Environmental
Geotechnical
Specialists

RGS

SOAKAWAY
LETTER
REPORT

job number	C5255/26/E/9063
date	26.02.2026
site address	The Crescent, Barnsley Road, Cudworth, Barnsley, South Yorkshire, S72 8SY
written by	S. Hale
checked by	R. Palmer
issued by	S. Hale

Please consider the environment before printing this report.

Constructionline
A UK GOVERNMENT CERTIFICATION SERVICE

QMS ISO 9001 : 2015 REGISTERED Cert No. 14123657

QMS ISO 14001 : 2015 REGISTERED Cert No. 14127804

QMS ISO 45001 : 2018 REGISTERED Cert No. 14130281

CITATION APPROVED HEALTH & SAFETY SYSTEMS Registered Member

UKAS United Kingdom Accreditation Service

<ENVIRONMENTAL><GEOTECHNICAL>

Contents

Appendices

Report on Soakaway Testing

Location:	The Crescent Barnsley Road, Cudworth, Barnsley, South Yorkshire, S72 8SY		
For:	Barnsley Metropolitan Borough Council		
Report No.	C5255/26/E/9063	Report Date:	February 2026

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

Steven Hale BSc FGS Geo-environmental Engineer	**Rob Palmer** MSc FGS ACIEH Engineering Director

Report Summary[1]

Item	Comments	Section
Geology	Bedrock Geology – Mexborough Rock.	4.
Strata Conditions	Extended thickness of made ground overlying weathered sandstone.	5.
Groundwater	No groundwater encountered during works.	5.
Suitability of Soakaways	Not recommended unless a suitable design is implemented incorporating the weathered Mexborough Rock. Careful consideration required.	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 16th February 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

Two trial pits were excavated in order to undertake soakaway testing, the positions of which are shown in Appendix 1. 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[3]
Superficial Geology	-	-	None indicated beneath the site.
Solid Geology	Mexborough Rock	Pennine Middle Coal Measures Formation	Named sandstone member 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
0.12	MADE GROUND (Dark grey, slightly sandy GRAVEL)	SA01	None
0.03	MADE GROUND (Asphalt)	SA02	None
0.15 – 0.25	MADE GROUND (Cream, slightly sandy GRAVEL)	Both	None
0.35	MADE GROUND (Dark grey, slightly sandy GRAVEL)	SA02	None
1.20 – 1.30	MADE GROUND (Dark grey, slightly sandy GRAVEL)	Both	None
+1.60 – +1.70	Orangish brown, weathered SANDSTONE [MEXBOROUGH ROCK]	Both	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.

It should be appreciated that the site is underlain by a significant thickness of made ground. The made ground is then immediately present on the uppermost weathered fraction of the underlying rock.

[2] Sources: British Geological Survey (NERC) Map Sheets 87; Barnsley; Solid and Drift Edition, and GeoIndex Onshore Viewer [*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 and the level monitored at time intervals relative to a reference bar at ground level. The results obtained from the soakaway tests are presented at Appendix 4 and are summarised below:

Table 3: Soakaway Test Results

Location	Soakage Area Dimensions (average) (m)	Depths of soaked strata (m)	Soil Description (of soaked strata)	Infiltration Rate (m/sec)	*Drainage Characteristics
SA01	0.3 x 2.0	1.29 to 1.60	Side – Clayey, silty, sandy GRAVEL Base – *As above*	1.6×10^{-5}	Good
SA02	0.108Ø	1.30 to 1.70	Side – Clayey, silty, sandy GRAVEL Base – *As above*	N/A	-

*Based on the most onerous results for each test.

During the soakaway tests the water level did not achieve a fall from 75% to 25% of the effective depth of the storage volume within SA02. During the test, a negligible amount of movement was monitored withn the first 10 minutes, after which no further movement was recorded. It is considered that the initial movement was observed as water filled any gaps and fissures within the made ground at the side of the pit. On this basis, the tests could not be completed within the scope of the method provided in BRE Digest 365 due to the poor soakage rate of the exposed soils. Due to the negligible water movement it was not possbile to extrapolate the results obtained in order to obtain a soil infiltration rate.

7. Discussion

The soils encountered beneath the made ground were found to be typical of the weathered fraction of the underlying Mexborough Rock, a named sandstone member of the Pennine Middle Coal Measures Formation. The strata conditions appear to be comparable across the site. In this instance, the infiltration testing has revealed that the soils have poor drainage characteristics in the area of SA02. In comparison the water soaked away during the test within SA01, however, due to time constraints it was not possible to undertake additional tests. Whilst the made ground included gravel, these soils cannot be recommended as a soakage stratum due to the potential for contamination and the potential for collapse compression.

While a ‘good’ drainage characteristic was revealed within the location of SA01, it is anticipated that soakaways installed within this strata would have to rely on fractures within the Mexborough Rock. Therefore, unless a suitable design is considered then soakaways cannot be recommended at this site and an alternative form of drainage should be adopted.

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

Notes:

RGS Environmental Geotechnical Specialists

Rogers Geotechnical Services Ltd

Offices 1 & 2, Barncliffe Business Park,
Near Bank,
Shelley,
Huddersfield,
HD8 8LU

Telephone: 0843 50 66 87
www.rogersgeotech.co.uk

Client:
Barnsley Metropolitan Borough Council

Job Number:
C5255/26/E/9063

Project Details:
The Crescent, Barnsley Road, Cudworth

Scale: Not to scale - reference only

Appendix 2

Trial Pit Records

Trial Pit Log

Trialpit No **SA01**

Sheet 1 of 1

Project Name:	The Crescent	Project No. C5255/25/E/9063	Co-ords: - Level:	Date 16/02/2026
Location:	Barnsley Road, Cudworth, Barnsley, South Yorkshire, S72 8SY	Dimensions (m): Depth 1.60	2 / 0.3	Scale 1:25
Client:	Barnsley Metropolitan Borough Council			Logged SH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.12			MADE GROUND (Dark grey, slightly sandy, angular to sub-angular and fine to medium GRAVEL of bituminous material, concrete and sandstone. Sand is fine to coarse).
				0.25			MADE GROUND (Cream, slightly sandy, angular to sub-angular and fine to medium GRAVEL of limestone. Sand is fine to coarse).
							MADE GROUND (Soft, brown, slightly sandy, gravelly, silty CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to sub-angular and fine to coarse of brick, concrete and sandstone. Cobbles are angular of brick).
				1.20			Orangish brown, weathered SANDSTONE recovered as a clayey, silty, slightly sandy, tabular, angular to sub-angular and fine to coarse gravel. Sand is fine to coarse. [MEXBOROUGH ROCK]
				1.60			End of pit at 1.60 m

1 2 3 4 5

Remarks: 1. Position scanned for services using CAT and Genny.

Stability: Stable

Trial Pit Log

Trialpit No **SA02**

Sheet 1 of 1

Project Name:	The Crescent	Project No. C5255/25/E/9063	Co-ords: - Level:	Date 16/02/2026
Location:	Barnsley Road, Cudworth, Barnsley, South Yorkshire, S72 8SY	Dimensions (m): Depth 1.70	2 / 0.3	Scale 1:25
Client:	Barnsley Metropolitan Borough Council			Logged SH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.03			MADE GROUND (Asphalt).
				0.15			MADE GROUND (Cream, slightly sandy, angular to sub-angular and fine to medium GRAVEL of limestone. Sand is fine to coarse).
				0.35			MADE GROUND (Dark grey, slightly sandy, angular to sub-angular and fine to medium GRAVEL of bituminous material, concrete and sandstone. Sand is fine to coarse).
							MADE GROUND (Soft, brown, slightly sandy, gravelly, silty CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to sub-angular and fine to coarse of brick, concrete and sandstone. Cobbles are angular of brick).
				1.30			Orangish brown, weathered SANDSTONE recovered as a clayey, silty, slightly sandy, tabular, angular to sub-angular and fine to coarse gravel. Sand is fine to coarse. [MEXBOROUGH ROCK]
				1.70			End of pit at 1.70 m

1 2 3 4 5

Remarks: 1. Position scanned for services using CAT and Genny.

Stability: Stable

Appendix 3

Trial Pit Photographs

Photo 1: SA01

Photo 2: SA01 during testing

RGS Environmental Geotechnical Specialists	Site Name: **The Crescent, Barnsley Road, Cudworth**	Job No: **C5255/26/E/9063**	**t. 0843 50 666 87** **www.rogersgeotech.co.uk**

Photo 1: SA02

Photo 2: SA02 during testing

RGS Environmental Geotechnical Specialists	Site Name: **The Crescent, Barnsley Road, Cudworth**	Job No: **C5255/26/E/9063**	**t. 0843 50 666 87** **www.rogersgeotech.co.uk**

Appendix 4

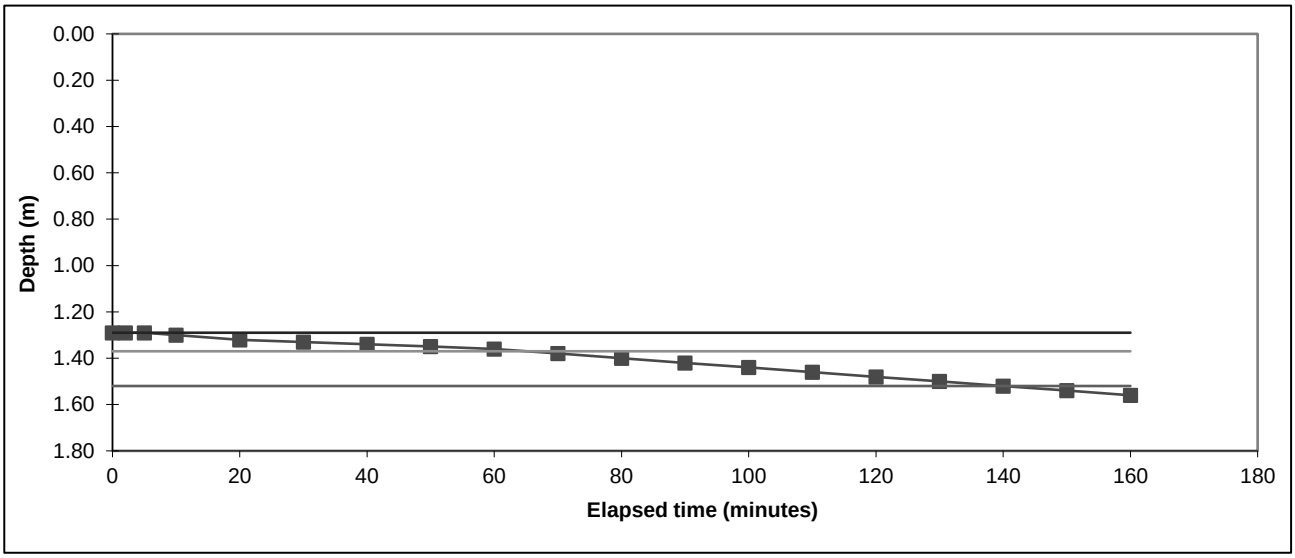
Soakaway Results

Rogers Geotechnical Services L

Soakaway Test

Trial Pit No:	SA01	Test No:	1	Date:	16.02.2026
Length (m):	2.000		Datum Height:	0.00	m agl
Width (m):	0.30		Granular infill:	None	
Depth (m):	1.60		Porosity of infill:	1	(assumed)

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	1.290	120	1.480
2	1.290	130	1.500
5	1.290	140	1.520
10	1.300	150	1.540
20	1.320	160	1.560
30	1.330		
40	1.340		
50	1.350		
60	1.360		
70	1.380		
80	1.400		
90	1.420		
100	1.440		
110	1.460		



Start water depth for analysis (mbgl):	1.29		
75% effective depth (mbgl):	1.37	Elapsed time (mins):	65.0
50% effective depth (mbgl):	1.45		
25% effective depth (mbgl):	1.52	Elapsed time (mins):	140.0
Base of soakage zone (mbgl):	1.60		

Volume outflow between 75% and 25% effective depth (m^3):	0.090
Mean surface area of outflow (m^2):	1.29
(side area at 50% effective depth + base area)	
Time for outflow between 75% and 25% effective depth (mins):	75.0

Soil infiltration rate (m/s):	**1.6E-5**

Remarks Results processed following BRE 365 (2007).

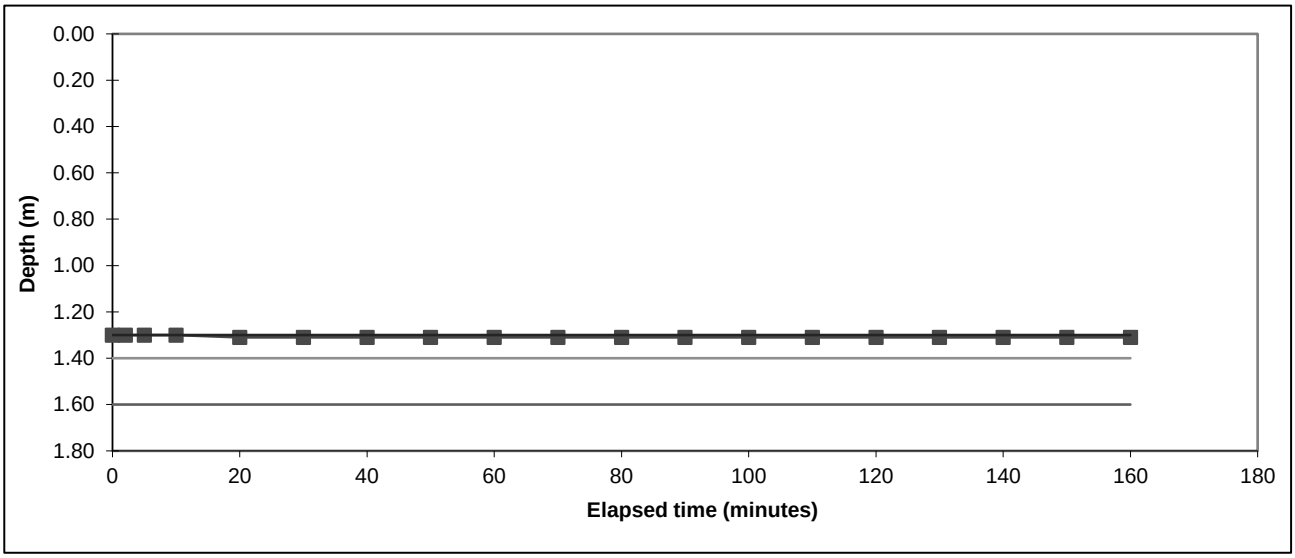
Client:	Barnsley Metropolitan Borough Council	**Job No:**
Site:	The Crescent, Barnsley Road	C5255/26/E/9063

Rogers Geotechnical Services L

Soakaway Test

Trial Pit No:	SA02	Test No:	1	Date:	16.02.2026
Length (m):	2.000		Datum Height:	0.00	m agl
Width (m):	0.30		Granular infill:	None	
Depth (m):	1.70		Porosity of infill:	1	(assumed)

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	1.300	120	1.310
2	1.300	130	1.310
5	1.300	140	1.310
10	1.300	150	1.310
20	1.310	160	1.310
30	1.310		
40	1.310		
50	1.310		
60	1.310		
70	1.310		
80	1.310		
90	1.310		
100	1.310		
110	1.310		



Start water depth for analysis (mbgl):	1.30		
75% effective depth (mbgl):	1.40	Elapsed time (mins):	#N/A
50% effective depth (mbgl):	1.50		
25% effective depth (mbgl):	1.60	Elapsed time (mins):	#N/A
Base of soakage zone (mbgl):	1.70		
Volume outflow between 75% and 25% effective depth (m^3):			
Mean surface area of outflow (m^2):			1.52
(side area at 50% effective depth + base area)			
Time for outflow between 75% and 25% effective depth (mins):			

Soil infiltration rate (m/s):	**Test incomplete as 25% effective depth not achieved. Unable to reliably determine soil infiltration rate.**

Remarks Results processed following BRE 365 (2007).

Client:	Barnsley Metropolitan Borough Council	**Job No:**
Site:	The Crescent, Barnsley Road	C5255/26/E/9063