

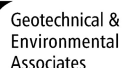
GEA Geotechnical & Environmental Associates				Widbury Barn Widbury Hill Ware, Herts SG12 7QE		Site Newmarket Road, Royston SG8 7NJ		Borehole Number BH8		
Boring Method Cable Percussion		Casing Diameter 150mm cased to 6.20m			Ground Level (mOD) 91.00		Client Countryside Properties PLC		Job Number J16202	
		Location 536750 E 240643 N			Dates 19/12/2016- 20/12/2016		Engineer		Sheet 2/3	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
10.50	D11			7,9/10,9,8,8		<				

GEA Geotechnical & Environmental Associates					Widbury Barn Widbury Hill Ware, Herts SG12 7QE		Site Newmarket Road, Royston SG8 7NJ		Borehole Number BH8	
Boring Method Cable Percussion		Casing Diameter 150mm cased to 6.20m		Ground Level (mOD) 91.00		Client Countryside Properties PLC		Job Number J16202		
		Location 536750 E 240643 N		Dates 19/12/2016- 20/12/2016		Engineer		Sheet 3/3		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
20.00-20.45	SPT N=50			3,5/6,9,13,22						
Remarks							Scale (approx) 1:50	Logged By LB		
							Figure No. J16202.BH8			

GEA Geotechnical & Environmental Associates				Widbury Barn Widbury Hill Ware, Herts SG12 7QE		Site Newmarket Road, Royston SG8 7NJ		Trial Pit Number TP1	
Excavation Method JCB 3CX		Dimensions 2200 x 600 x 1000		Ground Level (mOD) 107.00		Client Countryside Properties PLC		Job Number J16202	
		Location 537155 E 240593 N		Dates 07/09/2016		Engineer		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.80	B			106.70	(0.30) 0.30	MADE GROUND (light brownish grey sandy gravelly silt with rootlets, metal fragments, gravel of chalk and flint is fine-medium, angular-rounded, sand is very fine to fine)			
					(0.70) 106.00	1.00	CHALK: Very weak, low-density, white with orange and brown staining, CHALK. Fractures medium spaced, infilled, becoming very closely spaced and clean with depth (Grade C5, becoming grade B5)		
						Complete at 1.00m			
Plan					Remarks				
.					Groundwater was not encountered				
.					Sides of trial pit remained stable during excavation				
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					Scale (approx)		Logged By		Figure No.
					1:50		LB		J16202.TP1

GEA Geotechnical & Environmental Associates				Widbury Barn Widbury Hill Ware, Herts SG12 7QE		Site Newmarket Road, Royston SG8 7NJ		Trial Pit Number TP2	
Excavation Method JCB 3CX		Dimensions 2200 x 600 x 900		Ground Level (mOD) 110.00		Client Countryside Properties PLC		Job Number J16202	
		Location 537052 E 240554 N		Dates 07/09/2016		Engineer		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water
0.90	B			109.70	(0.30) 0.30	MADE GROUND (light brownish grey sandy gravelly silt with rootlets, metal fragments, gravel of chalk and flint is fine-medium, angular-rounded, sand is very fine to fine)			
					(0.60) 0.90	CHALK: Very weak, low-density, white with orange and brown staining, CHALK. Fractures medium spaced, infilled, becoming very closely spaced and clean with depth (Grade C5, becoming grade B5)			
						Complete at 0.90m			
Plan					Remarks				
.					Groundwater was not encountered				
.					Sides of trial pit remained stable during excavation				
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					Scale (approx)		Logged By		Figure No.
					1:50		LB		J16202.TP2

 Geotechnical & Environmental Associates				Widbury Barn Widbury Hill Ware, Herts SG12 7QE		Site Newmarket Road, Royston SG8 7NJ		Trial Pit Number TP3		
Excavation Method JCB 3CX		Dimensions 2600 x 600 x 1200		Ground Level (mOD) 73.00		Client Countryside Properties PLC		Job Number J16202		
		Location 536945 E 240772 N		Dates 07/09/2016		Engineer		Sheet 1/1		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water	
1.00	B			72.40 71.80	(0.60) 0.60	MADE GROUND (light brownish grey sandy gravelly silt with rootlets, metal, tile and brick fragments, and flint cobbles gravel of chalk and flint is fine-medium, angular-rounded, sand is very fine to fine)				
					(0.60) 1.20	CHALK: Very weak, low-density, white with orange and brown staining, CHALK. Fractures medium spaced, infilled, becoming very closely spaced and clean with depth (Grade C5, becoming grade B5)				
					Complete at 1.20m					
Plan						Remarks				
.						Groundwater was not encountered Sides of trial pit remained stable during excavation				
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						Scale (approx)		Logged By		Figure No.
						1:50		LB		J16202.TP3



Widbury Barn
Widbury Hill
Ware, Herts
SG12 7QE

Site

Newmarket Road, Royston SG8 7NJ

**Trial Pit
Number**
TP4

Excavation Method

JCB 3CX

Dimensions

Dimensions
2400 x 800 x 950

Ground Level (mOD)

96.00

Client	
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Countryside Properties PLC

Job Number
J16202

Location

536738 E 240556 N

Dates

07/09/2016

Engineer

Sheet

1/1

Depth
(m)

Sample / Tests

Water
Depth
(m)

Field Records

Level
(mOD)Depth
(m)
(Thickness)

Description

Legend

Water

95.72

$$(0.28)$$

0.28

(0.67)

95.05

0.95

MADE GROUND (light brownish grey sandy gravelly silt with rootlets, metal fragments and flint cobbles, gravel of chalk and flint is fine-medium, angular-rounded, sand is very fine to fine)

CHALK: Very weak, low-density, white with orange and brown staining, CHALK. Fractures medium spaced, infilled, becoming very closely spaced and clean with depth (Grade C5, becoming grade B5)

Complete at 0.95m

Plan

Remarks

Groundwater was not encountered
Sides of trial pit remained stable during excavation

Scale (approx)

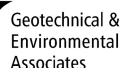
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Logged By

LB

Figure No.

J16202.TP4



Widbury Barn
Widbury Hill
Ware, Herts
SG12 7QE

Site

Newmarket Road, Royston SG8 7NJ

**Trial Pit
Number**
TP5

Excavation Method

JCB 3CX

Dimensions

 $2.6 \times 0.7 \times 2.4$

Ground Level (mOD)

106.00

Client	
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Countryside Properties PLC

Job Number
J16202

Location

537148 E 240640 N

Dates

21/09/2016

Engineer

Sheet

1/1

Depth
(m)

Sample / Tests

Water
Depth
(m)

Field Records

Level
(mOD)Depth
(m)
(Thickness)

Description

Legend

Water

0.90
0.90
0.90

BBB

Age Group	Percentage
18-24	~10%
25-34	~35%
35-44	~25%
45-54	~15%
55-64	~10%
65+	~5%

MADE GROUND (light brownish grey sandy gravelly silt with rootlets, metal fragments and flint cobbles, gravel of chalk and flint is fine-medium, angular-rounded, sand is very fine to fine)

CHALK: Very weak, low density off-white / cream with frequent orange staining and rare black specks silty CHALK, with scattered flint gravel. Fractures are very closely spaced, infilled with light brown-communitated chalk (Grade C5). The upper 200 mm has patches that are structureless (Grade Dc / Dm). At depth the fractures become open and clean, with patches of structureless chalk (Grade C5 to B4). From about 2.00 m the chalk fractures becoming prominent (Grade B3).

Complete at 2.40m

Plan

Remarks

Groundwater was not encountered
Sides of trial pit remained stable during excavation

Scale (approx)

1:50

Logged By

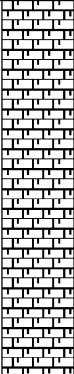
LB

Figure No.

.J16202 TP5

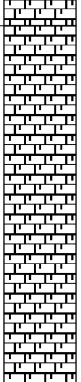
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.20 1.20 1.20	B B B			83.70	(0.30) 0.30	MADE GROUND (light brownish grey sandy gravelly silt with rootlets, metal fragments and flint cobbles, gravel of chalk and flint is fine-medium, angular-rounded, sand is very fine to fine)		
					(2.20)	CHALK: Very weak to moderately weak, low to medium density off-white / cream with frequent orange staining and rare black specks silty CHALK, with scattered flint gravel and cobbles. Fractures are very closely spaced, infilled with light brown-communitated chalk (Grade C5). The upper 200 mm has patches that are structureless (Grade Dc / Dm). At depth the fractures become open and clean, with patches of structureless chalk (Grade C5 to B4). From about 2.00 m the chalk fractures become more prominent (Grade B3).		
				81.50	2.50	Complete at 2.50m		

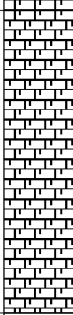
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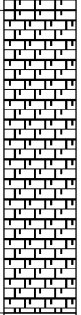
Excavation Method JCB 3CX		Dimensions 2.1 x 0.9 x 2.9		Ground Level (mOD) 87.00		Client Countryside Properties PLC		Job Number J16202		
		Location 537029 E 240753 N		Dates 21/09/2016		Engineer		Sheet 1/1		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water	
1.40 1.40 1.40	B B B			86.60	(0.40) 0.40	MADE GROUND (light brownish grey sandy gravelly silt with rootlets, metal fragments and flint cobbles, gravel of chalk and flint is fine-medium, angular-rounded, sand is very fine to fine)				
					(2.50)	CHALK: Very weak, low density off-white / cream with frequent orange staining and rare black specks silty CHALK, with scattered flint gravel. Fractures are very closely spaced, infilled with light brown-communitied chalk (Grade C5). The upper 200 mm has patches that are structureless (Grade Dc / Dm). At depth the fractures become open and clean, with patches of structureless chalk (Grade C5 to B4). From about 2.00 m the chalk fractures become more prominent (Grade B3).				
				84.10	2.90	Complete at 2.90m				
Plan					Remarks					
					Groundwater was not encountered Sides of trial pit remained stable during excavation					
					Scale (approx)		Logged By		Figure No.	
					1:50		LB		J16202.TP7	

 Geotechnical & Environmental Associates				Widbury Barn Widbury Hill Ware, Herts SG12 7QE		Site Newmarket Road, Royston SG8 7NJ		Trial Pit Number TP8	
Excavation Method JCB 3CX		Dimensions 2900 x 700 x 3000		Ground Level (mOD)		Client Countryside Properties PLC		Job Number J16202	
		Location		Dates 01/11/2016		Engineer		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water
0.50	D				(0.25) 0.25 (0.35) 0.60	MADE GROUND (light brownish grey sandy gravelly silt with rootlets, metal fragments, gravel of chalk and flint is fine-medium, angular-rounded, sand is very fine to fine)			
1.00	D				(1.00)	CHALK: structured, very weak to weak, low density, offwhite CHALK, with brown clay and communitied chalk infill and orange staining (Grade C5)			
1.50	B				1.60	CHALK: structured, very weak, low density, white with black specks CHALK with open clean discontinuities, shell fragments and orange staining (Grade B5)			
2.00	B				(1.40)	CHALK: structured, very weak, low density white CHALK, with open clean discontinuities and orange staining (Grade B4, becoming B3 at 2.00 m)			
2.50	B					Flint cobble band			
3.00	B				3.00	Complete at 3.00m			
Plan						Remarks			
.						Groundwater was not encountered			
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						Scale (approx) 1:50	Logged By LB	Figure No. J16202.TP8	

 Geotechnical & Environmental Associates				Widbury Barn Widbury Hill Ware, Herts SG12 7QE		Site Newmarket Road, Royston SG8 7NJ		Trial Pit Number TP9	
Excavation Method JCB 3CX		Dimensions 3500 x 700 x 3300		Ground Level (mOD)		Client Countryside Properties PLC		Job Number J16202	
		Location							
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water
0.50	D				(0.28) 0.28 (0.22) 0.50	MADE GROUND (light brownish grey sandy gravelly silt with rootlets, metal fragments, gravel of chalk and flint is fine-medium, angular-rounded, sand is very fine to fine)			
1.00	D					CHALK: structured, very weak, low density, offwhite CHALK, with structureless patches (Grade Dm), brown infill of clay and communitated chalk and orange staining (Grade C5)			
1.50	D					CHALK: structured, very weak, low density, white CHALK, with open and clean discontinuities and orange staining (Grade B4, becoming B2 at 1.80 m)			
2.00	B				(2.80)	Black specks			
2.50	B					Band of large flint cobbles			
3.00	B					Band of large flint cobbles			
3.30	B				3.30	Complete at 3.30m			
Plan					Remarks				
.					Groundwater was not encountered Sides of trial pit remained stable during excavation				
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					Scale (approx)		Logged By		Figure No.
					1:50		LB		J16202.TP9

 Geotechnical & Environmental Associates				Widbury Barn Widbury Hill Ware, Herts SG12 7QE		Site Newmarket Road, Royston SG8 7NJ		Trial Pit Number TP10	
Excavation Method JCB 3CX		Dimensions 2900 x 700 x 3000		Ground Level (mOD)		Client Countryside Properties PLC		Job Number J16202	
		Location		Dates 01/11/2016		Engineer		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water
0.50	D				(0.36) 0.36 (0.24) 0.60	MADE GROUND (light brownish grey sandy gravelly silt with rootlets, metal fragments, gravel of chalk and flint is fine-medium, angular-rounded, sand is very fine to fine) CHALK: structureless CHALK, composed of an offwhite and brown matrix of clay and communited chalk and white silty chalk gravel (Grade Dm/Dc)		 	
1.00	D					CHALK: structured, very weak, low density, offwhite CHALK, with orange staining and scattered flint gravel and cobbled (Grade C5, becoming B3 at 1.20 m)			
1.50	D				(2.40)				
2.00	D								
2.50	D								
3.00	D				3.00	Complete at 3.00m			
Plan .						Remarks Groundwater was not encountered Sides of trial pit remained stable during excavation			
						Scale (approx) 1:50	Logged By LB	Figure No. J16202.TP10	

 Geotechnical & Environmental Associates				Widbury Barn Widbury Hill Ware, Herts SG12 7QE		Site Newmarket Road, Royston SG8 7NJ		Trial Pit Number TP11		
Excavation Method JCB 3CX		Dimensions 2500 x 700 x 2500		Ground Level (mOD)		Client Countryside Properties PLC		Job Number J16202		
		Location		Dates 01/11/2016		Engineer		Sheet 1/1		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water	
0.50	D				(0.30) 0.30 (0.20) 0.50	MADE GROUND (light brownish grey sandy gravelly silt with rootlets, metal fragments, gravel of chalk and flint is fine-medium, angular-rounded, sand is very fine to fine) CHALK: structureless CHALK, composed of a brown matrix of clay and comminuted chalk and white chalk gravel (Grade Dm/Dc)		 		
1.00	D					CHALK: structured, very weak, low density, offwhite to white CHALK, with open, clean discontinuities and orange staining (Grade C5 to B3) Bands of flint gravel and cobbles at 0.80 m, 1.20 m and 2.50 m				
1.50	D				(2.00)					
2.00	D									
2.50	D				2.50	Complete at 2.50m				
Plan						Remarks				
.						Groundwater was not encountered Sides of trial pit remained stable during excavation				
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						Scale (approx)		Logged By		Figure No.
						1:50		LB		J16202.TP11

 Geotechnical & Environmental Associates				Widbury Barn Widbury Hill Ware, Herts SG12 7QE		Site Newmarket Road, Royston SG8 7NJ		Trial Pit Number TP12	
Excavation Method JCB 3CX		Dimensions 2200 x 700 x 2500		Ground Level (mOD)		Client Countryside Properties PLC		Job Number J16202	
		Location		Dates 01/11/2016		Engineer		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water
0.50	D				(0.30) 0.30 (0.20) 0.50	MADE GROUND (light brownish grey sandy gravelly silt with rootlets, metal fragments, gravel of chalk and flint is fine-medium, angular-rounded, sand is very fine to fine) CHALK: structureless CHALK, composed of a brown matrix of clay and comminuted chalk and white chalk gravel (Grade Dm/Dc)		 	
1.00	D					CHALK: structured, very weak, low density, offwhite to white CHALK, with open, clean discontinuities and orange staining (Grade C5 to B3)			
1.50	D				(2.00)				
2.00	B								
2.50	B				2.50	Patches of structureless putty chalk			
						Complete at 2.50m			
Plan .						Remarks			
						Scale (approx) 1:50		Logged By LB	Figure No. J16202.TP12

Soakage Test Results

Site	Newmarket Road, Royston SG8 7NJ	Job Number	J16202
Client	Countryside Properties PLC	Sheet	1/3
Engineer			

Trial Pit No: 1

Dimensions (m): 2.2 x 0.6 x 1.0

Soakage Test No: 1

Time (mins)	Depth to water (m)
0	0.70
1	0.70
2	0.70
3	0.70
4	0.70
5	0.70
6	0.70
7	0.70
10	0.70
15	0.70
20	0.70
25	0.71
30	0.72
45	0.75
60	0.75
90	0.77
120	0.79
180	0.8

Trial Pit No: 2

Dimensions (m): 2.2 x 0.6 x 0.9

Soakage Test No: 1

Time (mins)	Depth to water (m)
0	0.75
0.5	0.75
1	0.75
2	0.75
3	0.75
4	0.76
5	0.76
6	0.76
7	0.77
10	0.78
15	0.79
20	0.81
25	0.82
30	0.82
60	0.92
90	DRY

Soakage Test Results

Site	Newmarket Road, Royston SG8 7NJ	Job Number	J16202
Client	Countryside Properties PLC	Sheet	2/3
Engineer			

Trial Pit No: 3

Dimensions (m): 2.6 x 0.6 x 1.2

Soakage Test No: 1

Time (mins)	Depth to water (m)
0	0.89
0.5	0.89
1	0.90
2	0.90
3	0.90
4	0.90
5	0.91
6	0.92
7	0.92
10	0.93
15	0.95
25	1.01
30	1.01
45	1.06
60	1.08
90	1.11
120	1.17

Trial Pit No: 5

Dimensions (m): 2.6 x 0.7 x 2.4

Soakage Test No: 1

Time (mins)	Depth to water (m)
0	1.40
1	1.44
2	1.44
3	1.45
4	1.47
5	1.48
6	1.49
7	1.52
10	1.55
15	1.60
20	1.65
25	1.70
30	1.78
60	1.87
90	1.98
110	2.28
refill	110
	1.66
	111
	1.67
	112
	1.69
	113
	1.70
	114
	1.72
	115
	1.76
	150
	1.99
	226
	2.4

Soakage Test Results

Site	Newmarket Road, Royston SG8 7NJ	Job Number	J16202
Client	Countryside Properties PLC	Sheet	3/3
Engineer			

Trial Pit No: 6

Dimensions (m): 2.1 x 0.7 x 2.5

Soakage Test No: 1

Time (mins)	Depth to water (m)
0	1.17
1	1.20
2	1.21
3	1.26
4	1.27
5	1.28
6	1.29
7	1.31
10	1.35
15	1.40
25	1.44
30	1.50
60	1.63
90	1.71
120	1.84
180	1.90

Trial Pit No: 7

Dimensions (m): 2.1 x 0.9 x 2.9

Soakage Test No: 1

Time (mins)	Depth to water (m)
0	2.12
1	2.28
2	2.36
3	2.40
4	2.49
5	2.49
6	2.58
7	2.59
8	2.64
9	2.67
10	2.68
11	2.69
13	2.73
14	2.75
15	2.79
17	2.86
18	2.89
19	DRY



Soakage Test Results

Site Newmarket Road, Royston SG8 7NJ

Client Countryside Properties PLC

Engineer

Job Number
J16202

Sheet
1/3

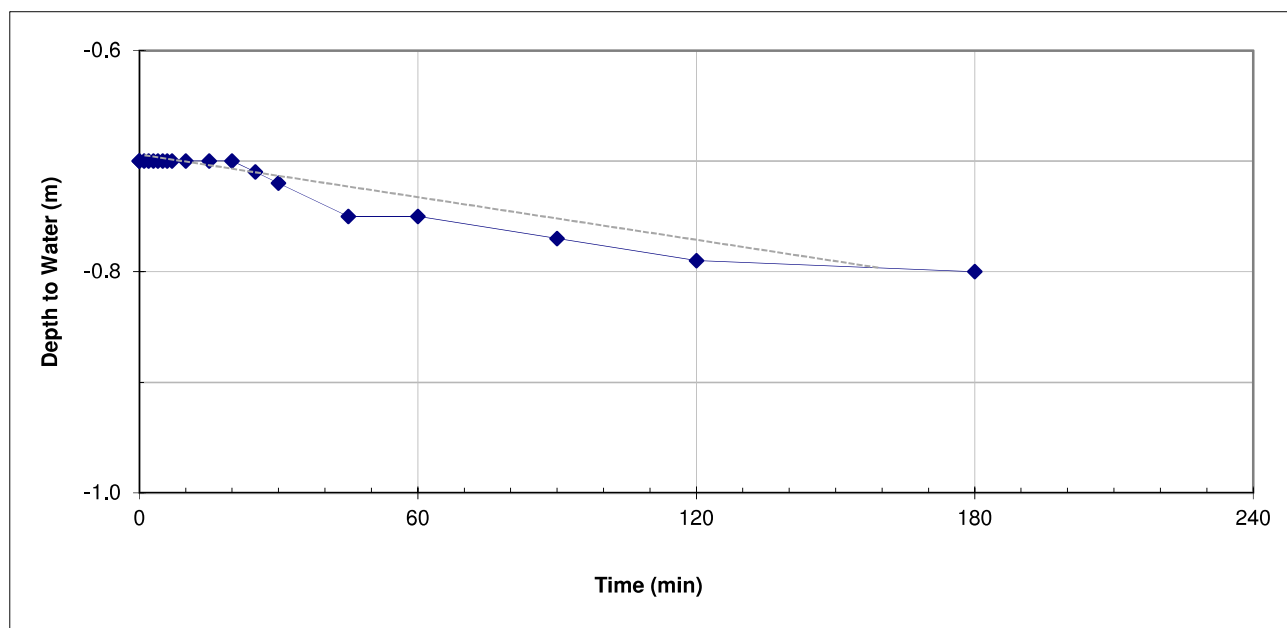
Trial Pit No. TP1

Soakage Test No. 1

Pit Length (m) 2.2

Pit Width (m) 0.6

Pit Depth (m) 1



Design Soakage Rate 5.1E-06 m/s (based on linear portion of graph as shown)
0.44 m/day

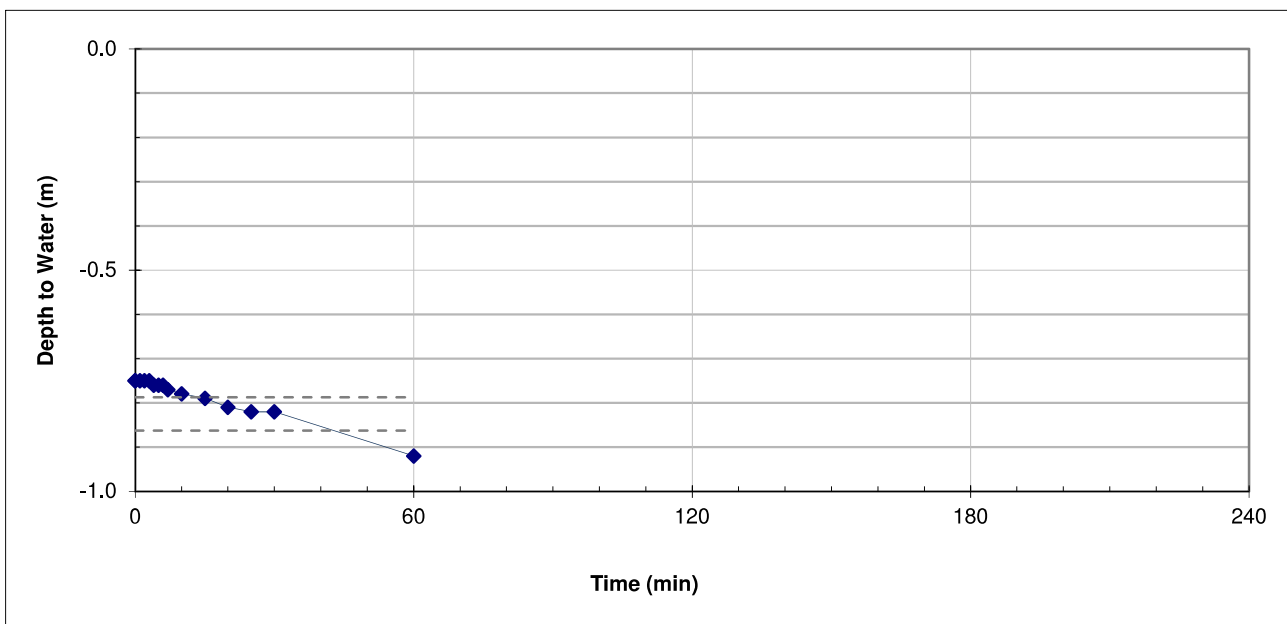
Trial Pit No. TP2

Soakage Test No. 1

Pit Length (m) 2.2

Pit Width (m) 0.6

Pit Depth (m) 0.9



Design Soakage Rate 3.5E-05 m/s (based on BRE 365 method)
3.04 m/day

Soakage Test Results

Site Newmarket Road, Royston SG8 7NJ

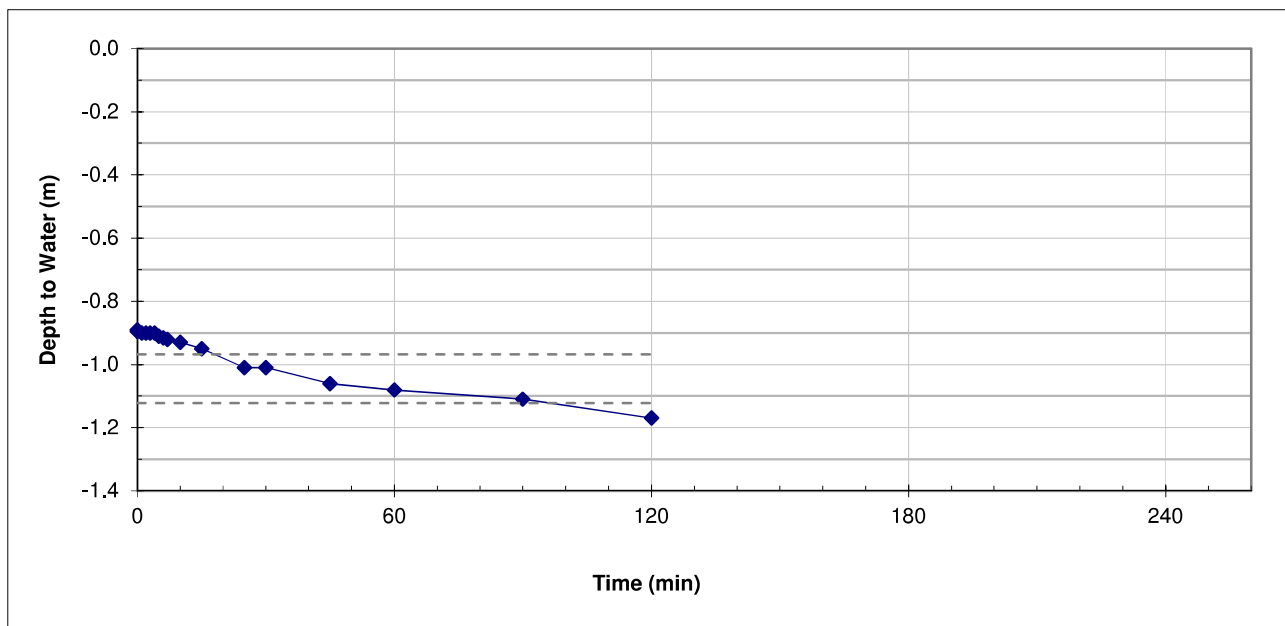
Client Countryside Properties PLC

Engineer

Job Number
J16202

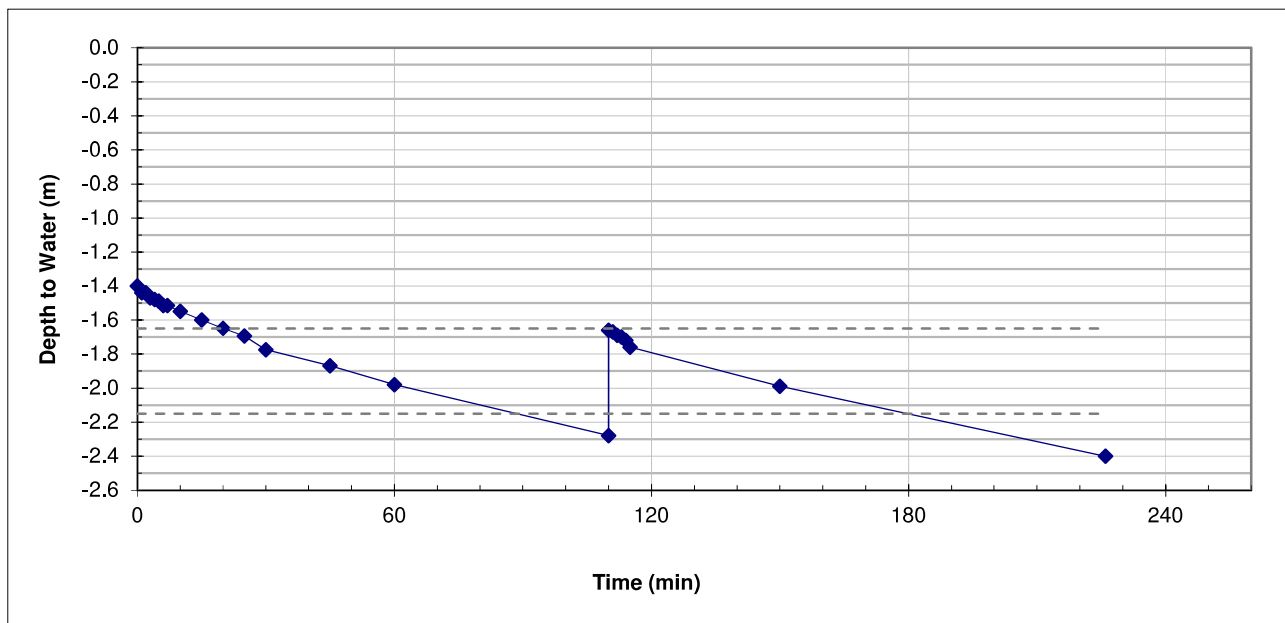
Sheet
2/3

Trial Pit No. TP3 Soakage Test No. 1
Pit Length (m) 2.6 Pit Width (m) 0.6 Pit Depth (m) 1.2



Design Soakage Rate 2.0E-05 m/s (based on BRE 365 method)
1.73 m/day

Trial Pit No. TP5 Soakage Test No. 1
Pit Length (m) 2.6 Pit Width (m) 0.7 Pit Depth (m) 2.4



Design Soakage Rate 4.4E-05 m/s (based on BRE 365 method)
3.82 m/day

Site Newmarket Road, Royston SG8 7NJ

Client Countryside Properties PLC

Engineer

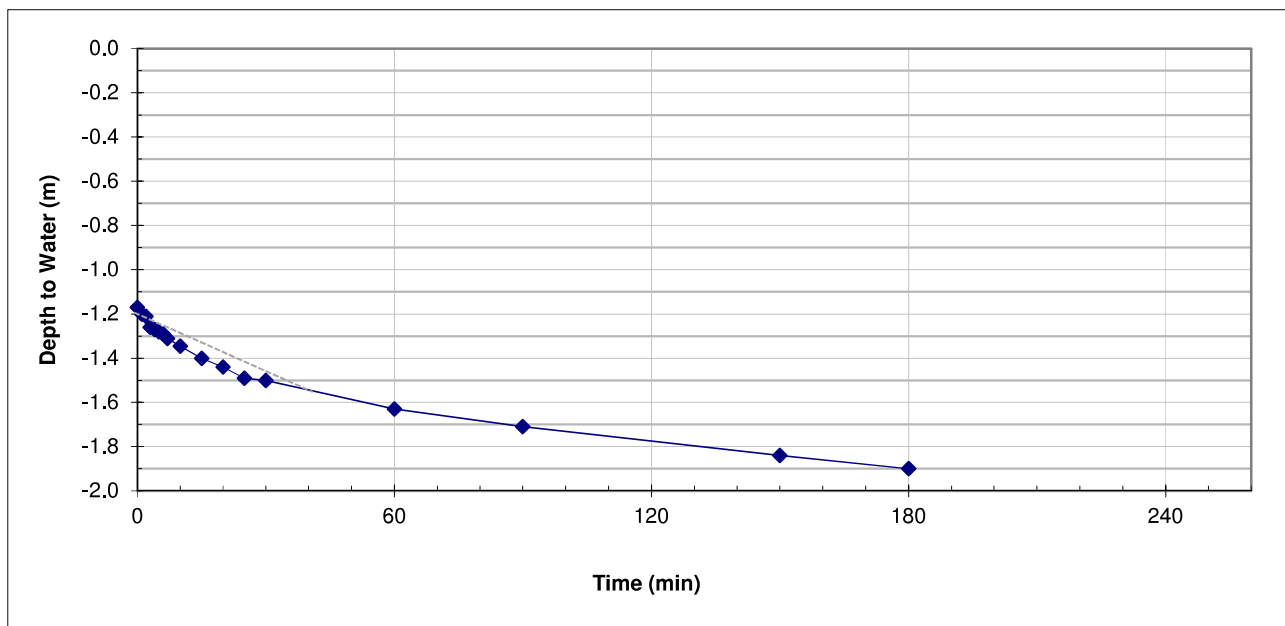
Job Number
J16202

Sheet
3/3

Trial Pit No. TP6

Soakage Test No. 1

Pit Length (m) 2.1 Pit Width (m) 0.7 Pit Depth (m) 2.5

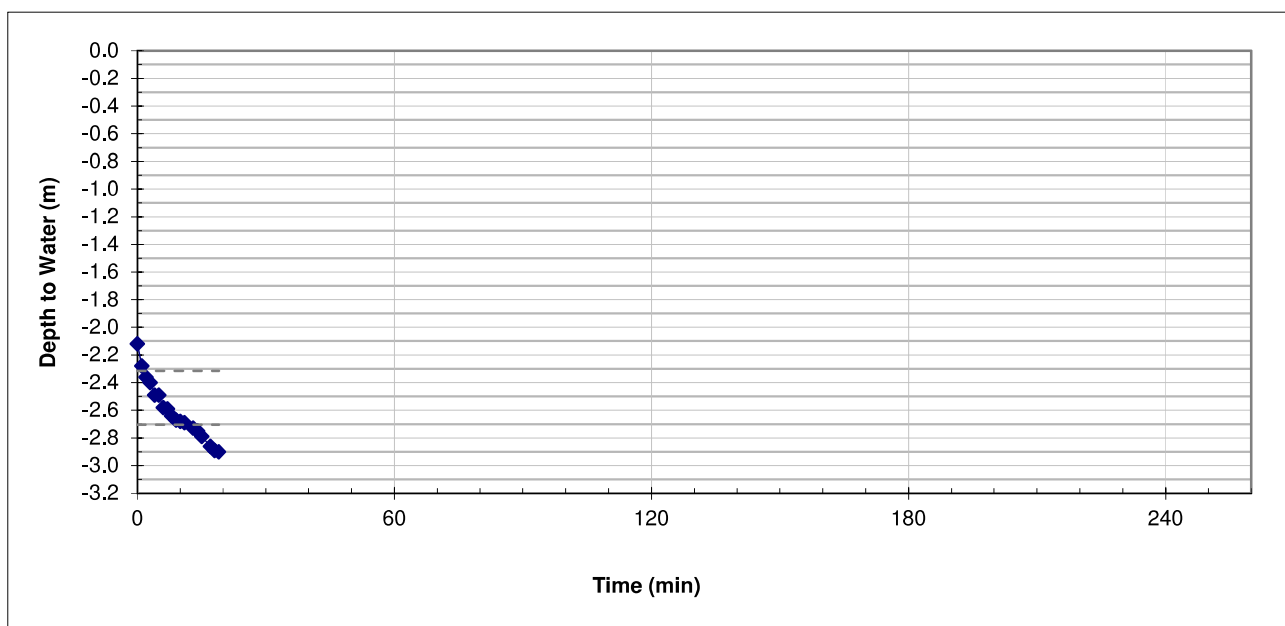


Design Soakage Rate 3.0E-05 m/s (based on linear portion of graph as shown)
2.57 m/day

Trial Pit No. TP7

Soakage Test No. 1

Pit Length (m) 2.1 Pit Width (m) 0.9 Pit Depth (m) 2.9



Design Soakage Rate 2.9E-04 m/s (based on BRE 365 method)
25.09 m/day