

BS 8680:2020



BSI Standards Publication

Water quality — Water safety plans — Code of practice

bsi.

AVA **Documents**
Document Sharing Hub

Publishing and copyright information

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

© The British Standards Institution 2020

Published by BSI Standards Limited 2020

ISBN 978 0 580 51000 7

ICS 91.140.60

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

Committee reference EH/3/4

Draft for comment 19/30364471 DC

Amendments/corrigenda issued since publication

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

Contents

	Page
Foreword	ii
Introduction	1
1 Scope	1
2 Normative references	2
3 Terms and definitions	3
4 The water safety plan (WSP)	7
4.1 High-level assessment/gap analysis	7
4.2 Governance	10
<i>Figure 1 — An example development of a WSP</i>	12
4.3 System assessment	16
4.4 Risk assessment	18
4.5 Risk factors in healthcare for inclusion in the WSP	28
4.6 Controlling risks (scheme of control)	29
4.7 Design, installation and use of water systems in buildings	32
4.8 Design and specification	32
<i>Table 1 — Key design considerations</i>	33
4.9 Monitoring	38
4.10 Supporting programmes	41
<i>Table 2 — Example of a RACI matrix in a healthcare setting for a temperature control failure of a centralized hot water supply</i>	41
4.11 Documentation	43
<i>Table 3 — Example of documents which might be required to support the WSP</i>	44
Annex A (informative) Development of a water safety plan (WSP)	49
<i>Table A.1 — Matrix of responsibilities</i>	50
<i>Table A.2 — Example risk assessment matrix for a small business, in this case, a hairdressers/beauty salon</i>	52
Annex B (informative) Remedial actions/Change management/Maintenance plans	54
Annex C (normative) Design, specification and commissioning	56
Annex D (informative) An example of a WSP checklist for new builds	66
Bibliography	70

Summary of pages

This document comprises a front cover, and inside front cover, pages i to iv, pages 1 to 73, 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 May 2020. It was prepared by Subcommittee EH/3/4, *Microbiological methods*, under the authority of Technical Committee EH/3, *Water quality*. A list of organizations represented on these committees can be obtained on request to their secretary.

Information about this document

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 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.

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.

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.

Particular attention is drawn to the following specific regulations:

- The Water Supply (Water Quality) Regulations 2018 (England and Wales) (as amended) [1]
- The Water Supply (Water Quality) (Scotland) Regulations 2014 [2]
- The Water Supply (Water Quality) Regulations (Northern Ireland) 2017 (as amended) [3]
- The Private Water Supplies (England) Regulations 2016 [4]

- The Private Water Supplies (Wales) Regulations 2017 [[5](#)]
- The Private Water Supplies (Scotland) Regulations 2006 [[6](#)]
- The Private Water Supplies Regulations (Northern Ireland) 2017 [[7](#)]
- Health and Safety at Work etc. Act 1974 [[8](#)]
- The Health and Safety at Work (Northern Ireland) Order 1978 [[9](#)]
- The Water Supply (Water Fittings) Regulations 1999 [[10](#)]
- The Water Supply (Water Fittings) (Scotland) Byelaws 2014 [[11](#)]
- The Water Supply (Water Fittings) Regulations (Northern Ireland) 2009 [[12](#)]

Introduction

In 2011 WHO published *Water safety in buildings* [13], which together with WHO's *Guidelines for Drinking Water Quality (GDWQ)* 4th Edition (2017) [14] gives guidance on how to ensure that water used within the built environment is safe for all uses and all users. These publications advocate the water safety plan (WSP) approach to developing a comprehensive strategy to ensure water is safe for all types of use from the conception of a building water system, and associated equipment, through to its demolition/destruction.

In the context of this document, a WSP is a proactive strategic plan which sets out the direction for how a business or organization, whether large or small, intends to manage risks from water on site to prevent harm arising from all forms of exposure. It defines and documents the processes and arrangements required for the safe use and management of all water systems within each building or estate together with any associated systems and equipment.

The types and complexity of water systems and related equipment vary depending on the size and type of business or organization. Developing a WSP can ensure these are managed and maintained so they do not pose a risk to operators/users or anyone else who might be exposed or otherwise affected by poor water management.

A core component is the appointment of a competent person or persons, a water safety group (WSG) with responsibility for developing and implementing the WSP. In a small business with simple systems this could be the person who takes overall responsibility for health and safety and could be the owner or manager of the premises if they have the competency and skills required.

WSPs need to take account of all potential hazards, including those of a biological, chemical, physical and radiological nature. This is especially important in the healthcare environment where the population might be more vulnerable to physical hazards, such as scalding, and more susceptible to infections than the general population, and where water used for treatment and diagnostic purposes might need to be of a quality over and above that required for drinking water. Where a risk assessment [based on hazard analysis and critical control point (HACCP) principles] identifies hazards that could pose a significant risk to human health then multiple control barriers, commensurate with the risk, need to be put in place to ensure water remains safe. The WSP is backed up by the development of supporting programmes such as training, competence checks, documentation, communication, surveillance and internal and external audit and continual review.

Health-based targets for hazards which pose a risk to human health are identified within the WHO GDWQ [14] and are established from international risk assessments. These targets are then transposed into national legislation. However, the microbiological targets within current regulations are based on the absence of faecal indicators and do not take account of the harm caused by environmental opportunistic pathogens. These rarely cause harm to the general population but could cause serious harm and even death to those who are more susceptible to infection due to illness or treatment which compromises their immune system.

1 Scope

This British Standard gives recommendations and guidance for the development of a water safety plan (WSP) for all types of premises and undertakings with water systems which can pose a risk to those exposed, either from the water itself, aerosols derived from it or the surrounding environment, and where a WSP is particularly recommended within existing national guidance [15], [16], such as in healthcare.

The British Standard is applicable to WSP development for new buildings, modifications and renovations to existing water systems and can also be applied retrospectively to control risks to health from all types of water use.

Intended users of this British Standard include all those involved in ensuring water is safe and fit for purpose at the point of use including: duty holders, appointed responsible persons, water safety groups (WSGs) and all those who have an influence on the safety of water systems, including during the development process for new and refurbished/upgraded systems during tender specification, design, purchasing, installation, commissioning through to operation, maintenance, and repair of water systems and related equipment.

Where there are existing water systems and associated equipment this British Standard aims to inform and support all relevant stakeholders, including operators, users, service providers, water treatment providers, professional bodies and regulators, public health and environmental health professionals, risk assessors, providers of risk assessments, sampling and laboratory services, repair and maintenance, authorizing engineers/independent advisors, responsible persons, standard-setting bodies and certification agencies, infection-control teams and water safety management personnel in hospitals, healthcare, dental and medical facilities.

Intended users of this document include those responsible for:

- a) design and specification;
- b) construction and installation;
- c) commissioning, decommissioning and recommissioning;
- d) maintenance;
- e) operation;
- f) risk assessment;
- g) development, implementation and management of control measures;
- h) monitoring for validation and verification;
- i) alteration and refurbishment;
- j) deconstruction; and
- k) the design, installation and management of equipment connected to water systems which use or store water or is otherwise filled with water.

This British Standard does not give recommendations for the development of WSPs for regulated drinking water supplies from either a public or private supply, as these are covered in national water quality regulations.

For risk assessment for *Legionella* or *Pseudomonas aeruginosa* and other waterborne pathogens, see [BS 8580](#).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes provisions of this document¹⁾. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

¹⁾ Documents that are referred to solely in an informative manner are listed in the Bibliography.

Standards references

[BS 7592](#), *Sampling for Legionella bacteria in water systems — Code of practice*

[BS 8552](#), *Sampling and monitoring of water from building services closed systems — Code of practice*

BS 8554, *Code of practice for the sampling and monitoring of hot and cold water services in buildings*

[BS 8558](#), *Guide to the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages — Complementary guidance to BS EN 806*

[BS 8580-1](#), *Water quality — Risk assessments for Legionella control — Code of practice*

Other references

[N1] HEALTH AND SAFETY EXECUTIVE. Approved Code of Practice (ACoP) L8. Legionnaires' disease, The control of Legionella in water systems., 2013.

3 Terms and definitions

For the purposes of this British Standard, the terms and definitions given in [BS 8580](#) and [BS 8558](#) where applicable and the following apply.

3.1 aerosol

suspension in a gaseous medium of solid particles, liquid particles or solid and liquid particles having negligible falling velocity

3.2 asset

plant and equipment, fittings or components associated with water systems, which are considered during a risk assessment for their ability to cause harm and/or require maintenance

NOTE 1 Water-related assets include standalone items which could present a risk, for example, jet washers, nebulizers or ultrasonic cleaning baths.

NOTE 2 Certain significant documents which are essential for the safe management of the system, such as the register itself, schematic diagram(s), CAD drawings, scheme of control, risk assessment, records of monitoring and maintenance, can also be considered assets (with or without financial values assigned).

3.3 asset register

list of all the water-related assets (see [3.2](#))

NOTE This helps to ensure that a list of all assets is available for reference.

3.4 authorizing engineer/independent advisor

person providing independent professional advisory services to support the WSG

3.5 calorifier

apparatus used for the transfer of heat to water in a vessel by indirect means and incorporating a source of heat

3.6 competent person

person with the combination of training, skills, experience and knowledge of water safety that enables them to perform their tasks safely and effectively

NOTE Other factors, such as attitude and physical ability, can also affect someone's competence.

3.7 control measure

any action and activity that can be used to prevent or eliminate a hazard or reduce it to an acceptable level

3.8 corrective action

any action to be taken when the results of monitoring at the critical control point indicate a loss of control

NOTE The critical control point is the step at which control can be applied and is essential to prevent or eliminate a hazard or reduce it to an acceptable level.

3.9 duty holder

employer where the risk is from their undertakings to their staff or others, self-employed person where the risk is from their undertaking to themselves or others, or person in control of the premises where the risk is present from systems in the building (e.g. a landlord who remains responsible for the maintenance of the systems)

[SOURCE: HSE ACoP L8 [N1], para. 23]

NOTE In most cases there is only one duty holder, but in cases of shared accommodation, or where there is shared responsibility such as hospital trusts/PFI/facilities management, there may be more than one duty holder. The duty holder cannot delegate this duty but can delegate managerial responsibility to the responsible person (see 3.17).

3.10 hazard analysis and critical control point (HACCP)

system used to ensure food safety which can be applied to risk assessment

3.11 hazard

biological, chemical, physical or radiological agents or water conditions with potential to cause harm

3.12 hazardous events

events which lead to water becoming unsafe for its intended purpose

NOTE This can be, for example, through the ingress of hazards into a system because of an absence of or failure in barriers, or an increase in hazards within a system to levels which could cause harm, e.g. the presence of nutrients leading to the growth of waterborne pathogens to an infectious dose, or an increase in chemicals at levels which are harmful to health, e.g. disinfection by-products, chemicals leaching from pipework or components.

3.13 inherent risk

risk associated with the system before any action has been taken to control it

3.14 landlord

anyone who rents out a property they own under a lease or a licence that is shorter than seven years

NOTE Landlords' duties apply to a wide range of accommodation, occupied under a lease or a licence, which includes but not exclusively, residential premises provided for rent by:

- a) local authorities;
- b) housing associations;
- c) private sector landlords;
- d) housing cooperatives; and
- e) hostels.

[SOURCE: Landlord and Tenant Act 1985 [17]]

3.15 microbial risk assessment

process of identifying and assessing the risk of exposure to opportunistic waterborne pathogens from activities involving water and from water systems or equipment

3.16 monitoring

act of conducting planned observations or measurements of control parameters to assess the effectiveness of control measures

[SOURCE: HTM 04-01 [16]]

3.17 responsible person (RP)

individual appointed with, and who has accepted, responsibility under the authority of the duty holder for ensuring that a business or organization's responsibilities for water safety are met and that all individuals and organizations assigned to carry out tasks are competent to do so

NOTE 1 Also referred to as the nominated responsible person or the nominated competent person or accountable officer in healthcare premises.

NOTE 2 In a large undertaking there might be more than one responsible person, each responsible for a part of the undertaking.

NOTE 3 Core members of the water safety group (WSG) may take on the role of responsible persons.

3.18 opportunistic pathogens

microorganisms that are normal inhabitants of the natural aquatic environment and plumbed water systems and can cause infections in individuals with impaired local or general defence mechanisms, such as the elderly or the very young, patients with open wounds, burns, and those with compromised immune systems as a result of illness or treatment

3.19 pathogen

bacterium, virus or other microorganism that can cause disease in a person, animal or plant

3.20 principal contractor

organization or individual (on smaller projects) who is required to plan, manage and coordinate the construction work

NOTE The need for a principal contractor is covered under national legislation.

3.21 principal designer

organization or individual (on smaller projects) appointed by the client to take control of the pre-construction phase of any project involving more than one contractor

3.22 risk

likelihood of a hazard causing harm, taking account of the probability, type and length of exposure and the severity of the consequences

3.23 risk assessment (general)

overall process of the identification of hazards and hazardous events together with risk identification, risk analysis and risk evaluation

3.24 risk review

reassessment of both the current risk assessment and scheme of control to ensure they are valid and up-to-date

NOTE This could be, for example, checks and review of results to verify the ongoing effectiveness of controls, a review of applicable hazards and hazardous events, reassessment of the susceptibility of the population, risks/likelihood and consequence.

3.25 schematic diagram

simple but accurate illustration of the configuration of the water system, including parts that are out of use

3.26 scheme of control

procedures and checks intended to manage the risk of microbial colonization and growth

NOTE The scheme can be in either hardcopy or electronic formats.

3.27 Soft Landings

strategy designed to make an easy transition from the construction to occupation phases of a project with the overriding aim of realizing ongoing optimal operational performance

3.28 source water

water supplied to the building or associated systems and equipment

NOTE This might be from a public or private supply, a combination of both or an unregulated supply. Private supplies include wells, springs, boreholes, etc. Unregulated supplies include rivers, springs, wells, boreholes, etc., which are not suitable for drinking but could be used for other purposes for example in industry. See 3.27.

3.29 supply water

3.29.1 public supply

water sourced from either surface water such as reservoirs, lakes and rivers or groundwater from aquifers and delivered by statutorily appointed water companies to properties including private houses, commercial and public buildings, industrial premises and other properties

NOTE 1 The water is suitable for domestic purposes including cooking and drinking when it meets the parameters set out within drinking water legislation. However, this does not mean it is suitable for all uses. Those who are more susceptible to waterborne infections than the general population might need water of enhanced quality to protect them from waterborne infections.

NOTE 2 The water, once abstracted, is then treated at water treatment works prior to being delivered. The water is continuously monitored throughout the treatment process to ensure the water meets regulatory standards.

[SOURCE: PHE Drinking Water Supplies Handbook 2015 [18]]

3.29.2 private water supply (PWS)

water supply including privately owned sources such as springs, wells and boreholes that serve one or more premises, for domestic and commercial purposes

NOTE 1 Such supply systems are not usually connected to the public water supply and the responsibility for maintenance and repair rests with the owners and consumers and not a statutorily appointed water company.

NOTE 2 Water is suitable for drinking when treated to meet the statutory limits for prescribed parameters set out within the Private Water Supply Regulations [4], [5], [6], [7] for which local authorities are the responsible enforcing body.

NOTE 3 The majority of private supplies are likely to be for dwellings and farms situated in remote, rural areas. However, there might be some private supplies in urban areas, particularly those used for industrial or commercial purposes, such as brewing and food and drink manufacturing. Private water supplies might also be found supplying places such as hospitals, hotels, schools or campsites. Unlike public supplies, many private water supplies are not effectively treated to remove all impurities that affect the quality of the water, such as pesticides, nitrates or cryptosporidium.

3.29.3 unregulated supply

water supply that is not intended for human consumption and might be used for processes not covered under The Water Supply (Water Quality) Regulations [1], [2], [3]

3.30 validation

written evidence of the checks and monitoring required to establish that a new system (e.g. of control) behaves as intended

3.31 verification

documented programmes of monitoring, tests and checks to establish ongoing compliance with the WSP (see 3.33)

3.32 water safety group (WSG)

multidisciplinary group of people formed to undertake the commissioning, development and ongoing implementation and management of the water safety plan (WSP) with the skills and responsibility for ensuring that the water is safe at the point of use for all uses and all users of water within buildings

NOTE 1 It also advises on the remedial actions required when water systems or outlets are found to be contaminated and the risk to susceptible persons is increased.

NOTE 2 The composition of the WSG and complexity of its role varies depending on the design, size and complexity of the systems and attached devices and risk assessments based on the types of hazard and the dose which can cause harm; the potential for hazardous events; and routes of exposure to intended uses and users of the system or device. The WSG might also be known as the water management team.

3.33 water safety plan (WSP)

strategic plan which defines and documents the arrangements that are required for the safe use and management of all water systems together with all associated systems and equipment within each building or estate to prevent harm arising from all forms of exposure

4 The water safety plan (WSP)

4.1 High-level assessment/gap analysis

4.1.1 General

NOTE 1 A WSP is applicable to any premises where there are business activities or rent payable to ensure the safety of staff, visitors, members of the public, patients in healthcare, etc.

Those responsible for water safety within a business or organization should develop and implement a documented WSP to safely manage all water-related risks.

The scope and complexity of the WSP and supporting documentation in the form of policies, procedures/method statements, risk assessments, schemes of control, record keeping, monitoring, training and other relevant documentation should be proportional to the type of water-related activities carried out and the scale and complexity of the business/organization.

NOTE 2 Developing and implementing a WSP is a sustainable and effective way to achieve safe water for all types of use and user.

The WSP should not be a large, unwieldy document which includes all method statements, procedures, risk assessments, etc., but a high-level strategic document which refers to and takes these into account.

This high-level, strategic WSP should define and document the arrangements that are required for the safe use and management of all water, whether from natural sources or that within engineered systems and equipment on site. It should set out the way the organization manages all risks from water, covering all water quality parameters to ensure all water remains safe, fit for purpose and meets all applicable legislation, guidance and standards. Its scope should cover all associated systems and equipment that might be used within each building or estate which could pose a risk of harm to health taking account all intended uses, all routes of exposure and the vulnerabilities of those likely to be exposed.

The WSP should contain the processes necessary to ensure all water-containing or water-using systems and devices, including components and fittings, and those which are tested or cleaned by water are designed, installed, commissioned, used/operated, managed and maintained safely. In addition, supporting programmes should be in place for training, surveillance, supervision, audit, etc.

NOTE 3 This is especially relevant in the healthcare environment, for example, endoscopes used in sterile areas.

For premises which conform to HSE ACoP [N1] and associated guidance for the management of *Legionella* risks in buildings, many of the microbiological components of the WSP will already be in place as *Legionella* control measures include many elements of good water hygiene maintenance. For other hazards, the assessors should determine whether there are any hazardous events and significant risks which have not been identified and included within the *Legionella* management programmes.

NOTE 4 A table outlining the necessary components of the WSP can be useful for ensuring the relevant aspects have been included. See [Annex A](#).

4.1.2 High-level assessment/gap analysis

An effective WSP should identify and assess all water which could pose a risk of harm to staff, visitors, members of the public or patients (where applicable) on site and, where appropriate, steps should be in place to manage these risks.

The responsible person (RP) or WSG or, in healthcare, the accountable officer responsible for water safety (see HTM 00-01 [19]), should ensure there is an initial high-level assessment of what is already in place to identify any gaps in the robustness of the current water safety governance and management measures, and any need for amendment or development.

The gap analysis should also:

- a) review what is already in place in terms of identifying and controlling risks from water; and
- b) determine whether all potential biological, chemical, and radiological hazards and potential hazardous events that could lead to harm have been identified and processes are in place to ensure any associated risks are controlled, together with the risk of physical harm.

NOTE These include those arising, for example, from scalding, slips/trips, falls, drowning, electrocution, water under pressure (see 4.3.5), from the point where systems, equipment, components and fittings are designed and/or specified.

The gap analysis should include an assessment of the current management of all water on site including open water, such as wells, springs, ponds and lakes, all engineered water systems and any associated storage, equipment and devices.

4.1.3 Gap analysis consideration

The gap analysis should identify what should be included within the WSP and, where there are gaps, the need for amendments and/or remedial actions. Items to be addressed should include, for example:

- a) organizational structures detailing arrangements for governance and management of water safety, including lines of accountability and responsibility;
- b) the policies and supporting documented procedures to be referred to;
- c) the process for appointing WSG members, competent contractors, service providers and professional advisors, etc.;
- d) the process to ensure an asset register and as-fitted drawings are maintained and kept up to date which cover all sources of water exposure on site including water systems and equipment which contain, use, process or are cleaned by water, together with components that need regular checks and maintenance;
- e) the process for ensuring the assets are risk assessed and a scheme for their safe management is put into place where appropriate;
- f) the processes for managing, conducting, reviewing and evaluating risk assessments; and implementing any management improvements or remedial actions needed; and appropriately prioritizing and completing actions (schemes of control);
- g) the quality of water required for each purpose, taking account of the route of exposure and vulnerability of the population who might be exposed, is agreed with the RP/WSG, considering applicable legislation and national guidelines and standards as appropriate;
- h) the particular vulnerabilities and susceptibilities of the “at risk” user population (who, where and what assets will they be exposed to?);
- i) the process for ensuring appropriate equipment and system maintenance is in place and, where contracts are in place, there are procedures to prevent lapses, for example, at the end of a guarantee period;
- j) the process for ensuring the design and specification of water systems for all new builds, refurbishment or alteration projects for water systems, including materials, equipment, fittings, are risk assessed and the assessments reviewed by the RP/WSG throughout all stages and there are processes and checks to ensure recommendations from the WSG are taken into account in a timely manner;
- k) whether the schedule and procedures for ongoing verification of control measures (monitoring) are effective;
- l) whether there are effective supporting programmes for all who might have an impact on water safety, including staff consultation, training and competence checks, communication, surveillance, quality systems, internal and external audits;
- m) whether sufficient and satisfactory up to date documentation is available and accessible for inspection as required;
- n) the emergency response protocol for adverse events, including failures in control measures, to ensure there is an effective response to incidents, accidents, near misses and adverse results;
- o) the lines of communication in place, for both normal operation and in the event of foreseeable adverse events; and
- p) the process to ensure that third parties are not exposed to risks which trained operatives are protected from, for example, aerosol drift from pressure washing.

This information should be used to review and inform the more detailed risk assessment process and WSP development.

NOTE 1 Particularly in a large organization, a gap analysis is helpful in identifying where the WSP is not comprehensive or needs enhancing, either at a governance level or at the level of specific user groups who might be more at risk from waterborne hazards because of their occupation or health status.

The RP/WSG should draw together items a) to p) within the WSP and ensure, where gaps are identified, there is a programme and lines of responsibility for ensuring points a) to p) are implemented, reviewed and documented with expert input from specialist advisors with the appropriate expertise where needed.

Checklists can be useful, particularly in smaller organizations, but care should be taken to avoid missing factors potentially affecting water quality because they are not on the checklist.

NOTE 2 Initially, a brain-storming session by the WSG with input from stakeholders, including specialist water users, e.g. evaporative cooling engineers, paint sprayers, water treatment specialists, laboratory staff, specialist healthcare users, such as those in dialysis, aquatic therapy and decontamination units, can be helpful in confirming that all high-risk areas and devices, equipment, etc., which use or are cleaned by water are covered.

4.2 Governance

COMMENTARY ON 4.2

Governance is the description of the infrastructure that the business or organization uses to lead, direct, manage and monitor its water and sanitation-related risks to ensure water in storage and in use remains safe for all those who might be exposed to it, or associated aerosols, so that the organization meets both its statutory and legislative requirements and can also demonstrate due diligence.

4.2.1 General

Each organization, whether large or small, should ensure there is a clear description of the structures in place to deliver its strategic goals with regards to water safety management. This should include documented processes for evaluating decisions that have an impact on water safety, for example, the processes and checks in place for purchasing major plant and for ensuring there is an assessment of cost against long-term effectiveness.

To demonstrate good governance and ensure the safe provision of water, an appropriate and effective WSP should be implemented irrespective of the size and complexity of the organization. Organizational risk registers should be reviewed to appropriately articulate identified risks until satisfactorily resolved.

4.2.2 Proportionality

The WSP should be proportional to water-related risks and the size and complexity of water systems within the business/organization. The WSP should also take account of any additional systems or equipment which could pose additional risks to health. The documentation required to support the WSP should also be proportional to the scale and complexity of the business/organization and the type, number and complexity of water systems on site, taking account of all potential modes for causing potential harm.

NOTE 1 For many small premises where there are no additional systems or equipment which pose a risk of water causing harm to users or others within the premises, a very simple WSP is all that is necessary.

The WSP does not cover source water from catchment to point of entry into the building, although this should be taken into account during the risk assessment.

NOTE 2 [Figure 1](#) shows an example of outline steps that could be used when developing a WSP for an existing building. The point at which a reassessment is made depends on the risk review findings.

The supporting documentation should be in a form which is readily accessible for reference and review.

A decision should be made as to which steps in the WSP outlined in [Figure 1](#) are applicable and should be followed and those which are less relevant or not applicable. When making this decision, account should be taken of the type of premises; the size, type and complexity of water systems and associated devices; the range of uses; all potential routes of exposure; and the susceptibility of the population likely to be exposed. This decision-making process should be documented.

The WSP should include processes to ensure all aspects including governance and accountability are kept under regular review. When significant changes occur which affect its validity, for example, significant changes in senior level management e.g. the duty holder, RP or WSG personnel (including following business mergers) (see [3.30](#)), the WSG should review the WSP and ensure the governance of the business/organization remains effective.

NOTE 3 See [4.2.8](#) for more information on the WSG.

NOTE 4 The safe management of water and therefore the development and implementation of a bespoke WSP is the responsibility of duty holders with support from others as required.

NOTE 5 Within the healthcare setting, due to the complexity and range of uses of water (including that used in patient diagnosis and treatment), together with an increased susceptibility of the population to waterborne infections, the development of a WSG and WSP is required within the Health and Social Care Act 2008: Code of practice on the prevention and control of infections [\[20\]](#) and is also advocated by the Health and Safety Executives within the GB and NI (HSG 274 part 2) [\[15\]](#) and Department of Health (HTM 04-01) [\[16\]](#).

4.2.3 Leased buildings

Where a business or organization leases a part of a building, the WSP should identify the processes for ensuring the lease clearly identifies who has responsibility for the safe management and maintenance of water systems provided by the lessor and lessee. The ownership and management responsibilities for any additional equipment or uses of water should be clearly identified and managed effectively.

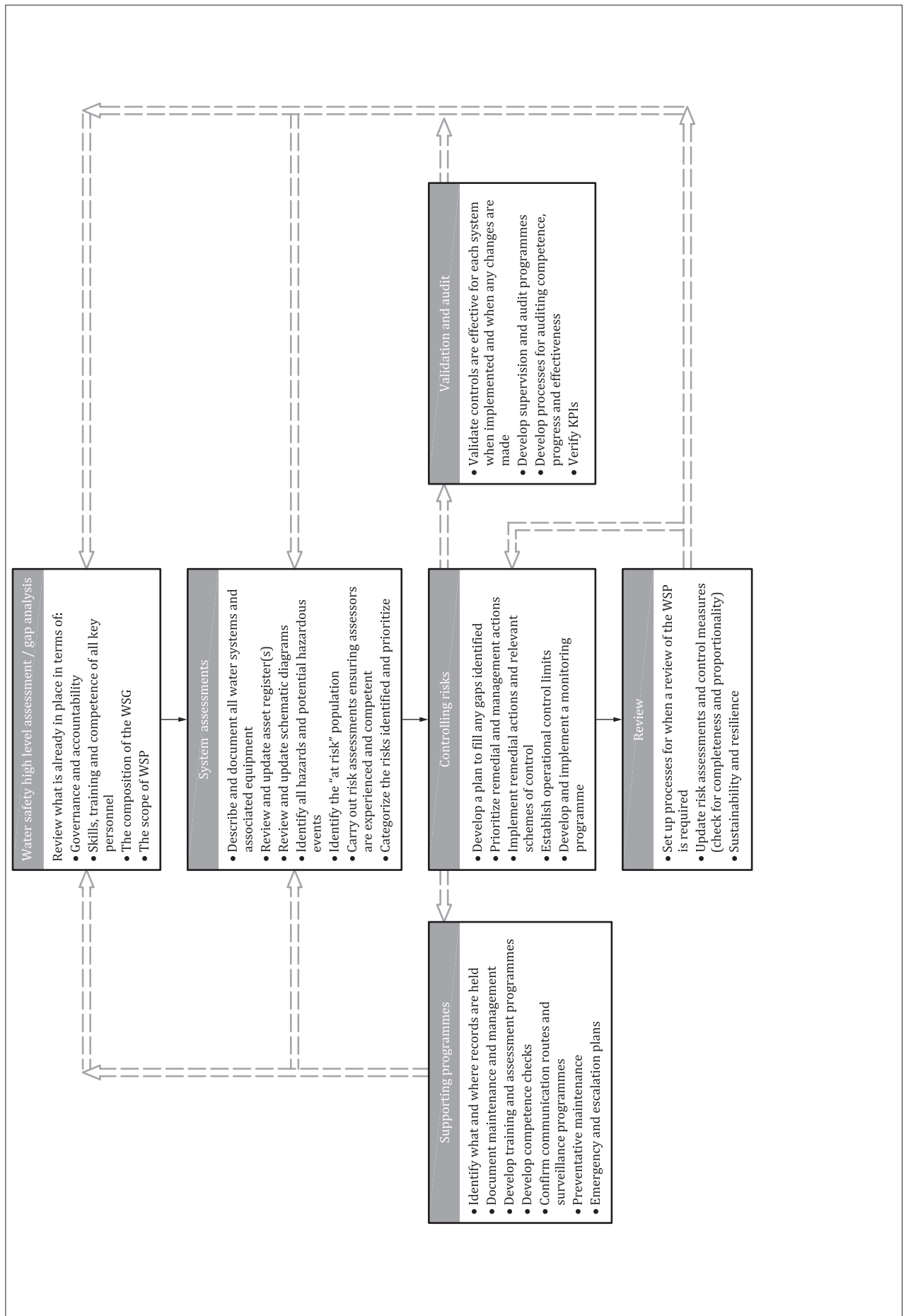
NOTE 1 It is important that good communication is maintained between all parties to ensure the WSP remains up to date and relevant. For example, a small beauty shop has water supplied for kitchen, handwashing and toilet facilities, etc., for which the landlord/their agent might retain responsibility, but if there is equipment such as washing machines, foot spas, hot tubs, whirlpool spas, spray bottles etc., the development and implementation of the WSP is the responsibility of the owner/manager of the business.

It should be ensured that tenants are kept informed of and comply with the landlord's instructions and plans to keep water systems safe. The landlord should be informed of changes of use that affect risk accordingly, e.g. outlets no longer being used.

NOTE 2 Attention is drawn to the Management of Health and Safety at Work Regulations [\[21\]](#), [\[22\]](#).

4.2.4 Franchises

Where the business is franchised or part of a chain, there should be a process for ensuring the responsibility for health and safety, including ensuring the supply and use of water is clearly identified and stated within the contracts. Appropriate lines of communication should be maintained between all parties to ensure water safety is owned and managed according to contractual arrangements.

Figure 1 — *An example development of a WSP*

4.2.5 Landlords

NOTE 1 Landlords under Section 53 of the Health and Safety at Work Act 1974 (HSWA) [8] are regarded as self-employed and therefore have legal responsibilities under Section 4 of the HSWA to ensure tenants are not exposed to health and safety risks, including those derived from exposure to water or aerosols derived from it. This applies even when a room within a person's home is rented. See also [9].

The WSP should make clear who (owner/tenant) is responsible for the safety of the supply water and all water systems and associated equipment, e.g. washing machines, dishwashers, showers, water heaters, and their safe installation, operation, management and maintenance.

Where necessary the WSP should recommend regular audits at a frequency commensurate with risk.

NOTE 2 For further information, see the HSE guidance on Legionella and landlords' responsibilities available at: <http://www.hse.gov.uk/legionnaires/legionella-landlords-responsibilities.htm>.

4.2.6 Small business/organization

In a smaller business/organization, or where risks associated with water are assessed as minimal, the governance required to ensure water is effectively managed is likely to be relatively simple and concise and should involve only the senior individual(s) responsible for developing and implementing the WSP and ensuring the business manages water safely along with other health and safety risks.

NOTE 1 This person(s) might be the owner and/or the manager if they have the necessary skills and competence.

The WSP for a small business should be a written description of the water systems and associated equipment, simple schematic drawings of the system, an up to date risk assessment and a description of how risks associated with water use are to be managed and monitored on site to comply with relevant legislation, guidance and standards.

NOTE 2 See Annex A for more information on development of a WSP.

4.2.7 Large organization

4.2.7.1 General

A large business or organization should ensure there is strategic leadership and direction from the duty holder, supported by the Board of Directors (or equivalent) and policies underpinned by procedures, to ensure safe processes, working practices and risk-management strategies are in place to safeguard all stakeholders and assets to reduce the risk of harm from all types of water use.

The WSP for a large organization should include the governance structure and person(s) accountable for implementing the organization's governance strategy for water safety on behalf of the duty holder.

NOTE This is usually the chief executive officer (CEO) or other senior manager in an equivalent position.

Where there are additional risks associated with water use due to the types of hazards, for example, in industrial and academic institutions, or where there is increased susceptibility of those who might be exposed to waterborne hazards, for example, in healthcare, a multidisciplinary WSG should be appointed which includes a designated RP(s) for water.

Ensuring water safety should be an ongoing commitment by the business or organization with continuing oversight and ability to manage water effectively at the highest level of management, for example, by regular review of reports/reporting mechanisms through the RP and/or WSG. Systems should be in place to ensure any recommendations are acted upon in a timely manner. These reports should give an update of all significant water safety risks including any adverse events, the condition of the water system's infrastructure and compliance with applicable legislation and guidance.

The duty holder/accountable officer should be able to provide demonstrable assurance that all risks with regard to water hygiene and safety are being managed as far as is reasonably practicable.

4.2.7.2 Organizations with several duty holders

NOTE 1 In large, multi-occupancy properties, e.g. large commercial premises with multiple individual units, there may be several duty holders.

NOTE 2 Section 4 of the Health and Safety at Work etc. Act 1974 [8] requires those who have control of such premises to ensure, so far as is reasonably practicable, that they are safe and without risks to health. See also [9]. These duties extend to the safe provision of water and usually lie with the landlord. Attention to drawn Regulation 11 of the Management of Health and safety at Work Regulations 1999 [21], [22].

Where there are several duty holders, e.g. acting as tenants of the landlord, facilities management companies, PFIs, responsibilities for safe water management should be defined by a contract or tenancy agreement. Landlords or tenants of individual commercial units should also ensure that risks from water are managed effectively and they might be required to perform certain tasks in respect of this. These arrangements should be covered in the contract, or tenancy agreement, and set out clearly in the WSP.

NOTE 3 Regulation 11 of the Management of Health and Safety at Work Regulations 1999 [21], [22] requires duty holders that share a workplace to cooperate with each other and coordinate their approach to health and safety as far as possible and inform each other of relevant risks to the others' employees.

Where one duty holder controls the workplace, the others should assist in the assessment accordingly.

4.2.8 Water safety group (WSG)

4.2.8.1 General

In large buildings or where there are complex systems, specialist uses of water and/or a more susceptible population, there should be a multidisciplinary team, referred to here as the water safety group (WSG) (see 3.32). To ensure effective ownership and provide assurance on the effective management of water safety and associated risk management, the organizational structure, lines of accountability and communication up to top level management by the WSG should be clear and facilitate the regular reporting and review of the status of water risk management and the supporting infrastructure.

The WSG remit, allocation of responsibilities and reporting structure should be agreed with the duty holder, who should be given support to carry out their role effectively, for example, resources, suitably qualified, trained and competent staff, and supporting documented procedures and policies.

When a person or persons are appointed to the WSG, the duty holder should ensure they:

- a) are empowered to manage water safety, including from the design and concept stage of projects for the development of new or refurbishment of existing water systems; and
- b) have the range of skills and competencies needed to manage water safety on site for both normal and abnormal operating conditions; and
- c) have the resources necessary to carry out their role effectively.

Where the necessary skills and competencies are not available in house, external specialist advisers, contractors and service providers should be appointed.

NOTE Attention is drawn to the Health and Safety at Work regulations [8], [9], and the Management of Health and Safety at Work Regulations [21], [22].

The organization should ensure processes are in place to facilitate the WSG to have sufficient overview, influence, time and resources to evaluate whether all water systems and associated ancillary systems and equipment are designed, installed, commissioned, operated, maintained and

decommissioned (where applicable) to provide water of a quality which does not pose a risk of harm to health for all potential uses and users.

4.2.8.2 Competencies and skills required

The duty holder or their nominated senior manager should be aware of the competencies and skill sets needed to develop, implement and review an effective WSP for all water systems and associated equipment and for all types of exposure to water or aerosols derived from them. The composition of the WSG should include the appointed RP familiar with all water systems and associated equipment and those with the skills and competencies needed to identify, understand, manage and control all hazards, hazardous events and risks associated with all potential routes of exposure to water within the building or estate.

NOTE 1 This is especially important for WSG members on sites with multiple systems and/or buildings or where there are specialized uses of water or equipment.

Depending on the size of the building or estate and the range of systems and equipment which contains, stores, uses or is cleaned by water, representation on the WSG can include, for example, equipment owners/operators, health and safety professionals, those with specialist knowledge of applicable hazards, risk assessors, ventilation and water treatment specialists, facilities managers responsible for the building water supply and distribution systems infrastructure, together with representation from senior management with responsibility for budget allocation and purchasing. Where all the necessary skills or competencies are not available internally, external competent help should be appointed and invited to WSG meetings on a regular or invited only basis. Wherever external support is required, all reasonable steps should be taken to verify the skills and competency of those appointed to assist, advise and support the RP/WSG.

NOTE 2 In healthcare premises, attention is drawn to the requirements of the Health and Social Care Act 2008 [23] and associated Code of Practice [20] for the composition of the WSG. See also HTM 04-01, part B [16] for WSG roles and representation.

4.2.8.3 Stakeholder responsibilities

The WSP should clearly define the legal responsibilities for water safety for the business/organization and the processes for ensuring all external stakeholders, including consultants, contractors, service providers and project teams, are aware of their individual responsibilities for controlling any potential risks to health derived from water on site.

NOTE This duty applies not only to the management of existing systems but includes all those who are involved in water system design throughout the whole process from design to system handover.

The WSP should also include the processes for ensuring all those involved in any stage of this process have sufficient information, instruction and training to understand the impact of both good and poor design, build, commissioning, operation and management on water system safety which is specific to the type and range of systems and equipment to be incorporated in the building.

The roles, accountabilities and responsibilities should be clear in cross-functional/departmental projects and processes.

4.2.9 Source water quality

The quality and resilience of source water should be included in the high-level assessment as these factors can affect the likelihood of harmful levels of hazards entering the water system.

NOTE 1 Some hazards might be present in undetectable amounts in the water entering the building but conditions within the building water system can lead to an increase in concentration of these to levels which could cause harm.

All applicable hazards, whether biological, chemical or radiological, and effectiveness of barriers to minimize the potential for hazardous events to as low as reasonably practicable (ALARP) should be included in the source water assessment.

Whilst this British Standard does not cover the management of water from the catchment to the supply into the building, the risk assessment should consider the availability of the supply and any factors which could adversely impact the supply water quality, for example, flooding affecting the quality of the catchment water or a period of drought affecting the flow.

NOTE 2 Private water supplies (PWS) are covered under the Private Water Supply Regulations [4], [5], [6], [7] and are required to have been assessed by the local authority where applicable.

Whether the water supply into a premises, supplementary system or equipment is from a mains, PWS or unregulated supply, processes should be in place to ensure the quality remains appropriate for its intended use, a risk assessment is carried out by persons competent for that specific application and any identified risks are managed to ALARP.

The RP/WSG should also ensure that source water supplies are adequately protected from ingress of hazards due to the proximity to grazing animals, run-off and flooding, etc.

Risk assessments should be reviewed by the WSG, with input from specialist expertise when required to confirm all risks are identified and controlled where appropriate. For example, where a point of entry (POE) water treatment is in place then the risk assessment should establish if this is appropriate and effective and if any improvements are necessary.

The WSP should identify how risks are to be managed by the individual or organization in the best position to do so.

NOTE 3 This varies depending on the stage and scale of the systems.

4.2.10 Incoming water supply

The WSP should include processes to ensure the biological, chemical and radiological quality of all incoming water is risk assessed and, where required, appropriate point of entry treatment is put in place.

NOTE 1 Many premises receive their water supply from a mains distribution system which has undergone a primary disinfection process, usually the addition of either chlorine or monochloramine, and so might contain residual biocide upon entry to the building. However, the water supply might also originate from a local borehole which might or might not be treated with biocides.

Depending on the risk assessment, water originating from other sources, for example, a rainwater collection process, could be assessed as suitable for some limited uses, e.g. irrigation or flushing toilets.

NOTE 2 Attention is drawn to HSE Approved Code of Practice L5 [24].

NOTE 3 Measuring online turbidity can be a useful indicator of decreasing water quality in pools and where supplies other than mains water are used, and can be used to trigger enhanced surveillance and a rapid response to prevent harm.

4.3 System assessment

4.3.1 General

For a WSP to be valid all assets and all possible miscellaneous ways in which the business/organization uses and disposes of water should be identified. Up to date schematic diagrams should be available and reviewed when assessing the complexity of the system and any associated supplementary systems and equipment.

4.3.2 Small/simple systems

NOTE 1 The WSP might be based on a simple risk assessment which may be carried out by the owner/manager if they have sufficient training and competency to do so.

The system assessment for a small premise with a simple water system, e.g. a toilet, wash hand basin and a sink, should be straightforward and could be carried out by the owner manager if they have the skills and experience to do so. However, all systems should have a risk assessment, even if they are small or simple.

NOTE 2 For some systems identified as low risk [25] which are being properly managed to conform to the law, elaborate control measures are not required.

The assessment should be reviewed regularly, especially when there have been any changes or alterations to the system or its use.

4.3.3 Complex systems

In buildings with complex or multiple water systems, or estates containing many buildings, the assessment should ensure there is a person or persons (e.g. RP/WSG) with designated responsibility for water safety to ensure there is the appropriate range of skills and competencies to identify and assess all water systems and associated devices used on site.

NOTE 1 For systems/equipment for specialist uses unfamiliar to the assessor, external competent help might be required.

NOTE 2 In an industrial facility, water can be used in a wide range of processes for manufacturing and production, as well as ancillary purposes such as cooling, heating, pollution abatement, air conditioning and fire safety.

The site manager, with help from engineering and facilities management functions, should identify and document where water is used and stored on site and list the various assets present together with how they are used and the frequency of use so that processes for their safe management can be included in the WSP.

Other specialist uses should be identified and assessed, such as paint spray booths, quench tanks, water used for commercial purposes, e.g. spray irrigation, water features, recreational uses (including fountains, aquatic play areas, whirlpool baths, hot tubs), and water used for diagnosis and treatment of patients, e.g. washer disinfectors, bed pan washers and sensory tubes.

NOTE 3 The level of risk posed by different assets depends on water usage, potential contaminants and pathways for exposure. Higher risk areas are associated with equipment and activities that produce aerosols, for example, cooling towers, air scrubbers, drench showers and drying-off components using air devices, as well as mobile equipment such as jet washers. Similarly, equipment with potentially high concentrations of hazardous agents, either direct from chemicals used in the process or those derived from microbial contamination and growth, could also present high levels of risk.

4.3.4 Asset lists

NOTE 1 An effective WSP depends on the identification of all assets, including those within or attached to the water system, to ensure there is a risk assessment, management, monitoring and maintenance plan to minimize the risks of harm from its use to ALARP.

NOTE 2 Assets can range from the obvious and simple (e.g. evaporative cooling towers, portable humidifiers or room coolers) to complex and hard to identify (e.g. heater cooler units used in heart surgery). It is therefore not possible to provide an exhaustive list of all the miscellaneous water systems that can present one or more hazards that require assessment. An example of a simple matrix for a small business is given in [Annex A](#).

The WSP should include the procedures in place to review and maintain an accurate, up-to-date asset list. Producing and maintaining an asset list requires considerable time and therefore financial

cost, so the asset list itself should be considered an asset and be assigned a budget to maintain it as appropriate.

The level of detail within the WSP can vary according to the type of system and the risks, but to be effective it should be consistent, for example, it should use standard terms to describe assets and should treat each part in the same way as the others.

A gap analysis (see 4.1.2) with input from any specialist water users should be carried out to ensure all systems and associated devices are identified. This should be supported by site inspections carried out at suitable intervals to verify the listing and safe management of water assets and changes to systems, taking account of current usage, practice and management.

NOTE 3 A common way in which asset lists are, or become, inaccurate is by the introduction of devices which are brought on site without permission or authorization.

The asset register should not be confined to the drinking water systems; all devices which use water and are brought on site by contractors should be included, e.g. commercial cleaning equipment, temporary toilets.

NOTE 4 In relatively low-risk or simple systems, as might be found in small commercial or retail premises, the asset list could be as simple as a list of locations where there are toilets, wash basins and sinks with cold water drawn directly from the mains and the source of hot water, whilst healthcare or industrial premises might have asset lists recording every tap, shower and thermostatic mixing valve in every facility as well as what could be considered to be plant items (storage tanks, calorifiers, pumps, heat exchangers, fire systems, emergency showers, washdown hoses, jet washer units, cooling towers, etc.).

4.3.5 Risk assessors

NOTE 1 The usefulness and validity of the risk assessment which forms the core of the WSP depends on the experience and competence of the assessor and the quality of the report produced upon which an effective scheme of control is based.

The WSP should include processes to ensure the assessors are skilled, competent and experienced in assessing each particular system, the likelihood and consequence of hazards and hazardous events in the context of exposure (type, extent and frequency), and the susceptibility of those who might be exposed. The WSP should also ensure that the WSG is aware of what the risk assessment should cover, to ensure only personnel with the skills and competence carry out and review the assessment to ensure it is fit for purpose. The report from the risk assessor should be produced within the agreed timescale and format, be concise and reflect and prioritize all identified risks.

The WSP should include processes to ensure the associated hazards, potential hazardous events and preventative measures to control the hazard are identified. The WSG should have an understanding of the factors to be included in the risk assessment and there should be competent support for the WSG to ensure that risk assessments are fit for purpose, especially if there are any gaps identified in risk assessors' knowledge.

NOTE 2 See available WRAS guidance for more information, available at: https://www.wras.co.uk/consumers/resources/publications/water_regulations_guide/.

4.4 Risk assessment

4.4.1 General

NOTE 1 Risk assessment is a legal requirement under Health and Safety legislation: see Regulation 3 of the Management of Health and Safety at Work Regulations [21], [22], and Regulation 6 of the Control of Substances Hazardous to Health Regulations 2002 (as amended) [26] and is fundamental to the WSP.

Risk assessment should be an ongoing process from the design and specification stage, through to completion (see 4.8). The WSP should incorporate a process for risk assessment of each water