



REPORT ON INFILTRATION TESTS

AT

WHITELANDS FARM BICESTER

FOR

TAYLOR WIMPEY OXFORDSHIRE

32938-003R

FEBRUARY 2011





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FOR

TAYLOR WIMPEY OXFORDSHIRE

Job No. : 32938 **Report Status FINAL** : 07 February 2011 Document Date : Approved :

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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 inte | o 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 | 0.5 <mark>4</mark> 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 x 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 |
| | This drawing is based on Cole Easdon Consultant's drawing no. 3050/501/01 rev D Proposed Drainage Strategy. |
| | |
| | Key |
| | Test 26-01-11. |
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| | |
| 216 | |
| 5 | |
| 11.02 1 <u>70.87</u> 10.02 1 <u>70.87</u> 10.02 176.00 176.00 | |
| 0.06 | |
| 26.64 | |
| 76:50 PED DEED 1 | |
| 236 Ex SWS MH | |
| S726 0176.258 | |
| +76.36 Ex FWS MH F86 L278.220 L273.310 | |
| +76.15 | |
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| +76.38 | |
| +76.21 | |
| | |
| +76 - | |
| | |
| +75.96 | A First Issue. |
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| ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | TAYLOR WIMPEY OXFORDSHIRE |
| +75.92 | |
| 32 | WHITELANDS FARM BICESTER |
| +76.0B | |
| +75.90 | |
| | EXPLORATORY HOLE |
| +75.92 | LOCATION PLAN |
| +75 | |
| - ^ J. 66 | Eastwood & Partners |
| | Pearson Court |
| +75.74 | Fleet, Hampshire GU51 3DL |
| +75.59 | Tel01252 360 580mail@eastwood-fleet.co.ukFax01252 360 581www.eastwoodandpartners.com |
| | SCALE WHEN PLOTTED AT A1 DRAWING STATUS |
| +75.94 | 1:500 INFORMATION |
| +75.70 | DRAWN CHECKED DATE DRAWING NUMBER REV |
| | IG AS 28-01-11 32938/001 A |



Appendix 2

Soakway Test Data

| (Consulting Er | ngineers) Lta | | | | | | | | |
|---|--|------------------|--------------------|-----------|----|-----------|---------------|-----|---|
| PROJECT: | Kingsmere, Bicester | Job No. 32938 | Date 27/01/2011 | | | | | | |
| SUBJECT: | Soakage Test Resul | Prepared AS | Checked CAT | | | | | | |
| Test No. | ST1 | | | | | | | | |
| Test Pit Din Length = Width = Depth = | nensions 1800 mm 600 mm 1000 mm (Total de | epth) | | Plan area | = | 1.08 | m² | | |
| Approximate Depth to wa | e time to discharge wa ter after completion of | ter int pump | to the ho bing: | le: | | 20 560 | Seconds mm | | |
| Time (min) | Depth (mm) | | | | | | | | |
| 1 | 560 | | 0 | | 50 | | 100 | 150 |) |
| 2 | 565 565 | 5 | 500 + | | 1 | | | | |
| 4 5 | 565 565 | 5 | 510 | | | | | | |
| 10 | 565 555 | 5 | 520 | | | | | | |
| 30 | 560 560 | [uu] | 530 | | | | | | |
| 40 70 | 535 | epth | 540 - | | | | | | |
| 134 156 | 520 510 | | 550 - | | | | | | |
| 180 | 510 | 5 | 560 | \sim | | | | | |
| | | 5 | 570 | | | | | | |
| | | | | | | Tim | e (minutes) | | |

Test Pit Log

| Depth (m) Description |
|-----------------------|
|-----------------------|

0.0 to 0.2 TOPSOIL: Dark brown clayey SAND with limestone grave

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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| | | D'a a a (| | | | |
|----------------------------|-----------------------------------|---------------------------------------|---|--|--------------------|--------------------|
| PROJECT | Kingsmere | , BICester | | | Job No. 32938 | Date 27/01/2011 |
| SUBJECT: | Soakage Te | est Results and | I Calculation of Infiltra | tion Rates | Prepared AS | Checked CAT |
| Toot No | ет1 | | | | | |
| Test No. | 311 | | | | | |
| Soil Infiltrat | tion Rate in | Accordance w | ith BR365 | | | |
| C | V_{p75-25} | | | | | |
| J =a | $x_{1,75,7}$ | | | | | |
| | 50 p75-2 | .5 | <i></i> | | | |
| where: | V_{p7} | betwee | effective storage volume en 75% and 25% effective | e of water in the trial pit ve depth; | | |
| | a_p | ⁵⁰ is the in effectiv | nternal surface area of t re depth and including t | he trial pit up to 50% he base area | | |
| | <i>t</i> _{p7} | ₅₋₂₅ is the ti effectiv | ime for the water level t re depth | o fall from 75% to 25% | | |
| Initial param | neters | | | | | |
| Depth to wa | iter = | 560 mm | Average water de | epth: 46 | 5 mm | |
| | - | • | Change in water | depth: 5 | 0 mm | |
| Final param Depth to wa | <u>eters</u> iter = | 510 mm | Time interval: | 13 | 4 min | |
| End time | = | 134 min | | | | |
| Effective Sto | orage Volum | e of Water in the | e Trial Pit | = 0.4752 m ³ | | |
| 75% Effectiv | ve Depth | | : | = 600 mm from - 680 mm from | ground | |
| Time at 75% | 6 Effective De | epth | : | = NA minutes | Water level ro | se over the |
| Time at 25% | 6 Effective De | epth | | = NA minutes | duration of the | e test |
| V_{p75-25} | = | NA m³ | | | | |
| a_{p50} | = | NA m² | | | | |
| t _{p75-25} | = | NA sec | | | | |
| f | = | NA m/sec | | | | |
| Average So | akaway Rate | ; = | NA m ³ /sec | | | |
| Average soa | akaway area | = | NA m ² (sides + base |) | | |
| BR365 So Average | il Infiltration e Infiltration | Rate = | <mark>NA m/sec</mark> NA m/sec | The water level rose a are not applicable. | and therefore infi | Itration rates |

Sheet 1 of 2

| (Consulting Er | ngineers) Ltd | | | | | | |
|---|---|--|-----------------|--------------|--|------------------|--------------------|
| PROJECT: | Kingsmere, Bicest | er | | | | Job No. 32938 | Date 27/01/2011 |
| SUBJECT: | Soakage Test Resu | Its and Ca | lculation of Ir | nfiltration | n Rates | Prepared AS | Checked CAT |
| Test No. | ST2 | | | | | | |
| Test Pit Dim Length = Width = Depth = Approximate Depth to wat Time (min) 0 1 2 3 4 5 10 20 30 61 124 147 169 | nensions 1800 mm 600 mm 700 mm (Total de e time to discharge w ter after completion of Depth (mm) 535 540 545 545 545 550 560 560 560 560 560 560 56 | epth) ater into the of pumping: 0 530 550 570 (mu) 41 630 650 670 670 | Plan area | = 50 , | 1.08 m ² 20 Seconds 535 mm Time (minutes) 100 | | |
| Test Pit Log Depth (m) | Description | 690 + | | | | | |
| 0.3 to 0.65 | Brown clave | /gravelly S/ | AND Gravelie | fine to o | oarse sub angula | r limestone | |
| 0.5 10 0.05 | Diowii ciayey | yiaveliy Sr | Slavel IS | | oaise sub aliyula | | |

0.65 to 0.70 Grey LIMESTONE

| 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. ST2 | | |
| Soil Infiltration Rate in Accordance with BR365 | | |
| V_{p75-25} | | |
| $J = \frac{1}{a_{p50}xt_{p75-25}}$ | | |
| 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 | | |
| $\begin{array}{rcl} \text{Depth to water} = & 535 \text{ mm} & \text{Average water depth:} & 92.8 \\ \text{Start time} & = & 0 \text{ min} \end{array}$ | o mm | |
| Change in water depth: 145 | 5 mm | |
| Depth to water =680 mmTime interval:169End time=169 min |) min | |
| Effective Storage Volume of Water in the Trial Pit = 0.1782 m ³ | | |
| 75% Effective Depth = 576 mm 25% Effective Depth = 659 mm | | |
| Time at 75% Effective Depth = 32 minut | es | |
| Time at 25% Effective Depth = 134 minut | es | |
| V_{p75-25} = 0.09 m ³ | | |
| a_{p50} = 1.48 m ² | | |
| t_{p75-25} = 6120 sec | | |
| f = 9.9E-06 m/sec | | |
| Average Soakaway Rate= 1.5E-05 m³/secAverage 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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|---|--|------------------------------------|----------------------|---------------|----------------|--------------------|
| PROJECT: | Kingsmere, Biceste | r | | | Job No. | Date 27/01/2011 |
| SUBJECT: | Soakage Test Resu | ts and Calculation of Ir | filtration Rates | | Prepared AS | Checked CAT |
| Test No. | ST3 | | | | | |
| Test Pit Dir Length = Width = Depth = | nensions 1800 mm 600 mm 1000 mm (Total de | Plan area | = 1.08 | m² | | |
| Approximate Depth to wa | e time to discharge wa ater after completion of | ter into the hole: pumping: | 20 \$ 700 | Second: mm | 5 | |
| Time (min) | Depth (mm) | | | | | |
| 0 | 700 700 | | Time (n | ninutes) | | |
| 2 | 705 | 0 | 50 | 100 | | 150 |
| 4 | 710 | 685 | | | | |
| 5 10 | 710 710 | 690 | | | | |
| 20 56 | 710 | c 695 | | | | |
| 117 | 695 | | | | | |
| 140 163 | 690 690 | epth | | | | |
| | | 705 | | | | |
| | | 710 | | | | |
| | | 715 | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Test Pit Lo | g | | | | | |
| Depth (m) | Description | | | | | |
| 0.0 to 0.3 | TOPSOIL | | | | | |
| 0.3 to 0.5 | Pale brown s | lightly clayey gravelly SA | ND | | | |
| 0.5 to 0.95 | Grey/brown li | mestone GRAVEL in sar | nd matrix | | | |
| 0.95 to 1.0 | Light grey LIN Slight ground | /ESTONE water seepage in base o | f pit. Standing at 0 |).865 m | after approxir | nately 30 minutes |

| | Kingemore | Bicostor | | | | | Data |
|--------------------------------|---------------------------------|-------------------------------|--|------------------------------------|-----------------------------------|--------------------------|----------------|
| FROJECT. | Kingsmere | , Dicester | | | | 32938 | 27/01/2011 |
| SUBJECT: | Soakage Te | est Results a | nd Calculation of | Prepared AS | Checked CAT | | |
| Test No. | ST3 | | | | | | |
| Soil Infiltrat | tion Rate in | Accordance | with BR365 | | | | |
| | V | | | | | | |
| f = | <i>p</i> 75–25 | _ | | | | | |
| a_{p} | $_{50}xt_{p75-2}$ | 5 | | | | | |
| Where: | V_{p7} | ⁵⁻²⁵ is the pit be | effective storage v tween 75% and 25 | volume of wat | er in the trial epth; | | |
| | a_p | ⁵⁰ is the | internal surface ar effective depth and | ea of the trial I including the | pit up to base area | | |
| | t_{p72} | ₅₋₂₅ is the 25% | time for the water effective depth | level to fall fr | om 75% to | | |
| Initial param | neters | | | | | | |
| Depth to wa Start time | ter = | 700 mm 0 min | Average wa | ter depth: | | mm | |
| | | • | Change in w | ater depth: | -10 | mm | |
| Final param Depth to wa | <u>eters</u> ter = | 690 mm | Time interva | al: | 163 | min | |
| End time | = | 163 min | | | | | |
| Effective Sto | orage Volum | e of Water in t | he Trial Pit | = | NA m³ | | |
| 25% Effective 25% Effective | /e Depth /e Depth | | | = | NA mm NA mm | | |
| Time at 75% | 6 Effective D | epth | | = | NA minute | S | |
| Time at 25% | | eptn | | = | NA minute | 5 | |
| V_{p75-25} | = | NA m³ | | | | | |
| a_{p50} | = | NA m ² | | | | | |
| t_{p75-25} | = | NA sec | | | | | |
| f | = | NA m/se | C | | | | |
| Average So | akaway Rate | e = | N/A m³/sec | | | | |
| Average soa | akaway area | = | N/A m ² (sides + | base) | | | |
| BR365 So Average | il Infiltration Infiltration | Rate = | NA m/sec N/A m/sec | The wa rates a | ater level rose re not applica | e and therefore able. | e infiltration |

Sheet 1 of 2

| PROJECT: | Kingsmere, Biceste | Job No. 32938 | Date 27/01/2011 | | | | | |
|---|---|-----------------------|--------------------|---|-----------|---------------|-----|-----|
| SUBJECT: | Soakage Test Resul | Prepared AS | Checked CAT | | | | | |
| Test No. | ST4 | | | | | | | |
| Test Pit Din Length = Width = Depth = | nensions 1800 mm 600 mm 750 mm (Total de | epth) | Plan area | = | 1.08 | m² | | |
| Approximate Depth to wa | e time to discharge wa ter after completion of | ter into the pumping: | e hole: | | 20 610 | Seconds mm | | |
| Time (min) | Depth (mm) | | | | | | | |
| 0 | 610 | | | | Time | (minutes) | | |
| 1 | 615 | 0 | 50 | | 100 | 150 | 200 | 250 |
| 2 | 620 | 600 - | | | 1 | 1 | | |
| 3 | 620 | 000 | | | | | | |
| 4 | 625 | 620 🕂 | | | | | | |
| 5 | 630 | | | | | | | |
| 10 | 635 | 640 — | | | | | | |
| 15 | 640 | E cco | | | | | | |
| 20 | 645 | Ē | | | | | | |
| 30 | 650 | £ 680 — | | | | | | |
| 40 | 660 | beb | | | | | | |
| 50 | 000 | 4 700 | | | | | | |
| 80 | 000 | 720 | | | | | | |
| 140 | 710 | /20 | | | | | | |
| 100 | 720 | 740 — | | | | | | |
| 214 | 745 | | | | | | | |
| 232 | 743 | | | | | | | |

Test Pit Log

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

| PROJECT: | Kingsmere, | Bicester | | | | Job No. 32938 | Date 27/01/2011 |
|---|--|---------------------------------|-------------------------------------|--|--|------------------|--------------------|
| SUBJECT: | Soakage Te | est Results | and Calculatio | on of Infiltration | n Rates | Prepared AS | Checked CAT |
| Test No. | ST4 | | | | | | |
| Soil Infiltra | tion Rate in | Accordance | e with BR365 | | | | |
| f = - | V_{p75-25} | _ | | | | | |
| | $_{50}xt_{p75-2}$ | 5 | | | | | |
| Where: | V_{p7} | ⁵⁻²⁵ is thety | e effective stor veen 75% and | age volume of v 25% effective d | water in the trial pit epth; | | |
| | a_p | ⁵⁰ is theffe | e internal surfa ctive depth and | ace area of the t I including the b | rial pit up to 50% ase area | | |
| | t _{p75} | ₅₋₂₅ is the | e time for the v ctive depth | water level to fal | l from 75% to 25% | | |
| Initial param Depth to wa | neters ater = = | 610 mm 0 min | Avera | age water depth | 70 | mm | |
| | - | • | Chan | ge in water dep | th: 140 | mm | |
| Depth to wa End time | ater = = | 750 mm 232 min | Time | interval: | 232 | min | |
| Effective Sto 75% Effectiv 25% Effectiv Time at 75% Time at 25% | orage Volume ve Depth ve Depth 6 Effective De 6 Effective De | e of Water in epth epth | the Trial Pit | = = = = | 0.1512 m ³ 645 mm from g 715 mm from g 20 minutes 153 minutes | pround pround | |
| V _{p75-25} | = | 0.08 m³ | | | | | |
| a_{p50} | = | 1.42 m ² | | | | | |
| t _{p75-25} | = | 7980 sec | | | | | |
| f | = (| 6.7E-06 m/s | ec | | | | |
| Average So Average so | akaway Rate akaway area | = | 1.1E-05 m³/se 1.42 m² (si | c des + base) | | | |
| BR365 So Average | <u>il Infiltration</u> e Infiltration | Rate = Rate = | 6.7E-06 m/see | C C | | | |

Sheet 1 of 2

| PROJECT: | Kingsmere, Biceste | Job No. 32938 | Date 27/01/2011 | | | | |
|--------------|------------------------|-----------------------|--------------------|------|---------------------------|----|-----|
| SUBJECT: | Soakage Test Resu | AS | Checked | | | | |
| Test No. | ST5 | | | | | | |
| Test Pit Dim | nensions | | | | | | |
| Length = | 1800 mm | | Plan area | = 1. | .08 m ² | | |
| Depth = | 800 mm (Total de | epth) | | | | | |
| Approvimete | time to discharge w | torinto the l | | | 20 Sacanda | | |
| Depth to wat | ter after completion o | f pumping: | iole. | : | 570 mm | | |
| / | | | | | | | |
| l ime (min) | Depth (mm) 710 | | | ті | ime (minutes) | | |
| 1 | 570 | 0 | 20 | 40 | 60 | 80 | 100 |
| 2 | 575 | 500 + | 1 | | 1 | 1 | |
| 6 | 565 | 520 | | | | | |
| 11 | 560 | 540 | | | | | |
| 15 | 565 555 | 5 60 | \sim | | | | |
| 25 56 | 555 | ≣ 580 − | | | | | |
| 77 | 530 | ੁੱ ⁶⁰⁰ | | | | | |
| 101 | 520 | 620 – | | | | | |
| | | 640 | | | | | |
| | | 660 | | | | | |
| | | 680 | | | | | |
| | | /00 - | | | | | |
| | | | | | | | |

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.

| PROJECT: Kingsmere | e, Bicester | | | Job No. 32938 | Date 27/01/2011 | |
|--|-------------------------------|---|---|---------------------|--------------------|--|
| SUBJECT: Soakage T | est Results and | Calculation of Infiltr | ation Rates | Prepared AS | Checked CAT | |
| Test No. ST5 | | | | | | |
| Soil Infiltration Rate in | Accordance wit | h BR365 | | | | |
| V_{p75-25} | | | | | | |
| $f = \frac{1}{a_{p50}xt_{p75-2}}$ | 25 | | | | | |
| Where: V_p | is the ef betweer | fective storage volum 1 75% and 25% effect | e of water in the trial pit ive depth; | | | |
| a | ^{p50} is the interve | ternal surface area of depth and including | the trial pit up to 50% 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 = Start time = | 700 mm 0 min | Average water d | epth: N/ | A mm | | |
| Final parameters | | Change in water | depth: -180 | mm | | |
| Depth to water = End time = | 520 mm 101 min | Time interval: | 101 | min | | |
| Effective Storage Volum | ne of Water in the | Trial Pit | = NA m ³ | | | |
| 25% Effective Depth | | | = NA mm from g | ground ground | | |
| Time at 75% Effective D Time at 25% Effective D | Depth Depth | | NA minutesNA minutes | | | |
| V _{p75-25} = | NA m ³ | | | | | |
| <i>a</i> _{<i>p</i>50} = | NA m ² | | | | | |
| t _{p75-25} = | NA sec | | | | | |
| <i>f</i> = | NA m/sec | | | | | |
| Average Soakaway Rat Average soakaway area | e = a = | N/A m³/sec N/A m² (sides + base |) | | | |
| BR365 Soil Infiltration | n Rate = n Rate = | NA m/sec N/A m/sec | The water level rose a not applicable. | nd therefore infilt | ration rates are | |

Sheet 1 of 2

| PROJECT: | Kingsmere, Biceste | r | | | | | Job No. 32938 | Date 27/01/2011 |
|---|---|--|-----------|----------------|----------------------------|--------------|------------------|--------------------|
| SUBJECT: | Soakage Test Resu | ts and Calo | | Prepared AS | Checked CAT | | | |
| Test No. | ST6 | | | | | | | |
| Test Pit Din Length = Width = Depth = | nensions 1800 mm 600 mm 710 mm (Total de | epth) | Plan area | = | 1.08 m ² | | | |
| Approximate Depth to wa | e time to discharge wa ter after completion of | ter into the l pumping: | hole: | | 20 Sec 460 mn | conds า | | |
| Time (min) | Depth (mm) | | | | | | | |
| 1 | 460 465 | 0 | 20 | | Time (mir 40 | iutes) 60 | 80 | 100 |
| 2 5 10 16 49 72 95 | 465 475 470 485 480 480 480 | 455 460 465 470 470 480 485 490 | | | | | | |

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

| (Consulting E | ngineers) Ltd | | | | | | |
|--|--|--------------------------------|--|--------------------------------|---|------------------|--------------------|
| PROJECT: | Kingsmere, B | licester | | | | Job No. 32938 | Date 27/01/2011 |
| SUBJECT: | Soakage Test | Results and Ca | alculation of Infil | tration Rat | tes | Prepared AS | Checked CAT |
| Test No. Soil Infiltra | ST6 tion Rate in Ac | ccordance with | BR365 | | | | UA1 |
| $f = \frac{1}{a_p}$ | V_{p75-25} $_{50}xt_{p75-25}$ | | | | | | |
| Where: | V_{p75-2} | is the effect between 7 | tive storage volur 5% and 25% effe | me of water ctive depth | r in the trial pit | | |
| | a_{p50} | is the inter effective de | nal surface area of epth and including | of the trial p g the base a | it up to 50% area | | |
| | <i>t</i> _{p75-2} | 5 is the time effective d | for the water leve epth | el to fall fror | n 75% to 25% | | |
| Initial param | neters | | | | | | |
| Depth to wa | ater = | 460 mm | Average water | depth: | 240 | mm | |
| Start time | = | 0 min | | | | | |
| Final naram | atora | | Change in wate | er depth: | 20 | mm | |
| Depth to wa | ater = = | 480 mm 95 min | Time interval: | | 95 | min | |
| Effective St 75% Effecti 25% Effecti Time at 75% Time at 25% | orage Volume c ve Depth ve Depth 6 Effective Dept 6 Effective Dept | of Water in the Tr th th | ial Pit | = = = = | NA m ³ NA mm NA mm NA minutes NA minutes | | |
| V_{p75-25} | = | NA m ³ | | | | | |
| a_{p50} | = | NA m ² | | | | | |
| t _{p75-25} | = | NA sec | | | | | |
| f | = | NA m/sec | | | | | |
| Average So Average so | akaway Rate akaway area | = 3.8E-0 = 2.23 | 16 m³/sec 3 m² (sides + bas | se) | | | |
| BR365 So Average | <mark>il Infiltration R</mark> e Infiltration Ra | <u>ate = N</u> ate = 1.7E-0 | <mark>A m/sec</mark>)6 m/sec | Did not | record below 7 | 5% effective dep | th |

Sheet 1 of 2

| PROIFCI | Kingemore Bicaster | | Job No | Data | | |
|--|---|--|----------------|----------------|--|--|
| INUJECI. | Ringsmere, Dicester | Kingsmere, Dicester | | | | |
| SUBJECT: | Soakage Test Resul | s and Calculation of Infiltration Rates | Prepared AS | Checked CAT | | |
| Test No. | ST7 | | | | | |
| Test Pit Di Length = Width = Depth = | mensions 1800 mm 600 mm 510 mm (Total de | Plan area = 1.08 m² | | | | |
| Approximat Depth to wa | te time to discharge wa ater after completion of | er into the hole: 20 Second: pumping: 405 mm | S | | | |
| Time (min) |) Depth (mm) | | | | | |
| (| 405 | Time (minut | tes) | | | |
| 6 12 44 69 97 | 410 5 425 2 435 4 465 9 475 1 505 | 400 420 (<u><u><u></u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u> | | | | |

Test Pit Log

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

Sheet 2 of 2

| Consulting Engineers) Ltd | | | | | | | | | |
|---------------------------|--|----------|------------|--|--|--|--|--|--|
| PROJECT: | Kingsmere, Bicester | Job No. | Date | | | | | | |
| | | 32938 | 27/01/2011 | | | | | | |
| SUBJECT: | Soakage Test Results and Calculation of Infiltration Rates | Prepared | Checked | | | | | | |
| | | ÂS | CAT | | | | | | |
| | | | | | | | | | |

Test No. ST7

Soil Infiltration Rate in Accordance with BR365

| $f = \frac{V_{p75-}}{a_{p50}xt_p}$ | 75-25 | | | | | | | | |
|---|--|--|---|---|--------------------------|-----|--|--|--|
| Where: | <i>V</i> _{<i>p</i>75-25} | is the effective storage volume of water in the trial pit between 75% and 25% effective depth; | | | | | | | |
| | a_{p50} | is the interna effective dep | is the internal surface area of the trial pit up to 50% effective depth and including the base area | | | | | | |
| | <i>t</i> _{p75-25} | is the time for the water level to fall from 75% to 25% effective depth | | | | | | | |
| Initial parameters Depth to water = Start time = | 405 0 | mm min | Average water deptl | ו: | 55 | mm | | | |
| | Ū | | Change in water depth: 100 | | | | | | |
| Final parametersDepth to water =End time = | 505 91 | mm min | Time interval: | | 91 | min | | | |
| Effective Storage V 75% Effective Dept 25% Effective Dept Time at 75% Effect Time at 25% Effect | ′olume of Wa h h ive Depth ive Depth | ter in the Tria | l Pit = = = = = | 0.1134 m ³ 431 mm 484 mm 10 min 76 min | n n nutes nutes | | | | |
| V _{p75-25} = | 0.06 | M³ | | | | | | | |
| $a_{p50} =$ | 1.33 | m² | | | | | | | |
| t_{p75-25} = | 3960 | sec | | | | | | | |
| <i>f</i> = | 1.1E-05 | m/sec | | | | | | | |
| Average Soakaway Average soakaway | Rate = area = | 2.0E-05 1.34 | m³/sec m² (sides + base) | | | | | | |
| BR365 Soil Infiltr Average Infiltra | a <mark>tion Rate =</mark> ation Rate = | <mark>1.1E-05</mark> 1.5E-05 | <mark>m/sec</mark> m/sec | | | | | | |

Sheet 1 of 2

| (Consulting E | ngineers) Ltd | | | | | | | | |
|----------------------------|---|-------------------------|------------------|------------|-----------|---------------|------------------|----|-------------------|
| PROJECT: | Kingsmere, Biceste | r | | | | | Job No. 32938 | 27 | Date 7/01/2011 |
| SUBJECT: | Soakage Test Resul | ts and Ca | alculation of In | filtration | Rates | | Prepared AS | C | CAT |
| Test No. | ST8 | | | | | | | | |
| Test Pit Din | nensions | | | | | | | | |
| Length = Width = | 1800 mm | | Plan area | = | 1.08 | m² | | | |
| Depth = | 635 mm (Total de | epth) | | | | | | | |
| Approximate Depth to wa | e time to discharge wa ter after completion of | iter into th pumping | ie hole: : | | 20 470 | Seconds mm | | | |
| Time (min) | Depth (mm) | | | | | | | | |
| 0 | 470 | | | | Time | (minutes) | | | |
| 1 | 480 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| 3 | 485 | 450 + | | 1 | 1 | | | 1 | |
| 63 | 635 | 470 | | | | | | | |
| | | 490 | | | | | | | |
| | | 510 | | | | | | | |
| | | E ₅₂₀ | | | | | | | |
| | | Ē | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | 590 + | | | | | | | |
| | | 610 + | | | | | | | |
| | | 630 + | | | | | | | |
| | | 650 - | | | | | | | |
| | | | | | | | | | |

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

| Consulting E | ingineers) | Ltd | | | | | |
|----------------------------|---|----------------------------|--|---------------------------------------|---------------------------|------------------|-----------------|
| PROJECT: | Kingsme | ere, Bicester | | | | Job No. 32938 | Date 27/01/2011 |
| SUBJECT: | Soakage | Test Results | and Calculation | of Infiltration R | ates | Prepared AS | Checked CAT |
| Test No. | ST8 | | | | | | |
| Soil Infiltra | tion Rate | in Accordanc | e with BR365 | | | | |
| | V_{p75-25} | ; | | | | | |
| $f = \frac{1}{a_p}$ | $\frac{1}{50}xt_{p75}$ | 5-25 | | | | | |
| Where: | I | $V_{p^{75-25}}$ is t | he effective stora ween 75% and 2 | ge volume of wat 5% effective dept | er in the trial pit h; | | |
| | | a_{p50} is t effe | he internal surfac ective depth and i | e area of the trial ncluding the base | pit up to 50% e area | | |
| | i | t_{p75-25} is t effe | he time for the water the depth | ater level to fall fro | om 75% to 25% | | |
| Initial paran | neters | 470 mm | | e water denth: | 82 5 | mm | |
| Start time | = | 0 mi | l Change | | 465 | | |
| Final param | neters | | Change | e in water depth: | 100 | mm | |
| Depth to wa End time | ater = = | 635 mn 63 mii | ก Time in า | terval: | 63 | min | |
| Effective St | orage Volu | ume of Water i | n the Trial Pit | = 0 | .1782 m³ | | |
| 75% Effecti | ve Depth | | | = | 511 mm | | |
| Time at 75% | % Effective | e Depth | | = | 13 minutes | | |
| Time at 25% | % Effective | e Depth | | = | 46 minutes | | |
| V_{p75-25} | = | 0.09 m³ | | | | | |
| a_{p50} | = | 1.48 m ² | | | | | |
| <i>t</i> _{p75-25} | = | 1980 see | c | | | | |
| f | = | 3.0E-05 m/ | sec | | | | |
| Average Sc | akaway R | ate = | 4.7E-05 m³/sec | | | | |
| Average so | akaway ar | ea = | 1.48 m² (side | es + base) | | | |
| BR365 So Average | o <mark>il Infiltrati</mark> e Infiltratio | ion Rate = on Rate = | 3.0E-05 m/sec 3.2E-05 m/sec | | | | |

Sheet 1 of 2

| (Consulting E | ngineers) Ltd | | | | | | | |
|---|--|--|-----------|---|-------------------------------|------------|---------|------|
| PROJECT: | Kingsmere, Biceste | r | | | | | Job No. | Date |
| SUBJECT: | Soakage Test Resu | Soakage Test Results and Calculation of Infiltration Rates | | | | | | |
| Test No. | ST9 | | | | | | | |
| Test Pit Din Length = Width = Depth = | nensions 1800 mm 600 mm 650 mm (Total d | epth) | Plan area | = | 1.08 m² | : | | |
| Approximate Depth to wa | e time to discharge wa ter after completion o | ater into the f pumping: | hole: | | 20 Se 550 mr | conds n | | |
| Time (min) | Depth (mm) | | | | | | | |
| 0 | 525 | | | | Time (mi | inutes) | | |
| 1 | 590 | 0 | 1 | | 2 | 3 | 4 | 5 |
| 5 | 000 | 500 520 540 (m) 560 (m) 580 600 620 640 | | | | | | |

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

| PROJECT: Kingsmere, B | Job No. | Date | | | |
|---|------------------------|---|---|--------------------|-------------------|
| | | | | 32938 | 27/01/2011 |
| SUBJECT: Soakage Test | Results and | Calculation of Infiltr | ation Rates | Prepared AS | Checked CAT |
| | | | | | |
| Test No. ST9 | | | | | |
| Soil Infiltration Rate in Ac | cordance wit | th BR365 | | | |
| V ac ac | | | | | |
| $f = \frac{r_{p/5-25}}{r_{p/5-25}}$ | | | | | |
| $a_{p50} x t_{p75-25}$ | | | | | |
| Where: V_{p75-2} | 5 is the ef betweer | fective storage volum n 75% and 25% effect | e of water in the trial pit ive depth; | | |
| a_{p50} | is the in effective | ternal surface area of e depth and including | the trial pit up to 50% the base area | | |
| t _{p75-25} | is the tir | me for the water level e depth | to fall from 75% to 25% | | |
| Initial parameters | | | | | |
| Depth to water = | 550 mm | Average water d | epth: | mm | |
| Start time = | U min | Change in water | depth: 10 | 0 mm | |
| Final parameters | 050 | | | _ . | |
| Depth to water = End time = | 650 mm 5 min | l'ime interval: | | 5 min | |
| Effective Storage Volume o | f Water in the | Trial Pit | = NA m ³ | | |
| 75% Effective Depth | | | = NA mm from | n ground | |
| 25% Effective Depth | L. | | = NA mm from | n ground | |
| Time at 75% Effective Dept | n h | | = NA minutes = NA minutes | | |
| | | | | | |
| V_{p75-25} = | NA m³ | | | | |
| <i>a</i> _{<i>p</i>50} = | NA m ² | | | | |
| t _{p75-25} = | NA sec | | | | |
| <i>f</i> = | NA m/sec | | | | |
| Average Soakaway Rate | = | NA m³/sec | ` | | |
| Average soakaway area = | = | INA mº (SIGES + DASE | ;) | | |
| BR365 Soil Infiltration Ra Average Infiltration Ra | ate = ite = | <mark>NA m/sec</mark> NA m/sec | Engineer reported that into something | at the water seeme | ed to be draining |

Sheet 1 of 2

| PROJECT: | Kingsmere, Bice | ester | | | | Job No. 32938 | Date 27/01/2011 |
|--------------|------------------------|---------------------------------|-----------------------|---------------|----------|------------------|--------------------|
| SUBJECT: | Soakage Test Ro | esults and Ca | Iculation of Infiltra | tion Rates | | Prepared AS | Checked CAT |
| Test No. | ST9A | | | | | | |
| Test Pit Din | nensions | | | | | | |
| Length = | 1800 mm | | Plan area = | 1.08 r | n² | | |
| VVIDIN = | 600 mm 650 mm (Tot: | al denth) | | | | | |
| Deptil – | | ai deptii) | | | | | |
| Approximate | e time to discharge | e water into the | e hole: | 20 \$ | Seconds | | |
| Depth to wa | ter after completic | on of pumping: | | 550 r | nm | | |
| Time (min) | Denth (m | um) | | | | | |
| 0 | 5 | 50 | | Time (| minutes) | | |
| 1 | 5 | 6 0 0 | 20 | 40 | 60 | 80 | 100 |
| 2 | 5 | 60 545 + | 1 | I | | 1 | |
| 5 14 | 5 | 70 | | | | | |
| 19 | 5 | 70 550 | | | | | |
| 31 | 5 | 70 | | | | | |
| 45 | 5 | 70 $\widehat{\mathbf{E}}^{555}$ | | | | | |
| 70 | 5 | 70 <u>Ē</u> | | | | | |
| 90 | J | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | 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

| PROJECT: | Kingsmere, B | icester | | | Job No. | Date |
|---|--|---------------------------------|---|--|---|----------------|
| SUBJECT: | Soakage Test | Results and Ca | Iculation of Infiltration F | Rates | S2936 Prepared AS | Checked CAT |
| Test No. | ST9A | | | | | |
| Soil Infiltrat | tion Rate in Ac | cordance with I | BR365 | | | |
| $f = \frac{1}{a_n}$ | V_{p75-25} | | | | | |
| Where: | V _{p75-2} | is the effec between 7 | tive storage volume of wa 5% and 25% effective dep | ter in the trial pit th; | | |
| | a_{p50} | is the intern effective de | nal surface area of the tria | ll pit up to 50% se area | | |
| | t _{p75-2} | 5 is the time effective de | for the water level to fall f | rom 75% to 25% | | |
| <u>Initial param</u> Depth to wa Start time | neters ter = = | 550 mm 0 min | Average water depth: | 90 | mm | |
| Final param | otors | | Change in water depth: | 20 | mm | |
| Depth to wa End time | ter = = | 570 mm 90 min | Time interval: | 90 | min | |
| Effective Sto 75% Effectiv 25% Effectiv Time at 75% Time at 25% | orage Volume o ve Depth ve Depth & Effective Dept & Effective Dept | of Water in the Tri th th | al Pit = = = = = | 0.108 m ³ 575 mm from g 625 mm from g NA minutes NA minutes | round round Did not record b effective depth | pelow 75% |
| V_{p75-25} | = | NA m³ | | | | |
| a_{p50} | = | NA m ² | | | | |
| t _{p75-25} | = | NA sec | | | | |
| f | = | NA m/sec | | | | |
| Average So Average soa | akaway Rate akaway area | = 4.0E-0 = 1.51 | 6 m³/sec I m² (sides + base) | | | |
| BR365 So Average | il Infiltration R Infiltration Ra | <u>ate = N</u> ate = 2.6E-0 | A m/sec 6 m/sec | | | |

Sheet 1 of 2

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|--|---|--|------------------------|------------------------|------------|------------------|--------------------|
| PROJECT: | Kingsmere, Biceste | r | | | | Job No. 32938 | Date 27/01/2011 |
| SUBJECT: | Soakage Test Resu | ts and Calc | ulation of Infiltratio | n Rates | | Prepared AS | Checked CAT |
| Test No. Test Pit Din Length = Width = Depth = | ST10 nensions 1800 mm 600 mm 750 mm (Total de | epth) | Plan area = | 1.08 m² | | | |
| Approximate Depth to wa | e time to discharge wa ter after completion of | ter into the pumping: | hole: | 20 Se 555 mr | conds n | | |
| Time (min) 0 | Depth (mm) 555 | | | Time (m | inutes) | | |
| 2 | 580 | 0 | 20 | 40 | 60 | 80 | 100 |
| 11 17 29 43 68 88 | 680 690 690 690 690 | 550 570 590 (m) 610 630 650 670 690 | | 40 | | | |

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

| Consulting E | ngineers | s) Ltd | costor | | | | | | | Data |
|-----------------------------------|--|----------------------|---------------------------|------------------------|---------------------------------|-----------------------------|-------------------------|--------------------|----------------|----------------|
| | Kiigsi | | Cester | | | | | | 32938 | 27/01/201 |
| SUBJECT: | Soaka | ge Test | Results | and Ca | culation of | Infiltration | Rates | | Prepared AS | Checked CAT |
| Test No. | ST10 | | | | | | | | | |
| Soil Infiltra | tion Rat | te in Aco | cordanc | e with E | BR365 | | | | | |
| | V_{p75-2} | 25 | | | | | | | | |
| $f = \frac{1}{a_p}$ | $\frac{1}{50}xt_p$ | 75-25 | | | | | | | | |
| Where: | 1 | V _{p75-25} | is t be | he effect tween 75 | ive storage % and 25% | volume of v effective d | vater in t epth; | he trial pit | | |
| | | a_{p50} | is t eff | he intern ective de | al surface a pth and incl | rea of the t uding the b | rial pit up ase area | o to 50% | | |
| | | t _{p75-25} | is t eff | he time f ective de | or the water pth | level to fal | l from 75 | % to 25% | | |
| Initial param | <u>neters</u> | | 555 mm | 0 | Average w | ater denth | | 67 5 | mm | |
| Start time | = | | 0 mi | ז | Average w | | | 07.5 | | |
| Final naram | otoro | | | | Change in | water dept | :h: | 135 | mm | |
| Depth to wa | iter = | | 690 mn | n | Time inter | val: | | 17 | min | |
| End time | = | | 17 mii | n (water f | able expect | ed to be ar | ound 69(|) mm below | ground level) | |
| Effective Sto 75% Effective | orage Vo ve Deptl | olume of h | Water i | n the Tria | al Pit | = | 0.1458 589 | m³ ∂ mm | | |
| 25% Effectiv | ve Deptl | h Na Daath | | | | = | 656 | 5 mm | | |
| Time at 75% | 6 Effecti 6 Effecti | ve Deptr ve Deptr | ו ו | | | = | ç | minutes minutes | | |
| <i>V</i> _{<i>p</i>75-25} | = | | 0.07 m³ | | | | | | | |
| a_{p50} | = | 1 | .40 m ² | | | | | | | |
| t_{p75-25} | = | | 360 se | C | | | | | | |
| f | = | 1.48 | E-04 m/ | sec | | | | | | |
| Average So Average soa | akaway akaway | Rate = area = | | 1.4E-04 1.40 | 4 m³/sec m² (sides - | + base) | | | | |
| BR365 So Average | <mark>il Infiltra</mark> e Infiltra | ation Ra | <u>te =</u> te = | 1.4E-04 1.0E-04 | 4 <mark>m/sec</mark> 4 m/sec | | | | | |

Sheet 1 of 2

| PROJECT: Kii | ngsmere, Bicester | | | | | Job No. 32938 | Date 27/01/2011 |
|---|---|--|----------------------|-----------------------------|----------------|------------------|--------------------|
| SUBJECT: So | oakage Test Result | s and Calcı | ulation of Infiltrat | tion Rates | | Prepared AS | Checked CAT |
| Test No. ST | [11 | | | | | | |
| Test Pit Dimen Length = 1 Width = Depth = | nsions 1800 mm 600 mm 615 mm (Total dep | oth) | Plan area = | 1.08 n | ץ ² | | |
| Approximate tin Depth to water | me to discharge wate after completion of p | er into the ho pumping: | ole: | 20 S 510 n | econds nm | | |
| Time (min) 0 1 2 3 6 11 22 29 40 54 78 99 | Depth (mm) 510 525 525 530 540 545 550 565 580 595 615 | 0 500 520 540 560 580 600 620 | 20 | Time (1 40 | ninutes) 60 | 80 | |

Test Pit Log

| Depth (m) | Description |
|-----------|-------------|
|-----------|-------------|

 0.0 to 0.25
 TOPSOIL

 0.25 to 0.615
 SAND and GRAVEL

Sheet 2 of 2

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

Test No. ST11

Soil Infiltration Rate in Accordance with BR365

| $f = \frac{V_{p75-}}{a_{-50}xt}$ | 25 | | | | |
|---|--|---------------------------------|--|--|----------|
| Where: | V_{p75-25} | is the effective between 75% | ve storage volume of w % and 25% effective de | vater in the trial pit | |
| | a_{p50} | is the interna effective dep | al surface area of the tr th and including the ba | ial pit up to 50% ase area | |
| | t _{p75-25} | is the time for effective dep | or the water level to fall th | from 75% to 25% | |
| Initial parameters Depth to water = Start time = | 510 0 | mm min | Average water depth: | 52.5 mn | n |
| | Ŭ | | Change in water dept | h: 105 mn | n |
| Final parameters Depth to water = End time = | 615 99 | mm min | Time interval: | 99 mir | ı |
| Effective Storage V 75% Effective Deptil 25% Effective Deptil Time at 75% Effecti Time at 25% Effecti | olume of Wat h h ve Depth ve Depth | er in the Tria | I Pit = = = = = | 0.1134 m ³ 536 mm from groun 589 mm from groun 9 minutes 68 minutes | าd าd |
| V _{p75-25} = | 0.06 | m³ | | | |
| $a_{p50} =$ | 1.33 | m² | | | |
| t_{p75-25} = | 3540 | sec | | | |
| <i>f</i> = | 1.2E-05 | m/sec | | | |
| Average Soakaway Average soakaway | Rate = area = | 1.9E-05 1.33 | m³/sec m² (sides + base) | | |
| BR365 Soil Infiltra Average Infiltra | ation Rate = ation Rate = | <mark>1.2E-05</mark> 1.4E-05 | m/sec m/sec | | |

Sheet 1 of 2

| (Consulting Er | ngineers) Ltd | | | | | | |
|---|---|-----------------------------|------------------|-----------|----------------------|----------------|----------------|
| PROJECT: | Kingsmere, Biceste | r | | | | Job No. | Date |
| SUBJECT: | Soakage Test Resu | Its and Cal | culation of Infi | tration I | Rates | Prepared AS | Checked CAT |
| Test No. | ST12 | | | | | | |
| Test Pit Din Length = Width = Depth = | nensions 1800 mm 600 mm 660 mm (Total de | epth) | Plan area | = | 1.08 m² | | |
| Approximate Depth to wa | e time to discharge wa ter after completion o | ater into the f pumping: | hole: | | 20 Seconds 540 mm | | |
| Time (min) | Depth (mm) | | | | | | |
| 0 | 540 | | | | Time (minutes) | | |
| 1 | 540 | 0 | 20 | 1 | 40 | 60 | 80 |
| 3 | 540 | 540 + | | | 1 | I | |
| 8 | 550 | | | | | | |
| 16 | 550 | 545 - | | | | | |
| 27 | 565 565 | 중 550 - | | | | | |
| 67 | 570 | E | | | | | |
| 86 | 580 | ਿੱ ⁵⁵⁵ – | | | | | |
| | | b 560 - | | | | | |
| | | <u>с</u> | | | | | |
| | | 505 | | | | | |
| | | 570 - | | | | | |
| | | 575 + | | | | | |
| | | | | | | | |
| | | 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

| PROJECT: Kingsmere, B | icester | | | | Job No. 32938 | Date 27/01/2011 |
|--|---|--|-------------------------|--------------------------|------------------|--------------------|
| SUBJECT: Soakage Test | Results and Cal | culation of Infilt | ration Ra | ates | Prepared AS | Checked CAT |
| Test No. ST12 | | | | | | |
| Soil Infiltration Pate in Ac | oordonoo with P | D265 | | | | |
| Son minitration Rate in Ac | | K303 | | | | |
| $f - V_{p75-25}$ | | | | | | |
| $\int a_{p50} x t_{p75-25}$ | | | | | | |
| Where: v | l is the effect | ive storage volum | ne of wat | er in the trial nit | | |
| V _{p75-2} | ⁵ between 75 | % and 25% effec | tive dept | h; | | |
| a_{p50} | is the intern effective de | al surface area o pth and including | f the trial the base | pit up to 50% e area | | |
| t _{p75-25} | 5 is the time for effective de | or the water level oth | l to fall fro | om 75% to 25% | | |
| Initial parameters | | | | | | |
| Depth to water = Start time = | 540 mm 0 min | Average water | depth: | 100 | mm | |
| | • | Change in wate | er depth: | 40 | mm | |
| <u>Final parameters</u> Depth to water = | 580 mm | Time interval: | | 86 | min | |
| End time = | 86 min | | | | | |
| Effective Storage Volume of | f Water in the Tria | al Pit | = 0. | .1296 m ³ | round | |
| 25% Effective Depth | | | = | 630 mm from g | ground | |
| Time at 75% Effective Dept Time at 25% Effective Dept | h h | | = | NA minutes NA minutes | Did not record | below 25% |
| V = | NA m ³ | | | | | |
| <i>v</i> _{p75-25} | $NA m^2$ | | | | | |
| $a_{p50} =$ | | | | | | |
| t_{p75-25} = | NA sec | | | | | |
| <i>f</i> = | NA m/sec | | | | | |
| Average Soakaway Rate = Average soakaway area = | = 8.4E-06 = 1.56 | 3 m³/sec m² (sides + bas | e) | | | |
| BR365 Soil Infiltration Ra | <u>ate = NA</u> <u>ite =</u> 5.4E-06 | m/sec m/sec | Did no | ot record below 2 | 5% effective dep | th |

Sheet 1 of 2

| (Consulting Er | ngineers) Ltd | | | | | | | | |
|----------------------------|---|----------------------------|--------------|-----------|---------------|---------------|------------------|-------------------|------|
| PROJECT: | Kingsmere, Bicester | | | | | | Job No. 32938 | Date 27/01/201 | 1 |
| SUBJECT: | Soakage Test Results | and Calculat | ion of Infil | tration F | lates | | Prepared AS | Checked CAT | |
| Test No. | ST13 | | | | | | | • | |
| Test Pit Din | nensions | | | | | | | | |
| Length = Width = | 1800 mm 600 mm | Р | an area | = | 1.08 r | n² | | | |
| Depth = | 720 mm (Total dept | h) | | | | | | | |
| Approximate Depth to wa | e time to discharge wate ter after completion of p | r into the hole umping: | 1 | | 20 S 540 r | Seconds nm | | | |
| Time (min) | Depth (mm) | | | | | | | | |
| 0 | 540 | | | | | | | | |
| 6 | 560 | | | | | | | 700 | |
| 13 | 580 | | | | | | | 600 | |
| 24 38 | 610 | | | | | | | 500 | |
| 64 82 | 630 650 | | | | | | | 400 | (mm) |
| | | | | | | | | 300 | epth |
| | | | | | | | | 200 | |
| | | | | | | | | 100 | |
| | | | | | | | 1 | 0 | |
| | | 80 | 60 | | 40 | | 20 | 0 | |
| | | | | Tim | e (minute | es) | | | |

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

| PROJECT: | Kingsmer | e, Bicester | | | | Job No. | Date |
|----------------------------|--------------------------------|-------------------------------|----------------------------------|--|-------------------------------|--------------------------|----------------|
| SUBJECT: | Soakage 1 | Fest Results | and Calculation | on of Infiltration | Rates | Prepared AS | Checked CAT |
| Test No. | ST13 | | | | | | •••• |
| Soil Infiltrat | tion Rate ir | n Accordanc | e with BR365 | | | | |
| | V | | | | | | |
| f = | <i>p</i> 75–25 | | | | | | |
| a_{ps} | $_{50}xt_{p75-}$ | 25 | | | | | |
| Where: | V_{μ} | betw | ne effective sto ween 75% and | rage volume of w 25% effective de | vater in the trial pit epth; | | |
| | а | is the ffe | ne internal surfa | ace area of the tr d including the ba | ial pit up to 50% ase area | | |
| | t _p | or5-25 is the ffe | ne time for the s | water level to fall | from 75% to 25% | | |
| Initial param | eters | | | | | | |
| Depth to wa Start time | ter = = | 540 mm 0 min | Avera | age water depth: | 125 | mm | |
| Final param | otors | | Char | ige in water dept | h: 110 | mm | |
| Depth to war End time | ter = = | 650 mm 82 min | Time | interval: | 82 | min | |
| Effective Sto | orage Volun | ne of Water ir | the Trial Pit | = | 0.1944 m³ | | |
| 75% Effectiv | /e Depth | | | = | 585 mm from g | round level | |
| Time at 75% | 6 Effective [| Depth | | = | 15 minutes | | |
| Time at 25% | 6 Effective [| Depth | | = | NA minutes | Did not record below 25% | |
| V_{p75-25} | = | NA m³ | | | | | |
| a_{p50} | = | NA m ² | | | | | |
| t _{p75-25} | = | NA sec | | | | | |
| f | = | NA m/s | ec | | | | |
| Average Soa Average soa | akaway Rat akaway area | te = a = | 2.4E-05 m³/se 1.68 m² (s | ec ides + base) | | | |
| BR365 Soi Average | il Infiltratio Infiltration | n Rate = n Rate = | NA m/se 1.4E-05 m/se | c Dic c | I not record below 28 | 5% effective depth | 1 |