



SOAKAWAY INFILTRATION REPORT
LAND OFF SPALDING ROAD, PINCHBECK
DELTA-SIMONS PROJECT NUMBER: 16-0323.01
DATED: 26TH JULY 2016

1.0 Authorisation, Context and Purpose

Delta-Simons Environmental Consultants Limited (Delta-Simons) has been requested by Robert Doughty Consultancy on behalf of AJ and RJ Cooke (the 'Client') to undertake three soakage tests (SA101 to SA103) to provide information for the suitability and design for soakaways as a drainage solution for the proposed development on land off Spalding Road, Pinchbeck (hereafter referred to as the 'Site'). An Approximate Intrusive Location Plan is included as Figure 1a & 1b.

2.0 Desktop Information

From current BGS online data, the Site is indicated to be underlain by superficial Tidal Flats Deposits, described as clay and silt. The bedrock is classified as the Oxford Clay Formation (mudstone). The nearest surface water feature is an on-Site drainage ditch that is present in the northern Site area. Drainage ditches also partially bound sections of both the northern and southern Site areas.

3.0 Fieldworks

Soakage testing was undertaken in general accordance with BRE Digest 365: Soakaway Design ^[Ref. 1] on the 1st July 2016.

The soakage testing comprised excavating three trial pits to depths of between 1.00 and 1.14 m bgl. The geology at each trial pit location was logged by a Delta-Simons engineer. Approximately one tonne of gravel and monitoring pipes were then installed in the trial pit and the remaining void was backfilled with arisings. The remaining spoil was graded back to original ground level.

The gravel pack in each test location was then filled with water from a water container and the depth to water from ground level recorded at intervals over a period up to 24 hours.

The soakage test data was recorded and used to calculate the soil infiltration rate for each location.

3.1 Identified Ground and Groundwater Conditions

Topsoil was identified in all test locations ranging between 0.25 m bgl in SA101 to 0.30 m bgl in SA103. Beneath the topsoil, firm silty sandy clay was encountered to the maximum advanced depth of 1.14 m bgl.

4.0 Soakage Tests

Test results are provided in Appendix I and summarised in Table 1 below. The approximate locations of the Soakage Tests are shown in Figure 1a & 1b.

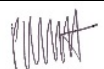
Table 1: Summary of Testing in General Accordance with BRE 365

Soakaway Test Reference Number	Test Depth Range (m bgl)	Soil Infiltration Rate (ms⁻¹)	Geology
SA101	0.50 – 1.00	1.86×10^{-7}	Tidal Flat Deposits
SA102	0.40 – 1.00	2.42×10^{-6}	
SA103	0.40 – 1.14	2.62×10^{-6}	

5.0 References

Ref 1: BRE Digest 365: Soakaway Design, BRE 1991

6.0 Project Contacts

Name	Signature	Position	Mobile	Email
Jon Craggs		Graduate	07528 222 038	jon.craggs@deltasimons.com
Paul Huteson		Principal	07770 748 792	paul.huteson@deltasimons.com
Paul Bennett		Unit Director	07799 477 280	paul.o.bennett@deltasimons.com

Encl.

Figure 1a & 1b Approximate Intrusive Location Plan

Appendix I Soakaway Test Results

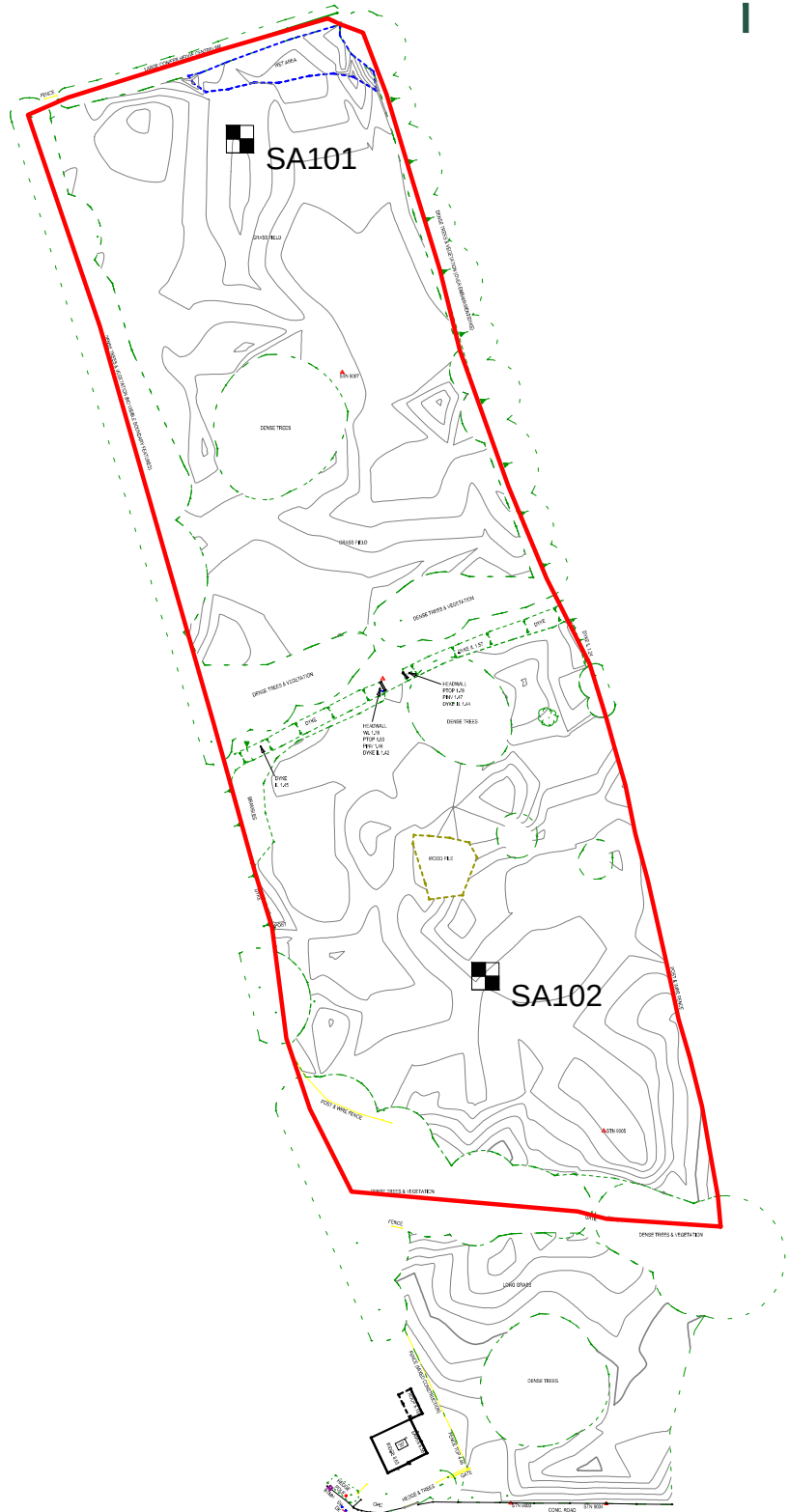




LEGEND

 Site Boundary

 SA Soakaway

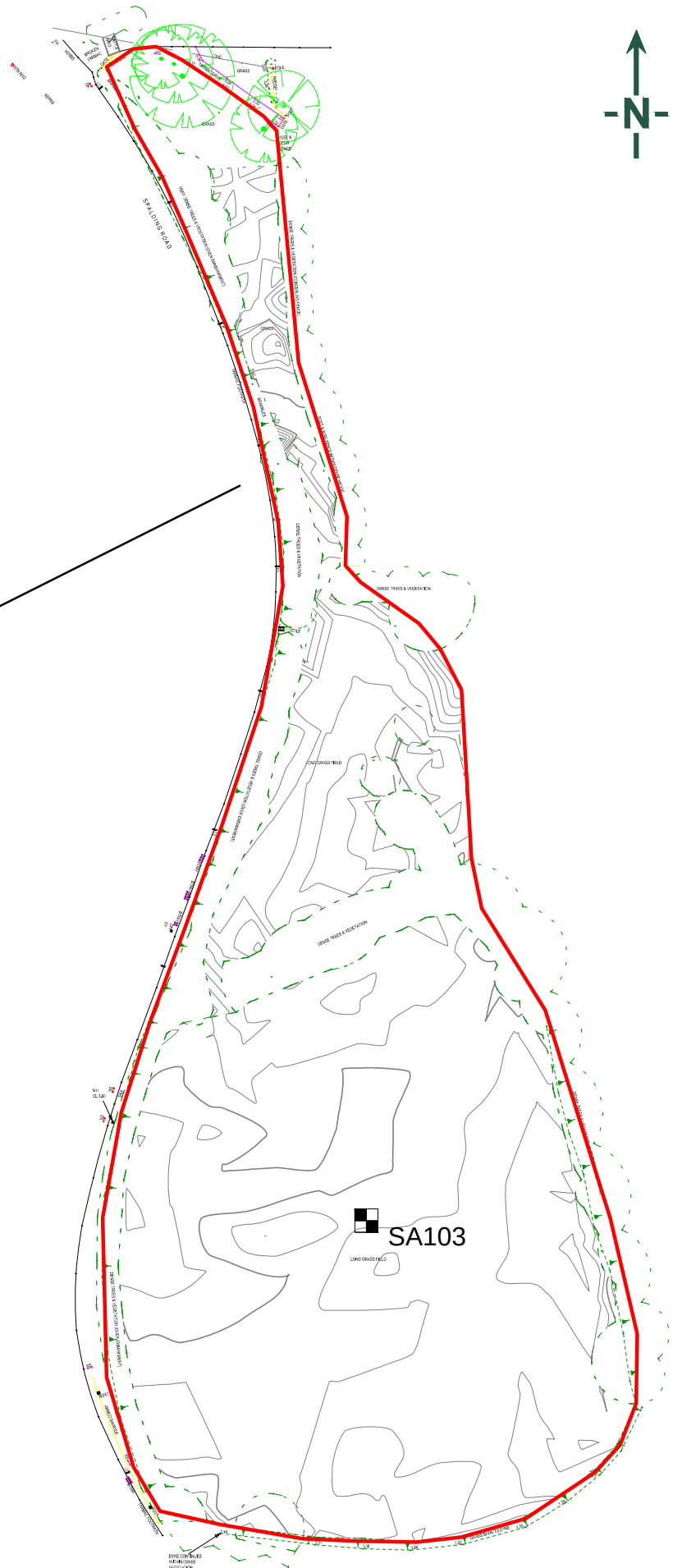




LEGEND

 Site Boundary

 SA Soakaway





	units	Infill 1	Infill 2	Infill 3
Length	m	2.20		
Width	m	0.50		
Depth	m	1.00		
Gravel type		20mm single size		
Voids ratio		0.40		
Resting groundwater level at time of testing	m	3.00		
Depth of first reading	m	0.25	0.00	0.00
Depth of final reading	m	0.35	0.00	0.00
Did soakage test reach 25% of maximum fill depth?		No	No	No
Depth at 75% effective / full depth	m	0.28	0.00	0.00
Depth at 25% effective / full depth	m	0.33	0.00	0.00
Time at 75% effective / full depth	mins	0.00	#N/A	#N/A
Time at 25% effective / full depth	mins	1440.00	#N/A	#N/A
Vp75 - 25 (volume outflowing between 75% and 25% effective depth)	m3	0.02	0.00	0.00
Mean surface area for outflow (50% full/effective depth)	m2	1.37	1.10	1.10
tp75 (time for the water level to fall from 75% to 25% effective depth)	mins	1440.00	#N/A	#N/A
Soil infiltration rate, f =	m/s	0.00000019	#N/A	#N/A
or	m/s	1.86E-07	#N/A	#N/A

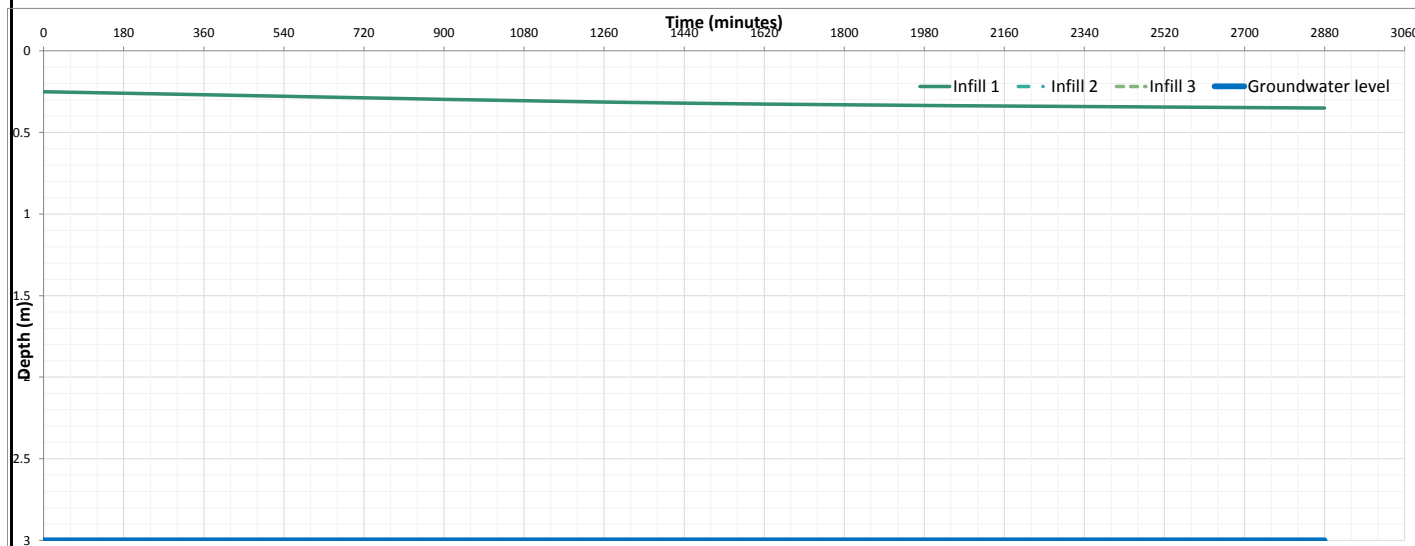
Recommended soil infiltration rate

1.86E-07

m/s

Note:

Where water level did not fall below the 25% of the maximum fill level, soil infiltration rate is based on effective drainage achieved only.



LOG

BACKFILL

DEPTH (m)	DEPTH (m)
TOPSOIL: Brown sandy clay. 0.0	Arisings 0.0
Browny grey, slight sandy silty CLAY. 0.3	Gravel (20mm) 0.5
1.0	1.0



TITLE: Soakaway Test Results
Spalding Rd, Pinchbeck
Robert Doughty Consultancy

In accordance with BRE Digest 365 (1991 with amendments in 2003 and 2007)

DRAWN BY: JC	SCALE: Not to Scale	PROJECT NUMBER: 16-0323.01
CHECKED BY: PH	REVISION: 1	SOAKAWAY NUMBER: SA01
DATE: 11/07/2016		

	units	Infill 1	Infill 2	Infill 3
Length	m	2.20		
Width	m	0.50		
Depth	m	1.00		
Gravel type		20mm single size		
Voids ratio		0.40		
Resting groundwater level at time of testing	m	3.00		
Depth of first reading	m	0.42	0.40	0.41
Depth of final reading	m	0.88	0.92	0.85
Did soakage test reach 25% of maximum fill depth?		Yes	Yes	No
Depth at 75% effective / full depth	m	0.57	0.55	0.52
Depth at 25% effective / full depth	m	0.86	0.85	0.74
Time at 75% effective / full depth	mins	30.00	20.00	10.00
Time at 25% effective / full depth	mins	360.00	470.00	180.00
Vp75 - 25 (volume outflowing between 75% and 25% effective depth)	m3	0.13	0.13	0.10
Mean surface area for outflow (50% full/effective depth)	m2	2.67	2.72	2.29
tp75 (time for the water level to fall from 75% to 25% effective depth)	mins	330.00	450.00	170.00
Soil infiltration rate, f =	m/s	0.00000242	0.00000180	0.00000415
or	m/s	2.42E-06	1.80E-06	4.15E-06

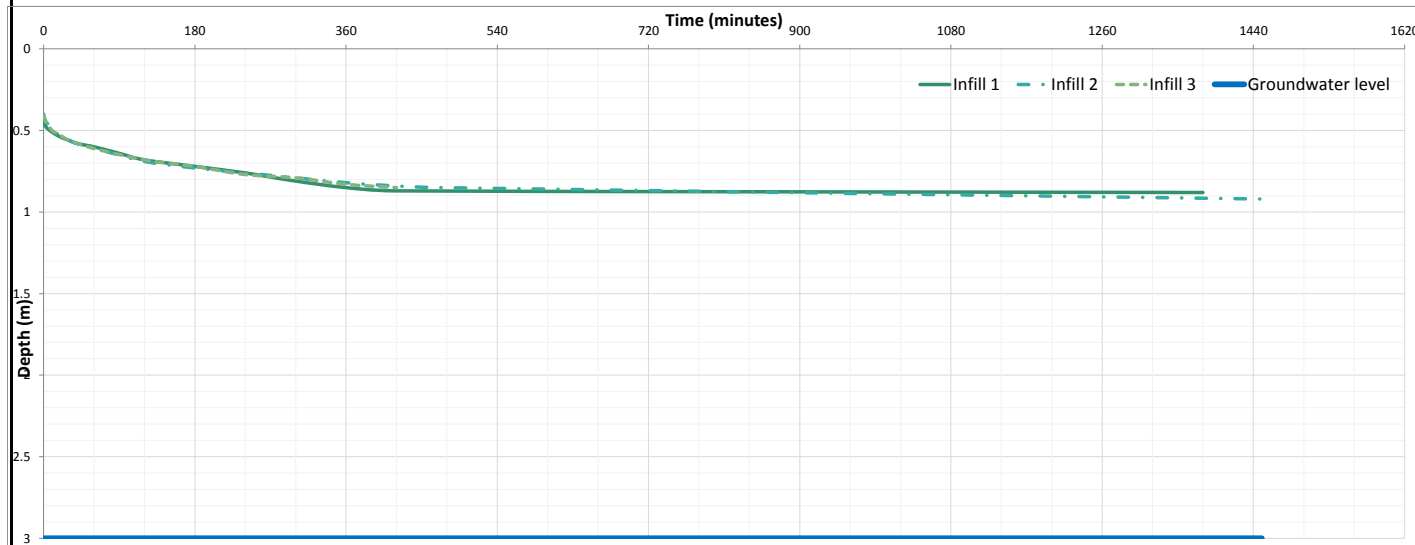
Recommended soil infiltration rate

2.42E-06

m/s

Note:

Where water level did not fall below the 25% of the maximum fill level, soil infiltration rate is based on effective drainage achieved only.



LOG		BACKFILL	
	DEPTH (m)		DEPTH (m)
TOPSOIL: Brown sandy clay.	0.0	Arisings	0.0
Browny grey, slight sandy silty CLAY.	0.3	Gravel (20mm)	0.4
	1.0		1.0



TITLE: Soakaway Test Results
Spalding Rd, Pinchbeck
Robert Doughty Consultancy

In accordance with BRE Digest 365 (1991 with amendments in 2003 and 2007)

DRAWN BY: JC	SCALE: Not to Scale	PROJECT NUMBER: 16-0323.01
CHECKED BY: PH	REVISION: 1	SOAKAWAY NUMBER: SA02
DATE: 11/07/2016		

	units	Infill 1	Infill 2	Infill 3
Length	m	2.00		
Width	m	0.50		
Depth	m	1.14		
Gravel type		20mm single size		
Voids ratio		0.40		
Resting groundwater level at time of testing	m	3.00		
Depth of first reading	m	0.46	0.43	0.44
Depth of final reading	m	1.10	1.10	0.95
Did soakage test reach 25% of maximum fill depth?		Yes	Yes	No
Depth at 75% effective / full depth	m	0.63	0.61	0.57
Depth at 25% effective / full depth	m	0.97	0.96	0.82
Time at 75% effective / full depth	mins	40.00	40.00	20.00
Time at 25% effective / full depth	mins	360.00	420.00	240.00
Vp75 - 25 (volume outflowing between 75% and 25% effective depth)	m3	0.14	0.14	0.10
Mean surface area for outflow (50% full/effective depth)	m2	2.70	2.78	2.28
tp75 (time for the water level to fall from 75% to 25% effective depth)	mins	320.00	380.00	220.00
Soil infiltration rate, f =	m/s	0.00000262	0.00000224	0.00000340
or	m/s	2.62E-06	2.24E-06	3.40E-06

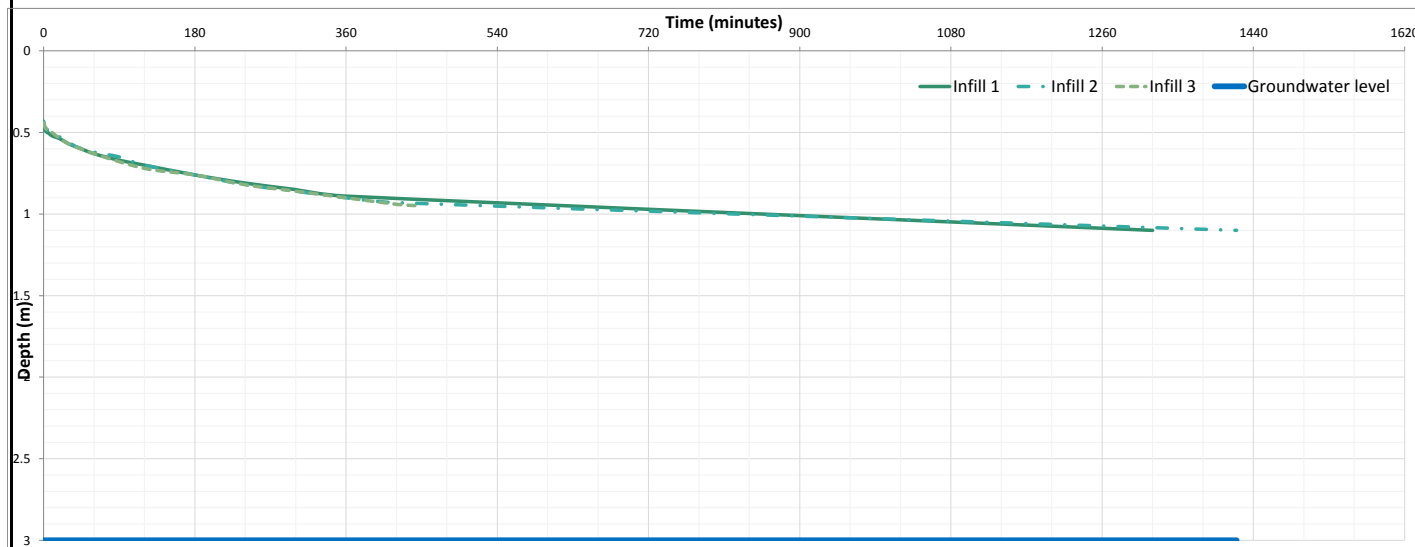
Recommended soil infiltration rate

2.62E-06

m/s

Note:

Where water level did not fall below the 25% of the maximum fill level, soil infiltration rate is based on effective drainage achieved only.



LOG	DEPTH (m)	BACKFILL	DEPTH (m)
TOPSOIL: Brown sandy clay.	0.0	Arisings	0.0
Brownish Orange silty SAND.	0.3	Gravel (20mm)	0.4
	1.2		1.2



TITLE: Soakaway Test Results
Spalding Rd, Pinchbeck
Robert Doughty Consultancy

In accordance with BRE Digest 365 (1991 with amendments in 2003 and 2007)

DRAWN BY: JC	SCALE: Not to Scale	PROJECT NUMBER: 16-0323.01
CHECKED BY: PH	REVISION: 1	SOAKAWAY NUMBER: SA03
DATE: 11/07/2016		