
**Service activities relating to drinking
water supply, wastewater and
stormwater systems — Water and
wastewater services for temporary
settlements for displaced persons**

*Activités de service relatives aux systèmes d'alimentation en eau
potable, aux systèmes d'assainissement et aux systèmes de gestion
des eaux pluviales — Services d'eau et d'assainissement pour les
installations provisoires pour les personnes déplacées*

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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).

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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*.

ISO/TS 24519:2022

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

Natural disasters, climate change and wars resulting in the mass migration of populations fleeing their homes to temporary settlements such as refugee/internally displaced persons (IDP) camps has become a reality in many parts of the world. Temporary settlements are planned or spontaneous places where refugees or IDPs can reside and benefit from welfare provision, safety and protection, and other assistance from host governments and humanitarian actors. Reliable and good quality water supply for purposes such as drinking, sanitation, hygiene, e.g., WASH (water, sanitation and hygiene) is critical for the survival of the population in temporary settlements. Risks due to natural disasters also require consideration. For instance, earthquakes can cause damage to electricity and/or transportation infrastructure, which are relied on for the construction and operation of the drinking water supply network and wastewater treatment system.

In order to establish a reliable drinking water supply to temporary settlements, it is desirable to have a regular drinking water supply system based on a water source connection through fixed or temporary piping. If this is not possible, water tankers can be used to supply the required quantity of drinking water to the temporary settlement on a regular basis. The water sources used for this purpose should be suitable for drinking purposes. Where water sources that are suitable for drinking purposes are limited, water sources of lower quality can be used for sanitation and other non-potable use purposes only, and cannot be used as drinking water.

Dealing with the adequate disposal of wastewater produced in a temporary settlement is also of critical importance. Neglecting proper disposal of wastewater can seriously harm public health and the environment. It is desirable that the wastewater from temporary settlements will be conveyed by means of fixed or temporary pipeline infrastructure that will enable its removal from the area of the temporary settlement and treated by adequate installations outside the settlement. If this is not possible, portable wastewater tankers can be used to transfer the wastewater to another location outside the temporary settlement for proper treatment.

There are different types of temporary settlements e.g. emergency and/or transition camps. In most cases, drinking water and wastewater provisions can differ or need to evolve according to spatial and temporal factors.

An international guideline can provide information on the different possibilities for providing alternative water services (AWS) and alternative wastewater services (AWWS) to temporary settlements of displaced persons, the methods that can be used to implement such possibilities and the technical aspects that have to be accounted for when considering the implementation of different solutions to resolve the problems of AWS and AWWS that arise in such settlements.

The purpose of this document is to serve as a guideline for planning and setting up appropriate water and wastewater services for temporary settlements.

A guideline for drinking water service provision to temporary settlements can also facilitate communication between relevant parties, coordinate activities and contribute to cost saving. It can be used by relevant industry and stakeholders wishing to be prepared to cope with the issues of drinking water supply and wastewater disposal in temporary settlements.

Service activities relating to drinking water supply, wastewater and stormwater systems — Water and wastewater services for temporary settlements for displaced persons

1 Scope

This document provides guidelines for alternative water services (AWS) and alternative wastewater services (AWWS) to temporary settlements for displaced persons e.g. refugee/internally displaced persons (IDP) camps, for drinking, sanitation and hygiene purposes. It addresses AWS and AWWS principles and methods, operational planning and implementation.

This document provides guidelines for drinking water supply to temporary settlements, and the disposal of wastewater, by implementation of different methods; it does not deal with the ways of using water inside the temporary settlements. This document deals with drinking water quantity but does not provide methods for quality testing. Water quality test methods are included in the scope of ISO TC 147.

The document does make recommendations regarding public safety with respect to the location of distribution and collection points. On-site treatments are not discussed in this document but, depending on circumstances, they can be suitable. In such case, helpful technical guidelines are provided in the bibliography of this document.

This document complements ISO 24527, whose scope excludes drinking water supplied to temporary settlements. It also complements other ISO TC 224's documents such as ISO 24518 and ISO/TS 24520.

This document is intended to be used by the responsible body for the provision of the water service. It can be used by interested parties such as water utilities, governments and governmental organizations, security bodies, international refugee agencies, related NGOs and relevant industry stakeholders.

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 24513:2019, *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 24513:2019 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

displaced person

a person who is forced to leave without their will their home or country

3.2

wastewater

water arising from any combination of domestic, institutional, commercial or industrial activities, surface runoff and any accidental sewer inflow/infiltration water and which can include collected stormwater, discharged to the environment or sewer

Note 1 to entry: Wastewater can flow in separate or combined sewer systems.

3.3

grey water

greywater

wastewater (3.2) from bathtubs and showers, hand basins, kitchen sinks, clothes washing and laundry tubes but excluding excreta and trade effluent

Note 1 to entry: It excludes used water from urinals or toilet bowls.

Note 2 to entry: Wastewater from kitchen sinks, food waste grinders or dishwashers can be excluded, subject to local requirements.

4 Principles for AWS and AWWs provision for temporary settlements

4.1 Responsibility

The authority which authorized the establishment of the temporary settlement should ensure that a consultation process is initiated among the entities concerned by the water services. This should allow for the designation of the responsible body to be in charge of the operation.

The first task of the responsible body in charge of the operation should be to establish an operational team.

The following are possible examples of responsible bodies: a local water utility, municipal authority, governmental bodies, military units, international bodies (e.g. UN WASH), NGO's, private companies (e.g. transport companies, containerized water companies).

A planning and operational team should be appointed of representatives of these relevant bodies, to allow a coordinated operation and determine the necessary decisions. The inclusion of representatives of the displaced persons in the temporary settlement should also be considered.

4.2 Main purposes of the operation

The main purposes of the operation should include the following.

- a) Bring to the temporary settlement enough water, in accordance with the AWS and AWWs plans which determine water allocation per capita per day, drinking water, and water for sanitation and hygiene purposes, considering the need for personal and public safety.
- b) Dispose of wastewater from the temporary settlement area to a dedicated site.

4.3 Temporary settlements categorization

For the purpose of this guideline, temporary settlements should be categorized as follows.

- a) Temporary settlements that can be connected to existing drinking water and wastewater infrastructure.
- b) Temporary settlements that can be connected to existing drinking water and wastewater infrastructure, but with limited capacity.
- c) Temporary settlements that cannot be connected to existing drinking water and wastewater infrastructure.

These three types of temporary settlements require different AWS and AWWS approaches.

The categorization of the temporary settlements may include a combination between these three types, e.g. drinking water infrastructure is available, but no wastewater infrastructure is available, or vice versa.

Temporary settlements may also be categorized by the availability of a water source which may not be adequate for drinking purposes but can be used for sanitation purposes, e.g. on-site treated wastewater, grey water.

In such case of a combination of the three types of settlements, AWS and AWWS provision should be based on a combination between the approaches described in [4.4](#).

4.4 AWS and AWWS provision to temporary settlements approaches

4.4.1 Using existing drinking water and wastewater networks

The use of existing drinking water and wastewater networks is based on the condition that drinking water and wastewater infrastructure is available, i.e., water or wastewater infrastructure that is:

- physically present;
- has the capacity to supply additional population;
- has political and administrative approval to be used for the additional population.

To be able to use existing drinking water and wastewater networks, the planning and operational team should connect the temporary settlement to the existing infrastructure by erecting temporary standpipes connected to the networks. Inside the temporary settlement, the planning and operational team should connect the temporary standpipes to users (e.g. multi drinking water taps, toilets, showers, etc.) and connect the toilets and showers to the wastewater infrastructure.

The use of existing drinking water and wastewater networks is the preferred approach as it provides users with the most reliable AWS and AWWS services, as well as the highest level of WASH.

See more on the operational aspects of this approach in [Clause 6](#).

4.4.2 Using existing drinking water and wastewater networks but with limited capacity

When existing drinking water and wastewater networks are available but with limited capacity, the largest available quantity of water should be supplied from the infrastructure, while the rest of the water should be supplied as described in [4.4.3](#).

The largest possible quantity of wastewater should be disposed of through the infrastructure, while the rest of the wastewater should be disposed of by means of transportation, or by on-site wastewater treatment (for more information about on-site wastewater treatment, see ISO 23056 and ISO 24521).

4.4.3 Providing drinking water by means of transport

This approach of provision of drinking water by means of transport assumes that limited or no drinking water and wastewater infrastructure are available. To implement this approach the planning and operational team should use various means of transport for the drinking water (e.g., mobile tankers, trains, air crafts) in order to provide it to the temporary settlement and to dispose of its wastewater. While using these various means of transport, the quality of the distributed water should always be clear / well marked for everyone in the supply chain.

Inside the temporary settlement, temporary points of distribution (TPDs) should be established. Such TPDs should be the interface for users to receive drinking water and water for hygiene purposes.

Containerized drinking water may also be used in this approach.

In this approach, sanitation should not be based on water. The planning and operational team should use different types of toilets (e.g. chemical toilets, latrines) and make the necessary arrangements to dispose of the wastewater by means of transport (e.g. mobile wastewater tanker) out of the temporary settlement to a dedicated site.

The planning and operational team should communicate to users instructions:

- about the establishment of TPDs to supply drinking water according to a determined water allocation;
- about the use of provisional toilets/latrines;
- regarding hygiene practices;
- about the quality of the distributed water.

See more on the operational aspects in [Clause 6](#).

4.4.4 Only drinking water infrastructure available

If only drinking water infrastructure is available, drinking water should be supplied as described in [4.4.1](#).

In the absence of wastewater network, an assessment should be completed to decide the best approach to wastewater. The planning and operational team can build a provisional wastewater lagoon for the temporary settlement, to dispose of – or disinfect – the wastewater according to the requirements of the responsible body, as described in [4.4.3](#).

4.4.5 Water source not adequate for drinking is available

When a water source that is not adequate for drinking is available, if it can be connected to the temporary settlements by temporary standpipes, it should be connected only to toilets and showers. Drinking water should be supplied as described in [4.4.2](#). If wastewater infrastructure is available, it should be connected as described in [4.4.1](#). If not, wastewater should be addressed as described in [4.4.4](#).

This approach, of using a water source that is not adequate for drinking, can be difficult to manage and lead to health issues so it should only be selected when other solutions cannot be implemented.

If a water source not adequate for drinking is available and used, the responsible body should communicate to the camp management that the water cannot be used for drinking purposes, so that the camp management can communicate this to the users.

4.4.6 A Natural water source is available

Where a natural water source such as a river or a lake is available near the temporary settlement, it may be used for hygiene purposes (e.g., shower, laundry), pending approval by the relevant authority for this use.

AWS and AWWS should be supplied according the circumstances, as described in [4.4.1](#) to [4.4.5](#).

The planning and operational team should inform users about the permitted uses (e.g. washing, laundry) and uses that are not permitted (e.g. drinking) and why they are not permitted, see also [6.7](#).

4.4.7 Creating a new water source

If there is no water source available near the temporary settlement, the planning and operational team should consider, according to geological conditions, the drilling of a new well(s), seawater desalination, mobile membrane filtration of stormwater / grey water etc., if the relevant means are available. See also [6.7](#), [6.8](#) and [Annex A](#) g).

Wastewater can also be treated within the temporary settlement for various uses. See further guidance on ISO 24521; ISO 23056.

4.4.8 Water allocation

The planning and operational team should determine a water allocation per capita per day. The amount of water allocation can vary between approaches (for example: the water allocation when using the approach described in 4.4.1 can be larger than the water allocation when using other approaches).

The planning and operational team should take into consideration that water allocation needs to be enough for WASH.

4.4.9 Water quality

The planning and operational team should take all practical actions to ensure the quality of the water is fit for purpose.

4.4.10 Grey water

For the purpose of saving drinking water, especially when the availability of drinking water is limited, grey water may be used for sanitation. In this case, appropriate infrastructure should be installed. The source of grey water is preferred to be within the camp but may also be outside, with the use of means of transport.

See more on ISO 23056 and in the WHO Guidelines for drinking water quality.

5 Planning for AWS and AWWS provision for temporary settlements

5.1 General

AWS and AWWS provision for temporary settlements should be dealt with by the designated planning and operational team. This team should be assembled according to the specific circumstances and location of the event. The planning and operational team should include representatives of relevant bodies (e.g. a local water utility, municipal authority, governmental bodies, military units, UN, NGOs). The inclusion of representatives of the displaced persons in the temporary settlement can be considered. The planning and operational team for AWS and AWWS for temporary settlements can be supervised by the temporary settlement management team.

The planning and operational team should evaluate the temporary settlement's situation and needs such as location, water sources, water and wastewater infrastructure, number of people, etc., including the provision of services to users with special needs.

According to this evaluation, the planning and operational team should decide on the adoption of one of the approaches of AWS and AWWS provision and, in accordance, plan the actions needed to implement and operate the chosen approach. Cooperation with other stakeholders should be considered in the selection of the chosen approach.

Stakeholder engagement and consultation is fundamental to select and develop an appropriate water and wastewater solution. Each group of users, including vulnerable groups and minorities that will face different challenges like children, elders, women and different ethnic groups, should be represented in planning and operational teams. Users' opinions and views should inform the design process and be incorporated into the project during the entire lifecycle. Users should be consulted before any change is implemented.

Consideration should also be given to the requirements related to the dismantling and removal of temporary structures after the need for them has passed.

See more information on The Global Wash Cluster website: <https://washcluster.net/>