TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

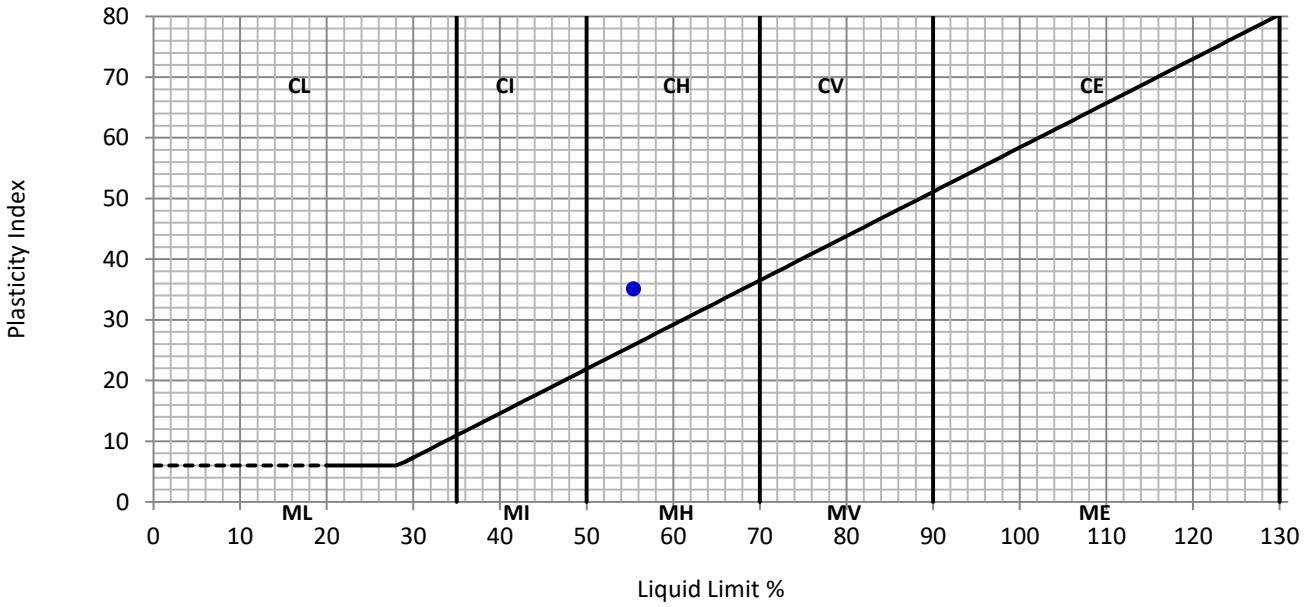
Project No:	D23452	**Client:**	HSP Consulting
Project Name:	CAVAC ATC	**Address:**	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34792		

Site Ref / Hole ID:	TP7	**Depth (m):**	1.50 - 1.70
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Light brown slightly gravelly CLAY
Location in Works:	N/a	**Material Source:**	Ex-Site
Date Sampled:	Unknown	**Material Supplier:**	Ex-Site
Sampled By:	Client	**Specification:**	BS1377
Date Received:	17 October 2023	**Date Tested:**	23 October 2023

Test Results

Liquid Limit	55	%
Plastic Limit	20	%
Plasticity Index	35	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	27	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377 - 2 Rev. 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	*A Grogan*	24/10/2023	**ATT**
		A Grogan, Laboratory Manager		

TEST REPORT
PARTICLE SIZE DISTRIBUTION ANALYSIS
BS1377:Part 2:1990

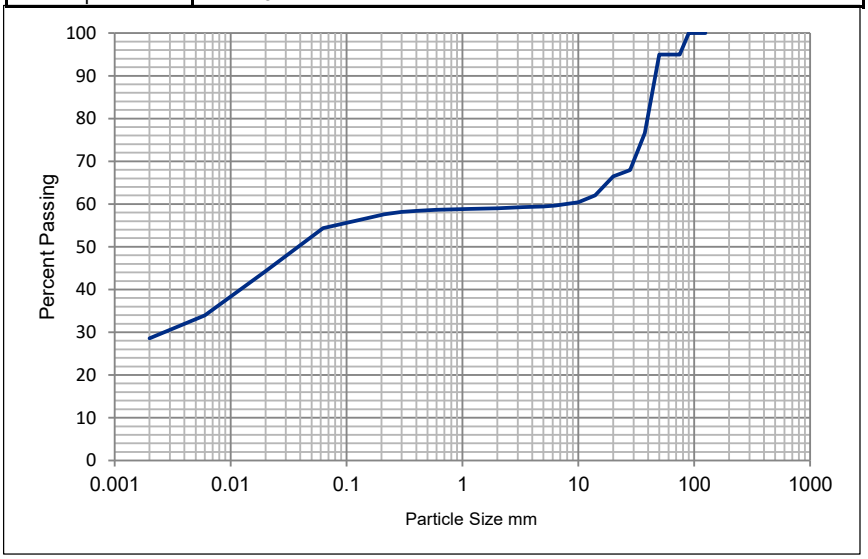
Project No:	D23452	**Client:**	HSP Consulting
Project Name:	CAVAC ATC	**Address**	Lawrence House Unit 6, Meadowbank Way Nottingham
ATS Sample No:	34793		NG16 3SB

Site Ref / Hole ID:	TP9	**Depth (m):**	0.50 - 0.70
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brownish grey very gravelly CLAY with low cobble content
Location in Works:	N/a	**Material Source:**	Ex-Site
Date Sampled:	Unknown	**Material Supplier:**	Ex-Site
Sampled By:	Client	**Specification:**	BS1377
Date Received:	17 October 2023	**Date Tested:**	24 October 2023

Test Results

Sieving	
Particle Size mm	% Passing
125	100
90	100
75	95
63	95
50	95
37.5	77
28	68
20	66
14	62
10	60
6.3	60
5.0	59
3.35	59
2.00	59
1.18	59
0.600	59
0.425	58
0.300	58
0.212	58
0.150	57
0.063	54

Preparation / Pretreatment	
Sieve:	Pre dried
Pipette:	as BS1377



Sedimentation	
Particle Size mm	% Passing
0.0201	44
0.0060	34
0.0020	29

Sample Portions		Particle Density Mg/m3		Uniformity Coefficient
Cobbles / Boulders	5	2.65	assumed	D_{60} / D_{10}
Gravel	36			
Sand	5	**Dry mass of sample, kg**		
Silt	26	7.0		**n/a**
Clay	29			

Remarks:

QA Ref.	**Apex Testing Solutions**		Approver	Date	Fig
BS1377 - 2 Rev. 2.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	G Llewellyn	24/10/2023	**PSD**
			G Llewellyn, Senior Technician		

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014+A1:2022

Project No:	D23452	**Client:**	HSP Consulting
Project Name:	CAVAC ATC	**Address:**	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34794		

Site Ref / Hole ID:	TP9	**Depth (m):**	0.50 - 0.70
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Light brown slightly gravelly CLAY
Location in Works:	N/a	**Material Source:**	Ex-Site
Date Sampled:	Unknown	**Material Supplier:**	Ex-Site
Sampled By:	Client	**Specification:**	ISO 17892-1
Date Received:	17 October 2023	**Date Tested:**	25 October 2023

Test Results

Moisture Content (%)	23.1

Remarks:

QA Ref.	**Apex Testing Solutions**		Approver	Date	Fig
EN ISO 17892-1:2014 A1:2022	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	A Grogan	25/10/2023	**MC**
			A Grogan, Laboratory Manager		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

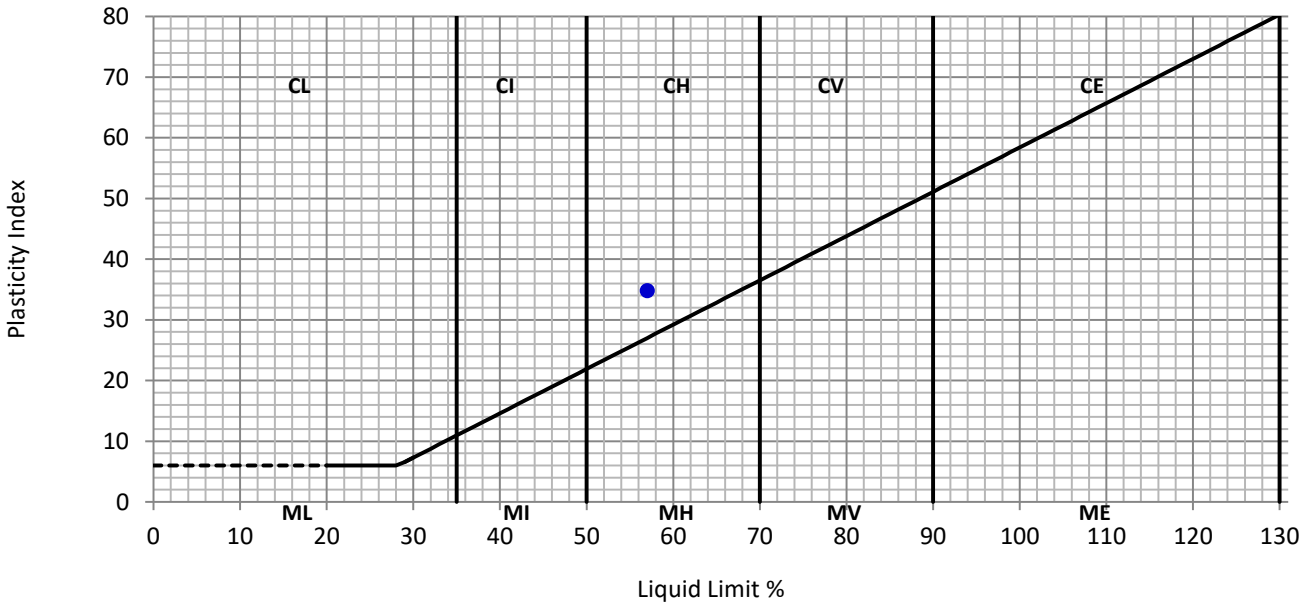
Project No:	D23452	**Client:**	HSP Consulting
Project Name:	CAVAC ATC	**Address:**	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34794		

Site Ref / Hole ID:	TP9	**Depth (m):**	0.50 - 0.70
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Light brown slightly gravelly CLAY
Location in Works:	N/a	**Material Source:**	Ex-Site
Date Sampled:	Unknown	**Material Supplier:**	Ex-Site
Sampled By:	Client	**Specification:**	BS1377
Date Received:	17 October 2023	**Date Tested:**	24 October 2023

Test Results

Liquid Limit	57	%
Plastic Limit	22	%
Plasticity Index	35	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	13	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377 - 2 Rev. 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	*A Grogan*	25/10/2023	**ATT**
		A Grogan, Laboratory Manager		

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014+A1:2022

Project No:	D23452	**Client:**	HSP Consulting
Project Name:	CAVAC ATC	**Address:**	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34795		

Site Ref / Hole ID:	TP9	**Depth (m):**	1.50 - 1.70
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Light brown CLAY
Location in Works:	N/a	**Material Source:**	Ex-Site
Date Sampled:	Unknown	**Material Supplier:**	Ex-Site
Sampled By:	Client	**Specification:**	ISO 17892-1
Date Received:	17 October 2023	**Date Tested:**	19 October 2023

Test Results

Moisture Content (%)	22.4

Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig
EN ISO 17892-1:2014 A1:2022	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	L Davis	19/10/2023	**MC**
		L Davis, Quality Manager		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

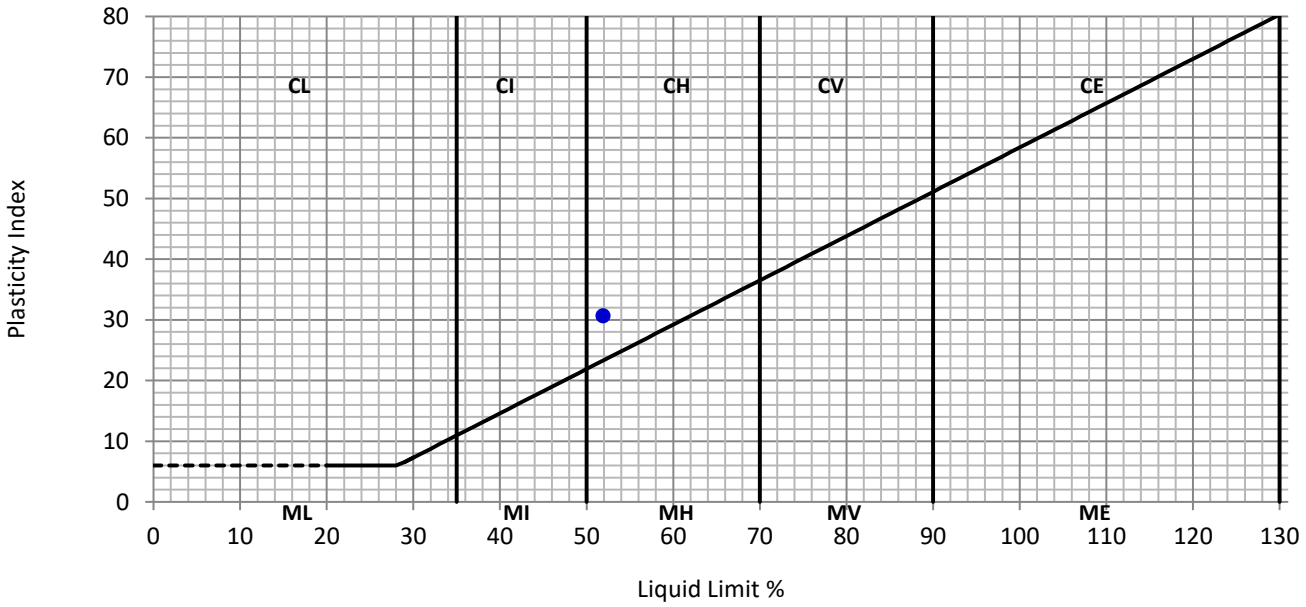
Project No:	D23452	**Client:**	HSP Consulting
Project Name:	CAVAC ATC	**Address:**	Lawrence House Unit 6, Meadowbank Way Nottingham NG16 3SB
ATS Sample No:	34795		

Site Ref / Hole ID:	TP9	**Depth (m):**	1.50 - 1.70
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Light brown CLAY
Location in Works:	N/a	**Material Source:**	Ex-Site
Date Sampled:	Unknown	**Material Supplier:**	Ex-Site
Sampled By:	Client	**Specification:**	BS1377
Date Received:	17 October 2023	**Date Tested:**	18 October 2023

Test Results

Liquid Limit	52	%
Plastic Limit	21	%
Plasticity Index	31	%

Preparation:	4.2.3 Natural Specimen	
Proportion retained on 425µm sieve:	0	%



Remarks:

QA Ref.	**Apex Testing Solutions**	Approver	Date	Fig.
BS1377 - 2 Rev. 3.0	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096 7771	L Davis	19/10/2023	**ATT**
		L Davis, Quality Manager		

Kiwa CMT

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Unit 5 Prime Park Way
Prime Enterprise Park
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E uk.cmt.enquiries@kiwa.com

www.kiwa.co.uk/cmt

HSP Consulting Engineers Ltd
Lawrence House
6 Meadowbank Way
Eastwood
Nottinghamshire
NG16 3SB

Date: 26th October 2023

Lab Ref: 71010

Order Ref: SC14905

Originator: Laura Jones

Site: Cardiff ATC, SC14905

Samples: A total of 9No borehole core samples, nominally 90mmØ, were delivered, by the client, to Kiwa CMT on the 23rd October 2023. Each of the samples were labelled, individually, with Sample ID and depth range.

Requirements: To assess the individual samples for UCS at the locations, and depths, delivered and requested by the client.

Results: Tabulated values are included overleaf, detailing test results and sample location.

Kiwa CMT

Ian Whitby
Supervisor
Building Products

Kiwa CMT

Test Results

Ref	Depth (m)	Test Type	I_s (MPa)	$I_{s(50)}$ (MPa)	UCS (N/mm²)
BH01	3.83-4.00	PL	2.927	3.742	-
BH01	6.69-6.91	UCS	-	-	31.81
BH02	1.68-1.78	PL	0.014	0.020	-
BH02	2.01-2.22	UCS	-	-	93.07
BH02	4.54-4.73	UCS	-	-	53.52
BH02	5.62-5.76	PL	1.688	2.280	-
BH03	2.52-2.63	PL	1.939	2.598	-
BH03	4.04-4.18	UCS	-	-	58.95
BH03	6.74-7.00	UCS	-	-	96.18

Comments:

$I_{s(50)}$ is the corrected Point Load strength when converted to a value of I_s that would have been measured by a diametral test with a Ø of 50mm. All Point Load tests undertaken Axially [PL(A)].

Samples tested on 25th October 2023.

N/mm^2 is equivalent to MPa.

Kiwa CMT

Ian Whitby
Supervisor
Building Products

Appendix VII

INSITU SOAKAWAY TEST RESULTS

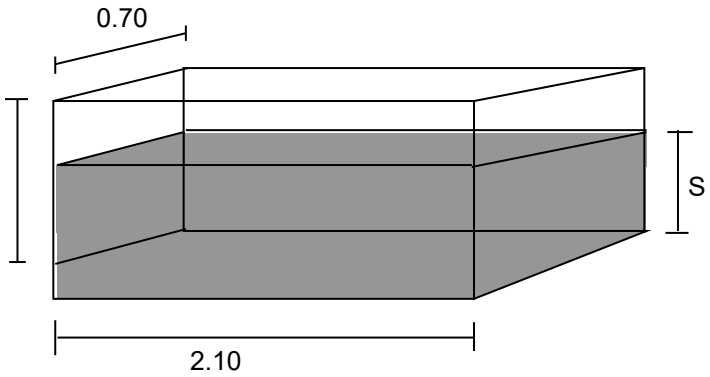
Trialpit No.: TP02

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.30	TOPSOIL
0.30	0.60	CLAY, Light brown to grey sandy gravelly clay.
0.60	1.30	LIMESTONE, recovered as gravel.

Sketch plan of test zone

Not to scale
All dimensions in metres.

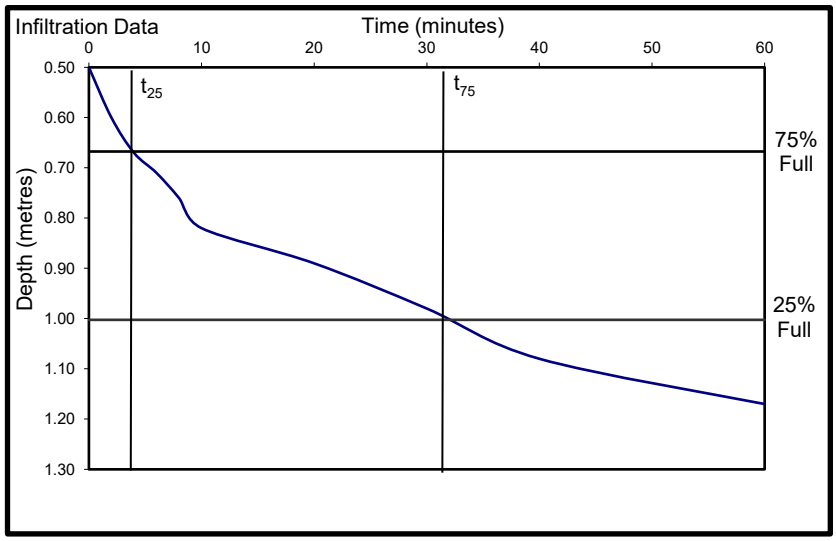


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m) 1.30
Water level from 0.50m to 1.30m.
No Groundwater was encountered

Gives the Figures

S= 0.67 m
a_{p50}= 3.35 m^2
V_{p75-25}= 0.49 m^3

Soakaway Test Run 1 Test Date: 25/09/2023



Time (minutes)	Depth (m)
0	0.50
2	0.60
4	0.67
6	0.71
8	0.76
10	0.82
20	0.89
30	0.98
40	1.08
60	1.17

From the above graph,

t_{p75}= 3 (min) $t_{p25=}$ 32 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 3.55E-05 f_{run1}= 3.55×10^{-5} m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No: C3296
Site: Cardiff & Vale College Site
Client: ARUP

hsp consulting

INSITU SOAKAWAY TEST RESULTS

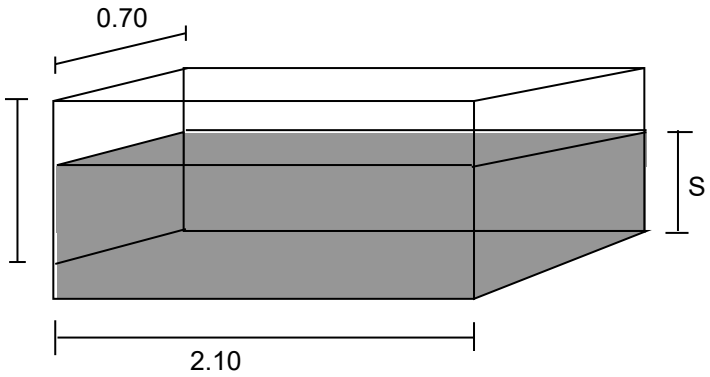
Trialpit No.: TP02

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.30	TOPSOIL
0.30	0.60	CLAY, Light brown to grey sandy gravelly clay.
0.60	1.30	LIMESTONE, recovered as gravel.

Sketch plan of test zone

Not to scale
All dimensions in metres.

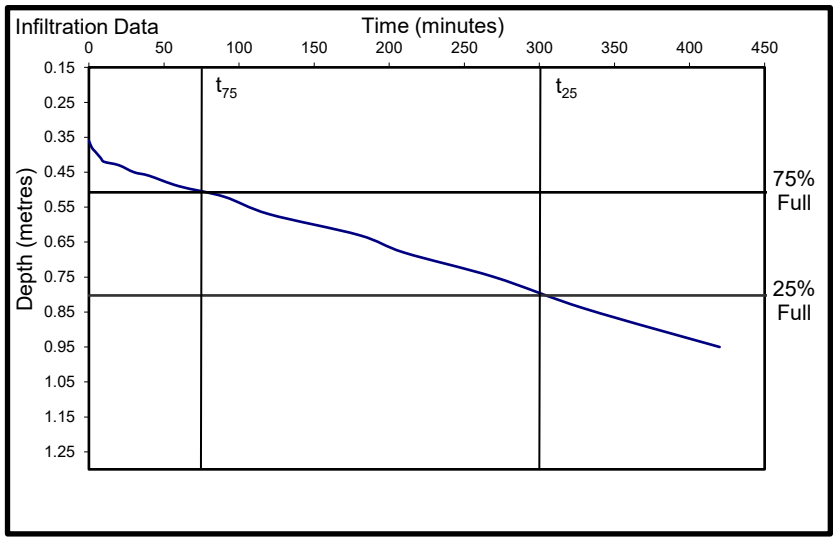


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m) 1.30
Water level from 0.36m to 1.30m.
No Groundwater was encountered

Gives the Figures

S= 0.59 m
a_{p50}= 3.12 m^2
V_{p75-25}= 0.43 m^3

Soakaway Test Run 2 Test Date: 26/09/2023



Time (minutes)	Depth (m)
0	0.36
2	0.38
4	0.39
6	0.40
8	0.41
10	0.42
20	0.43
30	0.45
40	0.46
60	0.49
90	0.52
120	0.57
180	0.63
210	0.68
270	0.75
330	0.84
420	0.95

From the above graph,
t_{p25}= 79 (min) $t_{p75=}$ 310 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 4.21E-06 $f_{run1} = 4.21 \times 10^{-6}$ m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No: C3296
Site: Cardiff & Vale College Site
Client: ARUP

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INSITU SOAKAWAY TEST RESULTS

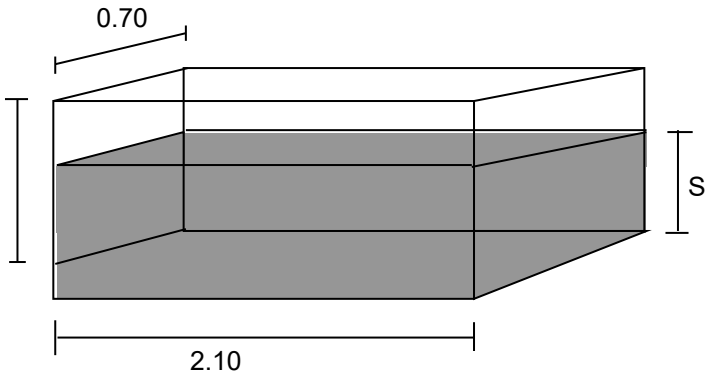
Trialpit No.: TP02

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.30	TOPSOIL
0.30	0.60	CLAY, Light brown to grey sandy gravelly clay.
0.60	1.30	LIMESTONE, recovered as gravel.

Sketch plan of test zone

Not to scale
All dimensions in metres.

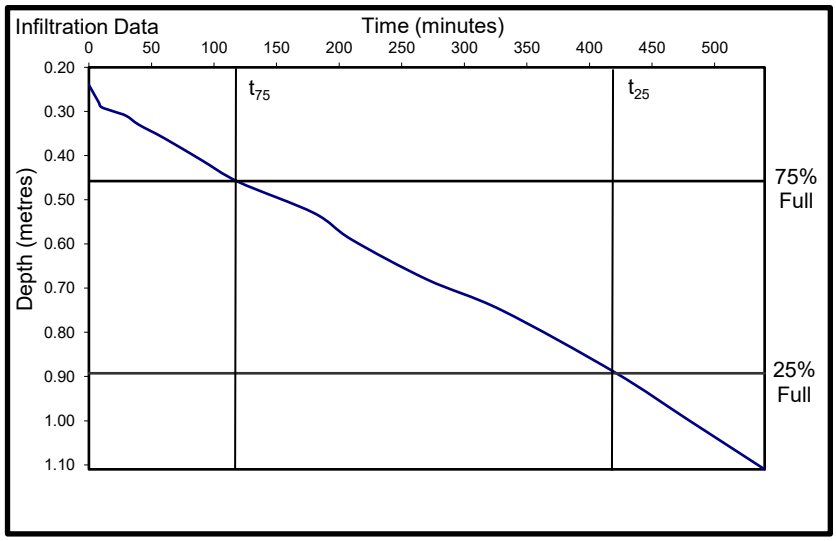


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m) 1.30
Water level from 0.24m to 1.30m.
No Groundwater was encountered

Gives the Figures

S= 0.87 m
a_{p50}= 3.91 m^2
V_{p75-25}= 0.64 m^3

Soakaway Test Run 3 Test Date: 27/09/2023



Time (minutes)	Depth (m)
0	0.24
2	0.25
4	0.26
6	0.27
8	0.28
10	0.29
20	0.30
30	0.31
40	0.33
60	0.36
90	0.41
120	0.46
180	0.53
210	0.59
270	0.68
330	0.75
420	0.89
480	1.00
540	1.11

From the above graph,
t_{p25}= 115 (min) $t_{p75=}$ 420 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 3.76E-06 f_{run1}= 3.76×10^{-6} m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No: C3296:
Site: Cardiff & Vale College Site
Client: ARUP

hsp consulting

INSITU SOAKAWAY TEST RESULTS

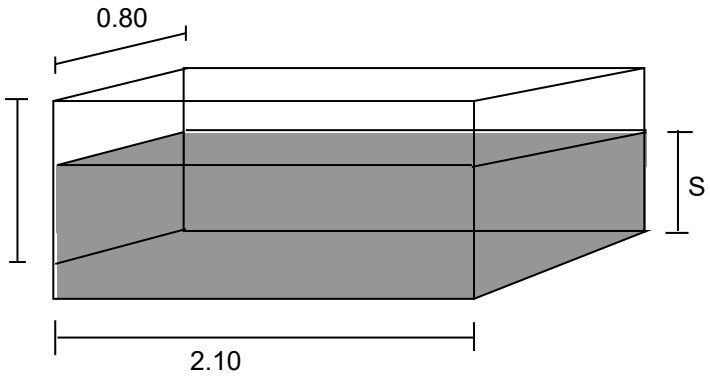
Trialpit No.: TP04

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.25	TOPSOIL
0.25	0.60	CLAY, Very light brown to greyish clay, with occasional limestone fragments.
0.60	1.00	CLAY, Light brown to grey sandy gravelly clay.
1.00	1.50	Limestone, recovered as gravel.

Sketch plan of test zone

Not to scale
All dimensions in metres.

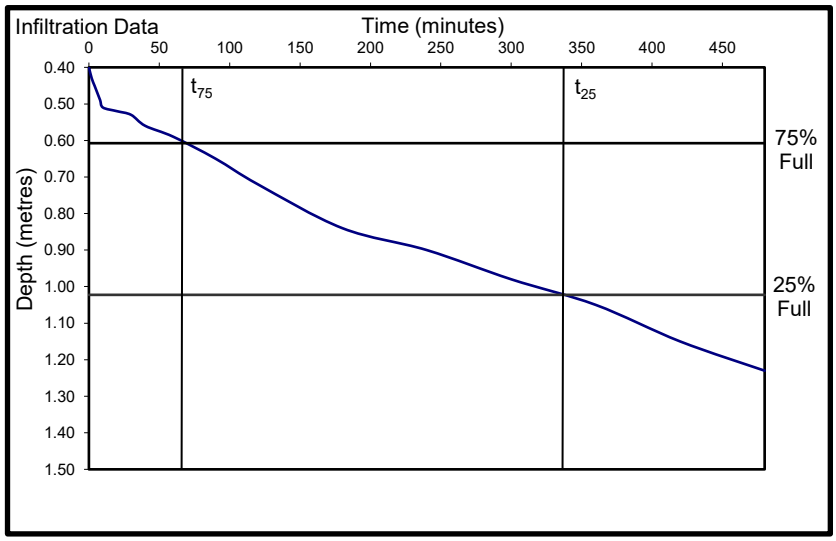


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m) 1.50
Water level from 0.40m to 1.50m.
No Groundwater was encountered

Gives the Figures

S= 0.83 m
a_{p50}= 4.09 m^2
V_{p75-25}= 0.70 m^3

Soakaway Test Run 1 Test Date: 26/09/2023



Time (minutes)	Depth (m)
0	0.40
2	0.43
4	0.45
6	0.47
8	0.49
10	0.51
20	0.52
30	0.53
40	0.56
60	0.59
90	0.65
120	0.72
180	0.84
240	0.90
300	0.98
360	1.05
420	1.15
480	1.23

From the above graph,
t_{p25}= 62 (min) $t_{p75=}$ 340 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 4.30E-06 f_{run1}= 4.30×10^{-6} m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No: C3296
Site: Cardiff & Vale College Site
Client: ARUP

hsp consulting

INSITU SOAKAWAY TEST RESULTS

Trialpit No.: TP04

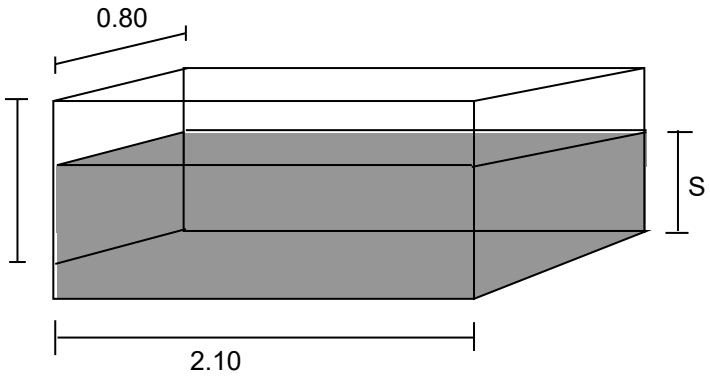
Soil Profile:

Depth (m) From:	To:	Description
0.00	0.25	TOPSOIL
0.25	0.60	CLAY, Very light brown to greyish clay, with occasional limestone fragments.
0.60	1.00	CLAY, Light brown to grey sandy gravelly clay.
1.00	1.50	Limestone, recovered as gravel.

Sketch plan of test zone

Not to scale
All dimensions in metres.

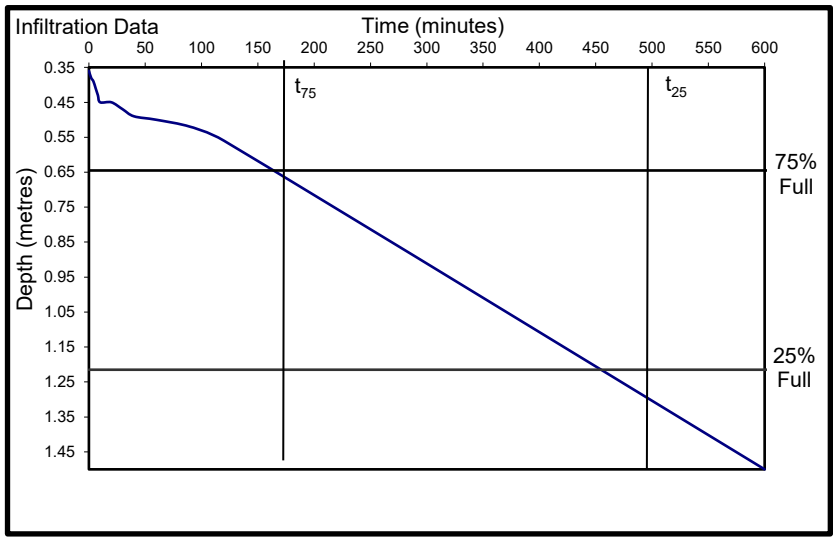
porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m) 1.50
Water level from 0.36 to 1.50m
No Groundwater was encountered



Gives the Figures

S=	1.14	m
a_{p50}=	4.99	m^2
V_{p75-25}=	0.96	m^3

Soakaway Test Run 2 Test Date: 26/09/2023



Time (minutes)	Depth (m)
0	0.36
2	0.38
4	0.39
6	0.41
8	0.43
10	0.45
20	0.45
30	0.47
40	0.49
60	0.50
90	0.52
120	0.56
600	1.50

From the above graph,

t_{p25}= 160 (min) $t_{p75=}$ 460 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 4.48E-06 f_{run1}= 4.48×10^{-6} m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No: C3296
Site: Cardiff & Vale College Site
Client: ARUP

hsp consulting

INSITU SOAKAWAY TEST RESULTS

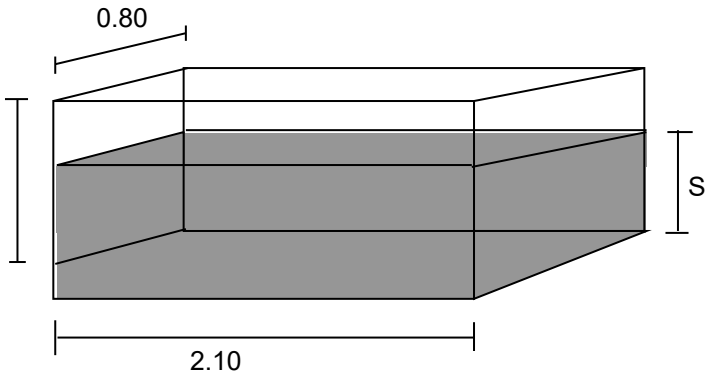
Trialpit No.: TP04

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.25	TOPSOIL
0.25	0.60	CLAY, Very light brown to greyish clay, with occasional limestone fragments.
0.60	1.00	CLAY, Light brown to grey sandy gravelly clay.
1.00	1.50	Limestone, recovered as gravel.

Sketch plan of test zone

Not to scale
All dimensions in metres.

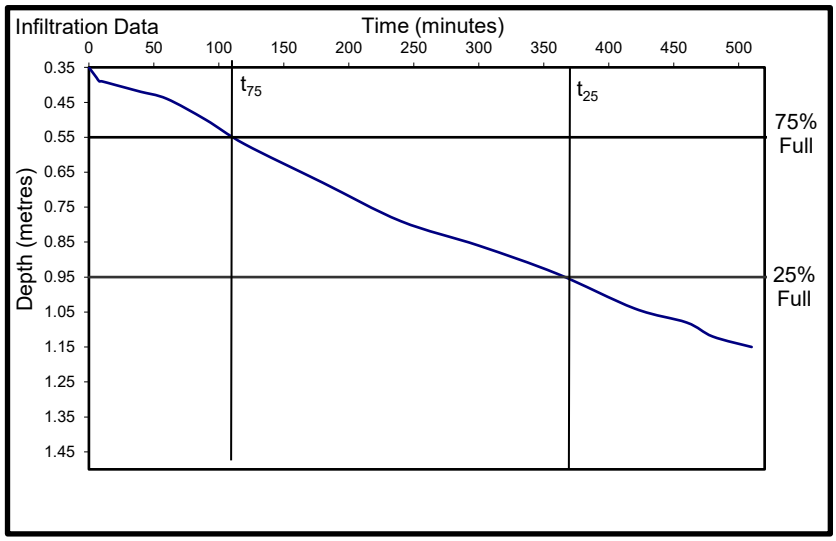


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m) 1.50
Water level from 0.35m to 1.50m.
No Groundwater was encountered

Gives the Figures

S= 0.80 m
a_{p50}= 4.00 m^2
V_{p75-25}= 0.67 m^3

Soakaway Test Run 3 Test Date: 27/09/2023



Time (minutes)	Depth (m)
0	0.35
2	0.36
4	0.37
6	0.38
8	0.39
10	0.39
20	0.40
30	0.41
40	0.42
60	0.44
90	0.50
120	0.57
180	0.68
240	0.79
300	0.86
360	0.94
420	1.04
460	1.08
480	1.12
510	1.15

From the above graph,
t_{p25}= 110 (min) $t_{p75=}$ 370 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 4.52E-06 f_{run1}= 4.52×10^{-6} m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No: C3296
Site: Cardiff & Vale College Site
Client: ARUP

hsp consulting

INSITU SOAKAWAY TEST RESULTS

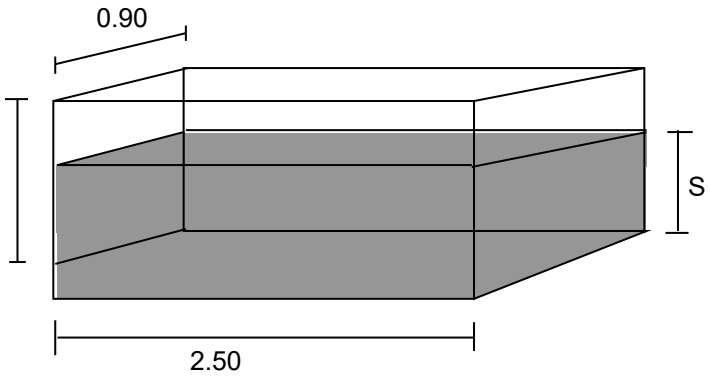
Trialpit No.: TP10

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.25	TOPSOIL
0.25	0.65	Light brown to greyish CLAY, with occasional limestone fragments.
0.65	1.00	Limestone fragments.
1.00	1.30	Limestone, recovered as gravel.

Sketch plan of test zone

Not to scale
All dimensions in metres.

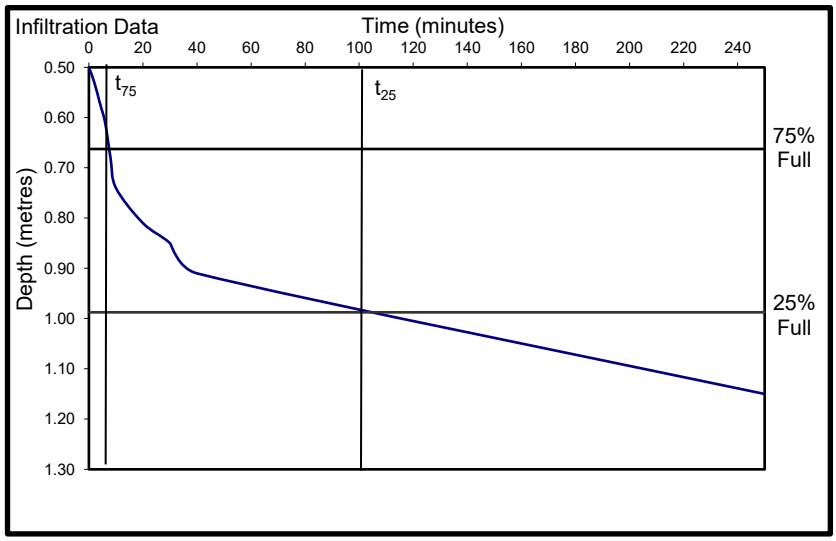


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m) 1.30
Water level from 0.50m to 1.30m.
No Groundwater was encountered

Gives the Figures

S=	0.65	m
a_{p50}=	4.46	m^2
V_{p75-25}=	0.73	m^3

Soakaway Test Run 1 **Test Date: 25/09/2023**



Time (minutes)	Depth (m)
0	0.50
2	0.53
4	0.57
6	0.61
8	0.68
10	0.74
20	0.81
30	0.85
40	0.91
250	1.15

From the above graph,

t_{p25}= 7 (min) $t_{p75=}$ 105 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.17E-05 f_{run1}= 1.17×10^{-5} m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No: C3296
Site: Cardiff & Vale College Site
Client: ARUP

hsp consulting

INSITU SOAKAWAY TEST RESULTS

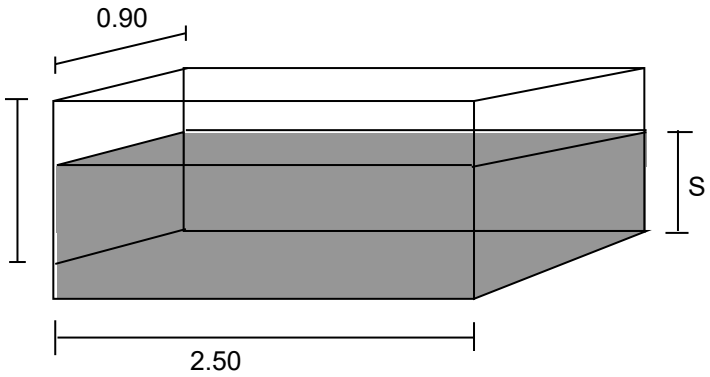
Trialpit No.: TP10

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.25	TOPSOIL
0.25	0.65	Light brown to greyish CLAY, with occasional limestone fragments.
0.65	1.00	Limestone fragments
1.00	1.30	Limestone, recovered as gravel.

Sketch plan of test zone

Not to scale
All dimensions in metres.

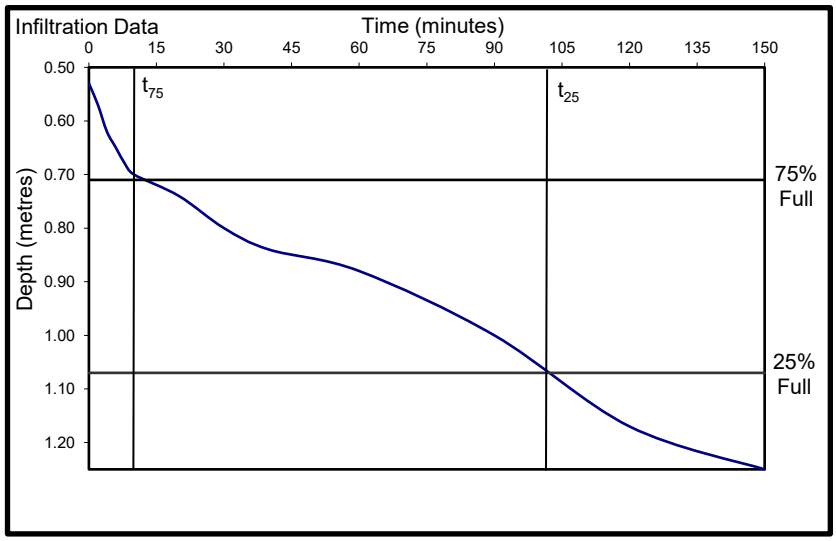


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m) 1.30
Water level from 0.53m to 1.30m.
No Groundwater was encountered

Gives the Figures

S=	0.72	m
a_{p50}=	4.70	m^2
V_{p75-25}=	0.81	m^3

Soakaway Test Run 2 Test Date: 26/09/2023



Time (minutes)	Depth (m)
0	0.53
2	0.57
4	0.62
6	0.65
8	0.68
10	0.70
20	0.74
30	0.80
40	0.84
60	0.88
90	1.00
120	1.17
150	1.25

From the above graph,
t_{p25}= 14 (min) $t_{p75=}$ 100 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.40E-05 f_{run1}= 1.40×10^{-5} m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No: C3296
Site: Cardiff & Vale College Site
Client: ARUP

hsp consulting

INSITU SOAKAWAY TEST RESULTS

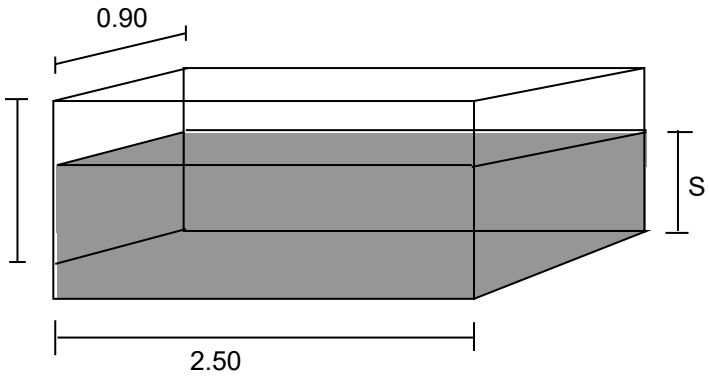
Trialpit No.: TP10

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.25	TOPSOIL
0.25	0.65	Light brown to greyish CLAY, with occasional limestone fragments.
0.65	1.30	Limestone Fragments

Sketch plan of test zone

Not to scale
All dimensions in metres.

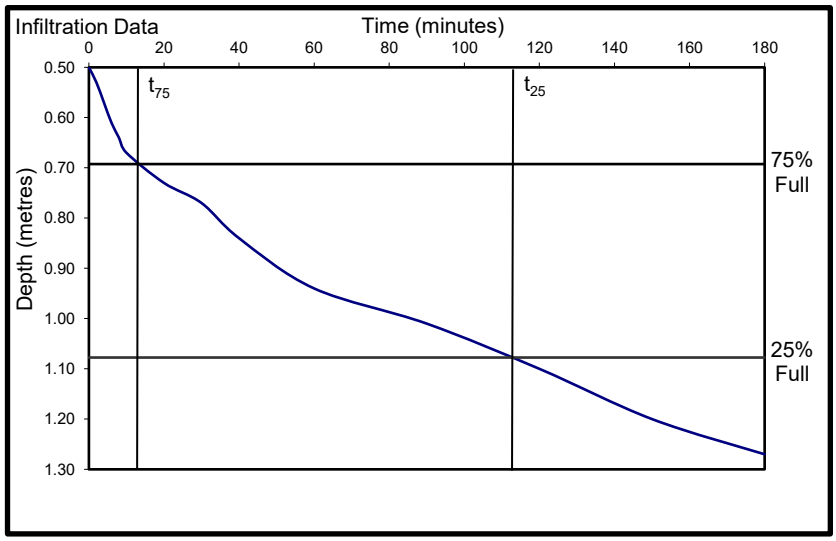


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m) 1.30
Water level from 0.50 to 1.30m.
No Groundwater was encountered

Gives the Figures

S= 0.77 m
a_{p50}= 4.87 m^2
V_{p75-25}= 0.87 m^3

Soakaway Test Run 1 Test Date: 26/09/2023



Time (minutes)	Depth (m)
0	0.50
2	0.53
4	0.57
6	0.61
8	0.64
10	0.67
20	0.73
30	0.77
40	0.84
60	0.94
90	1.01
120	1.10
150	1.20
180	1.27

From the above graph,
t_{p25}= 15 (min) $t_{p75=}$ 115 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.25E-05 f_{run1}= 1.25 x 10-5 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No: C3296
Site: Cardiff & Vale College Site
Client: ARUP

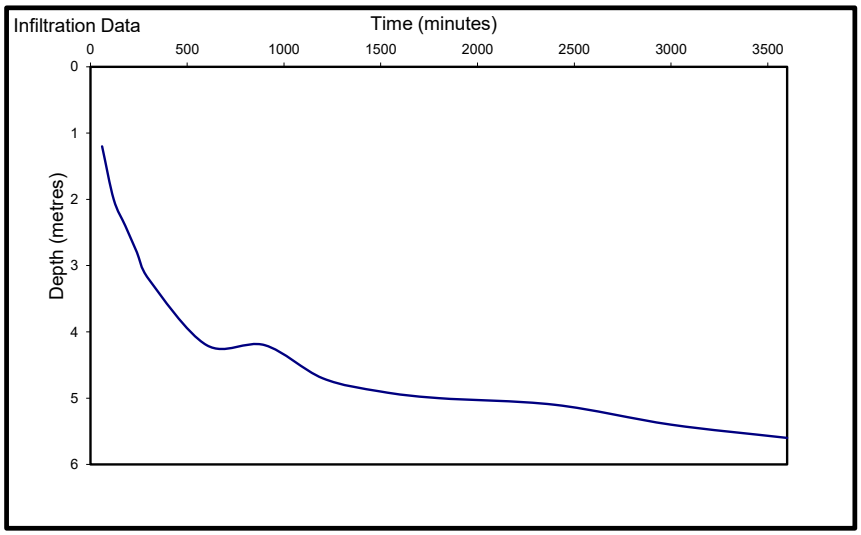
hsp consulting

FALLING HEAD SOAKAGE TEST

Test Hole Diameter	0.1	m
Test Hole Depth 'D'	6.8	m
Groundwater Level	Dry	m

Time	Time	Water Level	Water Depth
T	T	d	D-d
min	Sec	m	m
1	60	1.2	5.6
2	120	2	4.8
3	180	2.4	4.4
4	240	2.8	4
5	300	3.2	3.6
10	600	4.2	2.6
15	900	4.2	2.6
20	1200	4.7	2.1
25	1500	4.9	1.9
30	1800	5	1.8
40	2400	5.1	1.7
50	3000	5.4	1.4
60	3600	5.6	1.2

Test Date: **25/09/2023**



Job No: **C3296**
Site: **Cardiff & Vale College Site**
Client: **WEPCo**
Location: **BH01**

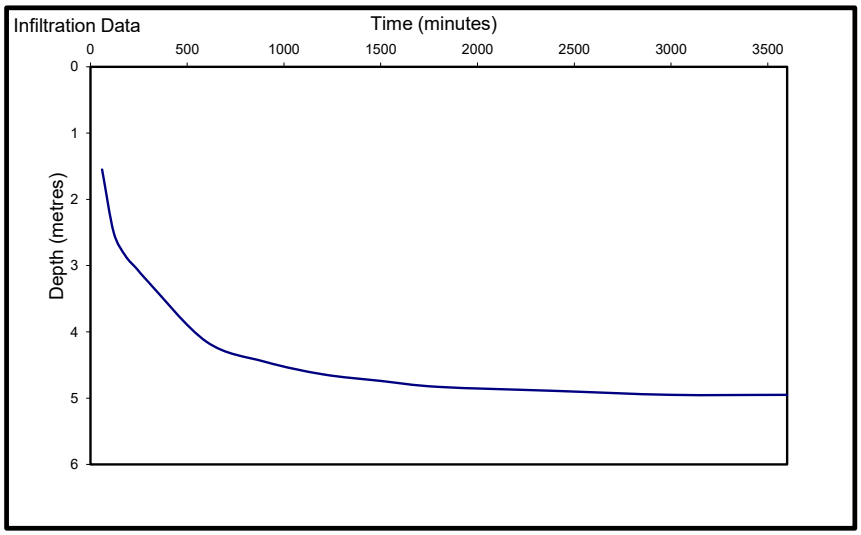
hsp consulting

FALLING HEAD SOAKAGE TEST

Test Hole Diameter	0.1	m
Test Hole Depth 'D'	7	m
Groundwater Level	Dry	m

Time	Time	Water Level	Water Depth
T	T	d	D-d
min	Sec	m	m
1	60	1.55	5.45
2	120	2.5	4.5
3	180	2.85	4.15
4	240	3.05	3.95
5	300	3.25	3.75
10	600	4.15	2.85
15	900	4.45	2.55
20	1200	4.64	2.36
25	1500	4.74	2.26
30	1800	4.83	2.17
40	2400	4.89	2.11
50	3000	4.95	2.05
60	3600	4.95	2.05

Test Date: **26.09.2023**



Job No: **C3296**
Site: **Cardiff & Vale College Site**
Client: **WEPCo**
Location: **BH03**

hsp consulting

Appendix VIII

Apex Testing Solutions
Sturmi Way
Village Farm Industrial Estate
Pyle
Bridgend
CF33 6BZ
Telephone :01656 746762
Facsimile :01656 749096
Email andrew.grogan@apex-drilling.com

REPORT No.	:	D23432
CLIENT	:	HSP
SITE	:	Cardiff Airport
MATERIAL DESCRIPTION	:	See Individual Tests Results
DATE TESTED	:	27 September 2023
TESTING REQUIRED	:	4 No. Plate Load Bearing Tests
RELEVANT SPECIFICATION	:	BS 1377 : Part 9 : 1990 In House Method / Clients Specification CD 225 Rev 1 (Supersedes IAN 73/06 rev 1)
TEST METHOD	:	Clause 4.1.6.4.2
TEST RESULTS	:	See Pages 3 – 6

Apex Testing Solutions
Sturmi Way
Village Farm Industrial Estate
Pyle
Bridgend
CF33 6BZ
Telephone :01656 746762
Facsimile :01656 749096
Email : andrew.grogan@apex-drilling.com

REPORT No. : D23432

CLIENT : HSP

SITE : Cardiff Airport

TEST LOCATION : 4 No. Locations as instructed by Client

DEPTH (m) : See Individual Test Results

Reaction Load : 8T Excavator

Plate Diameter : 300 mm

TEST RESULTS

Test No.	1	2	3	4						
CBR%	2.1	7.5	8.9	4.3						

Test No.										
CBR%										

COMMENTS

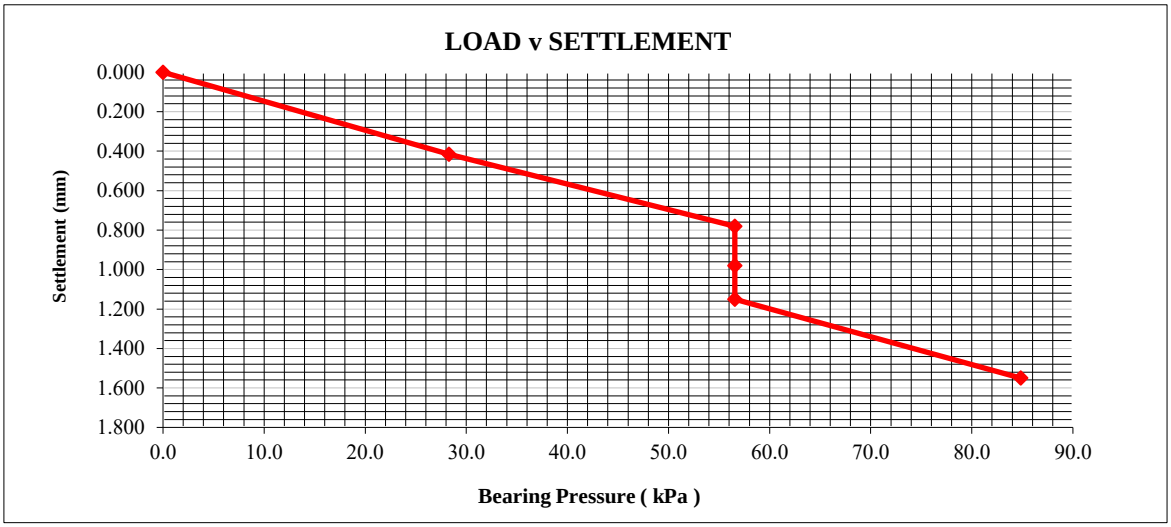
Weather - Overcast

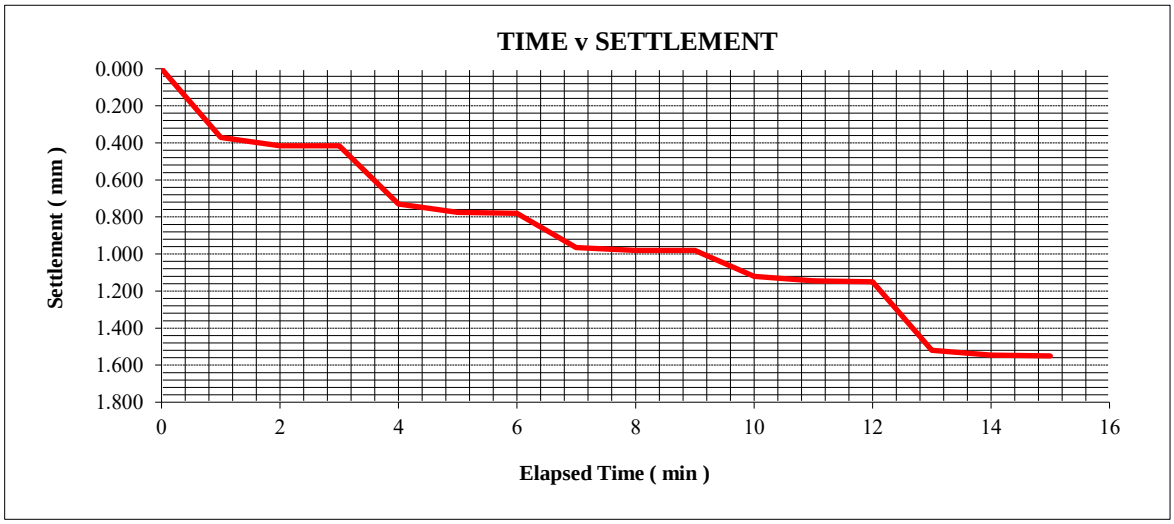
CHECKED BY: L Davis DATE : 28/09/2023

REPORT No : D23432
CLIENT : HSP
SITE : Cardiff Airport

TEST RESULTS

TEST No.	: 1		
DATE TESTED	: 27 September 2023		
SAMPLE TYPE	: Natural		
DEPTH (m)	: EGL		
SAMPLE DESCRIPTION	: Brown slightly sandy gravelly CLAY		
LOCATION	: TP5		
Plate Size	: 300 mm		
LOAD TO ACHIEVE 1.25mm SETTLEMENT >		:	63.63 kN/m^2
MODULUS OF SUBGRADE REACTION (k_{762}) >		:	22484 kN/m2/m
Equivalent CBR VALUE >		:	2.1 %

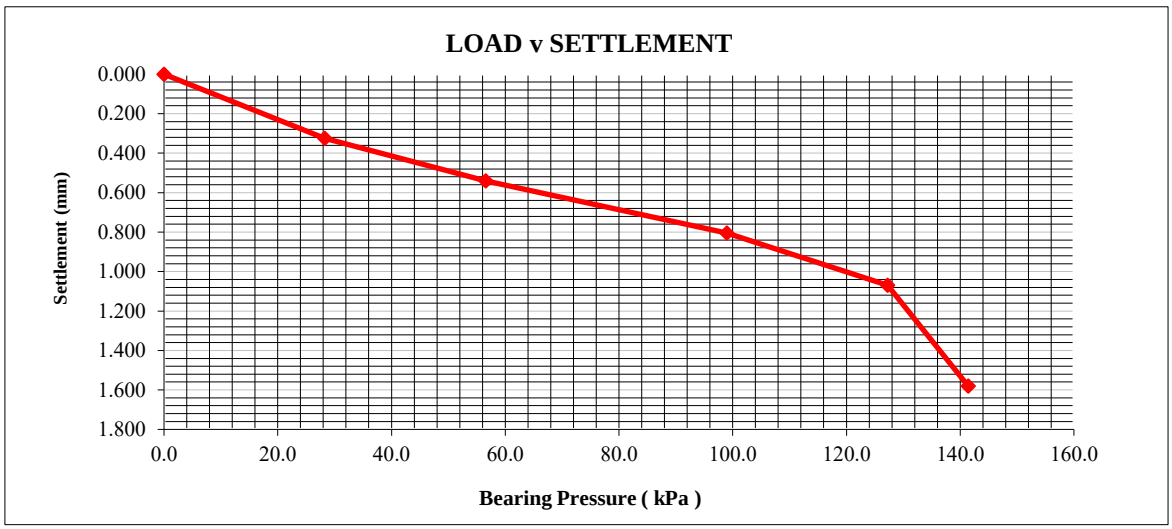


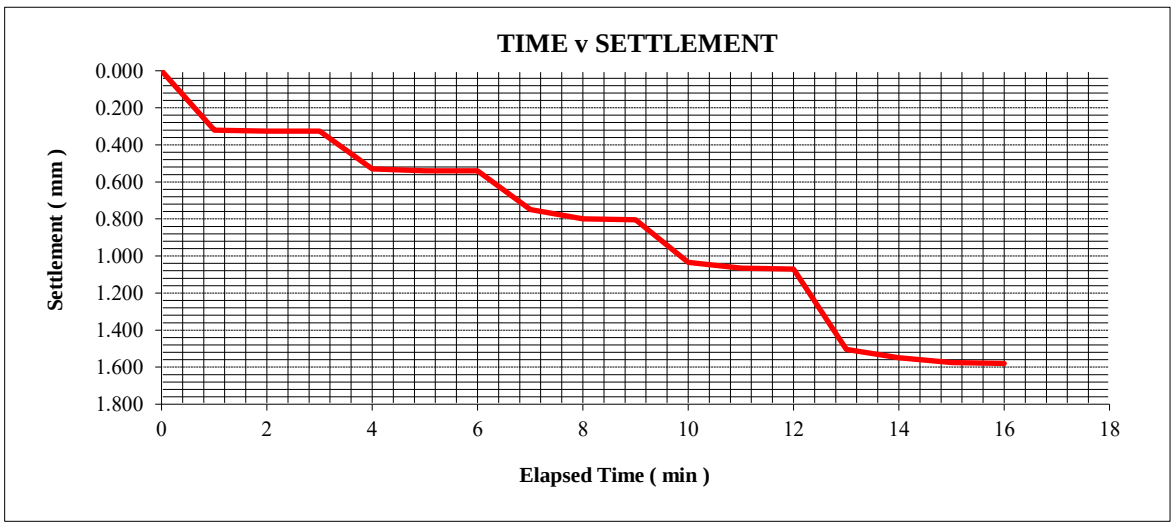


REPORT No : D23432
CLIENT : HSP
SITE : Cardiff Airport

TEST RESULTS

TEST No.	: 2	
DATE TESTED	: 27 September 2023	
SAMPLE TYPE	: Natural	
DEPTH (m)	: EGL	
SAMPLE DESCRIPTION	: Brown slightly sandy gravelly CLAY	
LOCATION	: TP6	
Plate Size	: 300 mm	
LOAD TO ACHIEVE 1.25mm SETTLEMENT >	:	132.25 kN/m^2
MODULUS OF SUBGRADE REACTION (k_{762}) >	:	46732 kN/m2/m
Equivalent CBR VALUE >	:	7.5 %

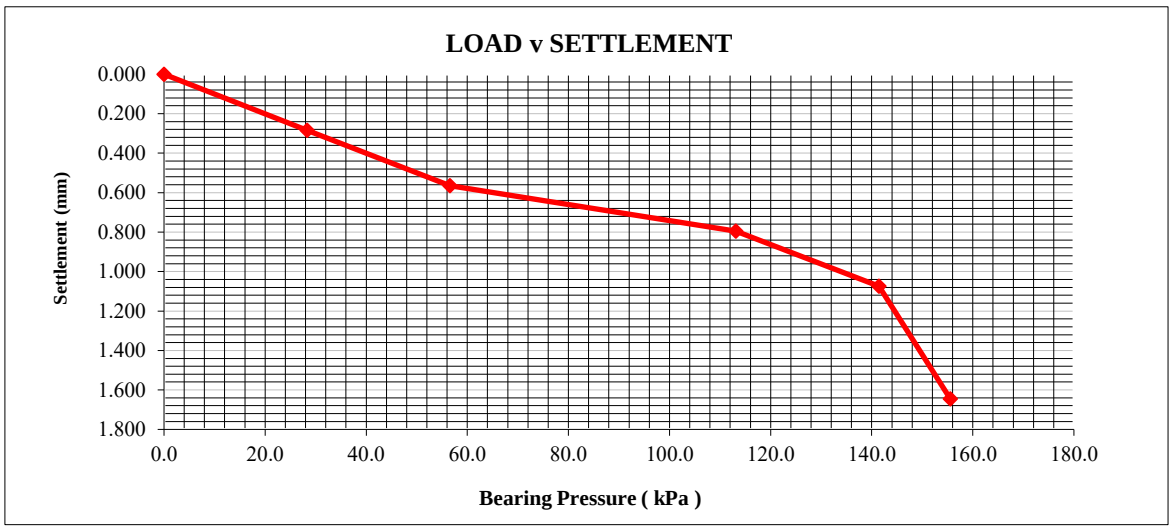


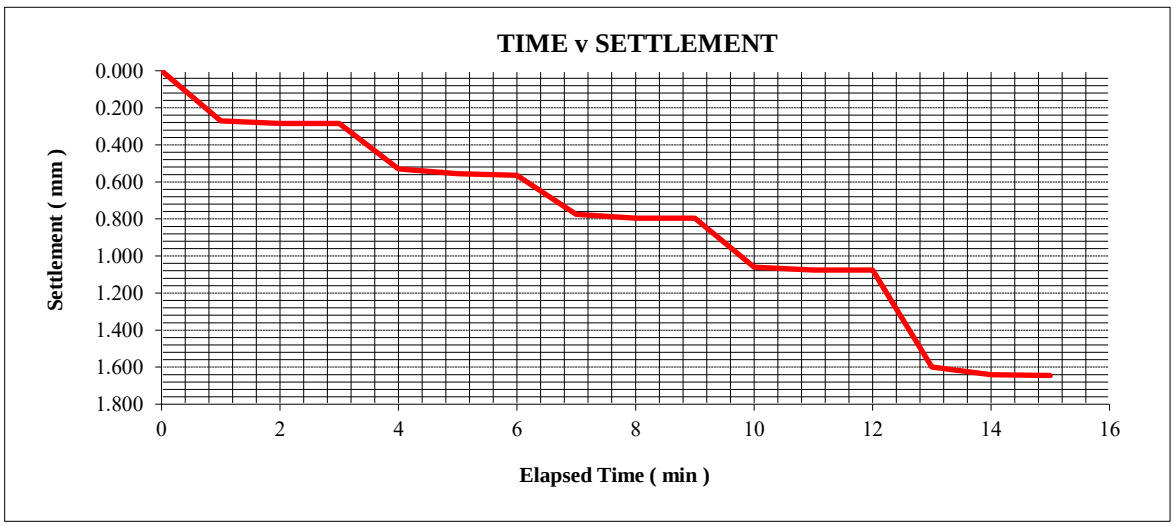


REPORT No : D23432
CLIENT : HSP
SITE : Cardiff Airport

TEST RESULTS

TEST No.	: 3		
DATE TESTED	: 27 September 2023		
SAMPLE TYPE	: Natural		
DEPTH (m)	: EGL		
SAMPLE DESCRIPTION	: Brown slightly sandy gravelly CLAY		
LOCATION	: TP9		
Plate Size	: 300 mm		
LOAD TO ACHIEVE 1.25mm SETTLEMENT >		:	145.74 kN/m^2
MODULUS OF SUBGRADE REACTION (k_{762}) >		:	51499 kN/m2/m
Equivalent CBR VALUE >		:	8.9 %

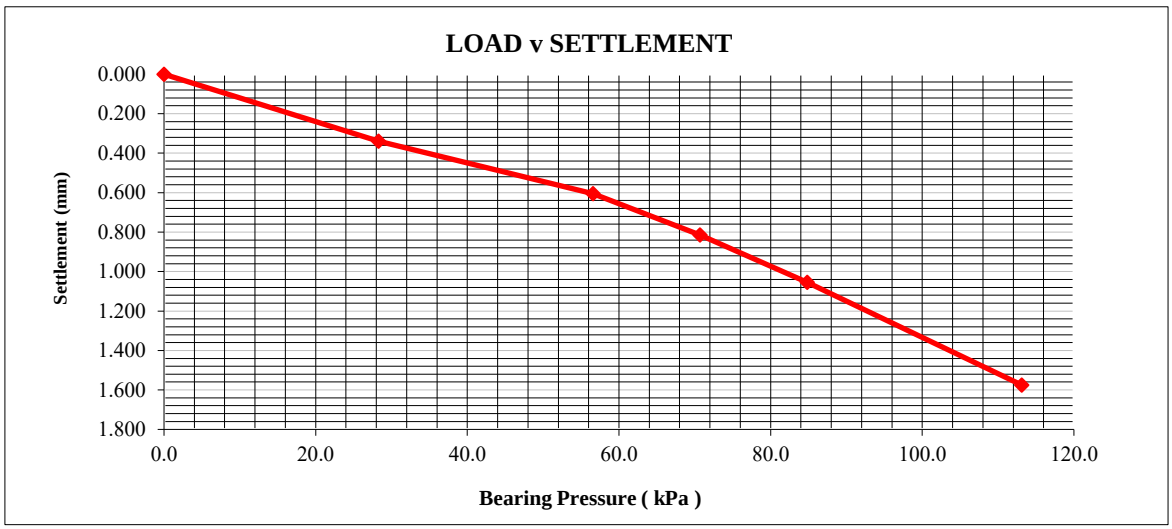


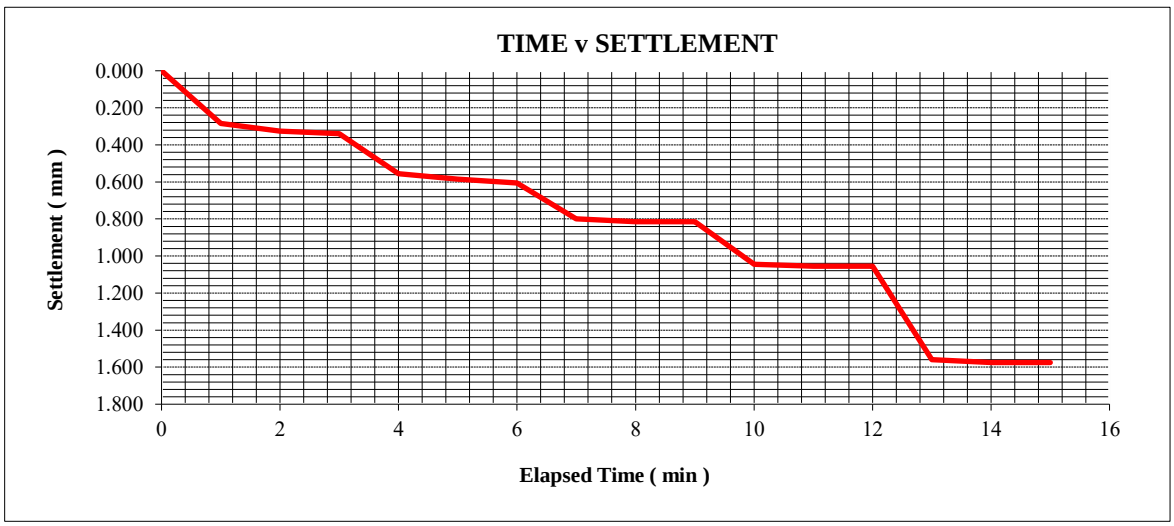


REPORT No : D23432
CLIENT : HSP
SITE : Cardiff Airport

TEST RESULTS

TEST No.	: 4		
DATE TESTED	: 27 September 2023		
SAMPLE TYPE	: Natural		
DEPTH (m)	: EGL		
SAMPLE DESCRIPTION	: Brown slightly sandy gravelly CLAY		
LOCATION	: TP7		
Plate Size	: 300 mm		
LOAD TO ACHIEVE 1.25mm SETTLEMENT >		:	95.45 kN/m^2
MODULUS OF SUBGRADE REACTION (k_{762}) >		:	33726 kN/m2/m
Equivalent CBR VALUE >		:	4.3 %





Appendix IX

Gas Monitoring Certificate

Project Number C3296
Project Name Cardiff & Vale College
Client WEPCo

BH01

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm)	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl)
00:00	5.5	<0.1	<0.1	16.1	0.3	<1	<1		6.95	2.22
00:15	5.0	<0.1	<0.1	5.7	3.3	<1	<1			
00:30	5.0	<0.1	<0.1	4.6	3.4	<1	<1			
00:45	4.5	<0.1	<0.1	4.5	3.4	<1	<1			
01:00	4.2	<0.1	<0.1	4.4	3.4	<1	<1			
01:15	4.0	<0.1	<0.1	4.4	3.4	<1	<1			
01:30	3.0	<0.1	<0.1	4.4	3.4	<1	<1			
01:45	2.0	<0.1	<0.1	4.4	3.4	<1	<1			
02:00	1.3	<0.1	<0.1	4.4	3.4	<1	<1			
02:15	0.8	<0.1	<0.1	4.4	3.4	<1	<1			
02:30	0.6	<0.1	<0.1	4.3	3.4	<1	<1			
02:45	0.3	<0.1	<0.1	4.3	3.4	<1	<1			
03:00	0.3	<0.1	<0.1	4.3	3.4	<1	<1			
03:15	0.3	<0.1	<0.1	4.3	3.4	<1	<1			
03:30	0.3	<0.1	<0.1	4.3	3.4	<1	<1			
03:45	0.3	<0.1	<0.1	4.3	3.4	<1	<1			
04:00	0.3	<0.1	<0.1	4.3	3.4	<1	<1			
04:15	0.3	<0.1	<0.1	4.3	3.4	<1	<1			
04:30	0.3	<0.1	<0.1	4.3	3.4	<1	<1			
04:45	3.0	<0.1	<0.1	4.3	3.4	<1	<1			
05:00	3.0	<0.1	<0.1	4.3	3.4	<1	<1			
Steady	**3.0**	**<0.1**	**<0.1**	**4.3**	**3.4**	**<1**	**<1**	**#####**	**6.95**	**2.22**
Peak	**5.5**	**0.0**	**0.0**	**16.1**	**3.4**	**0.0**	**0.0**	**0.0**	**6.95**	**2.22**

Date	Notes:			
16/10/2023	Engineer	NC	Barometric Pressure, mbar	1018
			Pressure Trend	STEADY
	Equipment	GFM436	Air Temp (˚C)	12

Gas Monitoring Certificate

Project Number	C3296
Project Name	Cardiff & Vale College
Client	WEPCo

BH02

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm)	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl)
00:00	0.1	<0.1	<0.1	20.0	0	<1	<1		7.00	6.20
00:15	0.1	<0.1	<0.1	9.3	3	<1	<1			
00:30	0.1	<0.1	<0.1	7.8	3.3	<1	<1			
00:45	0.1	<0.1	<0.1	7.7	3.3	<1	<1			
01:00	0.1	<0.1	<0.1	7.6	3.3	<1	<1			
01:15	0.1	<0.1	<0.1	7.6	3.3	<1	<1			
01:30	0.1	<0.1	<0.1	7.6	3.3	<1	<1			
01:45	0.1	<0.1	<0.1	7.6	3.3	<1	<1			
02:00	0.1	<0.1	<0.1	7.6	3.3	<1	<1			
02:15	0.1	<0.1	<0.1	7.6	3.3	<1	<1			
02:30	0.1	<0.1	<0.1	7.6	3.3	<1	<1			
02:45	0.1	<0.1	<0.1	7.5	3.3	<1	<1			
03:00	0.1	<0.1	<0.1	7.5	3.3	<1	<1			
03:15	0.1	<0.1	<0.1	7.5	3.3	<1	<1			
03:30	0.1	<0.1	<0.1	7.5	3.3	<1	<1			
03:45	0.1	<0.1	<0.1	7.5	3.3	<1	<1			
04:00	0.1	<0.1	<0.1	7.5	3.3	<1	<1			
04:15	0.1	<0.1	<0.1	7.5	3.3	<1	<1			
04:30	0.1	<0.1	<0.1	7.5	3.3	<1	<1			
04:45	0.1	<0.1	<0.1	7.5	3.3	<1	<1			
05:00	0.1	<0.1	<0.1	7.5	3.3	<1	<1			
Steady	**0.1**	**<0.1**	**<0.1**	**7.5**	**3.3**	**<1**	**<1**	**#####**	**7.00**	**6.20**
Peak	**0.1**	**0.0**	**0.0**	**20.0**	**3.3**	**0.0**	**0.0**	**0.0**	**7.00**	**6.20**

Date	Notes:			
16/10/2023	Engineer	NC	Barometric Pressure, mbar	1018
			Pressure Trend	STEADY
	Equipment	GFM436	Air Temp (˚C)	12

Gas Monitoring Certificate

Project Number C3296
Project Name Cardiff & Vale College
Client WEPCo

BH03

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl
00:00	0.1	<0.1	<0.1	18.9	0.2	<1	<1		7.00	3.92
00:15	0.1	<0.1	<0.1	11.5	3.3	<1	<1			
00:30	0.1	<0.1	<0.1	9.5	3.9	<1	<1			
00:45	0.1	<0.1	<0.1	9.2	4.0	<1	<1			
01:00	0.1	<0.1	<0.1	9.1	4.0	<1	<1			
01:15	0.1	<0.1	<0.1	9.0	4.0	<1	<1			
01:30	0.1	<0.1	<0.1	9.0	4.0	<1	<1			
01:45	0.1	<0.1	<0.1	9.0	4.0	<1	<1			
02:00	0.1	<0.1	<0.1	9.0	4.0	<1	<1			
02:15	0.1	<0.1	<0.1	9.0	4.0	<1	<1			
02:30	0.1	<0.1	<0.1	9.0	4.0	<1	<1			
02:45	0.1	<0.1	<0.1	9.0	4.0	<1	<1			
03:00	0.1	<0.1	<0.1	9.0	4.0	<1	<1			
03:15	0.1	<0.1	<0.1	9.0	4.0	<1	<1			
03:30	0.1	<0.1	<0.1	9.0	4.0	<1	<1			
03:45	0.1	<0.1	<0.1	9.0	4.0	<1	<1			
04:00	0.1	<0.1	<0.1	9.0	4.0	<1	<1			
04:15	0.1	<0.1	<0.1	9.0	4.0	<1	<1			
04:30	0.1	<0.1	<0.1	9.0	4.0	<1	<1			
04:45	0.1	<0.1	<0.1	9.0	4.0	<1	<1			
05:00	0.1	<0.1	<0.1	9.0	4.0	<1	<1			
Steady	**0.1**	**<0.1**	**<0.1**	**9.0**	**4.0**	**<1**	**<1**	#####	**7.00**	**3.92**
Peak	**0.1**	**0.0**	**0.0**	**18.9**	**4.0**	**0.0**	**0.0**	**0.0**	**7.00**	**3.92**

Date	Notes:			
16/10/2023	Engineer	NC	Barometric Pressure, mbar	1018
			Pressure Trend	STEADY
	Equipment	GFM436	Air Temp (˚C)	12

Gas Monitoring Certificate

Project Number C3296
Project Name Cardiff & Vale College
Client WEPCo

BH01

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm)	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl)
00:00	5.0	<0.1	<0.1	9.0	1.1	<1	<1		6.90	1.05
00:15	4.8	<0.1	<0.1	8.6	3.5	<1	<1			
00:30	4.6	<0.1	<0.1	7.8	3.6	<1	<1			
00:45	4.5	<0.1	<0.1	7.7	3.6	<1	<1			
01:00	4.3	<0.1	<0.1	7.6	3.6	<1	<1			
01:15	3.8	<0.1	<0.1	7.6	3.6	<1	<1			
01:30	3.4	<0.1	<0.1	7.6	3.6	<1	<1			
01:45	3.0	<0.1	<0.1	7.6	3.6	<1	<1			
02:00	2.5	<0.1	<0.1	7.6	3.6	<1	<1			
02:15	2.2	<0.1	<0.1	7.6	3.6	<1	<1			
02:30	1.6	<0.1	<0.1	7.6	3.6	<1	<1			
02:45	1.2	<0.1	<0.1	7.6	3.6	<1	<1			
03:00	0.8	<0.1	<0.1	7.6	3.6	<1	<1			
03:15	0.6	<0.1	<0.1	7.6	3.6	<1	<1			
03:30	0.3	<0.1	<0.1	7.6	3.6	<1	<1			
03:45	0.3	<0.1	<0.1	7.6	3.6	<1	<1			
04:00	0.3	<0.1	<0.1	7.6	3.6	<1	<1			
04:15	0.3	<0.1	<0.1	7.6	3.6	<1	<1			
04:30	0.3	<0.1	<0.1	7.6	3.6	<1	<1			
04:45	0.3	<0.1	<0.1	7.6	3.6	<1	<1			
05:00	0.3	<0.1	<0.1	7.6	3.6	<1	<1			
Steady	**0.3**	**<0.1**	**<0.1**	**7.6**	**3.6**	**<1**	**<1**	#####	**6.90**	**1.05**
Peak	**5.0**	**0.0**	**0.0**	**9.0**	**3.6**	**0.0**	**0.0**	**0.0**	**6.90**	**1.05**

Date	Notes:			
06/11/2023	Engineer	NC	Barometric Pressure, mbar	994
			Pressure Trend	STEADY
	Equipment	GFM436	Air Temp (˚C)	12

Gas Monitoring Certificate

Project Number C3296
Project Name Cardiff & Vale College
Client WEPCo

BH02

Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm)	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl)
Detection Limit		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
00:00	0.1	<0.1	<0.1	19.2	0.2	<1	<1		7.00	3.13
00:15	0.1	<0.1	<0.1	10.0	3.1	<1	<1			
00:30	0.1	<0.1	<0.1	7.4	3.7	<1	<1			
00:45	0.1	<0.1	<0.1	5.9	4.1	<1	<1			
01:00	0.1	<0.1	<0.1	4.7	4.3	<1	<1			
01:15	0.1	<0.1	<0.1	3.9	4.4	<1	<1			
01:30	0.1	<0.1	<0.1	3.5	4.5	<1	<1			
01:45	0.1	<0.1	<0.1	3.3	4.5	<1	<1			
02:00	0.1	<0.1	<0.1	3.2	4.5	<1	<1			
02:15	0.1	<0.1	<0.1	3.2	4.5	<1	<1			
02:30	0.1	<0.1	<0.1	3.2	4.5	<1	<1			
02:45	0.1	<0.1	<0.1	3.2	4.5	<1	<1			
03:00	0.1	<0.1	<0.1	3.2	4.5	<1	<1			
03:15	0.1	<0.1	<0.1	3.3	4.5	<1	<1			
03:30	0.1	<0.1	<0.1	3.2	4.5	<1	<1			
03:45	0.1	<0.1	<0.1	3.2	4.5	<1	<1			
04:00	0.1	<0.1	<0.1	3.2	4.5	<1	<1			
04:15	0.1	<0.1	<0.1	3.2	4.5	<1	<1			
04:30	0.1	<0.1	<0.1	3.2	4.5	<1	<1			
04:45	0.1	<0.1	<0.1	3.2	4.5	<1	<1			
05:00	0.1	<0.1	<0.1	3.2	4.5	<1	<1			
Steady	**0.1**	**<0.1**	**<0.1**	**3.2**	**4.5**	**<1**	**<1**	#####	**7.00**	**3.13**
Peak	**0.1**	**0.0**	**0.0**	**19.2**	**4.5**	**0.0**	**0.0**	**0.0**	**7.00**	**3.13**

Date	Notes:			
06/11/2023	Engineer	NC	Barometric Pressure, mbar	994
			Pressure Trend	STEADY
	Equipment	GFM436	Air Temp (˚C)	12

Gas Monitoring Certificate

Project Number	C3296
Project Name	Cardiff & Vale College
Client	WEPCo

BH03

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl
00:00	0.1	<0.1	<0.1	18.3	0.3	<1	<1		7.00	2.28
00:15	0.1	<0.1	<0.1	9.5	3.8	<1	<1			
00:30	0.1	<0.1	<0.1	7.9	4.0	<1	<1			
00:45	0.1	<0.1	<0.1	7.7	4.1	<1	<1			
01:00	0.1	<0.1	<0.1	7.6	4.1	<1	<1			
01:15	0.1	<0.1	<0.1	7.5	4.1	<1	<1			
01:30	0.1	<0.1	<0.1	7.5	4.1	<1	<1			
01:45	0.1	<0.1	<0.1	7.4	4.1	<1	<1			
02:00	0.1	<0.1	<0.1	7.4	4.1	<1	<1			
02:15	0.1	<0.1	<0.1	7.4	4.1	<1	<1			
02:30	0.1	<0.1	<0.1	7.4	4.1	<1	<1			
02:45	0.1	<0.1	<0.1	7.4	4.1	<1	<1			
03:00	0.1	<0.1	<0.1	7.4	4.1	<1	<1			
03:15	0.1	<0.1	<0.1	7.5	4.1	<1	<1			
03:30	0.1	<0.1	<0.1	7.5	4.1	<1	<1			
03:45	0.1	<0.1	<0.1	7.4	4.1	<1	<1			
04:00	0.1	<0.1	<0.1	7.4	4.1	<1	<1			
04:15	0.1	<0.1	<0.1	7.4	4.1	<1	<1			
04:30	0.1	<0.1	<0.1	7.4	4.1	<1	<1			
04:45	0.1	<0.1	<0.1	7.4	4.1	<1	<1			
05:00	0.1	<0.1	<0.1	7.4	4.1	<1	<1			
Steady	**0.1**	**<0.1**	**<0.1**	**7.4**	**4.1**	**<1**	**<1**	**#####**	**7.00**	**2.28**
Peak	**0.1**	**0.0**	**0.0**	**18.3**	**4.1**	**0.0**	**0.0**	**0.0**	**7.00**	**2.28**

Date	Notes:			
06/11/2023	Engineer	NC	Barometric Pressure, mbar	994
			Pressure Trend	STEADY
	Equipment	GFM436	Air Temp (˚C)	12

Gas Monitoring Certificate

Project Number C3296
Project Name Cardiff & Vale College
Client WEPCo

BH01

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm)	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl)
00:00	3.0	<0.1	<0.1	18.4	0.2	<1	<1		6.95	1.00
00:15	3.0	<0.1	<0.1	18.1	0.8	<1	<1			
00:30	3.0	<0.1	<0.1	17.1	0.9	<1	<1			
00:45	3.0	<0.1	<0.1	16.7	1.0	<1	<1			
01:00	3.0	<0.1	<0.1	16.4	1.1	<1	<1			
01:15	3.1	<0.1	<0.1	16.1	1.1	<1	<1			
01:30	3.1	<0.1	<0.1	15.9	1.2	<1	<1			
01:45	3.2	<0.1	<0.1	15.8	1.2	<1	<1			
02:00	3.2	<0.1	<0.1	15.6	1.3	<1	<1			
02:15	3.3	<0.1	<0.1	15.4	1.3	<1	<1			
02:30	3.3	<0.1	<0.1	15.2	1.4	<1	<1			
02:45	3.3	<0.1	<0.1	15.0	1.4	<1	<1			
03:00	3.3	<0.1	<0.1	15.0	1.5	<1	<1			
03:15	3.3	<0.1	<0.1	14.9	1.5	<1	<1			
03:30	3.3	<0.1	<0.1	14.9	1.5	<1	<1			
03:45	3.3	<0.1	<0.1	15.4	1.3	<1	<1			
04:00	3.3	<0.1	<0.1	15.2	1.4	<1	<1			
04:15	3.3	<0.1	<0.1	15.0	1.4	<1	<1			
04:30	3.3	<0.1	<0.1	15.0	1.5	<1	<1			
04:45	3.3	<0.1	<0.1	14.9	1.5	<1	<1			
05:00	3.3	<0.1	<0.1	14.9	1.5	<1	<1			
Steady	**3.3**	**<0.1**	**<0.1**	**14.9**	**1.5**	**<1**	**<1**	**#####**	**6.95**	**1.00**
Peak	**3.3**	**0.0**	**0.0**	**18.4**	**1.5**	**0.0**	**0.0**	**0.0**	**6.95**	**1.00**

Date	Notes:			
21/11/2023	Engineer	NC	Barometric Pressure, mbar	1020
			Pressure Trend	RISING
	Equipment	GFM436	Air Temp (˚C)	11

Gas Monitoring Certificate

Project Number	C3296
Project Name	Cardiff & Vale College
Client	WEPCo

BH02

	Detection Limit								
	<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm)	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl)
00:00	0.7	<0.1	<0.1	20.2	0.0	<1	<1		7.00	2.84
00:15	0.7	<0.1	<0.1	9.9	2.8	<1	<1			
00:30	0.7	<0.1	<0.1	7.2	3.5	<1	<1			
00:45	0.7	<0.1	<0.1	5.4	3.9	<1	<1			
01:00	0.7	<0.1	<0.1	3.6	4.3	<1	<1			
01:15	0.7	<0.1	<0.1	2.4	4.5	<1	<1			
01:30	0.7	<0.1	<0.1	1.8	4.6	<1	<1			
01:45	0.7	<0.1	<0.1	1.6	4.6	<1	<1			
02:00	0.7	<0.1	<0.1	1.4	4.6	<1	<1			
02:15	0.7	<0.1	<0.1	1.4	4.6	<1	<1			
02:30	0.7	<0.1	<0.1	1.3	4.6	<1	<1			
02:45	0.7	<0.1	<0.1	1.3	4.6	<1	<1			
03:00	0.7	<0.1	<0.1	1.3	4.6	<1	<1			
03:15	0.7	<0.1	<0.1	1.3	4.6	<1	<1			
03:30	0.7	<0.1	<0.1	1.3	4.6	<1	<1			
03:45	0.7	<0.1	<0.1	1.3	4.6	<1	<1			
04:00	0.7	<0.1	<0.1	1.3	4.6	<1	<1			
04:15	0.7	<0.1	<0.1	1.3	4.6	<1	<1			
04:30	0.7	<0.1	<0.1	1.3	4.6	<1	<1			
04:45	0.7	<0.1	<0.1	1.3	4.6	<1	<1			
05:00	0.7	<0.1	<0.1	1.3	4.6	<1	<1			
Steady	**0.7**	**<0.1**	**<0.1**	**1.3**	**4.6**	**<1**	**<1**	#####	**7.00**	**2.84**
Peak	**0.7**	**0.0**	**0.0**	**20.2**	**4.6**	**0.0**	**0.0**	**0.0**	**7.00**	**2.84**

Date	Notes:			
21/11/2023	Engineer	NC	Barometric Pressure, mbar	1020
			Pressure Trend	RISING
	Equipment	GFM436	Air Temp (˚C)	11

Gas Monitoring Certificate

Project Number	C3296
Project Name	Cardiff & Vale College
Client	WEPCo

BH03

		Detection Limit								
		<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1		
Time	Gas Flow Rate. (l/hr)	Methane. (%LEL)	Methane. (%vol)	Oxygen. (%vol)	Carbon Dioxide. (%vol)	Hydrogen Sulphide. (ppm)	Carbon Monoxide. (ppm)	Volatile Organic Carbon (ppm	Depth of Installation. (mbgl)	Depth of Groundwater (mbgl
00:00	5.4	<0.1	<0.1	18.8	0.3	<1	<1		7.00	1.92
00:15	5.4	<0.1	<0.1	10.9	4.1	<1	<1			
00:30	5.4	<0.1	<0.1	9.9	4.3	<1	<1			
00:45	5.4	<0.1	<0.1	9.7	4.4	<1	<1			
01:00	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
01:15	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
01:30	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
01:45	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
02:00	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
02:15	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
02:30	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
02:45	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
03:00	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
03:15	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
03:30	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
03:45	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
04:00	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
04:15	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
04:30	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
04:45	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
05:00	5.4	<0.1	<0.1	9.6	4.4	<1	<1			
Steady	**5.4**	**<0.1**	**<0.1**	**9.6**	**4.4**	**<1**	**<1**	**#####**	**7.00**	**1.92**
Peak	**5.4**	**0.0**	**0.0**	**18.8**	**4.4**	**0.0**	**0.0**	**0.0**	**7.00**	**1.92**

Date	Notes:			
21/11/2023	Engineer	NC	Barometric Pressure, mbar	1020
			Pressure Trend	RISING
	Equipment	GFM436	Air Temp (˚C)	11

Gas Testing Summary

Project Number	C3296
Project Name	Cardiff & Vale College
Client	WEPCo

Methane. (%LEL)						
BH01	<0.1	<0.1	<0.1			
BH02	<0.1	<0.1	<0.1			
BH03	<0.1	<0.1	<0.1			

Methane. (%vol)						
BH01	<0.1	<0.1	<0.1			
BH02	<0.1	<0.1	<0.1			
BH03	<0.1	<0.1	<0.1			

Oxygen. (%vol)						
BH01	4.3	7.6	14.9			
BH02	7.5	3.2	1.3			
BH03	9	7.4	9.6			

Gas Testing Summary

Project Number	C3296
Project Name	Cardiff & Vale College
Client	WEPCo

Carbon Dioxide. (%vol)						
BH01	3.4	3.6	1.5			
BH02	3.3	4.5	4.6			
BH03	4	4.1	4.4			

Hydrogen Sulphide. (ppm)						
BH01	<1	<1	<1			
BH02	<1	<1	<1			
BH03	<1	<1	<1			

Carbon Monoxide. (ppm)						
BH01	<1	<1	<1			
BH02	<1	<1	<1			
BH03	<1	<1	<1			

Gas Testing Summary

Project Number	C3296
Project Name	Cardiff & Vale College
Client	WEPCo

Gas Flow Rate (l/hr)						
BH01	3	0.3	3.3			
BH02	0.1	0.1	0.7			
BH03	0.1	0.1	5.4			

Volatile Organic Carbons (ppm)						

Atmospheric Pressure Range						
	1018	994	1020			

Max Methane Concentration (%vol)	0
Max Carbon Dioxide Concentration (%vol)	4.6
Max Carbon Monoxide Concentration (ppm)	0
Max Hydrogen Sulphide Concentration (ppm)	0
Max Flow Rate (l/hr)	5.4
Max Volatile Organic Carbon Concentration (ppm)	0
Methane Gas Screening Value	0
Carbon Dioxide Gas Screening Value	0.2484

Carbon Monoxide Gas Screening Value	0
Hydrogen Sulphide Gas Screening Value	0
Maximum Gas Screening Value	0.2484
Characteristic Situation 1	FAIL
Characteristic Situation 2	PASS
Characteristic Situation 3	PASS
Characteristic Situation 4	PASS
Characteristic Situation 5	PASS
Characteristic Situation 6	PASS
Hydrocarbon Vapour Barrier Required?	NO

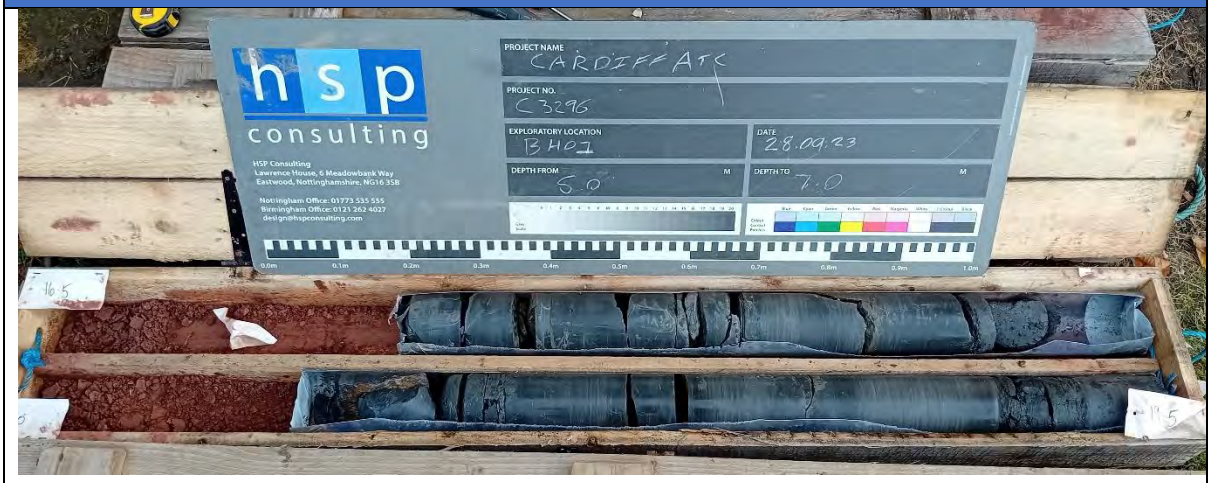
Appendix X

ROTARY CORE PHOTOGRAPHS – CARDIFF ATC

BH01: 0.00m – 0.30m

BH01: 3.00 – 5.00m

ROTARY CORE PHOTOGRAPHS – CARDIFF ATC



BH01: 5.00m – 7.00m

BH02: 0.30m – 3.00m

ROTARY CORE PHOTOGRAPHS – CARDIFF ATC

BH02: 3.00m – 5.00m

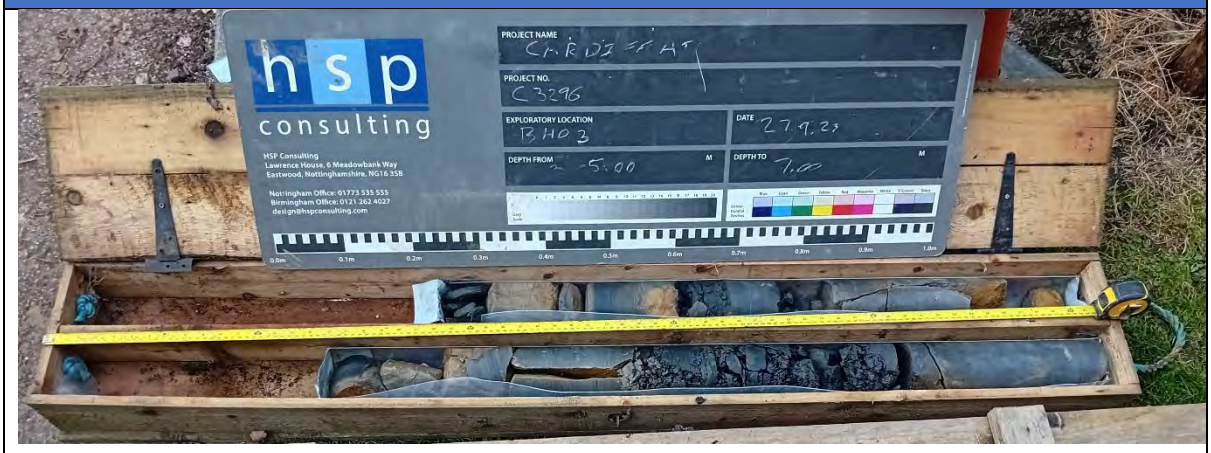
BH02: 5.00 – 7.00m

ROTARY CORE PHOTOGRAPHS – CARDIFF ATC

BH03: 0.30 – 3.00m

BH03: 3.00m – 5.00m

ROTARY CORE PHOTOGRAPHS – CARDIFF ATC



BH03: 5.00m – 7.00m

Appendix XI

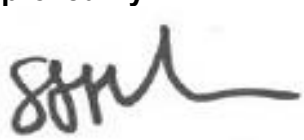
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	24-00769-1
Initial Date of Issue:	18-Jan-2024
Re-Issue Details:	
Client	HSP Consulting Engineers Limited
Client Address:	Lawrence House Meadowbank Way Eastwood Nottinghamshire NG16 3SB
Contact(s):	Harry Evans Laura Jones
Project	C3296 Cardiff Airport Technology College

Quotation No.:		**Date Received:**	12-Jan-2024
Order No.:	SC15015	**Date Instructed:**	12-Jan-2024
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	18-Jan-2024
Date Approved:	18-Jan-2024		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Water

Project: C3296 Cardiff Airport Technology College

Client: HSP Consulting Engineers Limited				**Chemtest Job No.:**		24-00769
Quotation No.:				**Chemtest Sample ID.:**		1753091
Order No.: SC15015				Client Sample Ref.:		BH01
				Sample Location:		BH01
				Sample Type:		WATER
				Date Sampled:		11-Jan-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
pH at 20C		U	1010		4.0	8.0
Chloride		U	1220	mg/l	1.0	98
Ammoniacal Nitrogen		U	1220	mg/l	0.050	< 0.050
Sulphate		U	1220	mg/l	1.0	25
Cyanide (Total)		U	1300	mg/l	0.050	< 0.050
Calcium (Total)		N	1455	mg/l	5.0	150
Total Hardness as CaCO3		U	1270	mg/l	15	330
Arsenic (Dissolved)		U	1455	µg/l	0.20	0.30
Boron (Dissolved)		U	1455	µg/l	10.0	480
Beryllium (Dissolved)		U	1455	µg/l	1.00	< 1.0
Cadmium (Dissolved)		U	1455	µg/l	0.11	< 0.11
Chromium (Dissolved)		U	1455	µg/l	0.50	< 0.50
Copper (Dissolved)		U	1455	µg/l	0.50	1.1
Mercury (Dissolved)		U	1455	µg/l	0.05	< 0.05
Nickel (Dissolved)		U	1455	µg/l	0.50	< 0.50
Lead (Dissolved)		U	1455	µg/l	0.50	< 0.50
Antimony (Dissolved)		U	1455	µg/l	0.50	< 0.50
Selenium (Dissolved)		U	1455	µg/l	0.50	1.1
Vanadium (Dissolved)		U	1455	µg/l	0.50	< 0.50
Zinc (Dissolved)		U	1455	µg/l	2.5	4.1
Dissolved Organic Carbon		U	1610	mg/l	2.0	2.7
Florisil Cleanup		N		-	N/A	Done
Aliphatic TPH >C5-C6	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	EH_2D_AL_#1	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10

Results - Water

Project: C3296 Cardiff Airport Technology College

Client: HSP Consulting Engineers Limited				**Chemtest Job No.:**		24-00769
Quotation No.:				**Chemtest Sample ID.:**		1753091
Order No.: SC15015				Client Sample Ref.:		BH01
				Sample Location:		BH01
				Sample Type:		WATER
				Date Sampled:		11-Jan-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
Total Aromatic Hydrocarbons	EH_2D_AR_#1	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	EH_2D_Total_#1	N	1675	µg/l	10	< 10
Dichlorodifluoromethane		U	1760	µg/l	1.0	< 1.0
Chloromethane		U	1760	µg/l	1.0	< 1.0
Vinyl Chloride		N	1760	µg/l	1.0	< 1.0
Bromomethane		U	1760	µg/l	5	< 5
Chloroethane		U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane		U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene		U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene		U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane		U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene		U	1760	µg/l	1.0	< 1.0
Bromochloromethane		U	1760	µg/l	5	< 5
Trichloromethane		U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane		U	1760	µg/l	1.0	< 1.0
Tetrachloromethane		U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene		U	1760	µg/l	1.0	< 1.0
Benzene		U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane		U	1760	µg/l	2.0	< 2.0
Trichloroethene		N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane		U	1760	µg/l	1.0	< 1.0
Dibromomethane		U	1760	µg/l	10	< 10
Bromodichloromethane		U	1760	µg/l	5	< 5
cis-1,3-Dichloropropene		N	1760	µg/l	10	< 10
Toluene		U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene		N	1760	µg/l	10	< 10
1,1,2-Trichloroethane		U	1760	µg/l	10	< 10
Tetrachloroethene		U	1760	µg/l	1.0	< 1.0
1,3-Dichloropropane		U	1760	µg/l	2.0	< 2.0
Dibromochloromethane		U	1760	µg/l	10	< 10
1,2-Dibromoethane		U	1760	µg/l	5	< 5
Chlorobenzene		N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane		U	1760	µg/l	2.0	< 2.0
Ethylbenzene		U	1760	µg/l	1.0	< 1.0
m & p-Xylene		U	1760	µg/l	1.0	< 1.0
o-Xylene		U	1760	µg/l	1.0	< 1.0
Styrene		U	1760	µg/l	1.0	< 1.0
Tribromomethane		U	1760	µg/l	1.0	< 1.0
Isopropylbenzene		U	1760	µg/l	1.0	< 1.0

Results - Water

Project: C3296 Cardiff Airport Technology College

Client: HSP Consulting Engineers Limited				**Chemtest Job No.:**		24-00769
Quotation No.:				**Chemtest Sample ID.:**		1753091
Order No.: SC15015				Client Sample Ref.:		BH01
				Sample Location:		BH01
				Sample Type:		WATER
				Date Sampled:		11-Jan-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
Bromobenzene		U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane		N	1760	µg/l	50	< 50
N-Propylbenzene		U	1760	µg/l	1.0	< 1.0
2-Chlorotoluene		U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene		U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene		U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene		U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene		U	1760	µg/l	1.0	< 1.0
Sec-Butylbenzene		U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene		N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene		U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene		U	1760	µg/l	1.0	< 1.0
N-Butylbenzene		U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene		U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane		U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene		U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene		U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene		U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether		N	1760	µg/l	1.0	< 1.0
N-Nitrosodimethylamine		N	1790	µg/l	0.50	< 0.50
Phenol		N	1790	µg/l	0.50	< 0.50
2-Chlorophenol		N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether		N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene		N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene		N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene		N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)		N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether		N	1790	µg/l	0.50	< 0.50
Hexachloroethane		N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine		N	1790	µg/l	0.50	< 0.50
4-Methylphenol		N	1790	µg/l	0.50	< 0.50
Nitrobenzene		N	1790	µg/l	0.50	< 0.50
Isophorone		N	1790	µg/l	0.50	< 0.50
2-Nitrophenol		N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol		N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane		N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol		N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene		N	1790	µg/l	0.50	< 0.50
Naphthalene		N	1790	µg/l	0.50	< 0.50

Results - Water

Project: C3296 Cardiff Airport Technology College

Client: HSP Consulting Engineers Limited				**Chemtest Job No.:**		24-00769
Quotation No.:				**Chemtest Sample ID.:**		1753091
Order No.: SC15015				Client Sample Ref.:		BH01
				Sample Location:		BH01
				Sample Type:		WATER
				Date Sampled:		11-Jan-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
4-Chloroaniline		N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene		N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol		N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene		N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene		N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol		N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol		N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene		N	1790	µg/l	0.50	< 0.50
2-Nitroaniline		N	1790	µg/l	0.50	< 0.50
Acenaphthylene		N	1790	µg/l	0.50	< 0.50
Dimethylphthalate		N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene		N	1790	µg/l	0.50	< 0.50
Acenaphthene		N	1790	µg/l	0.50	< 0.50
3-Nitroaniline		N	1790	µg/l	0.50	< 0.50
Dibenzofuran		N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether		N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene		N	1790	µg/l	0.50	< 0.50
Fluorene		N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate		N	1790	µg/l	0.50	< 0.50
4-Nitroaniline		N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol		N	1790	µg/l	0.50	< 0.50
Azobenzene		N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether		N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene		N	1790	µg/l	0.50	< 0.50
Phenanthrene		N	1790	µg/l	0.50	< 0.50
Anthracene		N	1790	µg/l	0.50	< 0.50
Carbazole		N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate		N	1790	µg/l	0.50	< 0.50
Fluoranthene		N	1790	µg/l	0.50	< 0.50
Pyrene		N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate		N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene		N	1790	µg/l	0.50	< 0.50
Chrysene		N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate		N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate		N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene		N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene		N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene		N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene		N	1790	µg/l	0.50	< 0.50

Results - Water

Project: C3296 Cardiff Airport Technology College

Client: HSP Consulting Engineers Limited				**Chemtest Job No.:**		24-00769
Quotation No.:				**Chemtest Sample ID.:**		1753091
Order No.: SC15015				Client Sample Ref.:		BH01
				Sample Location:		BH01
				Sample Type:		WATER
				Date Sampled:		11-Jan-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
Dibenz(a,h)Anthracene		N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene		N	1790	µg/l	0.50	< 0.50
4-Nitrophenol		N	1790	µg/l	0.50	< 0.50
Naphthalene		U	1800	µg/l	0.10	< 0.10
Acenaphthylene		U	1800	µg/l	0.10	< 0.10
Acenaphthene		U	1800	µg/l	0.10	< 0.10
Fluorene		U	1800	µg/l	0.10	< 0.10
Phenanthrene		U	1800	µg/l	0.10	< 0.10
Anthracene		U	1800	µg/l	0.10	< 0.10
Fluoranthene		U	1800	µg/l	0.10	< 0.10
Pyrene		U	1800	µg/l	0.10	< 0.10
Benzo[a]anthracene		U	1800	µg/l	0.10	< 0.10
Chrysene		U	1800	µg/l	0.10	< 0.10
Benzo[b]fluoranthene		U	1800	µg/l	0.10	< 0.10
Benzo[k]fluoranthene		U	1800	µg/l	0.10	< 0.10
Benzo[a]pyrene		U	1800	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		U	1800	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene		U	1800	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene		U	1800	µg/l	0.10	< 0.10
Total Of 16 PAH's		U	1800	µg/l	2.0	< 2.0
PCB 28		N	1815	µg/l	0.010	< 0.010
PCB 52		N	1815	µg/l	0.010	< 0.010
PCB 101		N	1815	µg/l	0.010	< 0.010
PCB 118		N	1815	µg/l	0.010	< 0.010
PCB 153		N	1815	µg/l	0.010	< 0.010
PCB 138		N	1815	µg/l	0.010	< 0.010
PCB 180		N	1815	µg/l	0.010	< 0.010
Total PCBs (7 congeners)		N	1815	µg/l	0.010	< 0.010
Total Phenols		U	1920	mg/l	0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH at 20°C	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l-1 CaCO3 equivalent.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Waters by GC-MS	ICES7 PCB congeners	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

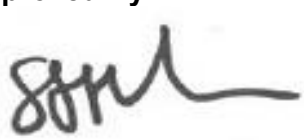
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	24-00907-1
Initial Date of Issue:	22-Jan-2024
Re-Issue Details:	
Client	HSP Consulting Engineers Limited
Client Address:	Lawrence House Meadowbank Way Eastwood Nottinghamshire NG16 3SB
Contact(s):	Laura Jones Harry Evans
Project	C3296 Cardiff Airport Technology College

Quotation No.:	Q23-31791	**Date Received:**	12-Jan-2024
Order No.:	SC15015	**Date Instructed:**	16-Jan-2024
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	22-Jan-2024
Date Approved:	22-Jan-2024		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Water

Project: C3296 Cardiff Airport Technology College

Client: HSP Consulting Engineers Limited				**Chemtest Job No.:**		24-00907
Quotation No.: Q23-31791				**Chemtest Sample ID.:**		1753164
Order No.: SC15015				Client Sample Ref.:		BH03
				Sample Location:		BH03
				Sample Type:		WATER
				Date Sampled:		10-Jan-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
pH at 20C		U	1010		4.0	7.5
Chloride		U	1220	mg/l	1.0	26
Ammoniacal Nitrogen		U	1220	mg/l	0.050	< 0.050
Cyanide (Total)		U	1300	mg/l	0.050	< 0.050
Calcium (Total)		N	1455	mg/l	5.0	160
Total Hardness as CaCO3		U	1270	mg/l	15	400
Arsenic (Dissolved)		U	1455	µg/l	0.20	0.40
Boron (Dissolved)		U	1455	µg/l	10.0	41
Beryllium (Dissolved)		U	1455	µg/l	1.00	< 1.0
Cadmium (Dissolved)		U	1455	µg/l	0.11	< 0.11
Chromium (Dissolved)		U	1455	µg/l	0.50	< 0.50
Copper (Dissolved)		U	1455	µg/l	0.50	1.2
Mercury (Dissolved)		U	1455	µg/l	0.05	< 0.05
Nickel (Dissolved)		U	1455	µg/l	0.50	< 0.50
Lead (Dissolved)		U	1455	µg/l	0.50	< 0.50
Antimony (Dissolved)		U	1455	µg/l	0.50	< 0.50
Selenium (Dissolved)		U	1455	µg/l	0.50	1.9
Vanadium (Dissolved)		U	1455	µg/l	0.50	< 0.50
Zinc (Dissolved)		U	1455	µg/l	2.5	3.0
Dissolved Organic Carbon		U	1610	mg/l	2.0	2.4
Florisil Cleanup		N		-	N/A	Done
Aliphatic TPH >C5-C6	EH_AL_2D_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	EH_AL_2D_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	EH_AL_2D_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	EH_AL_2D_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	EH_AL_2D_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	EH_AL_2D_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	EH_AL_2D_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	EH_AL_2D_#1	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	EH_AL_2D_#1	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	EH_AR_2D_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	EH_AR_2D_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	EH_AR_2D_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	EH_AR_2D_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	EH_AR_2D_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	EH_AR_2D_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	EH_AR_2D_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	EH_AR_2D_#1	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	EH_AR_2D_#1	N	1675	µg/l	5.0	< 5.0

Results - Water

Project: C3296 Cardiff Airport Technology College

Client: HSP Consulting Engineers Limited				**Chemtest Job No.:**		24-00907
Quotation No.: Q23-31791				**Chemtest Sample ID.:**		1753164
Order No.: SC15015				Client Sample Ref.:		BH03
				Sample Location:		BH03
				Sample Type:		WATER
				Date Sampled:		10-Jan-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
Total Petroleum Hydrocarbons	EH_Total_2D_#1	N	1675	µg/l	10	< 10
Dichlorodifluoromethane		U	1760	µg/l	1.0	< 1.0
Chloromethane		U	1760	µg/l	1.0	< 1.0
Vinyl Chloride		N	1760	µg/l	1.0	< 1.0
Bromomethane		U	1760	µg/l	5	< 5
Chloroethane		U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane		U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene		U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene		U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane		U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene		U	1760	µg/l	1.0	< 1.0
Bromochloromethane		U	1760	µg/l	5	< 5
Trichloromethane		U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane		U	1760	µg/l	1.0	< 1.0
Tetrachloromethane		U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene		U	1760	µg/l	1.0	< 1.0
Benzene		U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane		U	1760	µg/l	2.0	< 2.0
Trichloroethene		N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane		U	1760	µg/l	1.0	< 1.0
Dibromomethane		U	1760	µg/l	10	< 10
Bromodichloromethane		U	1760	µg/l	5	< 5
cis-1,3-Dichloropropene		N	1760	µg/l	10	< 10
Toluene		U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene		N	1760	µg/l	10	< 10
1,1,2-Trichloroethane		U	1760	µg/l	10	< 10
Tetrachloroethene		U	1760	µg/l	1.0	< 1.0
1,3-Dichloropropane		U	1760	µg/l	2.0	< 2.0
Dibromochloromethane		U	1760	µg/l	10	< 10
1,2-Dibromoethane		U	1760	µg/l	5	< 5
Chlorobenzene		N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane		U	1760	µg/l	2.0	< 2.0
Ethylbenzene		U	1760	µg/l	1.0	< 1.0
m & p-Xylene		U	1760	µg/l	1.0	< 1.0
o-Xylene		U	1760	µg/l	1.0	< 1.0
Styrene		U	1760	µg/l	1.0	< 1.0
Tribromomethane		U	1760	µg/l	1.0	< 1.0
Isopropylbenzene		U	1760	µg/l	1.0	< 1.0
Bromobenzene		U	1760	µg/l	1.0	< 1.0

Results - Water

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Client: HSP Consulting Engineers Limited				**Chemtest Job No.:**		24-00907
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Order No.: SC15015				Client Sample Ref.:		BH03
				Sample Location:		BH03
				Sample Type:		WATER
				Date Sampled:		10-Jan-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
1,2,3-Trichloropropane		N	1760	µg/l	50	< 50
N-Propylbenzene		U	1760	µg/l	1.0	< 1.0
2-Chlorotoluene		U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene		U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene		U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene		U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene		U	1760	µg/l	1.0	< 1.0
Sec-Butylbenzene		U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene		N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene		U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene		U	1760	µg/l	1.0	< 1.0
N-Butylbenzene		U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene		U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane		U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene		U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene		U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene		U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether		N	1760	µg/l	1.0	< 1.0
N-Nitrosodimethylamine		N	1790	µg/l	0.50	< 0.50
Phenol		N	1790	µg/l	0.50	< 0.50
2-Chlorophenol		N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether		N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene		N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene		N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene		N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)		N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether		N	1790	µg/l	0.50	< 0.50
Hexachloroethane		N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine		N	1790	µg/l	0.50	< 0.50
4-Methylphenol		N	1790	µg/l	0.50	< 0.50
Nitrobenzene		N	1790	µg/l	0.50	< 0.50
Isophorone		N	1790	µg/l	0.50	< 0.50
2-Nitrophenol		N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol		N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane		N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol		N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene		N	1790	µg/l	0.50	< 0.50
Naphthalene		N	1790	µg/l	0.50	< 0.50
4-Chloroaniline		N	1790	µg/l	0.50	< 0.50

Results - Water

Project: C3296 Cardiff Airport Technology College

Client: HSP Consulting Engineers Limited				**Chemtest Job No.:**		24-00907
Quotation No.: Q23-31791				**Chemtest Sample ID.:**		1753164
Order No.: SC15015				Client Sample Ref.:		BH03
				Sample Location:		BH03
				Sample Type:		WATER
				Date Sampled:		10-Jan-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
Hexachlorobutadiene		N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol		N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene		N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene		N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol		N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol		N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene		N	1790	µg/l	0.50	< 0.50
2-Nitroaniline		N	1790	µg/l	0.50	< 0.50
Acenaphthylene		N	1790	µg/l	0.50	< 0.50
Dimethylphthalate		N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene		N	1790	µg/l	0.50	< 0.50
Acenaphthene		N	1790	µg/l	0.50	< 0.50
3-Nitroaniline		N	1790	µg/l	0.50	< 0.50
Dibenzofuran		N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether		N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene		N	1790	µg/l	0.50	< 0.50
Fluorene		N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate		N	1790	µg/l	0.50	< 0.50
4-Nitroaniline		N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol		N	1790	µg/l	0.50	< 0.50
Azobenzene		N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether		N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene		N	1790	µg/l	0.50	< 0.50
Phenanthrene		N	1790	µg/l	0.50	< 0.50
Anthracene		N	1790	µg/l	0.50	< 0.50
Carbazole		N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate		N	1790	µg/l	0.50	< 0.50
Fluoranthene		N	1790	µg/l	0.50	< 0.50
Pyrene		N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate		N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene		N	1790	µg/l	0.50	< 0.50
Chrysene		N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate		N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate		N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene		N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene		N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene		N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene		N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene		N	1790	µg/l	0.50	< 0.50

Results - Water

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Client: HSP Consulting Engineers Limited				**Chemtest Job No.:**		24-00907
Quotation No.: Q23-31791				**Chemtest Sample ID.:**		1753164
Order No.: SC15015				Client Sample Ref.:		BH03
				Sample Location:		BH03
				Sample Type:		WATER
				Date Sampled:		10-Jan-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[g,h,i]perylene		N	1790	µg/l	0.50	< 0.50
4-Nitrophenol		N	1790	µg/l	0.50	< 0.50
Naphthalene		U	1800	µg/l	0.10	< 0.10
Acenaphthylene		U	1800	µg/l	0.10	< 0.10
Acenaphthene		U	1800	µg/l	0.10	< 0.10
Fluorene		U	1800	µg/l	0.10	< 0.10
Phenanthrene		U	1800	µg/l	0.10	< 0.10
Anthracene		U	1800	µg/l	0.10	< 0.10
Fluoranthene		U	1800	µg/l	0.10	< 0.10
Pyrene		U	1800	µg/l	0.10	< 0.10
Benzo[a]anthracene		U	1800	µg/l	0.10	< 0.10
Chrysene		U	1800	µg/l	0.10	< 0.10
Benzo[b]fluoranthene		U	1800	µg/l	0.10	< 0.10
Benzo[k]fluoranthene		U	1800	µg/l	0.10	< 0.10
Benzo[a]pyrene		U	1800	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		U	1800	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene		U	1800	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene		U	1800	µg/l	0.10	< 0.10
Total Of 16 PAH's		U	1800	µg/l	2.0	< 2.0
PCB 28		N	1815	µg/l	0.010	< 0.010
PCB 52		N	1815	µg/l	0.010	< 0.010
PCB 101		N	1815	µg/l	0.010	< 0.010
PCB 118		N	1815	µg/l	0.010	< 0.010
PCB 153		N	1815	µg/l	0.010	< 0.010
PCB 138		N	1815	µg/l	0.010	< 0.010
PCB 180		N	1815	µg/l	0.010	< 0.010
Total PCBs (7 congeners)		N	1815	µg/l	0.010	< 0.010
Total Phenols		U	1920	mg/l	0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH at 20°C	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l-1 CaCO3 equivalent.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1815	Polychlorinated Biphenyls (PCB) ICES7 Congeners in Waters by GC-MS	ICES7 PCB congeners	Solvent extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

S1.20.3 *Chemical testing for contamination (Clause 15.3)*

Test Suites E to G are specified in the following tables. The Contractor shall confirm in its Tender return the test methods and shall detail what accreditation requirement shall be provided. Gas sampling is not required (Suite G).

SCHEDULE 1.20.3: TEST SUITES

CHEMICAL LABORATORY TESTING FOR CONTAMINANTS

Nominated test laboratory? *	
Required testing turnaround times? *	

* To be completed in the Tender return

Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
SUITE E1 – Soil samples general			
Arsenic	1 mg/kg		
Cadmium	0.5 mg/kg		
Chromium - total	10 mg/kg		
Copper	10 mg/kg		
Lead	10 mg/kg		
Mercury	0.5 mg/kg		
Nickel	10 mg/kg		
Selenium	0.5 mg/kg		
Zinc	10 mg/kg		
Cyanide - total	5 mg/kg		
pH	0.1 units		
Boron (water soluble)	0.5 mg/kg		
Phenols - total	1 mg/kg		
Total Organic Carbon	0.1% w/w	ASTM D2974-87	
SUITE E2 – Soil samples Asbestos			
Asbestos presence and identification	0.001% w/w	Note E2a	
Asbestos quantification HSG248	0.001%w/w	Note E2b	
SUITE E3 – Soil samples TPHCWG and BTEX			
TPHCWG	10 mg/kg	GC-FID Note E3a	
BTEX	0.05 mg/kg	GCMS	
SUITE E4 – Soil samples PAH			

Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
USEPA 16 Polyaromatic Hydrocarbons	0.2 mg/kg	CGMS	
SUITE E5 – Soil samples VOC and SVOC			
Semi-Volatile Hydrocarbons	0.01 mg/kg	GC-MS US EPA Method 8270	
Volatile Hydrocarbons	0.01 mg/kg	GC-MS US EPA Method 8260	
SUITE E6 – Soil samples PCB			
Polychlorinated Biphenyls	0.005 mg/kg	WHO 12	
SUITE E7 – Soil samples hydrocarbon fuel identification			
Total Petroleum Hydrocarbons	50 mg/kg	C8 to C40 by GC FID	
SUITE E8 – Soil samples cyanide speciation- not required			
SUITE E9 – Soil samples hexavalent chromium			
Chromium - hexavalent	1 mg/kg		
SUITE E10 – Soil samples speciated phenols – not required			
SUITE E11 – Soil samples herbicides– not required			
SUITE E12 – Soil samples pesticides– not required			
SUITE E13 – Soil samples organotins– not required			
SUITE E14 – Soil samples dioxins, furans and dioxin-like PCBs– not required			
SUITE E15 – Soil samples for UKWIR water pipe selection I (Note E11) – not required			
SUITE E16 – Soil samples - other tests			
Loss on ignition	0.1% w/w		

Note E2a

Initial Stereo-binocular/PLM identification

Each sample is thoroughly mixed, spread across a clean plastic tray and examined visually for the presence of asbestos. Any obvious asbestos material (asbestos cement, pieces of loose lagging, etc.) is removed by hand picking and set aside for weighing.

The samples in which asbestos is detected are dried and weighed along with any materials removed to determine the proportion of asbestos in the original soil sample. The asbestos content of the asbestos containing materials (ACM) are determined by comparison with standard reference materials.

A representative sub-sample of approximately for each soil is selected by coning and quartering. These samples are analysed visually under stereo binocular microscope and by polarised light microscopy (PLM) using the method described in HSG 248 (HSE, 2005).

Note E2b

Approximately 1 gramme of each sample shall be transferred to a clean 500ml conical flask and 300ml of filtered distilled water added. The sample/water mixture shall be agitated for 20 seconds and allowed to stand for 10 seconds. After sedimentation time, aliquots shall be removed from just below the liquid surface and deposited onto a 0.8µm pore size blank tested membrane filter. The filter shall be carefully dried, cleared and fixed onto glass microscope slides using the acetone/triacetin method described in HSG 248 (2005).

Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
Two microscope slides produced from each sample. The estimated mass percentage calculated as the mean of the two results for each sample. Phase contrast microscopy shall be based closely on HSG 248 (2005) including reagents, equipment and filter clearing and mounting. A specific Walton-Beckett graticule shall be used for fibre sizing. For the purposes of estimating the asbestos mass percentage, a countable fibre is defined as an amphibole asbestos or chrysotile fibre. Non-asbestos fibres should not be counted. Fibre dimensions (length and diameter), number of ends falling in the graticule, and fibre identity shall be recorded for each individual countable fibre. Measurements shall be recorded to the nearest 5µm for length and to the nearest 0.5µm for diameter, up to a maximum of 5µm. The identity of each fibre shall be recorded as amphibole or chrysotile, where possible. Fibre identification shall be based on morphology and optical properties determined by polarised light microscopy. The overall mass percentage of asbestos is given by: $A.W.(\Sigma V.p_A + \Sigma V.p_c) \times 100 / (a.N.q.S)$ p_A = average density of amphibole asbestos (3.0×10^{-6} µ g µ m^{-3}) p_c = density of chrysotile (2.5×10^{-6} µ g µ m^{-3}) A = area of filter (mm^2) V = volume of fibre (µ m^3) W = volume of water in suspension (ml) a = area of graticule (mm^2) N = number of graticules evaluated S = mass of soil in suspension (µ g) q = aliquot on filter (ml) Note E3a Aliphatic: EC5-EC6; >EC6-EC8; >EC8-EC10; >EC10-EC12; >EC12-EC16 ;>EC16-EC35;>EC35-EC44 Aromatic: >EC6-EC7; >EC7-EC8; >EC8-EC10; >EC10-EC12; >EC12-EC16; >EC16-EC21; >EC21-EC35; >EC35-EC44			

Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
SUITE F1 – Water samples general			
pH value	0.1 pH units		
Hardness	2 mg/l		
Arsenic	1 µg/l		
Cadmium	0.5 µg/l		
Chromium	5 µg/l		
Copper	0.5 µg/l		
Lead	1 µg/l		
Mercury	0.1 µg/l		
Nickel	1 µg/l		
Selenium	1 µg/l		
Zinc	1 µg/l		
Cyanide - total	10 µg /l		

Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
Phenols - total	10 µg/l		
Dissolved organic carbon (DOC)	10 µg/l		
SUITE F2 – Water samples speciated TPH and BTEX			
TPH CWG	10 µg/l	Note F12a GC-FID	
BTEX	1 µg/l	GCMS	
SUITE F3 – Water samples PAH			
16 USEPA Polyaromatic Hydrocarbons	0.01 µg/l	GCMS	
SUITE F4 – Water samples VOC and SVOC			
Volatile Organic compounds	1 µg/l	GC-MS US EPA Method 8260	
Semi-Volatile Organic compounds	1 µg/l	GC-MS US EPA Method 8270	
SUITE F5 – Water samples PCB			
Polychlorinated biphenyls	0.001 µg/l		
SUITE F6 – Water samples hydrocarbon fuel identification			
Total Petroleum Hydrocarbons	50 µg/l	C8 to C40 by GC FID	
Suite F14 – Other tests			
PFAS (incl. PFOS and PFOA)	<0.001 µg/l (total)	Lab to confirm	
Note F12a Aliphatic: EC5-EC6; >EC6-EC8; >EC8-EC10; >EC10-EC12; >EC12-EC16 ;>EC16-EC35;>EC35-EC44 Aromatic: >EC6-EC7; >EC7-EC8; >EC8-EC10; >EC10-EC12; >EC12-EC16; >EC16-EC21; >EC21-EC35; >EC35-EC44			

S1.20.4 *Waste characterisation (Clause 15.4)*

Not required.

S1.20.5 *Waste Acceptance Criteria (WAC) testing (Clause 15.5)*

Test Suites H to I are specified in the following tables. The Contractor shall confirm the test methods and detail what accreditation requirement will be provided.

Leachate testing is to be undertaken as per the two stage BS EN 12457-3 method whereby the leachate 2:1 results are also reported.

SCHEDULE 1.20.5: TEST SUITES

CHEMICAL TESTING FOR WASTE ACCEPTANCE CRITERIA TESTING (from STWAPs 2003)

Nominated test laboratory? *	
Required testing turnaround times? *	

*** To be completed in the Tender return**

Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
SUITE H – Waste acceptance total soils			
Total organic carbon	0.1%		
BTEX	0.1mg/kg		
PCBs (7 congeners)	0.1mg/kg		
Mineral oil (C10 – C40)	10 mg/kg		
Polyaromatic hydrocarbons	0.1 mg/kg		
Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
SUITE I – Leachability			
Arsenic	0.5 mg/kg		
Barium	20 mg/kg		
Cadmium	0.04 mg/kg		
Chromium	0.5 mg/kg		
Copper	2 mg/kg		
Mercury	0.01 mg/kg		
Molybdenum	0.5 mg/kg		
Nickel	0.4 mg/kg		
Lead	0.5 mg/kg		
Antimony	0.06 mg/kg		
Selenium	0.1 mg/kg		
Zinc	4 mg/kg		
Chloride	800 mg/kg		
Fluoride	10 mg/kg		
Sulphate	1,000 mg/kg		
Total dissolved solids (TDS)	4,000 mg/kg		
Phenol Index	1 mg/kg		

Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
Dissolved organic carbon at own pH or pH 7.5-8.05	500 mg/kg		

S1.20.6 Geoenvironmental laboratory testing on site (Clause 15.6)

Not required.

S1.20.7 Special geoenvironmental laboratory testing (Clause 15.7)

The following special geoenvironmental laboratory testing is required:

Soil leachability testing for purposes other than waste classification using method BS EN 12457-3 and testing for suites below. Results shall be reported in mg/l.

Determinand	Detection level [required]/[offered]	Test method [required]/[offered]	Accreditation [required]/[offered]
SUITE J1 – Soil leachability general			
pH value	0.1 pH units		
Arsenic	1 µg/l		
Cadmium	0.5 µg/l		
Chromium	5 µg/l		
Copper	0.5 µg/l		
Lead	1 µg/l		
Mercury	0.1 µg/l		
Nickel	1 µg/l		
Selenium	1 µg/l		
Zinc	1 µg/l		
Cyanide - total	10 µg /l		
Phenols - total	10 µg/l		
SUITE J2 – Soil leachability PAH and BTEX			
BTEX	1 µg/l	GCMS	
16 Polyaromatic Hydrocarbons	0.01 µg/l	GCMS	

S1.21 Reporting (Clause 16) Particular restrictions/relaxations

S1.21.1 *Form of exploratory hole logs (Clauses 16.1 and 16.2.1)*

No project-specific format requirements apply.

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Trial Pit Log

Trialpit No **SK201**

Sheet 1 of 1

Project Name:	Cardiff & Vale College Site	Project No. C3296	Co-ords: 167742.47 - 307375.46 Level:
Location:	CAVAC ATC	Dimensions (m): Depth 1.65	2 × 0.8
Client:	WEPCo		

Date: 24/01/2024

Scale: 1:25

Logged: MK + HE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.15			Dark brown slightly sandy slightly gravelly clayey TOPSOIL with many rootlets.
				1.20			Yellowish orange brown slightly sandy clayey GRAVEL with medium cobble content and occasional fine to medium boulders. Gravels are fine to coarse angular to subangular Limestone.
				1.60			Yellow orange brown gravelly cobbly CLAY with occasional Limestone fragments. Gravels and cobbles are fine to coarse angular to subangular LIMESTONE.
				1.65			Grey LIMESTONE. End of pit at 1.65 m

Remarks: 1. Trial pit terminated at 1.65m begl due to bucket refusal on Limestone bedrock.
2. No groundwater was encountered during the excavation process.

Stability: Side wall collapse weathered Limestone.

Trial Pit Log

Trialpit No **SK202**

Sheet 1 of 1

Project Name: Cardiff & Vale College Site	Project No. C3296	Co-ords: 167761.24 - 307405.43 Level:	Date 24/01/2024
Location: CAVAC ATC		Dimensions (m): 1.8 × 0.8, Depth 1.10	Scale 1:25
Client: WEPCo			Logged MK + HE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			Dark brown slightly sandy slightly gravelly clayey TOPSOIL with many rootlets.
				0.75			Light brown clayey GRAVEL with large cobbles and medium boulders. Gravels are fine to coarse angular to subangular Limestone.
				1.05			Light brown grey gravelly CLAY with boulders and cobbles of Limestone. Gravels are fine to coarse angular to subangular Limestone.
				1.10			Gray LIMESTONE. End of pit at 1.10 m

1 2 3 4 5

Remarks: 1. Trial pit terminated at 1.10m begl due to refusal upon Limestone bedrock.

2. No groundwater was encountered during the excavation process.

Stability: Stable

AGS

Trial Pit Log

Trialpit No **SK203**

Sheet 1 of 1

Project Name:	Cardiff & Vale College Site	Project No. C3296	Co-ords: 167777.36 - 307431.44 Level:
Location:	CAVAC ATC	Dimensions (m): Depth 1.50	2.3 × 1.1
Client:	WEPCo		Date 24/01/2024 Scale 1:25 Logged MK + HE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			Dark brown slightly sandy slightly gravelly clayey TOPSOIL with many rootlets.
				1.10			Yellowish brown clayey GRAVEL with large cobbles and medium boulders. Gravels are fine to coarse angular to subangular of Limestone.
				1.40			Light brown gravelly CLAY. Gravels are fine to coarse angular to subangular of Mudstone.
				1.50			Grey LIMESTONE End of pit at 1.50 m

Remarks: 1. Trial pit terminated at 1.50m begl due to refusal upon Limestone bedrock.
2. No groundwater was encountered during the excavation process.

Stability: Stable

Trial Pit Log

Trialpit No **SK204**

Sheet 1 of 1

Project Name:	Cardiff & Vale College Site	Project No. C3296	Co-ords: 167747.23 - 307418.07 Level:
Location:	CAVAC ATC	Dimensions (m): Depth 1.70	1.7 × 0.7
Client:	WEPCo		Date 24/01/2024 Scale 1:25 Logged MK + HE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			Dark brown slightly sandy slightly clayey TOPSOIL with many rootlets.
							Yellowish brown clayey GRAVEL. Gravels are fine to coarse with large cobbles and medium boulders of Limestone.
				1.65			Grey LIMESTONE.
				1.70			End of pit at 1.70 m

Remarks:
1. Trial pit terminated at 1.70m begl due to refusal upon Limestone bedrock.
2. No groundwater was encountered during the excavation process.

Stability: Stable

Trial Pit Log

Trialpit No **SK205**

Sheet 1 of 1

Project Name:	Cardiff & Vale College Site	Project No. C3296	Co-ords: 167719.37 - 307397.84 Level:
Location:	CAVAC ATC	Dimensions (m): Depth 1.10	1.7 × 0.7
Client:	WEPCo		

Date 24/01/2024

Scale 1:25

Logged MK + HE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			Dark brown slightly sandy gravelly clayey TOPSOIL. Sand and gravel are fine to coarse angular to subangular of Limestone.
							Yellowish brown sandy gravelly CLAY with frequent cobbles and boulders. Sand and gravel are medium to coarse. Cobbles are fine to coarse. Boulders are fine to medium Limestone.
				1.00			Grey LIMESTONE.
				1.10			End of pit at 1.10 m

1 2 3 4 5

Remarks: 1. Trial pit terminated at 1.10m begl due to refusal upon Limestone bedrock.
2. Slight groundwater was encountered during the excavation process.

Stability: Slight collapse

Trial Pit Log

Trialpit No **SK206**

Sheet 1 of 1

Project Name:	Cardiff & Vale College Site	Project No. C3296	Co-ords: 167744.85 - 307438.87 Level:
Location:	CAVAC ATC	Dimensions (m): Depth 1.45	1.8 × 0.8
Client:	WEPCo		

Date: 24/01/2024

Scale: 1:25

Logged: MK+HE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.25			Dark brown slightly sandy slightly gravelly clayey TOPSOIL. Sand and gravel are fine to coarse angular to subangular of Limestone.
				1.00			Yellowish brown clayey GRAVEL. Fine to coarse subangular of limestone cobbles.
				1.30			Greyish brown gravelly CLAY. Gravels are fine to coarse angular to subangular of Limestone.
				1.45			Grey LIMESTONE. End of pit at 1.45 m

1 2 3 4 5

Remarks: 1. Trial pit terminated at 1.45m begl due to refusal upon Limestone bedrock.
2. No groundwater was encountered during the excavation process.

Stability: Stable

Trial Pit Log

Trialpit No **SK207**

Sheet 1 of 1

Project Name:	Cardiff & Vale College Site	Project No. C3296	Co-ords: 167740.58 - 307463.28 Level:
Location:	CAVAC ATC	Dimensions (m): Depth 1.50	1.9 × 0.8
Client:	WEPCo		

Date 24/01/2024

Scale 1:25

Logged MK+HE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			Dark brown slightly sandy slightly gravelly clayey TOPSOIL with many rootlets.
				1.00			Light yellow brown clayey GRAVEL. Gravels are fine to coarse angular to subangular Limestone.
				1.50			Light yellow brown gravelly CLAY. Gravels are fine to coarse subangular mudstone and limestone. Low cobble content. End of pit at 1.50 m

Remarks:
1. Trial pit terminated at 1.50m begl due to refusal upon Limestone bedrock.
2. Slight groundwater was encountered during the excavation process.

Stability: Stable

Trial Pit Log

Trialpit No **SK208**

Sheet 1 of 1

Project Name:	Cardiff & Vale College Site	Project No. C3296	Co-ords: 167728.97 - 307450.12 Level:
Location:	CAVAC ATC	Dimensions (m): Depth 1.35	1.75 × 0.75
Client:	WEPCo		Date 24/01/2024 Scale 1:25 Logged MK+HE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.25			Dark brown slightly sandy slightly gravelly clayey TOPSOIL with many rootlets.
							Yellowish brown clayey GRAVEL. Gravels are fine to coarse subangular of Limestone.
				1.30			Grey LIMESTONE.
				1.35			End of pit at 1.35 m

Remarks: 1. Trial pit terminated at 1.35m begl due to refusal upon Limestone bedrock.
2. No groundwater was encountered during the excavation process.

Stability: Stable

Trial Pit Log

Trialpit No **SK209**

Sheet 1 of 1

Project Name:	Cardiff & Vale College Site	Project No. C3296	Co-ords: 167702.23 - 307407.02 Level:
Location:	CAVAC ATC	Dimensions (m): Depth 1.10	1.9 × 0.8
Client:	WEPCo		

Date 22/01/2024

Scale 1:25

Logged TG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			Dark brown slightly sandy slightly gravelly clayey TOPSOIL with many rootlets.
				1.05			Light brown slightly sandy very clayey GRAVEL. Angular to subangular fine to coarse grey limestone. Sand is fine to coarse. Medium cobble content of limestone.
				1.10			Grey LIMESTONE End of pit at 1.10 m

Remarks:
1. No groundwater was encountered during the excavation process.
2. Trial pit terminated at 1.10m begl due to refusal upon Limestone bedrock.

Stability: Stable

Trial Pit Log

Trialpit No **SK210**

Sheet 1 of 1

Project Name:	Cardiff & Vale College Site	Project No. C3296	Co-ords: 167716.46 - 307466.50 Level:
Location:	CAVAC ATC	Dimensions (m): Depth 1.40	2 / 0.8
Client:	WEPCo		

Date: 24/01/2024

Scale: 1:25

Logged: MK+HE

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			Dark brown slightly sandy slightly gravelly clayey TOPSOIL with many rootlets.
				1.40			Light yellow brown clayey GRAVEL with medium cobble content and low boulder content. Gravels are fine to coarse angular to subangular Limestone. End of pit at 1.40 m

Remarks:
1. Trial pit terminated at 1.40m begl due to refusal upon Limestone bedrock.
2. No groundwater was encountered during the excavation process.

Stability: Stable

Trial Pit Log

Trialpit No **SK211**

Sheet 1 of 1

Project Name: Cardiff & Vale College Site	Project No. C3296	Co-ords: 167691.53 - 307426.93 Level:	Date 22/01/2024
Location: CAVAC ATC		Dimensions (m): 2.6 × 0.85, Depth 1.10	Scale 1:25
Client: WEPCo			Logged TG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			Dark brown slightly sandy slightly gravelly clayey TOPSOIL with many rootlets.
				1.05			Light brown slightly sandy very clayey GRAVEL. Angular to subangular fine to coarse grey limestone. Sand is fine to coarse. Medium cobble content of limestone.
				1.10			Grey LIMESTONE End of pit at 1.10 m

Remarks:
1. No groundwater was encountered during the excavation process.
2. Trial pit terminated at 1.10m begl due to refusal upon Limestone bedrock.

Stability: Stable

Trial Pit Log

Trialpit No **SK212**

Sheet 1 of 1

Project Name: Cardiff & Vale College Site	Project No. C3296	Co-ords: 167690.27 - 307452.08 Level:	Date 22/01/2024
Location: CAVAC ATC		Dimensions (m): 2.5 × 0.8 Depth 1.30	Scale 1:25
Client: WEPCo			Logged TG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							Dark brown slightly sandy slightly gravelly clayey TOPSOIL with many rootlets.
				0.30			Light brown slightly sandy very clayey GRAVEL. Angular to subangular fine to coarse grey limestone. Sand is fine to coarse. Medium cobble content of limestone.
				1.25			Grey LIMESTONE
				1.30			End of pit at 1.30 m

Remarks:
1. No groundwater was encountered during the excavation process.
2. Trial pit terminated at 1.30m begl due to refusal upon Limestone bedrock.

Stability: Stable

Trial Pit Log

Trialpit No
SK213
Sheet 1 of 1

Project Name: Cardiff & Vale College Site	Project No. C3296	Co-ords: 167682.89 - 307358.81 Level:	Date 22/01/2024
Location: CAVAC ATC		Dimensions (m): 2.4 × 0.8 Depth 1.20	Scale 1:25
Client: WEPCo			Logged TG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			Dark brown slightly sandy slightly gravelly clayey TOPSOIL with many rootlets.
				1.15			Light brown slightly sandy very clayey GRAVEL. Angular to subangular fine to coarse grey limestone. Sand is fine to coarse. Medium cobble content of limestone.
				1.20			Grey LIMESTONE End of pit at 1.20 m

Remarks: 1. No groundwater was encountered during the excavation process.
2. Trial pit terminated at 1.20m begl due to refusal upon Limestone bedrock.

Stability: Stable

Trial Pit Log

Trialpit No **SK214**

Sheet 1 of 1

Project Name:	Cardiff & Vale College Site	Project No. C3296	Co-ords: 167663.85 - 307352.12 Level:
Location:	CAVAC ATC	Dimensions (m): Depth 1.30	2.2 × 0.8
Client:	WEPCo		Date 22/01/2024 Scale 1:25 Logged TG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			Dark brown slightly sandy slightly gravelly clayey TOPSOIL with many rootlets.
				1.25			Light brown slightly sandy very clayey GRAVEL. Angular to subangular fine to coarse grey limestone. Sand is fine to coarse. Medium cobble content of limestone.
				1.30			Grey LIMESTONE End of pit at 1.30 m

Remarks:
1. No groundwater was encountered during the excavation process.
2. Trial pit terminated at 1.30m begl due to refusal upon Limestone bedrock.

Stability: Stable

Trial Pit Log

Trialpit No **SK215**

Sheet 1 of 1

Project Name: Cardiff & Vale College Site	Project No. C3296	Co-ords: 167651.05 - 307362.47 Level:	Date 22/01/2024
Location: CAVAC ATC		Dimensions (m): 2.5 × 0.8 Depth 1.20	Scale 1:25
Client: WEPCo			Logged TG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			Dark brown slightly sandy slightly gravelly clayey TOPSOIL with many rootlets.
				1.15			Light brown slightly sandy very clayey GRAVEL. Angular to subangular fine to coarse grey limestone. Sand is fine to coarse. Medium cobble content of limestone.
				1.20			Grey LIMESTONE End of pit at 1.20 m

Remarks:
1. No groundwater was encountered during the excavation process.
2. Trial pit terminated at 1.20m begl due to refusal upon Limestone bedrock.

Stability: Stable

Trial Pit Log

Trialpit No **SK216**

Sheet 1 of 1

Project Name:	Cardiff & Vale College Site	Project No. C3296	Co-ords: 167627.38 - 307356.57 Level:
Location:	CAVAC ATC	Dimensions (m): Depth 1.15	2.1 × 0.7
Client:	WEPCo		Date 22/01/2024 Scale 1:25 Logged TG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			Dark brown slightly sandy slightly gravelly clayey TOPSOIL with many rootlets.
				1.10			Light brown slightly sandy very clayey GRAVEL. Angular to subangular fine to coarse grey limestone. Sand is fine to coarse. Medium cobble content of limestone.
				1.15			Grey LIMESTONE End of pit at 1.15 m

Remarks:
1. No groundwater was encountered during the excavation process.
2. Trial pit terminated at 1.15m begl due to refusal upon Limestone bedrock.

Stability: Stable

Trial Pit Log

Trialpit No **SK217**

Sheet 1 of 1

Project Name: Cardiff & Vale College Site	Project No. C3296	Co-ords: 167583.18 - 307443.98 Level:	Date 22/01/2024
Location: CAVAC ATC		Dimensions (m): 1.8 × 0.6, Depth 1.10	Scale 1:25
Client: WEPCo			Logged TG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.20			Dark brown slightly sandy slightly gravelly clayey TOPSOIL with many rootlets.
							Firm light brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of limestone.
				1.05			Grey LIMESTONE
				1.10			End of pit at 1.10 m

Remarks:
1. No groundwater was encountered during the excavation process.
2. Trial pit terminated at 1.10m begl due to refusal upon Limestone bedrock.

Stability: Stable

Trial Pit Log

Trialpit No **SK218**

Sheet 1 of 1

Project Name:	Cardiff & Vale College Site	Project No. C3296	Co-ords: 167567.60 - 307433.96 Level:
Location:	CAVAC ATC	Dimensions (m): Depth 1.40	2.3 × 0.6
Client:	WEPCo		

Date 22/01/2024

Scale 1:25

Logged TG

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			Dark brown slightly sandy slightly gravelly clayey TOPSOIL with many rootlets.
				1.35			Light brown slightly sandy very clayey GRAVEL. Angular to subangular fine to coarse grey limestone. Sand is fine to coarse. Medium cobble content of limestone.
				1.40			Grey LIMESTONE End of pit at 1.40 m

1
2
3
4
5

Remarks: 1. No groundwater was encountered during the excavation process.
2. Trial pit terminated at 1.40m begl due to refusal upon Limestone bedrock.

Stability: Stable

INSITU SOAKAWAY TEST RESULTS

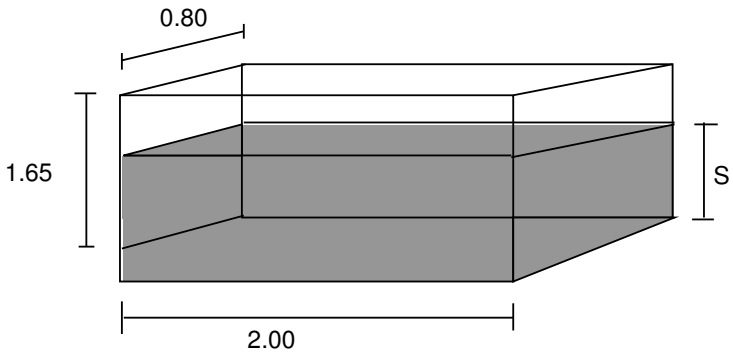
Trialpit No.: SK201

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.15	TOPSOIL - Dark brown CLAY
0.15	1.20	MADE GROUND - Yellowish orange brown sandy clayey GRAVEL
1.20	1.60	As above but gravelly CLAY with occasional mudstone
1.60	1.65	Grey Limestone

Sketch plan of test zone

Not to scale
All dimensions in metres.

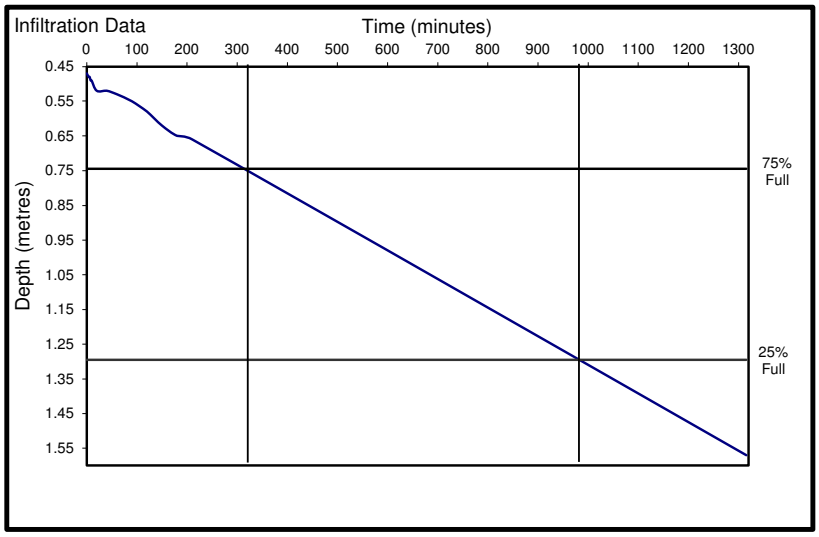


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.47 to 1.65
No Groundwater was encountered

Gives the Figures

S=	1.10	m
a_{p50}=	4.68	m^2
V_{p75-25}=	0.88	m^3

Soakaway Test Run 1 Test Date: 29/01/2024



Time (minutes)	Depth (m)
0	0.47
2	0.48
4	0.48
6	0.48
8	0.49
10	0.49
20	0.52
40	0.52
60	0.53
90	0.55
120	0.58
150	0.62
180	0.65
210	0.66
1315	1.57

From the above graph,

t_{p25}= 310 (min) $t_{p75=}$ 975 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.98E-06 f_{run1}= 1.98 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC - ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

Trialpit No.: SK201

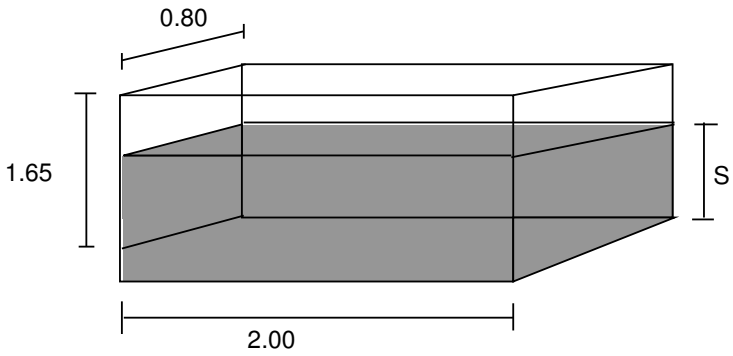
Soil Profile:

Depth (m) From:	To:	Description
0.00	0.15	TOPSOIL - Dark brown CLAY
0.15	1.20	MADE GROUND - Yellowish orange brown sandy clayey GRAVEL
1.20	1.60	As above but gravelly CLAY with occasional mudstone
1.60	1.65	Grey Limestone

Sketch plan of test zone

Not to scale
All dimensions in metres.

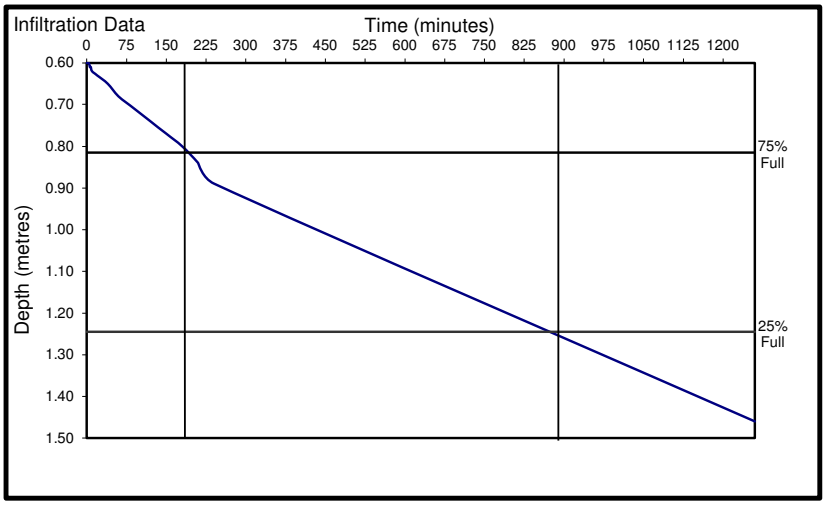
porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.60 to 1.65
No Groundwater was encountered



Gives the Figures

S=	0.86	m
a_{p50}=	4.01	m^2
V_{p75-25}=	0.69	m^3

Soakaway Test Run 1 Test Date: 30/01/2024



Time (minutes)	Depth (m)
0	0.60
2	0.60
4	0.60
6	0.61
8	0.61
10	0.62
20	0.63
40	0.65
60	0.68
90	0.71
120	0.74
150	0.77
180	0.80
210	0.84
240	0.89
1260	1.46

From the above graph,

t_{p25}= 200 (min) t_{p75}= 885 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.75E-06 f_{run1}= 1.75 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC - ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

Trialpit No.: SK201

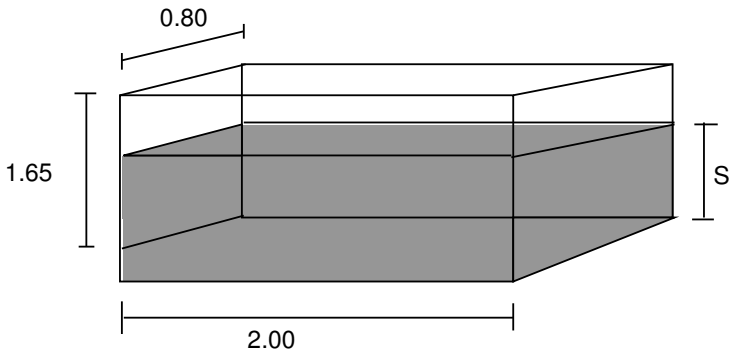
Soil Profile:

Depth (m) From:	To:	Description
0.00	0.15	TOPSOIL - Dark brown CLAY
0.15	1.20	MADE GROUND - Yellowish orange brown sandy clayey GRAVEL
1.20	1.60	As above but gravelly CLAY with occasional mudstone
1.60	1.65	Grey Limestone

Sketch plan of test zone

Not to scale
All dimensions in metres.

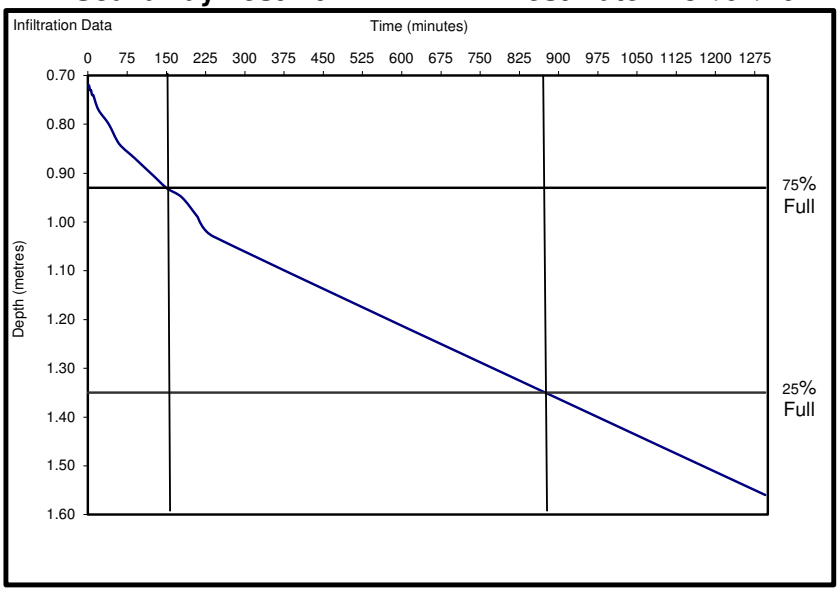
porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.72 to 1.65
No Groundwater was encountered



Gives the Figures

S=	0.84	m
a_{p50}=	3.95	m^2
V_{p75-25}=	0.67	m^3

Soakaway Test Run 1 Test Date: 31/01/2024



Time (minutes)	Depth (m)
0	0.72
2	0.72
4	0.73
6	0.73
8	0.74
10	0.74
20	0.77
40	0.80
60	0.84
90	0.87
120	0.90
150	0.93
180	0.95
210	0.99
240	1.03
1295	1.56

t_{p25}= 155 (min) t_{p75}= 880 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.64E-06

f_{run1}= 1.64 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC - ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

Trialpit No.: SK202

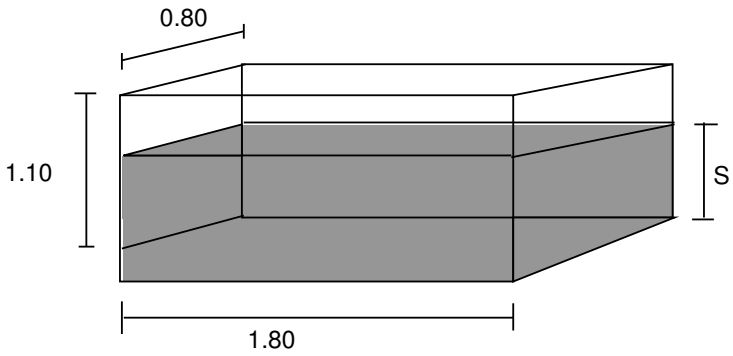
Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	TOPSOIL - Dark brown CLAY
0.20	0.75	MADE GROUND - Light brown clayey GRAVEL
0.75	1.10	Light brown grey gravelly CLAY

Sketch plan of test zone

Not to scale
All dimensions in metres.

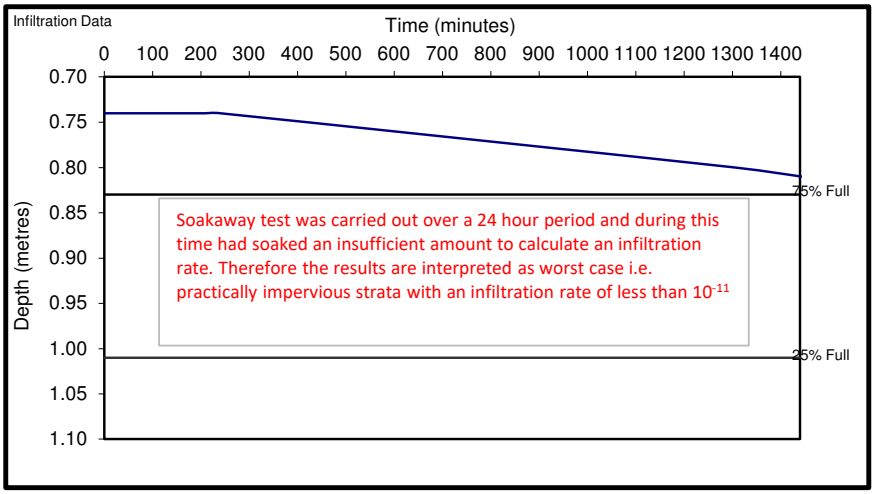
porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.74 to 1.10
Groundwater seepage
at 1.0m



Gives the Figures

S=	0.36	m
a_{p50}=	2.38	m^2
V_{p75-25}=	0.26	m^3

Soakaway Test Run 1 Test Date: 29/01/2024



Time (minutes)	Depth (m)
0	0.74
2	0.74
4	0.74
6	0.74
8	0.74
10	0.74
20	0.74
40	0.74
60	0.74
90	0.74
120	0.74
150	0.74
180	0.74
210	0.74
240	0.74
1303	0.80
1443	0.81

From the above graph,

t_{p25}= N/A (min) t_{p75}= N/A (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = N/A

f_{run1}= N/A m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC - ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

Trialpit No.: SK204

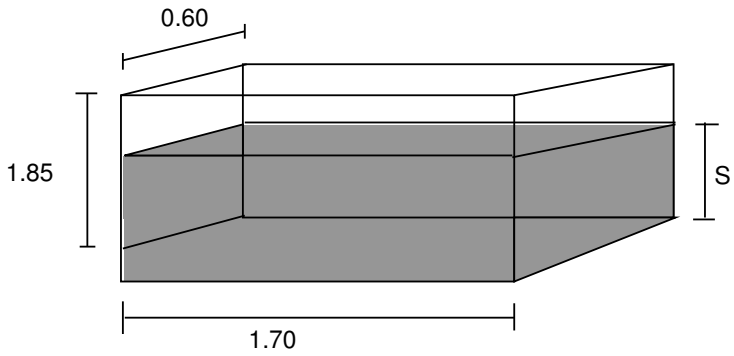
Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	TOPSOIL - Dark brown CLAY
0.20	1.10	MADE GROUND - Yellowish brown clayey GRAVEL
1.10	1.50	Light brown clayey GRAVEL
1.50	1.70	Light brown gravelly CLAY
1.70	1.85	Grey LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.76 to 1.85
Groundwater was encountered



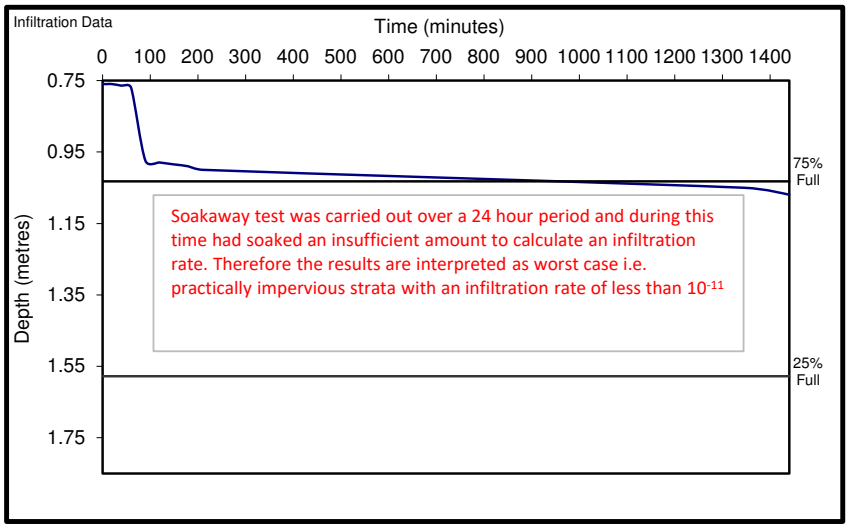
Gives the Figures

S= 1.09 m

a_{p50}= 3.53 m^2

V_{p75-25}= 0.56 m^3

Soakaway Test Run 1 Test Date: 29/01/2024



Time (minutes)	Depth (m)
0	0.76
2	0.76
4	0.76
6	0.76
8	0.76
10	0.76
20	0.76
40	0.77
60	0.77
90	0.98
120	0.98
150	0.99
180	0.99
210	1.00
1345	1.05
1440	1.07

From the above graph,

t_{p25}= N/A (min) $t_{p75=}$ N/A (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = N/A

f_{run1}= N/A m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC - ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

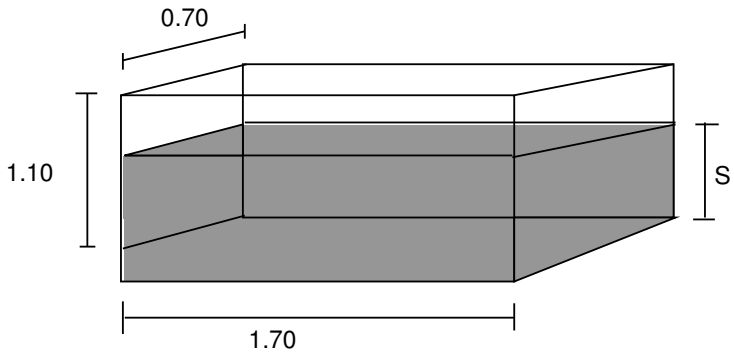
Trialpit No.: SK205

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	Dark brown slightly gravelly CLAY TOPSOIL
0.20	1.00	MADE GROUND - Yellowish brown sandy gravelly CLAY
1.00	1.10	Grey LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

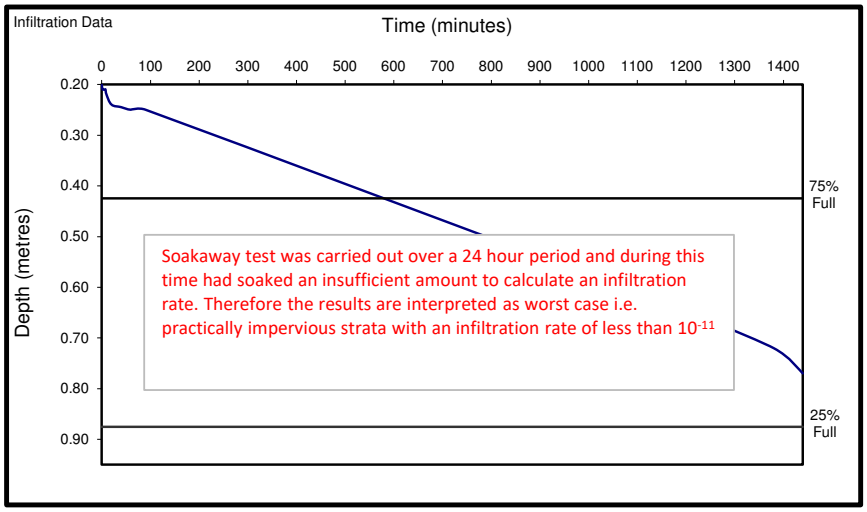


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.20 to 1.10
No Groundwater was encountered

Gives the Figures

S=	0.90	m
a_{p50}=	3.35	m^2
V_{p75-25}=	0.54	m^3

Soakaway Test Run 1 Test Date: 29/01/2024



Time (minutes)	Depth (m)
0	0.20
2	0.21
4	0.21
6	0.21
8	0.21
10	0.22
20	0.24
40	0.25
60	0.25
90	0.25
1205	0.65
1380	0.72
1440	0.77

From the above graph,

t_{p25}= N/A (min) $t_{p75=}$ N/A (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = N/A

f_{run1}= N/A m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

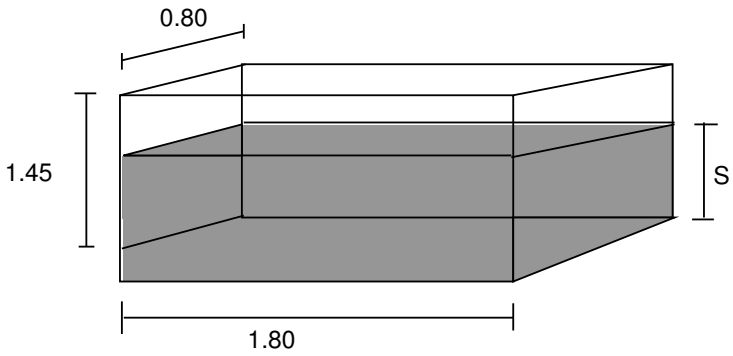
Trialpit No.: SK206

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.25	Dark brown CLAY TOPSOIL
0.25	0.45	MADE GROUND - Yellowish brown clayey GRAVEL
0.45	1.00	Greyish brown gravelly CLAY
1.00	1.45	Grey LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

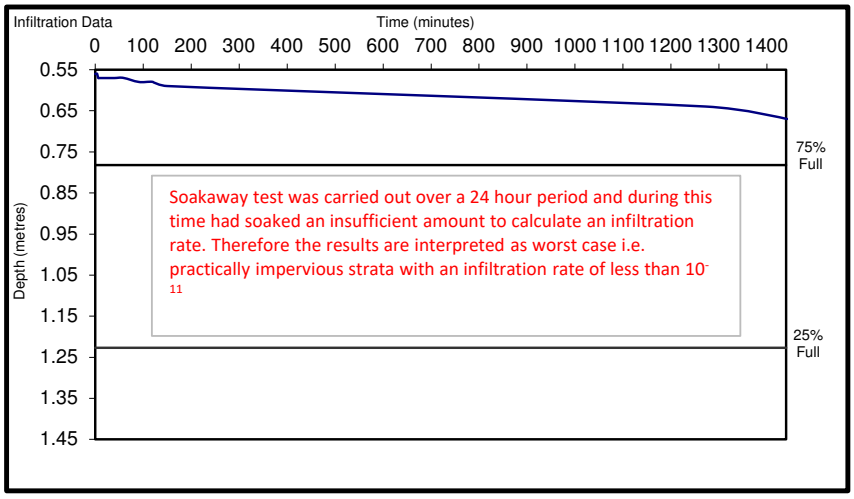


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.56 to 1.45
Groundwater was
encountered at 1.45m

Gives the Figures

S=	0.89	m
a_{p50}=	3.75	m^2
V_{p75-25}=	0.64	m^3

Soakaway Test Run 1 Test Date: 29/01/2024



Time (minutes)	Depth (m)
0	0.56
2	0.56
4	0.56
6	0.57
8	0.57
10	0.57
20	0.57
40	0.57
60	0.57
90	0.58
120	0.58
150	0.59
1272	0.64
1442	0.67

From the above graph,

t_{p25}= N/A (min) t_{p75}= N/A (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = N/A

f_{run1}= N/A m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

Trialpit No.: SK207

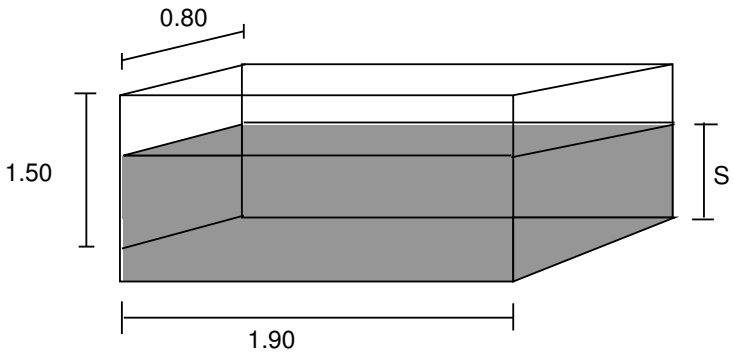
Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	Dark brown CLAY TOPSOIL
0.20	1.00	MADE GROUND - Light yellow brown clayey GRAVEL
1.00	1.50	Light yellow brown gravelly CLAY

Sketch plan of test zone

Not to scale
All dimensions in metres.

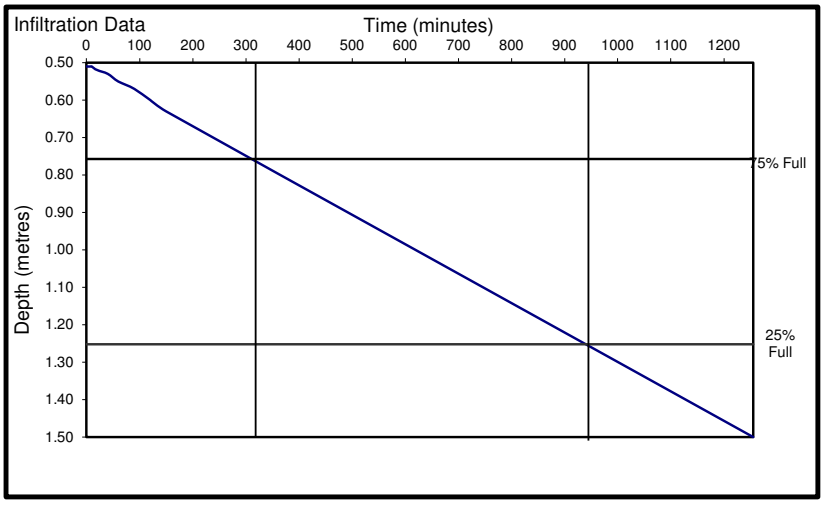
porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.51 to 1.50
No Groundwater was encountered



Gives the Figures

S=	0.99	m
a_{p50}=	4.19	m^2
V_{p75-25}=	0.75	m^3

Soakaway Test Run 1 Test Date: 29/01/2024



Time (minutes)	Depth (m)
0	0.51
2	0.51
4	0.51
6	0.51
8	0.51
10	0.51
20	0.52
40	0.53
60	0.55
90	0.57
120	0.60
150	0.63
1255	1.50

From the above graph,

t_{p25}= 325 (min) $t_{p75=}$ 945 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 2.03E-06 f_{run1}= 2.03 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

Trialpit No.: SK207

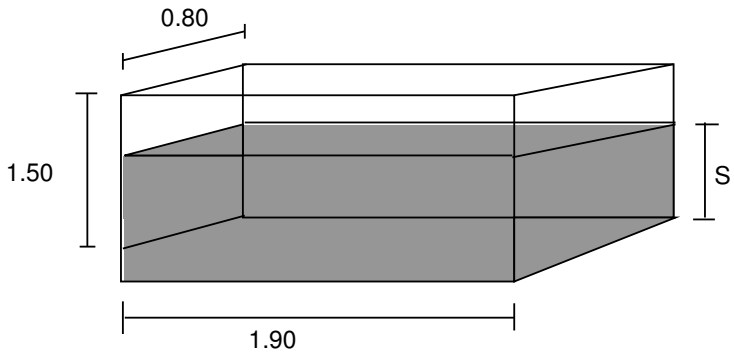
Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	Dark brown CLAY TOPSOIL
0.20	1.00	MADE GROUND - Light yellow brown clayey GRAVEL
1.00	1.50	Light yellow brown gravelly CLAY

Sketch plan of test zone

Not to scale
All dimensions in metres.

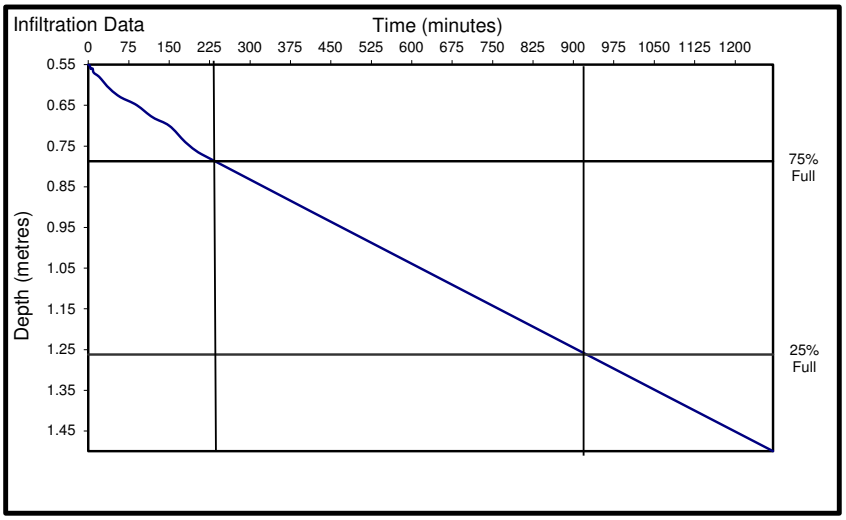
porosity (N) = 0.43
(measured in laboratory)
S= Storage depth (m)
Water level from 0.55 to 1.50
No Groundwater was encountered



Gives the Figures

S=	0.95	m
a_{p50}=	4.09	m^2
V_{p75-25}=	0.72	m^3

Soakaway Test Run 2 Test Date: 30/01/2024



Time (minutes)	Depth (m)
0	0.55
2	0.55
4	0.56
6	0.56
8	0.56
10	0.57
20	0.58
40	0.61
60	0.63
90	0.65
120	0.68
150	0.70
180	0.74
210	0.77
1270	1.50

From the above graph,

t_{p25}= 230 (min) $t_{p75=}$ 915 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.85E-06 f_{run1}= 1.85 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

Trialpit No.: SK207

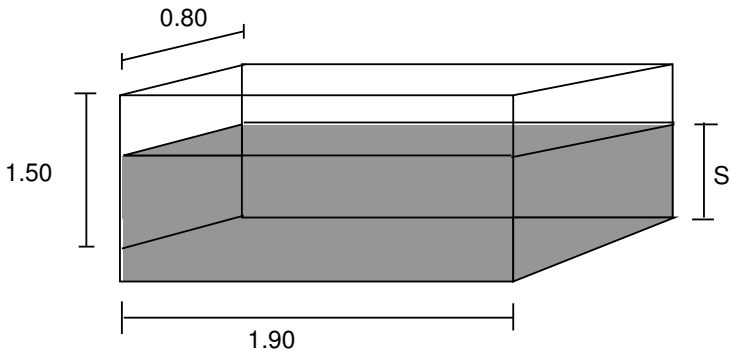
Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	Dark brown CLAY TOPSOIL
0.20	1.00	MADE GROUND - Light yellow brown clayey GRAVEL
1.00	1.50	Light yellow brown gravelly CLAY

Sketch plan of test zone

Not to scale
All dimensions in metres.

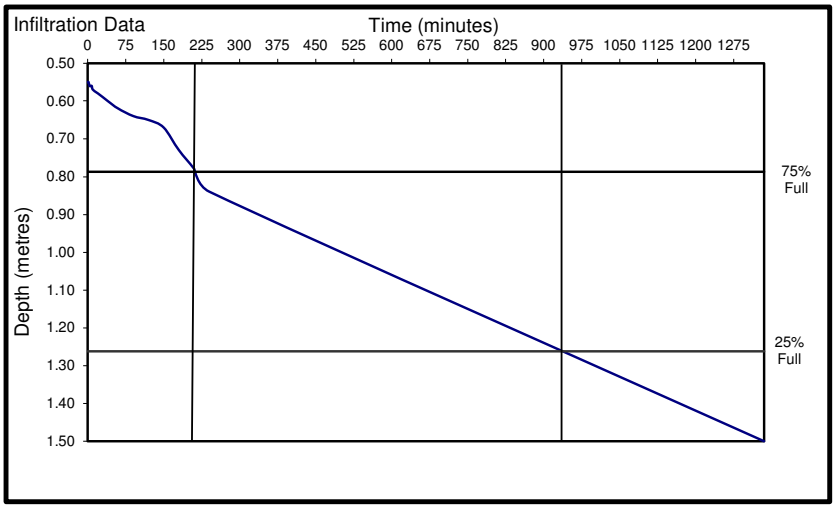
porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.55 to 1.50
No Groundwater was encountered



Gives the Figures

S=	0.95	m
a_{p50}=	4.09	m^2
V_{p75-25}=	0.72	m^3

Soakaway Test Run 3 Test Date: 31/01/2024



Time (minutes)	Depth (m)
0	0.55
2	0.55
4	0.56
6	0.56
8	0.56
10	0.57
20	0.58
40	0.60
60	0.62
90	0.64
120	0.65
150	0.67
180	0.73
210	0.78
240	0.84
1335	1.50

From the above graph,

t_{p25}= 220 (min) t_{p75}= 935 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.73E-06 f_{run1}= 1.73 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

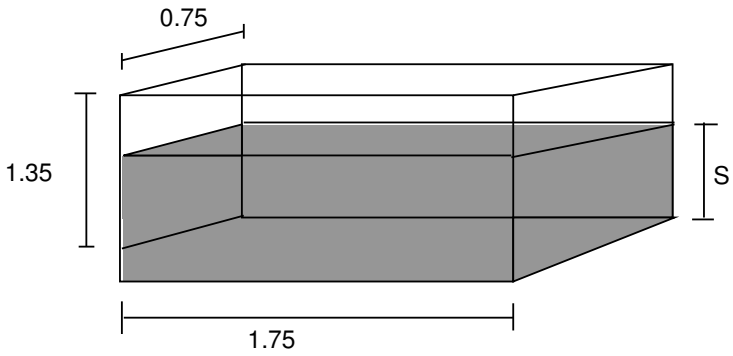
Trialpit No.: SK208

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.25	Dark brown CLAY TOPSOIL
0.25	1.30	MADE GROUND - Yellowish brown clayey GRAVEL
1.30	1.35	Grey LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

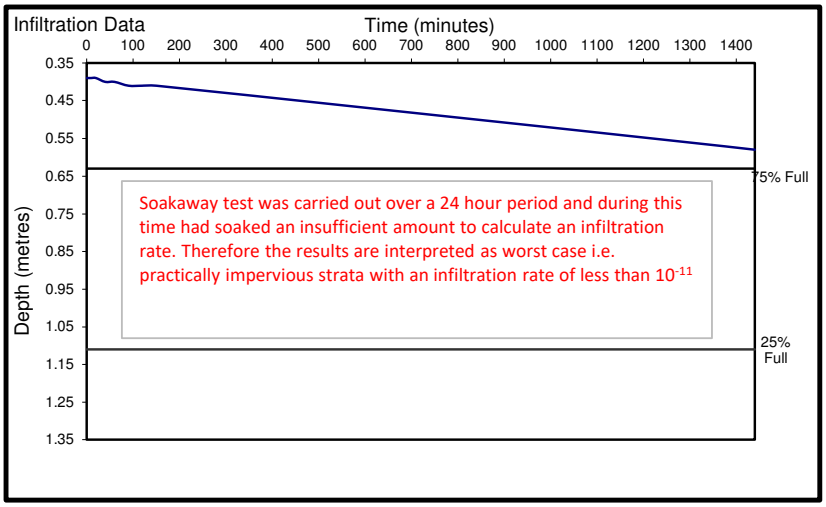


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.39 to 1.35
Groundwater was
encountered at 1.17m

Gives the Figures

S=	0.96	m
a_{p50}=	3.71	m^2
V_{p75-25}=	0.63	m^3

Soakaway Test Run 1 Test Date: 29/01/2024



Time (minutes)	Depth (m)
0	0.39
2	0.39
4	0.39
6	0.39
8	0.39
10	0.39
20	0.39
40	0.40
60	0.40
90	0.41
120	0.41
150	0.41
1220	0.55
1440	0.58

From the above graph,

t_{p25}= N/A (min) t_{p75}= N/A (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = N/A

f_{run1}= N/A m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

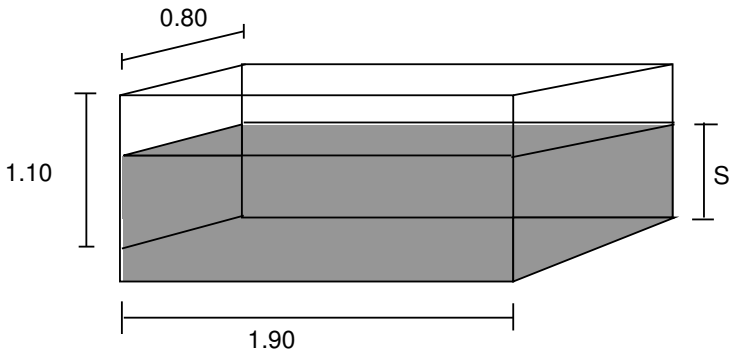
Trialpit No.: SK209

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	TOPSOIL - Grass over brown clay with abundant roots
0.20	1.10	Light brown slightly sandy very clayey GRAVEL
1.10	1.10	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

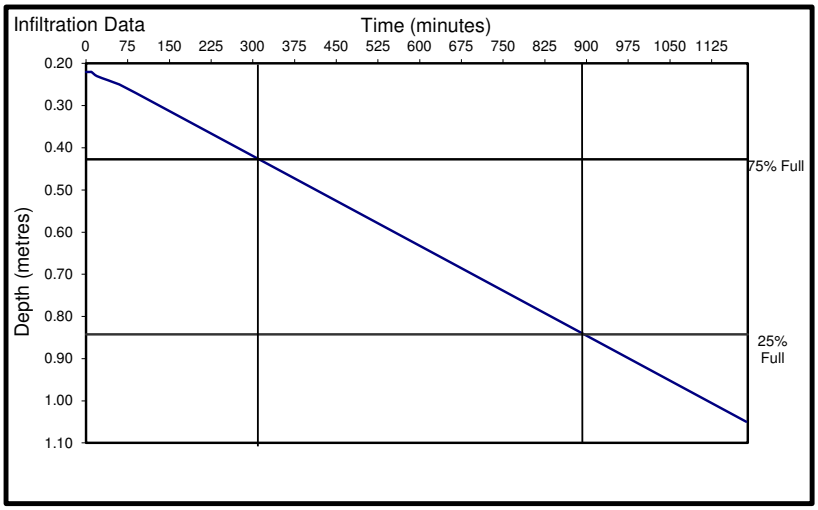


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.22 to 1.10
No Groundwater was encountered

Gives the Figures

S=	0.83	m
a_{p50}=	3.76	m^2
V_{p75-25}=	0.63	m^3

Soakaway Test Run 1 Test Date: 29/01/2024



Time (minutes)	Depth (m)
0	0.22
2	0.22
4	0.22
6	0.22
8	0.22
10	0.22
20	0.23
40	0.24
60	0.25
90	0.27
1187	1.05

From the above graph,

t_{p25}= 315 (min) t_{p75}= 895 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 2.02E-06 f_{run1}= 2.02 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

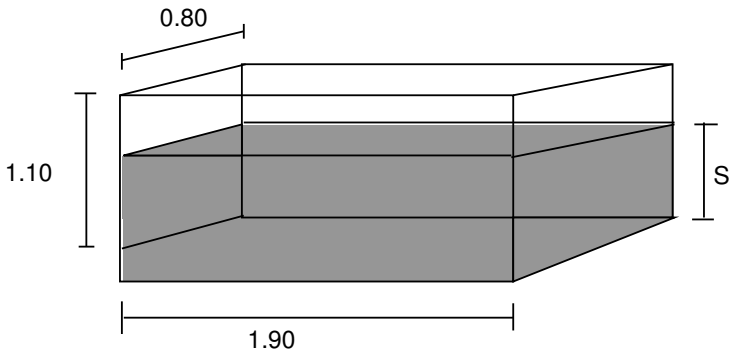
Trialpit No.: SK209

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	TOPSOIL - Grass over brown clay with abundant roots
0.20	1.10	Light brown slightly sandy very clayey GRAVEL
1.10	1.10	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

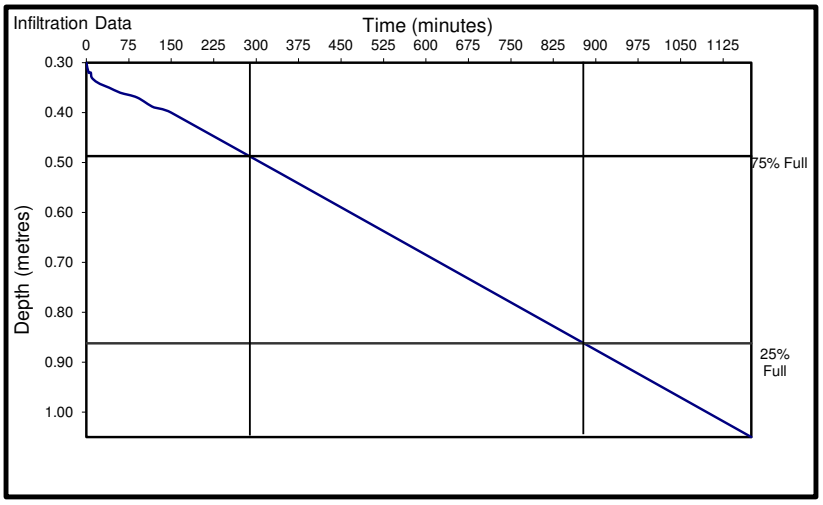


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.30 to 1.10
No Groundwater was encountered

Gives the Figures

S=	0.75	m
a_{p50}=	3.55	m^2
V_{p75-25}=	0.57	m^3

Soakaway Test Run 2 **Test Date: 30/01/2024**



Time (minutes)	Depth (m)
0	0.30
2	0.31
4	0.32
6	0.32
8	0.32
10	0.33
20	0.34
40	0.35
60	0.36
90	0.37
120	0.39
150	0.40
1175	1.05

From the above graph,

t_{p25}= 280 (min) $t_{p75=}$ 875 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.89E-06 f_{run1}= 1.89 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

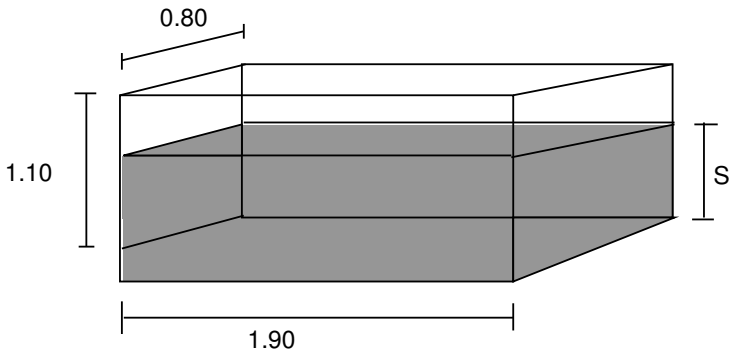
Trialpit No.: SK209

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	TOPSOIL - Grass over brown clay with abundant roots
0.20	1.10	Light brown slightly sandy very clayey GRAVEL
1.10	1.10	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

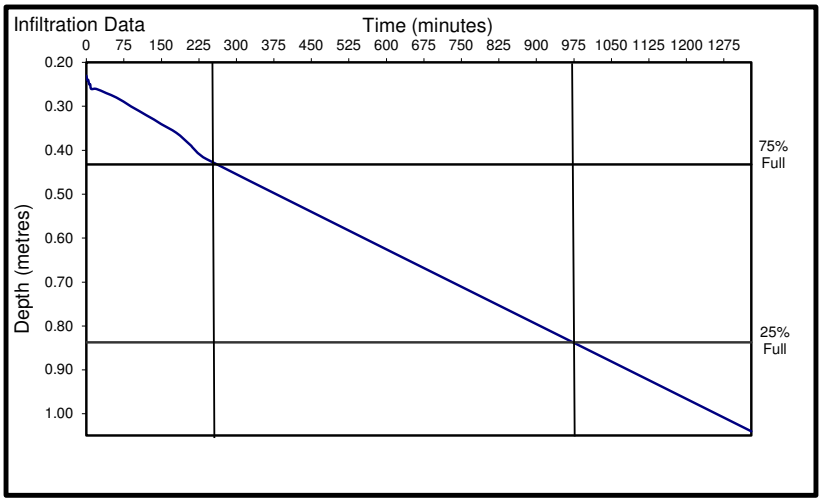


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.23 to 1.10
No Groundwater was encountered

Gives the Figures

S=	0.81	m
a_{p50}=	3.71	m^2
V_{p75-25}=	0.62	m^3

Soakaway Test Run 3 **Test Date: 31/01/2024**



Time (minutes)	Depth (m)
0	0.23
2	0.24
4	0.24
6	0.25
8	0.25
10	0.26
20	0.26
40	0.27
60	0.28
90	0.30
120	0.32
150	0.34
180	0.36
210	0.39
240	0.42
1330	1.04

From the above graph,

t_{p25}= 260 (min) $t_{p75=}$ 975 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.63E-06 f_{run1}= 1.63 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

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INSITU SOAKAWAY TEST RESULTS

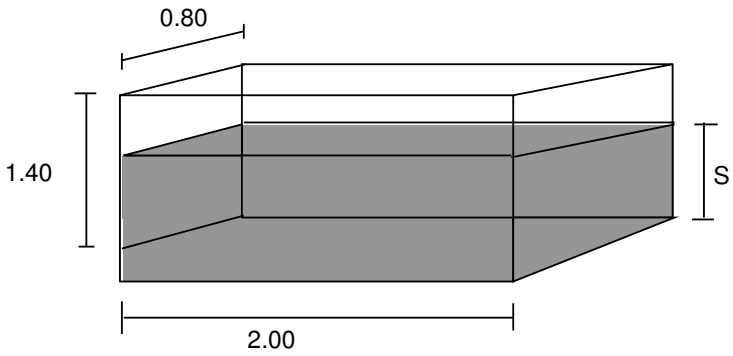
Trialpit No.: SK210

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	TOPSOIL - Dark brown CLAY
0.20	1.40	Light yellow brown clayey GRAVEL

Sketch plan of test zone

Not to scale
All dimensions in metres.

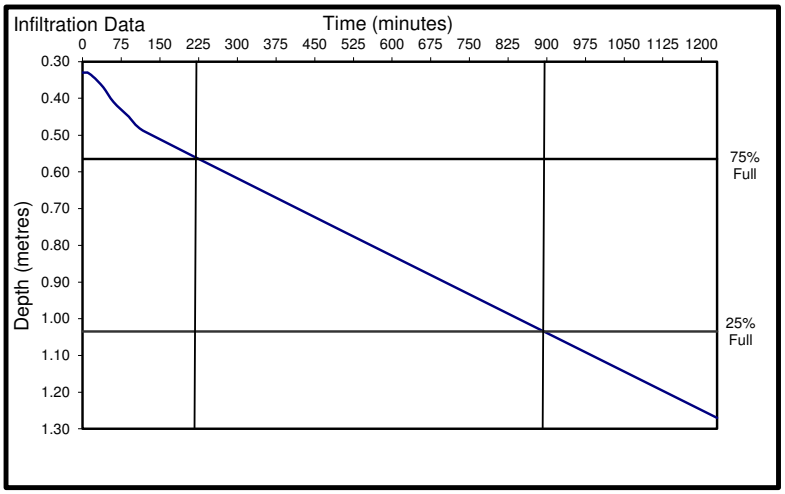


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.33 to 1.40
No Groundwater was encountered

Gives the Figures

S=	0.94	m
a_{p50}=	4.23	m^2
V_{p75-25}=	0.75	m^3

Soakaway Test Run 1 Test Date: 29/01/2024



Time (minutes)	Depth (m)
0	0.33
2	0.33
4	0.33
6	0.33
8	0.33
10	0.33
20	0.34
40	0.37
60	0.41
90	0.45
120	0.49
1230	1.27

From the above graph,

t_{p25}= 225 (min) t_{p75}= 895 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.86E-06 f_{run1}= 1.86 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

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INSITU SOAKAWAY TEST RESULTS

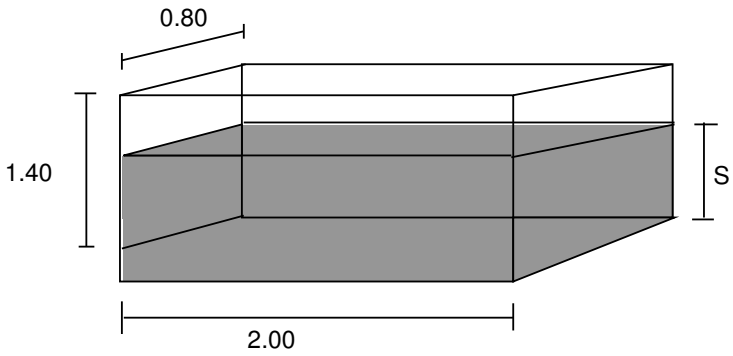
Trialpit No.: SK210

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	TOPSOIL - Dark brown CLAY
0.20	1.40	Light yellow brown clayey GRAVEL

Sketch plan of test zone

Not to scale
All dimensions in metres.

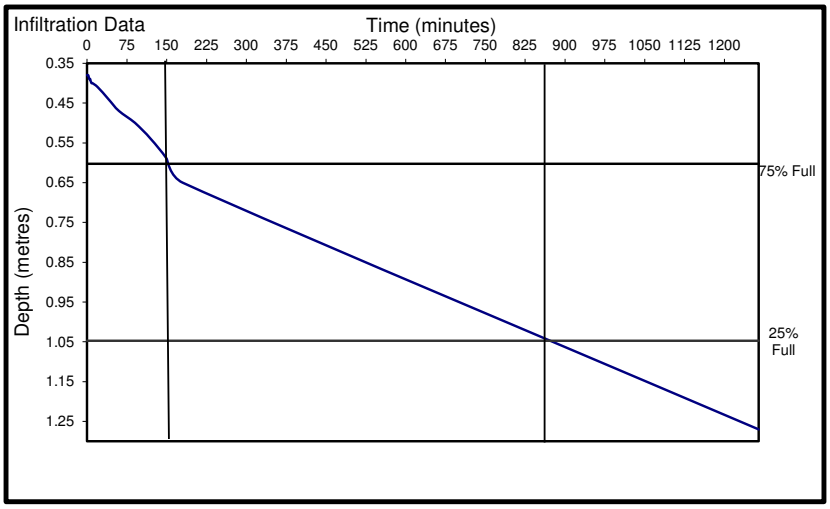


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.38 to 1.40
No Groundwater was encountered

Gives the Figures

S=	0.89	m
a_{p50}=	4.09	m^2
V_{p75-25}=	0.71	m^3

Soakaway Test Run 2 Test Date: 30/01/2024



Time (minutes)	Depth (m)
0	0.38
2	0.38
4	0.39
6	0.39
8	0.40
10	0.40
20	0.41
40	0.44
60	0.47
90	0.50
120	0.54
150	0.59
180	0.65
1265	1.27

From the above graph,

t_{p25}= 150 (min) t_{p75}= 860 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.72E-06 f_{run1}= 1.72 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

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INSITU SOAKAWAY TEST RESULTS

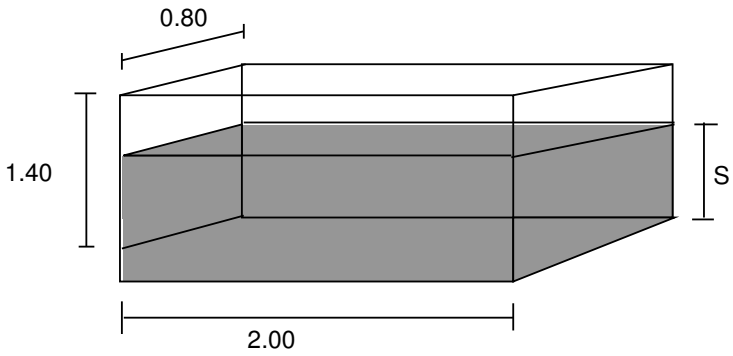
Trialpit No.: SK210

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	TOPSOIL - Dark brown CLAY
0.20	1.40	Light yellow brown clayey GRAVEL

Sketch plan of test zone

Not to scale
All dimensions in metres.

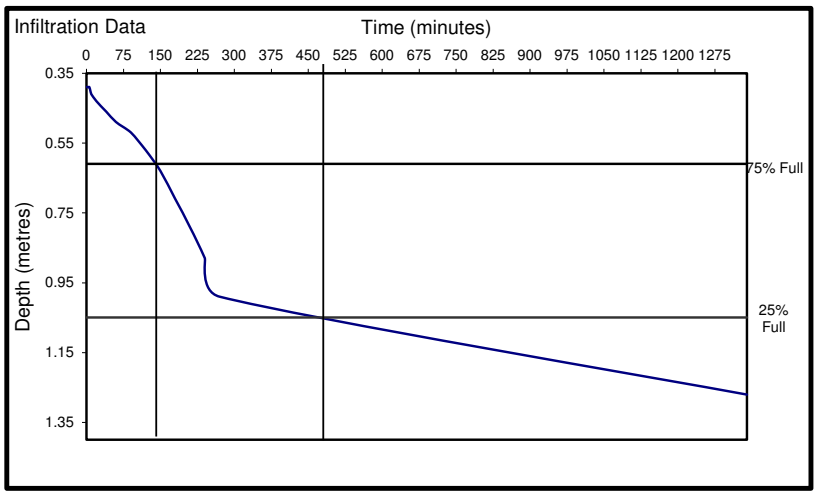


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.39 to 1.40
No Groundwater was encountered

Gives the Figures

S=	0.88	m
a_{p50}=	4.06	m^2
V_{p75-25}=	0.70	m^3

Soakaway Test Run 3 **Test Date: 31/01/2024**



Time (minutes)	Depth (m)
0	0.39
2	0.39
4	0.39
6	0.39
8	0.40
10	0.41
20	0.43
40	0.46
60	0.49
90	0.52
120	0.57
150	0.63
180	0.71
210	0.79
240	0.88
270	0.99
1340	1.27

From the above graph,

t_{p25}= 140 (min) t_{p75}= 485 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 3.51E-06 f_{run1}= 3.51 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

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INSITU SOAKAWAY TEST RESULTS

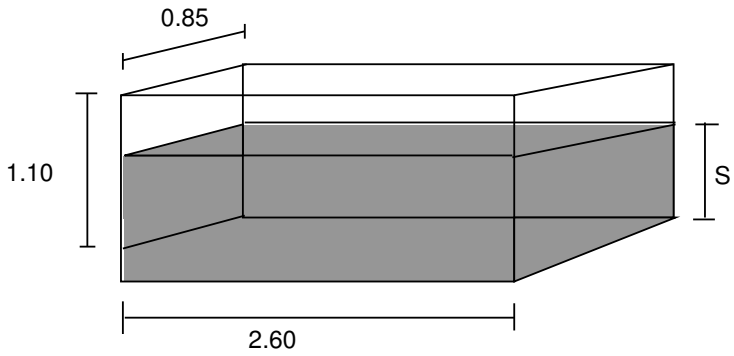
Trialpit No.: SK211

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.30	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.30	1.10	Light brown slightly sandy very clayey GRAVEL
1.10	1.10	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

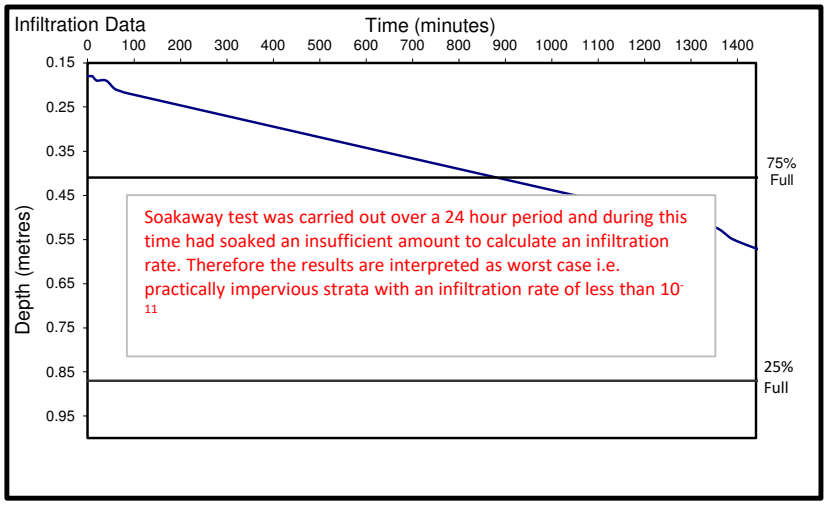


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.18 to 1.10
No Groundwater was encountered

Gives the Figures

S=	0.92	m
a_{p50}=	5.38	m^2
V_{p75-25}=	1.02	m^3

Soakaway Test Run 1 Test Date: 29/01/2024



Time (minutes)	Depth (m)
0	0.18
2	0.18
4	0.18
6	0.18
8	0.18
10	0.18
20	0.19
40	0.19
60	0.21
90	0.22
1175	0.48
1345	0.52
1390	0.55
1465	0.58

From the above graph,

t_{p25}= N/A (min) t_{p75}= N/A (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = N/A

f_{run1}= N/A m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

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INSITU SOAKAWAY TEST RESULTS

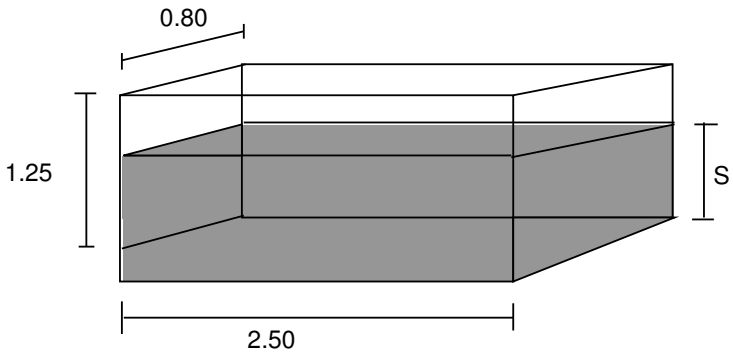
Trialpit No.: SK212

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.30	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.30	1.30	Light brown slightly sandy very clayey GRAVEL
1.30	1.30	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

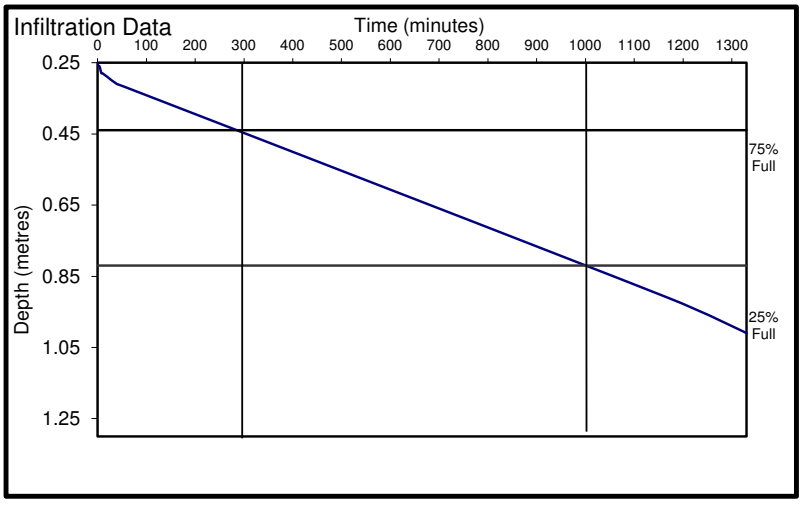


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.25 to 1.01
No Groundwater was encountered

Gives the Figures

S=	0.76	m
a_{p50}=	4.51	m^2
V_{p75-25}=	0.76	m^3

Soakaway Test Run 1 **Test Date: 29/01/2024**



Time (minutes)	Depth (m)
0	0.25
2	0.26
4	0.26
6	0.27
8	0.28
10	0.28
20	0.29
40	0.31
60	0.32
1168	0.91
1330	1.01

From the above graph,

t_{p25}= 300 (min) $t_{p75=}$ 1005 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.67E-06 f_{run1}= 1.67 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

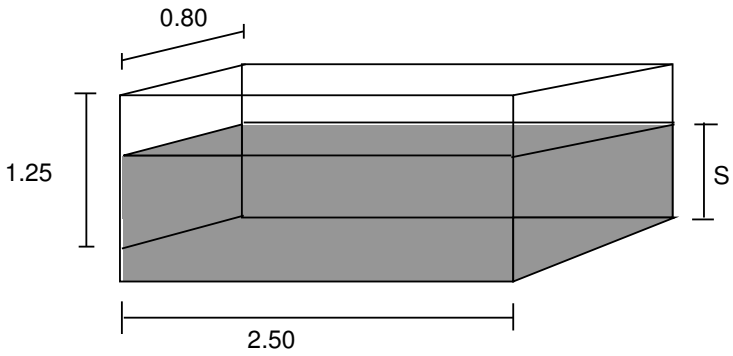
Trialpit No.: SK212

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.30	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.30	1.30	Light brown slightly sandy very clayey GRAVEL
1.30	1.30	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

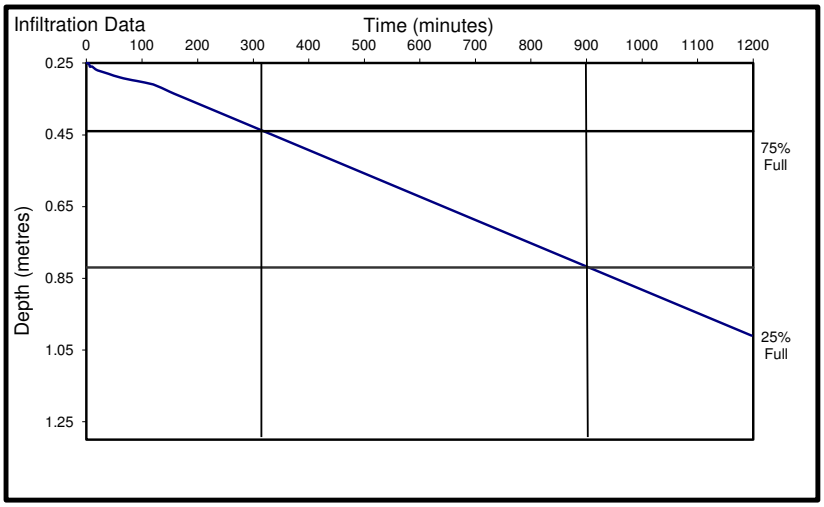


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.25 to 1.25
No Groundwater was encountered

Gives the Figures

S=	0.76	m
a_{p50}=	4.51	m^2
V_{p75-25}=	0.76	m^3

Soakaway Test Run 2 **Test Date: 30/01/2024**



Time (minutes)	Depth (m)
0	0.25
2	0.25
4	0.25
6	0.26
8	0.26
10	0.26
20	0.27
40	0.28
60	0.29
90	0.30
120	0.31
150	0.33
180	0.35
1197	1.01

From the above graph,

t_{p25}= 320 (min) t_{p75}= 900 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 2.03E-06 f_{run1}= 2.03 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

Trialpit No.: SK212

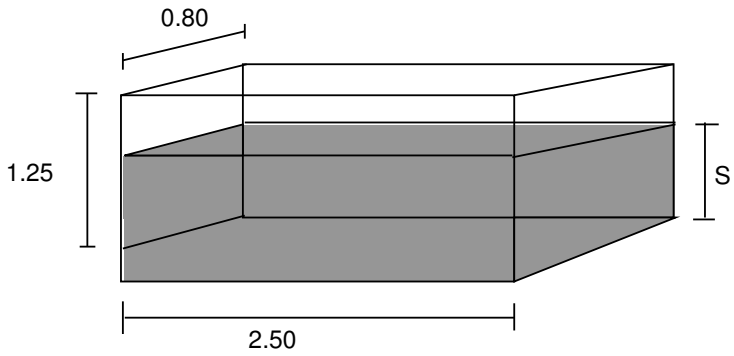
Soil Profile:

Depth (m) From:	To:	Description
0.00	0.30	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.30	1.30	Light brown slightly sandy very clayey GRAVEL
1.30	1.30	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

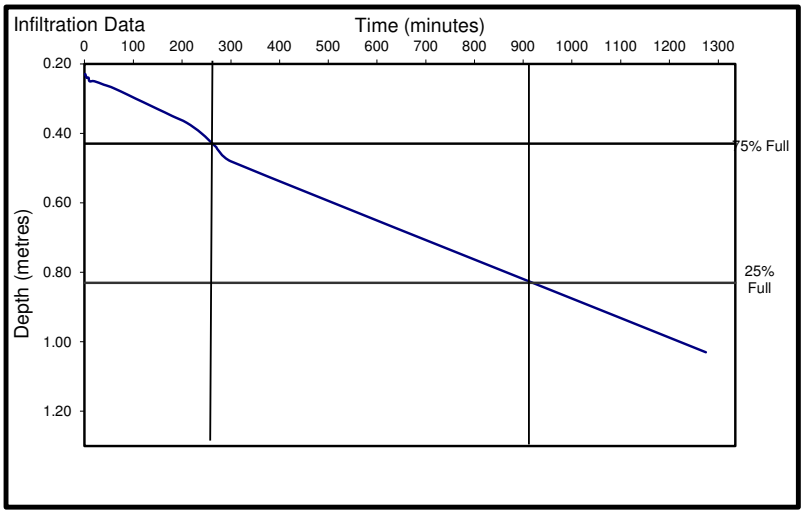
porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.23 to 1.25
No Groundwater was encountered



Gives the Figures

S= 0.80 m
a_{p50}= 4.64 m^2
V_{p75-25}= 0.80 m^3

Soakaway Test Run 3 **Test Date: 31/01/2024**



Time (minutes)	Depth (m)
0	0.23
2	0.23
4	0.24
6	0.24
8	0.24
10	0.25
20	0.25
40	0.26
60	0.27
90	0.29
120	0.31
150	0.33
180	0.35
210	0.37
240	0.40
270	0.44
300	0.48
1275	1.03

From the above graph,
t_{p25}= 270 (min) t_{p75}= 920 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.86E-06 f_{run1}= 1.86 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

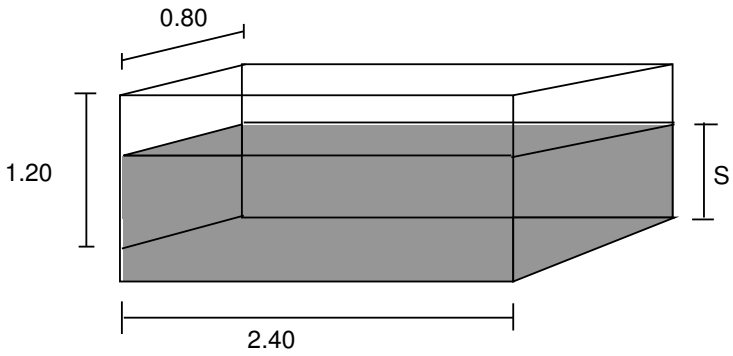
Trialpit No.: SK213

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.20	1.20	Light brown slightly sandy very clayey GRAVEL
1.20	1.20	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

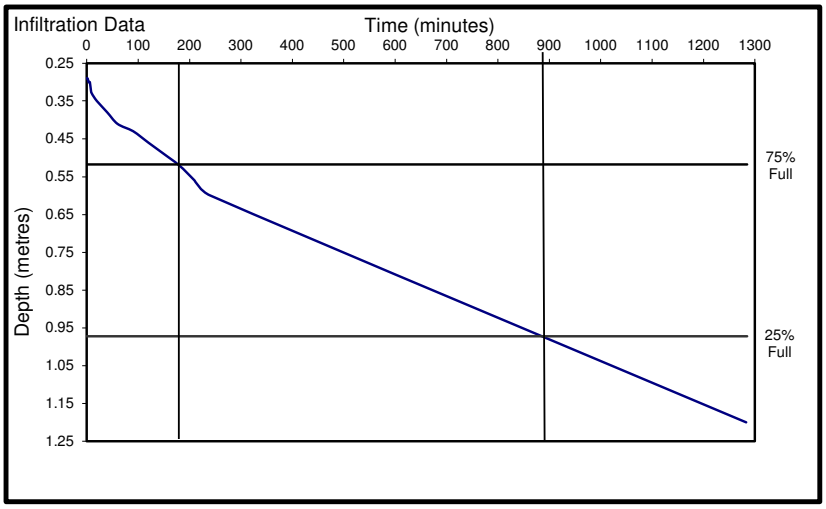


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.29 to 1.20
No Groundwater was encountered

Gives the Figures

S=	0.91	m
a_{p50}=	4.83	m^2
V_{p75-25}=	0.87	m^3

Soakaway Test Run 1 Test Date: 30/01/2024



Time (minutes)	Depth (m)
0	0.29
2	0.29
4	0.30
6	0.30
8	0.32
10	0.33
20	0.35
40	0.38
60	0.41
90	0.43
120	0.46
150	0.49
180	0.52
210	0.56
240	0.60
1283	1.20

From the above graph,

t_{p25}= 175 (min) t_{p75}= 890 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.77E-06 f_{run1}= 1.77 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

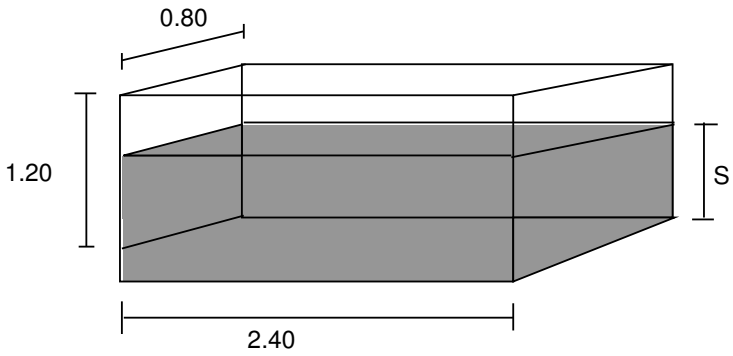
Trialpit No.: SK213

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.20	1.20	Light brown slightly sandy very clayey GRAVEL
1.20	1.20	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

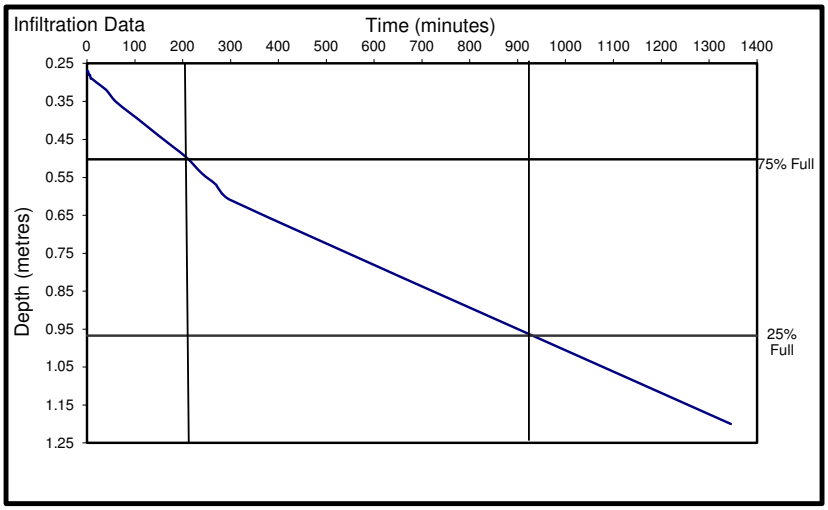


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.27 to 1.20
No Groundwater was encountered

Gives the Figures

S=	0.93	m
a_{p50}=	4.90	m^2
V_{p75-25}=	0.89	m^3

Soakaway Test Run 2 **Test Date: 31/01/2024**



Time (minutes)	Depth (m)
0	0.27
2	0.27
4	0.28
6	0.28
8	0.29
10	0.29
20	0.30
40	0.32
60	0.35
90	0.38
120	0.41
150	0.44
180	0.47
210	0.50
240	0.54
270	0.57
300	0.61
1345	1.20

From the above graph,

t_{p25}= 205 (min) t_{p75}= 925 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.77E-06 f_{run1}= 1.77 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

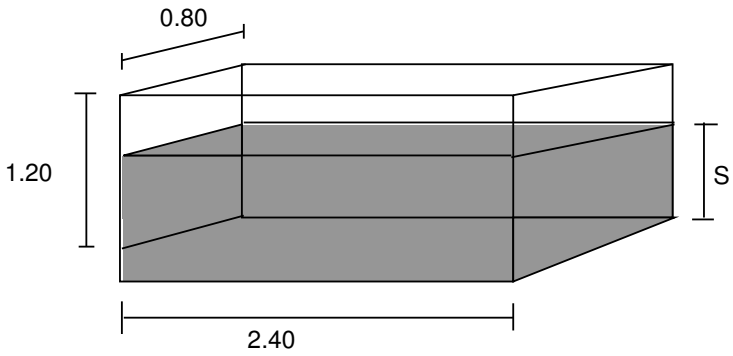
Trialpit No.: SK213

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.20	1.20	Light brown slightly sandy very clayey GRAVEL
1.20	1.20	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

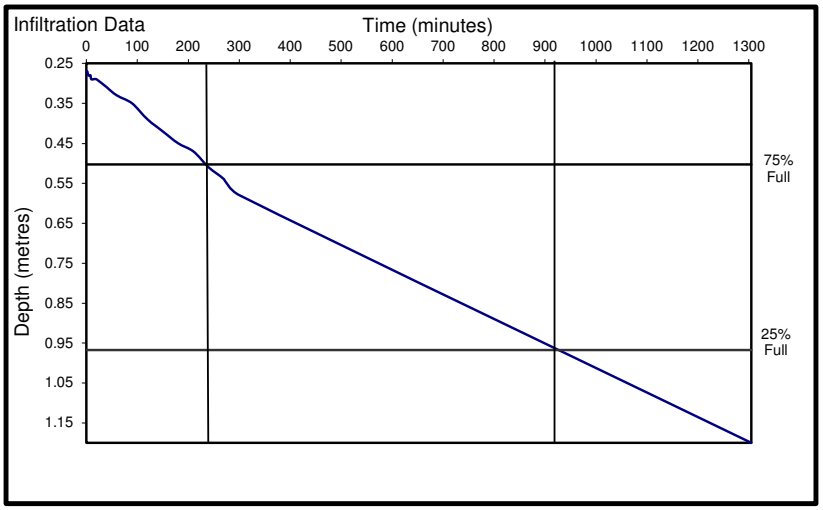


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.27 to 1.20
No Groundwater was encountered

Gives the Figures

S=	0.93	m
a_{p50}=	4.90	m^2
V_{p75-25}=	0.89	m^3

Soakaway Test Run 3 **Test Date: 01/02/2024**



Time (minutes)	Depth (m)
0	0.27
2	0.27
4	0.28
6	0.28
8	0.28
10	0.29
20	0.29
40	0.31
60	0.33
90	0.35
120	0.39
150	0.42
180	0.45
210	0.47
240	0.51
270	0.54
300	0.58
1305	1.20

From the above graph,

t_{p25}= 240 (min) t_{p75}= 915 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.89E-06 f_{run1}= 1.89 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

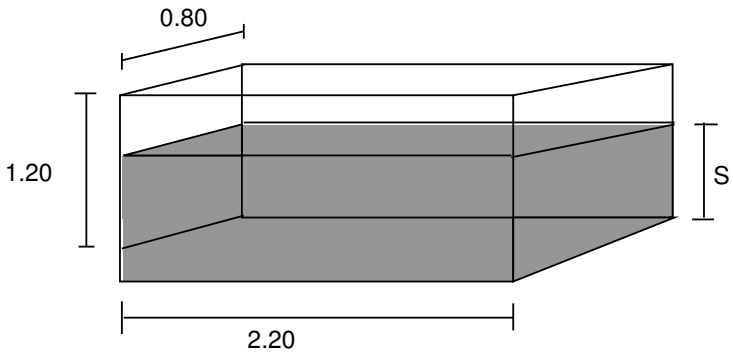
Trialpit No.: SK214

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.20	1.30	Light brown slightly sandy very clayey GRAVEL
1.30	1.30	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

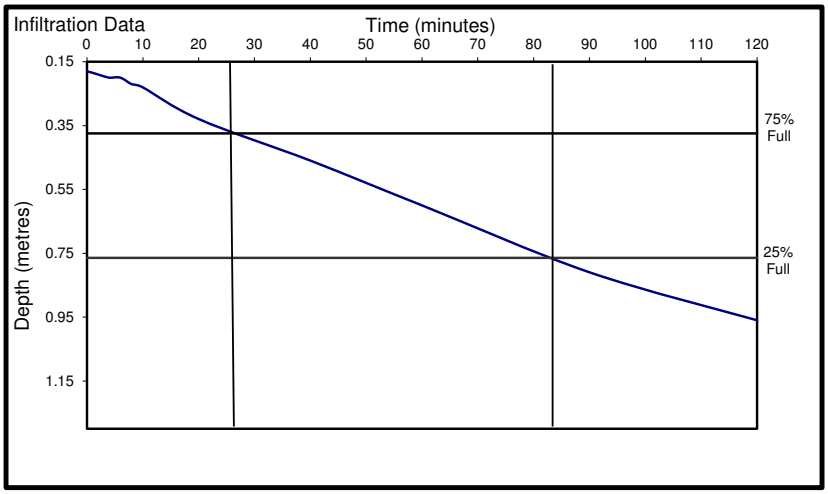


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.18 to 1.20
No Groundwater was encountered

Gives the Figures

S=	0.78	m
a_{p50}=	4.10	m^2
V_{p75-25}=	0.69	m^3

Soakaway Test Run 1 Test Date: 30/01/2024



Time (minutes)	Depth (m)
0	0.18
2	0.19
4	0.20
6	0.20
8	0.22
10	0.23
20	0.33
40	0.46
60	0.60
90	0.81
120	0.96

From the above graph,

t_{p25}= 26 (min) $t_{p75=}$ 83 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 2.06E-05 f_{run1}= 2.06 x 10-5 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

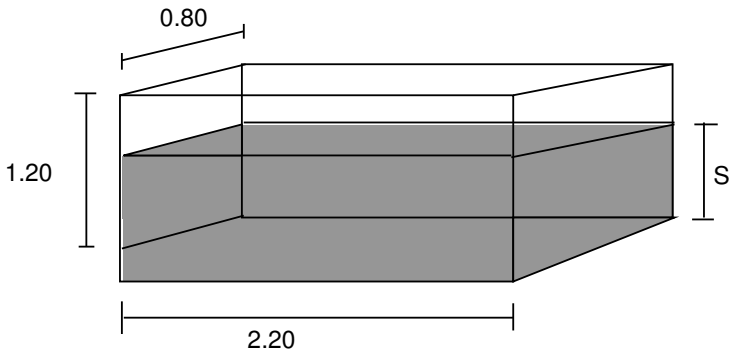
Trialpit No.: SK214

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.20	1.30	Light brown slightly sandy very clayey GRAVEL
1.30	1.30	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

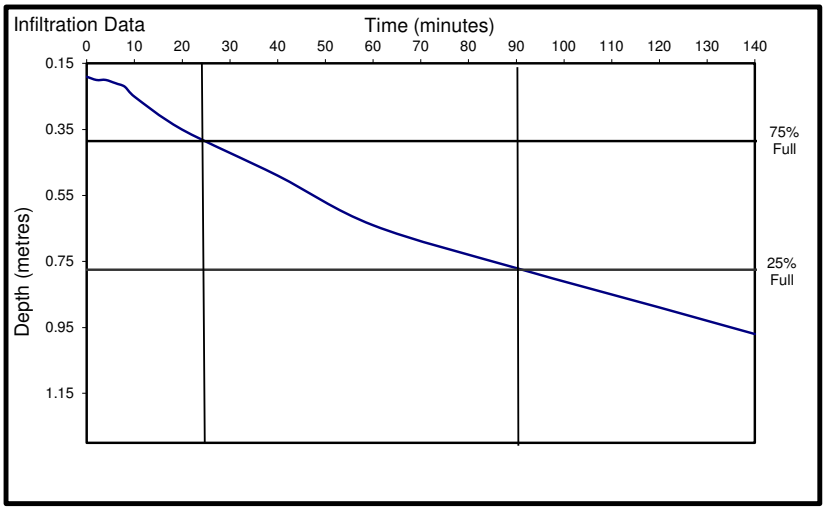


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.19 to 1.20
No Groundwater was encountered

Gives the Figures

S=	0.78	m
a_{p50}=	4.10	m^2
V_{p75-25}=	0.69	m^3

Soakaway Test Run 2 **Test Date: 31/01/2024**



Time (minutes)	Depth (m)
0	0.19
2	0.20
4	0.20
6	0.21
8	0.22
10	0.25
20	0.35
40	0.49
60	0.64
90	0.77
120	0.89
140	0.97

From the above graph,

t_{p25}= 24 (min) $t_{p75=}$ 91 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.75E-05 f_{run1}= 1.75 x 10-5 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

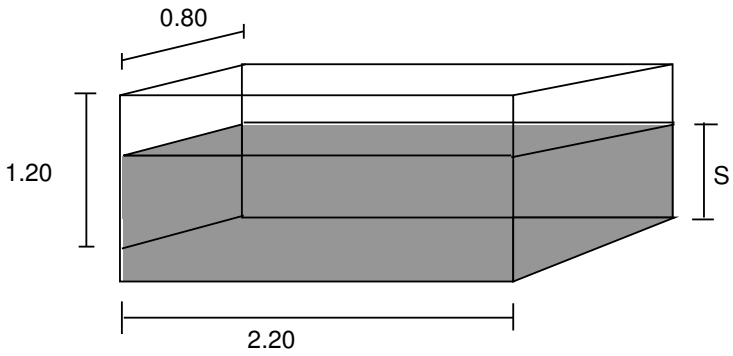
Trialpit No.: SK214

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.20	1.30	Light brown slightly sandy very clayey GRAVEL
1.30	1.30	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

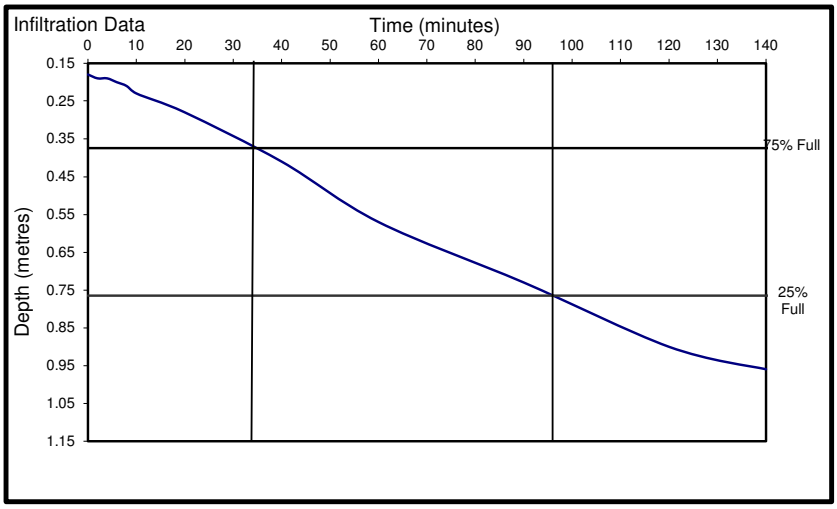


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.18 to 1.20
No Groundwater was encountered

Gives the Figures

S=	0.78	m
a_{p50}=	4.10	m^2
V_{p75-25}=	0.69	m^3

Soakaway Test Run 3 **Test Date: 01/02/2024**



Time (minutes)	Depth (m)
0	0.18
2	0.19
4	0.19
6	0.20
8	0.21
10	0.23
20	0.28
40	0.41
60	0.57
90	0.73
120	0.90
140	0.96

From the above graph,

t_{p25}= 35 (min) t_{p75}= 96 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.92E-05 f_{run1}= 1.92 x 10-5 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

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INSITU SOAKAWAY TEST RESULTS

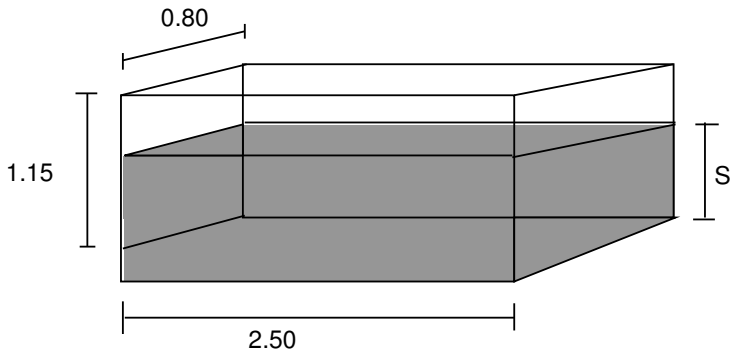
Trialpit No: SK215

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.30	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.30	1.20	Light brown slightly sandy very clayey GRAVEL
1.20	1.20	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

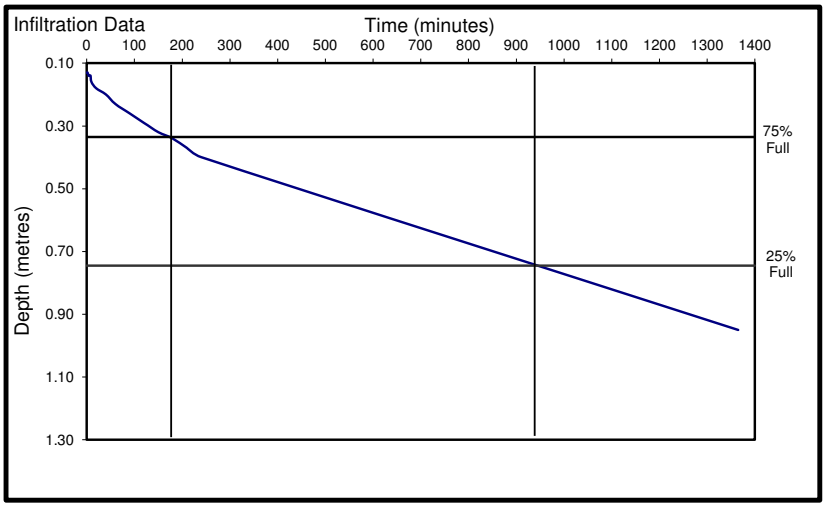


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.13 to 1.15
No Groundwater was encountered

Gives the Figures

S=	0.82	m
a_{p50}=	4.71	m^2
V_{p75-25}=	0.82	m^3

Soakaway Test Run 1 Test Date: 30/01/2024



Time (minutes)	Depth (m)
0	0.13
2	0.13
4	0.14
6	0.14
8	0.14
10	0.16
20	0.18
40	0.20
60	0.23
90	0.26
120	0.29
150	0.32
180	0.34
210	0.37
240	0.40
1365	0.95

From the above graph,

t_{p25}= 180 (min) $t_{p75=}$ 945 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.59E-06 f_{run1}= 1.59 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

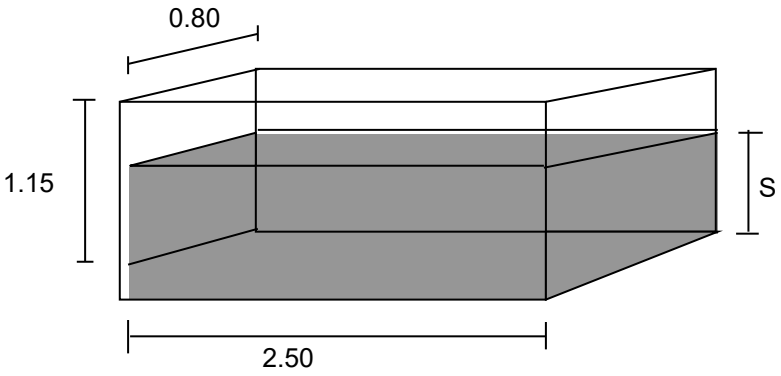
Trialpit No.: SK215

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.30	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.30	1.20	Light brown slightly sandy very clayey GRAVEL
1.20	1.20	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

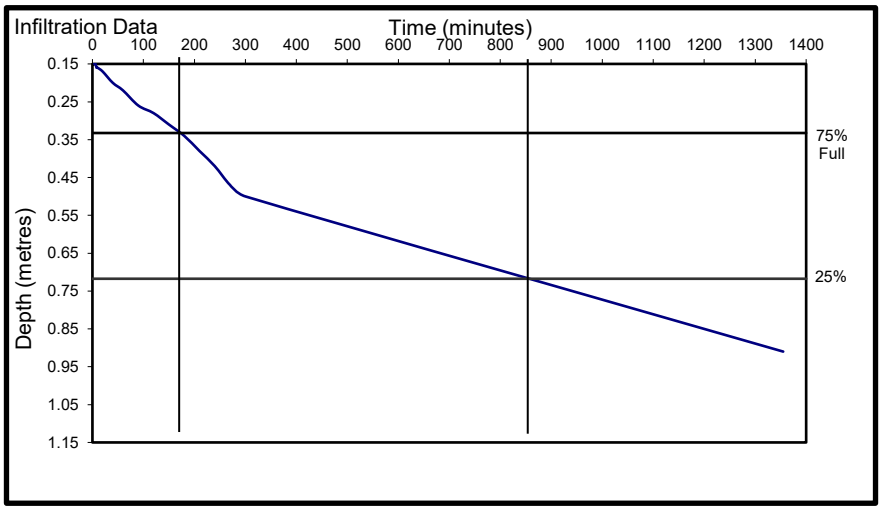


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.14 to 1.15
No Groundwater was encountered

Gives the Figures

S=	0.77	m
a_{p50}=	4.54	m^2
V_{p75-25}=	0.77	m^3

Soakaway Test Run 2 **Test Date: 31/01/2024**



Time (minutes)	Depth (m)
0	0.14
2	0.14
4	0.15
6	0.15
8	0.16
10	0.16
20	0.17
40	0.20
60	0.22
90	0.26
120	0.28
150	0.31
180	0.34
210	0.38
240	0.42
270	0.47
300	0.50
1355	0.91

From the above graph,

t_{p25}= 175 (min) $t_{p75=}$ 860 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.73E-06 f_{run1}= 1.73 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

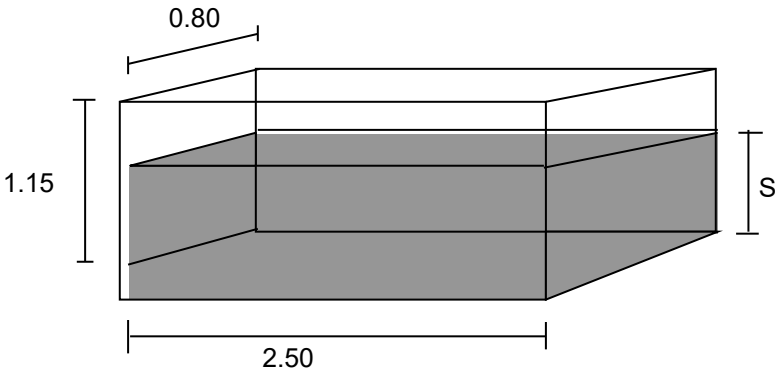
Trialpit No.: SK215

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.30	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.30	1.20	Light brown slightly sandy very clayey GRAVEL
1.20	1.20	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

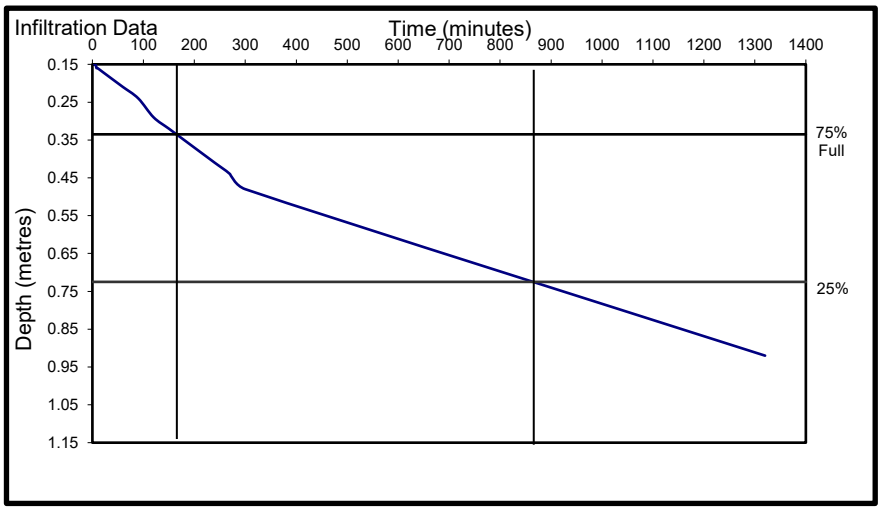


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.14 to 1.15
No Groundwater was encountered

Gives the Figures

S=	0.78	m
a_{p50}=	4.57	m^2
V_{p75-25}=	0.78	m^3

Soakaway Test Run 3 Test Date: 01/02/2024



Time (minutes)	Depth (m)
0	0.14
2	0.14
4	0.15
6	0.15
8	0.16
10	0.16
20	0.17
40	0.19
60	0.21
90	0.24
120	0.29
150	0.32
180	0.35
210	0.38
240	0.41
270	0.44
300	0.48
1320	0.92

From the above graph,

t_{p25}= 160 (min) $t_{p75=}$ 875 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.67E-06 f_{run1}= 1.67 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

Trialpit No.: SK216

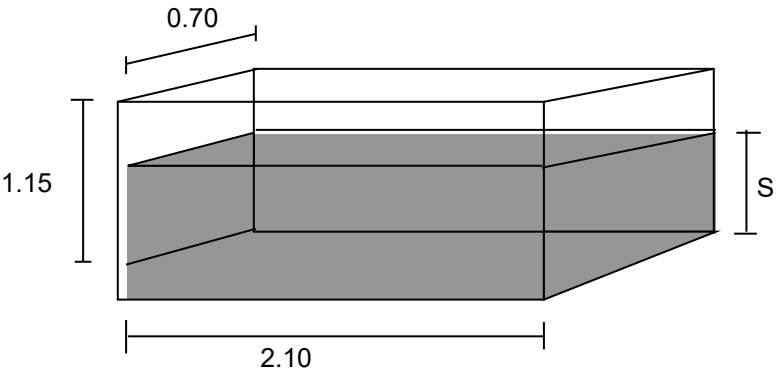
Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.20	1.15	Light brown slightly sandy very clayey GRAVEL
1.15	1.15	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

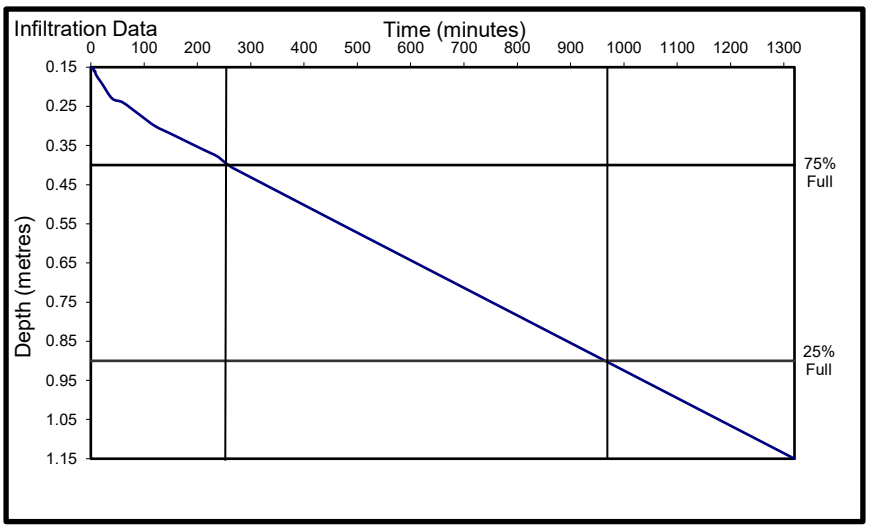
porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.15 to 1.15
No Groundwater was encountered



Gives the Figures

S=	1.00	m
a_{p50}=	4.27	m^2
V_{p75-25}=	0.74	m^3

Soakaway Test Run 1 Test Date: 30/01/2024



Time (minutes)	Depth (m)
0	0.15
2	0.15
4	0.15
6	0.16
8	0.16
10	0.17
20	0.19
40	0.23
60	0.24
90	0.27
120	0.30
150	0.32
180	0.34
210	0.36
240	0.38
270	0.41
1320	1.15

From the above graph,

t_{p25}= 185 (min) $t_{p75=}$ 975 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.53E-06 f_{run1}= 1.53 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

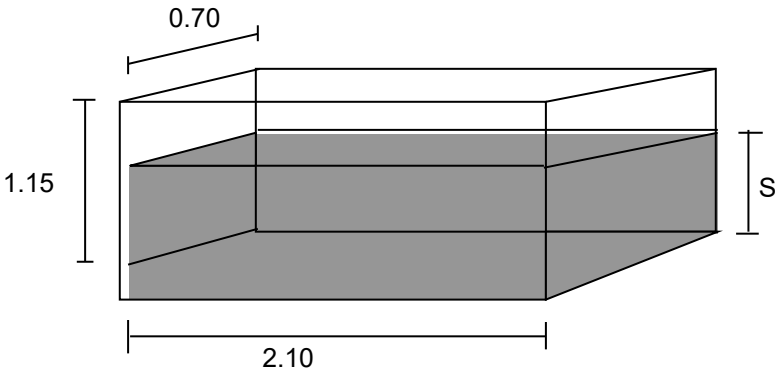
Trialpit No.: SK216

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.20	1.15	Light brown slightly sandy very clayey GRAVEL
1.15	1.15	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

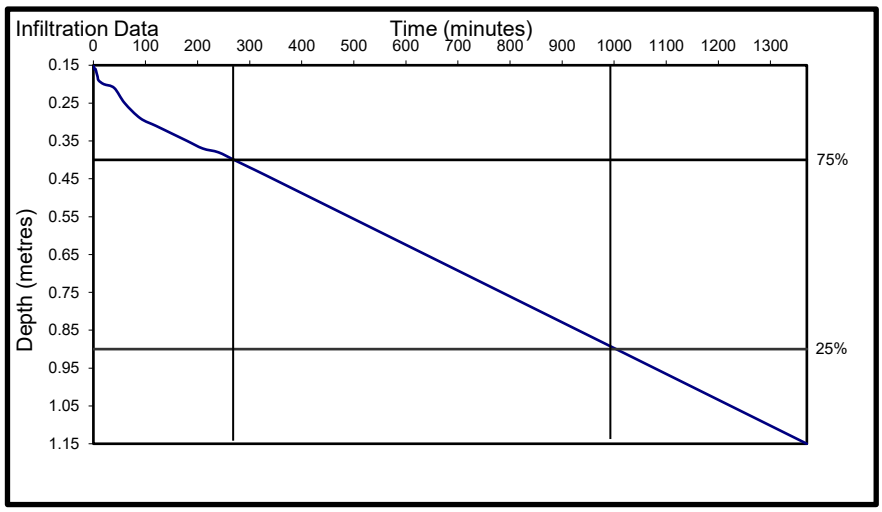


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.15 to 1.15
No Groundwater was encountered

Gives the Figures

S=	1.00	m
a_{p50}=	4.27	m^2
V_{p75-25}=	0.74	m^3

Soakaway Test Run 2 Test Date: 31/01/2024



Time (minutes)	Depth (m)
0	0.15
2	0.16
4	0.16
6	0.17
8	0.18
10	0.19
20	0.20
40	0.21
60	0.25
90	0.29
120	0.31
150	0.33
180	0.35
210	0.37
240	0.38
270	0.40
300	0.42
330	0.44
1370	1.15

From the above graph,

t_{p25}= 260 (min) $t_{p75=}$ 1005 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.62E-06 f_{run1}= 1.62 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

Trialpit No.: SK216

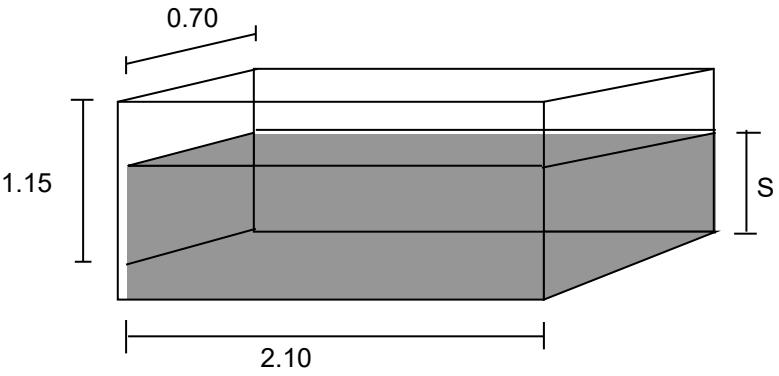
Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.20	1.15	Light brown slightly sandy very clayey GRAVEL
1.15	1.15	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

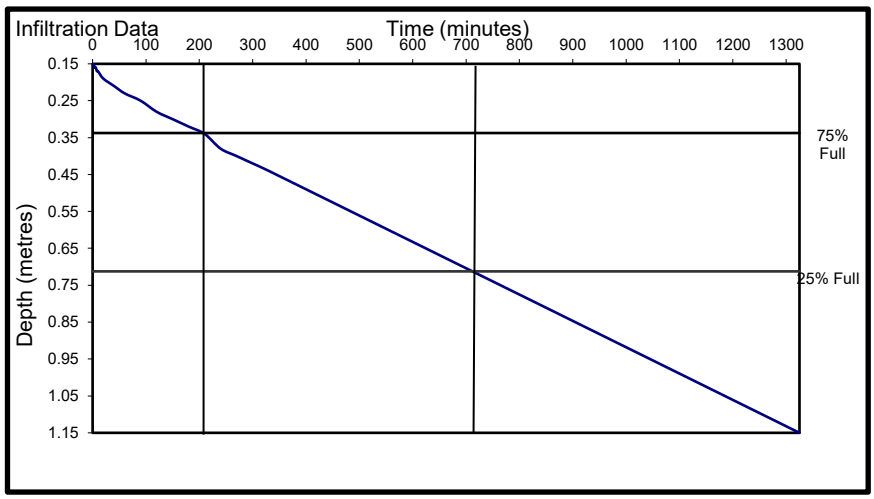
porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.15 to 1.15
No Groundwater was encountered



Gives the Figures

S=	0.75	m
a_{p50}=	3.57	m^2
V_{p75-25}=	0.55	m^3

Soakaway Test Run 3 Test Date: 01/02/2024



Time (minutes)	Depth (m)
0	0.15
2	0.15
4	0.16
6	0.16
8	0.17
10	0.17
20	0.19
40	0.21
60	0.23
90	0.25
120	0.28
150	0.30
180	0.32
210	0.34
240	0.38
270	0.40
300	0.42
330	0.44
1325	1.15

From the above graph,

t_{p25}= 205 (min) $t_{p75=}$ 720 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 2.10E-06 f_{run1}= 2.10 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

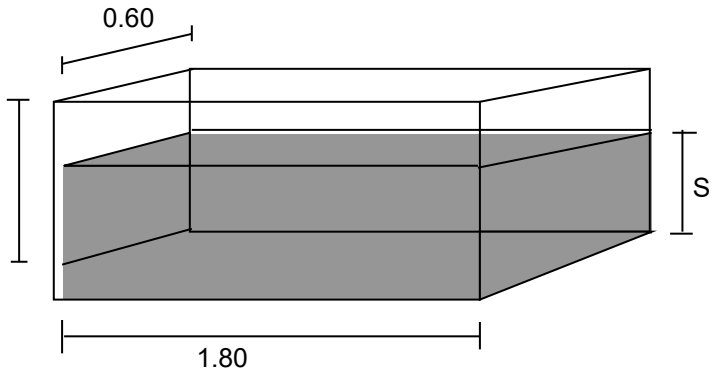
Trialpit No.: SK217

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.20	1.10	Firm light brown slightly sandy gravelly CLAY
1.10	1.10	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

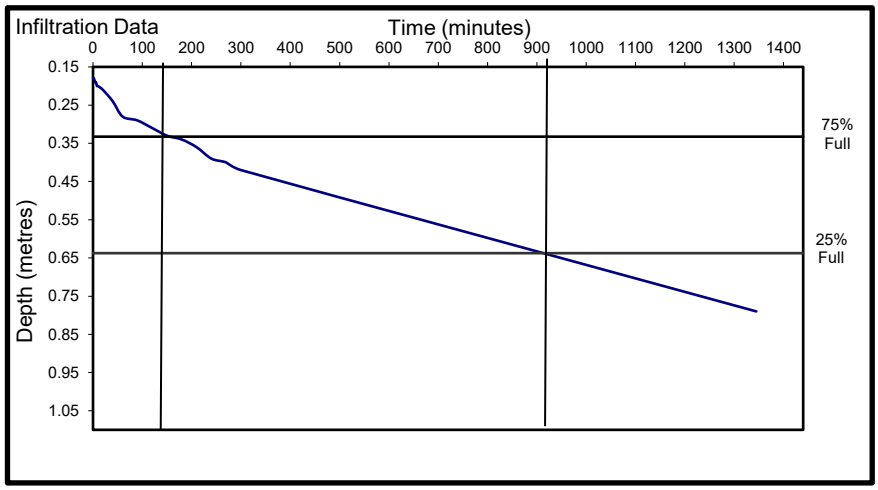


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.18 to 1.15
No Groundwater was encountered

Gives the Figures

S=	0.61	m
a_{p50}=	2.54	m^2
V_{p75-25}=	0.33	m^3

Soakaway Test Run 1 Test Date: 30/01/2024



Time (minutes)	Depth (m)
0	0.18
2	0.18
4	0.19
6	0.19
8	0.20
10	0.20
20	0.21
40	0.24
60	0.28
90	0.29
120	0.31
150	0.33
180	0.34
210	0.36
240	0.39
270	0.40
300	0.42
1345	0.79

From the above graph,

t_{p25}= 150 (min) $t_{p75=}$ 925 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.17E-06 f_{run1}= 1.17 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

Trialpit No.: SK217

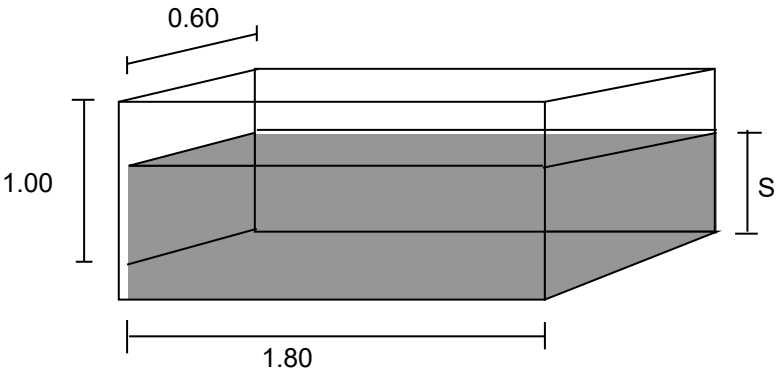
Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.20	1.10	Firm light brown slightly sandy gravelly CLAY
1.10	1.10	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

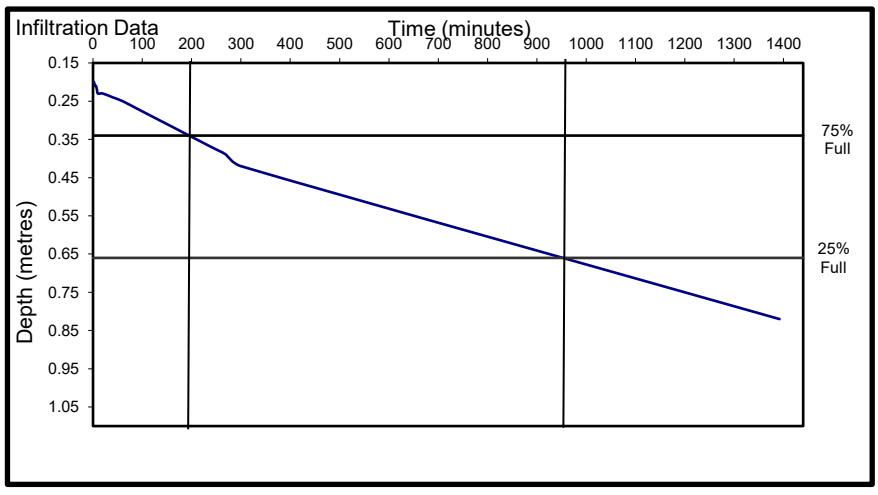
porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.20 to 1.10
No Groundwater was encountered



Gives the Figures

S=	0.64	m
a_{p50}=	2.62	m^2
V_{p75-25}=	0.35	m^3

Soakaway Test Run 2 Test Date: 31/01/2024



Time (minutes)	Depth (m)
0	0.20
2	0.20
4	0.21
6	0.21
8	0.22
10	0.23
20	0.23
40	0.24
60	0.25
90	0.27
120	0.29
150	0.31
180	0.33
210	0.35
240	0.37
270	0.39
300	0.42
1392	0.82

From the above graph,

t_{p25}= 200 (min) $t_{p75=}$ 965 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.21E-06 f_{run1}= 1.21 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

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INSITU SOAKAWAY TEST RESULTS

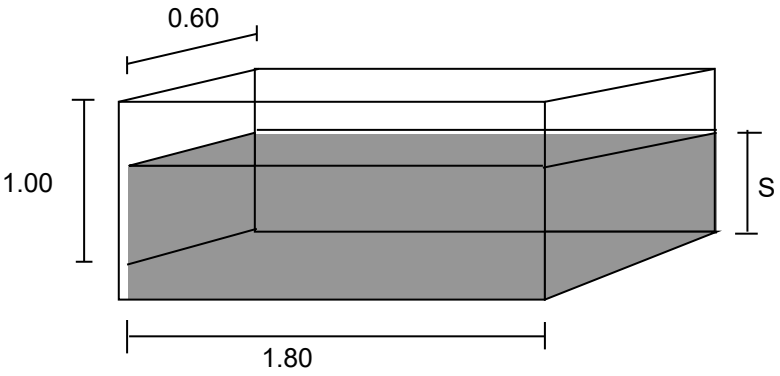
Trialpit No.: SK217

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.20	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.20	1.10	Firm light brown slightly sandy gravelly CLAY
1.10	1.10	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

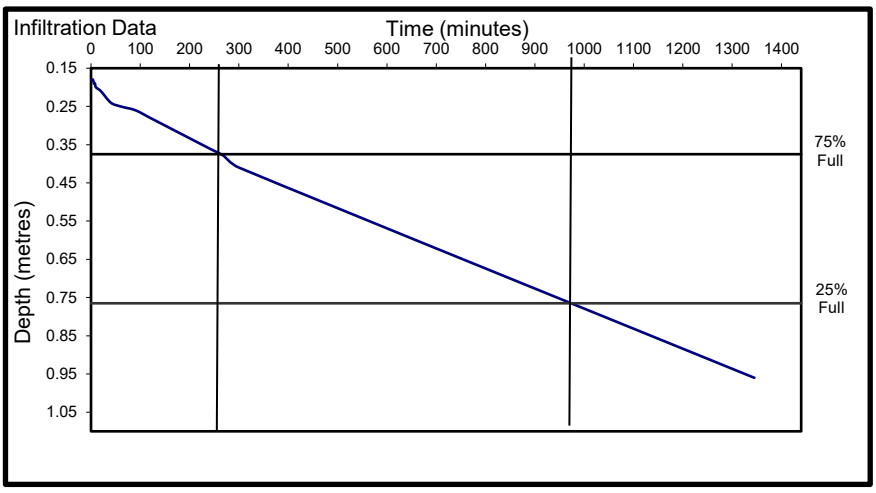


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.18 to 1.00
No Groundwater was encountered

Gives the Figures

S=	0.78	m
a_{p50}=	2.95	m^2
V_{p75-25}=	0.42	m^3

Soakaway Test Run 3 Test Date: 01/02/2024



Time (minutes)	Depth (m)
0	0.18
2	0.18
4	0.18
6	0.19
8	0.19
10	0.20
20	0.21
40	0.24
60	0.25
90	0.26
120	0.28
150	0.30
180	0.32
210	0.34
240	0.36
270	0.38
300	0.41
1345	0.96

From the above graph,

t_{p25}= 290 (min) $t_{p75=}$ 980 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 1.39E-06 f_{run1}= 1.39 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

hsp consulting

INSITU SOAKAWAY TEST RESULTS

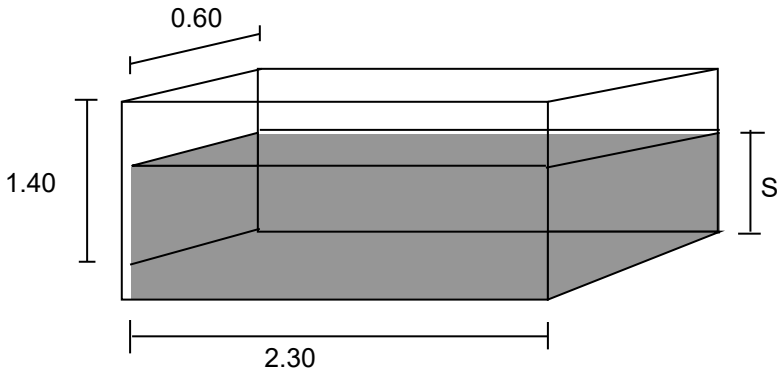
Trialpit No.: SK218

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.30	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.30	1.40	Light brown slightly sandy very clayey GRAVEL
1.40	1.40	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

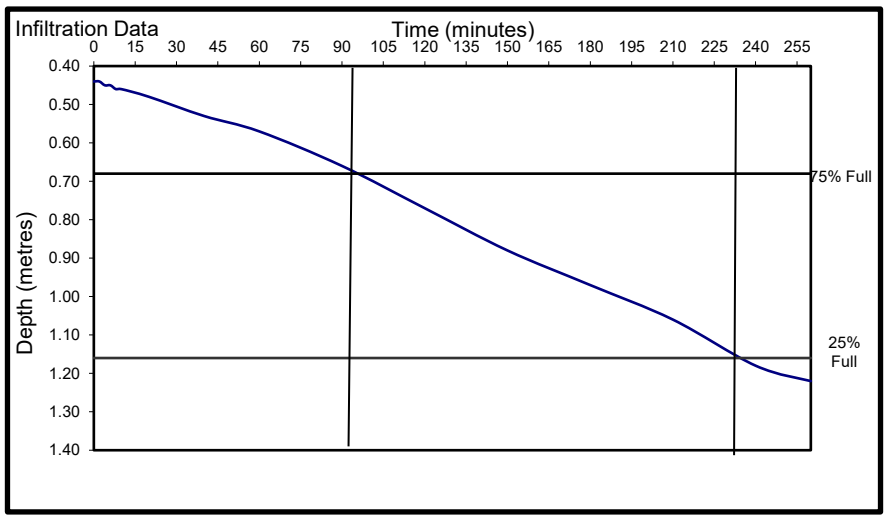


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.44 to 1.20
No Groundwater was encountered

Gives the Figures

S=	0.96	m
a_{p50}=	4.16	m^2
V_{p75-25}=	0.66	m^3

Soakaway Test Run 1 Test Date: 30/01/2024



Time (minutes)	Depth (m)
0	0.44
2	0.44
4	0.45
6	0.45
8	0.46
10	0.46
20	0.48
40	0.53
60	0.57
90	0.66
120	0.77
150	0.88
180	0.97
210	1.06
240	1.18
260	1.22

From the above graph,

t_{p25}= 95 (min) $t_{p75=}$ 232 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 8.13E-06 f_{run1}= 8.13 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

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INSITU SOAKAWAY TEST RESULTS

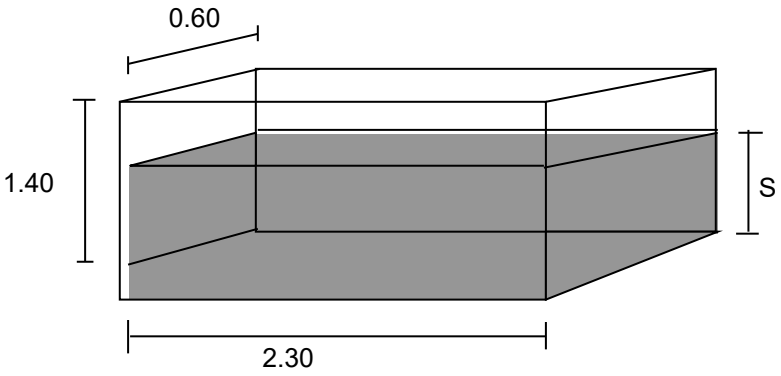
Trialpit No.: SK218

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.30	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.30	1.40	Light brown slightly sandy very clayey GRAVEL
1.40	1.40	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

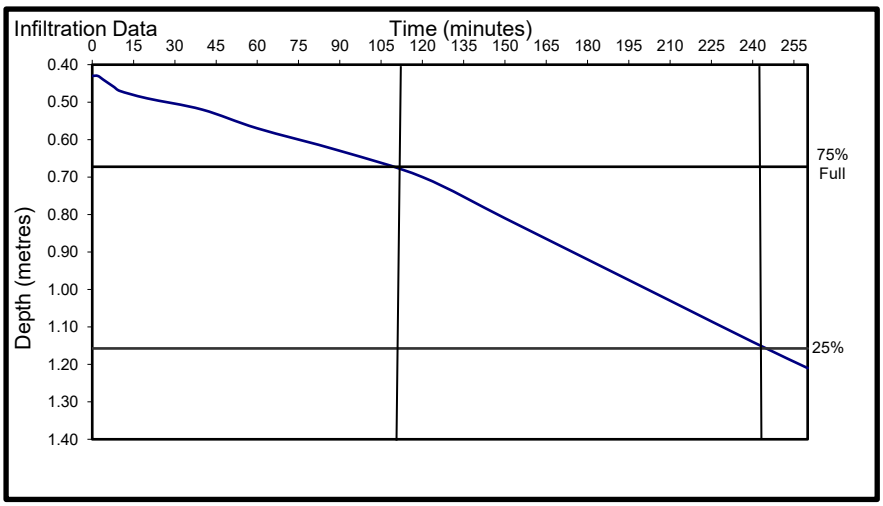


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.43 to 1.40
No Groundwater was encountered

Gives the Figures

S=	0.97	m
a_{p50}=	4.19	m^2
V_{p75-25}=	0.67	m^3

Soakaway Test Run 2 Test Date: 31/01/2024



Time (minutes)	Depth (m)
0	0.43
2	0.43
4	0.44
6	0.45
8	0.46
10	0.47
20	0.49
40	0.52
60	0.57
90	0.63
120	0.70
150	0.81
180	0.92
210	1.03
240	1.14
260	1.21

From the above graph,
t_{p25}= 110 (min) $t_{p75=}$ 245 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 8.28E-06 f_{run1}= 8.28 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

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INSITU SOAKAWAY TEST RESULTS

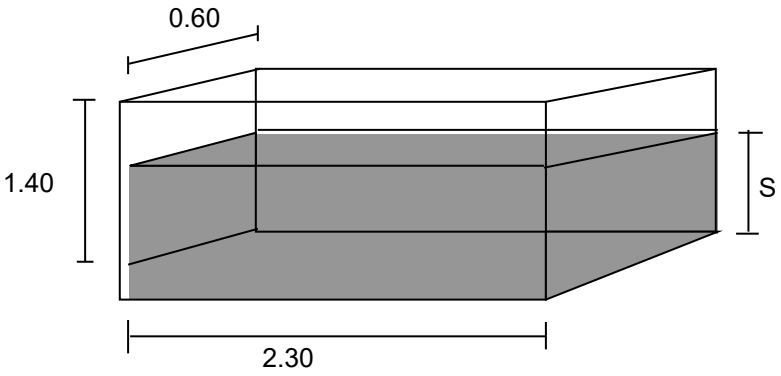
Trialpit No.: SK218

Soil Profile:

Depth (m) From:	To:	Description
0.00	0.30	Grass over brown clay with abundant roots and rootlets TOPSOIL
0.30	1.40	Light brown slightly sandy very clayey GRAVEL
1.40	1.40	LIMESTONE

Sketch plan of test zone

Not to scale
All dimensions in metres.

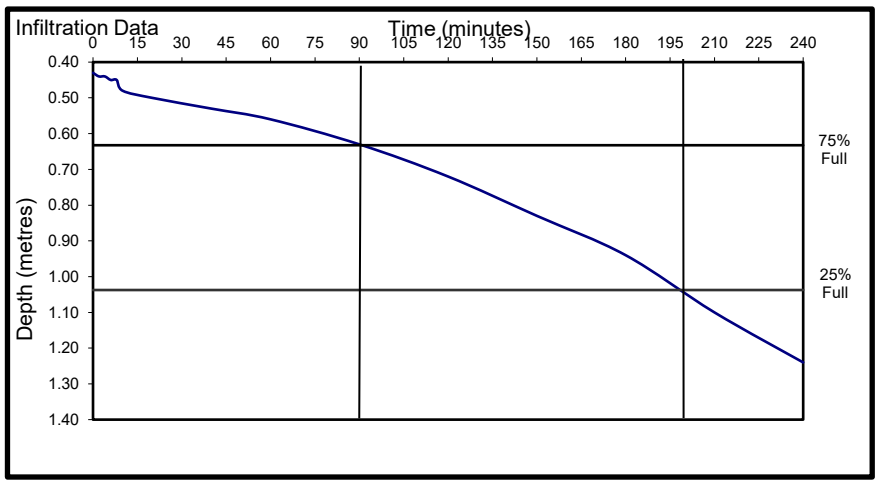


porosity (N) = 0.42
(measured in laboratory)
S= Storage depth (m)
Water level from 0.43 to 1.40
No Groundwater was encountered

Gives the Figures

S=	0.81	m
a_{p50}=	3.73	m^2
V_{p75-25}=	0.56	m^3

Soakaway Test Run 3 Test Date: 01/02/2024



Time (minutes)	Depth (m)
0	0.43
2	0.44
4	0.44
6	0.45
8	0.45
10	0.48
20	0.50
40	0.53
60	0.56
90	0.63
120	0.72
150	0.83
180	0.94
210	1.10
240	1.24

From the above graph,
t_{p25}= 90 (min) $t_{p75=}$ 197 (min)

Soil Infiltration Rate: $f = \frac{V_{p75-25} \times N}{a_{p50} \times t_{p75-25}}$ = 9.81E-06 f_{run1}= 9.81 x 10-6 m/s

Test and analysis carried out in general accordance with BRE Digest 365 : 2016

Job No.: C3296
Site: CAVAC ATC
Client: WEPCo

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