



**International
Standard**

ISO 24596

**Drinking water, wastewater and
stormwater systems and services —
Guidelines for the planning and
implementation of infrastructure
hardening for water and
wastewater systems**

*Systèmes et services relatifs à l'eau potable, à l'assainissement
et à la gestion des eaux pluviales — Lignes directrices pour
la planification et la mise en œuvre du renforcement des
infrastructures des services de l'eau et de l'assainissement*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 224, *Drinking water, wastewater and stormwater systems and services*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Hardening of water and wastewater infrastructure is one of the most crucial issues to address when formulating and implementing a plan for assuring the security of water and wastewater systems. The delivery of strong safety and security outcomes is essential to protect employees, the public and the assets of the water utility. Securing the assets and operations, where these facilities constitute an essential element of water service continuity or contain hazards or risks to the public, should be central to each water utility's safety and security programme and demonstrated through applied risk management principles, business activities and associated corporate documentation. These assets are crucial to ensure service continuity and minimize risks to the community.

Over the past few years there has been an increase in water and wastewater supply crisis events associated with:

- climate change;
- cyberattacks on water infrastructure;
- civil disruption;
- terrorist-related physical attacks on civil targets.

There has also been an increase in public awareness of water and wastewater incidents.

Under these circumstances, the protection of water and wastewater infrastructure is of critical importance.

Hardening of water and wastewater infrastructures has the aim of enhancing the protection of these infrastructures. Hardening consists of construction and creation of barriers, that can include physical and electronic elements, personnel and organizational measures, with the purpose of making it difficult to intentionally or unintentionally disrupt service continuity, supply and quality.

Examples of such barriers include fences, buildings, electronic alarms and cameras connected to control rooms, remote valves, both manual and remote controlled, backflow preventers, analysis software, such as event detection systems (EDS, as described in ISO/TS 24522)^[1] and software designed to prevent cyberattacks.

Another type of protective system is the installation of monitoring equipment for water quality and operational parameters. This document only briefly refers to this type of protection. For more information, see ISO/TS 24541^[2].

Drinking water, wastewater and stormwater systems and services — Guidelines for the planning and implementation of infrastructure hardening for water and wastewater systems

1 Scope

This document provides guidelines for the planning and implementation of hardening of different water and wastewater infrastructures aiming to improve the resilience of water and wastewater services provided by water utilities through security measures.

It applies to the determination of measures for the protection of water supply systems and sewer collection systems from unwanted or unplanned access, as part of risk management. This document is applicable to all water and/or wastewater utilities.

This document does not include guidelines for the protection of large water sources such as lakes or rivers.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 24513, *Service activities relating to drinking water supply, wastewater and stormwater systems — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 24513 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

access point

opening or accessible opening in the perimeter of a site, building, structure or cabinet

3.2

alarm

audible and visual signal alerting a condition requiring immediate attention or user action

[SOURCE: ISO 8468:2007, 3.1.3^[3]]

3.3

alarm response

type and timeframe of physical response to a designated site to enable an informed management decision in response to an *alarm* (3.2) or other alert