Environmental
Geotechnical
Specialists

SOAKAWAY
LETTER
REPORT

job number	C6419/26/E/9922
date	05.10.2026
site address	Cliffe Cottage, 52 Rotherham Road, Barnsley, South Yorkshire, S71 2LQ
written by	S. Hale
checked by	I. Sakoor
issued by	S. Hale

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Report on Soakaway Testing

Location:	Cliffe Cottage 52 Rotherham Road, Barnsley, South Yorkshire, S71 2LQ		
For:	N3XT Generation Developments Limited		
Report No.	C6419/26/E/9922	Report Date:	October 2026

For and on behalf of **Rogers Geotechnical Services Ltd**

Steven Hale BSc FGS
Geo-environmental Engineer

Imran Sakoor BEng FGS
Geo-environmental Engineer

Report Summary[1]

Item	Comments	Section
Geology	Bedrock Geology – Oaks Rock.	4.
Strata Conditions	Capping of made ground overlying weathered Oaks Rock. Extended thickness of made ground encountered to the southeast corner of the site.	5.
Groundwater	No water strikes encountered.	5.
Suitability of Soakaways	Soakaways found to be suitable if placed within the weathered Oaks Rock.	7.

[1] This summary should not be relied upon to provide a comprehensive review. All of the information contained in this document should be considered.

1. Introduction

We thank you for your request to undertake percolation testing at the above mentioned site and take pleasure in enclosing the results of this work. The investigation was undertaken on the 28th September 2026 in accordance with your instruction to proceed. This report describes the work undertaken, presents the data obtained and discusses the results of the tests

2. Limitations

The recommendations made and opinions expressed in this report are based on the ground conditions revealed by the site works, together with an assessment of the site. Whilst opinions may be expressed relating to sub-soil conditions in parts of the site not investigated, for example between trial pit positions, these are for guidance only and no liability can be accepted for their accuracy.

This report has been prepared in accordance with our understanding of current best practice. However, new information or legislation, or changes to best practice may necessitate revision of the report after the date of issue.

3. Fieldworks

Three trial pits were excavated in order to undertake soakaway testing, the positions of which are shown in Appendix 1, as designated by the client. However, only two of these pits were utilised for the soakaway tests as an extended thickness of made ground was encountered within SA03. The soakaway tests were undertaken at the base of the pit at depths rational to the construction of soakaways. The soils exposed in the trial pits were logged on site in general accordance with BS5930: 2015 +A1: 2020, and full descriptions are given on the trial pit records which are presented in Appendix 2. Photographs of the trial pits are included within Appendix 3.

Once excavations were completed, the trial pits were carefully re-instated with the arisings. Whilst every care was taken during the infilling process, including compacting of the infill at regular intervals with the arm of the excavator, it should be appreciated that some mounding of the surface may have resulted. Moreover, the infilled soils may be subjected to settlement over time, such that a depression in the surface may also occur. Therefore, the locations of any pits undertaken in this investigation should be conveyed to the current site user, as the mounds or depressions associated with the pits may present a risk to current site operations. Furthermore, it must be realised that the infilled pits represent an area of disturbance within the site soils, thus the soils at the pit locations may vary characteristically compared to the undisturbed ground. As such, foundations placed in this disturbed material may not perform as anticipated.

4. Geology

The available published geological data for the site has been examined and the following table presents the anticipated geology.

Table 1: Geological Data for the Site

Strata Type	Strata Name[2]	Parent Unit[3]	Description
Superficial Geology	-	-	None indicated beneath the site.
Solid Geology	Oaks Rock	Pennine Middle Coal Measures Formation	Named sandstone unit of the Pennine Middle Coal Measures Formation.

5. Strata Conditions

In accordance with the geology of the area, the succession has been shown to include the following:

Table 2: Generalised Strata Profile

Depth m below ground level to underside of layer	**Strata Type**	**Positions Layer Revealed**	**Groundwater Strikes** m below ground level
0.55 – 1.90	MADE GROUND (Brown, silty, sandy GRAVEL)	All	None
+1.30 – +1.35	Orangish brown SANDSTONE [OAKS ROCK]	SA01 & SA02	None

'+' denotes that the strata extended below the termination depth of the investigated positions, thus the extent of the deposit is only proven to the depths indicated.

[2] Sources: British Geological Survey (NERC) Map Sheets 78; Wakefield; Solid and Drift Edition, and Onshore Geoindex [*online resource from www.bgs.ac.uk*]
[3] Sources: British Geological Survey (NERC) Lexicon of Named Rock Units [*online resource from www.bgs.ac.uk*]

6. Insitu Testing

6.1 Soakaway Test

On reaching the elected soakaway test depth, the pit was trimmed and squared as much as practicable. Water was then introduced into the pit at a controlled rate to prevent collapse of the sides. It should be appreciated that the infiltration of the water was higher than the rate that it was introduced into the pit. As such, it was not possible to fill the pit like a standard soakaway test. Instead, the volume of water along with the time taken to drain said volume was monitored in order to calculate an infiltration rate from the flow rate. The results obtained from the tests are presented below:

Table 3: Soakaway Test Results

Location	Soakage Area Dimensions (average) (m)	Volume of Water Introduced (Litres)	Time Taken to Drain (s)	Soil Description (of soaked strata)	Infiltration Rate (m/s)	*Drainage Characteristics
SA01	0.30 x 2.80	200 200 200	533 576 617	Side – Silty, sandy GRAVEL of SANDSTONE Base – *as above*	$4.47x10^{-4}$ $4.13x10^{-4}$ $3.86x10^{-4}$	Good
SA02	0.30 x 2.40	200 200 200	621 543 586	Side – Silty, sandy GRAVEL of SANDSTONE Base – *as above*	$3.83x10^{-4}$ $4.38x10^{-4}$ $4.06x10^{-4}$	Good

*Based on the most onerous results for each test.

7. Discussion

The soils encountered beneath the made ground were found to be typical of the weathered fraction of the underlying Oaks Rock, a named sandstone member of the Pennine Middle Coal Measures Formation. The strata conditions and subsequent drainage characteristics appear to be comparable across the site within the trial pits tested. In this instance, the infiltration testing has revealed that the soils appear to have good drainage characteristics. Whilst the made ground included gravel, these soils cannot be recommended as a soakage stratum due to the potential presence of contamination and the potential for collapse compression. Nonetheless, given the drainage characteristics soakaways can be recommended at this site subject to a suitable design.

8. References

- Building Research Establishment (BRE) Digest 365, *Soakaway Design*, September 1991.
- British Standards Institution (2015 +A1: 2020) BS 5930: *Code of practice for ground investigations*, B.S.I., London.
- Barnes, G. (2000). *Soil Mechanics Principle and Practice.* 2nd ed. London: Macmillan Press Ltd, p.47.

Appendix 1

Site Plan

GENERAL:-

All below ground drainage in 100mm diameter plastic pipework laid to falls of not less than 1 in 60 (FW) or 1 in 80 (SW) except main run between F7 and F19 to Ex outfall in 150mm dia pipework. Drainage to be bed and surround in 150mm free-flowing gravel followed by suitable selected as dug material or surround in 150mm concrete then selected as dug material in traffic areas where cover to crown of pipe is less than 900mm. All gullies to be access gullies for maintenance and cleaning purposes. Provisional drainage levels scheduled below subject to verification on site.

Inspection chambers generally upto 1.1m deep to be constructed in proprietary polypropylene inspection chambers with ductile iron covers and frames and concrete surround. If req'd. to suit potential loadings. Any inspection chambers over 1.1m deep to be constructed in 215mm class b eng brick off 150mm SA/C base with heavy duty ductile iron cover and frame.

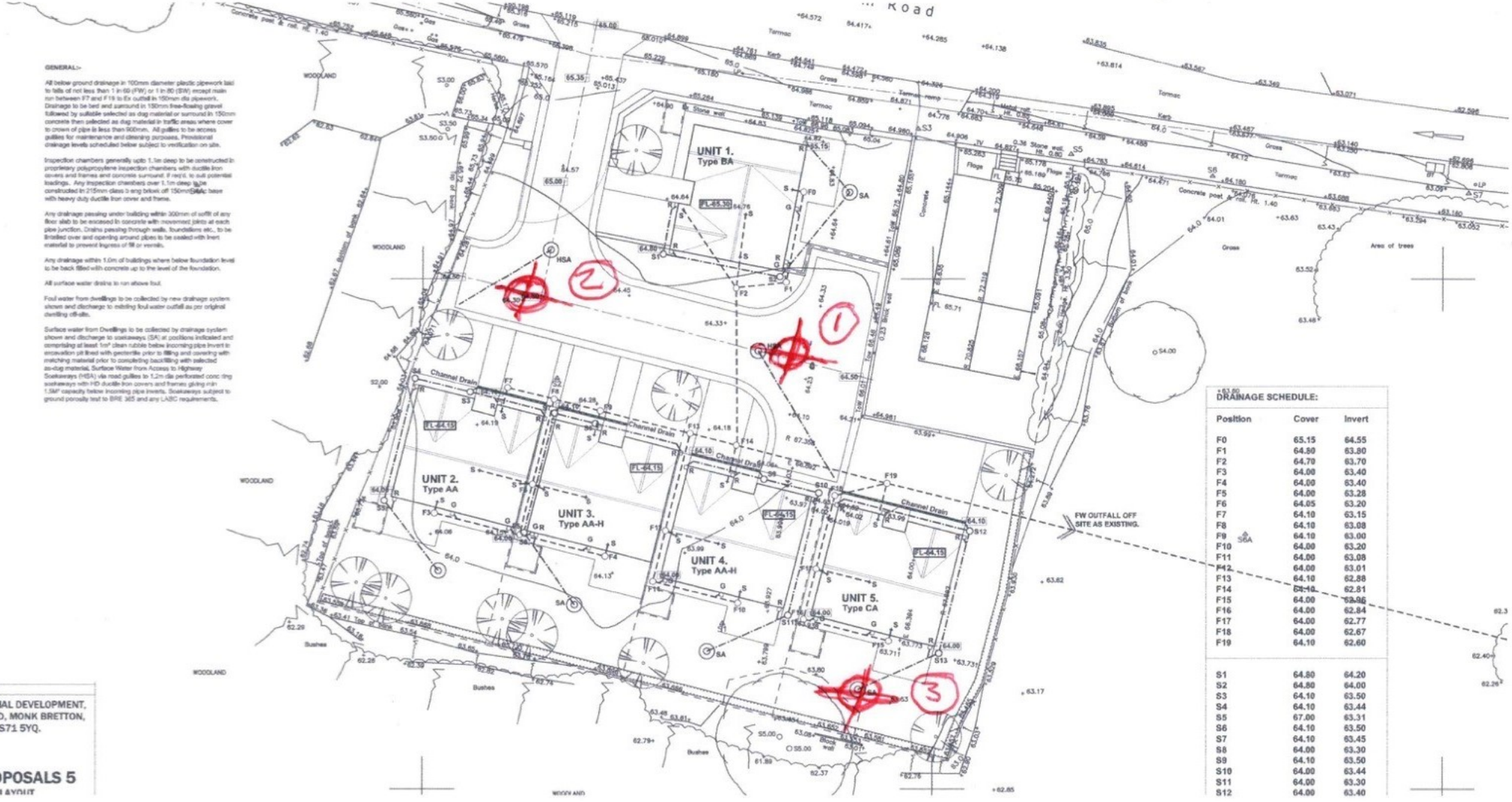
Any drainage passing under building within 300mm of soffit of any floor slab to be encased in concrete with movement joints at each pipe junction. Drains passing through walls, foundations etc., to be lintelled over and opening around pipes to be sealed with inert material to prevent ingress of fill or vermin.

Any drainage within 1.0m of buildings where below foundation level to be back filled with concrete up to the level of the foundation.

All surface water drains to run above foul.

Foul water from dwellings to be collected by new drainage system shown and discharge to existing foul water outfall as per original dwelling off-site.

Surface water from Dwellings to be collected by drainage system shown and discharge to soakaways (SA) at positions indicated and comprising at least 1m³ clean rubble below incoming pipe invert in excavation pit lined with geotextile prior to filling and covering with matching material prior to completing backfilling with selected as-dug material. Surface Water from Access to Highway Soakaways (HSA) via road gullies to 1.2m dia perforated conc ring soakaways with HD ductile iron covers and frames giving min 1.5M³ capacity below incoming pipe inverts. Soakaways subject to ground porosity test to BRE 365 and any LABC requirements.



DRAINAGE SCHEDULE:

Position	Cover	Invert
F0	65.15	64.55
F1	64.80	63.80
F2	64.70	63.70
F3	64.00	63.40
F4	64.00	63.40
F5	64.00	63.28
F6	64.05	63.20
F7	64.10	63.15
F8	64.10	63.08
F9	64.10	63.00
F10	64.00	63.20
F11	64.00	63.08
F12	64.00	63.01
F13	64.10	62.88
F14	64.10	62.81
F15	64.00	62.96
F16	64.00	62.84
F17	64.00	62.77
F18	64.00	62.67
F19	64.10	62.60
S1	64.80	64.20
S2	64.80	64.00
S3	64.10	63.50
S4	64.10	63.44
S5	67.00	63.31
S6	64.10	63.50
S7	64.10	63.45
S8	64.00	63.30
S9	64.10	63.50
S10	64.00	63.44
S11	64.00	63.30
S12	64.00	63.40

Revision	Date	Description

PROPOSED RESIDENTIAL DEVELOPMENT,
52 ROTHERHAM ROAD, MONK BRETTON,
BARNSLEY, S71 5YQ.

DESIGN PROPOSALS 5

DRAINAGE LAYOUT

Appendix 2

Trial Pit Records

Trial Pit Log

Trialpit No **SA01**

Sheet 1 of 1

Project Name: Cliffe Cottage	Project No. C6419/26/E/9922	Co-ords: - Level:	Date 28/09/2026
Location: 52 Rotherham Road, Barnsley, South Yorkshire, S71 2LQ		Dimensions (m): Depth 1.35 — 2.8 × 0.3	Scale 1:25
Client: N3XT Generation Developments Limited			Logged SH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND (Brown, silty, sandy, angular to sub-angular and fine to coarse GRAVEL of brick, concrete, sandstone and various other lithologies. Sand is fine to coarse).
				0.60			Orangish brown SANDSTONE recovered as a silty, sandy gravel. [WEATHERED OAKS ROCK]
				1.35			End of pit at 1.35 m

Remarks:

Stability: Stable

Trial Pit Log

Trialpit No **SA02**

Sheet 1 of 1

Project Name: Cliffe Cottage	Project No. C6419/26/E/9922	Co-ords: - Level:	Date 28/09/2026
Location: 52 Rotherham Road, Barnsley, South Yorkshire, S71 2LQ		Dimensions (m): Depth 1.30 — 2.4 × 0.3	Scale 1:25
Client: N3XT Generation Developments Limited			Logged SH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND (Brown, silty, sandy, angular to sub-angular and fine to coarse GRAVEL of brick, concrete, sandstone and various other lithologies. Sand is fine to coarse).
				0.55			Orangish brown SANDSTONE recovered as a silty, sandy gravel. [WEATHERED OAKS ROCK]
				1.30			End of pit at 1.30 m

Remarks:

Stability: Stable

Trial Pit Log

Trialpit No **SA03**

Sheet 1 of 1

Project Name:	Cliffe Cottage	Project No. C6419/26/E/9922	Co-ords: - Level:	Date 28/09/2026
Location:	52 Rotherham Road, Barnsley, South Yorkshire, S71 2LQ	Dimensions (m): Depth 1.90	2.5 × 0.3	Scale 1:25
Client:	N3XT Generation Developments Limited			Logged SH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				1.90			MADE GROUND (Brown, silty, sandy, angular to sub-angular and fine to coarse GRAVEL of ash, asphalt, brick, concrete, sandstone and various other lithologies. Sand is fine to coarse). End of pit at 1.90 m

Remarks:

Stability: Stable

Appendix 3

Trial Pit Photographs



SA01



SA01 Spoil



SA02



SA02 Spoil

Rogers Geotechnical Services Ltd

Manor Croft,
Skelmanthorpe,
Huddersfield,
HD8 9DT

Job No:

C6419/26/E/9922

Site:

Cliffe Cottage,
52 Rotherham Road,
Barnsley,
South Yorkshire,
S71 2LQ

Client:

N3XT Generation Developments Limited



SA03



SA03 Spoil