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Miller Homes
Unit B22 Lapwing House
Peel Avenue
Calder Park
Wakefield
WF2 7UA

PR/AJK/40600-007

By E-mail Only

16 February 2018

Dear Liam,

Land at Cross Lane, Scholes, Holmfirth
Report on Further Infiltration Test Results

This letter presents the results of further infiltration testing which has been undertaken by Eastwood & Partners (Consulting Engineers) Ltd on behalf of Miller Homes at a site located to the north of Cross Lane in Scholes, Holmfirth, West Yorkshire where a residential development is proposed to be constructed. Surface water from the plots and highways are proposed to drain via soakaways.

Eastwood & Partners have previously undertaken seasonal infiltration testing, with the results of this (E&P report reference PR/AJK/SAE/40600-006) indicating favourable results and concluding that soakaways are a suitable method of disposing of surface water from the development. The Local Authority has since requested that one final round of testing be undertaken in the final proposed locations of the highway soakaway chambers and to the design depths. Three additional shallower infiltration tests were also requested to confirm that plot soakaways are suitable in the areas in between the previous test locations.

Site Summary

The site is rectangular on plan, and is currently a grassed field most recently used for grazing. Existing housing borders the site to the west, a farm is present to the east, a playground to the north and agricultural fields to the south. The ground level falls towards the north east with a change in level of around 7.5 m at a gradient of around 1 in 22.

The geology beneath the site is shown as Carboniferous Rough Rock, a coarse grained sandstone. No alluvial deposits or made ground are present on the site. The underlying geology is indicated as a Secondary A Aquifer.

Also at:- Centaur House, Ancells Business Park, Ancells Road, Fleet, Hampshire, GU51 2UJ 01252 360580

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Site Works

The additional site works were undertaken on Thursday 8th and Friday 9th February 2018. The test pits were broken into the bedrock using a 37T tracked excavator with a hydraulic breaker attachment and rock claw.

The position of the soakaway tests are shown on the attached exploratory hole location plan, referenced 40600/002E.

The excavations recorded topsoil to depths of between 0.2 m and 0.5 m. Below the topsoil was a coarse grained, orange sand with abundant cobbles of sandstone. This became solid sandstone bedrock at depths typically of between 0.65 m and 1.15 m and required the use of the breaker below these depths.

The weather on Thursday 8th February comprised moderate to heavy rain throughout the day, with snow showers in the morning and in the evening. The weather on the second day of the tests comprised sun with occasional short light rain showers.

Soakaway Test Results

Three tests were undertaken in all of the pits, with the exception of SA16, where four tests were completed. Infiltration rates were calculated in accordance with BRE365. The results are summarised in the table below:

Soakaway Location	Plot/Highway Soakaway location?	Soakaway Depth (mm)	Material at Base	Test Number	Infiltration Rate (m/sec*10 ⁻⁶)	
					BRE365 Rate	Average Rate
SA14	Highway	2300-2850	Sandstone	1	31	36
				2	20	24
				3	20	25
SA15	Highway	3100-3450	Sandstone	1	20	24
				2	18	22
				3	12	14
SA16	Plot	1600-1700	Sandstone	1	35	44
				2	39	39
				3	31	32
				4	27	15
SA17	Plot	2600-2700	Sandstone	1	7.4	7.6
				2	9.9	12
				3	11	13
SA18	Highway	2600-2800	Sandstone	1	14	15
				2	14	18
				3	9.7	12
SA19	Plot	1950-2200	Sandstone	1	8.8	9.3
				2	9.1	12
				3	9.1	12

Discussion of Results

The varying depths of the soakaways has arisen due to the monitoring being spread across two days, with different engineers using different datum levels to measure the water level and depth to the base of the test pit. The base of the pits was not altered during the testing.

The findings of the three tests undertaken in the plot soakaway positions (SA16, SA17 and SA19) were that infiltration rates of between 7.4 and 39 m/sec^{*10⁻⁶} being recorded.

Within the deeper highway soakaway positions, SA14, SA15 and SA18), the rates were similar, being between 9.7 and 31 m/sec^{*10⁻⁶}.

The results from this testing are comparable to those of the previous four rounds of seasonal testing. A infiltration rate of 9 m/sec^{*10⁻⁶} has been used in the design of the soakaway chamber sizes, based on the worst of the results obtained previously. A number of these tests recorded infiltration rates of 9 m/sec^{*10⁻⁶}, or slightly above and therefore the previously submitted designs for chamber sizes, depths and supporting infrastructure will remain suitable.

Two tests recorded slightly lower rates, however. A rate of 8.8 m/sec^{*10⁻⁶} was recorded during test 1 in SA19, and a rate of 7.4 m/sec^{*10⁻⁶} was recorded in test 1 in SA17. Both of these locations are for private plot soakaways and therefore will not impact the design of the drainage system which is to be adopted by Kirklees Highways under the Section 38 agreement.

In any case, it is considered likely that the lower rates were partly caused by the inclement weather, with rain and snow landing in the pits themselves, and also seeping in through the pit sides after falling on the surrounding ground and infiltrating through the soils. The rates calculated for the tests undertaken on the second (drier) day indicate an increase.

The rate calculated for SA17 Test 1 is also considered very conservative, as the end point of the (i.e. when the pit drained fully of water) test was not witnessed. The test was monitoring at the end of the day on the Thursday, but still had a body of water in the pit. It was checked again first thing the following morning, where it was found to be dry. Due to the uncertainty in the drain-down time, the 75th percentile value used in the calculation is likely to be several hours after the actual time, meaning that a lower infiltration rate will have been calculated.

In any case, the slightly reduced rates are not considered to significantly affect the chamber designs for the plot soakaways, and as stated above, will not impact the highway soakaway design.



Based on these results, we continue to recommend that soakaways are suitable to be used on this development.

We trust that the above meets with your approval. This report should be submitted to the regulators.

Yours sincerely,

Phil Richardson

Director

Enc Infiltration Test Logs and Calculations
 Exploratory Hole Location Plan (40600/002/E).

(Consulting Engineers) Ltd

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA14-01**Test Pit Dimensions**

Length = 3400 mm

Plan area = 13.26 m²

Width = 3900 mm

Depth = 2300 mm (Total depth)

Approximate time to discharge water into the hole:

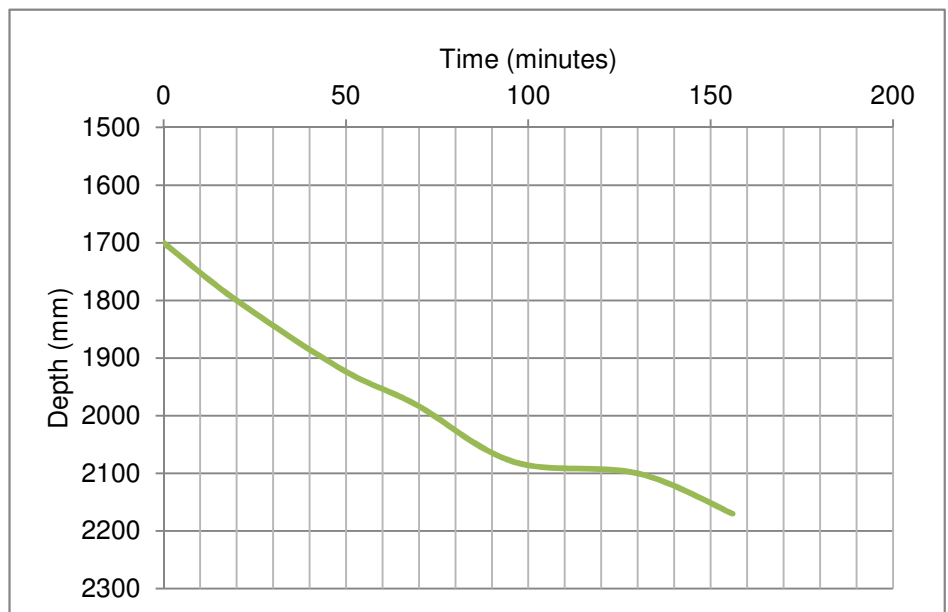
120 Seconds

Depth to water after completion of pumping:

1700 mm

Time (min) **Depth (mm)**

0	1700
20	1800
49	1920
69	1980
96	2080
130	2100
156	2170

**Test Pit Log**

Depth (m)	Description
0.0 - 0.35	TOPSOIL
0.35 - 0.90	Weathered orange SANDSTONE cobbles in sand
0.90 - 2.30	Strong SANDSTONE, locally fractured

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA14-01

Soil Infiltration Rate in Accordance with BR365

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

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 = **1700** mm Average water depth: **365** mm

Start time = **0** min

Change in water depth: **470** mm

Final parameters

Depth to water = **2170** mm

Time interval: **156** min

End time = **156** min

Effective Storage Volume of Water in the Trial Pit	=	7.956 m ³
75% Effective Depth	=	1850 mm from ground level
25% Effective Depth	=	2150 mm from ground level
Time at 75% Effective Depth	=	30 minutes
Time at 25% Effective Depth	=	150 minutes

V_{p75-25} = **3.98** m³

a_{p50} = **17.64** m²

t_{p75-25} = **7200** sec

f = **3.1E-05** m/sec

Average Soakaway Rate = **6.7E-04** m³/sec

Average soakaway area = **18.59** m² (sides + base)

BR365 Soil Infiltration Rate = 3.1E-05 m/sec

Average Infiltration Rate = 3.6E-05 m/sec

(Consulting Engineers) Ltd

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA14-02**Test Pit Dimensions**

Length = 3400 mm

Plan area = 13.26 m²

Width = 3900 mm

Depth = 2400 mm (Total depth)

Approximate time to discharge water into the hole:

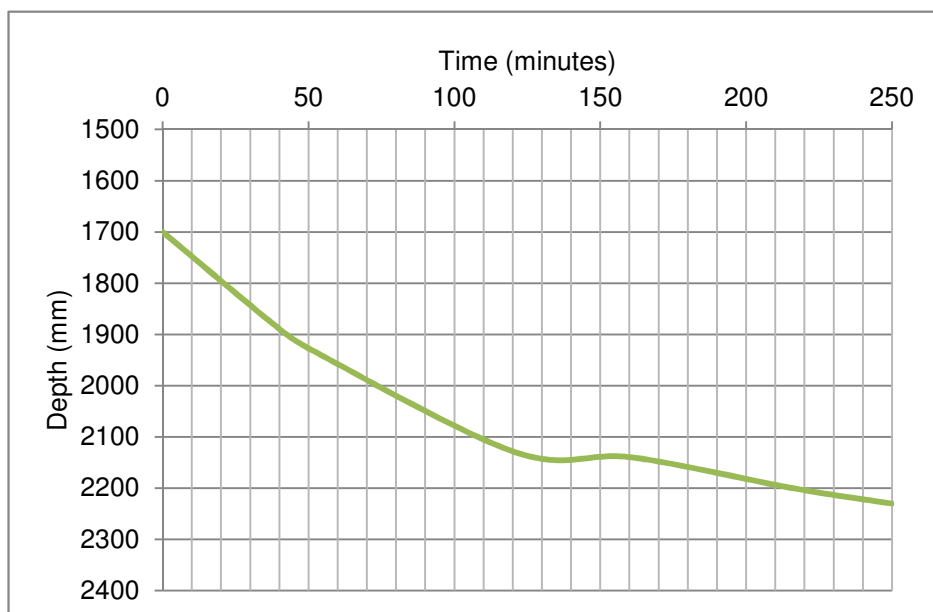
120 Seconds

Depth to water after completion of pumping:

1700 mm

Time (min) **Depth (mm)**

0	1700
38	1880
51	1930
121	2130
161	2140
216	2200
250	2230

**Test Pit Log**

Depth (m)	Description
0.0 - 0.35	TOPSOIL
0.35 - 0.90	Weathered orange SANDSTONE cobbles in sand
0.90 - 2.40	Strong SANDSTONE, locally fractured

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA14-02

Soil Infiltration Rate in Accordance with BR365

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

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 = **1700** mm Average water depth: **435** mm
Start time = **0** min Change in water depth: **530** mm

Final parameters

Depth to water = **2230** mm Time interval: **250** min
End time = **250** min

Effective Storage Volume of Water in the Trial Pit = **9.282** m³
75% Effective Depth = **1875** mm from ground level
25% Effective Depth = **2225** mm from ground level
Time at 75% Effective Depth = **35** minutes
Time at 25% Effective Depth = **245** minutes

V_{p75-25} = **4.64** m³
 a_{p50} = **18.37** m²
 t_{p75-25} = **12600** sec
 f = **2.0E-05** m/sec

Average Soakaway Rate = **4.7E-04** m³/sec
Average soakaway area = **19.61** m² (sides + base)

BR365 Soil Infiltration Rate = 2.0E-05 m/sec
Average Infiltration Rate = 2.4E-05 m/sec

(Consulting Engineers) Ltd

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA14-03**Test Pit Dimensions**

Length = 3400 mm

Plan area = 13.26 m²

Width = 3900 mm

Depth = 2850 mm (Total depth)

Approximate time to discharge water into the hole:

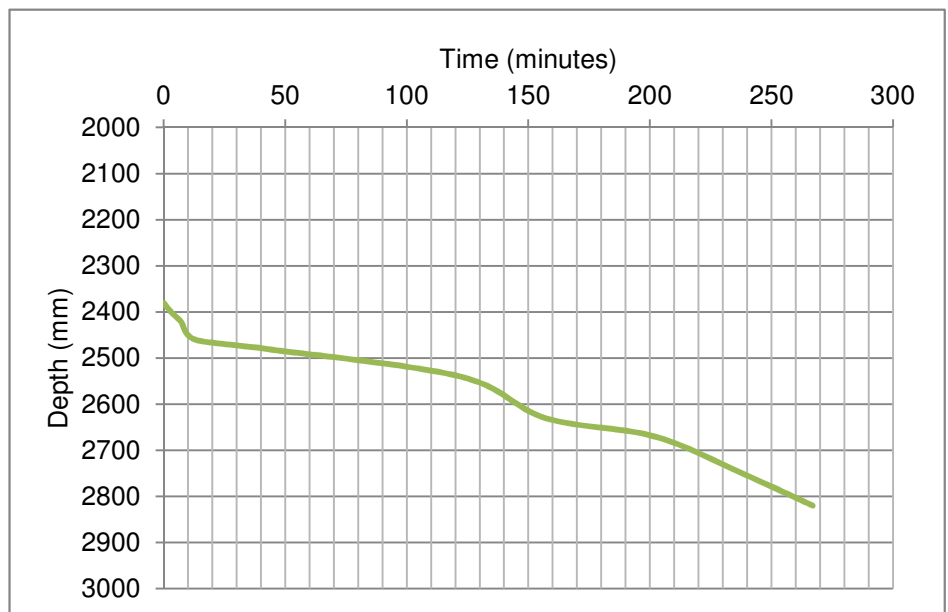
120 Seconds

Depth to water after completion of pumping:

2380 mm

Time (min) Depth (mm)

0	2380
3	2400
7	2420
13	2460
42	2480
122	2540
157	2630
202	2670
238	2750
267	2820

**Test Pit Log**

Depth (m)	Description
0.0 - 0.35	TOPSOIL
0.35 - 0.90	Weathered orange SANDSTONE cobbles in sand
0.90 - 2.85	Strong SANDSTONE, locally fractured

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA14-03

Soil Infiltration Rate in Accordance with BR365

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

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 = **2380** mm Average water depth: **200** mm
Start time = **0** min Change in water depth: **540** mm

Final parameters

Depth to water = **2920** mm Time interval: **292** min
End time = **292** min

Effective Storage Volume of Water in the Trial Pit = **6.2322** m³
75% Effective Depth = **2498** mm from ground level
25% Effective Depth = **2733** mm from ground level
Time at 75% Effective Depth = **75** minutes
Time at 25% Effective Depth = **230** minutes

V_{p75-25} = **3.12** m³
 a_{p50} = **16.69** m²
 t_{p75-25} = **9300** sec
 f = **2.0E-05** m/sec

Average Soakaway Rate = **4.1E-04** m³/sec
Average soakaway area = **16.18** m² (sides + base)

BR365 Soil Infiltration Rate = 2.0E-05 m/sec
Average Infiltration Rate = 2.5E-05 m/sec

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PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA15-01**Test Pit Dimensions**

Length = 4100 mm

Plan area = 15.99 m²

Width = 3900 mm

Depth = 3100 mm (Total depth)

Approximate time to discharge water into the hole:

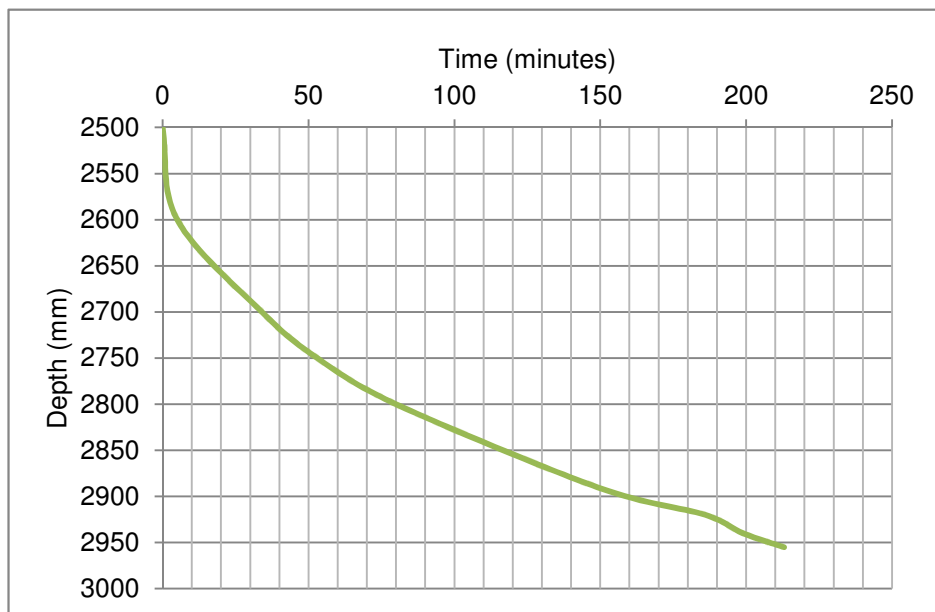
120 Seconds

Depth to water after completion of pumping:

2500 mm

Time (min) **Depth (mm)**

0	2500
5	2600
34	2700
53	2750
80	2800
149	2890
186	2920
199	2940
213	2955

**Test Pit Log**

Depth (m)	Description
0.0 - 0.25	TOPSOIL
0.25 - 1.3	Orange silt, gravel and cobbles
1.3 - 1.7	SANDSTONE, recovered as gravel.
1.7 - 3.1	Hard SANDSTONE, locally fractured

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA15-01

Soil Infiltration Rate in Accordance with BR365

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

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 = **2500** mm Average water depth: **390** mm
 Start time = **0** min Change in water depth: **420** mm

Final parameters

Depth to water = **2920** mm Time interval: **209** min
 End time = **209** min

Effective Storage Volume of Water in the Trial Pit = **9.594** m³
 75% Effective Depth = **2650** mm from ground level
 25% Effective Depth = **2950** mm from ground level
 Time at 75% Effective Depth = **18** minutes
 Time at 25% Effective Depth = **209** minutes

V_{p75-25} = **4.80** m³
 a_{p50} = **20.79** m²
 t_{p75-25} = **11460** sec
 f = **2.0E-05** m/sec

Average Soakaway Rate = **5.4E-04** m³/sec
 Average soakaway area = **22.23** m² (sides + base)

BR365 Soil Infiltration Rate = 2.0E-05 m/sec
Average Infiltration Rate = 2.4E-05 m/sec

(Consulting Engineers) Ltd

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA15-02**Test Pit Dimensions**

Length = 4100 mm

Plan area = 15.99 m²

Width = 3900 mm

Depth = 3100 mm (Total depth)

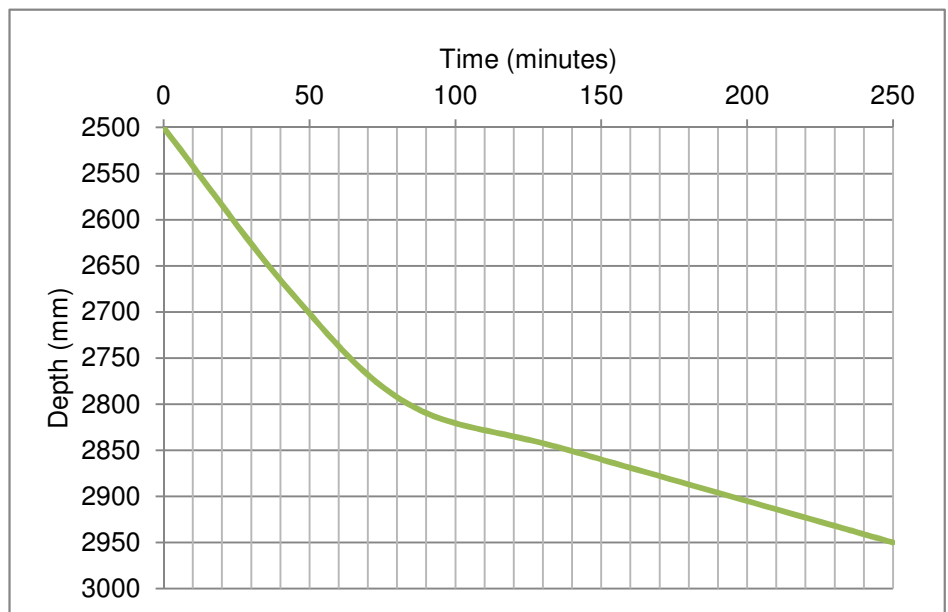
Approximate time to discharge water into the hole:

120 Seconds

Depth to water after completion of pumping:

2500 mm

Time (min)	Depth (mm)
0	2500
44	2680
84	2800
139	2850
250	2950

**Test Pit Log**

Depth (m)	Description
0.0 - 0.25	TOPSOIL
0.25 - 1.3	Orange silt, gravel and cobbles
1.3 - 1.7	SANDSTONE, recovered as gravel.
1.7 - 3.1	Hard SANDSTONE, locally fractured

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA15-02

Soil Infiltration Rate in Accordance with BR365

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

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 = **2500** mm Average water depth: **375** mm
 Start time = **0** min Change in water depth: **450** mm

Final parameters

Depth to water = **2950** mm Time interval: **250** min
 End time = **250** min

Effective Storage Volume of Water in the Trial Pit = **9.594** m³
 75% Effective Depth = **2650** mm from ground level
 25% Effective Depth = **2950** mm from ground level
 Time at 75% Effective Depth = **38** minutes
 Time at 25% Effective Depth = **250** minutes

V_{p75-25} = **4.80** m³
 a_{p50} = **20.79** m²
 t_{p75-25} = **12720** sec
 f = **1.8E-05** m/sec

Average Soakaway Rate = **4.8E-04** m³/sec
 Average soakaway area = **21.99** m² (sides + base)

BR365 Soil Infiltration Rate = 1.8E-05 m/sec
Average Infiltration Rate = 2.2E-05 m/sec

(Consulting Engineers) Ltd

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA15-03**Test Pit Dimensions**

Length = 4100 mm

Plan area = 15.99 m²

Width = 3900 mm

Depth = 3450 mm (Total depth)

Approximate time to discharge water into the hole:

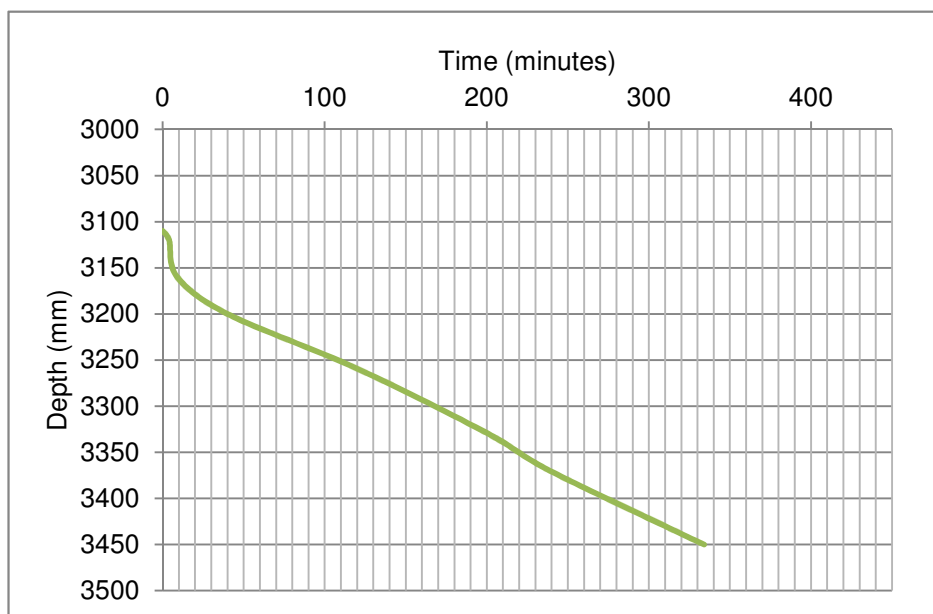
120 Seconds

Depth to water after completion of pumping:

3110 mm

Time (min) Depth (mm)

0	3110
4	3120
9	3160
40	3200
121	3260
201	3330
239	3370
334	3450

**Test Pit Log**

Depth (m)	Description
0.0 - 0.25	TOPSOIL
0.25 - 1.3	Orange silt, gravel and cobbles
1.3 - 1.7	SANDSTONE, recovered as gravel.
1.7 - 3.45	Hard SANDSTONE, locally fractured

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA15-03

Soil Infiltration Rate in Accordance with BR365

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

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 = **3110** mm Average water depth: **170** mm
Start time = **0** min Change in water depth: **340** mm

Final parameters

Depth to water = **3450** mm Time interval: **334** min
End time = **334** min

Effective Storage Volume of Water in the Trial Pit = **5.4366** m³
75% Effective Depth = **3195** mm from ground level
25% Effective Depth = **3365** mm from ground level
Time at 75% Effective Depth = **40** minutes
Time at 25% Effective Depth = **245** minutes

V_{p75-25} = **2.72** m³
 a_{p50} = **18.71** m²
 t_{p75-25} = **12300** sec
 f = **1.2E-05** m/sec

Average Soakaway Rate = **2.7E-04** m³/sec
Average soakaway area = **18.71** m² (sides + base)

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

(Consulting Engineers) Ltd

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA16-01**Test Pit Dimensions**

Length = 3600 mm

Plan area = 6.84 m²

Width = 1900 mm

Depth = 1600 mm (Total depth)

Approximate time to discharge water into the hole:

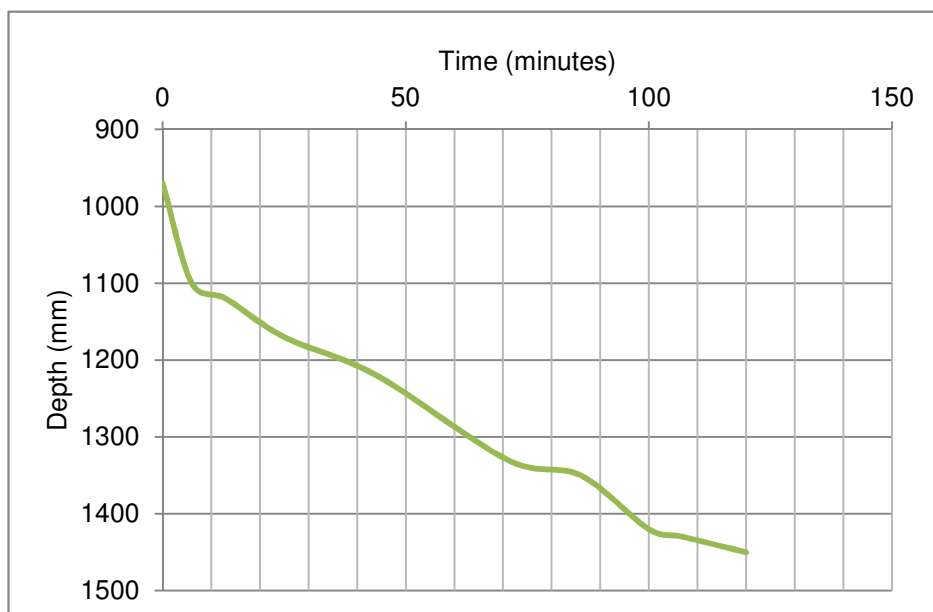
120 Seconds

Depth to water after completion of pumping:

970 mm

Time (min) **Depth (mm)**

0	970
6	1100
13	1120
25	1170
44	1220
71	1330
86	1350
100	1420
107	1430
120	1450

**Test Pit Log**

Depth (m)	Description
0.0 - 0.5	TOPSOIL
0.5 - 1.2	Sandstone gravel in sand matrix
1.2 - 1.6	SANDSTONE, recovered as sandy subangular gravel

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA16-01

Soil Infiltration Rate in Accordance with BR365

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

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 = **970 mm** Average water depth: **400 mm**

Start time = **0 min**

Change in water depth: **460 mm**

Final parameters

Depth to water = **1430 mm**

Time interval: **107 min**

End time = **107 min**

Effective Storage Volume of Water in the Trial Pit	=	4.3092 m³
75% Effective Depth	=	1128 mm from ground level
25% Effective Depth	=	1443 mm from ground level
Time at 75% Effective Depth	=	15 minutes
Time at 25% Effective Depth	=	115 minutes

V_{p75-25} = **2.15 m³**

a_{p50} = **10.31 m²**

t_{p75-25} = **6000 sec**

f = **3.5E-05 m/sec**

Average Soakaway Rate = **4.9E-04 m³/sec**

Average soakaway area = **11.24 m²** (sides + base)

BR365 Soil Infiltration Rate = 3.5E-05 m/sec

Average Infiltration Rate = 4.4E-05 m/sec

(Consulting Engineers) Ltd

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA16-02**Test Pit Dimensions**

Length = 3600 mm

Plan area = 6.84 m²

Width = 1900 mm

Depth = 1600 mm (Total depth)

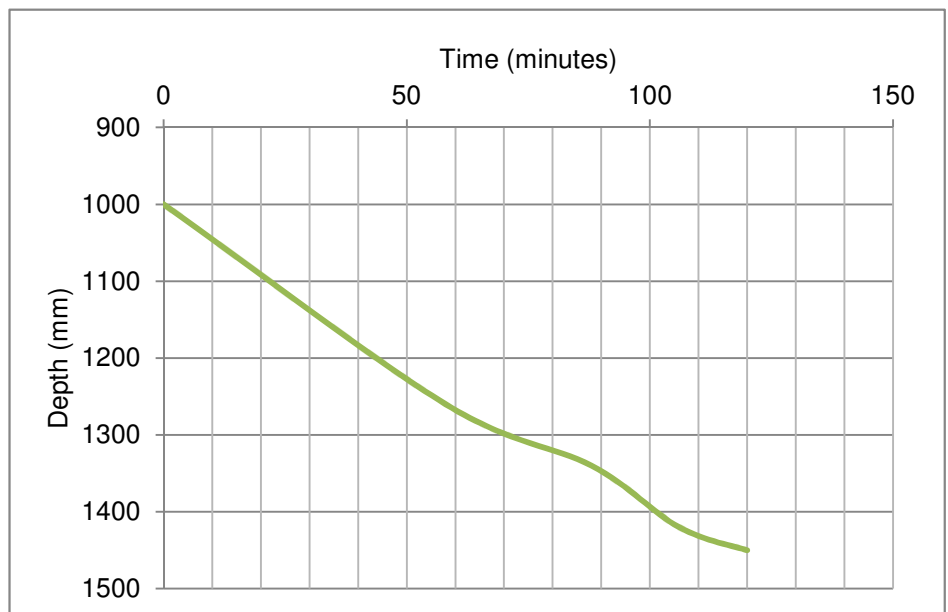
Approximate time to discharge water into the hole:

120 Seconds

Depth to water after completion of pumping:

1000 mm

Time (min)	Depth (mm)
0	1000
58	1260
88	1340
106	1420
120	1450

**Test Pit Log**

Depth (m)	Description
0.0 - 0.5	TOPSOIL
0.5 - 1.2	Sandstone gravel in sand matrix
1.2 - 1.6	SANDSTONE, recovered as sandy subangular gravel

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA16-02

Soil Infiltration Rate in Accordance with BR365

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

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 = **1000** mm Average water depth: **375** mm
 Start time = **0** min Change in water depth: **450** mm

Final parameters

Depth to water = **1450** mm Time interval: **120** min
 End time = **120** min

Effective Storage Volume of Water in the Trial Pit = **4.104** m³
 75% Effective Depth = **1150** mm from ground level
 25% Effective Depth = **1450** mm from ground level
 Time at 75% Effective Depth = **33** minutes
 Time at 25% Effective Depth = **120** minutes

V_{p75-25} = **2.05** m³
 a_{p50} = **10.14** m²
 t_{p75-25} = **5220** sec
 f = **3.9E-05** m/sec

Average Soakaway Rate = **4.3E-04** m³/sec
 Average soakaway area = **10.97** m² (sides + base)

BR365 Soil Infiltration Rate = 3.9E-05 m/sec
Average Infiltration Rate = 3.9E-05 m/sec

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PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA16-03**Test Pit Dimensions**

Length = 3600 mm

Plan area = 6.84 m²

Width = 1900 mm

Depth = 1600 mm (Total depth)

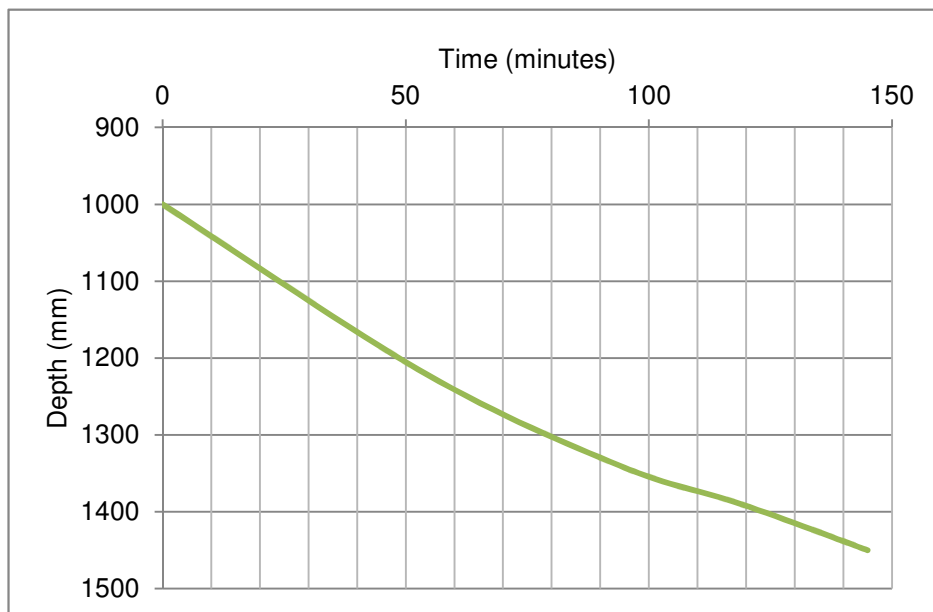
Approximate time to discharge water into the hole:

120 Seconds

Depth to water after completion of pumping:

1000 mm

Time (min)	Depth (mm)
0	1000
54	1220
94	1340
119	1390
145	1450

**Test Pit Log**

Depth (m)	Description
0.0 - 0.5	TOPSOIL
0.5 - 1.2	Sandstone gravel in sand matrix
1.2 - 1.6	SANDSTONE, recovered as sandy subangular gravel

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA16-03

Soil Infiltration Rate in Accordance with BR365

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

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 = **1000** mm Average water depth: **375** mm
Start time = **0** min

Change in water depth: **450** mm

Final parameters

Depth to water = **1450** mm Time interval: **145** min
End time = **145** min

Effective Storage Volume of Water in the Trial Pit = **4.104** m³
75% Effective Depth = **1150** mm from ground level
25% Effective Depth = **1450** mm from ground level
Time at 75% Effective Depth = **35** minutes
Time at 25% Effective Depth = **145** minutes

V_{p75-25} = **2.05** m³

a_{p50} = **10.14** m²

t_{p75-25} = **6600** sec

f = **3.1E-05** m/sec

Average Soakaway Rate = **3.5E-04** m³/sec
Average soakaway area = **10.97** m² (sides + base)

BR365 Soil Infiltration Rate = 3.1E-05 m/sec
Average Infiltration Rate = 3.2E-05 m/sec

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PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA16-04**Test Pit Dimensions**

Length = 3600 mm

Plan area = 6.84 m²

Width = 1900 mm

Depth = 1700 mm (Total depth)

Approximate time to discharge water into the hole:

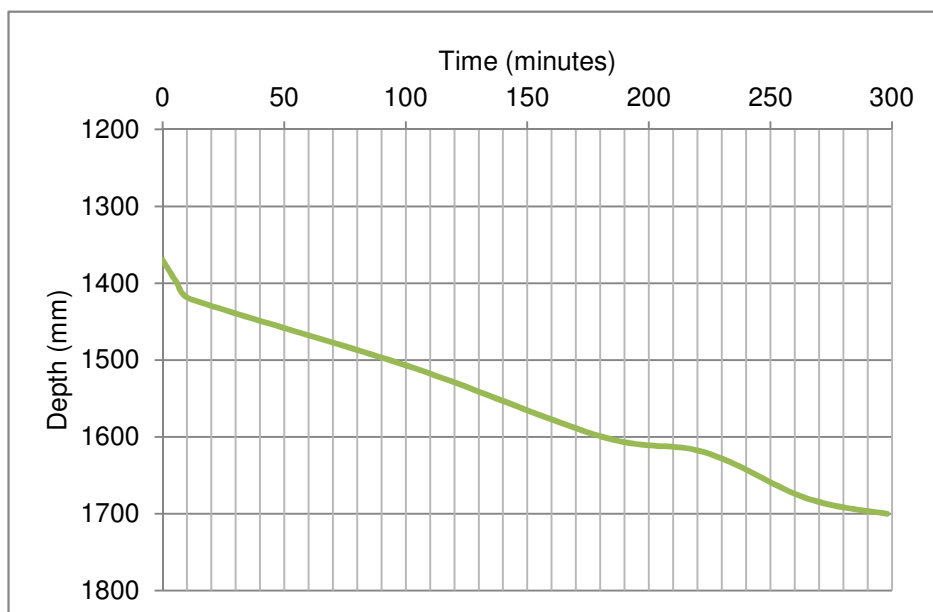
120 Seconds

Depth to water after completion of pumping:

1370 mm

Time (min)	Depth (mm)
------------	------------

0	1370
6	1400
11	1420
103	1510
181	1600
223	1620
265	1680
298	1700

**Test Pit Log**

Depth (m)	Description
0.0 - 0.5	TOPSOIL
0.5 - 1.2	Sandstone gravel in sand matrix
1.2 - 1.7	SANDSTONE, recovered as sandy subangular gravel

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA16-04

Soil Infiltration Rate in Accordance with BR365

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

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 = **1370** mm Average water depth: **165** mm
Start time = **0** min

Change in water depth: **330** mm

Final parameters

Depth to water = **1700** mm Time interval: **298** min
End time = **298** min

Effective Storage Volume of Water in the Trial Pit = **2.2572** m³
75% Effective Depth = **1453** mm from ground level
25% Effective Depth = **1618** mm from ground level
Time at 75% Effective Depth = **145** minutes
Time at 25% Effective Depth = **225** minutes

V_{p75-25} = **1.13** m³

a_{p50} = **8.66** m²

t_{p75-25} = **4800** sec

f = **2.7E-05** m/sec

Average Soakaway Rate = **1.3E-04** m³/sec
Average soakaway area = **8.66** m² (sides + base)

BR365 Soil Infiltration Rate = 2.7E-05 m/sec
Average Infiltration Rate = 1.5E-05 m/sec

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PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA17-01**Test Pit Dimensions**

Length = 2800 mm

Plan area = 7.56 m²

Width = 2700 mm

Depth = 2700 mm (Total depth)

Approximate time to discharge water into the hole:

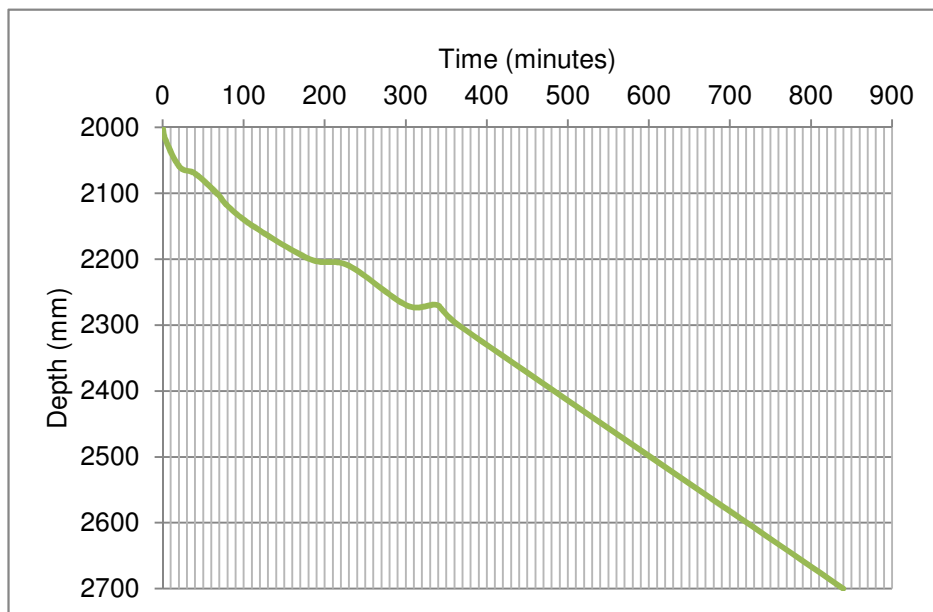
120 Seconds

Depth to water after completion of pumping:

2000 mm

Time (min) **Depth (mm)**

0	2000
4	2020
21	2060
40	2070
67	2100
81	2120
112	2150
182	2200
230	2210
301	2270
340	2270
365	2300
840	2700

**Test Pit Log**

Depth (m)	Description
0.0 - 0.25	Topsoil
0.25 - 0.90	Orange suorange subangular sandstone COBBLES in coarse orange sand.
0.9 - 2.7	Strong yellow SANDSTONE, locally fractured.

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA17-01

Soil Infiltration Rate in Accordance with BR365

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

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 = **2000** mm Average water depth: **550** mm
Start time = **0** min Change in water depth: **300** mm

Final parameters

Depth to water = **2300** mm Time interval: **365** min
End time = **365** min

Effective Storage Volume of Water in the Trial Pit = **5.292** m³
75% Effective Depth = **2175** mm from ground level
25% Effective Depth = **2525** mm from ground level
Time at 75% Effective Depth = **140** minutes
Time at 25% Effective Depth = **660** minutes

V_{p75-25} = **2.65** m³
 a_{p50} = **11.41** m²
 t_{p75-25} = **31200** sec
 f = **7.4E-06** m/sec

Average Soakaway Rate = **1.0E-04** m³/sec
Average soakaway area = **13.61** m² (sides + base)

BR365 Soil Infiltration Rate = 7.4E-06 m/sec
Average Infiltration Rate = 7.6E-06 m/sec

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PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA17-02**Test Pit Dimensions**

Length = 2800 mm

Plan area = 7.56 m²

Width = 2700 mm

Depth = 2600 mm (Total depth)

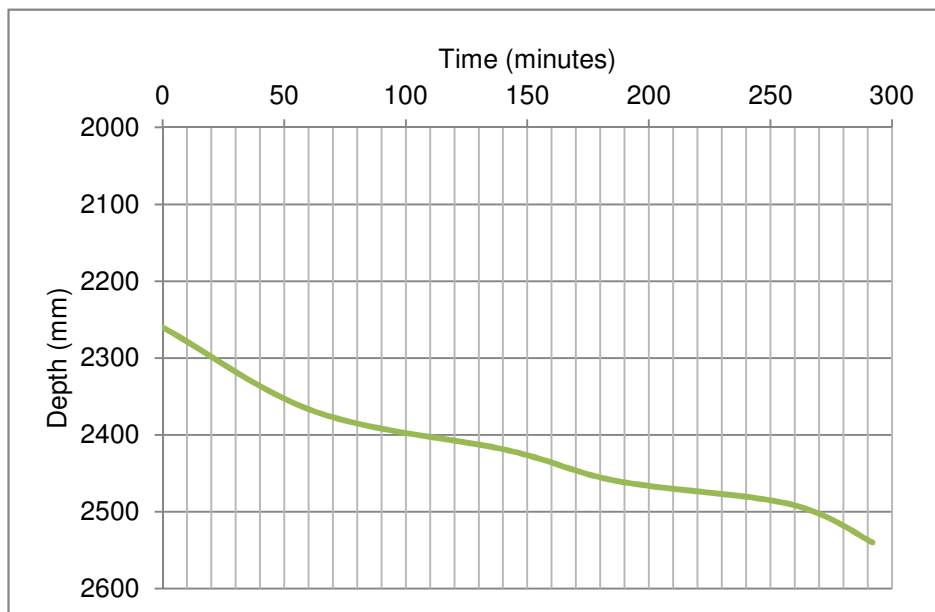
Approximate time to discharge water into the hole:

120 Seconds

Depth to water after completion of pumping:

2260 mm

Time (min)	Depth (mm)
0	2260
63	2370
142	2420
187	2460
258	2490
292	2540

**Test Pit Log**

Depth (m)	Description
0.0 - 0.25	Topsoil
0.25 - 0.90	Orange suorange subangular sandstone COBBLES in coarse orange sand.
0.9 - 2.6	Strong yellow SANDSTONE, locally fractured.

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA17-02

Soil Infiltration Rate in Accordance with BR365

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

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 = **2260** mm Average water depth: **200** mm
Start time = **0** min

Change in water depth: **280** mm

Final parameters

Depth to water = **2540** mm Time interval: **292** min
End time = **292** min

Effective Storage Volume of Water in the Trial Pit = **2.5704** m³
75% Effective Depth = **2345** mm from ground level
25% Effective Depth = **2515** mm from ground level
Time at 75% Effective Depth = **50** minutes
Time at 25% Effective Depth = **280** minutes

V_{p75-25} = **1.29** m³

a_{p50} = **9.43** m²

t_{p75-25} = **13800** sec

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

Average Soakaway Rate = **1.2E-04** m³/sec
Average soakaway area = **9.76** m² (sides + base)

BR365 Soil Infiltration Rate = 9.9E-06 m/sec
Average Infiltration Rate = 1.2E-05 m/sec

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PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA17-03**Test Pit Dimensions**

Length = 2800 mm

Plan area = 7.56 m²

Width = 2700 mm

Depth = 2600 mm (Total depth)

Approximate time to discharge water into the hole:

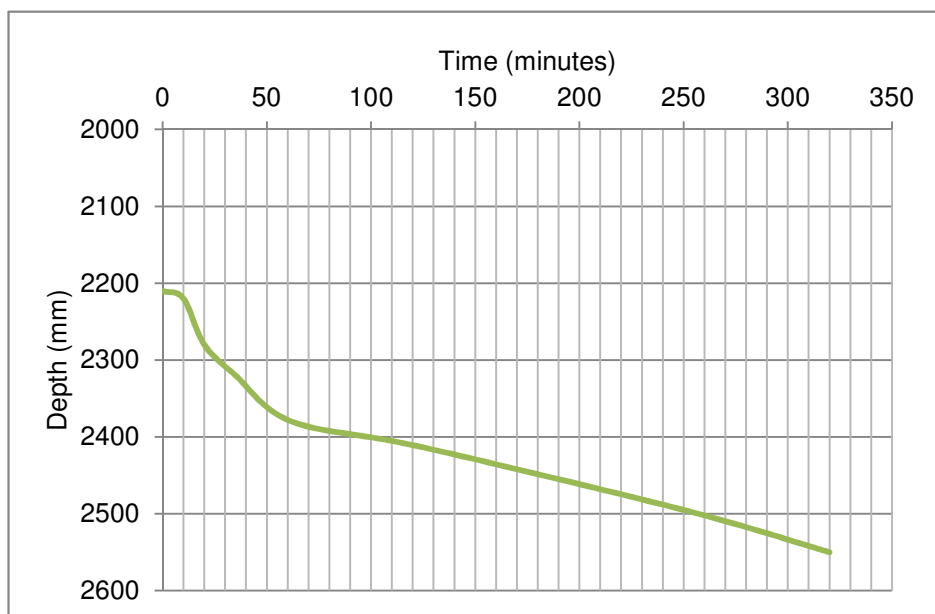
120 Seconds

Depth to water after completion of pumping:

2210 mm

Time (min) **Depth (mm)**

0	2210
10	2220
20	2280
35	2320
62	2380
124	2413
250	2495
320	2550

**Test Pit Log**

Depth (m)	Description
0.0 - 0.25	Topsoil
0.25 - 0.90	Orange suorange subangular sandstone COBBLES in coarse orange sand.
0.9 - 2.6	Strong yellow SANDSTONE, locally fractured.

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA17-03

Soil Infiltration Rate in Accordance with BR365

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

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 = **2210** mm Average water depth: **220** mm

Start time = **0** min

Change in water depth: **340** mm

Final parameters

Depth to water = **2550** mm

Time interval: **330** min

End time = **330** min

Effective Storage Volume of Water in the Trial Pit	=	2.9484 m ³
75% Effective Depth	=	2308 mm from ground level
25% Effective Depth	=	2503 mm from ground level
Time at 75% Effective Depth	=	28 minutes
Time at 25% Effective Depth	=	260 minutes

V_{p75-25} = **1.47** m³

a_{p50} = **9.71** m²

t_{p75-25} = **13920** sec

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

Average Soakaway Rate = **1.3E-04** m³/sec

Average soakaway area = **9.98** m² (sides + base)

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

Average Infiltration Rate = 1.3E-05 m/sec

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PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA18-01**Test Pit Dimensions**

Length = 2700 mm

Plan area = 7.02 m²

Width = 2600 mm

Depth = 2800 mm (Total depth)

Approximate time to discharge water into the hole:

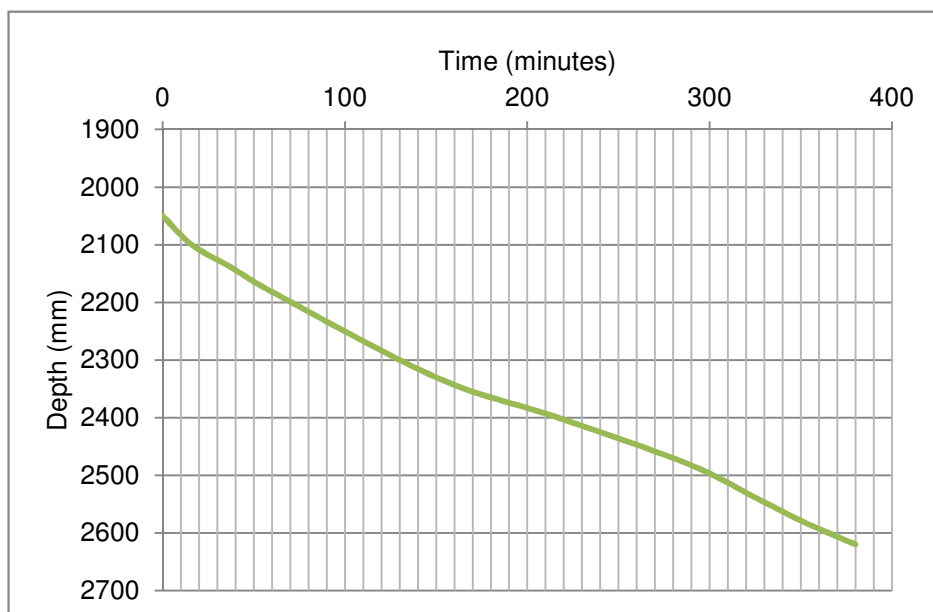
120 Seconds

Depth to water after completion of pumping:

2050 mm

Time (min) **Depth (mm)**

0	2050
16	2100
38	2140
59	2180
150	2330
217	2400
288	2480
326	2540
351	2580
380	2620

**Test Pit Log**

Depth (m)	Description
0.0 - 0.3	TOPSOIL
0.3 - 0.85	Sandstone gravel in sand matrix
0.85 - 1.3	SANDSTONE, recovered as sandy subangular gravel
1.3 - 2.8	Hard sandstone, locally fractured.

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA18-01

Soil Infiltration Rate in Accordance with BR365

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

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 = **2050** mm Average water depth: **485** mm
Start time = **0** min Change in water depth: **530** mm

Final parameters

Depth to water = **2580** mm Time interval: **351** min
End time = **351** min

Effective Storage Volume of Water in the Trial Pit = **5.265** m³
75% Effective Depth = **2238** mm from ground level
25% Effective Depth = **2613** mm from ground level
Time at 75% Effective Depth = **80** minutes
Time at 25% Effective Depth = **370** minutes

V_{p75-25} = **2.63** m³
 a_{p50} = **11.00** m²
 t_{p75-25} = **17400** sec
 f = **1.4E-05** m/sec

Average Soakaway Rate = **1.8E-04** m³/sec
Average soakaway area = **12.16** m² (sides + base)

BR365 Soil Infiltration Rate = 1.4E-05 m/sec
Average Infiltration Rate = 1.5E-05 m/sec

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PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA18-02**Test Pit Dimensions**

Length = 2700 mm

Plan area = 7.02 m²

Width = 2600 mm

Depth = 2600 mm (Total depth)

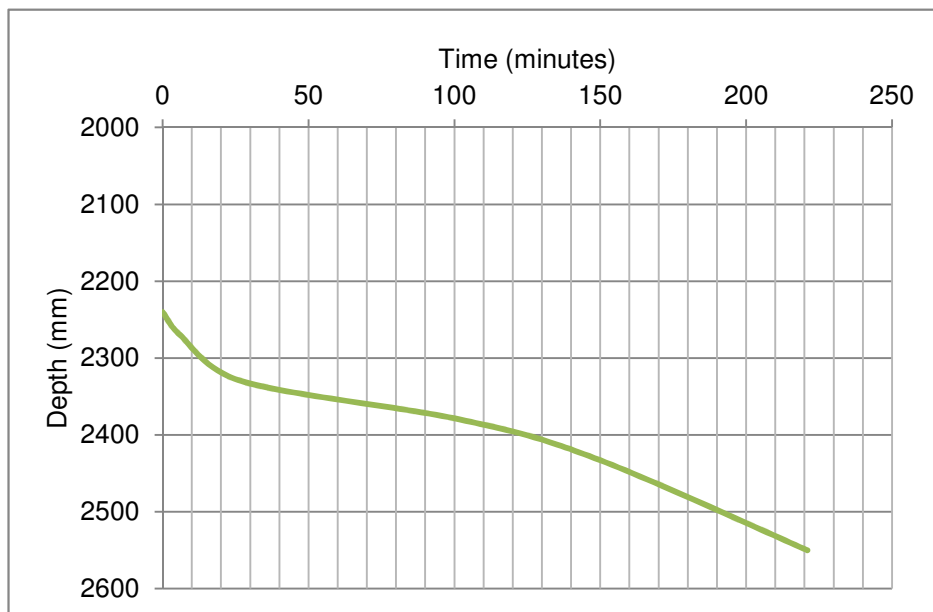
Approximate time to discharge water into the hole:

120 Seconds

Depth to water after completion of pumping:

2240 mm

Time (min)	Depth (mm)
0	2240
6	2270
27	2330
102	2380
148	2430
221	2550

**Test Pit Log**

Depth (m)	Description
0.0 - 0.3	TOPSOIL
0.3 - 0.85	Sandstone gravel in sand matrix
0.85 - 1.3	SANDSTONE, recovered as sandy subangular gravel
1.3 - 2.6	Hard sandstone, locally fractured.

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA18-02

Soil Infiltration Rate in Accordance with BR365

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

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 = **2240** mm Average water depth: **205** mm

Start time = **0** min

Change in water depth: **310** mm

Final parameters

Depth to water = **2550** mm

Time interval: **221** min

End time = **221** min

Effective Storage Volume of Water in the Trial Pit	=	2.5272 m ³
75% Effective Depth	=	2330 mm from ground level
25% Effective Depth	=	2510 mm from ground level
Time at 75% Effective Depth	=	27 minutes
Time at 25% Effective Depth	=	195 minutes

V_{p75-25} = **1.26** m³

a_{p50} = **8.93** m²

t_{p75-25} = **10080** sec

f = **1.4E-05** m/sec

Average Soakaway Rate = **1.6E-04** m³/sec

Average soakaway area = **9.19** m² (sides + base)

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

Average Infiltration Rate = 1.8E-05 m/sec

PROJECT:	CROSS LANE, SCHOLDS	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No.	SA18-03
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Test Pit Dimensions

Length = **2700** mm

Plan area = **7.02 m²**

Width = **2600** mm

Depth = **2600** mm (Total depth)

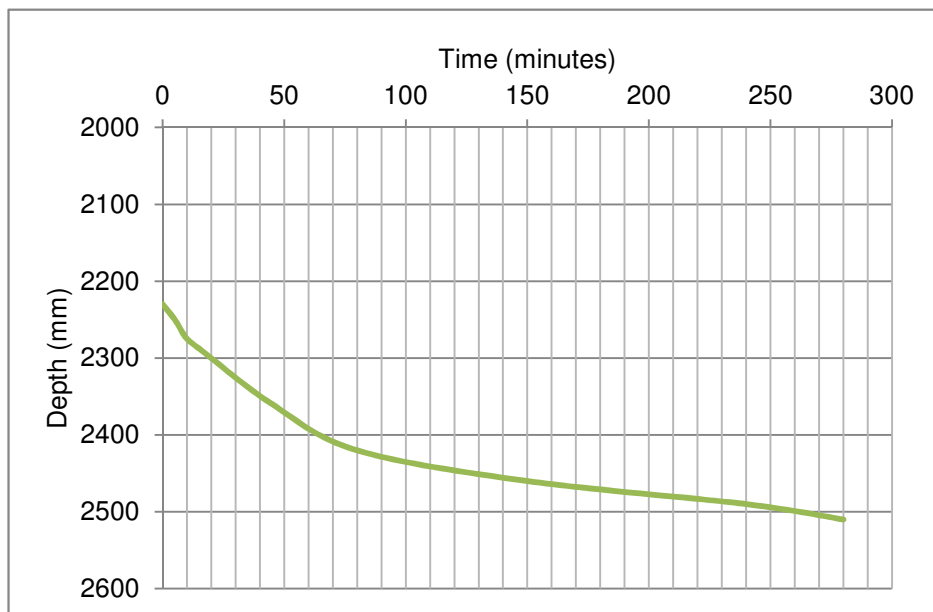
Approximate time to discharge water into the hole:

120 Seconds

Depth to water after completion of pumping:

2230 mm

Time (min)	Depth (mm)
0	2230
5	2250
10	2275
16	2290
45	2360
80	2420
150	2460
240	2490
280	2510



Test Pit Log

Depth (m)	Description
0.0 - 0.3	TOPSOIL
0.3 - 0.85	Sandstone gravel in sand matrix
0.85 - 1.3	SANDSTONE, recovered as sandy subangular gravel
1.3 - 2.6	Hard sandstone, locally fractured.

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA18-03

Soil Infiltration Rate in Accordance with BR365

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

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 = **2230** mm Average water depth: **230** mm

Start time = **0** min

Change in water depth: **280** mm

Final parameters

Depth to water = **2510** mm

Time interval: **280** min

End time = **280** min

Effective Storage Volume of Water in the Trial Pit	=	2.5974 m ³
75% Effective Depth	=	2323 mm from ground level
25% Effective Depth	=	2508 mm from ground level
Time at 75% Effective Depth	=	30 minutes
Time at 25% Effective Depth	=	279 minutes

V_{p75-25} = **1.30** m³

a_{p50} = **8.98** m²

t_{p75-25} = **14940** sec

f = **9.7E-06** m/sec

Average Soakaway Rate = **1.2E-04** m³/sec

Average soakaway area = **9.46** m² (sides + base)

BR365 Soil Infiltration Rate = 9.7E-06 m/sec

Average Infiltration Rate = 1.2E-05 m/sec

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PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA19-01**Test Pit Dimensions**

Length = 2600 mm

Plan area = 6.76 m²

Width = 2600 mm

Depth = 2200 mm (Total depth)

Approximate time to discharge water into the hole:

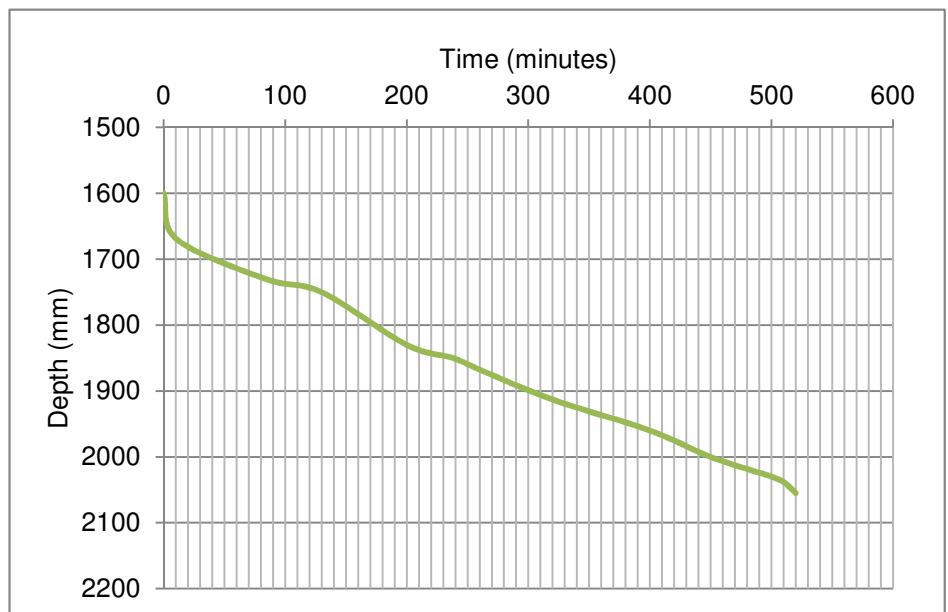
120 Seconds

Depth to water after completion of pumping:

1600 mm

Time (min) **Depth (mm)**

0	1600
11	1670
84	1730
130	1750
200	1830
238	1850
263	1870
320	1913
400	1960
450	2000
500	2030
510	2038
520	2055

**Test Pit Log**

Depth (m)	Description
0.0 - 0.35	TOPSOIL: Dark brown clayey sand.
0.35 - 0.60	Weathered orange subangular sandstone COBBLES in coarse orange sand.
0.60 - 2.20	Strong yellow SANDSTONE. Locally fractured.

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 08/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared GB	Checked AK

Test No. SA19-01

Soil Infiltration Rate in Accordance with BR365

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

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 = **1600** mm Average water depth: **372.5** mm
Start time = **0** min

Change in water depth: **455** mm

Final parameters

Depth to water = **2055** mm Time interval: **520** min
End time = **520** min

Effective Storage Volume of Water in the Trial Pit = **4.056** m³
75% Effective Depth = **1750** mm from ground level
25% Effective Depth = **2050** mm from ground level
Time at 75% Effective Depth = **130** minutes
Time at 25% Effective Depth = **518** minutes

V_{p75-25} = **2.03** m³

a_{p50} = **9.88** m²

t_{p75-25} = **23280** sec

f = **8.8E-06** m/sec

Average Soakaway Rate = **9.9E-05** m³/sec
Average soakaway area = **10.63** m² (sides + base)

BR365 Soil Infiltration Rate = 8.8E-06 m/sec
Average Infiltration Rate = 9.3E-06 m/sec

(Consulting Engineers) Ltd

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA19-02**Test Pit Dimensions**

Length = 2600 mm

Plan area = 6.76 m²

Width = 2600 mm

Depth = 1950 mm (Total depth)

Approximate time to discharge water into the hole:

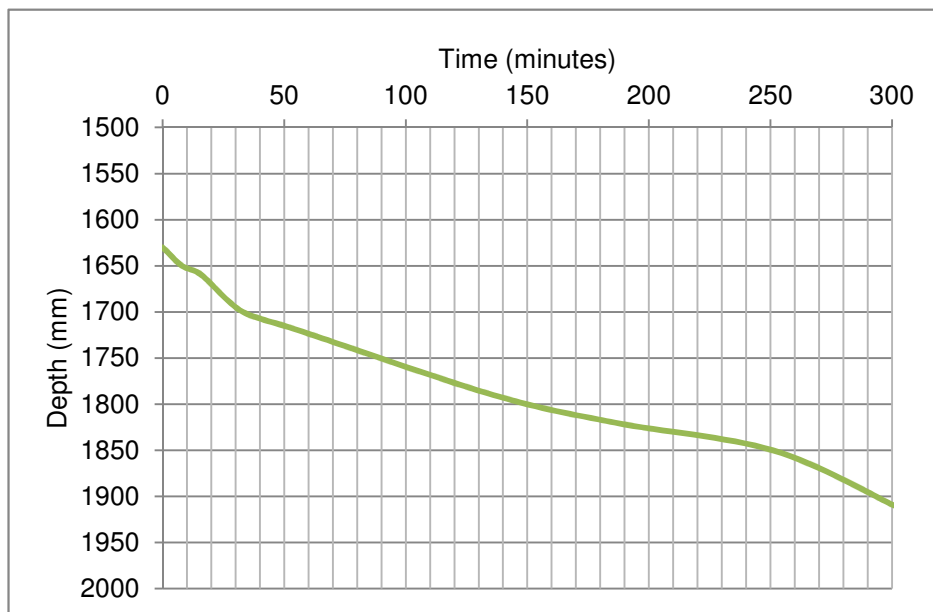
120 Seconds

Depth to water after completion of pumping:

1630 mm

Time (min) **Depth (mm)**

0	1630
8	1650
16	1660
33	1700
56	1720
136	1790
186	1820
251	1850
301	1910

**Test Pit Log**

Depth (m)	Description
0.0 - 0.35	TOPSOIL: Dark brown clayey sand.
0.35 - 0.60	Weathered orange subangular sandstone COBBLES in coarse orange sand.
0.60 - 1.95	Strong yellow SANDSTONE. Locally fractured.

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA19-02

Soil Infiltration Rate in Accordance with BR365

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

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 = **1630** mm Average water depth: **180** mm
Start time = **0** min Change in water depth: **280** mm

Final parameters

Depth to water = **1910** mm Time interval: **301** min
End time = **301** min

Effective Storage Volume of Water in the Trial Pit = **2.1632** m³
75% Effective Depth = **1710** mm from ground level
25% Effective Depth = **1870** mm from ground level
Time at 75% Effective Depth = **40** minutes
Time at 25% Effective Depth = **275** minutes

V_{p75-25} = **1.08** m³
 a_{p50} = **8.42** m²
 t_{p75-25} = **14100** sec
 f = **9.1E-06** m/sec

Average Soakaway Rate = **1.0E-04** m³/sec
Average soakaway area = **8.63** m² (sides + base)

BR365 Soil Infiltration Rate = 9.1E-06 m/sec
Average Infiltration Rate = 1.2E-05 m/sec

(Consulting Engineers) Ltd

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA19-03**Test Pit Dimensions**

Length = 2600 mm

Plan area = 6.76 m²

Width = 2600 mm

Depth = 1950 mm (Total depth)

Approximate time to discharge water into the hole:

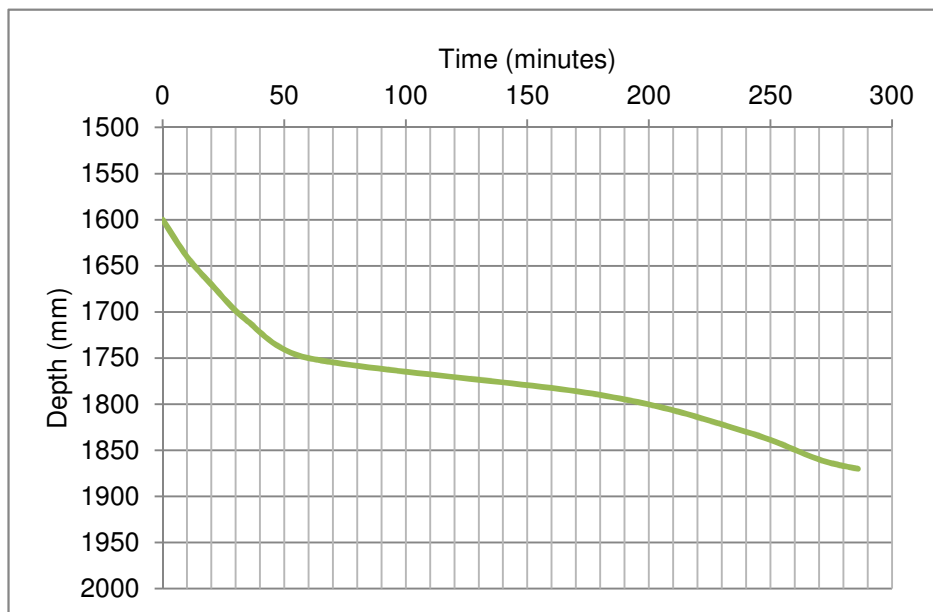
120 Seconds

Depth to water after completion of pumping:

1600 mm

Time (min) **Depth (mm)**

0	1600
10	1640
20	1670
35	1710
60	1750
180	1790
240	1830
270	1860
286	1870

**Test Pit Log**

Depth (m)	Description
0.0 - 0.35	TOPSOIL: Dark brown clayey sand.
0.35 - 0.60	Weathered orange subangular sandstone COBBLES in coarse orange sand.
0.60 - 1.95	Strong yellow SANDSTONE. Locally fractured.

PROJECT:	CROSS LANE, SCHOLES	Job No. 40600	Date 09/02/2018
SUBJECT:	Infiltration Test Results and Calculation of Infiltration Rates	Prepared AK	Checked GB

Test No. SA19-03

Soil Infiltration Rate in Accordance with BR365

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

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 = **1600** mm Average water depth: **215** mm

Start time = **0** min

Change in water depth: **270** mm

Final parameters

Depth to water = **1870** mm

Time interval: **286** min

End time = **286** min

Effective Storage Volume of Water in the Trial Pit	=	2.366 m ³
75% Effective Depth	=	1688 mm from ground level
25% Effective Depth	=	1863 mm from ground level
Time at 75% Effective Depth	=	28 minutes
Time at 25% Effective Depth	=	280 minutes

V_{p75-25} = **1.18** m³

a_{p50} = **8.58** m²

t_{p75-25} = **15120** sec

f = **9.1E-06** m/sec

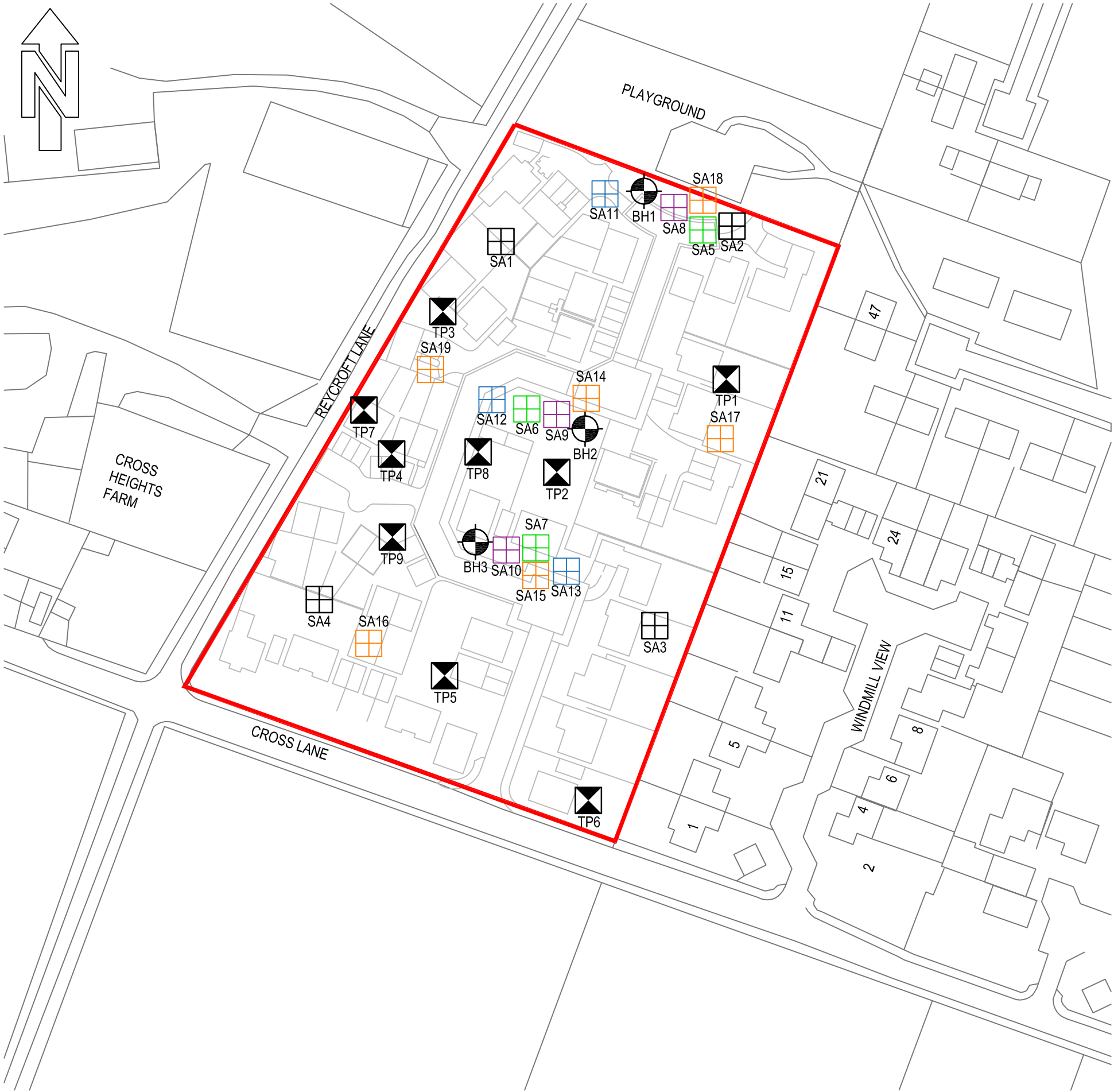
Average Soakaway Rate = **1.1E-04** m³/sec

Average soakaway area = **9.00** m² (sides + base)

BR365 Soil Infiltration Rate = 9.1E-06 m/sec

Average Infiltration Rate = 1.2E-05 m/sec

INFORMATION WITHIN THIS DRAWING IS NOT NECESSARILY PRODUCED TO SCALE.
ALWAYS USE FIGURED DIMENSIONS AND CO-ORDINATES - IF IN DOUBT, ASK.



-  Approximate location of Trial pits excavated by Eastwood & Partners on 03.11.16.
-  Approximate location of Soakaway tests carried out by Eastwood & Partners on 03.11.16.
-  Approximate location of Soakaway tests carried out by Eastwood & Partners on 17.01.17.
-  Approximate location of soakaway tests carried out by Eastwood and Partners on 12.06.17.
-  Approximate location of soakaway tests carried out by Eastwood and Partners on 05.10.17.
-  Approximate location of soakaway tests carried out by Eastwood and Partners on 08.02.18-09.02.18.
-  Approximate location of Borehole excavated by Eastwood & Partners on 17.01.17.

E	SA14-SA19 added.	RJ	AJK	09.02.18
D	SA11-SA13 added.	RH	SE	09.10.17
C	SA8-SA10 added.	JRB	KLG	06.07.17
B	SA5-SA7 and BH1-BH3 added.	JRB	SE	18.01.17
A	First Issue.			
REV	DESCRIPTION	SIG	CHK	DATE

MILLER HOMES

CROSS LANE, SCHOLES, HOLMFIRTH

EXPLORATORY HOLE LOCATION
PLAN

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EOP

SCALE WHEN PLOTTED AT A3			DRAWING STATUS	
1:1000			INFORMATION	
DRAWN	CHECKED	DATE	DRAWING NUMBER	REV
JQ	DES	18.11.16	40600/002	E