

Kirklees Council

Highways Guidance Note – Soakaways March 2019 (version 2)

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This guidance note

Introduction

- 1 This guidance note summarizes best practice regarding the use of soakaways for highway drainage.
- 2 This guidance note has been written mainly to help developers, but it will also be used by highways teams within Kirklees Council.

Previous version

- 3 This version replaces the previous version of this guidance note, which is withdrawn.

Background

Objectives for new and improved roads and paths

- 6 Kirklees Council seeks to ensure that any new roads or paths and any improved highways would:
 - be safe, secure, and convenient for all members of the public

- 4 Significant changes from the previous version of this guidance note are highlighted with a vertical line to the left of the affected text.

Implementation

- 5 This guidance note applies to all applications for technical review submitted on or after 1 April 2019.

- be safe, convenient, and not disproportionately expensive to maintain
- support the development of thriving, liveable neighbourhoods

Objectives of highway drainage

7 The three principal objectives of highway drainage are:

- to speedily remove surface water to enhance the safety and comfort of highway users
- to maximise the long-term performance of road pavements by ensuring that the subsurface layers are well drained
- to minimize the impact of highway run-off on the receiving environment

Safety and health

8 The design of development proposals must comply with health and safety legislation. This includes the [Health and Safety at Work etc Act 1974](#) and the [Construction \(Design and Management\) Regulations 2015](#) (the CDM Regulations).

9 The [Health and Safety at Work Act](#) requires employers – which includes developers – to conduct their business in a way that ensures, ‘so far as is

reasonably practicable’, that they do not expose ‘persons not in their employment’ to risks to their health or safety. This means that developers must ensure that the use of soakaways would not unreasonably increase the risks to the public, local residents, or people engaged in servicing or maintaining the soakaways or any nearby roads, paths, or drains.

10 In addition, the [CDM Regulations](#) impose specific requirements on designers to eliminate, ‘so far as is reasonably practicable’, foreseeable risks to safety or health.

11 Kirklees Council would be responsible for the ongoing maintenance and management of any soakaways adopted as part of a publicly maintainable highway. Accordingly, it also has specific duties under the [Health and Safety at Work Act](#) to make sure that the working environment of anyone maintaining the soakaways or any nearby roads or paths would be safe and without risks to health. Therefore, when deciding whether to adopt soakaways, the council has a duty to refuse any that could not be maintained safely.

Soakaways – practical considerations

General

12 Soakaways can be useful devices for dealing with the discharge of surface water from new roads where developments are remote from suitable watercourses and there is insufficient capacity in the sewerage network. However, soakaways are not without problems.

13 Replacing diffused infiltration into grassed or other permeable surfaces with a soakaway that introduces all the water at a single point can lead to ground softening, foundation failure, and slope instability.

14 Soakaways near roads can saturate the subsurface pavement layers, leading to rutting, settlement, and premature pavement failure. Failed pavements are expensive to repair. Surface deformations can be dangerous and inconvenient for road users and can prevent adequate drainage of trafficked surfaces. In wet or icy weather this can cause ponding or icing with a further deterioration in road users’ safety and convenience.

15 Soakaways can introduce pollutants and can cause previously stable pollutants to migrate to sensitive locations. A particular problem associated with the drainage of roads and car parks is contamination of the run-off; the most common pollutants being unburnt hydrocarbons, tyre particles, brake pad dust, and road salt. In addition, extreme pollution incidents can result from spillages and ‘firewater’ run-off.

16 On steep slopes, soakaways can lead to slope instability and downslope re-emergence of water or waterlogging.

17 Lack of capacity in soakaways can lead to surcharging and the flooding of nearby properties.

Maintenance and long-term care

18 As the performance of soakaways can be reduced by the build-up of silt or material, they need regular maintenance to ensure that they continue to function effectively. Usually this involves cleaning or emptying using lorry-mounted plant. Accordingly, inadequate access increases the costs and disruption of cleaning and maintenance.

Commuted sums

19 Most highways adopted by Kirklees Council do not include soakaways. Instead, the water from them usually runs straight into a public sewer or a watercourse. This means that new highways which drain to soakaways would cost significantly more than usual to maintain. Accordingly, Kirklees Council charges a 'commuted sum' to cover the ongoing management and maintenance of any highway soakaway that it adopts.

Calculation

20 Kirklees Council calculates commuted sums using guidance issued by the Association of Directors of Environment, Economy, Planning, and Transport (ADEPT). See [Commuted Sums for the Relief of Maintenance and Reconstruction of Bridges](#).

Further information

21 For more information about commuted sums, please contact the highway adoptions team.

Consultation, survey, and site investigation

Consultation and conditions

22 The developer shall:

- consult the Environment Agency about any proposed soakaway that could adversely affect an aquifer or an environmentally sensitive site
- consult the Coal Authority about any proposed soakaway that could adversely affect their mine water pumping operations
- consult Kirklees Council's flood management and drainage team, which is responsible for the council's work as lead local flood authority and land drainage authority
- comply with any requirements or conditions imposed by the Environment Agency or the Coal Authority or by Kirklees Council in its role as the lead local flood authority and land drainage authority

Site survey and investigation

Topographic survey

23 There shall be an adequate topographic survey of any development site where soakaways are considered.

Ground investigation and assessment

24 There shall be an adequate ground investigation and assessment of the proposed development site. As the performance of soakaways

is affected by the level of water in the adjacent strata, ground investigation and assessment shall establish the level and seasonal variation of the water table.

Gradients

25 Where the general gradient of the site exceeds 5% (1:20) or where there is contaminated, unstable, or made ground, the ground investigation and assessment shall address:

- Migration of pollutants
- Local ground softening
- Subsidence and heave
- Slope stability
- Downslope re-emergence of water and waterlogging

Infiltration testing

26 The soil infiltration characteristics of the sites of any proposed highway soakaways shall be established by infiltration testing. This shall be done in accordance with [BRE Digest 365 – Soakaway Design](#). 'Four-season' testing is required, with separate tests done when the ground is saturated and when dry.

27 Where the final position of a proposed highway soakaway would be more than 15 m from a test location, additional tests shall be undertaken at the final position to confirm the applicable infiltration rate.

Location

Ground conditions and slope stability

28 Soakaways are generally unsuitable where there is contaminated, unstable, or made ground. On steep slopes, they might lead to slope instability and downslope re-emergence of water or waterlogging. Consequently:

- Soakaways should not be used where there was contaminated, unstable, or made ground.
- Where the general gradient of the site exceeded 5% (1:20) but was less than 10% (1:10), soakaways would not usually be acceptable but might be approved in exceptional circumstances.
- Kirklees Council would not approve soakaways where the general gradient of the site exceeded 10% (1:10).

All soakaways

29 Soakaways shall be located to minimise their impact on the new roads, existing highways, and surrounding property. They shall not be located:

- in or within 5 m of carriageways or where the base of the soakaway would extend below a transverse line sloping downwards at 45° from the edge of a carriageway
- within 5 m of any building, burr wall, retaining wall, or other structure – for further information see the [Building Regulations 2010 Approved Document H – Drainage and Waste Disposal](#)

Access

Highway soakaways

34 Soakaways need regular maintenance to ensure that they continue to function effectively. Usually this involves cleaning or emptying using lorry-mounted plant. Occasionally, emergency work might be required to remove a blockage that, if left in place, could cause overflowing and flooding. Accordingly, highway soakaways shall be readily accessible for both planned and emergency works.

35 Kirklees Council shall have free, safe, and unfettered pedestrian and vehicular access to all

Highway soakaways

30 Highway soakaways shall only be located within highways or areas of public open space

31 Highway soakaways shall not be located:

- in footways, footpaths, cycle tracks, or hard margins
- in verges that contain utility apparatus
- in side slopes of embankments or cuttings
- within tree 'root protection areas' (as defined in [BS 5837:2012 – Trees in Relation to Design, Demolition and Construction](#)) or under the crowns of trees – both as expected at ten years after adoption

32 To avoid 'sterilizing' adjoining land:

- Prospective highway soakaways shall not be located within 5 m of the development site boundary.
- Soakaways within highways shall not be located within 5 m of the highway boundary.

Private soakaways

33 Private soakaways shall not be located within highways or areas of public open space or within 5 m of a highway.

highway soakaways and associated drainage runs. This shall be available 24 h a day without prior notice.

36 Access routes to highway soakaways shall accommodate cleaning and maintenance vehicles. Their layout should not require vehicles to reverse more than 20 m. They shall be paved or otherwise hardened and have sufficient strength to accommodate heavy commercial vehicles. The gradients on them should not exceed 5% (1:20), although this may be increased to 8% (1:12.5) where paved.

37 In some situations, vehicles used for the cleaning or maintenance of soakaways might remain in the highway. The highway should be able to accommodate these vehicles without significantly reducing the safety or convenience of highway users and without damaging the highway. For example, consideration should be given to whether parked vehicles would force pedestrians to walk in the carriageway, block entrances to private drives, or damage grassed areas.

Easements

38 No highway soakaways or other drainage outside a highway would be adopted unless Kirklees Council were granted an easement for the soakaway and associated works, including the means of access. Easements shall extend a minimum of:

- 3 m from any soakaway when measured from the outside of the permeable separation membrane around the granular surround or fill
- 3 m from the outside face of any manhole

- 3 m from the outside face of any attenuation tank or pipe
- 3 m on either side of the centre of any other pipe
- 1 m around any paved or otherwise hardened access

Permanent obstructions

39 There shall be no permanent structures, play equipment, steps, or significant landscaping above highway soakaways or within any associated easements.

Private soakaways

40 Private soakaways also require regular cleaning and maintenance and might require remedial works to ensure that they continue to function effectively. Accordingly, developers shall consider the likely means of accessing private soakaways and the consequential effects of these on the highway and highway users.

Technical review and approval – highway soakaways

General

41 Where soakaways are proposed, the following should be submitted to allow this aspect of a development to be adequately assessed:

- Confirmation that, where appropriate, the developer had consulted the Environment Agency, the Coal Authority, and Kirklees Council in its role as the lead local flood authority and land drainage authority and would comply with any requirements or conditions imposed by them
- A contoured plan of the development site and adjacent area
- A copy of the factual and interpretative reports of the ground investigation and assessment
- The infiltration test results
- The soakaway design methodology used and associated calculations, including any modelling undertaken
- Detailed drawings of the proposed soakaways

- The results of the modelling of the overflow conditions
- A drawing of expected overflow paths and any works required to protect residential or commercial properties and essential infrastructure from flooding
- Drawings of the proposed access arrangements
- Drawings of any easements proposed

Confirmation of specialist review

42 Where the general gradient of the site exceeds 5% (1:20) or where there is contaminated, unstable, or made ground, confirmation shall be given that the design has been reviewed and approved by, as appropriate, competent geotechnical, hydrological, and geoenvironmental specialists.

Structure approval

43 Large or deep highway soakaways might require approval as highway structures.

Design

Highway soakaways – design principles

44 Highway soakaways shall be designed in accordance with [BRE Digest 365](#) using a 30-year return period, including an appropriate allowance for climate change.

45 Soakaways located close together have lower infiltration capacities than isolated ones. Accordingly, the design of highway soakaways located closer than 10 m to another soakaway should allow for the reduction in capacity.

46 The distance between the ground water level and the base of highway soakaways should be maximized. The maximum seasonally high water table shall be at least 1 m below the base.

47 Highway soakaways shall have adequate facilities for inspection, cleaning, and maintenance. To allow cleaning by conventional means, they should not be deeper than 3 m. Deeper soakaways might be acceptable but Kirklees Council would charge a significantly larger commuted sum to cover their maintenance and long-term care.

Overflow and flooding

48 Soakaways do not have unlimited capacity and can become blocked. Accordingly, their performance when overloaded shall be assessed. In particular, the performance of highway soakaways shall be assessed for a 100-year return period, including an appropriate allowance for climate change, and facilities shall be provided to deal with the predicted overflow.

Connections

49 Highway soakaways shall not be connected to private drains, public sewers, or prospective public sewers.

50 Highway soakaways shall not receive discharge from private drains, public sewers, or prospective public sewers or surface run-off from private drives or other private areas.

Pre-treatment and pollution control

51 Silt and rubbish traps shall be provided immediately upstream of all highway soakaway inlets.

52 If oil interceptors are not provided, then all entries to piped drainage systems that discharge into highway soakaways shall be readily blocked by

the emergency services in the event of a fire or significant spillage to protect the permeable strata from contamination. Accordingly, kerb drainage systems, grated channels, and permeable pavements shall not be used in conjunction with highway soakaways unless oil interceptors are provided.

Highway soakaways – design details

Inlets

53 Highway soakaways shall be provided with a wet well at each inlet. This shall allow a clear view of the base – even if the soakaway were filled with granular material or similar – and shall be wide enough to accommodate the hose of a suction gully emptier. Each inlet pipe shall be fitted with a T-piece, aligned vertically, to help minimize the movement of suspended or floating debris out of the wet well. The internal diameter of the T-piece shall be the same as the internal diameter of the inlet pipe.

Trench soakaways

54 Trench highway soakaways shall have inspection/access points at each end. These shall also allow a clear view of the base and be wide enough to accommodate the hose of a gully emptier. Inspection/access points should be a maximum of 10 m apart, with intermediate ones provided where necessary. The inspection/access points shall be connected with perforated or porous horizontal pipes with internal diameters of at least 150 mm. The ends of these pipes should be accessible to allow rodding or jetting.

Soakaways made from precast concrete units

55 Highway soakaways made using precast concrete units should be installed in excavations of at least twice their external diameter. The resulting annular space should be filled with stable, free-draining granular material.

Granular surrounds and fills

56 Granular material in soakaway surrounds or trench soakaways shall be separated from the adjacent ground with a suitable permeable geotextile to prevent the ingress of fine material. The ingress of fine material can impair the performance of

soakaways and the loss of fine material from adjoining ground can lead to settlement.

Proprietary geocellular units

57 Highway soakaways shall not be made of proprietary geocellular units.

Private soakaways

58 Private soakaways should be designed in accordance with [BRE Digest 365](#) using a 30-year

return period, including an appropriate allowance for climate change.

59 The performance of private soakaways when overloaded shall be assessed for a 100-year return period, including an appropriate allowance for climate change. Overflow from private soakaways during such an event shall not contribute to flooding of any highway.

Construction – highway soakaways

General requirements

Blinding

60 Concrete blinding shall not be used in the construction of highway soakaways.

Smearing

61 Smearing of the permeable strata by impermeable soil or other material can significantly reduce the actual performance of soakaways below that predicted during design. Accordingly, in the construction of highway soakaways, the interface with the permeable strata shall be inspected and any smearing shall be manually removed before the geotextile or free-draining granular material is placed.

Overbreak and overdig

62 When constructing highway soakaways, any overbreak or overdig shall only be reinstated with stable, free-draining granular material.

Wet mortar and concrete

63 Where wet mortar or concrete is used in the construction of highway soakaways, care shall be

taken to prevent it contaminating the permeable strata, geotextile, or free-draining granular material or any porous or perforated elements. After using wet mortar or concrete:

- The interface with the permeable strata shall be inspected and any contamination shall be manually removed before the geotextile or free-draining granular material is placed.
- Any contaminated geotextile or free-draining granular material shall be replaced.
- Any contaminated porous or perforated elements shall be cleaned or – where this cannot be done satisfactorily – replaced.

Compaction

64 Compaction of the permeable strata, particularly those below the base, can significantly reduce the actual performance of soakaways below that predicted during design. Accordingly, care shall be taken to avoid compaction during the construction of highway soakaways. Any material compacted during construction shall be removed and replaced with stable, free-draining granular material.

Adoption – highway soakaways

Testing and certification

65 Kirklees Council will not adopt any highway soakaways unless they have been certified by a competent, independent specialist that they have been tested and would work satisfactorily throughout the year.

66 As the performance of soakaways is affected by the level of the water table and the moisture in overlying strata, tests might be delayed until the weather conditions are appropriate. Developers should take this into account when programming their works to reduce the risks of delaying adoption of the development.

Further information, comments, and queries

Kirklees Council highways standards and guidance

Highways guidance notes

- Existing Roads and Paths Affected by New Developments
- Gradients
- Highway Adoption Drawings
- Highway Adoptions and the CDM Regulations
- Highway Adoptions Criteria
- Highways Technical Approval
- Highways, SuDS, and Private Drainage
- Introduction to Highways and Adoptions
- Operation and Maintenance Manuals for Adopted Highways
- Requirements of New and Improved Roads and Paths
- Requirements of Submitted Documents
- Section 38 Agreements for Highway Adoptions
- Soakaways
- Technical Approval of Surface Water Flow Attenuation Tanks and Pipes

Other highways documents

- Kirklees Highways Standard Details

Comments and queries

Kirklees Council welcomes comments and queries about this guidance note

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| <ul style="list-style-type: none"> ■ Huddersfield (01484) 22 1000 – ask for ‘Highway Adoptions’ ■ Highways.Section38@kirklees.gov.uk ■ www.kirklees.gov.uk/highwayadoptions | <ul style="list-style-type: none"> ■ Kirklees Council
Highway Adoptions
Flint Street Depot
Flint Street
Fartown
Huddersfield
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