The Brownfield Consultancy
Woodstock
Memorial Road
Fenny Compton.
CV47 2XU

Your Ref:

Our Ref: BC340 L.001 / JT

Amy Atkins
Rectory Homes
Rectory House
Thame Road
Haddenham
Aylesbury
HP17 8DA

16th November 2017

Dear Amy

Land South of SOUTHSIDE, STEEPLE ASTON
Results of Soakaway Testing

The Brownfield Consultancy was commissioned by Rectory Homes to undertake trial pit soakaway testing in accordance with BRE 365 at the above site. The fieldwork was undertaken on 15th November 2017. The site is located on the southwestern edge of the village of Steeple Aston, Oxfordshire. The site covers an area of approximately 0.83hectare and is roughly rectangular in shape. Recently the site has been cleared of all vegetation and the surface is rutted and undulating. The majority of the site appears to be at a slightly lower level than the road (Southside).

To the south and northwest lie agricultural fields. To the east and northeast lie residential houses and to the west a Car Repair shop is present (Steve Ward Autos) with a former Telephone Exchange beyond.

1. FIELDWORK

Soakaway tests were undertaken within four trial pits denoted SA1 – SA4 (incl). A further 3No. trial pits denoted TP1, TP2 and TP3 were excavated to inspect ground conditions. SA1, SA3 and SA4 terminated in impenetrable bedrock at depths of 2.15m, 1.20m and 1.40m respectively.

The locations of the exploratory holes are denoted on the drawing in Appendix A. The soakaway pits were excavated to depths of between 0.90 – 2.15m bgl. The pits were carefully measured and then flooded using a mobile water bowser. The time for the water to drain was then measured.

2. GROUND CONDITIONS

Reference to the online BGS Mapping Index indicates that two different strata units outcrop below the site. The west of the site is underlain by the Chipping Norton Limestone and the East of the site is underlain by the Horseshay Sand Formation. The two units are subgroups of the 'Oolite Group'. During the fieldwork the two units could not be differentiated and thus we have categorised all recorded strata as Oolite Group.

A description of the materials encountered is set out in the following section. However, for full descriptions of the strata types encountered, the reader is referred to the exploratory hole logs presented in Appendix B.

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TOPSOIL

Grass overlying TOPSOIL was encountered in all locations with the exception of SA1 and TP3 to a maximum depth of 0.40m but was generally sparse ranging in depths from 0.10-0.20m.

MADE GROUND

Made Ground was recorded in SA1 and TP3. In SA1 the Made Ground comprised of a reworked 'brashy' material of GRAVEL & COBBLE of limestone with variable quantities of sand and clay to a depth of 1.30m. In TP3 it comprised of a black humic TOPSOIL with timber to a depth of 0.20m.

OOLITE GROUP

The Oolite Group generally comprised of an upper unit of 'brash' comprising GRAVEL & COBBLE of limestone with variable quantities of sand and silt. This in turn was underlain by a soft and firm CLAY with variable quantities of sand and silt. Abundant shell fragments were also recorded in this cohesive unit. In SA3 and SA4 the brash was absent. SA3 and SA4 encountered shelly CLAY overlying bedrock at depths of 1.20m and 1.40m respectively.

3. SOAKAWAY DRAINAGE

The tests conducted in SA3 and SA4 failed to achieve a 75% reduction in effective depth (which is a requirement under BRE 365).

Tests undertaken in SA1 and SA2 did achieve a 75% reduction in effective depth.

SA1 terminated in the shelly CLAY unit which in turn overlay bedrock and a slow rate of soakage was achieved. A rate of 8.2×10^{-6} m/s was calculated. However no retests were possible in this unit.

SA2 was terminated in the brash unit at 0.90m bgl and 2No. successful tests yielded soakaway rates of 2.4×10^{-5} and 2.2×10^{-5} m/s.

The brash unit is considered suitable for soakaway drainage. However, it is limited in its vertical extent and is seemingly absent from the western half of the site. If soakaway drainage is proposed in the brash unit then further investigations will be required to determine its vertical and lateral extent across the site. We would recommend further soakaway tests at that time also.

Variable soakage results were recorded in the shelly CLAY unit and bedrock. Further soakaway tests could be conducted in this unit in the eastern half of the site but the tests would likely run into several days.

The soakaway test result calculations are presented in Appendix C.

We trust the above is satisfactory for your purposes. Should you have any queries please do not hesitate to contact me.

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Yours sincerely

Jim Twaddle CGeol
Director

Appendix A	*Exploratory Hole Location Plan*
Appendix B	*Exploratory Hole Logs*
Appendix C	*Soakaway Test Calculations*

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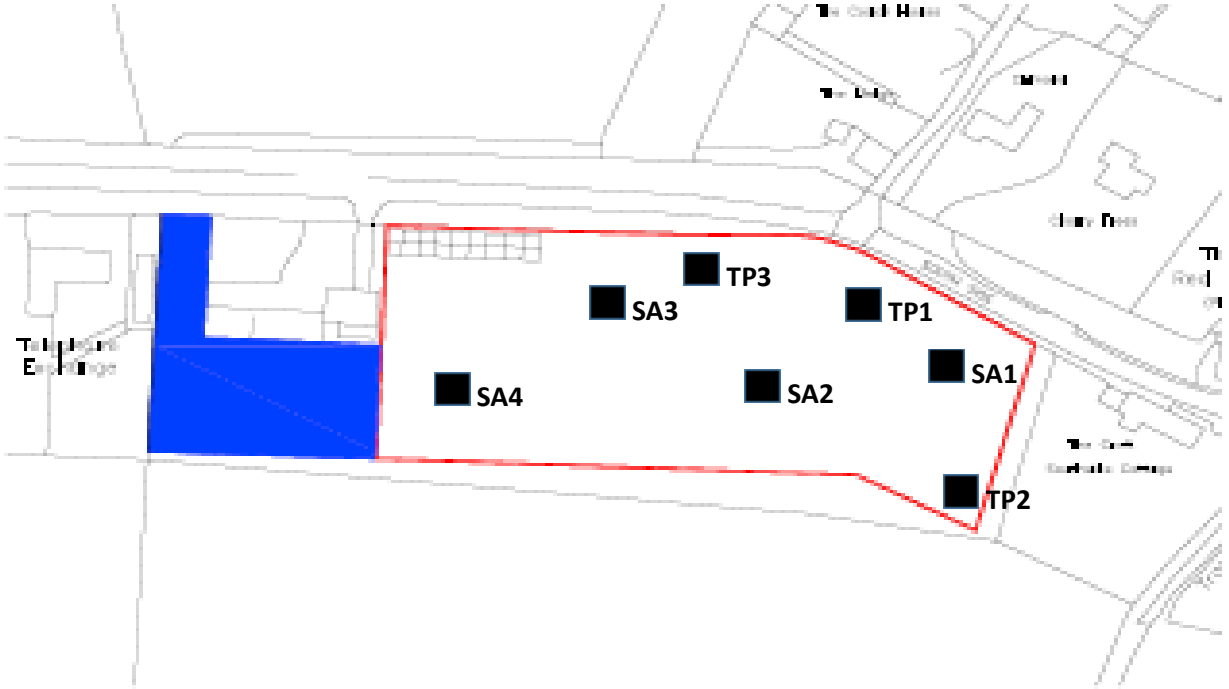
APPENDIX A

Exploratory Hole Location Plan

SOUTHSIDE, STEEPLE ASTON

EXPLOATORY HOLE LOCATION PLAN



APPENDIX B

Exploratory Hole Records

Brownfield Consultancy
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Fenny Compton, CV47 2YF
Phone: 07852881086

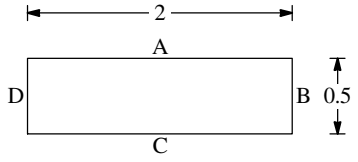
TRIAL PIT LOG

The Brownfield Consultancy

Project				TRIAL PIT No
Southside, Steeple Aston				SA1
Job No	Date	Ground Level (m)	Co-Ordinates ()	
BC340	15-11-17			
Contractor				Sheet
Brownfield Consultancy Ltd				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.20			Grass over TOPSOIL. (MADE GROUND)			
0.20-1.30			Dark brown very clayey sandy GRAVEL & COBBLE of sbangular and subrounded occasionally tabular limestone. Some minor spalling in the sidewalls initially. Possibly Made Ground / Reworked ground. (MADE GROUND)			
1.30-2.15			Firm brown occasionally grey sandy locally very sandy CLAY with abundant shell fragments. (OOLITE GROUP)			
2.15			No further progress due to encountering bedrock.			

Shoring/Support:
Stability: Sides stable.



GENERAL REMARKS

Soakaway Test undertaken. Groundwater not encountered. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Rectory Homes Ltd	Method/ Plant Used JCB 3CX	Logged By JT

BROWNFIELD TP STEEP LOGS.GPJ GINT STD AGS 3_1.GDT 16/11/17

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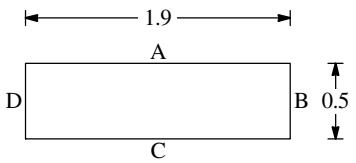
TRIAL PIT LOG

The Brownfield Consultancy

Project				TRIAL PIT No
Southside, Steeple Aston				SA2
Job No	Date	Ground Level (m)	Co-Ordinates ()	
BC340	15-11-17			
Contractor				Sheet
Brownfield Consultancy Ltd				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.20			Grass over TOPSOIL. (TOPSOIL)			
0.20-0.50			Soft brown sandy CLAY. Rare gravel of limestone. (OOLITE GROUP)			
0.50-0.90			Brown slightly clayey sandy GRAVEL & COBBLE of subangular and subrounded occasionally tabular limestone. (OOLITE GROUP)			

Shoring/Support:
Stability: Sides stable.



GENERAL REMARKS

Soakaway Test undertaken. Groundwater not encountered. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Rectory Homes Ltd	Method/ Plant Used JCB 3CX	Logged By JT

BROWNFIELD TP STEEP LOGS.GPJ GINT STD AGS 3_1.GDT 16/11/17

Brownfield Consultancy
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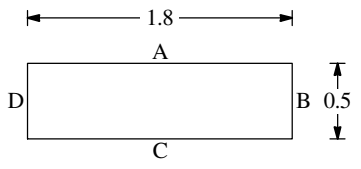
TRIAL PIT LOG

The Brownfield Consultancy

Project				TRIAL PIT No
Southside, Steeple Aston				SA3
Job No	Date	Ground Level (m)	Co-Ordinates ()	
BC340	15-11-17			
Contractor				Sheet
Brownfield Consultancy Ltd				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.15			Grass over TOPSOIL. (TOPSOIL)			
0.15-1.20			Soft becoming firm below 0.70m brown sandy locally very sandy CLAY with shell fragments, abundant in places. (OOLITE GROUP)			
1.20			No further progress due to encountering bedrock.			

Shoring/Support:
Stability: Sides stable.



GENERAL REMARKS

Soakaway Test undertaken. Groundwater not encountered. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Rectory Homes Ltd	Method/ Plant Used JCB 3CX	Logged By JT

BROWNFIELD TP STEEP LOGS.GPJ GINT STD AGS 3_1.GDT 16/11/17

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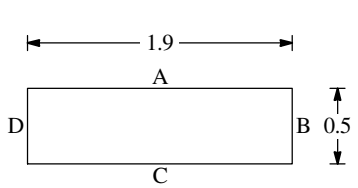
TRIAL PIT LOG

The Brownfield Consultancy

Project				TRIAL PIT No
Southside, Steeple Aston				SA4
Job No	Date	Ground Level (m)	Co-Ordinates ()	
BC340	15-11-17			
Contractor				Sheet
Brownfield Consultancy Ltd				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.10			Grass over TOPSOIL. (TOPSOIL)			
0.10-0.30			Soft brown sandy CLAY. Rare gravel of limestone. (OOLITE GROUP)			
0.30-1.40			Soft becoming firm below 0.90m brown sandy locally very sandy CLAY with shell fragments, abundant in places. (OOLITE GROUP)			
1.40			No further progress due to encountering bedrock.			

Shoring/Support:
Stability: Sides stable.



GENERAL REMARKS

Soakaway Test undertaken. Groundwater not encountered. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Rectory Homes Ltd	Method/ Plant Used JCB 3CX	Logged By JT

BROWNFIELD TP STEEP LOGS.GPJ GINT STD AGS 3_1.GDT 16/11/17

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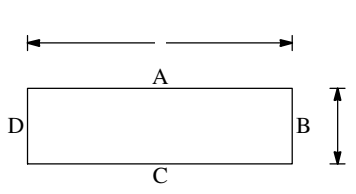
TRIAL PIT LOG

The Brownfield Consultancy

Project				TRIAL PIT No
Southside, Steeple Aston				**TP1**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
BC340	15-11-17			
Contractor				Sheet
Brownfield Consultancy Ltd				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.40			Grass over TOPSOIL. (TOPSOIL)			
0.40-2.20			Brown slightly clayey sandy GRAVEL & COBBLE of subangular and subrounded occasionally tabular limestone. Occasional boulder. (OOLITE GROUP) 1.00 Becoming very sandy below 1.00m.			
2.20-2.40			Firm brown sandy CLAY with abundant shell fragments. (OOLITE GROUP)			

Shoring/Support:
Stability: Sides stable.



GENERAL REMARKS

Groundwater not encountered. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Rectory Homes Ltd	Method/ Plant Used JCB 3CX	Logged By JT

BROWNFIELD TP STEEP LOGS.GPJ GINT STD AGS 3_1.GDT 16/11/17

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Phone: 07852881086

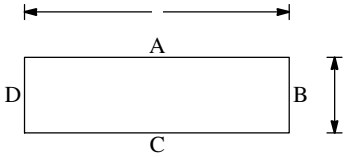
TRIAL PIT LOG

The Brownfield Consultancy

Project				TRIAL PIT No
Southside, Steeple Aston				**TP2**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
BC340	15-11-17			
Contractor				Sheet
Brownfield Consultancy Ltd				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.20			Grass over TOPSOIL. (TOPSOIL)			
0.20-1.00			Buff brown slightly clayey very sandy GRAVEL of subangular and subrounded fine to coarse limestone. (OOLITE GROUP)			
1.00-1.90			Firm brown sandy CLAY with shell fragments. Shell fragments abundant in places. (OOLITE GROUP)			
1.90			No further progress due to encountering bedrock.			

Shoring/Support:
Stability: Sides stable.



GENERAL REMARKS

Groundwater not encountered. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Rectory Homes Ltd	Method/ Plant Used JCB 3CX	Logged By JT

BROWNFIELD TP STEEP LOGS.GPJ GINT STD AGS 3_1.GDT 16/11/17

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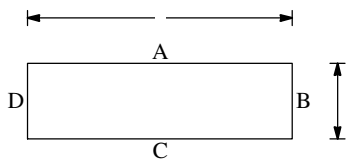
TRIAL PIT LOG

The Brownfield Consultancy

Project				TRIAL PIT No
Southside, Steeple Aston				TP3
Job No	Date	Ground Level (m)	Co-Ordinates ()	
BC340	15-11-17			
Contractor				Sheet
Brownfield Consultancy Ltd				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.20			Black humic TOPSOIL with timber. (MADE GROUND)			
0.20-0.90			Soft brown sandy CLAY. Rare gravel of limestone. (OOLITE GROUP)			
0.90-1.50			Brown slightly clayey sandy GRAVEL & COBBLE of subangular and subrounded occasionally tabular limestone. (OOLITE GROUP)			
1.50-3.00			Firm brown sandy CLAY with abundant shell fragments. (OOLITE GROUP)			

Shoring/Support:
Stability: Sides stable.



GENERAL REMARKS

Groundwater not encountered. Backfilled with arisings.

All dimensions in metres Scale 1:25	Client Rectory Homes Ltd	Method/ Plant Used JCB 3CX	Logged By JT

BROWNFIELD TP STEEP LOGS.GPJ GINT STD AGS 3_1.GDT 16/11/17

APPENDIX C

Soakaway Test Calculations

The Brownfield Consultancy	SOIL INFILTRATION TEST
Woodstock **Memorial Road** **Fenny Compton** **CV47 2XU** **Tel: 07852881086**	**Project:** Southside, Steeple Aston **Project No:** BC340

Test Location: SA1 Test No: 1 Date: 14.11.17

Water level during test

Time mins	Depth m bgl
0	1.270
9	1.360
15	1.380
26	1.410
50	1.470
65	1.520
98	1.600
130	1.680
145	1.700
196	1.800
245	1.900
287	1.980

Trial pit dimensions

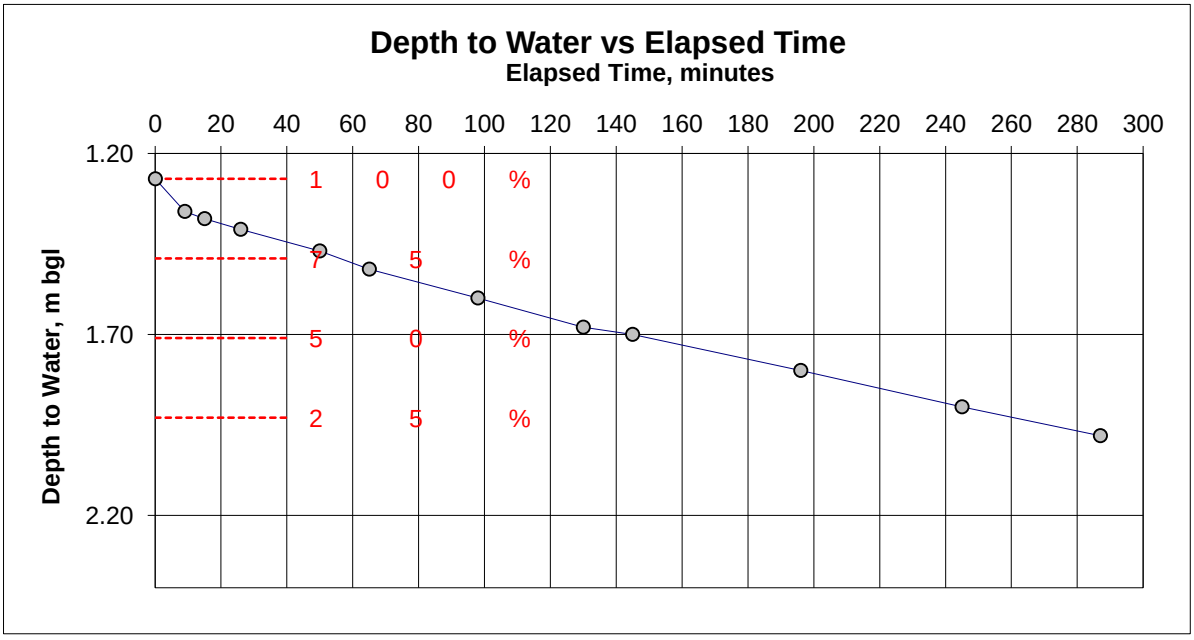
depth (m)	2.15
length (m)	2.00
width (m)	0.50

$$f = \frac{V_p}{\alpha_p \times t_p}$$

f = soil infiltration rate
Vp = volume of water from 75% to 25% effective depth
αp = Internal surface area at 50% effective depth
tp = time for the water level to fall from 75% to 25% effective depth

time at 75% effective depth (mins)	60
time at 25% effective depth (mins) (from graph)	280

Calculated Soil Infiltration Rate = 8.2E-06 m/sec



The Brownfield Consultancy	SOIL INFILTRATION TEST
Woodstock **Memorial Road** **Fenny Compton** **CV47 2XU** **Tel: 07852881086**	**Project:** Southside, Steeple Aston **Project No:** BC340

Test Location: SA2 Test No: 1 Date: 14.11.17

Water level during test

Time mins	Depth m bgl
0	0.570
8	0.680
26	0.720
42	0.760
55	0.800
70	0.840

Trial pit dimensions

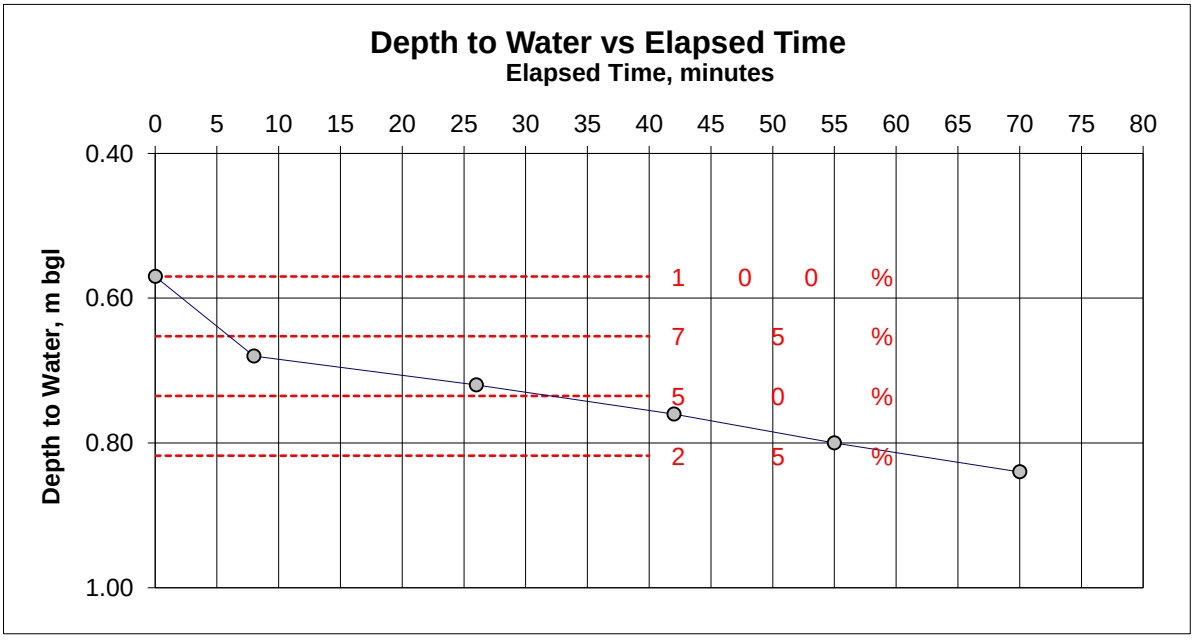
depth (m)	0.90
length (m)	1.90
width (m)	0.50

$$f = \frac{V_p}{\alpha_p \times t_p}$$

f = soil infiltration rate
Vp = volume of water from 75% to 25% effective depth
αp = Internal surface area at 50% effective depth
tp = time for the water level to fall from 75% to 25% effective depth

time at 75% effective depth (mins) 7
time at 25% effective depth (mins) 60
(from graph)

Calculated Soil Infiltration Rate = 2.4E-05 m/sec



The Brownfield Consultancy	SOIL INFILTRATION TEST
Woodstock **Memorial Road** **Fenny Compton** **CV47 2XU** **Tel: 07852881086**	**Project:** Southside, Steeple Aston **Project No:** BC340

Test Location: SA2 Test No: 2 Date: 14.11.17

Water level during test

Time mins	Depth m bgl
0	0.290
5	0.350
27	0.490
79	0.690
114	0.790
142	0.850

Trial pit dimensions

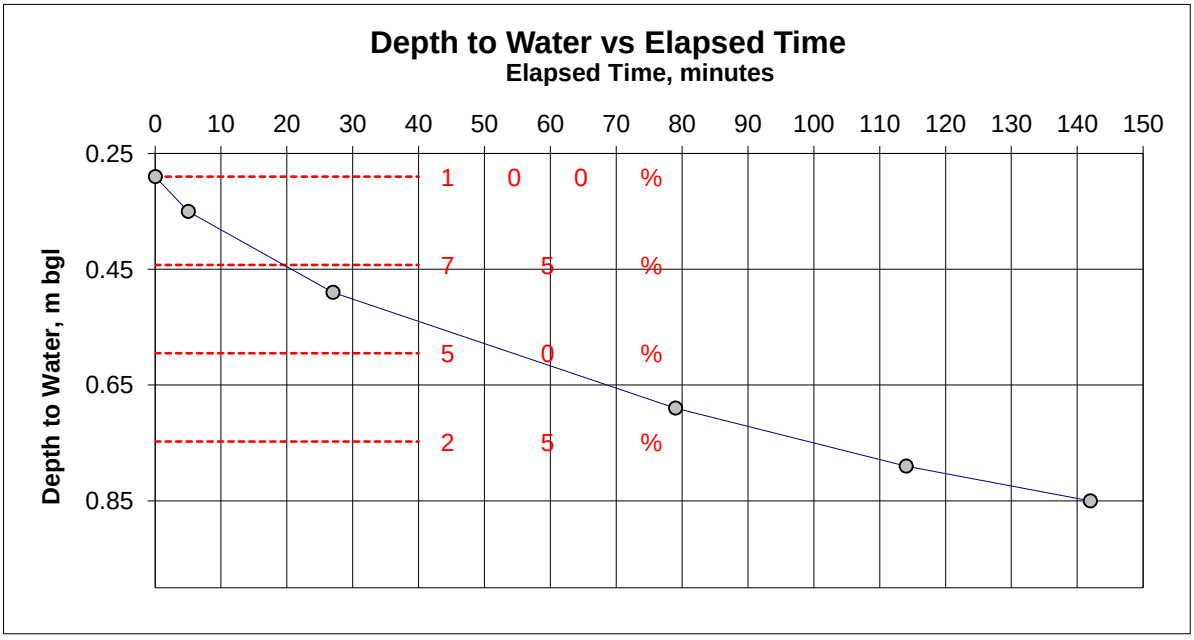
depth (m)	0.90
length (m)	1.90
width (m)	0.50

$$f = \frac{V_p}{\alpha_p \times t_p}$$

f = soil infiltration rate
Vp = volume of water from 75% to 25% effective depth
αp = Internal surface area at 50% effective depth
tp = time for the water level to fall from 75% to 25% effective depth

time at 75% effective depth (mins) 20
time at 25% effective depth (mins) 102
(from graph)

Calculated Soil Infiltration Rate = 2.2E-05 m/sec



The Brownfield Consultancy	SOIL INFILTRATION TEST
Woodstock **Memorial Road** **Fenny Compton** **CV47 2XU** **Tel: 07852881086**	**Project:** Southside, Steeple Aston **Project No:** BC340

Test Location: SA3 Test No: 1 Date: 14.11.17

Water level during test

Time mins	Depth m bgl
0	0.500
12	0.510
47	0.540
89	0.550
109	0.560
146	0.570

Trial pit dimensions

depth (m)	1.20
length (m)	1.80
width (m)	0.50

$$f = \frac{V_p}{\alpha_p \times t_p}$$

f = soil infiltration rate

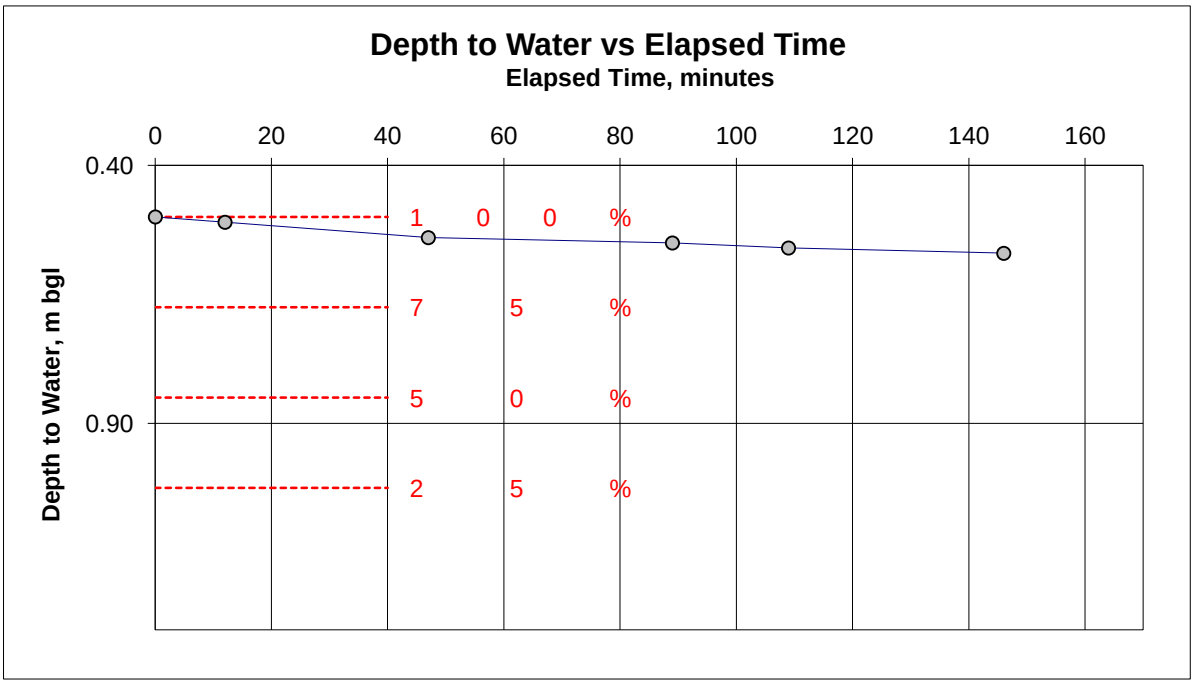
Vp = volume of water from 75% to 25% effective depth

αp = Internal surface area at 50% effective depth

tp = time for the water level to fall from 75% to 25% effective depth

time at 75% effective depth (mins)
time at 25% effective depth (mins)
(from graph)

Calculated Soil Infiltration Rate = - m/sec



The Brownfield Consultancy	**SOIL INFILTRATION TEST**
Woodstock **Memorial Road** **Fenny Compton** **CV47 2XU** **Tel: 07852881086**	**Project:** Southside, Steeple Aston **Project No:** BC340

Test Location: SA4 Test No: 1 Date: 14.11.17

Water level during test

Time mins	Depth m bgl
0	0.450
10	0.490
52	0.540
71	0.560
110	0.570
144	0.580

Trial pit dimensions

depth (m)	1.20
length (m)	1.80
width (m)	0.50

$$f = \frac{V_p}{\alpha_p \times t_p}$$

f = soil infiltration rate

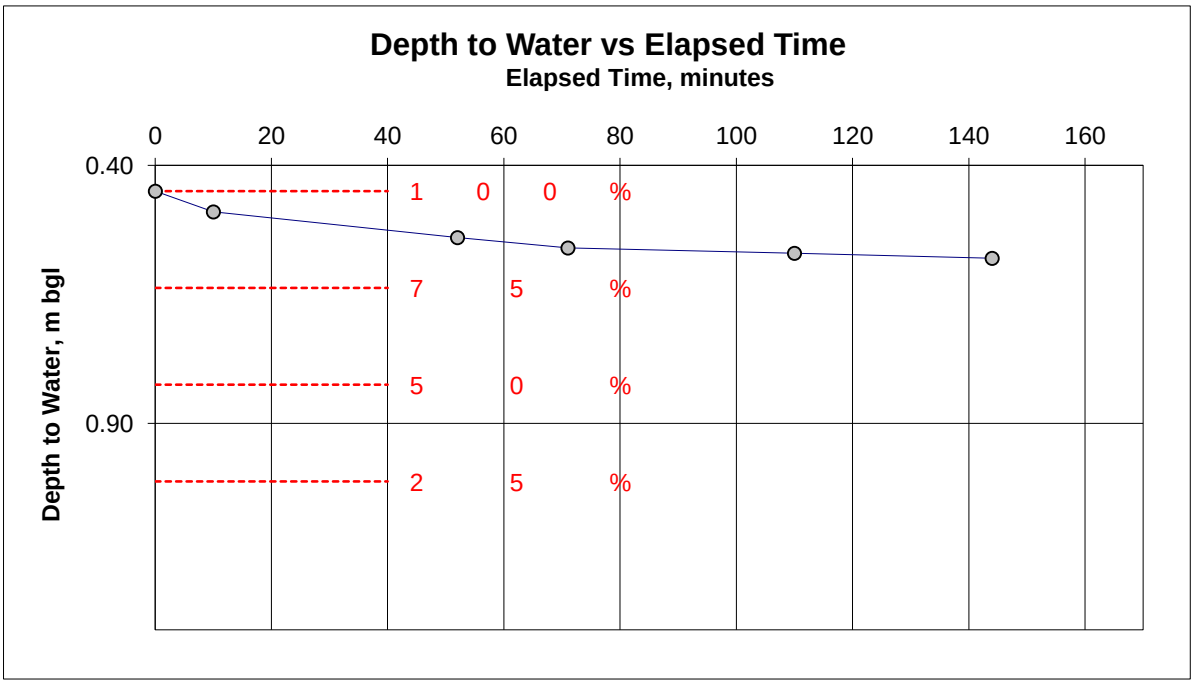
Vp = volume of water from 75% to 25% effective depth

αp = Internal surface area at 50% effective depth

tp = time for the water level to fall from 75% to 25% effective depth

time at 75% effective depth (mins)
time at 25% effective depth (mins)
(from graph)

Calculated Soil Infiltration Rate = - m/sec



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