



Doc. Ref.	29018-CALC-0401
Sheet	1 of 19
Engineer	RF
Date	13/09/2024
Revision	-

SOIL INFILTRATION CALCULATIONS FRONT SHEET

SCHEME	Thurlaston Lane, Earl Shilton
CLIENT	Persimmon Homes North Midlands
ASPECTS OF SCHEME TO BE DESIGNED	Soil Infiltration Rate Testing
CODES OF PRACTICE, DESIGN SPECIFICATIONS & BRITISH STANDARDS	Soil Infiltration Rate testing and calculations completed in general accordance with BRE Digest 365 utilising the gravel fill method.
NOTES	The infiltration rates reported below apply to the specific depth ranges at the test locations as stated on the calculation sheets. Soil infiltration test locations have been positioned to specifically target the proposed attenuation basin and areas of predominantly granular strata identified by the previous ground investigation. Additional trial pits were advanced to confirm the depth to groundwater and investigate the extent of the infilled pond identified during the previous investigation. Infiltration rates for the proposed attenuation pond in the north have ranged between 2.14×10^{-6} m/s and 1.37×10^{-5} m/s and infiltration into the Thrussington Member will be viable at this location. The potential for infiltration within open spaces in the south of the site are likely to be more variable due to the presence of more cohesive strata, although it is noted based on the current development proposal that soakaways are not currently proposed for this area. The values presented below should be adopted for the exact test locations

INDEX

Pages	Calculations	Checked by	Approved By	Date
2	Exploratory hole location plan	CW	DT	20.09.24
3-9	Exploratory hole logs			
10	SA201 – Test 1 6.89×10^{-6} m/s			
11	SA201 – Test 2 3.24×10^{-6} m/s (worst case)			
12	SA201 – Test 3 4.15×10^{-6} m/s			
13	SA202 – Test 1 3.46×10^{-5} m/s			
14	SA202 – Test 2 1.96×10^{-5} m/s (worst case)			
15	SA202 – Test 3 2.62×10^{-5} m/s			
16	SA203 – Test 1 6.13×10^{-6} m/s			
17	SA203 – Test 2 4.01×10^{-6} m/s (worst case)			
18	SA203 – Test 3 6.42×10^{-6} m/s			
19	SA204 – Test 1 Insufficient drainage to derive infiltration rate			



GENERAL NOTES

- DO NOT SCALE THIS DRAWING.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS, ARCHITECTS AND SPECIALIST DESIGN DRAWINGS AND DETAILS.
- ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
- THIS DRAWING IS FOR STRATEGY PURPOSES ONLY AND IS NOT TO BE USED FOR CONSTRUCTION PURPOSES.

KEY

TP01 TRIAL PIT LOCATION

SA01 SOAKAWAY TEST LOCATION

APPROXIMATE SITE BOUNDARY

FIRST ISSUE		DW	CW	DT	20.09.24
REV	AMENDMENTS	DRN	CHK	APP	DATE
PROJECT: THURLASTON LANE EARL SHILTON					
DRAWING TITLE: EXPLORATORY HOLE LOCATION PLAN					
CLIENT: PERSIMMON HOMES NORTH MIDLANDS					
DRAWING NUMBER: 29018_04_140_01					
REVISION: -	SHEET SIZE: A1	SCALE: 1:500			
STATUS: FOR INFORMATION / APPROVAL					
MEC Consulting Group Birmingham Brighton Leicester		Telephone: 01530 284 753 Email: group@me-c.co.uk Website: www.m-ec.co.uk ORDNANCE SURVEY © CROWN COPYRIGHT 2015. ALL RIGHTS RESERVED. LICENCE NUMBER 100055865.			



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Exploratory
Hole ID:

SA201
Sheet 1 of 1

Project:	Earl Shilton	Project No.	29018	Start Date:	09/09/2024	End Date:	09/09/2024	Plant Used:	JCB 3CX
Location:	Thurlaston Lane	Logged By:	CC	Easting and Northing Co-ordinates:		Elevation (m AOD):			
Client:	Persimmon Homes North Midlands	Approved By:	DT						

Strata Description	Legend	Depth (m)	Level (m AOD)	Samples		Tests	Groundwater (m)
				Type	Depth		
Grass over brown silty, clayey sand TOPSOIL with rare sub-rounded to rounded, fine to coarse gravels of flint and quartzite.		0.30	97.20				
Brown becoming reddish brown, clayey, silty, slightly gravelly, fine to coarse SAND. Gravel comprises sub-rounded, fine to coarse quartzite and flint with cobbles of quartzite and flint. THRUSSINGTON MEMBER							
End of Trial Pit		2.10	95.40				

Remarks: Exploratory hole location scanned with Cable Avoidance Tool and Signal Generator. Descriptions based on visual inspection by a Geo-environmental engineer. Groundwater was not encountered. Visual or olfactory evidence of contamination was not observed. Co-ordinates and elevations estimated from the topographical survey.	Dimensions: Width: 0.60m Length: 2.00m Depth: 2.10m	Key: B - Bulk Sample D - Disturbed Sample ES - Environmental Sample W - Water Sample PID - PID Reading HSV - Hand Shear Vane Reading
Stability: Stable		



Sheet 1 of 1

Plant Used:
JCB 3CX

Elevation (m AOD):

97.50

Groundwater
(m)

95.30

B - Bulk Sample
D - Disturbed Sample
ES - Environmental Sample
W - Water Sample
PID - PID Reading
HSV - Hand Shear Vane Reading

Stability: Stable



Sheet 1 of 1

Plant Used.
JCB 3CX

Elevation (m AOD):	
--------------------	--

101.40

Groundwater
(m)

101.15

99.40

End of Trial Pit

B - Bulk Sample
D - Disturbed Sample
ES - Environmental Sample
W - Water Sample
PID - PID Reading
HSV - Hand Shear Vane Reading

Stability: Stable



Sheet 1 of 1

Plant Used:
JCB 3CX

Elevation (m AOD):

101.30

Groundwater
(m)

101.00

99.30

End of Trial Pit

Exploratory hole location scanned with Cable Avoidance Tool and Signal Generator.
Descriptions based on visual inspection by a Geo-environmental engineer.
Groundwater was not encountered.
Visual or olfactory evidence of contamination was not observed.
Co-ordinates and elevations estimated from the topographical survey.

Stability: Stable

Depth:
2.00m

B - Bulk Sample
D - Disturbed Sample
ES - Environmental Sample
W - Water Sample
PID - PID Reading
HSV - Hand Shear Vane Reading



Sheet 1 of 1

Elevation (m AOD):

96.30

Depth:
3.40m



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Exploratory
Hole ID:

TP202
Sheet 1 of 1

Project:	Earl Shilton	Project No.	29018	Start Date:	09/09/2024	End Date:	09/09/2024	Plant Used:	JCB 3CX
Location:	Thurlaston Lane	Logged By:	CC	Easting and Northing Co-ordinates:		Elevation (m AOD):			
Client:	Persimmon Homes North Midlands	Approved By:	DT						

Strata Description	Legend	Depth (m)	Level (m AOD)	Samples		Tests	Groundwater (m)
				Type	Depth		
Grass over brown, silty, clayey sand TOPSOIL with rare, sub-rounded, fine to coarse gravel of flint and quartzite.		0.30	97.00				
Firm to stiff brown, becoming red, silty, slightly sandy CLAY with sub-rounded, fine to coarse gravel of quartzite. THRUSSINGTON MEMBER							
End of Trial Pit		3.10	94.20				

Remarks: Exploratory hole location scanned with Cable Avoidance Tool and Signal Generator. Descriptions based on visual inspection by a Geo-environmental engineer. Groundwater was not encountered. Visual or olfactory evidence of contamination was not observed. Co-ordinates and elevations estimated from the topographical survey.	Dimensions: Width: 0.60m Length: 2.00m Depth: 3.10m	Key: B - Bulk Sample D - Disturbed Sample ES - Environmental Sample W - Water Sample PID - PID Reading HSV - Hand Shear Vane Reading
Stability: Stable		



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Exploratory
Hole ID:

TP203
Sheet 1 of 1

Project:	Earl Shilton	Project No.	29018	Start Date:	09/09/2024	End Date:	09/09/2024	Plant Used:	JCB 3CX
Location:	Thurlaston Lane	Logged By:	CC	Easting and Northing Co-ordinates:		Elevation (m AOD):			
Client:	Persimmon Homes North Midlands	Approved By:	DT						

Strata Description	Legend	Depth (m)	Level (m AOD)	Samples		Tests	Groundwater (m)
				Type	Depth		
Grass over brown, silty, clayey sand TOPSOIL with rare sub-rounded, fine to coarse gravel of flint and quartzite.		0.25	100.85				
Firm to stiff brown becoming red, silty, slightly sandy CLAY. THRUSSINGTON MEMBER							
End of Trial Pit		2.05	99.05				

Remarks: Exploratory hole location scanned with Cable Avoidance Tool and Signal Generator. Descriptions based on visual inspection by a Geo-environmental engineer. Groundwater was not encountered. Visual or olfactory evidence of contamination was not observed. Co-ordinates and elevations estimated from the topographical survey.	Dimensions: Width: 0.60m Length: 2.00m Depth: 2.05m	Key: B - Bulk Sample D - Disturbed Sample ES - Environmental Sample W - Water Sample PID - PID Reading HSV - Hand Shear Vane Reading
Stability: Stable		



Scheme Thurlaston Lane, Earl Shilton
Client Persimmon Homes North Midlands
Job ref. 29018

Page No. 10
Calcs by RF
Checked By DT
Date 20/09/24

Soil Infiltration Test - Gravel Filled Method

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

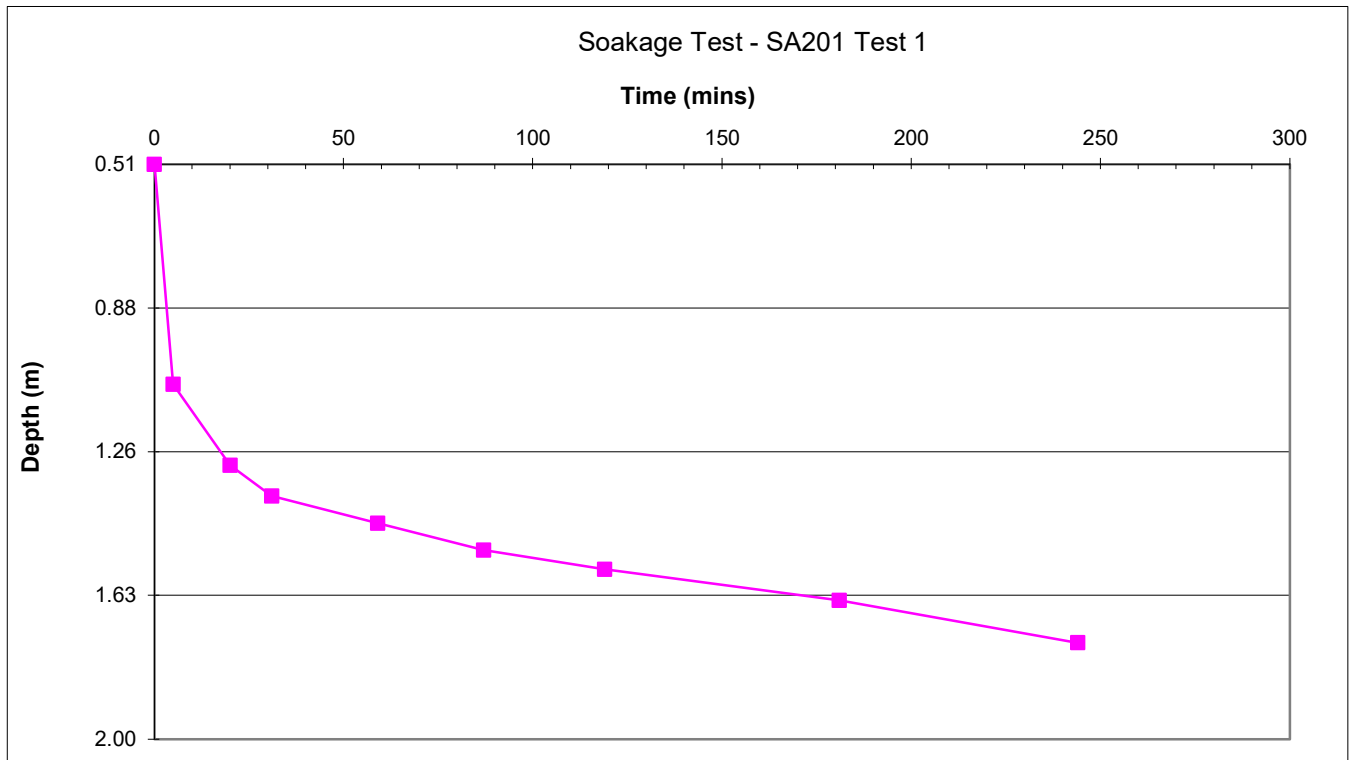
Soakaway pit ref.	SA201	Test 1
Length	2.00 m	
Width	0.60 m	
Depth	2.00 m	
Ground water level	Not Encountered	
Ground conditions	0.00 - 0.30m Grass over brown, clayey, silty, slightly gravelly sand TOPSOIL. Gravel comprises sub-rounded to rounded, fine to coarse flint and quartzite.	
	0.30 - 2.10m Brown becoming reddish brown, clayey, silty, slightly gravelly, fine to coarse SAND. Gravel comprises sub-rounded, fine to coarse, quartzite and flint with cobbles of quartzite and flint.	

Time (mins)	Depth to water (m bgl)
0	0.51
5	1.08
20	1.29
31	1.37
59	1.44
87	1.51
119	1.56
181	1.64
244	1.75

Effective storage depth =	1.49 m
75% effective storage depth =	1.12 m
(ie depth below GL) =	0.88 m
25% effective storage depth =	0.37 m
(ie depth below GL) =	1.63 m
effective storage depth 75%-25% =	0.75 m

Time to fall to 75% effective depth =	3.4 mins
Time to fall to 25% effective depth =	174 mins
Void Ratio =	40%
V (75%-25%) =	0.36 m ³
a (50%) =	5.07 m ²
t (75%-25%) =	170.60 mins

SOIL INFILTRATION RATE = 6.89E-06 m/s





Scheme Thurlaston Lane, Earl Shilton
Client Persimmon Homes North Midlands
Job ref. 29018

Page No. 11
Calcs by RF
Checked By DT
Date 20/09/24

Soil Infiltration Test - Gravel Filled Method

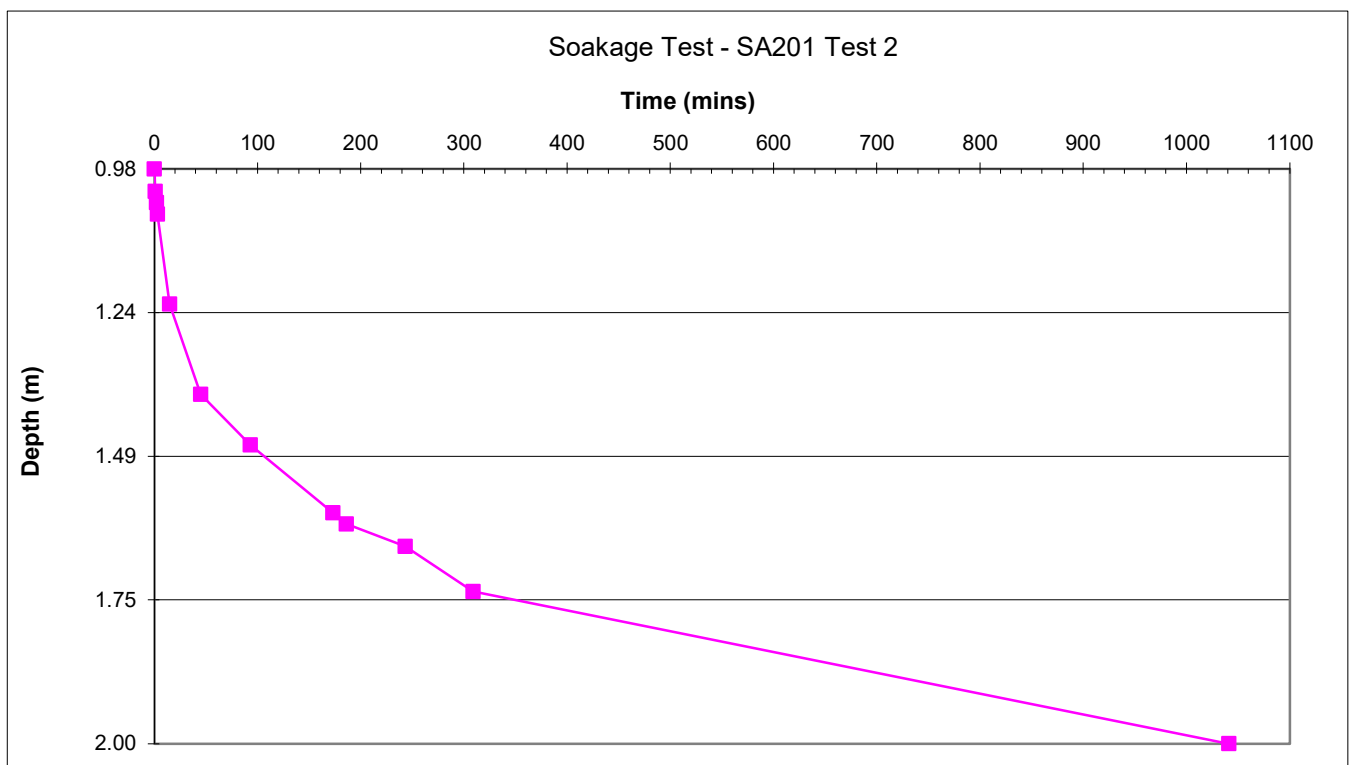
(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Soakaway pit ref.	SA201	Test 2
Length	2.00 m	
Width	0.60 m	
Depth	2.00 m	
Ground water level	Not Encountered	
Ground conditions	0.00 - 0.30m Grass over brown, clayey, silty, slightly gravelly sand TOPSOIL. Gravel comprises sub-rounded to rounded, fine to coarse flint and quartzite. 0.30 - 2.10m Brown becoming reddish brown, clayey, silty, slightly gravelly, fine to coarse SAND. Gravel comprises sub-rounded, fine to coarse, quartzite and flint with cobbles of quartzite and flint.	

Time (mins)	Depth to water (m bgl)
0	0.98
1	1.02
2	1.04
3	1.06
15	1.22
45	1.38
93	1.47
173	1.59
186	1.61
243	1.65
309	1.73
1041	2.00

Effective storage depth =	1.02 m
75% effective storage depth =	0.77 m
(ie depth below GL) =	1.24 m
25% effective storage depth =	0.26 m
(ie depth below GL) =	1.75 m
effective storage depth 75%-25% =	0.51 m
Time to fall to 75% effective depth =	18 mins
Time to fall to 25% effective depth =	345 mins
Void Ratio =	40%
V (75%-25%) =	0.24 m ³
a (50%) =	3.85 m ²
t (75%-25%) =	327.00 mins

SOIL INFILTRATION RATE = 3.24E-06 m/s





Scheme Thurlaston Lane, Earl Shilton
Client Persimmon Homes North Midlands
Job ref. 29018

Page No. 12
Calcs by RF
Checked By DT
Date 20/09/24

Soil Infiltration Test - Gravel Filled Method

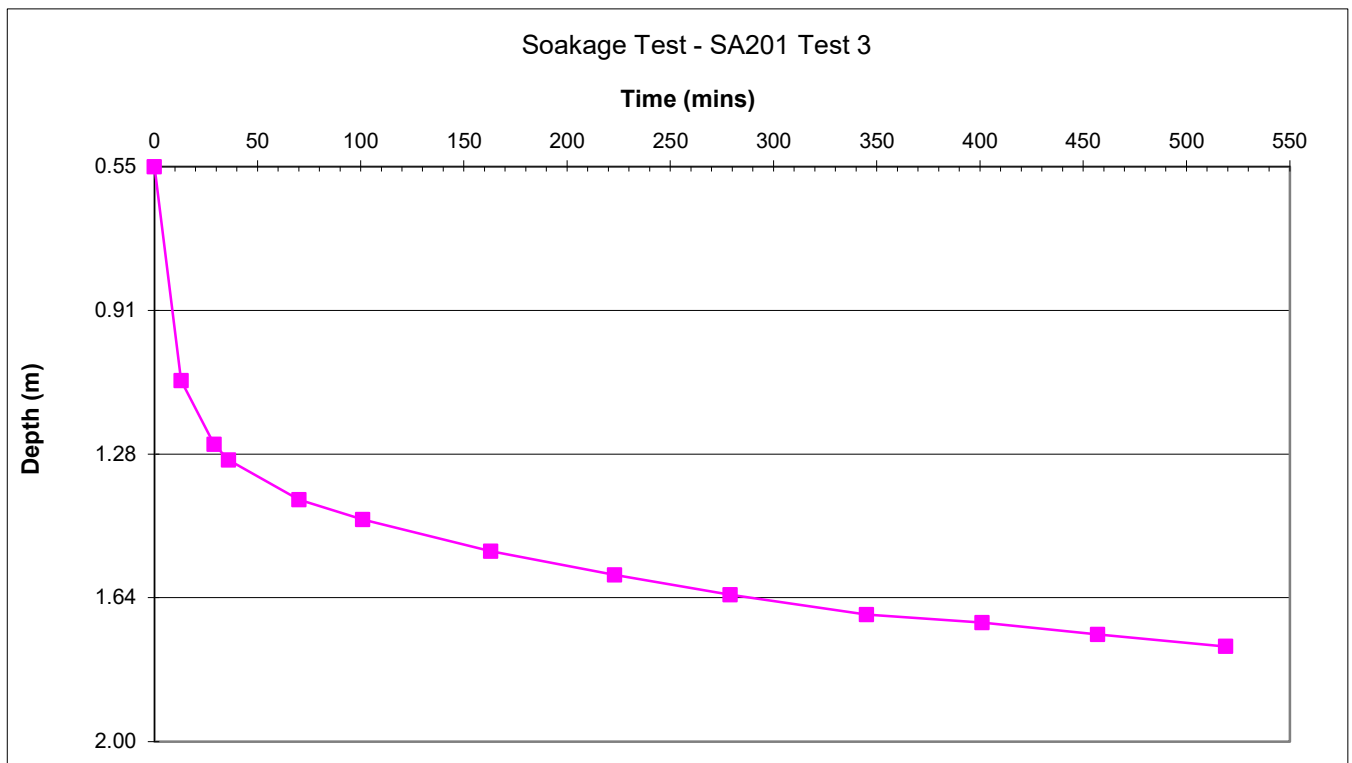
(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Soakaway pit ref.	SA201	Test 3
Length	2.00 m	
Width	0.60 m	
Depth	2.00 m	
Ground water level	Not Encountered	
Ground conditions	0.00 - 0.30m Grass over brown, clayey, silty, slightly gravelly sand TOPSOIL. Gravel comprises sub-rounded to rounded, fine to coarse flint and quartzite.	
	0.30 - 2.10m Brown becoming reddish brown, clayey, silty, slightly gravelly, fine to coarse SAND. Gravel comprises sub-rounded, fine to coarse, quartzite and flint with cobbles of quartzite and flint.	

Time (mins)	Depth to water (m bgl)
0	0.55
13	1.09
29	1.25
36	1.29
70	1.39
101	1.44
163	1.52
223	1.58
279	1.63
345	1.68
401	1.70
457	1.73
519	1.76

Effective storage depth =	1.45 m
75% effective storage depth =	1.09 m
(ie depth below GL) =	0.91 m
25% effective storage depth =	0.36 m
(ie depth below GL) =	1.64 m
effective storage depth 75%-25% =	0.73 m
Time to fall to 75% effective depth =	8.7 mins
Time to fall to 25% effective depth =	290 mins
Void Ratio =	40%
V (75%-25%) =	0.35 m ³
a (50%) =	4.97 m ²
t (75%-25%) =	281.30 mins

SOIL INFILTRATION RATE = 4.15E-06 m/s





Scheme Thurlaston Lane, Earl Shilton
Client Persimmon Homes North Midlands
Job ref. 29018

Page No. 13
Calcs by RF
Checked By DT
Date 20/09/24

Soil Infiltration Test - Gravel Filled Method

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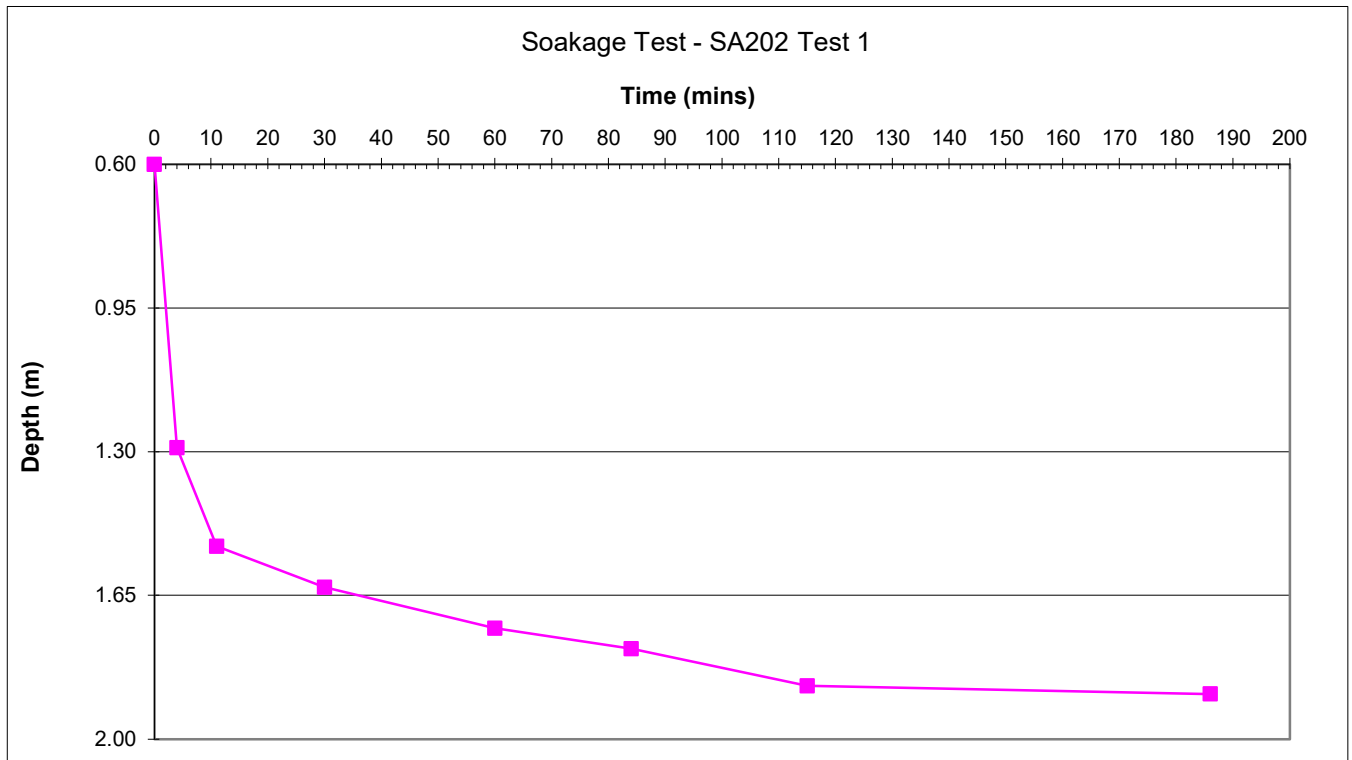
Soakaway pit ref.	SA202	Test 1
Length	2.20 m	
Width	0.60 m	
Depth	2.00 m	
Ground water level	Not Encountered	
Ground conditions	0.00 - 0.30m Grass over brown, clayey, silty, slightly gravelly sand TOPSOIL. Gravel comprises sub-rounded to rounded, fine to coarse flint and quartzite.	
	0.30 - 2.20m Brown becoming reddish brown, clayey, silty, slightly gravelly, fine to coarse SAND. Gravel comprises sub-rounded to rounded, fine to coarse flint and quartzite	

Time (mins)	Depth to water (m bgl)
0	0.60
4	1.29
11	1.53
30	1.63
60	1.73
84	1.78
115	1.87
186	1.89

Effective storage depth =	1.40 m
75% effective storage depth =	1.05 m
(ie depth below GL) =	0.95 m
25% effective storage depth =	0.35 m
(ie depth below GL) =	1.65 m
effective storage depth 75%-25% =	0.70 m

Time to fall to 75% effective depth =	2 mins
Time to fall to 25% effective depth =	36 mins
Void Ratio =	40%
V (75%-25%) =	0.37 m ³
a (50%) =	5.24 m ²
t (75%-25%) =	34.00 mins

SOIL INFILTRATION RATE = 3.46E-05 m/s





Scheme Thurlaston Lane, Earl Shilton
Client Persimmon Homes North Midlands
Job ref. 29018

Page No. 14
Calcs by RF
Checked By DT
Date 20/09/24

Soil Infiltration Test - Gravel Filled Method

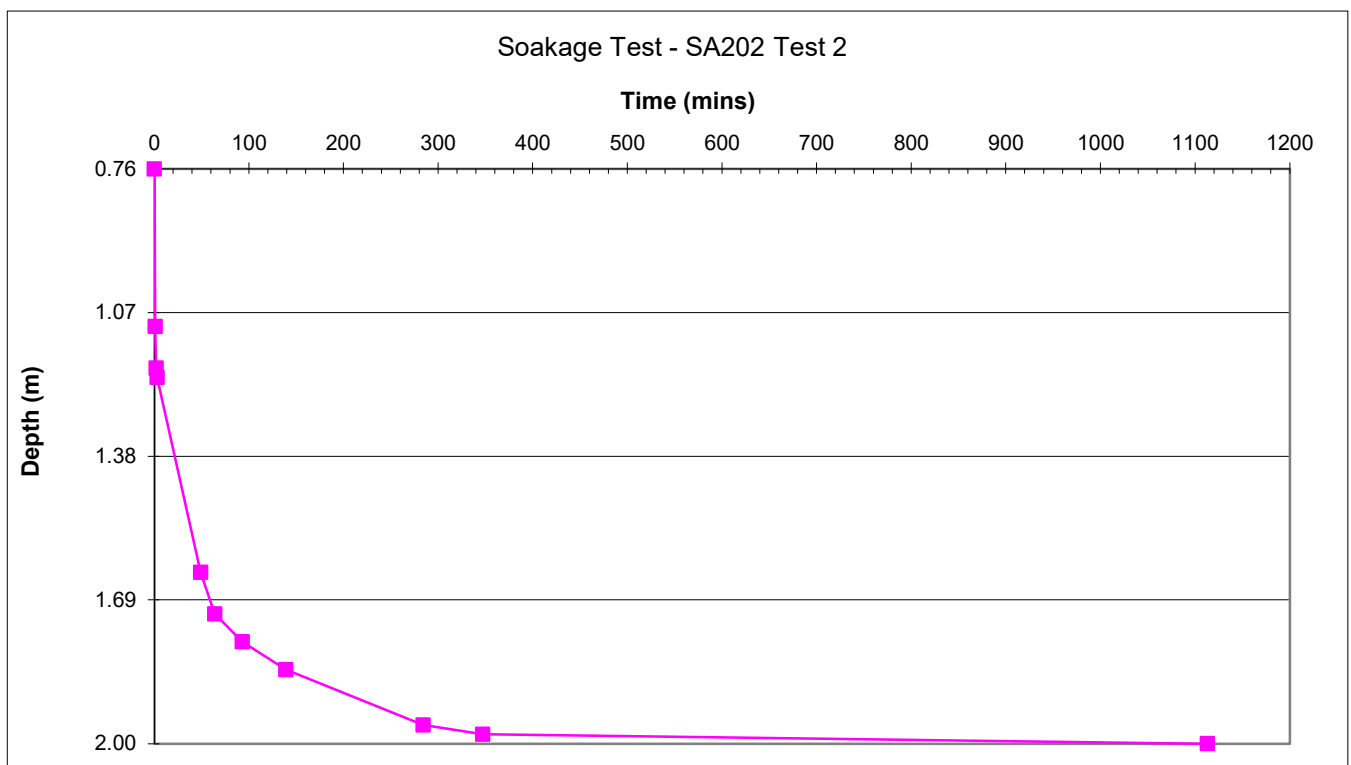
(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Soakaway pit ref.	SA202	Test 2
Length	2.20 m	
Width	0.60 m	
Depth	2.00 m	
Ground water level	Not Encountered	
Ground conditions	0.00 - 0.30m Grass over brown, clayey, silty, slightly gravelly sand TOPSOIL. Gravel comprises sub-rounded to rounded, fine to coarse flint and quartzite. 0.30 - 2.20m Brown becoming reddish brown, clayey, silty, slightly gravelly, fine to coarse SAND. Gravel comprises sub-rounded to rounded, fine to coarse flint and quartzite	

Time (mins)	Depth to water (m bgl)
0	0.76
1	1.10
2	1.19
3	1.21
49	1.63
64	1.72
93	1.78
139	1.84
284	1.96
347	1.98
1113	2.00

Effective storage depth =	1.24 m
75% effective storage depth =	0.93 m
(ie depth below GL) =	1.07 m
25% effective storage depth =	0.31 m
(ie depth below GL) =	1.69 m
effective storage depth 75%-25% =	0.62 m
Time to fall to 75% effective depth =	0.9 mins
Time to fall to 25% effective depth =	59 mins
Void Ratio =	40%
V (75%-25%) =	0.33 m ³
a (50%) =	4.79 m ²
t (75%-25%) =	58.10 mins

SOIL INFILTRATION RATE = 1.96E-05 m/s





Scheme Thurlaston Lane, Earl Shilton
Client Persimmon Homes North Midlands
Job ref. 29018

Page No. 15
Calcs by RF
Checked By DT
Date 20/09/24

Soil Infiltration Test - Gravel Filled Method

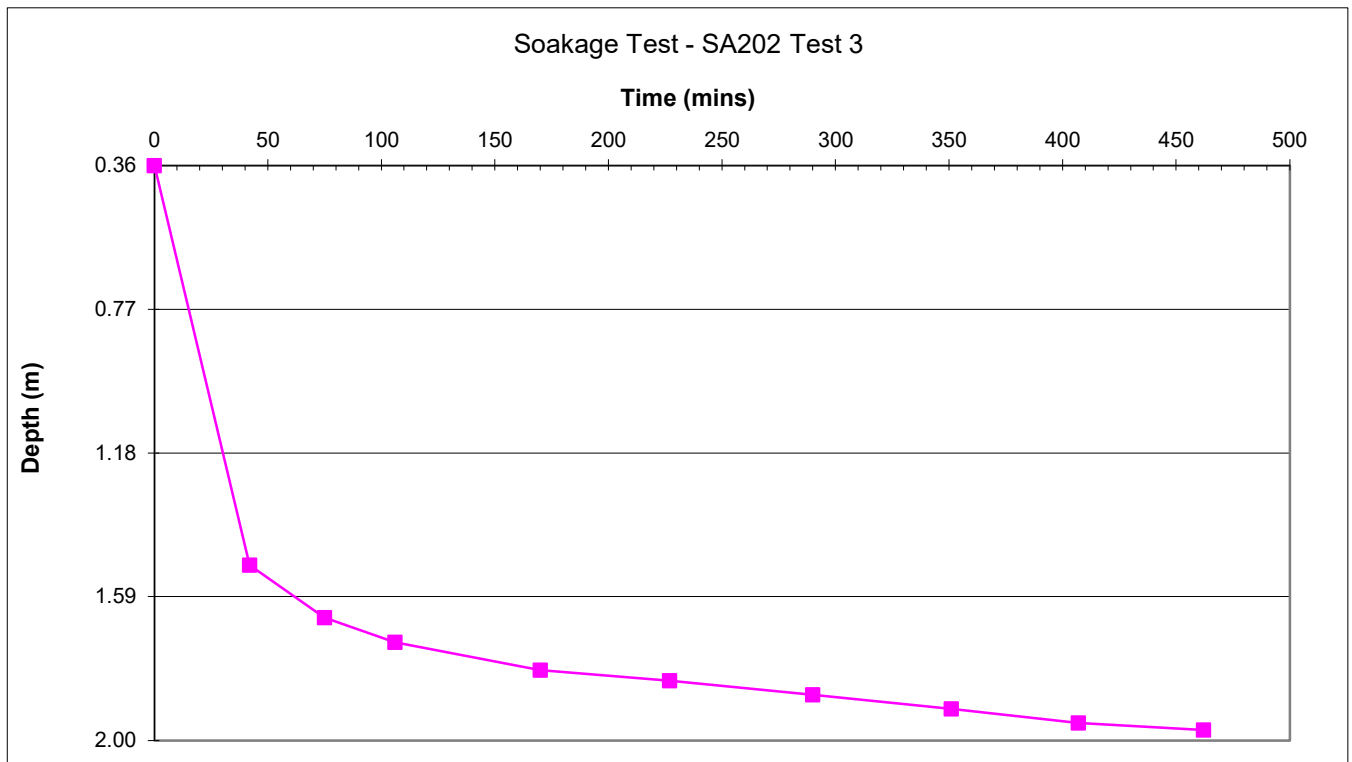
(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Soakaway pit ref.	SA202	Test 3
Length	2.20 m	
Width	0.60 m	
Depth	2.00 m	
Ground water level	Not Encountered	
Ground conditions	0.00 - 0.30m Grass over brown, clayey, silty, slightly gravelly sand TOPSOIL. Gravel comprises sub-rounded to rounded, fine to coarse flint and quartzite. 0.30 - 2.20m Brown becoming reddish brown, clayey, silty, slightly gravelly, fine to coarse SAND. Gravel comprises sub-rounded to rounded, fine to coarse flint and quartzite	

Time (mins)	Depth to water (m bgl)
0	0.36
42	1.50
75	1.65
106	1.72
170	1.80
227	1.83
290	1.87
351	1.91
407	1.95
462	1.97

Effective storage depth =	1.64 m
75% effective storage depth =	1.23 m
(ie depth below GL) =	0.77 m
25% effective storage depth =	0.41 m
(ie depth below GL) =	1.59 m
effective storage depth 75%-25% =	0.82 m
Time to fall to 75% effective depth =	15 mins
Time to fall to 25% effective depth =	61.6 mins
Void Ratio =	40%
V (75%-25%) =	0.43 m ³
a (50%) =	5.91 m ²
t (75%-25%) =	46.60 mins

SOIL INFILTRATION RATE = 2.62E-05 m/s





Scheme Thurlaston Lane, Earl Shilton
Client Persimmon Homes North Midlands
Job ref. 29018

Page No. 16
Calcs by RF
Checked By DT
Date 20/09/24

Soil Infiltration Test - Gravel Filled Method

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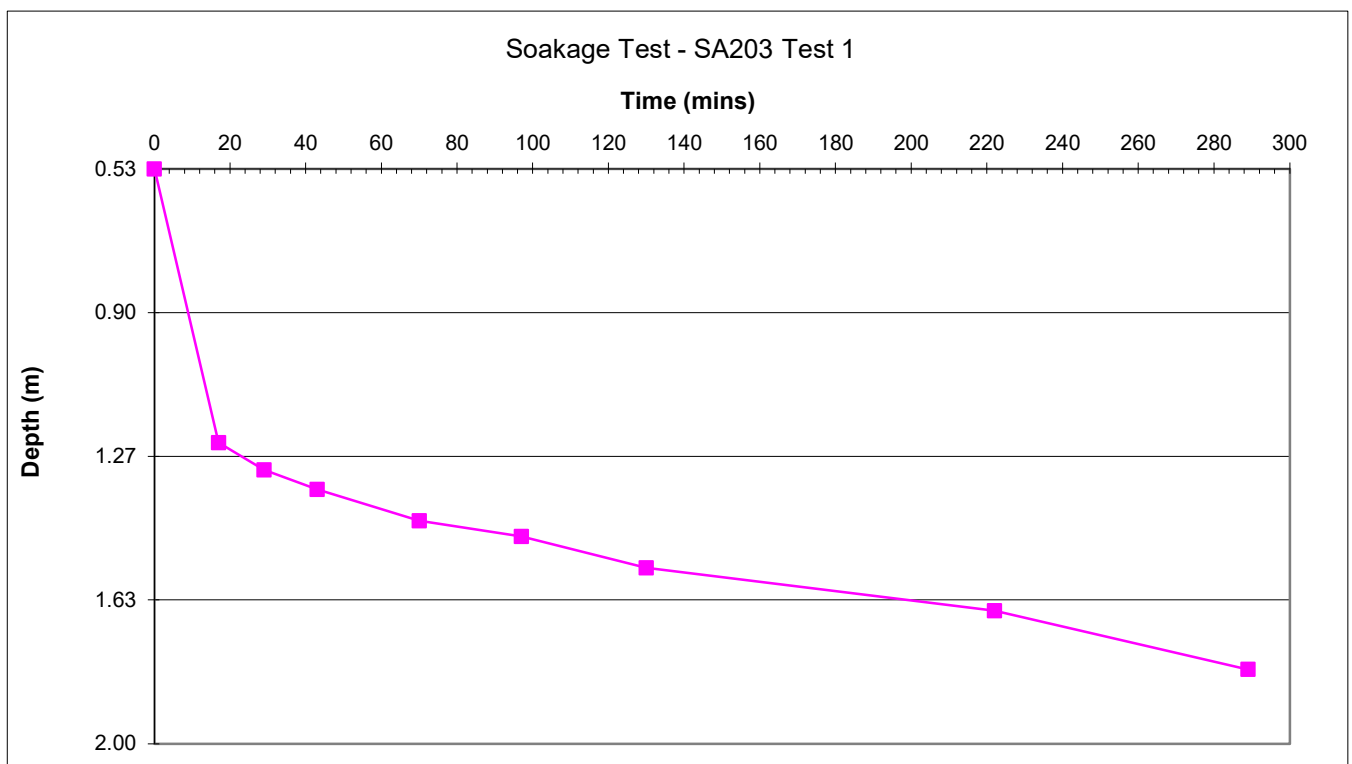
Soakaway pit ref.	SA203	Test 1
Length	2.00 m	
Width	0.60 m	
Depth	2.00 m	
Ground water level	Not Encountered	
Ground conditions	0.00 - 0.25m Grass over brown, clayey, silty, slightly gravelly sand TOPSOIL. Gravel comprises sub-rounded to rounded, fine to coarse flint and quartzite. 0.25 - 2.00m Firm, brown becoming reddish brown, silty, sandy, slightly gravelly CLAY. Gravel comprises subangular to sub-rounded, fine to coarse flint and quartzite.	

Time (mins)	Depth to water (m bgl)
0	0.53
17	1.23
29	1.30
43	1.35
70	1.43
97	1.47
130	1.55
222	1.66
289	1.81

Effective storage depth =	1.47 m
75% effective storage depth =	1.10 m
(ie depth below GL) =	0.90 m
25% effective storage depth =	0.37 m
(ie depth below GL) =	1.63 m
effective storage depth 75%-25% =	0.74 m

Time to fall to 75% effective depth =	8.9 mins
Time to fall to 25% effective depth =	200 mins
Void Ratio =	40%
V (75%-25%) =	0.35 m ³
a (50%) =	5.02 m ²
t (75%-25%) =	191.10 mins

SOIL INFILTRATION RATE = 6.13E-06 m/s





Scheme Thurlaston Lane, Earl Shilton
Client Persimmon Homes North Midlands
Job ref. 29018

Page No. 17
Calcs by RF
Checked By DT
Date 20/09/24

Soil Infiltration Test - Gravel Filled Method

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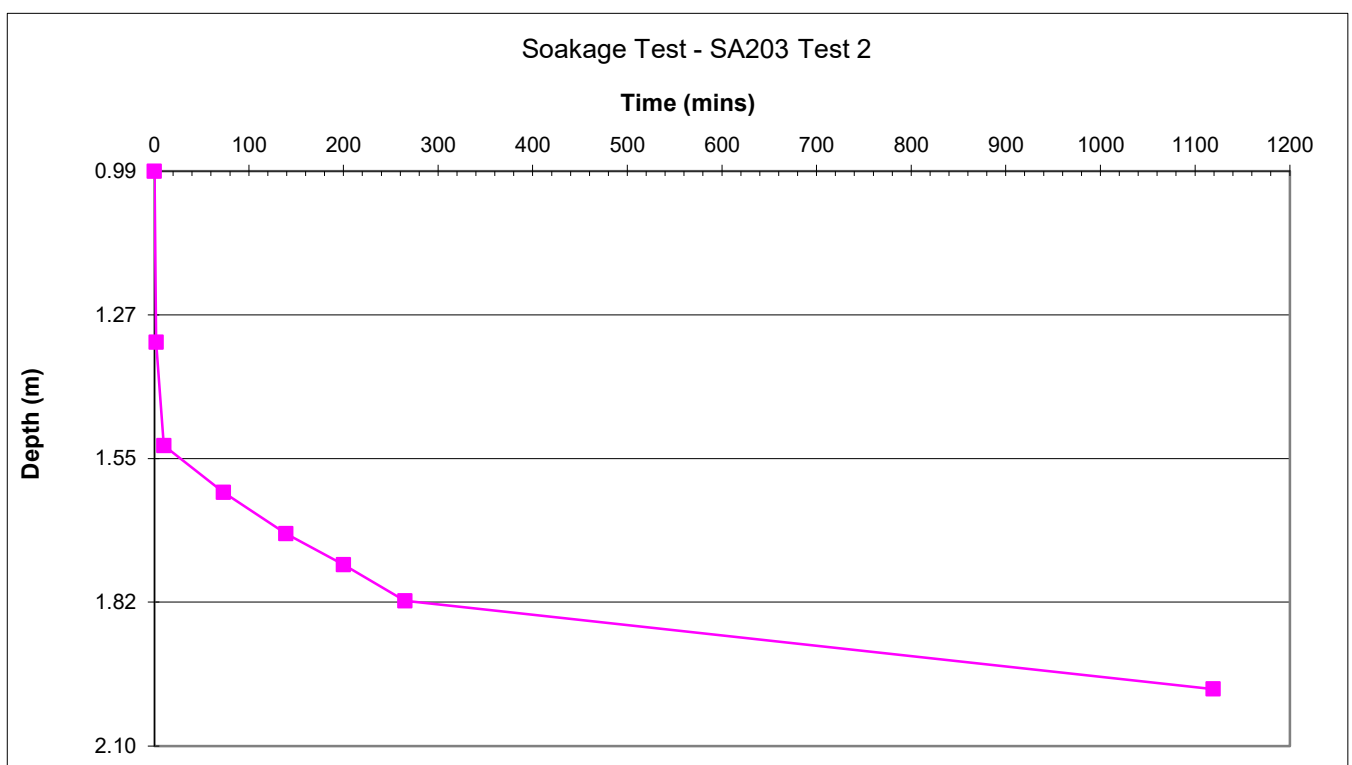
Soakaway pit ref.	SA203	Test 2
Length	2.00 m	
Width	0.60 m	
Depth	2.00 m	
Ground water level	Not Encountered	
Ground conditions	0.00 - 0.25m Grass over brown, clayey, silty, slightly gravelly sand TOPSOIL. Gravel comprises sub-rounded to rounded, fine to coarse flint and quartzite.	
	0.25 - 2.00m Firm, brown becoming reddish brown, silty, sandy, slightly gravelly CLAY. Gravel comprises subangular to sub-rounded, fine to coarse flint and quartzite.	

Time (mins)	Depth to water (m bgl)
0	0.99
2	1.32
10	1.52
73	1.61
139	1.69
200	1.75
265	1.82
1119	1.99

Effective storage depth =	1.01 m
75% effective storage depth =	0.76 m
(ie depth below GL) =	1.24 m
25% effective storage depth =	0.25 m
(ie depth below GL) =	1.75 m
effective storage depth 75%-25% =	0.51 m

Time to fall to 75% effective depth =	1.7 mins
Time to fall to 25% effective depth =	265 mins
Void Ratio =	40%
V (75%-25%) =	0.24 m ³
a (50%) =	3.83 m ²
t (75%-25%) =	263.30 mins

SOIL INFILTRATION RATE = 4.01E-06 m/s





Scheme Thurlaston Lane, Earl Shilton
Client Persimmon Homes North Midlands
Job ref. 29018

Page No. 18
Calcs by RF
Checked By DT
Date 20/09/24

Soil Infiltration Test - Gravel Filled Method

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

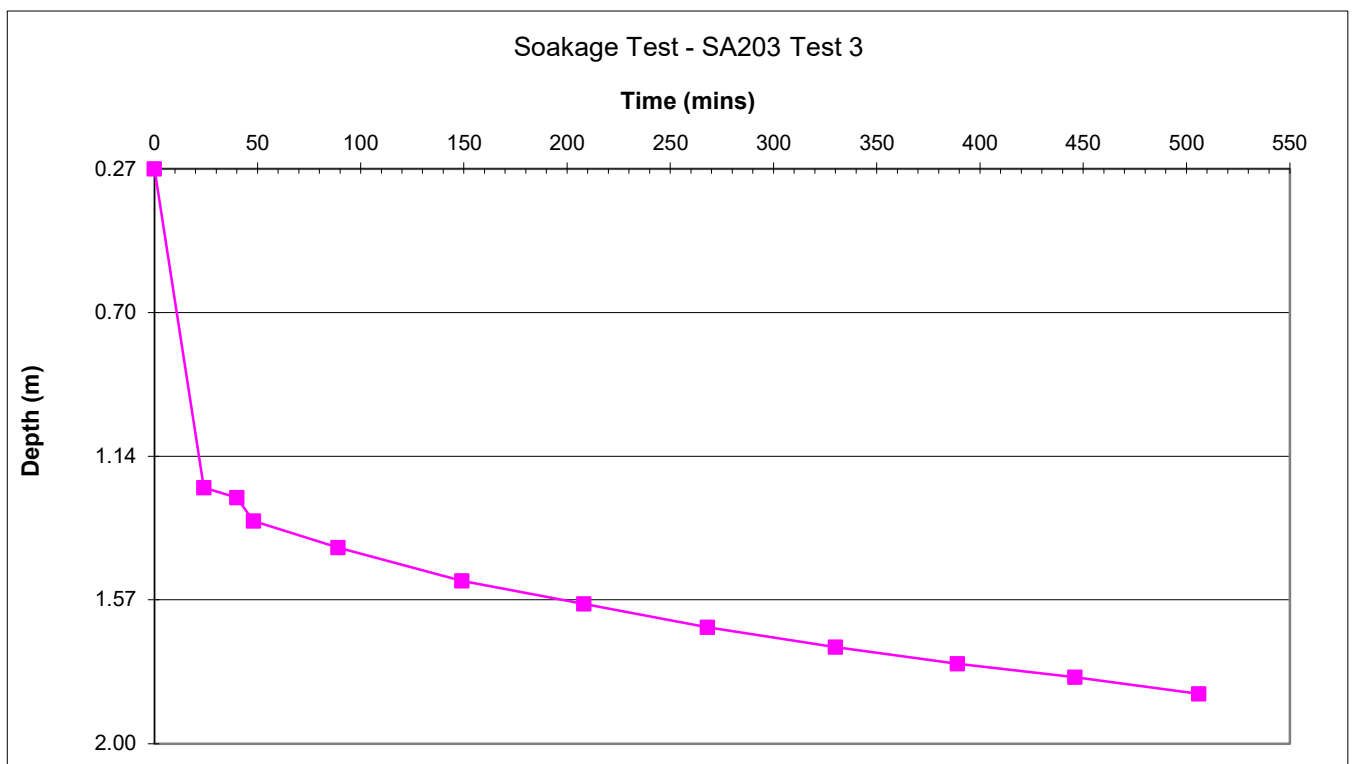
Soakaway pit ref.	SA203	Test 3
Length	2.00 m	
Width	0.60 m	
Depth	2.00 m	
Ground water level	Not Encountered	
Ground conditions	0.00 - 0.25m Grass over brown, clayey, silty, slightly gravelly sand TOPSOIL. Gravel comprises sub-rounded to rounded, fine to coarse flint and quartzite.	
	0.25 - 2.00m Firm, brown becoming reddish brown, silty, sandy, slightly gravelly CLAY. Gravel comprises subangular to sub-rounded, fine to coarse flint and quartzite.	

Time (mins)	Depth to water (m bgl)
0	0.27
24	1.23
40	1.26
48	1.33
89	1.41
149	1.51
208	1.58
268	1.65
330	1.71
389	1.76
446	1.80
506	1.85

Effective storage depth =	1.73 m
75% effective storage depth =	1.30 m
(ie depth below GL) =	0.70 m
25% effective storage depth =	0.43 m
(ie depth below GL) =	1.57 m
effective storage depth 75%-25% =	0.87 m

Time to fall to 75% effective depth =	10.8 mins
Time to fall to 25% effective depth =	200 mins
Void Ratio =	40%
V (75%-25%) =	0.42 m ³
a (50%) =	5.70 m ²
t (75%-25%) =	189.20 mins

SOIL INFILTRATION RATE = 6.42E-06 m/s





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Client Persimmon Homes North Midlands
Job ref. 29018

Page No. 19
Calcs by RF
Checked By DT
Date 20/09/24

Soil Infiltration Test - Gravel Filled Method

(In general accordance with BRE Digest 365, 2016, Soakaway Design)

Soakaway pit ref.	SA204	Test 1
Length	2.00 m	
Width	0.60 m	
Depth	2.00 m	
Ground water level	Not Encountered	
Ground conditions	0.00 - 0.30m Grass over brown, clayey, silty, slightly gravelly sand TOPSOIL. Gravel comprises sub-rounded, fine to coarse flint and quartzite.	
	0.00 - 2.00m Firm to stiff, brown becoming reddish brown, silty, sandy CLAY.	

Time (mins)	Depth to water (m bgl)
0	0.34
25	0.60
48	0.72
78	0.85
104	0.86
233	0.99
298	1.04
357	1.08
417	1.12
477	1.15
544	1.19
1397	1.45
1438	1.45

Effective storage depth =	1.66 m
75% effective storage depth =	1.25 m
(ie depth below GL) =	0.76 m
25% effective storage depth =	0.42 m
(ie depth below GL) =	1.59 m
effective storage depth 75%-25% =	0.83 m
Time to fall to 75% effective depth =	60 mins
Time to fall to 25% effective depth =	N/A mins
Void Ratio =	40%
V (75%-25%) =	0.40 m ³
a (50%) =	5.52 m ²
t (75%-25%) =	N/A mins

Insufficient drainage to derive an infiltration rate.

