Environmental
Geotechnical
Specialists

SOAKAWAY
LETTER
REPORT

job number	C5629/25/E/8706
date	13.07.26
site address	Bank End Primary School Underwood Avenue Worsbrough Barnsley S70 4AZ
written by	R. Palmer
checked by	I. Sakoor
issued by	R. Palmer

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Contents

		Page
1.	Introduction	2
2.	Limitations	2
3.	Fieldworks	2
4.	Geology	3
5.	Strata Conditions	3
6.	Insitu Testing	3
6.1	Soakaway Test	3
7.	Discussion	4
8.	References	4

Appendices

1.	Site Plan
2.	Trial Pit Records
3.	Trial Pit Photographs
4.	Soakaway Results

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Report on Soakaway Testing

Location:	Bank End Primary School Underwood Avenue, Worsbrough, Barnsley S70 4AZ
For:	Assix Ltd
Consultants:	-
Report No.	C5629/25/E/8706
Report Date:	July 2026

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

Rob Palmer MSc FGS ACIEH
Engineering Director

Imran Sakoor BEng FGS
Geo-environmental Engineer

Report Summary[1]

Item	Comments	Section
Geology	Woolley Edge Rock (sandstone member).	4.
Strata Conditions	Topsoil overlying variably graded clay (weathered fraction of the underlying rock).	5.
Groundwater	None recorded.	5.
Suitability of Soakaways	Recommended in the northern area.	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 26th June 2026 in accordance with your instruction to proceed. This reports 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 locations were selected in order to undertake soakaway testing, the positions of which are shown in Appendix 1. It should be appreciated that the locations were limited due to access constraints (overgrown vegetation and rubble) and also buried services. It should be noted that an electric cable was identified close to the existing building; this was not present on the current utility drawings. In addition, an initial trial pit within the southern section of the pit (TP02A) identified a shallow concrete pad, possibly forming part of the foundation for the existing property.

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 back acting 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]	Previous Name[3]	Description
Superficial Geology	-	-	None indicated beneath the site.
Solid Geology	Woolley Edge Rock	Pennine Middle Coal Measures Formation	Sandstone, coarse-grained in the north, becoming finer southwards.

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
0.2 – 0.3	TOPSOIL	WS01 & WS02	None
0.6	Clayey silty SAND	WS01	None
1.3 – +1.15	Gravelly CLAY (Weathered Rock)	WS01 & WS02	None
+1.4	Clayey GRAVEL and COBBLES (Weathered Rock)	WS01	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.

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.

[2] Sources: British Geological Survey (NERC) Map Sheets 87; Barnsley; 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*]

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
TP01	1.5 x 0.33	1.0 to 1.4	Side – Gravelly CLAY with cobbles Base – Very clayey GRAVEL and COBBLES	6.7×10^{-5} 3.2×10^{-5} 3.6×10^{-5}	Good
TP02	1.45 x 0.33	0.75 to 1.15	Side – Slightly sandy slightly gravelly CLAY Base – Gravelly CLAY	-	Practically Impermeable

*Based on the most onerous results for each test.

During the soakaway test at TP02, the water level did not achieve a fall from 75% to 25% of the effective depth of the storage volume. On this basis, the test 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. Notwithstanding this, three successful tests were completed in TP01.

7. Discussion

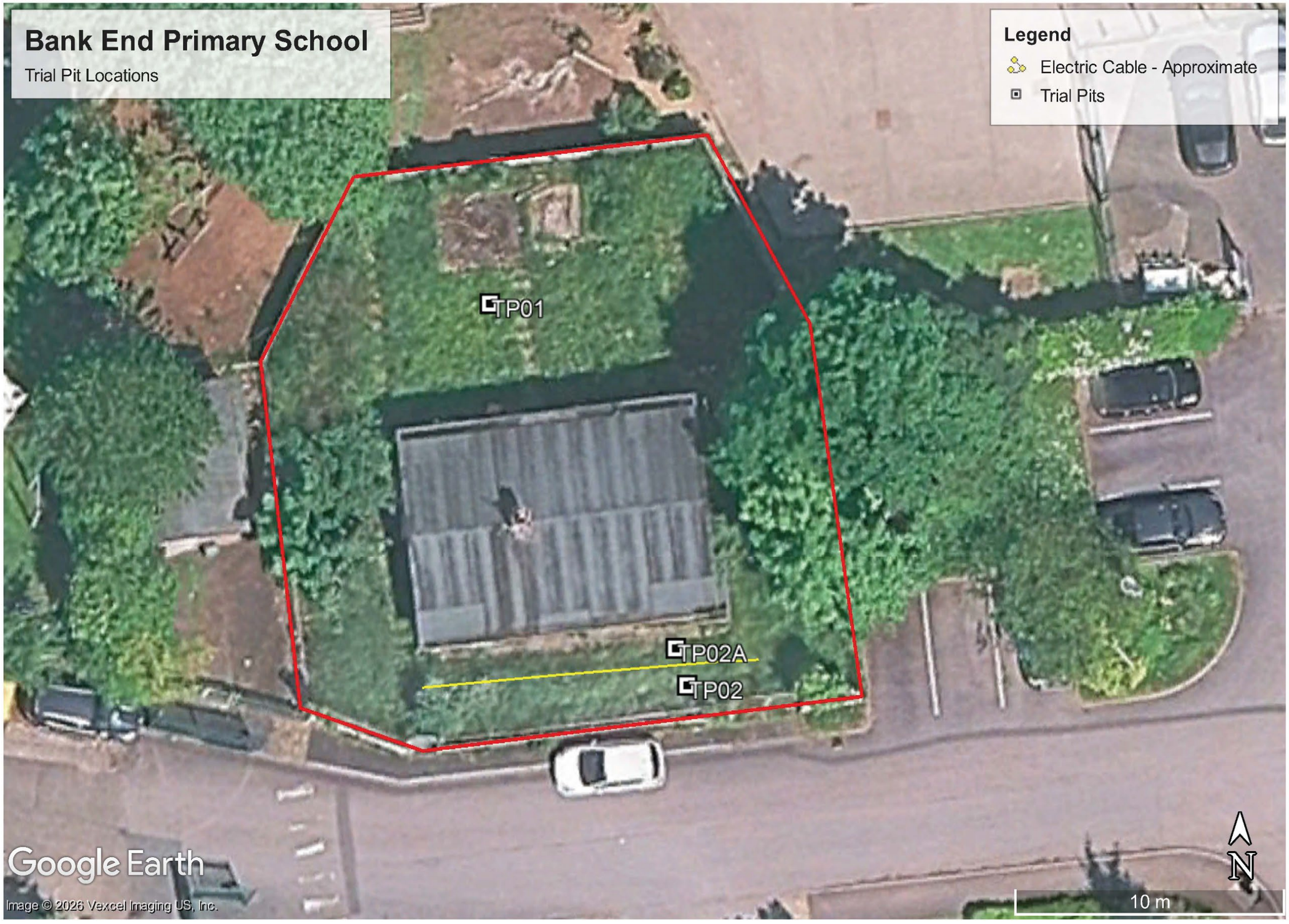
The soils encountered beneath the topsoil were found to be typical of the weathered fraction of the underlying Woolley Edge Rock. Whilst this is a sandstone member, the rock profile appears to have contained a high fraction of fine material as the rock has generally weathered to a clay, or clayey gravel. The strata conditions and subsequent drainage characteristics appear to be comparable across the site, albeit the rockhead appears to have weathered differentially. In this instance, the infiltration testing has revealed that the soil/rock has poor drainage characteristics on the southern section of the site. At this location the rockhead was recorded as gravelly clay. However, the rockhead in the northern section was recorded as a clayey gravel. Clearly this difference in grading appears to be a defining characteristic for drainage potential. Therefore, soakaways can be recommended in the northern section of the site, provided that the base of the soakaways are placed on soils that are notably granular in nature. Should this area prove unsuitable for design purposes, or say the lateral extent of the weathered rock is not consistent i.e. granular in nature, then an alternative form of drainage should be sought.

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:

Investigation positions approximated from site operative's notes.

RGS Environmental Geotechnical Specialists

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Shelley,
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Telephone: 0843 50 66 87
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Client:	Assix
Job Number:	C5629/25/E/8706
Project Details:	Bank End Primary School
Scale:	Not to scale - reference only

ground investigation | drilling & excavation | insitu testing
laboratory testing & gas monitoring | engineering consultancy
surveying & flood risk assessments | training, CPD & expert witness
... delivered using our own drilling rigs / crews / soils lab / engineers

Appendix 2

Trial Pit Records

Trial Pit Log

Trialpit No **TP01** Sheet 1 of 1

Project Name:	Bank End Primary School	Project No. C5629/25/E/8706	Co-ords: - Level:	Date 26/06/2026
Location:	Underwood Avenue, Worsbrough, Barnsley S70 4AZ	Dimensions (m): Depth 1.40	1.5 × 0.33	Scale 1:25
Client:	Assix Ltd			Logged RP

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			TOPSOIL
				0.60			Brown clayey silty fine to coarse SAND.
				1.30			Stiff gravelly CLAY with low sandstone cobble content.
				1.40			Very clayey GRAVEL and COBBLES of siltstone and sandstone. WOOLLEY EDGE ROCK
							End of pit at 1.40 m

Remarks:

Stability:

Trial Pit Log

Trialpit No **TP02**

Sheet 1 of 1

Project Name:	Bank End Primary School	Project No. C5629/25/E/8706	Co-ords: - Level:	Date 26/06/2026
Location:	Underwood Avenue, Worsbrough, Barnsley S70 4AZ	Dimensions (m): Depth 1.15	1.45 / 0.33	Scale 1:25
Client:	Assix Ltd			Logged RP

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							TOPSOIL
				0.30			Firm to stiff brown slightly sandy slightly gravelly CLAY.
				1.00			Stiff to very stiff very gravelly CLAY with medium cobble content.
				1.15			WOOLLEY EDGE ROCK End of pit at 1.15 m

Remarks:

Stability:

Trial Pit Log

Trialpit No
TP02A
Sheet 1 of 1

Project Name:	Bank End Primary School	Project No. C5629/25/E/8706	Co-ords: - Level:	Date 26/06/2026
Location:	Underwood Avenue, Worsbrough, Barnsley S70 4AZ	Dimensions (m): Depth 0.30		Scale 1:25
Client:	Assix Ltd			Logged RP

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							CONCRETE at ~250mm

1
2
3
4
5

Remarks: Abandoned due to obstruction.

Stability:

Appendix 3

Trial Pit Photographs



TP01 ; Soakaway test



TP01 ; Spoil pile



TP02 ; Soakaway test



TP02 ; Spoil pile

Rogers Geotechnical Services Ltd

Manorcroft Works
Skelmanthorpe
Huddersfield HD8 9DT

Job No:	Site:	Client:
C5629/25/E/8706	Bank End Primary School	Assix Ltd

Appendix 4

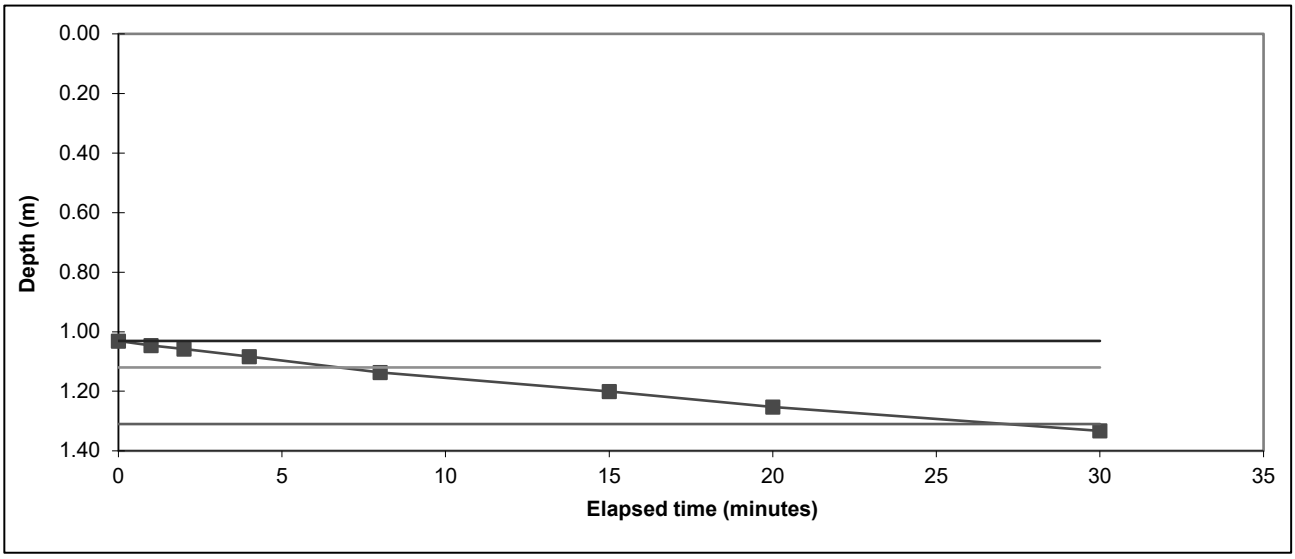
Soakaway Results

Rogers Geotechnical Services Ltd

Soakaway Test

Trial Pit No:	TP01	Test No:	1	Date:	26/06/2026
Length (m):	1.500		Datum Height:	0.00	m agl
Width (m):	0.33		Granular infill:	None	
Depth (m):	1.40		Porosity of infill:	1	(assumed)

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	1.031		
1	1.046		
2	1.058		
4	1.084		
8	1.137		
15	1.201		
20	1.253		
30	1.333		



Start water depth for analysis (mbgl):	1.03		
75% effective depth (mbgl):	1.12	Elapsed time (mins):	6.7
50% effective depth (mbgl):	1.22		
25% effective depth (mbgl):	1.31	Elapsed time (mins):	27.1
Base of soakage zone (mbgl):	1.40		

Volume outflow between 75% and 25% effective depth (m^3):	0.094
Mean surface area of outflow (m^2): (side area at 50% effective depth + base area)	1.15
Time for outflow between 75% and 25% effective depth (mins):	20.4

Soil infiltration rate (m/s):	**6.7E-5**

Remarks Results processed following BRE 365 (2007).

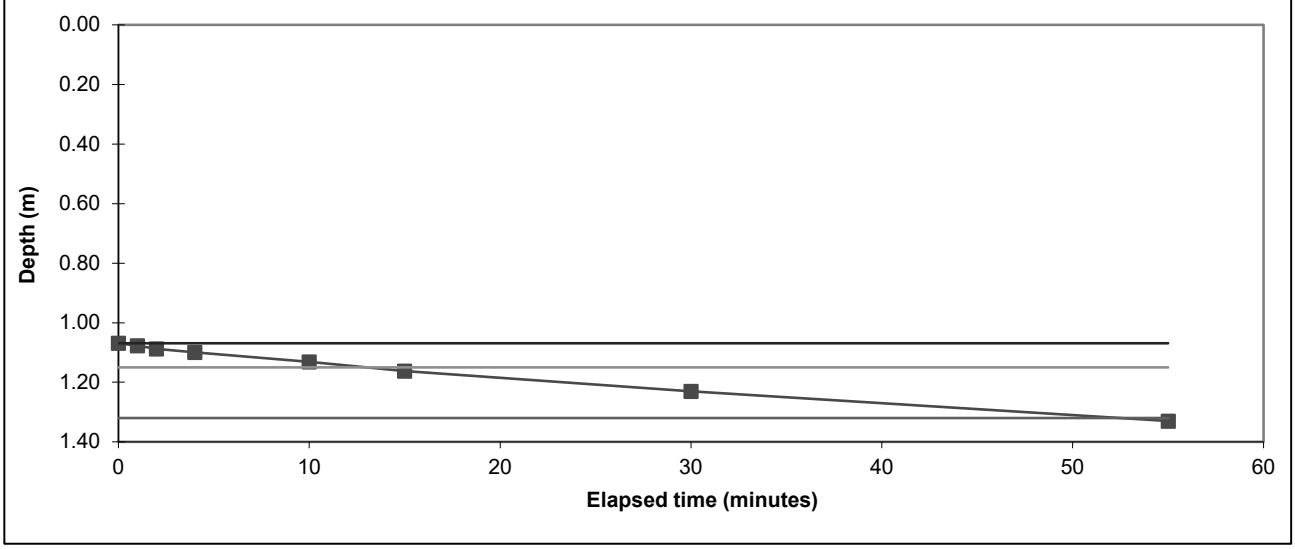
Client:	Assix Ltd	**Job No:**
Site:	Bank End Primary School	C5629/25/E/8706

Rogers Geotechnical Services Ltd

Soakaway Test

Trial Pit No:	TP01	Test No:	2	Date:	26/06/2026
Length (m):	1.500		Datum Height:	0.00	m agl
Width (m):	0.33		Granular infill:	None	
Depth (m):	1.40		Porosity of infill:	1	(assumed)

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	1.069		
1	1.077		
2	1.088		
4	1.099		
10	1.131		
15	1.162		
30	1.230		
55	1.330		



Start water depth for analysis (mbgl):	1.07		
75% effective depth (mbgl):	1.15	Elapsed time (mins):	13.1
50% effective depth (mbgl):	1.23		
25% effective depth (mbgl):	1.32	Elapsed time (mins):	52.5
Base of soakage zone (mbgl):	1.40		

Volume outflow between 75% and 25% effective depth (m^3):	0.084
Mean surface area of outflow (m^2): (side area at 50% effective depth + base area)	1.12
Time for outflow between 75% and 25% effective depth (mins):	39.4

Soil infiltration rate (m/s):	**3.2E-5**

Remarks Results processed following BRE 365 (2007).

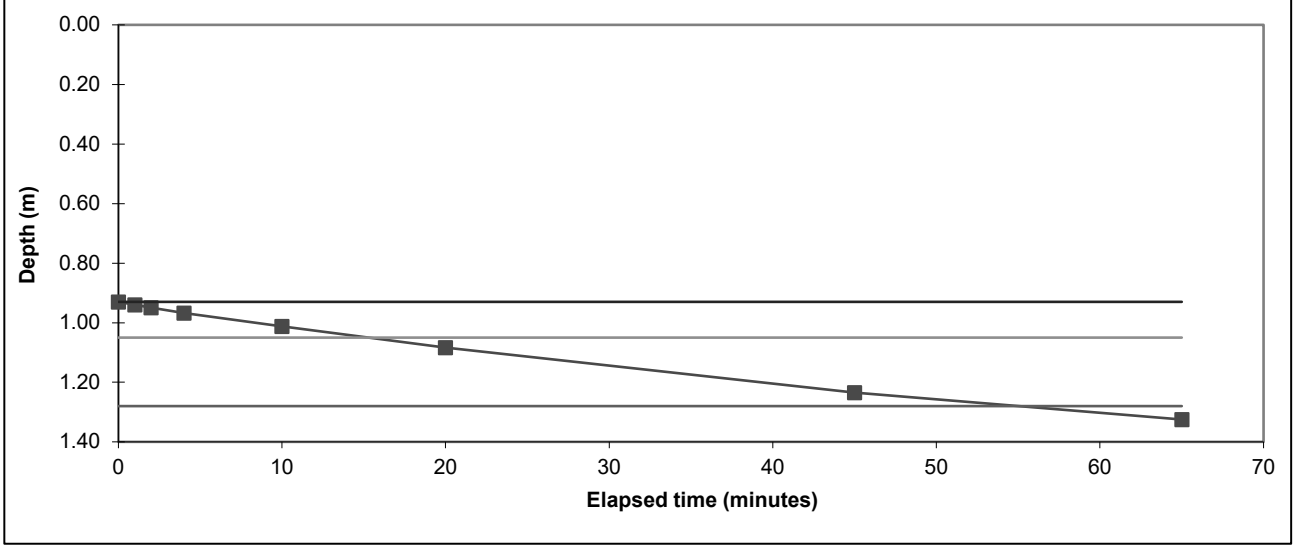
Client:	Assix Ltd	**Job No:**
Site:	Bank End Primary School	C5629/25/E/8706

Rogers Geotechnical Services Ltd

Soakaway Test

Trial Pit No:	TP01	Test No:	3	Date:	26/06/2026
Length (m):	1.500		Datum Height:	0.00	m agl
Width (m):	0.33		Granular infill:	None	
Depth (m):	1.40		Porosity of infill:	1	(assumed)

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	0.930		
1	0.940		
2	0.949		
4	0.968		
10	1.012		
20	1.084		
45	1.235		
65	1.325		



Start water depth for analysis (mbgl):	0.93		
75% effective depth (mbgl):	1.05	Elapsed time (mins):	15.3
50% effective depth (mbgl):	1.17		
25% effective depth (mbgl):	1.28	Elapsed time (mins):	55.0
Base of soakage zone (mbgl):	1.40		

Volume outflow between 75% and 25% effective depth (m^3):	0.114
Mean surface area of outflow (m^2): (side area at 50% effective depth + base area)	1.34
Time for outflow between 75% and 25% effective depth (mins):	39.7

Soil infiltration rate (m/s):	**3.6E-5**

Remarks Results processed following BRE 365 (2007).

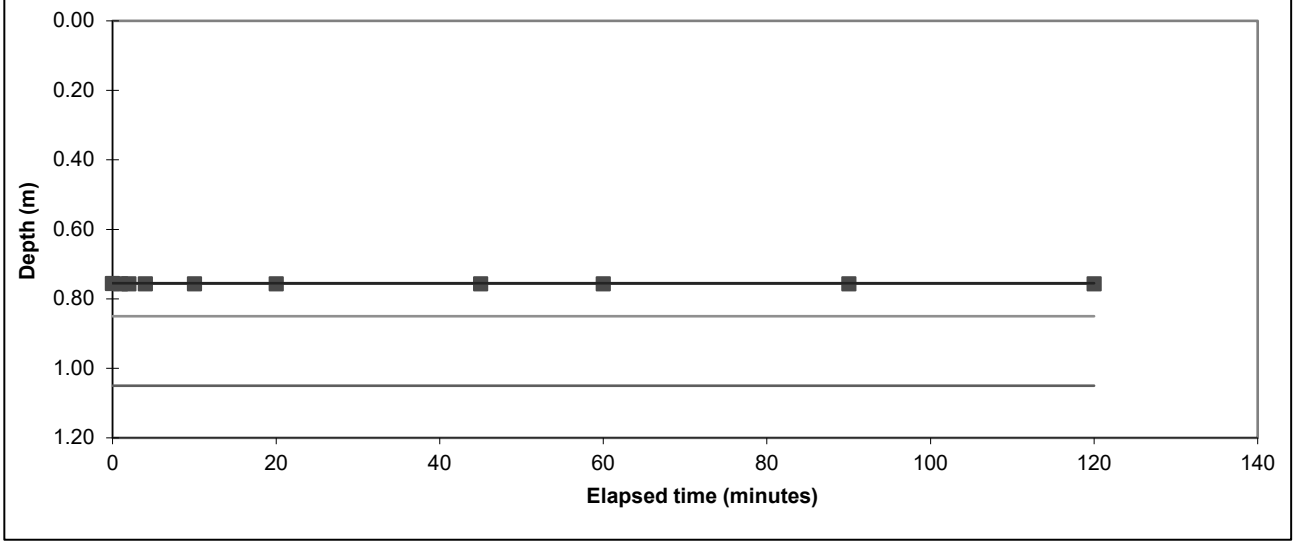
Client:	Assix Ltd	**Job No:**
Site:	Bank End Primary School	C5629/25/E/8706

Rogers Geotechnical Services Ltd

Soakaway Test

Trial Pit No:	TP02	Test No:	1	Date:	26/06/2026
Length (m):	1.450		Datum Height:	0.00	m agl
Width (m):	0.33		Granular infill:	None	
Depth (m):	1.15		Porosity of infill:	1	(assumed)

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	0.755		
1	0.756		
2	0.756		
4	0.756		
10	0.756		
20	0.756		
45	0.756		
60	0.756		
90	0.756		
120	0.756		



Start water depth for analysis (mbgl):	0.76		
75% effective depth (mbgl):	0.85	Elapsed time (mins):	#N/A
50% effective depth (mbgl):	0.95		
25% effective depth (mbgl):	1.05	Elapsed time (mins):	#N/A
Base of soakage zone (mbgl):	1.15		

Volume outflow between 75% and 25% effective depth (m^3):
Mean surface area of outflow (m^2): 1.19
(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:	Assix Ltd	**Job No:**
Site:	Bank End Primary School	C5629/25/E/8706