Eastwood&Partners
CONSULTING ENGINEERS

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REPORT ON INFILTRATION TESTS

AT

WHITELANDS FARM
BICESTER

FOR

TAYLOR WIMPEY OXFORDSHIRE

32938-003R   **FEBRUARY 2011**

Eastwood&Partners
CONSULTING ENGINEERS

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Job No.   :   32938

Report Status   :   FINAL

Document Date   :   07 February 2011

Approved   :

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CONTENTS

APPENDICES

Appendix 1 - *'Exploratory Hole Location Plan'*, drawing 32938/001, Revision A

Appendix 2 - Soakway Test Data

1.0   INTRODUCTION

This report documents the findings of infiltration tests completed within land parcels KM1a and KIM1b at Whitelands Farm, Bicester. It has been prepared by Eastwood & Partners (Consulting Engineers) Ltd, for, and on the instructions of, Taylor Wimpey Oxfordshire.

2.0   SITE VISIT

We visited site on 26 January 2011 and completed fourteen infiltration tests, referenced ST1 to ST9, ST9A and ST10 to ST13. The approximate locations of these are shown on our *'Exploratory Hole Location Plan'*, drawing 32938/001, Revision A, in Appendix 1. The tests were undertaken at up to 1.0 m below ground level (bgl).

3.0 RESULTS

A copy of the results is provided in Appendix 2 and the infiltration rates recorded are summarised in the table below

Table 3.0 Summary of Results

Test	Depth (m bgl)	Material	BR365 Infiltration Rate (m/sec x 10^{-06})	Average Infiltration Rate (m/sec x 10^{-06})
ST1	0.56 to 1.00	GRAVEL	NA[*1]	NA[*1]
ST2	0.535 to 0.70	Clayey gravelly SAND over LIMESTONE	9.9	10
ST3	0.7 to 1.0	GRAVEL in sand matrix over LIMESTONE	NA[*1]	NA[*1]
ST4	0.61 to 0.75	SAND and GRAVEL	67	77
ST5	0.57 to 0.8	Clayey gravelly SAND over LIMESTONE	NA[*1]	NA[*1]
ST6	0.46 to 0.71	Sandy gravelly CLAY	NA[*2]	17
ST7	0.405 to 0.51	Gravelly SAND	11	15
ST8	0.47 to 0.635	Gravelly SAND	30	32
ST9	0.525 to 0.65	GRAVEL	Drained into something	
ST9A	0.55 to 0.65	GRAVEL	NA[*2]	2.6
ST10	0.555 to 0.75	Clayey gravelly SAND	140	100
ST11	0.51 to 0.615	SAND and GRAVEL	12	14
ST12	0.54 to 0.66	GRAVEL	NA[*2]	54
ST13	0.54 to 0.72	GRAVEL	NA[*2]	14

[*1] *The water level rose over the duration of the test and therefore infiltration rates are not applicable.*

[*2] *The water depth was not recorded below 25% of the effective depth.*

These infiltration rates are in accordance with the sorts of rates which would be expected for these types of material.

Groundwater was encountered as a slight seepage at the base of pits ST1, ST3 and ST5, which were dug to 1.0 m, 1.0 m and 0.8 m bgl, respectively. After approximately 30 minutes the groundwater was recorded as standing at 0.72 m, 0.865 m and 0.71 bgl, respectively. The water level rose over the duration of these tests. It was also encountered at 0.71 m bgl in ST6. In ST5,

which was dug to 0.75 m, there was less than 5 mm of water in the base of the pit after approximately 10 minutes. The test, however indicates the water table to be a depth of the order of 0.69 m bgl. In summary, therefore, the groundwater table appears to have be at a depth of approximately 0.7 m bgl.

It is considered that a sustainable drainage system of porous paving will be appropriate with infiltration within the upper 0.5 m bgl. An infiltration rate of 10×10^{-06} m/sec is considered a reasonable worst case figure.

Appendix 1

'Exploratory Hole Location Plan', drawing 32938/001, Revision A

Information within this drawing is not necessarily produced to scale.
Always use figured dimensions and co-ordinates — if in doubt, ask.

NOTES

1. This drawing is based on Cole Easdon Consultant's drawing no.
3050/501/01 rev D Proposed Drainage Strategy.

Key

⬕ Approximate location of Soakaway
Test 26-01-11.

A	First Issue.			
REV	DESCRIPTION	SIG	CHK	DATE

TAYLOR WIMPEY OXFORDSHIRE

WHITELANDS FARM, BICESTER

EXPLORATORY HOLE
LOCATION PLAN

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SCALE WHEN PLOTTED AT A1	DRAWING STATUS
1:500	INFORMATION

DRAWN	CHECKED	DATE	DRAWING NUMBER	REV
TG	AS	28-01-11	32938/001	A

Appendix 2

Soakway Test Data

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PROJECT:	Kingsmere, Bicester		Job No. 32938	Date 27/01/2011
SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates		Prepared AS	Checked CAT

Test No.   ST1

Test Pit Dimensions
Length = **1800** mm   Plan area   =   **1.08** m²
Width   =   **600** mm
Depth   = **1000** mm (Total depth)

Approximate time to discharge water into the hole: **20** Seconds
Depth to water after completion of pumping: **560** mm

Time (min)	Depth (mm)
0	560
1	560
2	565
3	565
4	565
5	565
10	565
20	555
30	560
40	550
70	535
134	520
156	510
180	510
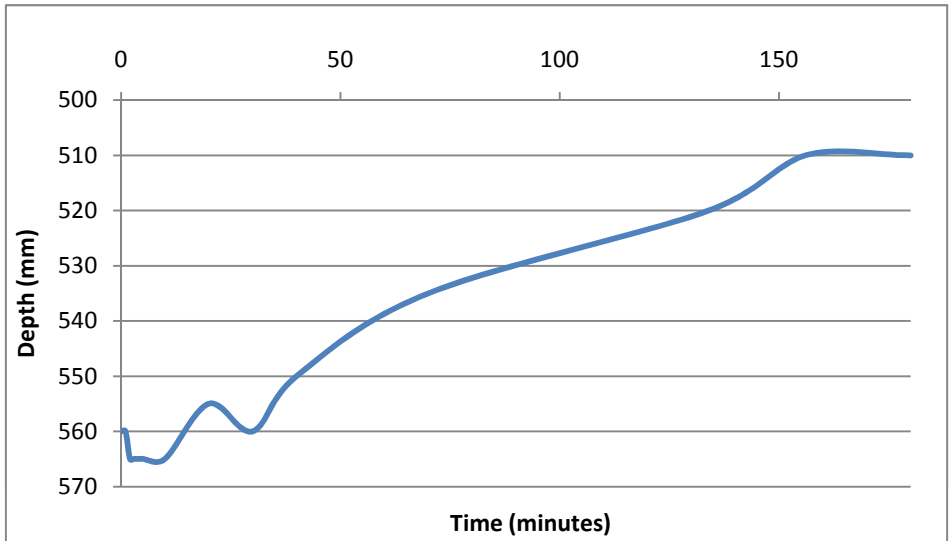
Test Pit Log

Depth (m)	Description
0.0 to 0.2	TOPSOIL: Dark brown clayey SAND with limestone gravel
0.2 to 0.6	Brown clayey gravelly SAND
0.6 to 1.0	Grey limestone GRAVEL
1.0	Slight groundwater seepage in base. Standing at 0.72 m after approximately 30 minutes

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Test No.   ST1

Soil Infiltration Rate in Accordance with BR365

$$f = \frac{V_{p75-25}}{a_{p50} x t_{p75-25}}$$

Where:

V_{p75-25} is the effective storage volume of water in the trial pit between 75% and 25% effective depth;

a_{p50} is the internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} is the time for the water level to fall from 75% to 25% effective depth

Initial parameters
Depth to water = **560** mm   Average water depth: **465** mm
Start time   =   **0** min

Change in water depth: **50** mm

Final parameters
Depth to water = **510** mm   Time interval: **134** min
End time   = **134** min

Effective Storage Volume of Water in the Trial Pit   =   **0.4752** m³
75% Effective Depth   =   **600** mm from ground
25% Effective Depth   =   **680** mm from ground
Time at 75% Effective Depth   =   **NA** minutes   Water level rose over the
Time at 25% Effective Depth   =   **NA** minutes   duration of the test

V_{p75-25} =   **NA** m³

a_{p50} =   **NA** m²

t_{p75-25} =   **NA** sec

f =   **NA m/sec**

Average Soakaway Rate =   **NA** m³/sec
Average soakaway area =   **NA** m² (sides + base)

BR365 Soil Infiltration Rate =   **NA m/sec**   The water level rose and therefore infiltration rates
Average Infiltration Rate =   **NA m/sec**   are not applicable.

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**Test No.   ST2**

Test Pit Dimensions
Length =   **1800** mm   Plan area   =   **1.08** m²
Width =   **600** mm
Depth =   **700** mm (Total depth)

Approximate time to discharge water into the hole: **20** Seconds
Depth to water after completion of pumping: **535** mm

Time (min)	Depth (mm)
0	535
1	540
2	545
3	545
4	550
5	560
10	560
20	560
30	575
61	605
124	650
147	670
169	680
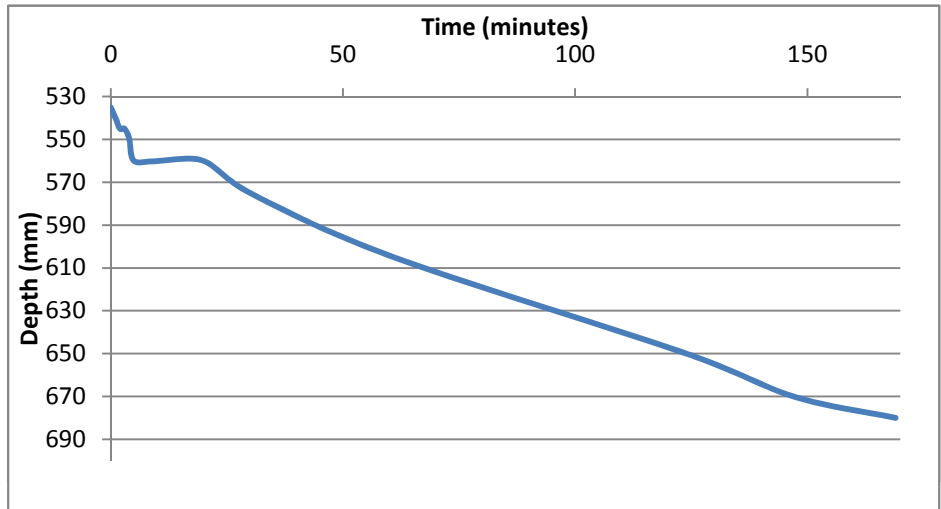
Test Pit Log

Depth (m)	Description
0.0 to 0.3	TOPSOIL
0.3 to 0.65	Brown clayey/gravelly SAND. Gravel is fine to coarse sub angular limestone
0.65 to 0.70	Grey LIMESTONE

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Test No.   ST2

Soil Infiltration Rate in Accordance with BR365

$$f = \frac{V_{p75-25}}{a_{p50} x t_{p75-25}}$$

Where:

V_{p75-25} is the effective storage volume of water in the trial pit between 75% and 25% effective depth;

a_{p50} is the internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} is the time for the water level to fall from 75% to 25% effective depth

Initial parameters
Depth to water = **535** mm   Average water depth: **92.5** mm
Start time   =   **0** min

         Change in water depth: **145** mm

Final parameters
Depth to water = **680** mm   Time interval: **169** min
End time   =   **169** min

Effective Storage Volume of Water in the Trial Pit   =   **0.1782** m³
75% Effective Depth   =   **576** mm
25% Effective Depth   =   **659** mm
Time at 75% Effective Depth   =   **32** minutes
Time at 25% Effective Depth   =   **134** minutes

V_{p75-25} =   **0.09** m³

a_{p50} =   **1.48** m²

t_{p75-25} =   **6120** sec

f =   **9.9E-06 m/sec**

Average Soakaway Rate = **1.5E-05** m³/sec
Average soakaway area = **1.52** m² (sides + base)

BR365 Soil Infiltration Rate = **9.9E-06 m/sec**
 Average Infiltration Rate = **1.0E-05 m/sec**

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Test No.   ST3

Test Pit Dimensions

Length =   **1800** mm   Plan area   =   **1.08** m²
Width   =   **600** mm
Depth   =   **1000** mm (Total depth)

Approximate time to discharge water into the hole: **20** Seconds
Depth to water after completion of pumping: **700** mm

Time (min)	Depth (mm)
0	700
1	700
2	705
3	705
4	710
5	710
10	710
20	710
56	700
117	695
140	690
163	690
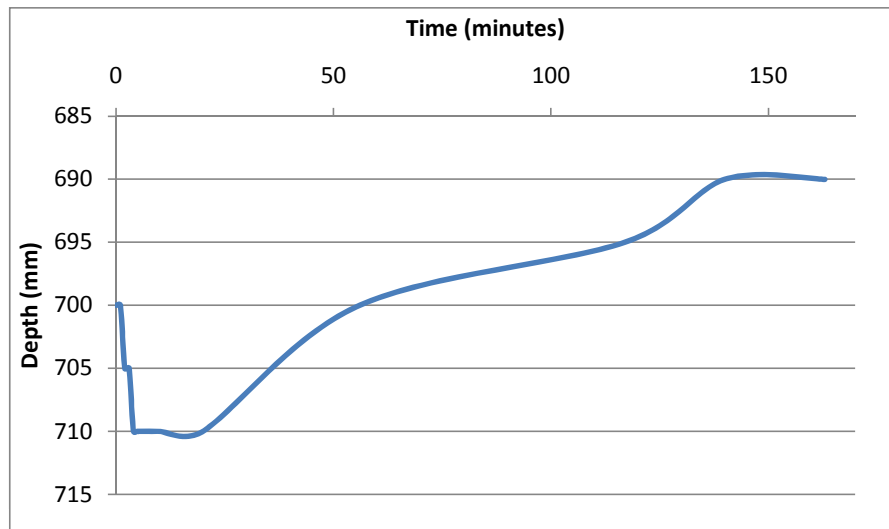
Test Pit Log

Depth (m)	Description
0.0 to 0.3	TOPSOIL
0.3 to 0.5	Pale brown slightly clayey gravelly SAND
0.5 to 0.95	Grey/brown limestone GRAVEL in sand matrix
0.95 to 1.0	Light grey LIMESTONE

Slight groundwater seepage in base of pit. Standing at 0.865 m after approximately 30 minutes

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Test No.   **ST3**

Soil Infiltration Rate in Accordance with BR365

$$f = \frac{V_{p75-25}}{a_{p50} \, x \, t_{p75-25}}$$

Where:

V_{p75-25} is the effective storage volume of water in the trial pit between 75% and 25% effective depth;

a_{p50} is the internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} is the time for the water level to fall from 75% to 25% effective depth

Initial parameters

Depth to water = **700** mm   Average water depth: mm

Start time = **0** min

                                 Change in water depth: **-10** mm

Final parameters

Depth to water = **690** mm   Time interval: **163** min

End time = **163** min

Effective Storage Volume of Water in the Trial Pit	=	**NA** m³
75% Effective Depth	=	**NA** mm
25% Effective Depth	=	**NA** mm
Time at 75% Effective Depth	=	**NA** minutes
Time at 25% Effective Depth	=	**NA** minutes

V_{p75-25} =   **NA** m³

a_{p50} =   **NA** m²

t_{p75-25} =   **NA** sec

f =   **NA m/sec**

Average Soakaway Rate =   **N/A** m³/sec

Average soakaway area =   **N/A** m² (sides + base)

BR365 Soil Infiltration Rate =   **NA m/sec**   The water level rose and therefore infiltration

Average Infiltration Rate =   **N/A m/sec**   rates are not applicable.

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**Test No.   ST4**

Test Pit Dimensions

Length =   **1800** mm   Plan area   =   **1.08** m²
Width   =   **600** mm
Depth   =   **750** mm (Total depth)

Approximate time to discharge water into the hole: **20** Seconds
Depth to water after completion of pumping: **610** mm

Time (min)	Depth (mm)
0	610
1	615
2	620
3	620
4	625
5	630
10	635
15	640
20	645
30	650
40	660
50	660
80	680
140	710
166	720
188	745
214	745
232	750
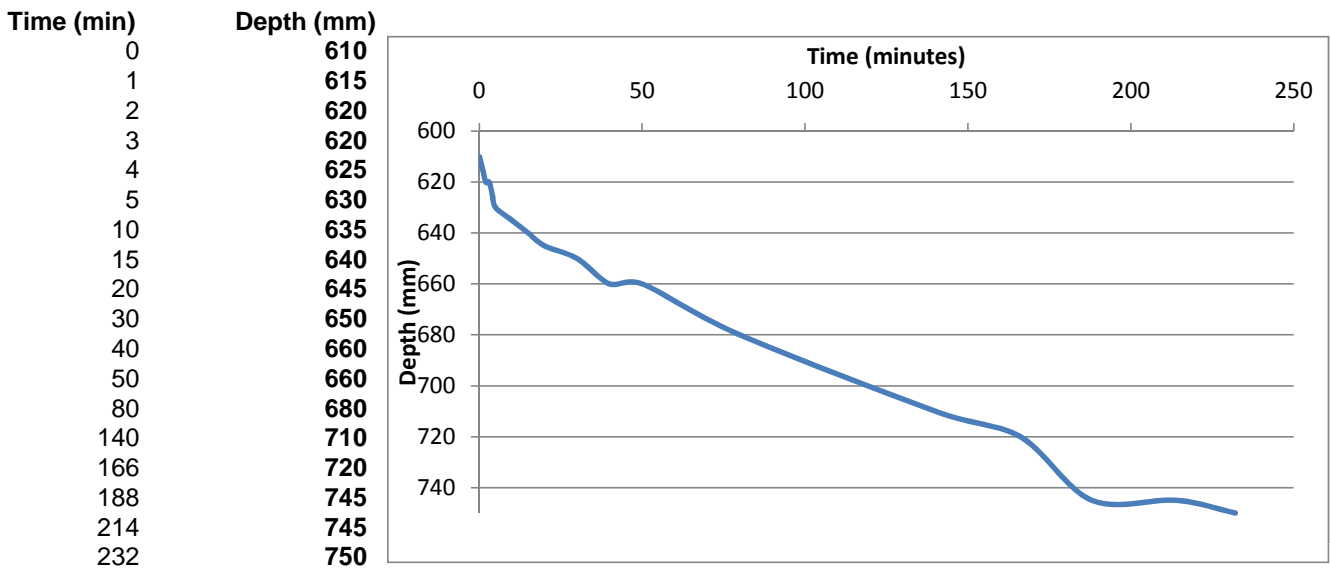
Test Pit Log

Depth (m)	Description
0.0 to 0.25	TOPSOIL
0.25 to 0.75	Grey brown SAND and GRAVEL

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Test No.   ST4

Soil Infiltration Rate in Accordance with BR365

$$f = \frac{V_{p75-25}}{a_{p50} \, x \, t_{p75-25}}$$

Where:

V_{p75-25} is the effective storage volume of water in the trial pit between 75% and 25% effective depth;

a_{p50} is the internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} is the time for the water level to fall from 75% to 25% effective depth

Initial parameters
Depth to water =   **610** mm   Average water depth: **70** mm
Start time   =   **0** min

Change in water depth: **140** mm
Final parameters
Depth to water =   **750** mm   Time interval: **232** min
End time   =   **232** min

Effective Storage Volume of Water in the Trial Pit   =   **0.1512** m³
75% Effective Depth   =   **645** mm from ground
25% Effective Depth   =   **715** mm from ground
Time at 75% Effective Depth   =   **20** minutes
Time at 25% Effective Depth   =   **153** minutes

V_{p75-25} =   **0.08** m³

a_{p50} =   **1.42** m²

t_{p75-25} =   **7980** sec

f =   **6.7E-06 m/sec**

Average Soakaway Rate =   **1.1E-05** m³/sec
Average soakaway area =   **1.42** m² (sides + base)

BR365 Soil Infiltration Rate =   **6.7E-06 m/sec**
 Average Infiltration Rate =   **7.7E-06 m/sec**

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Test No.   ST5

Test Pit Dimensions

Length =   **1800** mm   Plan area   =   **1.08** m²
Width   =   **600** mm
Depth   =   **800** mm (Total depth)

Approximate time to discharge water into the hole: **20** Seconds
Depth to water after completion of pumping: **570** mm

Time (min)	Depth (mm)
0	710
1	570
2	575
6	565
8	565
11	560
15	565
25	555
56	555
77	530
101	520

Test Pit Log

Depth (m)	Description
0.0 to 0.25	TOPSOIL
0.25 to 0.8	Brown clayey gravelly SAND
0.8	Limestone GRAVEL. Slight groundwater seepage at base. Standing at 0.71 m after approximately 30 minutes.

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SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates	Prepared AS	Checked CAT

Test No.   ST5

Soil Infiltration Rate in Accordance with BR365

$$f = \frac{V_{p75-25}}{a_{p50} x t_{p75-25}}$$

Where:

V_{p75-25} is the effective storage volume of water in the trial pit between 75% and 25% effective depth;

a_{p50} is the internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} is the time for the water level to fall from 75% to 25% effective depth

Initial parameters
Depth to water =   **700** mm   Average water depth: **NA** mm
Start time   =   **0** min

     Change in water depth: **-180** mm

Final parameters
Depth to water =   **520** mm   Time interval: **101** min
End time   =   **101** min

Effective Storage Volume of Water in the Trial Pit   =   **NA** m³
75% Effective Depth   =   **NA** mm from ground
25% Effective Depth   =   **NA** mm from ground
Time at 75% Effective Depth   =   **NA** minutes
Time at 25% Effective Depth   =   **NA** minutes

V_{p75-25} =   **NA** m³

a_{p50} =   **NA** m²

t_{p75-25} =   **NA** sec

f =   **NA m/sec**

Average Soakaway Rate =   **N/A** m³/sec
Average soakaway area =   **N/A** m² (sides + base)

BR365 Soil Infiltration Rate =   **NA m/sec**   The water level rose and therefore infiltration rates are
Average Infiltration Rate =   **N/A m/sec**   not applicable.

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SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates		Prepared AS	Checked CAT

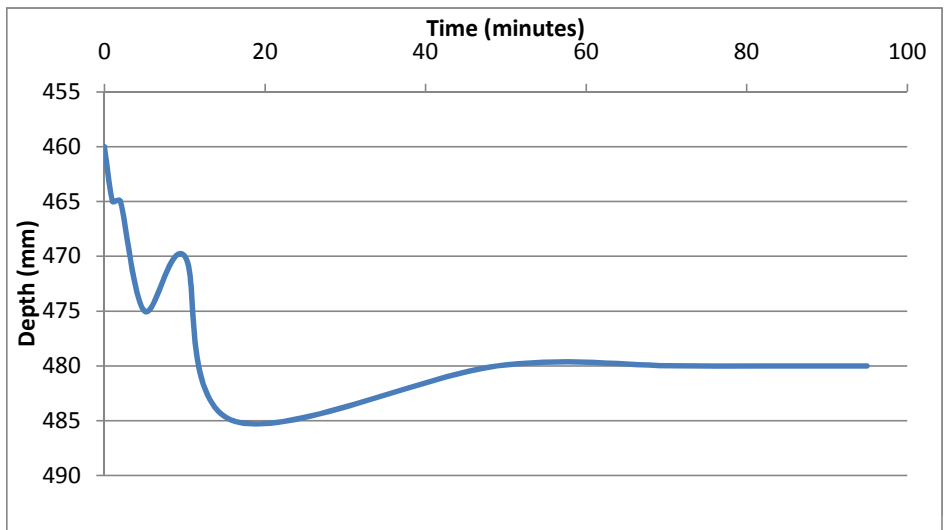**Test No.   ST6**

Test Pit Dimensions

Length =   **1800** mm   Plan area   =   **1.08** m²
Width   =   **600** mm
Depth   =   **710** mm (Total depth)

Approximate time to discharge water into the hole: **20** Seconds
Depth to water after completion of pumping: **460** mm

Time (min)	Depth (mm)
0	460
1	465
2	465
5	475
10	470
16	485
49	480
72	480
95	480

Test Pit Log

Depth (m)	Description
0.0 to 0.25	TOPSOIL
0.25 to 0.71	Pale brown sandy gravelly CLAY
0.71	Limestone GRAVEL. Groundwater

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Test No.   ST6

Soil Infiltration Rate in Accordance with BR365

$$f = \frac{V_{p75-25}}{a_{p50} \, x \, t_{p75-25}}$$

Where:

V_{p75-25} is the effective storage volume of water in the trial pit between 75% and 25% effective depth;

a_{p50} is the internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} is the time for the water level to fall from 75% to 25% effective depth

Initial parameters
Depth to water =   **460** mm   Average water depth: **240** mm
Start time   =   **0** min

Change in water depth: **20** mm

Final parameters
Depth to water =   **480** mm   Time interval: **95** min
End time   =   **95** min

Effective Storage Volume of Water in the Trial Pit   =   **NA** m³
75% Effective Depth   =   **NA** mm
25% Effective Depth   =   **NA** mm
Time at 75% Effective Depth   =   **NA** minutes
Time at 25% Effective Depth   =   **NA** minutes

V_{p75-25} =   **NA** m³

a_{p50} =   **NA** m²

t_{p75-25} =   **NA** sec

f =   **NA m/sec**

Average Soakaway Rate =   **3.8E-06** m³/sec
Average soakaway area =   **2.23** m² (sides + base)

BR365 Soil Infiltration Rate =   **NA m/sec**   Did not record below 75% effective depth
 Average Infiltration Rate =   **1.7E-06 m/sec**

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SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates		Prepared AS	Checked CAT

Test No.   ST7

Test Pit Dimensions

Length = **1800** mm   Plan area   =   **1.08** m²
Width = **600** mm
Depth = **510** mm (Total depth)

Approximate time to discharge water into the hole: **20** Seconds
Depth to water after completion of pumping: **405** mm

Time (min)	Depth (mm)
0	405
1	410
6	425
12	435
44	465
69	475
91	505
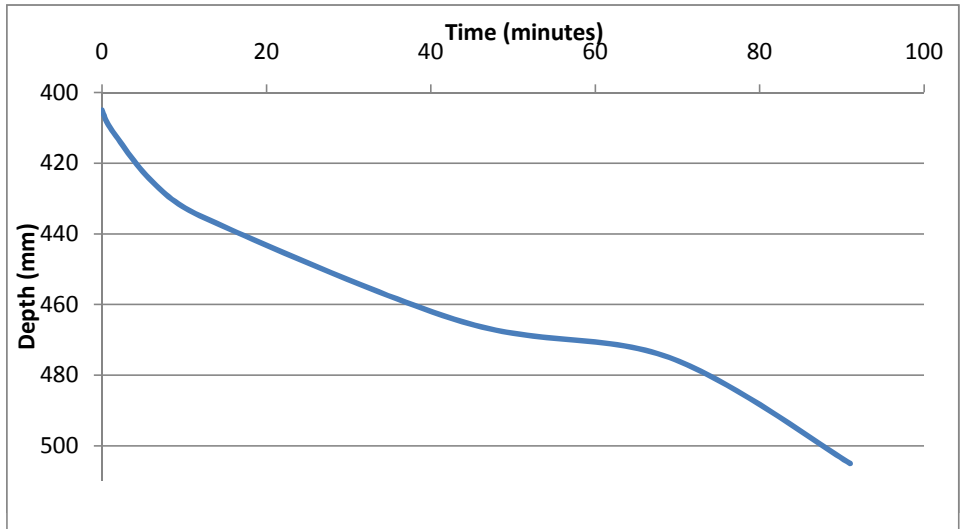
Test Pit Log

Depth (m)	Description
0.0 to 0.2	TOPSOIL
0.2 to 0.51	Gravelly fine to coarse SAND

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SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates		Prepared AS	Checked CAT

Test No.   ST7

Soil Infiltration Rate in Accordance with BR365

$$f = \frac{V_{p75-25}}{a_{p50}\,x\,t_{p75-25}}$$

Where:

V_{p75-25} is the effective storage volume of water in the trial pit between 75% and 25% effective depth;

a_{p50} is the internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} is the time for the water level to fall from 75% to 25% effective depth

Initial parameters
Depth to water =   **405** mm   Average water depth: **55** mm
Start time   =   **0** min

Change in water depth: **100** mm

Final parameters
Depth to water =   **505** mm   Time interval: **91** min
End time   =   **91** min

Effective Storage Volume of Water in the Trial Pit   =   **0.1134** m³
75% Effective Depth   =   **431** mm
25% Effective Depth   =   **484** mm
Time at 75% Effective Depth   =   **10** minutes
Time at 25% Effective Depth   =   **76** minutes

V_{p75-25} =   **0.06** m³

a_{p50} =   **1.33** m²

t_{p75-25} =   **3960** sec

f =   **1.1E-05 m/sec**

Average Soakaway Rate =   **2.0E-05** m³/sec
Average soakaway area =   **1.34** m² (sides + base)

BR365 Soil Infiltration Rate = **1.1E-05 m/sec**
 Average Infiltration Rate = **1.5E-05 m/sec**

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SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates		Prepared AS	Checked CAT

**Test No.   ST8**

Test Pit Dimensions

Length =   **1800** mm   Plan area   =   **1.08** m²
Width   =   **600** mm
Depth   =   **635** mm (Total depth)

Approximate time to discharge water into the hole: **20** Seconds
Depth to water after completion of pumping: **470** mm

Time (min)	Depth (mm)
0	470
1	480
3	485
40	580
63	635

Test Pit Log

Depth (m)	Description
0.0 to 0.3	TOPSOIL
0.3 to 0.4	Brown clayey SAND
0.4 to 0.635	Pale brown gravelly SAND

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SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates		Prepared AS	Checked CAT

Test No.   ST8

Soil Infiltration Rate in Accordance with BR365

$$f = \frac{V_{p75-25}}{a_{p50}\,x\,t_{p75-25}}$$

Where:

V_{p75-25} is the effective storage volume of water in the trial pit between 75% and 25% effective depth;

a_{p50} is the internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} is the time for the water level to fall from 75% to 25% effective depth

Initial parameters
Depth to water = **470** mm   Average water depth: **82.5** mm
Start time   =   **0** min

Change in water depth: **165** mm
Final parameters
Depth to water = **635** mm   Time interval: **63** min
End time   =   **63** min

Effective Storage Volume of Water in the Trial Pit   =   **0.1782** m³
75% Effective Depth   =   **511** mm
25% Effective Depth   =   **594** mm
Time at 75% Effective Depth   =   **13** minutes
Time at 25% Effective Depth   =   **46** minutes

V_{p75-25} =   **0.09** m³

a_{p50} =   **1.48** m²

t_{p75-25} =   **1980** sec

f =   **3.0E-05 m/sec**

Average Soakaway Rate = **4.7E-05** m³/sec
Average soakaway area = **1.48** m² (sides + base)

BR365 Soil Infiltration Rate =   **3.0E-05 m/sec**
 Average Infiltration Rate =   **3.2E-05 m/sec**

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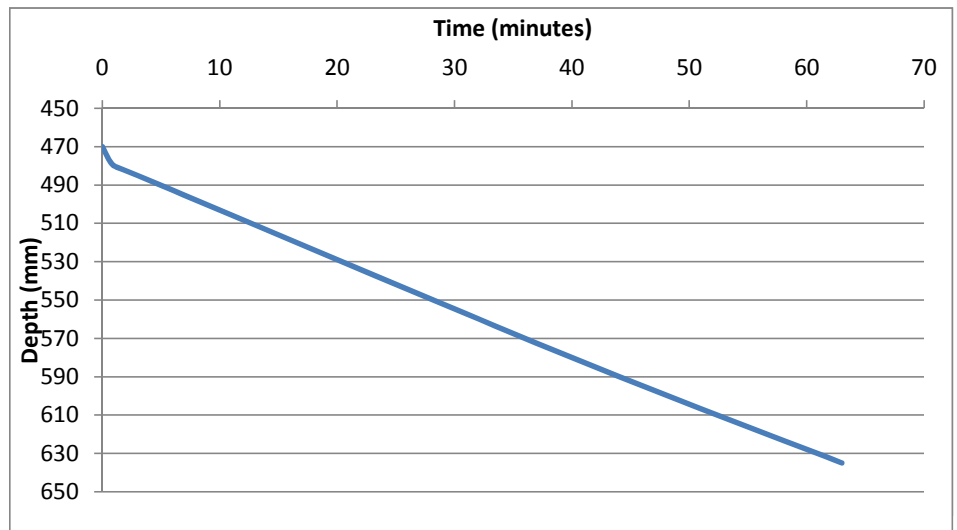| PROJECT:	Kingsmere, Bicester		Job No. 32938	Date 27/01/2011
SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates		Prepared AS	Checked CAT

Test No.   ST9

Test Pit Dimensions

Length = **1800** mm   Plan area   =   **1.08** m²
Width   =   **600** mm
Depth   =   **650** mm (Total depth)

Approximate time to discharge water into the hole: **20** Seconds
Depth to water after completion of pumping: **550** mm

Time (min)	Depth (mm)
0	525
1	590
5	650

Engineer reported that the water seemed to be draining into something

Test Pit Log

Depth (m)	Description
0.0 to 0.2	TOPSOIL
0.2 to 0.35	SAND and GRAVEL
0.3 to 0.5	GRAVEL - Moist in base

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SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates	Prepared AS	Checked CAT

Test No.   ST9

Soil Infiltration Rate in Accordance with BR365

$$f = \frac{V_{p75-25}}{a_{p50} x t_{p75-25}}$$

Where:

V_{p75-25} is the effective storage volume of water in the trial pit between 75% and 25% effective depth;

a_{p50} is the internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} is the time for the water level to fall from 75% to 25% effective depth

Initial parameters
Depth to water =   **550** mm   Average water depth: mm
Start time   =   **0** min

                                              Change in water depth: **100** mm
Final parameters
Depth to water =   **650** mm   Time interval: **5** min
End time   =   **5** min

Effective Storage Volume of Water in the Trial Pit   =   **NA** m³
75% Effective Depth   =   **NA** mm from ground
25% Effective Depth   =   **NA** mm from ground
Time at 75% Effective Depth   =   **NA** minutes
Time at 25% Effective Depth   =   **NA** minutes

V_{p75-25} =   **NA** m³

a_{p50} =   **NA** m²

t_{p75-25} =   **NA** sec

f =   **NA m/sec**

Average Soakaway Rate =   **NA** m³/sec
Average soakaway area =   **NA** m² (sides + base)

BR365 Soil Infiltration Rate =   **NA m/sec**   Engineer reported that the water seemed to be draining
 Average Infiltration Rate =   **NA m/sec**   into something

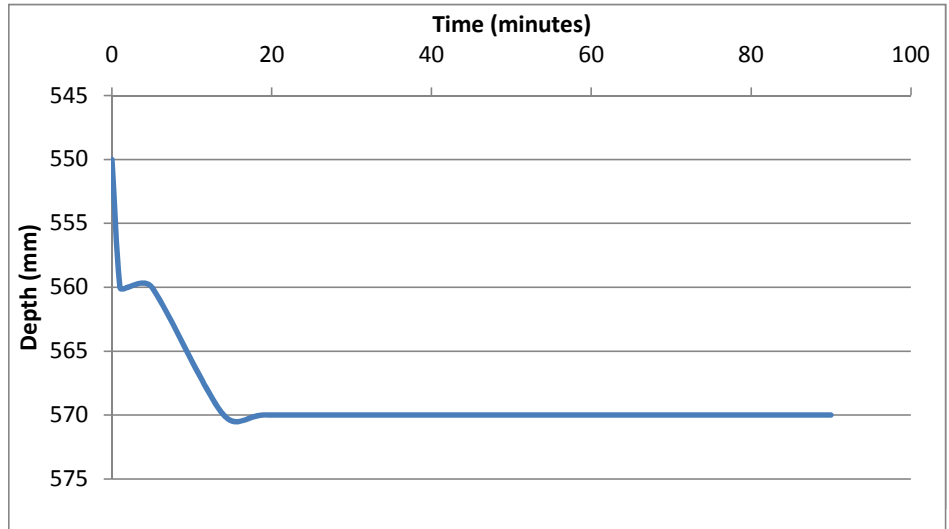| PROJECT:	Kingsmere, Bicester	Job No. 32938	Date 27/01/2011
SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates	Prepared AS	Checked CAT

Test No.   ST9A

Test Pit Dimensions

Length =   **1800** mm   Plan area   =   **1.08** m²
Width   =   **600** mm
Depth   =   **650** mm (Total depth)

Approximate time to discharge water into the hole: **20** Seconds
Depth to water after completion of pumping: **550** mm

Time (min)	Depth (mm)
0	550
1	560
2	560
5	560
14	570
19	570
31	570
45	570
70	570
90	570

Test Pit Log

Depth (m)	Description
0.0 to 0.2	TOPSOIL
0.2 to 0.35	SAND and GRAVEL
0.3 to 0.65	GRAVEL - Moist in base

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SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates		Prepared AS	Checked CAT

Test No.   ST9A

Soil Infiltration Rate in Accordance with BR365

$$f = \frac{V_{p75-25}}{a_{p50} x t_{p75-25}}$$

Where:

V_{p75-25} is the effective storage volume of water in the trial pit between 75% and 25% effective depth;

a_{p50} is the internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} is the time for the water level to fall from 75% to 25% effective depth

Initial parameters
Depth to water =   **550** mm   Average water depth: **90** mm
Start time   =   **0** min

                                                           Change in water depth: **20** mm
Final parameters
Depth to water =   **570** mm   Time interval: **90** min
End time   =   **90** min

Effective Storage Volume of Water in the Trial Pit   =   **0.108** m³
75% Effective Depth   =   **575** mm from ground
25% Effective Depth   =   **625** mm from ground
Time at 75% Effective Depth   =   **NA** minutes   Did not record below 75%
Time at 25% Effective Depth   =   **NA** minutes   effective depth

V_{p75-25} =   **NA** m³

a_{p50} =   **NA** m²

t_{p75-25} =   **NA** sec

f =   **NA m/sec**

Average Soakaway Rate =   **4.0E-06** m³/sec
Average soakaway area =   **1.51** m² (sides + base)

   BR365 Soil Infiltration Rate =   **NA m/sec**
    Average Infiltration Rate =   **2.6E-06 m/sec**

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| PROJECT:	Kingsmere, Bicester	Job No. 32938	Date 27/01/2011
SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates	Prepared AS	Checked CAT

Test No.   ST10

Test Pit Dimensions

Length = **1800** mm   Plan area   =   **1.08** m²
Width = **600** mm
Depth = **750** mm (Total depth)

Approximate time to discharge water into the hole: **20** Seconds
Depth to water after completion of pumping: **555** mm

Time (min)	Depth (mm)
0	**555**
2	**580**
11	**680**
17	**690**
29	**690**
43	**690**
68	**690**
88	**690**
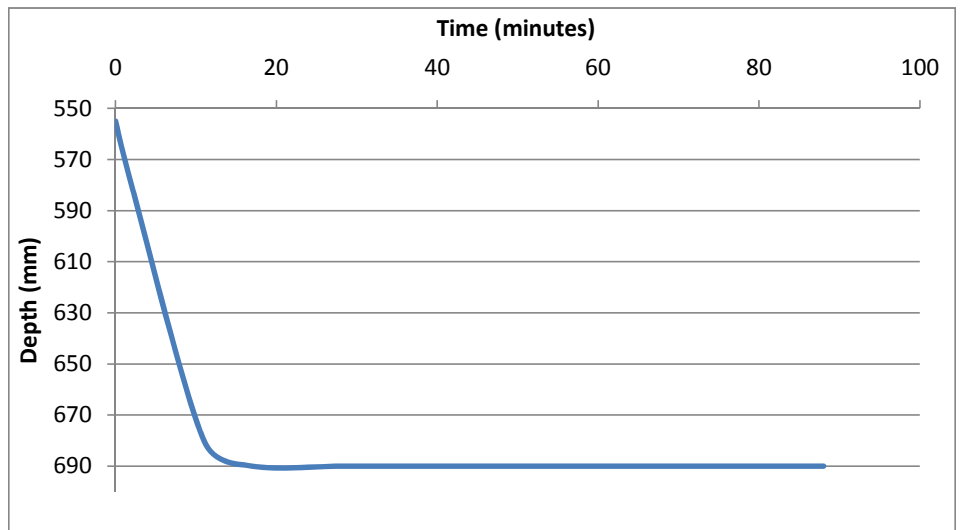
Water table expected to be around 690 mm below ground level.

Test Pit Log

Depth (m)	Description
0.0 to 0.3	TOPSOIL
0.3 to 0.75	Clayey gravelly SAND. Less than 5 mm of water in the base after approximately 10 minutes

PROJECT:	Kingsmere, Bicester	Job No. 32938	Date 27/01/2011
SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates	Prepared AS	Checked CAT

Test No.   ST10

Soil Infiltration Rate in Accordance with BR365

$$f = \frac{V_{p75-25}}{a_{p50} x t_{p75-25}}$$

Where:

V_{p75-25} is the effective storage volume of water in the trial pit between 75% and 25% effective depth;

a_{p50} is the internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} is the time for the water level to fall from 75% to 25% effective depth

Initial parameters
Depth to water =   **555** mm   Average water depth: **67.5** mm
Start time   =   **0** min

                                                 Change in water depth: **135** mm
Final parameters
Depth to water =   **690** mm   Time interval: **17** min
End time   =   **17** min (water table expected to be around 690 mm below ground level)

Effective Storage Volume of Water in the Trial Pit   =   **0.1458** m³
75% Effective Depth   =   **589** mm
25% Effective Depth   =   **656** mm
Time at 75% Effective Depth   =   **3** minutes
Time at 25% Effective Depth   =   **9** minutes

V_{p75-25} =   **0.07** m³

a_{p50} =   **1.40** m²

t_{p75-25} =   **360** sec

f =   **1.4E-04 m/sec**

Average Soakaway Rate =   **1.4E-04** m³/sec
Average soakaway area =   **1.40** m² (sides + base)

BR365 Soil Infiltration Rate =   **1.4E-04 m/sec**
 Average Infiltration Rate =   **1.0E-04 m/sec**

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PROJECT:	Kingsmere, Bicester		Job No. 32938	Date 27/01/2011
SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates		Prepared AS	Checked CAT

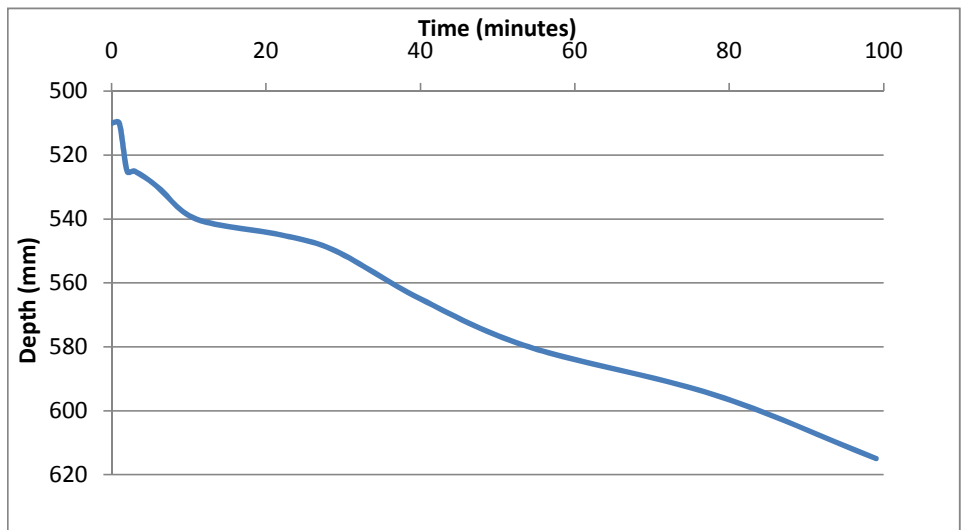**Test No.   ST11**

Test Pit Dimensions

Length = **1800** mm   Plan area   =   **1.08** m²
Width =   **600** mm
Depth =   **615** mm (Total depth)

Approximate time to discharge water into the hole: **20** Seconds
Depth to water after completion of pumping: **510** mm

Time (min)	Depth (mm)
0	**510**
1	**510**
2	**525**
3	**525**
6	**530**
11	**540**
22	**545**
29	**550**
40	**565**
54	**580**
78	**595**
99	**615**

Test Pit Log

Depth (m)	Description
0.0 to 0.25	TOPSOIL
0.25 to 0.615	SAND and GRAVEL

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SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates	Prepared AS	Checked CAT

Test No.   ST11

Soil Infiltration Rate in Accordance with BR365

$$f = \frac{V_{p75-25}}{a_{p50} x t_{p75-25}}$$

Where:

V_{p75-25} is the effective storage volume of water in the trial pit between 75% and 25% effective depth;

a_{p50} is the internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} is the time for the water level to fall from 75% to 25% effective depth

Initial parameters
Depth to water =   **510** mm   Average water depth: **52.5** mm
Start time   =   **0** min

                                 Change in water depth: **105** mm
Final parameters
Depth to water =   **615** mm   Time interval: **99** min
End time   =   **99** min

Effective Storage Volume of Water in the Trial Pit   =   **0.1134** m³
75% Effective Depth   =   **536** mm from ground
25% Effective Depth   =   **589** mm from ground
Time at 75% Effective Depth   =   **9** minutes
Time at 25% Effective Depth   =   **68** minutes

V_{p75-25} =   **0.06** m³

a_{p50} =   **1.33** m²

t_{p75-25} =   **3540** sec

f =   **1.2E-05 m/sec**

Average Soakaway Rate   =   **1.9E-05** m³/sec
Average soakaway area   =   **1.33** m² (sides + base)

BR365 Soil Infiltration Rate =   **1.2E-05 m/sec**
Average Infiltration Rate =   **1.4E-05 m/sec**

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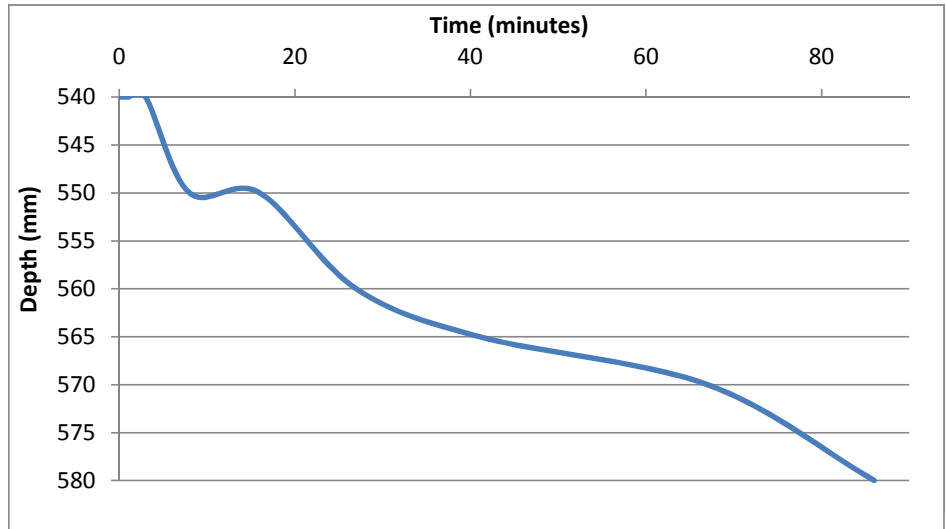| PROJECT:	Kingsmere, Bicester		Job No. 32938	Date 27/01/2011
SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates		Prepared AS	Checked CAT

Test No.   ST12

Test Pit Dimensions
Length =   **1800** mm   Plan area   =   **1.08** m²
Width   =   **600** mm
Depth   =   **660** mm (Total depth)

Approximate time to discharge water into the hole: **20** Seconds
Depth to water after completion of pumping: **540** mm

Time (min)	Depth (mm)
0	540
1	540
3	540
8	550
16	550
27	560
41	565
67	570
86	580

Test Pit Log

Depth (m)	Description
0.0 to 0.25	TOPSOIL
0.25 to 0.35	SAND & GRAVEL
0.35 to base	GRAVEL

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SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates		Prepared AS	Checked CAT

Test No.   ST12

Soil Infiltration Rate in Accordance with BR365

$$f = \frac{V_{p75-25}}{a_{p50} x t_{p75-25}}$$

Where:

V_{p75-25} is the effective storage volume of water in the trial pit between 75% and 25% effective depth;

a_{p50} is the internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} is the time for the water level to fall from 75% to 25% effective depth

Initial parameters
Depth to water =   **540** mm   Average water depth: **100** mm
Start time   =   **0** min

                            Change in water depth: **40** mm

Final parameters
Depth to water =   **580** mm   Time interval: **86** min
End time   =   **86** min

Effective Storage Volume of Water in the Trial Pit   =   **0.1296** m³
75% Effective Depth   =   **570** mm from ground
25% Effective Depth   =   **630** mm from ground
Time at 75% Effective Depth   =   **NA** minutes   Did not record below 25%
Time at 25% Effective Depth   =   **NA** minutes   effective depth

V_{p75-25} =   **NA** m³

a_{p50} =   **NA** m²

t_{p75-25} =   **NA** sec

f =   **NA m/sec**

Average Soakaway Rate =   **8.4E-06** m³/sec
Average soakaway area =   **1.56** m² (sides + base)

BR365 Soil Infiltration Rate =   **NA m/sec**   Did not record below 25% effective depth
**Average Infiltration Rate =**   **5.4E-06 m/sec**

PROJECT:	Kingsmere, Bicester		Job No. 32938	Date 27/01/2011
SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates		Prepared AS	Checked CAT

Test No.   ST13

Test Pit Dimensions

Length =   **1800** mm   Plan area   =   **1.08** m²
Width   =   **600** mm
Depth   =   **720** mm (Total depth)

Approximate time to discharge water into the hole: **20** Seconds
Depth to water after completion of pumping: **540** mm

Time (min)	Depth (mm)
0	**540**
1	**550**
6	**560**
13	**580**
24	**580**
38	**610**
64	**630**
82	**650**
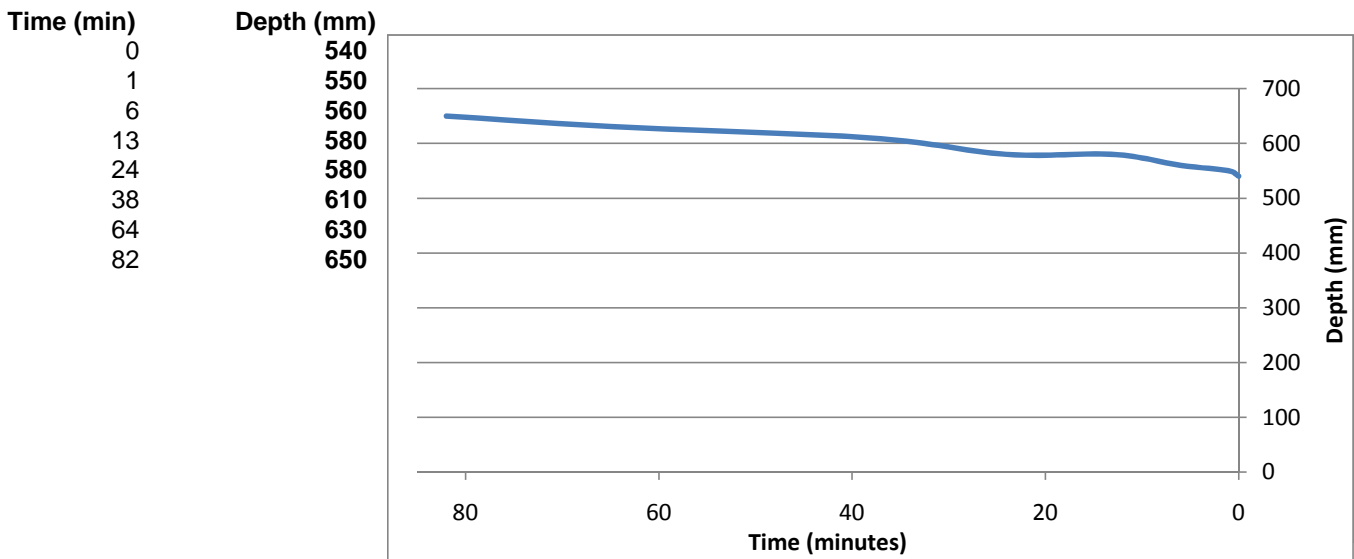
Test Pit Log

Depth (m)	Description
0.0 to 0.25	TOPSOIL
0.25 to 0.4	SAND & GRAVEL
0.4 to 0.72	Limestone GRAVEL

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SUBJECT:	Soakage Test Results and Calculation of Infiltration Rates		Prepared AS	Checked CAT

Test No.   ST13

Soil Infiltration Rate in Accordance with BR365

$$f = \frac{V_{p75-25}}{a_{p50} x t_{p75-25}}$$

Where:

V_{p75-25} is the effective storage volume of water in the trial pit between 75% and 25% effective depth;

a_{p50} is the internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} is the time for the water level to fall from 75% to 25% effective depth

Initial parameters
Depth to water =   **540** mm   Average water depth: **125** mm
Start time   =   **0** min

      Change in water depth: **110** mm

Final parameters
Depth to water =   **650** mm   Time interval: **82** min
End time   =   **82** min

Effective Storage Volume of Water in the Trial Pit	=	**0.1944** m³
75% Effective Depth	=	**585** mm from ground level
25% Effective Depth	=	**675** mm from ground level
Time at 75% Effective Depth	=	**15** minutes
Time at 25% Effective Depth	=	**NA** minutes Did not record below 25%

V_{p75-25} =   **NA** m³

a_{p50} =   **NA** m²

t_{p75-25} =   **NA** sec

f =   **NA m/sec**

Average Soakaway Rate =   **2.4E-05** m³/sec
Average soakaway area =   **1.68** m² (sides + base)

BR365 Soil Infiltration Rate =   **NA m/sec**   Did not record below 25% effective depth
  Average Infiltration Rate =   **1.4E-05 m/sec**