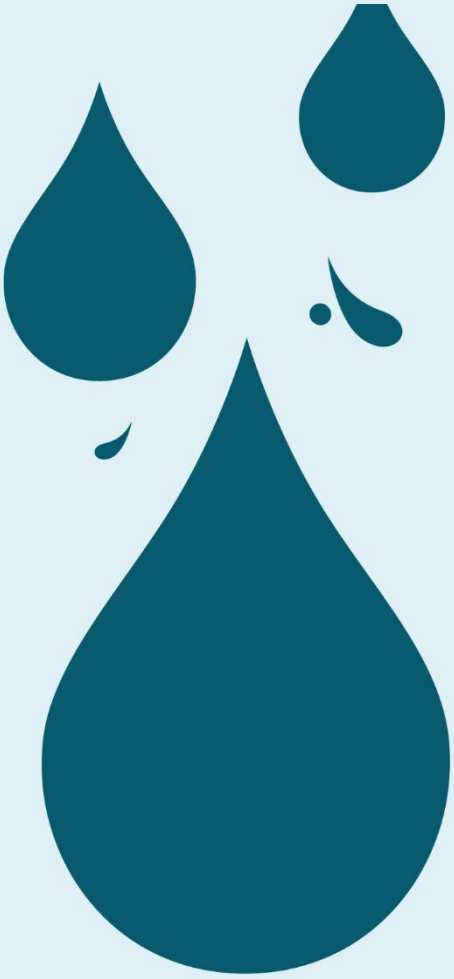
Planning Guidance for Developers

Infiltration testing and Groundwater Monitoring Technical Note



Hampshire County Council

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Notice

This document and its contents have been prepared by Hampshire County Council and is intended solely as information for Local Planning Authorities and Developers in Hampshire and should be used in relation to surface water drainage strategies and flood risk assessments.

The County Council assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 9 pages including the cover.

Document history

Revision	Purpose description	Originated	Reviewed	Authorised	Date
Rev 1.0	IT & GWM Technical Note	SDH	SR	SR	Nov 2025
Rev 2.0					
Rev 3.0					

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Contents

1. Aims and Objectives

This guidance is for anybody proposing to utilise infiltration techniques which require the submission of infiltration testing and groundwater monitoring as part of a planning application for major development with surface water drainage. It sets out how Hampshire County Council expects the National Standards for Sustainable Drainage Systems (SuDS) to be applied in practice. Please note that where there are contradictions between the National Standards and Local Policy, the more stringent requirements shall apply.

The Lead Local Flood Authority (LLFA) is the statutory consultee for surface water drainage for major development applications, as specified in Schedule 5 to the Town and Country Planning (Development Management Procedure) (England) Order 2015. Hampshire County Council is the LLFA for Hampshire.

Major development is defined by Part 1, Article 2 or the Order as meaning development involving any one or more of the following –

(a) the winning and working of minerals or the use of land for mineral-working deposits;
(b) waste development;
(c) the provision of dwellinghouses where –
    (i) the number of dwellinghouses to be provided is 10 or more; or
    (ii) the development is to be carried out on a site having an area of 0.5 hectares or more and it is not known whether the development falls within sub-paragraph (c)(i);
(d) the provision of a building or buildings where the floor space to be created by the development is 1,000 square metres or more; or
(e) development carried out on a site having an area of 1 hectare or more.

The level of detail required for supporting information varies depending on the type of planning application being made. For all applications it is critical to determine a suitable discharge method and location for surface water, and to set aside sufficient space in appropriate locations for sustainable drainage systems (SuDS).

1.1. How to use this document

This document is written to provide more detailed support where needed on how to meet the requirements of the National Standards for SuDS. It should be read in conjunction with Hampshire County Council's Planning Guidance document.

2. National and Local Policy

2.1. National Standards for Sustainable Drainage Systems

In July 2025, the government introduced the National Standards for Sustainable Drainage Systems (SuDS), replacing previous guidance. These standards guide developers, designers, and local authorities, and will apply to planning applications in Hampshire from January 2026. The seven standards cover:

1. Runoff destinations
2. Everyday rainfall (interception)
3. Extreme rainfall and flooding
4. Water quality
5. Amenity
6. Biodiversity
7. Design

This document set out what should be submitted by developers to evidence that the proposals meet the infiltration related elements of standards 1 and 3 only. Infiltration also impacts several of the standards, in particular 2 (interception) and 4 (water quality). Please see the Hampshire County Council Planning Guidance and other technical notes for details about meeting the other standards.

2.2. Catchment Management Plans (CMPs)

The National Planning Policy Framework (NPPF) and the supporting Planning Practice Guidance (PPG) link strategic flood risk plans produced by the Environment Agency (EA) and the LLFA to the planning process.

LFWMS (also known as Local Flood Risk Management Strategies) are required to be considered at the planning application stage by paragraphs 165-175 of the NPPF, paragraph 040 of the Planning Practice Guidance and Principle 7 of the National Standards for SuDS.

Both the Catchment Management Plan policies and National Standards for SuDS should be considered at every stage of the planning process. Of the 11 policies within the CMPs, policies 4 (groundwater monitoring) and 10 (Outfall) relate to infiltration and groundwater monitoring.

Policy 4: Groundwater Policy

'In prioritised areas of the catchment where major development is due to take place, Hampshire County Council will ensure that the most up to date and site-specific data pertaining to the risk of groundwater flooding is used.'

Locally high groundwater levels can prevent the use of infiltration drainage features due to the possible reduction in capacity and the risk of directly contaminating the groundwater. Infiltration drainage features should be designed so that an unsaturated depth of one metre is retained beneath the base when groundwater levels reach their seasonal peak (National Standards for SuDS paragraph 1.15 and 4.16.1). The seasonal peak should be determined by monitoring groundwater levels through the winter period (National Standards for SuDS 3.11).

Policy 10: Outfall Policy

'In prioritised areas of the catchment where development is due to take place on sites where infiltration is not viable either through infiltration rates, groundwater levels and/or policy/best practice restrictions, Hampshire County Council will advise LPAs to refuse any development on sites with no alternative demonstrable outfall.'

The LLFA will maintain an objection to a proposed development with no demonstrable outfall for the surface water drainage system. Potential discharge locations should be considered in order of sustainability, i.e. by first investigating re-use, then shallow infiltration to ground, followed by a restricted discharge to a watercourse and then a surface water sewer (Standard 1- National Standards for SuDS).

Infiltration will only be considered viable where infiltration rates are above 1×10^{-6} m/s (National Standards for SuDS 3.15) and peak groundwater levels are at least 1m below the base of the infiltrating features (National Standards for SuDS 1.15). Combined sewers should only be considered as a last resort. The owner of the drainage asset may have requirements for maximum allowable discharge rates. A capacity check should be undertaken when proposing to connect to a sewer, to prove that it is a viable discharge location. Discharges to a watercourse may require additional permissions. Infiltration to the ground through deep-bore soakaway structures should not be considered, as this does not mimic natural drainage processes. Please see table 6 on deep-bore soakaways. Foul sewers should also not be considered as a discharge location for surface water.

Please note that this policy is likely to be applied across all of Hampshire, even for sites that are not within Priority Areas.

3. Infiltration Testing

3.1. Infiltration Principles

The most critical factor in a drainage system is a viable outfall—either to ground, watercourse, or surface water sewer. If the outfall fails, the drainage system fails.

For infiltration-based systems, robust evidence of viability is essential through site investigation, infiltration testing, and groundwater monitoring. Ideally, this data should be gathered early in the development process.

If early testing isn't possible (e.g., brownfield, outline sites), infiltration may still be considered if a backup discharge option (such as discharge to a watercourse or surface water sewer) is provided. Without a backup, approval is unlikely. Backup options are only acceptable at outline stage. Full or discharge-of-condition stages must be supported by appropriate site investigation, testing and monitoring.

3.2. Infiltration Testing

Infiltration testing for drainage systems shall be carried out in accordance with the BRE Digest 365 (2016) methodology. Design of infiltration drainage systems should comply with either BRE Digest 365 or CIRIA Report 156. Maintain at least **1 m clearance** between infiltration system bases and peak groundwater levels, ensuring unsaturated soil depth for groundwater protection. Seasonal and weather-related groundwater fluctuations should be assessed using historic records and monitoring.

Infiltration tests and ground investigations should be:

- **Repeated at least three times.** Repeating the test in this way can reduce the measured infiltration rate by at least half an order of magnitude each time the test is repeated and is more likely to reflect realistic event conditions.
- **Locate testing as close to the likely position of a proposed soakaway** as possible and similar to the likely depth of soakaways. Infiltration rates can vary noticeably by location and depth across a site.
- **Include soil and geology descriptions.** It is important that site investigation identify not only the geology on the site but relevant details e.g. chalk density etc as this affects offset distance from structures.
- **Should identify any likely risks that may be caused by infiltration** e.g. ground instability/ subsidence, mobilising contaminants, groundwater flooding due to infiltration, groundwater leakage into sewers due to infiltration.
- **Worst-case infiltration rates** must be used unless specifically agreed otherwise with the LLFA.

3.3. Groundwater Monitoring

Groundwater monitoring should identify the highest expected groundwater level. To do this, monitoring is typically required between November and May. The exact timing depends on the site's geology:

- **Chalk sites** usually peak between **January and May**.
- **River terrace deposits** usually peak between **November and February**.

Groundwater monitoring must be located within the site. Exceptions may be made for an adjacent site location at outline, if a backup outfall option is provided, and further groundwater monitoring is undertaken at a later stage.

A layout plan should be provided clearly showing the location of infiltration testing and groundwater monitoring boreholes. Sufficient information should be provided to determine the groundwater level relative to the ground surface level.

3.4. Infiltration Feature design

Infiltration device design should:

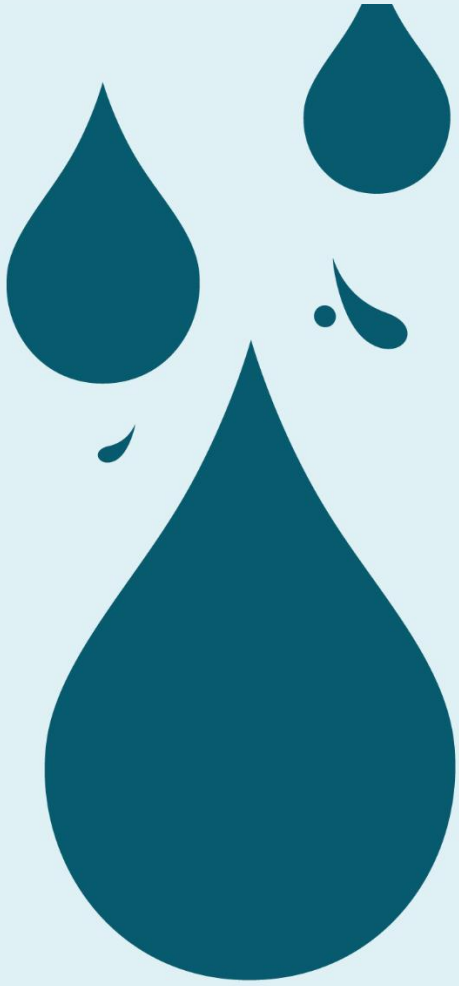
- Be guided by the ground investigation/ infiltration testing/ groundwater monitoring results
- Use industry best practice (such as CIRIA 574) to determine suitable offset distance based on observed/measured site conditions.
- Correct factors of safety, as set out within CIRIA C753 table 25.2, should be applied based on the consequence of failure and the area being drained unless suitably justified.
- The lowest percolation rate at which a soakaway is still efficient is 1 x10-6 m/s. Lower infiltration rates are unlikely to be acceptable.

Soakaway re-use on brownfield sites should use the approach set out by Chen et al 2008.

3.5. Common Mistakes

Below is a list of the most common mistakes made in planning application in relation to infiltration and groundwater monitoring. Any one of these issues it likely to result in an objection from the LLFA.

- **Results must not be extrapolated if incomplete.** Incomplete infiltration tests must not be extrapolated for design values. The water level should drop to less than 25% of its initial height; otherwise, the infiltration rate cannot be determined.
- **Tests not run in accordance with BRE 365:**
    - 3 tests not completed
    - Test pits not sufficiently filled with water
    - Testing not located near the proposed infiltration devices
    - The base of an infiltration devices is located at a very different depth to that of the of infiltration tests
- **Using an average infiltration rate** rather than the worst case
- **Assuming the infiltration rate based on soil type**



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