



BSI Standards Publication

Drain and sewer systems outside buildings — Design

- Part 1: Layout principles

National foreword

This British Standard is the UK implementation of EN 16933-1:2022.

The UK participation in its preparation was entrusted to Technical Committee B/505/22, Drainage Systems Outside Buildings.

A list of organizations represented on this committee can be obtained on request to its committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2022
Published by BSI Standards Limited 2022

ISBN 978 0 539 12880 2

ICS 93.030

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 May 2022.

Amendments/corrigenda issued since publication

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

English Version

Drain and sewer systems outside buildings - Design - Part 1: Layout principles

Réseaux d'évacuation et d'assainissement à l'extérieur
des bâtiments - Conception - Partie 1 : Principes
d'implantation

Entwässerungssysteme außerhalb von Gebäuden -
Planung - Teil 1: Planungsgrundsätze

This European Standard was approved by CEN on 17 January 2022.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword	3
Introduction	4
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions	6
4 General.....	8
4.1 Introduction.....	8
4.2 The design process	8
5 Preliminary investigations.....	10
5.1 General.....	10
5.2 Topography.....	10
5.3 Geotechnical survey.....	10
5.4 Groundwater	11
5.5 Existing drainage services	11
5.6 Other existing utility services	11
5.7 Nature and quality of inputs	11
6 Layout.....	12
6.1 General.....	12
6.2 Access locations.....	14
6.3 Provision of pumping	16
6.4 Drains and sewers near water abstraction areas	17
7 Sources of additional information	17
Bibliography	18

European foreword

This document (EN 16933-1:2022) has been prepared by Technical Committee CEN/TC 165 “Wastewater engineering”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2022, and conflicting national standards shall be withdrawn at the latest by September 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

Drain and sewer systems are part of the overall wastewater system that provides a service to the community. This can be briefly described as:

- removal of wastewater from premises for public health and hygienic reasons;
- prevention of flooding in urbanised areas;
- protection of the environment.

The overall wastewater system has four successive functions:

- collection;
- transport;
- treatment;
- discharge.

Drain and sewer systems provide for the collection and transport of wastewater.

EN 752:2017 provides a framework for the design, construction, rehabilitation, maintenance and operation of drain and sewer systems outside buildings. This is illustrated in the upper part of the diagram in Figure 1. EN 752:2017 is supported by more detailed standards for the investigation, design, construction, management and control of drain and sewer systems.

Investigation and assessment standards include:

- EN 13508 (all parts), *Investigation and assessment of drain and sewer systems outside buildings*

Design and construction standards include:

- EN 16932 (all parts), *Drain and sewer systems outside buildings - Pumping systems*
- EN 16933, *Drain, sewer systems outside buildings - Design*
- EN 1295, *Structural design of buried pipelines under various conditions of loading*
- EN 1610, *Construction and testing of drains and sewers*
- EN 12889, *Trenchless construction and testing of drains and sewers*
- EN 15885, *Classification and characteristics of techniques for renovation, repair and replacement of drains and sewers*

Management and control standards include:

- EN 14654 (all parts), *Drain and sewer systems outside buildings - Management and control of activities*

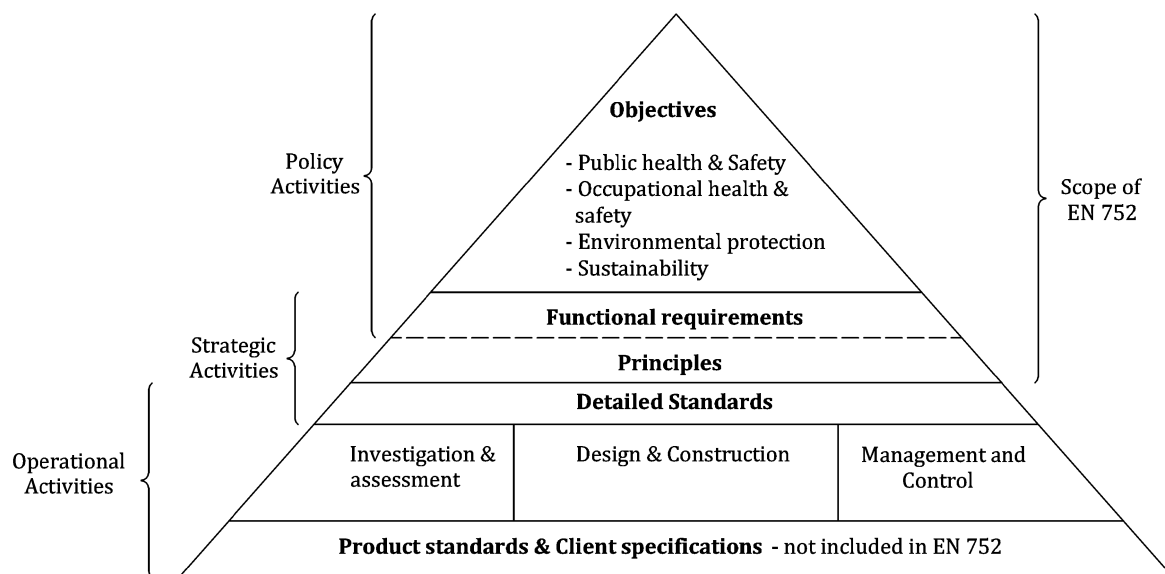


Figure 1 — Relationship to EN 752:2017 and other drain and sewer standards¹

¹ Source: EN 752:2017.