

BS 8551:2011



BSI Standards Publication

Provision and management of temporary water supplies and distribution networks (not including provisions for statutory emergencies) – Code of practice

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Foreword

Publishing information

This British Standard is published by BSI and came into effect on 31 December 2011. It was prepared by BSI Panel EH/3/-/1, *Panel for BS 8551*, under the authority of Technical Committee EH/3, *Water quality*. A list of organizations represented on this committee can be obtained on request to its secretary.

Information about this document

This document is intended for application when there is a temporary loss of a piped water supply that is not the responsibility of a water company or licensed water supplier (e.g. burst of private supply pipe). It is also intended to be applicable to the provision of temporary water distribution systems for public events or construction sites.

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.

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.

Any user claiming compliance with this British Standard is expected to be able to justify any course of action that deviates from its recommendations.

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

Test laboratory accreditation. Users of this British Standard are advised to consider the desirability of selecting test laboratories that are accredited to BS EN ISO/IEC 17025 by a national or international accreditation body.

WARNING. This British Standard calls for the use of substances and/or procedures that can be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

Presentational conventions

The provisions in this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is “should”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

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.

In particular, attention is drawn to the following statutory regulations.

- Water Industry Act 1991 [1]
- Water (Scotland) Act 1980 [2]
- Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption [3]
- The Water Supply (Water Quality) Regulations 2000 [4]
- The Water Supply (Water Quality) Regulations 2001 [5]
- The Water Supply (Water Quality) (Scotland) Regulations 2001 [6]
- The Water Supply (Water Quality) Regulations (Northern Ireland) 2007 [7]
- The Private Water Supplies Regulations 2009, as amended [8]
- The Private Water Supplies (Wales) Regulations 2010, as amended [9]
- The Private Water Supplies (Scotland) Regulations 2006 [10]
- The Private Water Supplies (Northern Ireland) Regulations 2009, as amended [11]
- The Natural Mineral Water, Spring Water and Bottled Drinking Water (England) Regulations 2007, as amended [12]
- The Natural Mineral Water, Spring Water and Bottled Drinking Water (Scotland) Regulations 2007, as amended [13]
- The Natural Mineral Water, Spring Water and Bottled Drinking Water (Northern Ireland) Regulations 2007, as amended [14]
- The Natural Mineral Water, Spring Water and Bottled Drinking Water (Wales) Regulations 2007, as amended [15]
- The Workplace (Health, Safety and Welfare) Regulations 1992 [16]
- The Control of Substances Hazardous to Health Regulations 2002 (COSHH) [17]

NOTE Bottled water held in storage for emergency uses has to be suitable for supply under the same Regulations [4, 5, 6 and 7] as that which is supplied through the distribution network.

In this document, the following national regulations, which apply to plumbing systems in premises to which a supply of public mains water has been provided, are referred to as the "Water Fittings Regulations".

- The Water Supply (Water Fittings) Regulations 1999 [18], in England and Wales;
- The Water Byelaws 2004 (Scotland) [19], in Scotland;
- The Water Supply (Water Fittings) Regulations (Northern Ireland) 2009 [20], in Northern Ireland.

Introduction

Safe clean drinking water is essential for people's wellbeing and many situations arise where there is a need to provide a temporary supply for domestic purposes, e.g. drinking, cooking, cleaning and laundry (see note). This includes a supply by pipes or a supply by means of containers, e.g. tankers, bowsters, static tanks or bottled water. Anyone providing a water supply for use in a commercial activity or a public building for use by the public or employees (even the self-employed) has to comply with regulations intended to protect public health. This code of practice acknowledges that anyone providing a supply for domestic purposes, whether or not they are a licensed water undertaker, is under a duty to ensure that the supply is wholesome as defined in the legislation.

NOTE The drinking water regulators [Drinking Water Inspectorate (England, Wales, Northern Ireland) and the Drinking Water Quality Regulator (Scotland) together with Local Authorities] regulate drinking water quality and enforce the legislation. Guidance on the legislation is available from the drinking water regulators.

The primary purpose of a management system for temporary water supply is to ensure a wholesome water supply and demonstrate due diligence by the relevant persons (private supplies) or the water supplier (public supplies) in relation to water law and health and safety law. In relation to a temporary water supply, the management system has to be capable (through documentation) of demonstrating to the local authority that all of the procedural steps have been carried out.

This standard provides guidance to providers of temporary water supplies in the methods of transport, management and supply, which, if followed carefully, will ensure the wholesomeness of the water supply.

It also provides guidance on the preparation and use of temporary water transfer vessels which are pre-prepared and stored ready for collection and deployment, either for stand-alone use or connection to a temporary network. In addition to the supply of wholesome water, this standard covers the extraction from a wholesome supply and transfer to the point of use.

1 Scope

This British Standard gives recommendations and guidance on the provision and management of temporary water supplies and distribution networks to ensure the water supplied to users is wholesome. It is applicable to situations when a permanent supply is not available or not required, for example, at building sites and outdoor public events, or when there is an interruption in the public mains water supply.

NOTE The drinking water regulators, water companies and local authorities have in place collective arrangements for dealing with operational events, incidents and emergencies in relation to both public and private water supplies and they ought always to be informed and consulted before a temporary water supply arrangement is put in place. This includes emergency situations where these agencies are responders under the Security and Emergency Measures Direction [21].

The standard gives recommendations and guidance on procedures for:

- a) supplying, maintaining and cleaning vessels used to collect and transport wholesome water or function as temporary supply points;
- b) storage and quality control of bottled water stocks intended for temporary supply;
- c) connecting to a permanent distribution pipework for extraction purposes, avoiding contamination risks;

- d) installing temporary water storage vessels and temporary pipework for distribution networks serving temporary water draw-off points whilst avoiding contamination risks; and
- e) management of supplies to package welfare facilities, such as field canteens and ablution units.

This standard is intended to provide guidance on good practice related to anticipated temporary water supplies and installation of temporary distribution networks, but its principles are applicable to contingency arrangements for water supply incidents and emergencies (see note).

The standard also gives guidance on water supply hygiene and management practices which can involve staff training and/or operational procedures.

The standard relates to the supply of water that has already been treated to make it safe for drinking, and its provisions are intended to prevent contamination.

The standard is not applicable to:

- 1) the use and maintenance of large-bottle water dispensers, for example, the bottles often used in office water coolers/dispensers (although the management of stocks of water held for use in such devices is included);
- 2) the dispensing of the water supplied from vessels which are managed outside a predefined management regime, such as:
 - i) personalized utensils (for example, sports water bottles or personal filters);
 - ii) personal portable containers designed for carrying water; and
 - iii) vending machines;
- 3) the supply of water for the flushing of toilets; and
- 4) the extraction and treatment of raw water from springs, streams, wells, boreholes, lakes, rain or seawater as part of the provision of either a public or private water supply (regulated activity).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 6920-1, *Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water – Part 1: Specification*

BS 6700:2006+A1:2009, *Design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages – Specification*

BS EN 938, *Chemicals used for treatment of water intended for human consumption – Sodium chlorite*

BS ISO 5667-5, *Water quality – Sampling – Part 5: Guidance on sampling of drinking water from treatment works and piped distribution systems*

BS ISO 5667-21, *Guidance on sampling of drinking water distributed by tankers or means other than distribution pipes*

3 Terms and definitions

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

3.1 audit

systematic examination to determine whether activities and related results conform to planned arrangements and whether these arrangements are implemented effectively and are suitable for achieving the organization's policy and objectives

[BS EN ISO 9000:2005]

3.2 auditing programme

set of one or more audits planned for a specific time frame and directed towards a specific purpose

[BS EN ISO 9000:2005]

3.3 available chlorine

measure of the amount of chlorine available in chlorine based disinfection materials

3.4 best before date

advisory date before which the quality of the product is assured by the producer

NOTE This is in contrast with a use-by date or best-by date which indicates that the product is no longer fit for use after the specified date.

3.5 biofilm

structured community of microorganisms encapsulated within a self-developed polymeric matrix and adherent to a living or inert surface

NOTE Environmental organisms adhere to the surfaces of all types of material and form an invisible film on the inner surfaces of pipes or fittings. In certain circumstances where conditions for microbial growth are optimal, such biofilms develop to form visible slimes, turbid water or unpleasant tastes and odours. In such situations organisms will be shed into the flowing water.

3.6 competent person

person deemed to be capable, proficient or expert through training, knowledge or experience

3.7 contact water

water that is stored prior to super chlorination

3.8 customer

individual or organization that has contracted with a supplier to receive temporary water supply services

3.9 deployment log

record of the activities of transferring water into the storage vessel(s)

3.10 distribution network

permanent network of pipes (often called mains) that convey wholesome water from a public or private water supply treatment facility to a customer service connection or user draw-off point

3.11 emergency supply

immediate unplanned requirement for wholesome water via an alternative water supply method other than that arising from a civil emergency

NOTE Section 208 (7) of the Water Industry Act 1991 [1] defines "civil emergency" as any natural disaster or other emergency which could:

- a) disrupt water supplies or sewerage services; or*
- b) involve destruction of or damage to life or property.*

3.12 filling log

record of the activities of transferring water from the filling point into the transfer vessel(s)

NOTE This records "local" journeys only, not those from the base to the filling point, and contains, e.g. data, operator, times, water supply and supplier, water company, identity of transfer vessel, chlorine readings, volume and destination/use.

3.13 filling point

chosen fixture providing access to the wholesome water supply to the person or organization providing the temporary water supply

3.14 operator

person qualified to prepare vessels, fill and transfer water into vessels, and connect temporary supplies to a temporary distribution network

3.15 prepared vessel

vessel prepared to ensure that it is clean and, when filled with wholesome water, does not become contaminated

3.16 residual free chlorine

amount of chlorine remaining after a given contact period under specified conditions of dose and time

3.17 responsible person

individual appointed as competent to carry out tasks, or arrange for others to carry out tasks, in relation to the temporary supply of water

NOTE Such persons become "relevant persons" under the water legislation together with the organization or person appointing them.

3.18 service pipe

permanent pipe connection from a public or private water supply main or pipe to a property or a communal user draw-off point

3.19 static tank

stand-alone tank that is not connected by pipes to a public or private water supply main or pipe

3.20 storage vessel

temporary or permanent tank or reservoir which is constructed and maintained in a manner that after inspection has been determined as suitable for storing wholesome water

NOTE Suitability includes the type of construction materials, the condition of the structure and the arrangements that safeguard against ingress of environmental matter, rain or surface water, insects, vermin, etc., and minimize the likelihood of deliberate or accidental contamination.

3.21 tamper evident

process that makes unauthorized access to the protected object easily detected

3.22 temporary distribution system

pipework, fittings and appliances, installed either above ground or *in situ* but not those which comprise part of the permanent public or private water supply or the temporary storage tank or vessel which comprises the source of wholesome water for the temporary supply

3.23 temporary mains

pipework and fittings between end-user and temporary wholesome supply

3.24 temporary wholesome water infrastructure

non-permanent network that conveys wholesome water, including distribution pipes, from the public or private water mains supply or reservoir, including any temporary water vessels or tanks which are filled with wholesome water from a public or private water supply by pipes or tanker

NOTE It can also include any mains pressure boosting via temporary break tanks and a permanent network that is used intermittently with a permanent or temporary supply. However, direct mains boosting is not permitted under the Water Fittings Regulations [18, 19, 20].

3.25 temporary wholesome water supply

water deployed from stand-alone temporary vessels (including bottles) for public consumption where no other temporary water infrastructure is involved

3.26 temporary vessel

container, usually reusable, that is suitable for the collection, storage and distribution of a wholesome water supply

3.27 total residual chlorine

sum of the combined chlorine and the residual free chlorine

3.28 testing facility

laboratory for testing water samples

3.29 total viable count (TVC)

estimate of number of bacteria in a sample

NOTE Also known as aerobic plate count (APC) or heterotrophic plate count (HPC).

3.30 transfer vessel

vessel for collecting water from a filling point, transporting water and decanting water into a static temporary supply tank, but not left on site and not comprising part of the temporary water supply infrastructure

NOTE 1 Transfer vessels can be either tankers or bowzers, and are usually transported by road on a flatbed truck or trailer.

NOTE 2 A transfer vessel would normally be used several times in one day.

3.31 water technician

competent installer of water supply networks, both mains and temporary

3.32 water supplier

person or organization providing a private water supply

3.33 water undertaker

licensed water supplier providing a public water supply

4 Medical assessment and water quality hygiene awareness training

All operational personnel involved in the provision of a water supply should be subject to scrutiny and training to ensure that they do not present an increased risk of transmission of agents associated with waterborne illnesses.

NOTE This usually takes the form of a preliminary health questionnaire accompanied by relevant information to identify risk factors that might warrant the individual being excluded from operational tasks until they have been assessed by a medical practitioner as being fit to work on restricted water supply operations.

In addition, personnel should receive water quality hygiene awareness training in accordance with Annex A to ensure that they are aware of the ongoing need to report certain illnesses to management and exclude themselves from restricted operational work tasks.

5 Wholesome supply suitability

5.1 General

The supply of all water is subject to availability from the local public or private water supply company and local extraction licence agreements. In the case of a public supply, the water company can restrict access to the public water supply. Therefore, unless specifically authorized, the operator should seek clearance to draw water on every occasion, unless the licence granted by the water company is open for use in all areas.

NOTE Some water utilities limit the size of hydrant to be used in order to prevent high-flow extraction and reduce the risk to the network to acceptable standards. In the case of a private water supply, the owner/manager can set any conditions which have to be agreed in advance and adhered to, and the local authority can restrict the use of any private water supply in its area.

5.2 Draw-off points

As explained in 5.1, the operator requires a valid license to draw off water from a public water distribution network. In the case of a regulated private supply the operator should obtain:

- a) evidence from the local authority that the supply is suitable; and
- b) the permission of the owner/manager.

Equipment used for draw-off should be clean, disinfected and sealed (if stored before use) to avoid contamination of the water. Standpipes should have a double-check valve in line to prevent backflow. Only standpipes of a type approved by the water company should be used.

NOTE The same principles regarding equipment also apply to private water supplies.

Only equipment conforming to the Water Supply (Water Fittings) Regulations 1999 [18] should be used to make the connections. The equipment should be disinfected before use. Final connectors should be physically sprayed with 1 000 mg/L free chlorine solution and allowed to stand for two minutes in a manner that protects from contamination (e.g. by being placed on or in a new, clean plastic bag, not placed directly on the ground), then flushed for two minutes before connection to the transfer vessel to remove residual chlorine. Records of all draw-offs should be maintained for each vessel.

Hoses used to draw off wholesome water should:

- 1) have unique fittings from all other hose fittings on the vessel;