properties structural or functional integrity;

xviii. any health and safety issues that might need to be taken into account;

xix. any known action taken by other parties that could impact on the damage management activity.

The DMP should take steps to resolve any conflicting or contradictory information supplied by the different parties.

NOTE 4 Often a situation is unfolding at this time and so more information can become available over quite short periods of time. It's important to recognize this dynamic element and be alert to these changes and be prepared for updates. It is at this point that good communication is established to both reassure all relevant parties, and to ensure collaboration between all involved parties.

Once all of the required information has been gathered and considered an appropriate initial response plan should be formulated and recorded. The planned response should be confirmed with the incident owner and, if found to be acceptable, an appointment should be made for the initial site visit.

3.5 Interface with BCP

For commercial and public properties, once the DMP has established that a BCP is in place contact should be made with the BCP plan owner at the earliest opportunity. A copy of the relevant part pertaining to initial response damage management operations and recovery objectives, as well as business impacts, business priority activities and maximum acceptable outage should be reviewed and then discussed with the BCP plan owner. All actions to be taken should be in close collaboration with the BCP plan owner. It would be assumed that this collaboration would continue throughout the project when a BCP plan is in place.

NOTE See Annex B for business continuity and commercial property considerations.

In incidents affecting commercial property, if no BCP is available the DMP should consider using business continuity management principles when advising the incident owner. Application of these principles can be beneficial when defining scope and deliverables (see Table B.1).

4 On-site damage assessment

4.1 Purpose of the on-site damage assessment and preparedness to commence work

*COMMENTARY ON **4.1***

The purpose of the initial site visit is to verify that the information already received is accurate and up-to-date, to carry out a visual and technical inspection of the damage, and to determine which measures need to be applied immediately to mitigate the damage and prevent the onset of secondary damage.

Any initial site visit should take into account that for some incidents the police normally co-ordinate the activities of those responding to a land-based sudden impact emergency, at and around the scene.

NOTE 1 There are however exceptions, for example, a fire and rescue authority would co-ordinate the response at the scene for a major fire.

NOTE 2 For the police, as for other responders, the saving and protection of life is the priority. However, they also ensure the scene is preserved, so as to safeguard evidence for subsequent enquiries and, possibly, criminal proceedings. Once life-saving is complete the area is likely to be preserved as a crime scene until confirmed otherwise.

NOTE 3 For major incidents the local authority plays an enabling role in close collaboration with a range of bodies which are not routinely involved in emergency response, e.g. building proprietors, land owners, etc.

In other incidents, where there are variables such as significant impact on building structure and/or contents and more complex needs/priorities of the building users, there is usually a need for a more detailed inspection and analysis and, potentially liaison with a wider range of involved parties, to take place before any damage mitigation/restoration work can commence.

During the inspection process a response plan should be formulated by the DMP and appropriate resources placed on standby to enable an efficient response to be made once approval for action is obtained.

NOTE 4 The purpose of this "preparedness" and the potential for the prompt arrival of damage management practitioners equipped with the resources to stabilize the environment is a key benefit to the incident owner in terms of overall project duration and cost, where the quick response can reduce secondary damage, further loss and timescale and facilitate earlier reuse of the property.

4.2 Initial site visit introductions and risk assessments

On this visit the DMP normally meets with the incident owner or their representative(s) and should re-state their role in the management of the incident, to ensure this is clearly understood.

The first stage of the inspection process is to validate the information received during the desktop assessment with the incident owner. The site visit should provide a first opportunity to validate the client's understanding of the situation and their needs. This applies to personal priorities and vulnerabilities, and key elements of any BCP or recovery plan.

The DMP should ensure the information is accurate and up-to-date, note any discrepancies and inform all relevant parties.

This initial damage assessment should be carried out by a DMP. As part of the ongoing assessment of risk the DMP should ascertain from the incident owner any general or specific health and safety issues to be considered before entering the property to start the inspection.

From this information and the DMP's own observations a detailed risk assessment should be carried out, based on all the information received and specific personal observations. Risks should be reassessed on an ongoing basis throughout the duration of the recovery process.

4.3 Damage assessment and triage

Prior to the commencement of the inspection the incident owner should be consulted again on their view of how the incident has impacted them in the short, medium and long term in terms of their buildings, contents, use of the premises and, where appropriate, business interruption.

NOTE 1 This process of checking and double checking is repeated regularly to verify all information has been understood correctly and allow the incident owner to add information as their situation changes and develops.

A visual inspection and a detailed technical assessment of the extent, severity and consequences of the damage should be carried out and communicated to the incident owner, associated parties and where appropriate the BCP owner.

Using all the information gained, the DMP should identify inspection methodology and equipment for investigating the extent, severity, and impact of the damage or contamination to the property and contents for the different types of incident that could be encountered.

NOTE 2 See Annex C for information on inspection methods and equipment.

NOTE 3 During the inspection, but dependent on the nature of the incident and the type of inspection being carried out as described in Annex C, it might be necessary to carry out test processing of affected materials surfaces or items with a range of products to determine if a return to pre-incident condition is achievable and acceptable.

The specific types of activities described in Annex C should be applied to all aspects of the damaged and contaminated areas to determine what has been affected, how it has been affected, and if the affected material can be economically restored and returned to a pre-incident condition.

Regardless of whether the building has suffered damage the DMP should take note of the type of the building, its construction, approximate age and size and any features that might influence the recovery approach, including pre-existing problems.

The DMP should carry out, for all types of conditions, a detailed visual technical inspection on a room-by-room, area-by-area basis of the affected building, noting dimensions and floor plans if required. Construction detail should be noted and damage photographed and described, including reference to any perceived defects/disrepair not resulting from the incident that might impact or influence stabilization or reinstatement. The DMP should inspect all affected construction elements, surfaces, material, and contents and equipment, etc. where instructed and document their damage and contamination condition.

Based on the incident owner and incident type the DMP should be able to assess which contents are deemed important and then should focus their inspection efforts on these first, to ensure correct prioritization in the initial stages of the recovery work.

Where practical, the DMP should prepare lists of affected contents on a room-by-room, area-by-area basis, noting the nature of the item, manufacturer details, nature and extent and severity of damage, and feasibility and cost of restoration. The incident owner should be consulted on the value and importance of affected items. Items which are, in the view of the DMP, BER should be listed.

During this inspection and on completion the DMP should update their hazard and risk assessments to satisfy themselves that they understand the risks that they and the incident owner might face.

Once the inspection has been completed the DMP should consider any other key issues before communicating their recommendations.

4.4 Discuss findings with incident owner and gain permission to carry out required stabilization works

The DMP should provide an overview of their inspections findings to relevant interested parties particularly regarding any emergency stabilization that might be required. This should include a briefing on the options for recovery of contents and equipment and advice on any immediate actions that might be necessary to prevent deterioration of the buildings and contents. Agreed actions should be documented.

Before commencing any emergency stabilization restoration work the DMP should receive authorization from the incident owner or instructing party.

5 Stabilization

5.1 Objective

The objective of this phase is to ensure that environmental conditions within the damaged property are brought under control to prevent further deterioration and the onset of secondary damage.

*NOTE See Clause **4** and Annex E for information on secondary damage.*

The DMP who is required to carry out the damage stabilization work should review the damage assessment findings and ensure they have sufficient resources to carry out the work. On smaller, less complicated damage incidents it is usual for the DMP to carry out both the initial damage assessment then proceed to the damage stabilization work.

5.2 Liaison and works authorization

There should be close liaison between relevant parties; including the DMP making the initial inspection, the DMP carrying out the work (if different), as well as the incident owner and other involved parties and contractors to ensure everyone understands the actions to be taken, the timescales and, where appropriate, costs involved, and the impact on any occupants. During the above process, and prior to the commencement of work, appropriate authorization and instructions should be sought by the DMP from the incident owner and/or interested parties.

NOTE 1 The intention is to avoid any unnecessary delays to the stabilization activities.

NOTE 2 For a major incident, a local authority usually leads the recovery process and is responsible for planning for the recovery of the community following any major emergency, supported by other local partners via the local resilience forum. It will have a wide range of functions that are likely to be called upon in support of the emergency services during both emergency response and recovery.

NOTE 3 The local authority will play an enabling role in close collaboration with a range of bodies which are not routinely involved in emergency response, e.g. building proprietors, and land owners, etc. This might be enabled and co-ordinated by a local resilience forum. This includes: clean-up of pollution and facilitate the remediation and reoccupation of sites or areas affected by an emergency; and liaising with insurers to ensure that insurance industry personnel and/or their representatives have appropriate access to the scene.

5.3 Health and safety and stabilization works

Prior to commencement of stabilization work the DMP should ensure they understand and comply with all health and safety requirements pertaining to the work to be undertaken (see Annex D for information about on-site health and safety issues).

All risk assessments should be updated and communicated to all interested parties.

Work carried out in this phase should be done in accordance with Annex E.

5.4 Contents protection and disposal of BER items

Sensitive or vulnerable items (namely items at risk of secondary damage or items of especial sensitivity to the changed ambient conditions) should be recorded and then removed from site. If conditions allow, they should be suitably protected from deterioration or moved to an unaffected area on-site.

It is usual for contents or building items deemed BER to be recorded and removed for appropriate disposal (subject to approval of the relevant parties) at this stage if their continued presence is adversely affecting the environmental conditions and potentially causing further deterioration to other items.

The DMP should liaise with the incident owner regarding security in relation to protection or disposal of all assets including data and/or sensitive information unless prior instruction has been received.

NOTE 1 See Annex B for information on data and information security.

For items of particular personal or sentimental value, e.g. antiques, fine art, etc., DMPs should not assume that they cannot be restored. Options for restoration should be considered as a matter of course. If necessary, the DMP should obtain a specialist opinion and a cost estimate.

NOTE 2 There are many specialist restorers and conservators who can return badly damaged items to their previous condition. This includes things such as papers, photographs, certain fabrics, jewellery, ceramics, artwork, antique furniture, etc. In addition, personal belongings that have been heavily contaminated during flooding can, in many cases, be returned to those affected in time.

NOTE 3 In the case of valuable items it can be more cost effective to restore than replace even if the item is significantly damaged.

5.5 Stabilizing environmental conditions to prevent secondary damage

On completion of the initial stabilization works the DMP should check the environmental conditions to ensure that they have been altered sufficiently to prevent secondary damage and to slow the rate of deterioration of susceptible items, materials, and surfaces, etc. Scheduled checks should be made and operating parameters altered as and when required to ensure that the environmental conditions established remain stable.

6 Damage scoping

6.1 Objective

During this phase the DMP should prepare a detailed action plan. The action plan should comprise outcomes of works to be carried out against agreed objectives for any longer term stabilization, drying, decontamination and restoration of the affected property and contents that might be required. More detailed and complex damage scoping is most commonly required on larger, multi-faceted damage incidents and, for commercial property, the scope should take into account the recovery time objectives identified by the relevant parties.

6.2 Scopes of work (SOW)

The action plan should take the form of a scope or series of SOW covering the activity to be undertaken. All SOW should cover health and safety requirements, cost effectiveness, work costs (if appropriate) and timescales, work methods, resources and which quality assurance methods are to be used to demonstrate that the work has met the defined acceptance criteria.

Dependent upon the nature of the incident, SOW should be prepared, setting out, for example, how the property is to be fully dried, decontaminated, de-odorized or sanitized.

Property damage restoration works should be carried out in accordance with Annex F.

Where contents are affected, detailed SOW should be prepared for how they are to be identified, listed, disposed of when deemed BER or beyond reinstatement, once agreed with interested parties. If required, they should be removed for off-site restoration/storage, decontaminated, repaired/refurbished, returned and serviced/re-commissioned.

Contents damage restoration activity should be carried out in accordance with Annex G.

6.3 SOW approval

Once prepared, the SOW should be issued as soon as possible to the instructing/interested parties for consideration, discussion and approval prior to implementation.

7 Damage recovery and restoration

7.1 Objective

NOTE The objective of this phase is to carry out all of the required work previously identified in the scope(s) of works.

The works should be carried out by DMPs in line with the agreed SOW(s) following agreed methodologies and protocols.

7.2 Liaison and works authorization

There should be an agreed method for liaison between all parties; including the DMP that prepared the SOW(s), the DMP(s) carrying out the work, (if different), as well as the incident owner and other involved parties to ensure everyone understands the actions to be taken, the timescales and, if appropriate, costs involved, and the impact on any occupants.

Prior to the commencement of work, the DMP should request and receive appropriate authorization and instructions from the incident owner and/or interested parties.

7.3 Health and safety and damage recovery works

Prior to commencement of the works the DMP(s) should ensure they understand and comply with all health and safety requirements pertaining to the work to be undertaken.

NOTE See Annex D for information about on-site health and safety considerations.

During the works the DMP should keep the original SOW under review and modify it in the light of developments/discoveries made on or off-site. The interested parties should be informed as soon as possible of any potential variations to the SOW, including potential impact on cost and timelines, and approval obtained for these variations.

Where the success of restoration might be affected by the time taken to commence repairs, the DMP should highlight the urgency of authorization to proceed.

7.4 Quality assurance

During the works, and at their completion, the DMP should carry out quality assurance testing against the previously defined acceptance criteria appropriate to the incident and work type to ensure and demonstrate the work has been carried out correctly.

Quality assurance testing should be carried out in accordance with Annex H.

8 Completion, sign-off and handover

The DMP should evaluate outcomes of the work carried out against defined acceptance criteria (see **6.2**) and create completion handover documentation.

At the completion of the works the DMP should provide all relevant documentation to the interested parties to demonstrate the work has been completed and the acceptance criteria met. The DMP should obtain sign-off that it is to the customer's satisfaction, prior to handover, to prevent delay, especially to any further works.

The DMP should request feedback from the customer for the purposes of continuous improvement.

NOTE Handover might be to the incident owner or to relevant third parties, including those engaged in reinstatement or further works. For commercial property, feedback to the BCP might also be appropriate.

Annex A (informative) Role of insurance sector stakeholders

COMMENTARY ON ANNEXA

Information on the insurance sector can be found at the websites [1] of the following organizations ABI (Association of British Insurers); CILA (Chartered Institute of Loss Adjusters); and BIBA (British Insurance Brokers' Association).

A.1 Insurance claims process – general overview

In the context of damage management many incidents result in the property owner making an insurance claim in connection with the damage and losses incurred.

The handling of insurance claims by insurance companies is a regulated environment with rules set out by the Financial Conduct Authority.

Depending on the nature and extent of the claim, insurers have processes in place to either handle and process the claim at the desk or appoint a loss adjuster to manage the claim in the field (see **A.2**). In some cases there will be arrangements in place via the insurance broker to handle claims under delegated authority schemes (DAS) (see **A.3**).

At high level the stages of any insurance claim are likely to be:

a) notification;

b) investigation;

c) negotiation;

d) settlement; or

e) subrogated recovery.

*NOTE With regard to a subrogated recovery action (see **2.1.19**), the insurer or adjuster might liaise with DMP to ensure relevant damaged items are retained for evidence or for a third party to view.*

Insurers might also take a proactive lead in assisting their customer in managing the claim activity, including subsequent reinstatement works, by utilizing the services of their own supply chain.

During the claims process, insurers might liaise with the customer's chosen representatives, agents, and/or their appointed suppliers.

A.2 Role of the loss adjuster

Following damage to property, a loss adjuster might be appointed by the property insurer to assist the persons or organizations affected. This includes, confirming what is covered by an insurance policy, and helping the affected person or organization in finding ways to reduce the impact of the incident.

To do this, the loss adjusters verify the cause and the extent of the damage. This is usually carried out as far as possible at an initial visit, however, for smaller incidents, a visit by a loss adjuster might not always be required. To ensure the full extent of the insurance policy cover is used the loss adjuster needs to understand the policy and usually needs to check details with the person(s) or organization(s) affected.

[1] http://www.abi.org.uk, http://www.cila.co.uk, and http://www.biba.org.uk [last viewed 2-11-2015].

Sometimes the damage, for a variety of reasons, might not be covered at all or only part of the damage might be covered. It is the loss adjuster's role to establish this. The loss adjuster tries to confirm cover as soon as possible. Assisting them by providing details they request speeds this process. If those affected do not understand why information is being requested, they receive a clear explanation from the loss adjuster.

Loss adjusters understand that those affected require reassurance and empathy, during what, for many people, is a very difficult time and it is important that there is excellent communication between the loss adjuster and those affected.

NOTE The Chartered Institute of Loss Adjusters sets the professional and ethical standards in loss adjusting for its members.

A.3 Role of the insurance broker

The role of an insurance broker is to place insurance cover on behalf of their client and negotiate with insurers in order to secure the best possible terms including extent of cover, premium, warranties and conditions within the quotation, reputation of insurer (including claims paying), financial credit rating of insurer and to meet the client's "demands and needs" for the insurance cover.

Insurance brokers can:

a) provide risk management advice to their clients to comply with the terms and conditions of the insurance policy and to prevent or control insurance losses;

b) assist their client at the time of a claim by, for example:

    1) advising where cover under the policy might attach;

    2) ensuring compliance with any claims conditions or warranties;

    3) notifying the claim to insurers; or

    4) helping insurers handle claims in a timely and fair manner.

Insurers might use loss adjusters to handle claims on their behalf. An insurance broker might prepare their client for and might also attend the meeting with the loss adjuster.

At the meeting the insurance broker can assist their client in demonstrating the following:

i. that the loss was caused by an insured event under the terms of the insurance policy;

ii. that the client had not been in breach of a policy condition or warranty;

iii. that the sum insured for items damaged by the loss were adequate at the time of the loss (e.g. for a building claim, showing a recent valuation by a chartered surveyor of rebuilding cost, or, for an organization's contents claim, an up-to-date inventory with replacement costs attached);

iv. the basis of settlement in accordance with the terms of the policy;

v. the amount of the policy excess, if the client is liable to make any payment for VAT and any other contributions to be paid by the client, for example a contribution due to betterment;

vi. an agreed set of actions by all parties following this initial meeting.

Once the basis on which the claim is to be handled has been agreed by all parties, the role of the insurance broker is to have oversight to help conclude the claim promptly and fairly.

Once settlement is agreed with the insurer, the insurance broker might arrange for collection of claims monies from insurers promptly.

NOTE Not all claims related incidents require the involvement of all of these activities.

A.4 Claims management companies (CMCs)

A CMC is a company or third party which obtains permission from the claimant to:

a) represent the policyholder in their claim;

b) advise a claimant or potential claimant about their claim or course of action;

c) investigate or commission an investigation of the circumstances, merits or foundation of a claim with a view to using the results to pursue a claim.

A CMC might take the form of claims managers, independent loss assessors, contractors, or other professionals including chartered loss adjusters, and can be used by any policyholder to deal with all aspects of their claim.

NOTE 1 A loss assessor is someone who can present the policyholder's claim on their behalf to the insurers. They might charge a fee for their services and the fee is not recoverable from insurers.

NOTE 2 All CMCs are required by law to be authorized by the Ministry of Justice or the FCA, or be the appointed representative of an authorized firm.

NOTE 3 Searches can be undertaken at the financial services register [2], or for the Ministry of Justice [3]. Further guidance for consumers on home insurance and the role of CMCs is available [4].

A.5 The difference between a loss assessor and a loss adjuster

A loss assessor is a representative who is typically appointed (and paid for) by the claimant. Some specialist policies might contribute to loss assessor fees.

The loss assessor might visit to assess the damage, and liaises with the insurer on the claimant's behalf. Fees cannot normally be claimed back through the claims settlement.

A loss adjuster is typically appointed by the insurance company and visits the claimant to assess the damage, then reporting back to the insurer. All fees are paid for by the insurer in addition to the claim settlement. Their role is to ensure that the claimant receives their full entitlement under the policy in a just and fair manner.

A.6 Claims management – other aspects

When taking responsibility for delivery and management of response to an incident, one of the key aspects is to ensure that appropriate specialists are engaged according to the nature and extent of damage that has occurred and the action required to manage or mitigate losses and facilitate reinstatement of the property or the function of the organization.

As well as the damage management specialist, other experts might be involved in the following areas:

a) forensic investigation;

b) asbestos testing and removal;

c) building surveying;

---

2) http://www.fca.org.uk/register/ [last viewed 2-11-2015]

3) http://www.claimsregulation.gov.uk/search.aspx [last viewed 2-11-2015]

4) https://www.abi.org.uk/~/media/Files/Documents/Consumer%20Guides/Home%20insurance%20and%20claims%20management%20companies.pdf [last viewed 2-11-2015]

d) structural engineering;

e) mechanical engineering;

f) electrical engineering;

g) drainage;

h) environmental conditions (internal and external);

i) building repair;

j) accommodation;

k) contents replacement;

l) forensic accounting;

m) salvage;

n) OEM and other specializations.

NOTE These specialists might also be engaged directly by the property or 'incident' owner, usually after consultation with the insurer.

Annex B (informative) Business continuity, commercial property and major incident considerations

B.1 General

Many incidents involve the emergency services responding to the incident site. When this occurs it is important that all interested parties become familiar with the roles and responsibilities of the emergency responders and in particular how incident scenes are managed.

Within the UK an integrated approach is applied to large incident emergency management based on the principles of contingency and emergency planning. The principles consist of:

a) pre-emergency elements of anticipation, assessment, prevention and preparation; and

b) response and recovery.

The emergency phase commences with notification of an incident to the emergency services, at this point the focus of the response is on the work of emergency services (if required) to save lives and prevent further loss of life. Allied to this is the relief of suffering, containing the emergency, communications and health and safety.

Within the UK, coordination of activities of the emergency services at an incident is the role of the Police [5)], it is important that site owners and DMPs are familiar with the designation of cordons around an incident scene and the implications these have with regards to access and responsibilities for the site.

Where specialist intervention may be required to stabilize the structure of a property to allow site investigations to be undertaken, companies providing such services should seek confirmation of who is in control of the site and the relationships between the emergency services and the site owners.

For larger scale events affecting communities, local authorities provide general support to the emergency services by providing the councils' normal functions at the scene to assist with, or take over responsibility for highways/traffic management, building/structure safety advice, community welfare and housing.

[5)] https://www.app.college.police.uk/app-content/operations/command-and-control/ [last viewed 2-11-2015]

The local authority usually leads the recovery phase for the community by establishing a 'multi-agency' recovery co-ordination group which works to consider the recovery issues from the incident. Consideration might be needed for long term issues including people, land and buildings and economic recovery. All agencies as well as some community representation are likely to be involved in this process. One of the key issues is to establish good two-way communication with the community including organizations and businesses.

During an incident the local authority also co-ordinates the work of voluntary sector organizations, provide for the welfare of displaced persons such as evacuees and survivors who have been involved in the incident.

In preparing to conduct an initial site visit and damage assessment it is a good idea that consideration be given to requesting, via the incident owner:

a) information from emergency services of any known hazards associated with the building/premises and the local environment;

b) confirmation of the content of handover of the site from the emergency services to the site owner;

c) arrangements for safe access and egress to allow a site visit to take place.

B.2 Recognizing the importance of business continuity and its influence on recovery decisions

Some commercial and many government organizations have BCPs in place which inform the actions to be taken and the priorities to be followed when planning a recovery. The principles of contingency planning are contained within a business continuity standard (e.g. BS EN ISO 22301:2014), which addresses the "capability of the organization to continue delivery of products or services at acceptable predefined levels following disruptive incident".

Within a BCP, a BIA (see Table B.1) is used to determine the recovery priorities of an organization's products and service through understanding the impact of a disruption on its reputation, finances and obligations. These product and service priorities dictate the priority of the activities which deliver them. Within the BIA the interdependencies and resource requirements (such as people, IT applications and suppliers) of each activity are also documented. This enables appropriate recovery strategies to be selected in advance as well as, during a disruption, enabling the implications of damage or loss of any resources to be understood. These basic principles might also apply to a domestic scenario.

Table B.1 **Business impact analysis (BIA)**

1	Identifies the products and services of the organization
2	Identifies the interested parties (e.g. customer) and the timescales of impacts of a disruption to product and service delivery would have on them
3	Assesses the point in time when such impacts become unacceptable as a result of those impacts
4	Understands how the organization's activities deliver those products and services
5	Documents the resource requirements of those activities
6	Enables a recovery time to be set for each product, service and activity so that delivery is resumed before the impacts become unacceptable

Recovery times are important in particular for products and services including the supporting activities. BS EN ISO 23301:2014 describes the period of disruption as "time it would take for adverse impacts, which might arise as a result of not providing a product/service or performing an activity, to become unacceptable." The following two terms are commonly used in this context:

1) maximum acceptable outage (MAO), or

2) maximum tolerable period of disruption (MTPD).

Where continuity plans exist these are used to inform the priority for recovery and restoration. The plans contain assumptions on recovery objectives and damage management companies benefit from understanding the BCP process. If continuity plans do not exist there is an opportunity to use the processes outlined in BS EN ISO 22301:2014 to advise the incident owner and to help define the business recovery project.

The DMP should refer to the BCP owner for guidance on the priority for recovery of assets and contents. When conducting the site visit the DMP would be expected to conduct an initial assessment of the status of these items.

Where the incident owner has issued instructions to the DMP for the recovery of contents then the role of the DMP with regards to specialist services for IT related assets, paper and data storage, machinery and equipment protection and recovery, etc., should be defined. This would normally also include clarification of the security arrangements necessary to protect personal and confidential information prior to recovery or disposal.

Annex C (normative) Inspection methods and equipment

C.1 Water damage

C.1.1 Environmental conditions

The DMP should measure the humidity and temperature conditions within the affected property and the ambient external conditions, where relevant. The DMP should be capable of interpreting these measurements, and evaluating the specific humidity and the effect of this on the stabilization and recovery strategy.

In addition, the DMP should evaluate the change in the moisture conditions of the affected buildings and contents materials following the incident.

NOTE 1 This is especially important with materials that are especially vulnerable to damage from elevated moisture, and consideration needs to be given to interstitial voids where moisture might be trapped.

Wherever possible this investigation should be carried out in a way that causes minimal damage to undamaged decorative surfaces or finishes of the materials being investigated.

The DMP should use instruments capable of measuring relative humidity, temperature, and material moisture content.

The DMP should understand the challenges of measuring different types of construction materials, including dense and lightweight materials, and within interstitial spaces and micro-climates within the building structure. As well, the DMP should be able to evaluate the moisture content within the material, not limiting the moisture assessment to the measurements taken of conditions on the material surface.

NOTE 2 An example of where investigation of interstitial spaces would be required is with timber framed properties where the external walls include vapour barriers, which are designed to inhibit the passage of water and so could prevent the release of incident related moisture.

C.1.2 Grey and black water contamination assessment

This assessment should initially be carried out with a visual inspection of the affected areas. Any concerns about contamination in interstitial spaces should be further investigated, potentially with some opening up of building structures for investigation, although this should be done in a way that reduces the impact and damage to these materials and surfaces.

NOTE Assessment of the standard of decontamination achieved can be by a visual check, combined with the use of clean white absorbent material such as cotton buds in tile grouting wall/floor boundaries and other difficult to clean areas. Additionally, cleanliness testing systems exist, for example those that test for the presence of ATP, which is a component of all living organisms, and present even when the organism is no longer viable. This can be particularly helpful because even non-viable organic detritus can be an allergen for some individuals. Also available are tests for the residual presence of proteins, also an indicator of poor decontamination.

Materials that are capable of absorbing contaminated water, such as textiles, should be viewed differently from other, non-absorbent materials, where decontamination can more easily be achieved.

C.1.3 Red water assessment

Where there is known specific contamination following red water incidents, the appropriate technique should be used to assess the contamination levels.

C.2 Fire damage

C.2.1 General

Assessment of fire damage contamination is initially visual. It's important to recognize that in certain fire conditions there is a strong tendency, due to temporary pressure differentials, for the internal parts of contents and some building structural components to be significantly contaminated. If this is thought likely then this should prompt an assessment that involves some internal inspection or opening up of these enclosed spaces.

The combustion of certain materials produces highly acidic fire residues. Where this is suspected, and where, if such residues were present there would be damage to vulnerable materials, an assessment should be made of the fire residues, and appropriate action taken to prevent corrosion damage or staining if highly acidic residues are discovered.

C.2.2 Fire residue odour assessment

Most fire incidents result in a degree of associated fire odour. It is important to assess whether this odour is likely to be very temporary, or persistent. This assessment can be achieved by looking at the circumstances of the fire, the appearance of the residue, and more importantly recognizing the strength and persistency after a period of days have elapsed.

NOTE 1 If the odour persists after all airborne particulates have been removed from the building, and after some days have passed, samples of suspect materials might be assessed in isolation.

NOTE 2 Sensitivity to odour can be subjective and can vary between individuals.

C.3 General observation about damage assessment

The DMP will also be aware that some items which are assessed and found to have been significantly and permanently damaged by the incident could remain of potential value, or require a more detailed expert assessment by OEMs or specialists and should be kept safe from further deterioration, even if these items cannot necessarily be restored to their pre-incident condition.

NOTE 1 Examples would be unique or irreplaceable items and equipment, important documents or photographs, items of sentimental value, or where the item has a residual value or utility even in its damaged condition. Close liaison with the owner of these items will be essential in this assessment.

NOTE 2 In some cases there might be evidence of damp that is not associated with, or resulting from, the incident or peril. Examples of unrelated dampness might include:

a) rising damp in walls caused by the migration of groundwater up walls where there are missing or damaged damp proof courses/membranes;

b) penetrating damp through walls where water is entering the building as a result of damaged brickwork/stonework pointing. Sources of water can be rain or damage to guttering and down pipes; or

c) condensation or relative humidity levels due to poor ventilation.

Annex D (informative) Description of on-site health and safety considerations

COMMENTARY ON ANNEX D

The Health and Safety Executive's (HSE) mission is to protect people's health and safety by ensuring that risks in the workplace are properly controlled [6]*. HSE regulates health and safety in nuclear installations, mines, factories, farms, hospitals, schools, offshore gas and oil installations and other workplaces. It also regulates the safety of the gas grid, railway safety, and many other aspects of the protection of both workers and the public. HSE's remit encompasses the workplace health and safety of other responding agencies.*

D.1 Asbestos

Unexpected property damage can occur to buildings where asbestos containing materials are present. Asbestos has been used for many centuries and is widely used in buildings in current occupation. In normal use these materials can be safely installed and present no exposure risk. Following fire or water damage there can be a potential hazard if these materials are damaged and become airborne, as a result of the incident or the proposed works.

NOTE Attention is drawn to the Control of Asbestos Regulations 2012 [2].

D.2 Exposure to contamination from grey and black water incidents

Typical hazards are potentially infectious micro-organisms and other contaminated materials that might have been picked up by the water.

D.3 Red water incidents

The type or level of any specific contaminant will define the hazard in incidents of this type.

D.4 Building stability

Following a severe fire, explosion or damage from deep moving water, parts or all of the affected building could be unstable. Pre-existing hazards might also need to be taken into account.

[6] http://www.hse.gov.uk [last viewed 2-11-2015]

D.5 Air quality

Poor air quality following a fire and some water damage incidents is a potential hazard. The potential risk following fires is from exposure to particulates, aerosols and off-gassing condensed fire residues. There is a potential poor air quality risk following contaminated water incidents and in the case of aged water damage incidents (see **K.3.2**) the presence of airborne mould particulates might be a risk for some individuals.

D.6 Pre-existing health issues

Unexpected incidents often cause disruption and associated stress which can potentially have an effect on health.

NOTE Predisposed individuals might be more vulnerable in these circumstances.

Annex E (normative) Description of damage stabilization works

E.1 Water damage – control of relative humidity conditions

The control of the relative humidity conditions following water damage incidents is particularly critical. Hygroscopic materials, many of which are vulnerable to elevated moisture levels, have a moisture content in equilibrium with the relative humidity of their environment.

NOTE 1 The post water damage incident environment inevitably has elevated humidity conditions, and these should be returned to an appropriate humidity level for the property and its environment as soon as reasonably possible, preferably within a few hours or a day or two, to avoid damage to vulnerable materials. The techniques used for this should include but not be limited to:

a) removal of laying water;

b) removal of saturated ruined contents or building components;

c) reduction in relative humidity by various means such as:

1) discharging moisture from the property to the exterior if conditions are suitable;

2) the use of temporally installed dehumidification and/or air movement equipment.

If investigation reveals trapped interstitial moisture associated with vulnerable building materials (materials which would rapidly deteriorate in elevated moisture conditions, such as plasterboard where mould growth very rapidly occurs) then action should be taken within the stabilization phase to prevent deterioration and environmental impact by suitably targeted remedial actions (see Clause **5**).

NOTE 2 Equilibrium moisture content (EMC) is the moisture content of a hygroscopic material when it is neither losing nor gaining moisture (when it is in equilibrium with its environment). This is a dynamically changing equilibrium and it alters as temperature and relative humidity (RH) levels change. If RH levels remain high some hygroscopic materials, such as paper and plasterboard, quickly increases in moisture content to a point where there is sufficient moisture in the material to support mould growth.

E.2 Fire damage

*COMMENTARY ON **E.2***

If corrosive residues have been discovered during the inspection phase, or are suspected of being present and where damage can occur, the reduction of relative humidity below 60% RH inevitably inhibits this damage from occurring. This can sometimes be achieved by controlling the whole environment, or individual at risk items could be encapsulated in an environment where the humidity is controlled below this level.

Where acidic fire residues are present, further action should be taken in the stabilization phase to target the vulnerable components for special attention and initial action. Consideration should be given to vulnerabilities of those items at risk and the DMP needs to take into account the complexities of certain types of expensive equipment, when considering the actions and scope of initial work during the stabilization phase.

Items at risk of damage from strongly acidic residues are not limited to items that could corrode but also include plastic materials such as UPVC windows and doors that could become stained from prolonged exposure. Wherever possible, prompt selective decontamination should be undertaken to arrest this.

The floor surfaces or floor coverings are contaminated following a fire. To reduce spread of this by foot traffic, which could possibly extend the area of staining, the floor or floor coverings should be decontaminated at an early stage.

Annex F (normative) Property damage restoration works

F.1 Water damage

The DMP should, wherever possible, include restoration techniques that enable a reduction, cost effectively, in the scope of subsequent building works required as a result of the incident.

The DMP should make every effort to avoid strip-out where economically viable alternative solutions can often reduce timeframe and overall costs in addition to being more environmentally beneficial.

NOTE For example, targeted drying methods, which create a controlled environment local to the affected material and greatly increase effectiveness, can prevent potentially vulnerable materials from being damaged, and have the potential to significantly reduce the amount of building materials that need to be replaced, whilst also contributing to environmental sustainability targets.

During the drying phase of the building, where the objective is to return the property to its pre-incident moisture condition, the DMP should give consideration to the moisture conditions throughout the property and should avoid inadvertently transferring the potential for water damage to initially unaffected parts of the property.

Wherever possible, the DMP should take action to avoid damage arising from the creation of differential drying conditions on either side of potentially vulnerable building materials, such as wood.

The release of trapped moisture from interstitial spaces, if economic and viable, can reduce the overall recovery duration, and project cost; the DMP should consider the viability in the SOW.

F.2 Fire and smoke damage, and smoke odour

The type of incident (see **K.4**) changes the technical demands and likelihood for successful restoration of affected items. The DMP should make an assessment of the incident type as classified in Annex K so that an appropriate SOW can be initiated.

NOTE 1 With many incidents the fire odour is not persistent and dissipates over several days. However, this is not the case with all incidents. Annex K describes the types of incidents that can produce persistent smoke odours. Where odours from such incidents have penetrated into absorbent materials, such as wood, textiles or plaster and render, then an early assessment and evaluation is very helpful. This is to ensure that a proper odour evaluation is carried in controlled conditions with the objective of ensuring that an appropriate scope of works is proposed. The purpose is that the fire odour does not remain at the end of the re-instatement.

NOTE 2 Generally, when carrying out test decontamination of affected materials, it is important that an assessment is made of the success in good light conditions and preferably an odour free environment, if odour is known to be a problem. The human nose is quickly desensitized to any particular odour and so an odour assessment cannot be made after spending time in an environment where there are ambient fire odours.

NOTE 3 Certain types of fires burn at high temperatures and during the spread of smoke through a building there are momentary pressure differences between the hot smoke filled room environment and the cooler internal spaces within cupboards, equipment and some ventilated building voids. The cooler internal spaces are at a lower pressure and so in these cases smoke is forced into these voids. This can result in contamination of these internal spaces to a greater degree than the untrained eye would expect. Full decontamination of the incident usually requires that these partially hidden fire residues be removed.

More generally fire residues are difficult to remove from absorbent surfaces and the DMP should ensure that methods are used that will avoid staining.

F.3 Resilient repairs

Some resilient measures might increase overall costs and, if considered as part of a claim, the incident owner should liaise with the insurer to obtain agreement to incorporate such solutions.

NOTE Some building materials are more resilient to water damage than others and flexibility for resilient repair can also be determined by the inherent design of the building. Insulated ground floors, for example, which are common in property built from the 1990s onwards, might present difficulties.

Annex G (normative) Contents damage restoration works

G.1 Water damage

Contents materials are generally more vulnerable to exposure to moisture than resilient building materials; for this reason the recovery of normal moisture conditions should be carried as soon as possible, to offer the greatest likelihood of successful restoration. The DMP should take appropriate action to reduce or alleviate further damage to contents.

NOTE This could mean that at risk contents could be moved to an area with better environmental conditions which might be within the affected building, or at a different location. Some items, such as documents, books and textiles can be frozen to prevent further deterioration until an action plan can be agreed.

A cost benefit analysis should be carried out by the DMP for proposing these works.

G.2 Grey and black water contamination

The DMP should make an assessment of the vulnerabilities of the affected contents materials, and the items themselves, to assess the potential for successful decontamination and return to their pre-incident condition.

The decontamination techniques should achieve a result as close as possible to the pre-incident condition when the item is returned to the owner.

The owner might in some circumstances, depending on their use or significance of the item, and the financial aspects involved, be willing to accept the presence of residual staining or visual evidence of the contamination, and their instructions should be requested before considering an item to be BER.

G.3 Fire damage

NOTE 1 Because fire residues vary so much in their makeup and physical characteristics, contents items which appear to be heavily contaminated can sometimes be readily decontaminated if the residues are in the form of loose particulates. Depending on the nature of the fire, restoration of contents items contaminated with fire residues can often be achieved. In many cases contents which appear to be irretrievably damaged can be restored.

In the case of items requiring a specialist restorer or conservator, if the DMP does not have the relevant expertise then the engagement of such a specialist to assess and advise should be sought, especially where items are of personal or financial significance.

NOTE 2 Such items might include photographs, documents, antiques, fine arts, electrical goods, IT equipment, and plant and machinery.

Annex H (normative) Damage management assurance methods

H.1 General

The DMP should define and refine the scope of works and the activities thought appropriate to achieve the desired result as the project progresses.

The DMP should ensure that the scope of work has been carried out, or changes noted, where appropriate, and ensure that suitable checks are carried out on the achievement of the work outcomes specified in the scope or scopes of works.

H.2 A retrospective and the BCP

If the incident involved a business or commercial property, on the completion of the work covered by this standard the DMP might have been able to observe the adequacy of the BCP. In this case, the DMP should provide feedback, including observations and suggestions that might contribute to improvements to the BCP.

NOTE If no BCP exists the DMP could provide observations that would be helpful if one were to be developed and implemented.

Annex I (informative) Repair/reinstatement activity

In some cases, following this standard could result in avoiding the need for reinstatement and repairs. However, if required, reinstatement and repair works could either follow on after completion of the works described in this standard, or be partly concurrent with it. In either, case the DMP needs to be aware of the potential need to liaise during the project or at handover with the reinstatement and repairs contractor.

The subject areas described in Table I.1 might be relevant to repair reinstatement activities.

Table I.1 **Repair/resinstatement works**

Activity	Subject area
Pre-contract activity	a) Construction (Design and Management) Regulations b) Asbestos management c) Contamination and pollution d) Dangerous structures e) Strip out control f) Recovery and restoration sign off g) Design responsibility h) Contractor selection
Reinstatement scope	a) Repair standards b) Building regulations c) Planning considerations d) Listed buildings e) Production of repair scopes f) Insurance aspects (betterment) g) Agreement of repair scope h) Sustainability
Procurement	a) Building contracts – options b) Risk based approach c) Dayworks d) Schedule of rates e) Traditional tendering f) Prime cost contracts g) Design and build h) Management/construction management i) Acceleration costs j) Contract insurances
Repair process	a) Contract administration b) Contract period c) Pre contract meeting d) Supervision e) Variations f) Valuations g) Completion h) Liquidated damages i) Retention j) Defects liability

Table I.1 **Repair/resinstatement works**

Activity	Subject area
Risk improvements and resilience	a) Flood resilience and resistance b) Fire risk improvements c) Explosive risk improvements

Annex J (informative)

Stakeholder route map

Table J.1 gives examples of potential stakeholders.

Table J.1 **Stakeholder route map**

Role	Examples of potential stakeholders
Incident owner	a) Building owner b) Leaseholder/tenant c) BCP manager d) Management company e) Facilities manager f) Adjacent/shared owner (Party Wall for example) g) Neighbour (access requirements)
Public bodies (local and national)	a) Local Authority b) Building Control c) Conservation Officer d) English Heritage e) Environmental Health f) Highways Agency g) Fire and rescue services h) Environment Agency i) Police services j) Ambulance services k) Public Health England l) Public Health Wales
Insurance	a) Insurer b) Broker c) Loss Adjuster d) Loss Assessor e) Claim Management Company f) Forensic Investigator g) Fraud Investigator

Table J.1 **Stakeholder route map**

Role	Examples of potential stakeholders
Project management	a) Building Surveyor b) Architect c) Structural Engineer d) M&E Consultant e) Cost Consultant/QS f) Damage Management Contractor g) Building Contractor h) Asbestos Contractor

Annex K (informative) Specific incident types

K.1 Water damage incidents

K.1.1 Escape of water

Escape of water incidents usually occur inside a building where the escape is from a fixed water installation and can be sub-divided by the source of the water, which might include:

a) broken water pipe or long-term leak;

b) broken sink/bath/foul drain pipe or long-term leak from same source;

c) blocked drain and/or sewage back surge;

d) broken heating pipe, water-filled radiator leak or long-term leak from same source;

e) accidental discharge from washing machine or dishwasher or long-term leak from same source;

f) water pipes servicing extinguishing systems;

g) accidental release of sprinkler systems; and

h) burst pipes due to freezing, which can result in multiple points of escape.

K.1.2 Flooding

Flooding incidents have usually originated from outside a building and are sub-divided as follows.

a) Localized surface water flooding: run-off from surrounding land following exceptional rain.

b) Pluvial flooding: arising from the capacity of the drainage system being over-reached.

c) Fluvial flooding: from overflowing rivers.

d) Coastal and estuarine storm surge.

NOTE Each incident can have different characteristics in terms of nature of contamination, duration and depth of floodwater. For example, the route by which flood water enters the building might include backing up of foul water systems, or temporary raising of the water table.

K.1.3 Wind and storm

Water damage incidents occurring as a result of a storm involving strong winds are usually accompanied by other physical damage to the property resulting in water ingress. The usual source of the water is rainwater.

NOTE Wind storms can occur without associated rain or water damage.

K.1.4 Fire

Water damage following a fire is usually accompanied by other physical damage and smoke contamination to the property. The initial source of the water is usually fire fighting extinguishing water (including sprinklers) but subsequent to that it can be rainwater or leakage from damaged pipes.

K.2 Water contamination categorizations

K.2.1 General

The type of water involved in an incident is categorized as in **K.2.2** to **K.2.5**.

K.2.2 Clean water (category 1)

Typically an escape of potable water from the mains supplied water system where the escape occurs within the building. It is possible that a clean water escape could become contaminated in certain types of buildings if it travels through contaminated areas, in which case it can be identified under appropriate alternative category.

K.2.3 Grey water (category 2)

An escape of water from within the property where there is some degree of contamination and/or where the water quality will deteriorate and become increasingly contaminated with time. Examples would be the wastewater from a washing appliance, or from sinks and baths. Water from these sources often escape unnoticed into building voids where, in the right temperature and other conditions, bacterial growth can result in reclassification as a black water contamination.

K.2.4 Black water (category 3)

Usually external floodwater or storm or sewage contamination flooding into the building but an escape of foul-water from the internal sewage system, or backing up of that system, would also be categorized as black water. Fire suppressant water used by the fire service will usually be contaminated with the products of combustion so this too will be categorised as black water. The black water category includes sewage, storm flooding, river-water, seawater and run-off water from rain storms.

The levels of some biological contaminants, especially in black and grey water, can increase where decontamination is delayed.

K.2.5 Red water

Incidents where external floodwater has become contaminated with substances of a known hazardous nature, such as flooding affecting industrial or agricultural premises. Control of contamination in red water, such as water containing fuel oil or chemicals from industrial or agricultural premises, might need to be performed by specialist contractors.

K.3 Other useful categories of water damage incidents

K.3.1 Vertical incidents

Incidents where water ingress, or an escape of water, affects any floor other than the lowest. Vertical incidents indicate the possibility that water will have moved through the building structure to the floor or floors below. These incidents are much more difficult to assess because of the variable pathway taken by water as it moves across ceilings and through walls. It is much more likely to affect the electrical system, with the associated hazards. Additionally, it can pick up contamination from within some types of building voids.

K.3.2 Aged incidents

Incidents where there has been a delay in the discovery of the problem, perhaps because of an escape of water that is hidden in the building structure, or where an incident has not been adequately stabilized early enough. With the delay present in aged incidents there is a much greater likelihood of secondary damage having occurred. For example, if the delay was very prolonged there could be timber rot and even with shorter delays, mould growth on vulnerable materials. Prolonged high humidity in a building alters the equilibrium moisture content of all the hygroscopic materials in that environment. This can result in there being sufficient moisture in those materials to support mould growth, or to swell and distort materials such as timber. In both these situations the affected material might not have had direct contact with the water, but has been indirectly affected by the sustained abnormally high relative humidity conditions.

K.4 Fire and smoke damage incidents

K.4.1 Categorization

Categorization of fire and smoke damage incidents is typically dependent upon the following:

a) property type;

b) materials burnt;

c) timescale of fire;

d) temperatures reached;

e) mass of material;

f) proximity;

NOTE 1 Radiated heat affects all similar materials equally, in all directions.

g) location – convected heat.

NOTE 2 Materials high in the structure are more affected than those at ground level.

These factors determine the extent and severity of thermal damage and soot/smoke contamination. Whilst thermal damage is usually categorized as being somewhere between minimal and severe, soot/smoke contamination is usually categorized as discussed in **K.4.2** to **K.4.6.**

K.4.2 Oxygen deficient fires

Oxygen deficient fires are generally deemed to be slow-burning/smouldering low temperature fires where the fire is contained inside a room/enclosure and "deprived" of air. They tend to produce:

a) "wet" residues - higher proportion of liquid particulates (aerosols) which condense on surfaces;

b) persistent smoke odours that penetrate porous/absorbent materials;

c) persistent staining especially of porous/absorbent materials.

K.4.3 Oxygen rich fires

Oxygen rich fires are generally deemed to be fast-burning high temperature fires that spread rapidly and have a ready supply of air. They tend to produce:

a) 'dry' smoke/soot deposits – lower proportion of aerosol deposits;

b) warmer, high-energy air tends to move to lower energy, cooler areas – this can lead to extensive contamination within enclosures such as cupboards, equipment and air ducts;

c) significant thermal damage.

K.4.4 Protein fires

Protein fires usually involve the combustion of animal derived material such as foodstuffs, leather furniture, etc. Characteristics of such fires are:

a) extremely odorous fire deposits, with smell of item burnt;

b) fire deposits that are sometimes very heavy/greasy, and often invisible to the naked eye;

c) fire deposits and odour, which are often very difficult to remove.

K.4.5 Plastic consuming fires

Where plastics, [in particular polyvinyl chloride (PVC)], are consumed in a fire, of whatever nature, there is a high likelihood that acidic fire residues will be generated along with soot and smoke. These acidic fire residues can cause:

a) the rapid onset of corrosion on bare metal surfaces, which results in damage to printed circuit boards, machined surfaces, protective oxide surface deposits etc.;

b) damage to textiles and paper based materials;

c) rapid staining on some surfaces and discolouration of plastic surfaces.

K.4.6 Oil and rubber consuming fires

Fires of whatever nature in which mineral based oils and/or rubber based materials are burnt tend to produce:

a) oleophilic (affinity for oils) soot/smoke deposits that are oily, sticky and odorous in nature; and

b) smoke/soot deposits that cause rapid staining on porous surfaces and can discolour plastic surfaces e.g. window frames.

In the majority of fires several different types of materials will have been burnt and as a result different types of residues and categories of damage can be present at the same time, which can be further complicated by the effects of smoke/soot movement and varying temperatures in the building. Generally the products of combustion can contain compounds potentially injurious to health and so this needs to be borne in mind when carrying out the risk assessment.

K.5 Storm damage

Storm damage is categorized by damage that is caused by wind, usually accompanied by rain, hail or snow. Storm damage can occur to both buildings and contents and can be seen as physical damage as well as water saturation.

K.6 Explosion damage

Damage can result from a number of different types of explosion including those caused by:

a) low and high explosives;

b) uncontrolled chemical reactions;

c) flammable liquids and gases;

d) pressure vessels;

e) pressure pipelines.

Explosions can occur both inside and outside a building. Explosion damage can be accompanied by fire and water damage, structural failure and subsidence. Explosions always affect both buildings and contents.

K.7 Other incident types

Many types of incident can cause damage to property. These might include malicious damage, accidental damage, vehicle impact, oil contamination, trauma scene, riots and terrorism.

Damage management processes are based on the nature and effects of the damage, and can be applied to scenarios resulting from a variety of causes.

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 85500, *Flood resistant and resilient construction – Guide to improving the flood performance of buildings* [7) 8)]

BS EN ISO 22301:2014, *Business continuity management systems – Requirements*

PAS 64, *Mitigation and recovery of water damaged buildings – Code of practice*[7)]

PD 25888, *Business continuity management – Guidance on organization recovery following disruptive incidents*[7)]

Other publications

[1] BDMA. *BDMA Standards: Guidelines relating to the protocols and procedures for dealing with incidents or perils that damage properties* <http://www.bdma.org.uk/Standards/bdmastnd> [last viewed 9-10-2015]

[2] GREAT BRITAIN. The Control of Asbestos Regulations 2012. London: The Stationery Office

Further reading

ACPO. *Guidance on command and control* 2009<https://www.ipcc.gov.uk/sites/default/files/Documents/acpo_guidance_on_command_and_control_-_2009-2.pdf> [last viewed 9-10-2015]

THE CABINET OFFICE. *Business Continuity for Dummies: A guide to help SMEs introduce business continuity into their firms*. Chichester: John Wiley & Sons Ltd. 2012. ISBN 978-1-118-48203-2

THE CABINET OFFICE. *Lexicon of UK Civil Protection Terminology* 2013 <https://www.gov.uk/government/publications/emergency-responder-interoperability-lexicon> [last viewed 9-10-2015]

BCI. *Business Continuity Institute Good Practice Guidelines Global Edition: A Guide to Global Good Practice in Business Continuity* 2013 <http://www.thebci.org/index.php/resources/the-good-practice-guidelines> [last viewed 4-11-2015]

BDMA. *The BDMA glossary of terms* <http://www.bdma.org.uk/glossary/2/lettera> [last viewed 9-10-2015]

CII NEW GENERATION PROGRAMME CLAIMS GROUP. *Co-Ordination of Flood Response* 2014 <http://www.cii.co.uk/media/6175205/coordination_of_flood_response.pdf> [last viewed 9-10-2015]

CIRIA C623. *Standards for the repair of buildings following flooding* 2005. London: CIRIA

EMERGENCY RESPONSE AND RECOVERY. *Non-statutory guidance accompanying the Civil Contingencies Act* 2004 <https://www.gov.uk/government/publications/emergency-response-and-recovery> [last viewed 9-10-2015]

---

7) This standard is not referenced in the text of this British Standard, however users might wish to refer to it as a source of ancillary information.

8) At the time of publication, this document is being revised.

HISTORIC ENGLAND. *Flooding and Historic Buildings* 2015. <https://content.historicengland.org.uk/images-books/publications/flooding-and-historic-buildings-2ednrev/heag017-flooding-and-historic-buildings.pdf> [last viewed 9-10-2015]

HM GOVERNMENT. *Fire and Rescue Manual (Volume 2): Fire Service Operations: Incident Command*, Third Edition 2008 <https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7643/incidentcommand.pdf> [viewed 9-10-2015]

HM GOVERNMENT . *Strategic National Guidance: The decontamination of buildings, infrastructure and open environment exposed to chemical, biological, radiological substances or nuclear materials* 2015 <https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/402645/Strategic_National_Guidance_4th_Edition.pdf> [last viewed 9-10-2015]

OFFICE OF THE DEPUTY PRIME MINISTER. *Guidance on Development of a Site Clearance Capability in England and Wales* 2005 [9)] <https://www.gov.uk/government/publications/guidance-on-development-of-a-site-clearance-capability-in-england-and-wales> [last viewed 9-10-2015]

[9)] At the time of publication, this document is being revised and a new edition will be published.

This page deliberately left blank

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards -based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email bsmusales@bsigroup.com.

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Copyright

Useful Contacts:

Customer Services
Tel: +44 845 086 9001
Email (orders): orders@bsigroup.com
Email (enquiries): cservices@bsigroup.com

Subscriptions
Tel: +44 845 086 9001
Email: subscriptions@bsigroup.com

Knowledge Centre
Tel: +44 20 8996 7004
Email: knowledgecentre@bsigroup.com

Copyright & Licensing
Tel: +44 20 8996 7070
Email: copyright@bsigroup.com

bsi.

...making excellence a habit.™