

**CODE OF PRACTICE
DRAINAGE FIELDS FOR THE
DISPOSAL OF EFFLUENT
FROM BS EN 12566
CERTIFIED PACKAGED
WASTEWATER TREATMENT
PLANTS AND SEPTIC TANKS**

BRITISH WATER WWTP FG DF-V0.1-2020



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THIS GUIDE HAS BEEN PRODUCED BY THE BRITISH WATER WASTEWATER TREATMENT PLANT FOCUS GROUP

01. SCOPE



To **illustrate** to owners and users of Septic Tanks and Packaged Wastewater Treatment Plants how a drainage field works and why it is important they operate correctly.



To **explain** in simple terms how the correct design and installation of a drainage field is essential to avoid polluting the environment.



To help **owners** understand that they have a duty, under environmental regulations, to ensure that their wastewater system does not pollute the environment.

02. INTRODUCTION

A poorly maintained or incorrectly installed drainage field will result in environmental pollution and owners may be subject to enforcement by the environmental regulator. The purpose of this Guide is to help you avoid this. It explains what a drainage field is, why it is needed and how to find a company that will install and maintain it correctly to BS 6297:2007+A1:2008.

The terms drainage field and soakaway are sometimes used interchangeably as if they are the same thing and perform the same function. They do not.

03. WHAT IS A DRAINAGE FIELD?

Drainage fields, or soakaways in Scotland, are an important component of the wastewater treatment system.

A drainage field has two main purposes:

- // To allow infiltration of the partially treated effluent into the ground at a **controlled rate**.
- // To allow further **natural biological treatment** of the partially treated effluent before it reaches the underlying groundwater. This treatment takes place in the aerated layers of the soil. *A suitable percolation test will ensure that the receiving ground is suitable for the installation of a drainage field.*

It is essential that as an owner of a Packaged Wastewater Treatment Plant or Septic Tank you do not inadvertently agree to have a soakaway installed, which should only be used with surface water, not with wastewater.

04. KEY POINTS TO CONSIDER **BEFORE INSTALLING A DRAINAGE FIELD**

PRELIMINARY PLANNING

The design and installation of a drainage field must comply with:

- // BS 6297:2007+A1:2008
- // Building regulations
- // Environmental regulations

SITE INVESTIGATION

- // Must be a minimum of 10m from a watercourse, 50m from a water abstraction point used for human consumption (e.g. a well or borehole) and a recommended minimum of 15m from a habitable building.
- // The base of the trenches must be at least 1.2m above the seasonally highest groundwater level to prevent direct entry to groundwater.
- // The direct entry of sewage effluent to groundwater is prohibited under the law.
- // All drainage fields in a groundwater Source Protection Zone 1 (SPZ1) require an environmental permit from the Environment Agency.
- // Septic tanks can only discharge via a drainage field. Discharge to a watercourse (stream, ditch, pond, etc) is not allowed.
- // Topography, soil characteristics and composition of the effluent should be examined.

SITE ASSESSMENT:

The key factor in the potential use of a drainage field is the suitability of the ground. Ground where water soaks away too quickly (e.g. some sandy soils), or soaks away too slowly (e.g. some clay soils) may not be suitable. Waterlogged ground is never suitable. This is a complex area so you should engage the services of a reputable British Water Wastewater Accredited Service Technician to carry out the tests to ascertain the ground suitability:

- // Trial holes to investigate the groundwater level and to characterize the soil profile.
- // Soil characteristics and site geology assessments.
- // Percolation tests: to determine the length and area of infiltration and soil porosity. Must follow BS6297.

RESTRICTIONS:

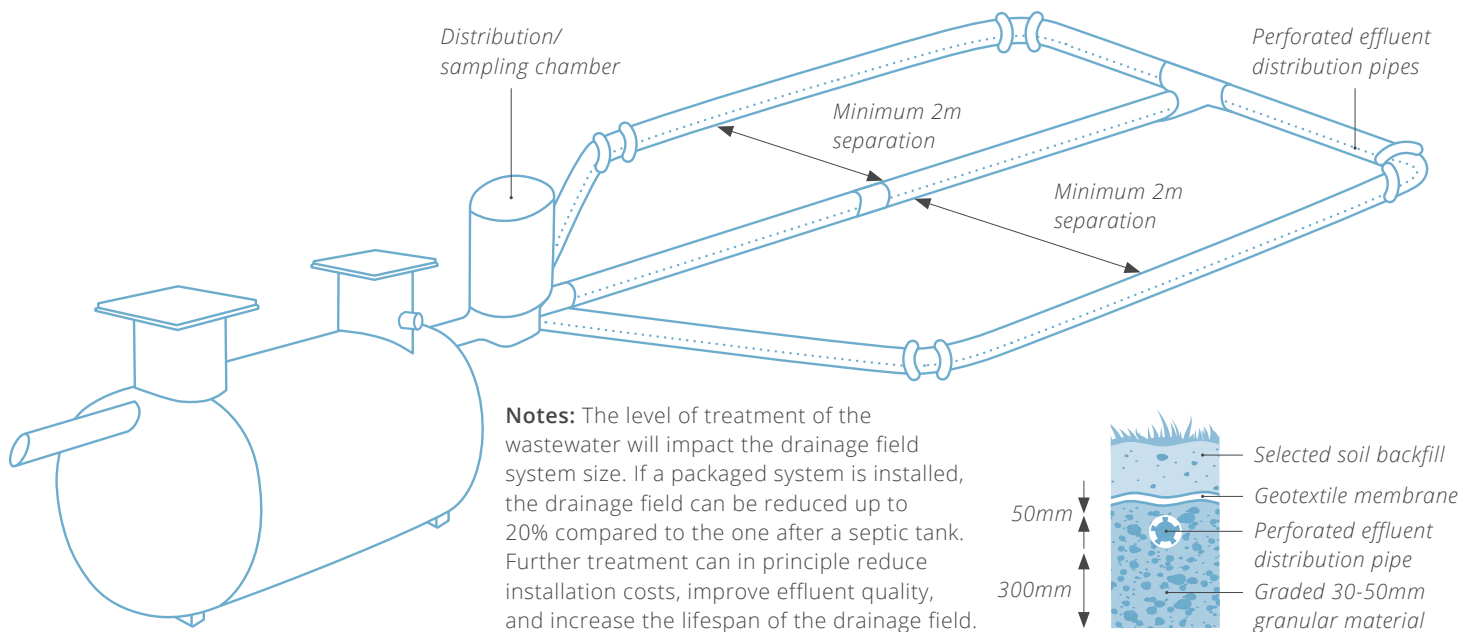
Drainage fields can only be used where soil conditions are suitable and where there is sufficient ground space to accommodate the infiltration trenches.

05. DRAINAGE FIELD DESIGN

There are two types of drainage fields. The most common of the two, are drainage fields laid in the ground. Drainage mounds are placed above the natural surface. They should be only used when soil and drainage conditions prove to be unsuitable for other forms of effluent dispersal. Your British Water Experienced Installer will advise you on the most appropriate design for your site.

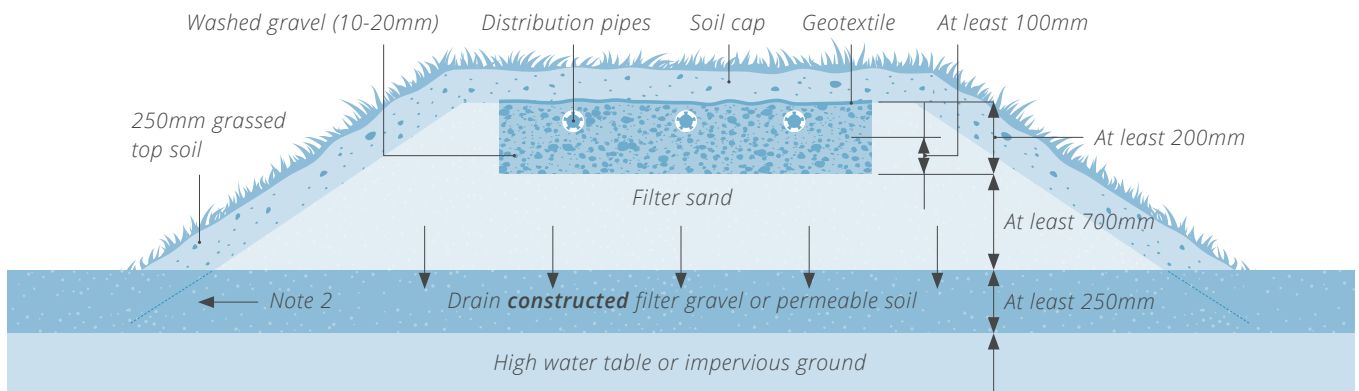
DRAINAGE FIELD

(The Building Regulations 2010- Drainage and Waste Disposal). In Scotland drainage fields need to be designed in accordance with the Building Control Technical Handbook.



DRAINAGE MOUND

(The Building Regulations 2010- Drainage and Waste Disposal). In Scotland drainage mounds need to be designed in accordance with the Building Control Technical Handbook - which refers to BR 478, 'Mound Filter Systems for the treatment of domestic wastewater'.



Notes: 1. To provide venting of the filter, the upstream ends of the distribution pipes may be extended vertically above mound level and capped with a cowl or grille. 2. Surface water runoff and uncontaminated seepage from the surrounding soil may be cut off by shallow interceptor drains and diverted away from the mound. There must be no seepage of wastewater to such an interceptor drain. 3. Where the permeable soil is slow draining and overlaid on an impervious layer, the mound filter system should be constructed on a gently sloping site.

06. DRAINAGE FIELDS TESTS

As discussed in section 4, the key factor in the potential use of a drainage field is the suitability of the ground. Detailed below are the tests which can ascertain the ground suitability of an area. As this is a complex area, you should engage the services of a reputable British Water Wastewater Accredited Service Technician to carry out these tests.

Installers should perform two tests:

Water table test

This determines the location of the water table which changes seasonally. It is not required that the depth to groundwater is proven by testing, but a drainage field should only be used if the water table test shows that the groundwater table will be at least 1.2m below the pipework in the drainage field throughout the year.

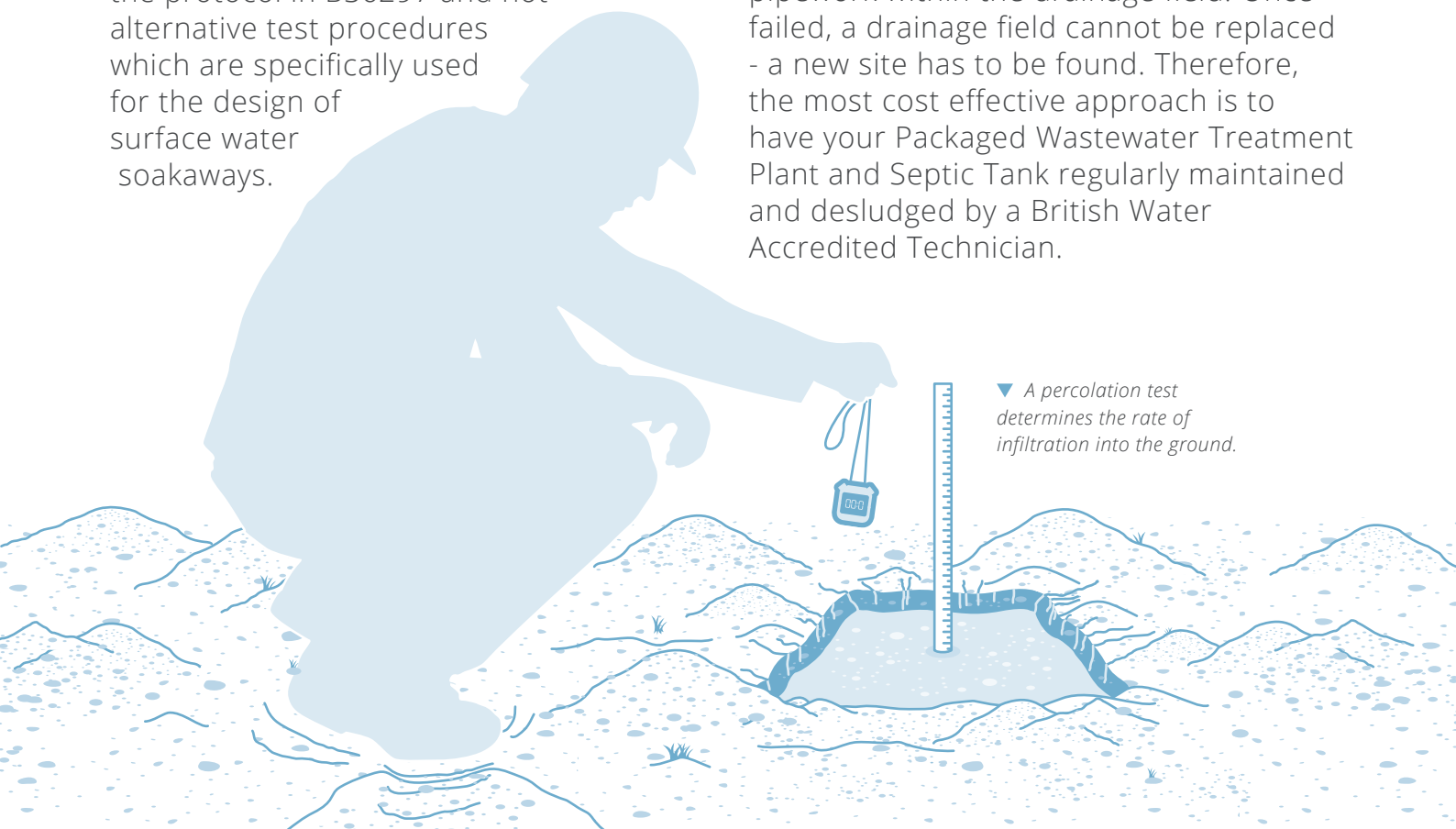
Percolation test

This determines the rate of infiltration into the ground. Testing should follow the protocol in BS6297 and not alternative test procedures which are specifically used for the design of surface water soakaways.

07. THE IMPORTANCE OF MAINTENANCE

Drainage Fields do not have an infinite lifespan operating as they do in the natural environment. Over time root intrusion can interfere with their operation, as can long term changes in weather patterns which result for example in a higher water table across all seasons. However, the most common reason for drainage field failure is misuse and poor care of the 'upstream' system' which feeds into the drainage field. The drainage field should be inspected monthly to check it is not waterlogged and that effluent is not backing up. Particular care should be taken to avoid compaction or disturbance of the area over the drainage field.

The upstream system is the packaged wastewater treatment plant or septic tank. All upstream systems require regular maintenance and desludging. This will ensure poor quality effluent does not enter the drainage field and block the perforated pipework within the drainage field. Once failed, a drainage field cannot be replaced - a new site has to be found. Therefore, the most cost effective approach is to have your Packaged Wastewater Treatment Plant and Septic Tank regularly maintained and deslugged by a British Water Accredited Technician.



▼ A percolation test determines the rate of infiltration into the ground.

08. REGULATORY RESPONSIBILITY

Owners have a duty to:

// Ensure their Packaged Wastewater Sewage Treatment Plant or Septic Tank has been correctly installed and complies with the current building and environmental regulations.

// Ensure their Drainage Field has been correctly designed and installed to meet **BS 6297:2007+A1:2008** code of practice for the design and installation of drainage fields for use in wastewater treatment.

Once installed and commissioned owners have an ongoing duty to ensure treated effluent from the Packaged Wastewater Treatment System and Septic Tank meets environmental regulatory standards. This means that it should meet any specified discharge quality and that it does not pollute the surrounding ground or water. This is not an onerous duty as regular maintenance by a British Water Accredited Service Technician will maximise the natural lifespan of your drainage field by ensuring that poor effluent quality does not block the perforated pipework which would lead to drainage field failure. Click here to find the list of British Water Accredited Service Technicians.

09. REFERENCE DOCUMENTS

BS 6297:2007+A1:2008 Code of Practice for the Design and Installation of Drainage Fields for use in Wastewater Treatment.

Building Regulations 2010 H - Drainage and Waste Disposal- For use in England:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/442889/BR_PDF_AD_H_2015.pdf

Building Regulations 2010 H - Drainage and Waste Disposal - For use in Wales:
https://www.labc.co.uk/sites/default/files/EXT.Approved-Document-H-Drainage-%26-Waste-Disposal.JMCN_.v1.030417.pdf

Building Standards technical handbook 2019. 3.9 Private wastewater treatment systems-infiltration systems - For use in Scotland:

<https://www.gov.scot/publications/building-standards-technical-handbook-2019-domestic/3-environment/3-9-private-wastewater-treatment-systems-infiltration-systems/>

Control Technical Handbook - which refers to BR 478, 'Mound Filter Systems for the treatment of domestic wastewater' - For use in Scotland and Northern Ireland:

<https://www.netregs.org.uk/environmental-topics/water/septic-tanks/new-tanks-planning-waste-water-and-sewage-treatment/>

OTHER SOURCES OF INFORMATION

1. British Water list of Accredited Service Engineers can be viewed at: <https://www.britishwater.co.uk/directory/findengineer.aspx>
2. Other British Water publications available at www.britishwater.co.uk are:
 - A. Code of Practice: Guide to the Installation of Sewage Treatment Systems
 - B. Code of Practice: Guide to Desludging Sewage Treatment Systems
 - C. Code of Practice: Flows and Loads 4
 - D. Code of Practice: Maintenance and Servicing by British Water Accredited Technicians
 - E. A Guide for Users of Packaged Wastewater Treatment Plant

SYSTEMS THAT SHOULD NOT BE USED AS DRAINAGE FIELDS

Surface water soakaways: Are little more than a large hole or pit that receive surface water (rainwater from roofs, paved areas etc...) to percolate through the soil to reduce the risk of flooding.

Cautionary Note: Soakaways are not Drainage Fields. BS6297 states deep pit based systems should not be used for wastewater effluent disposal.

Storm crates/attenuation systems sometimes used in soakaways do not enable further biological treatment of partially treated effluent before it reaches the groundwater level. Using storm crates instead of installing a properly designed drainage field will lead to groundwater pollution.

BS6297 states surface water soakaways should not be used for wastewater effluent disposal.

THE ENVIRONMENTAL REGULATORS ARE:



Environment Agency
(EA) in England



Natural Resources Wales
(NRW)



Scottish Environment
Protection Agency (SEPA)



Northern Ireland
Environment Agency (NIEA)

Users can access the websites by clicking on the logos above.

Anyone who makes discharges to the environment, including sewage effluent, has a responsibility to ensure their discharge is not polluting and meets the regulatory requirements that apply to their discharge and location. You should ensure your treatment system is well operated and maintained, and that a new or replacement system is correctly sited and installed.

Further information can be found by clicking on the environmental regulator logos, above, to access their websites.

Note: The Environment Agency, Natural Resources Wales, the Scottish Environment Protection Agency and the Environment and Heritage Service (Northern Ireland) support the use of this code of practice, but the Agencies do not specifically endorse any particular manufacturer's product.

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