

Laboratory CBR Test Results

BS1377:Part 4 : 1990:Test 7:method 7

Preparation - BS1377:Part 1:1990:7.6.5

cjassociates

Site **JER6151 Shinfield West**

Client RPS

Job Number AC0262

Lab Number L10446

Hole	SFW-TP12
Sample	B
Depth [m]	3.0

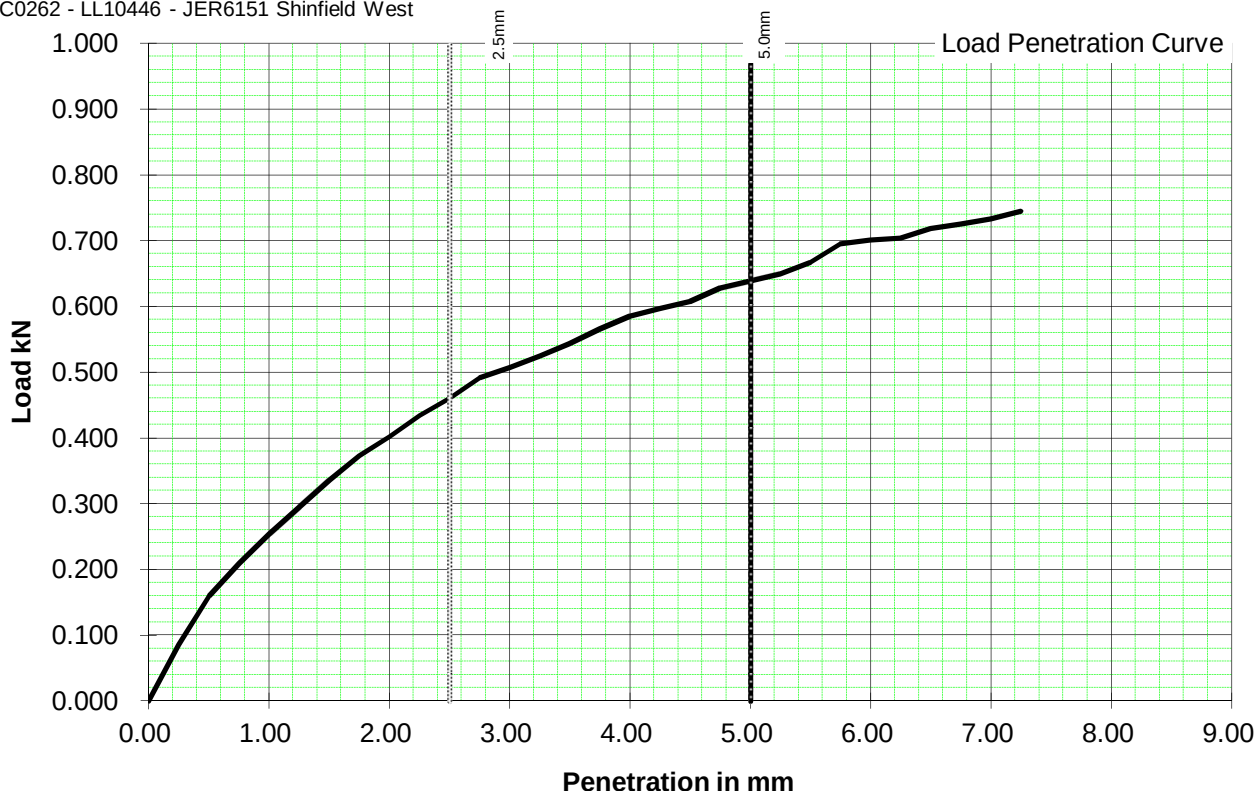
UKAS Testing
Laboratory
1429

Soaked	[Y/N]	N
Percentage > 20mm	[%]	0
Initial Moisture Content	[%]	29
Initial Bulk Density	[Mg/m3]	1.96
Initial Dry Density	[Mg/m3]	1.57
Surface Tested		Top
Correction Applied	[Y/N]	N
Final Moisture Content	[%] at plunger	25
CBR 2.5mm	[%]	3.5
CBR 5.0mm	[%]	3.2
DESIGN CBR	[%]	3.5

Description/Comments

Orangish brownish grey CLAY.

AC0262 - LL10446 - JER6151 Shinfield West



Checked

Approved

[Signature]

Laboratory CBR Test Results

BS1377:Part 4 : 1990:Test 7:method 7

Preparation - BS1377:Part 1:1990:7.6.5

cjassociates

Site **JER6151 Shinfield West**

Client RPS

Job Number AC0262

Lab Number L10446

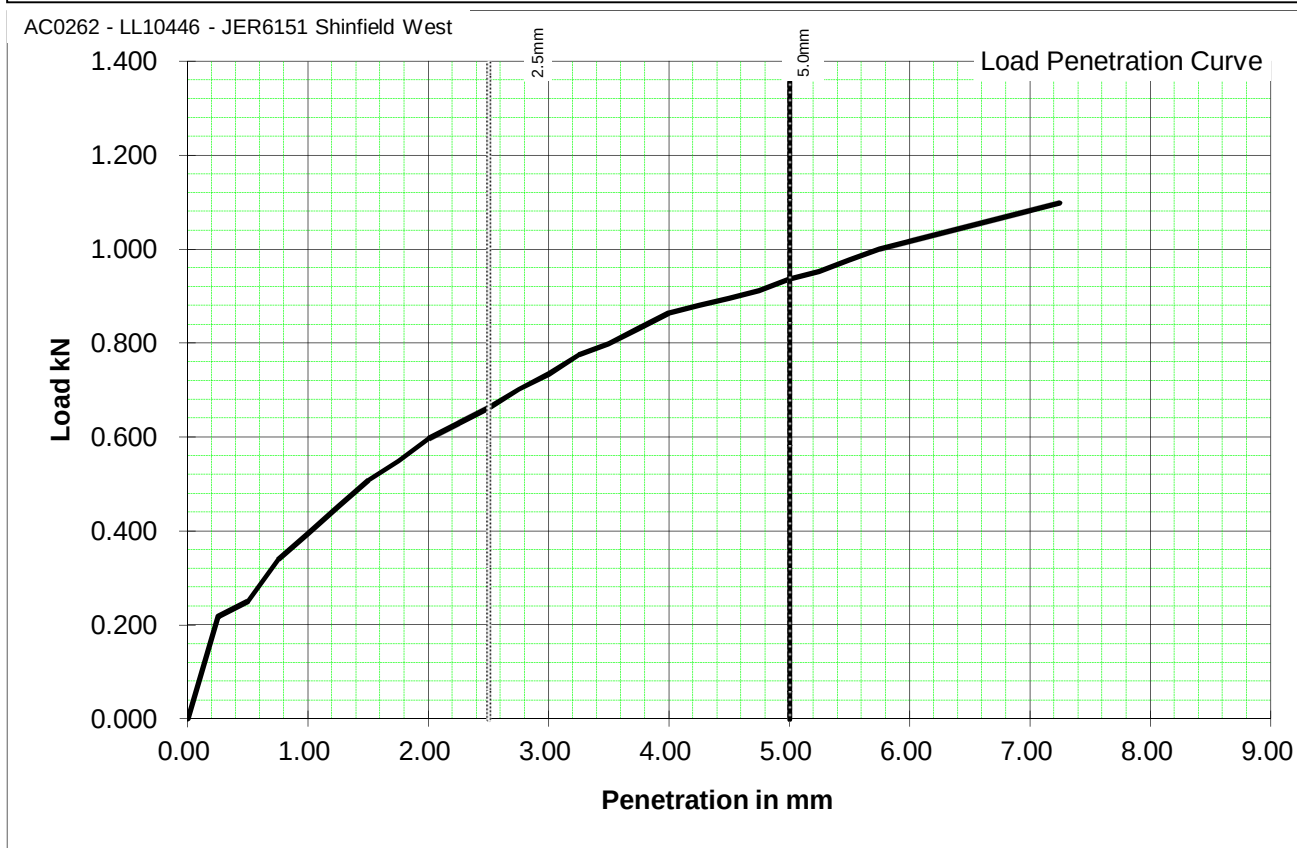
Hole	SFW-TP14
Sample	B
Depth [m]	1.0

UKAS Testing
Laboratory
1429

Soaked	[Y/N]	N
Percentage > 20mm	[%]	0
Initial Moisture Content	[%]	25
Initial Bulk Density	[Mg/m ³]	2.04
Initial Dry Density	[Mg/m ³]	1.69
Surface Tested		Top
Correction Applied	[Y/N]	N
Final Moisture Content	[%] at plunger	20
CBR 2.5mm	[%]	5.0
CBR 5.0mm	[%]	4.7
DESIGN CBR	[%]	5.0

Description/Comments

Orangish brown slightly sandy slightly gravelly silty CLAY



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Laboratory CBR Test Results

BS1377:Part 4 : 1990:Test 7:method 7

Preparation - BS1377:Part 1:1990:7.6.5

cjassociates

Site **JER6151 Shinfield West**

Client RPS

Job Number AC0262

Lab Number L10446

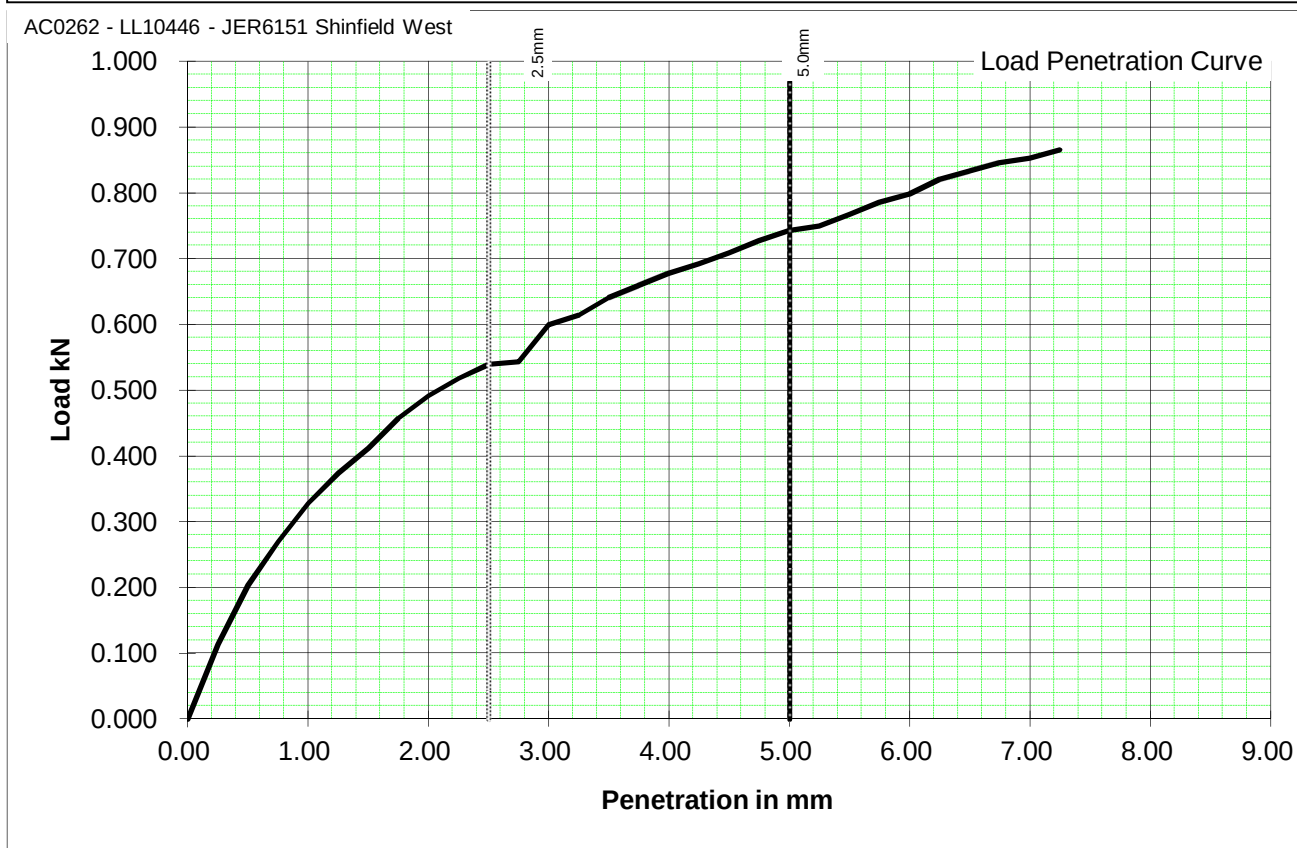
Hole	SFW-TP15
Sample	B
Depth [m]	1.0

UKAS Testing
Laboratory
1429

Soaked	[Y/N]	N
Percentage > 20mm	[%]	9
Initial Moisture Content	[%]	14
Initial Bulk Density	[Mg/m3]	2.07
Initial Dry Density	[Mg/m3]	1.80
Surface Tested		Top
Correction Applied	[Y/N]	N
Final Moisture Content	[%] at plunger	15
CBR 2.5mm	[%]	4.1
CBR 5.0mm	[%]	3.7
DESIGN CBR	[%]	4.1

Description/Comments

Orangish bluey grey slightly gravelly CLAY.



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Laboratory CBR Test Results

BS1377:Part 4 : 1990:Test 7:method 7

Preparation - BS1377:Part 1:1990:7.6.5

cjassociates

Site **JER6151 Shinfield West**

Client RPS

Job Number AC0262

Lab Number L10446

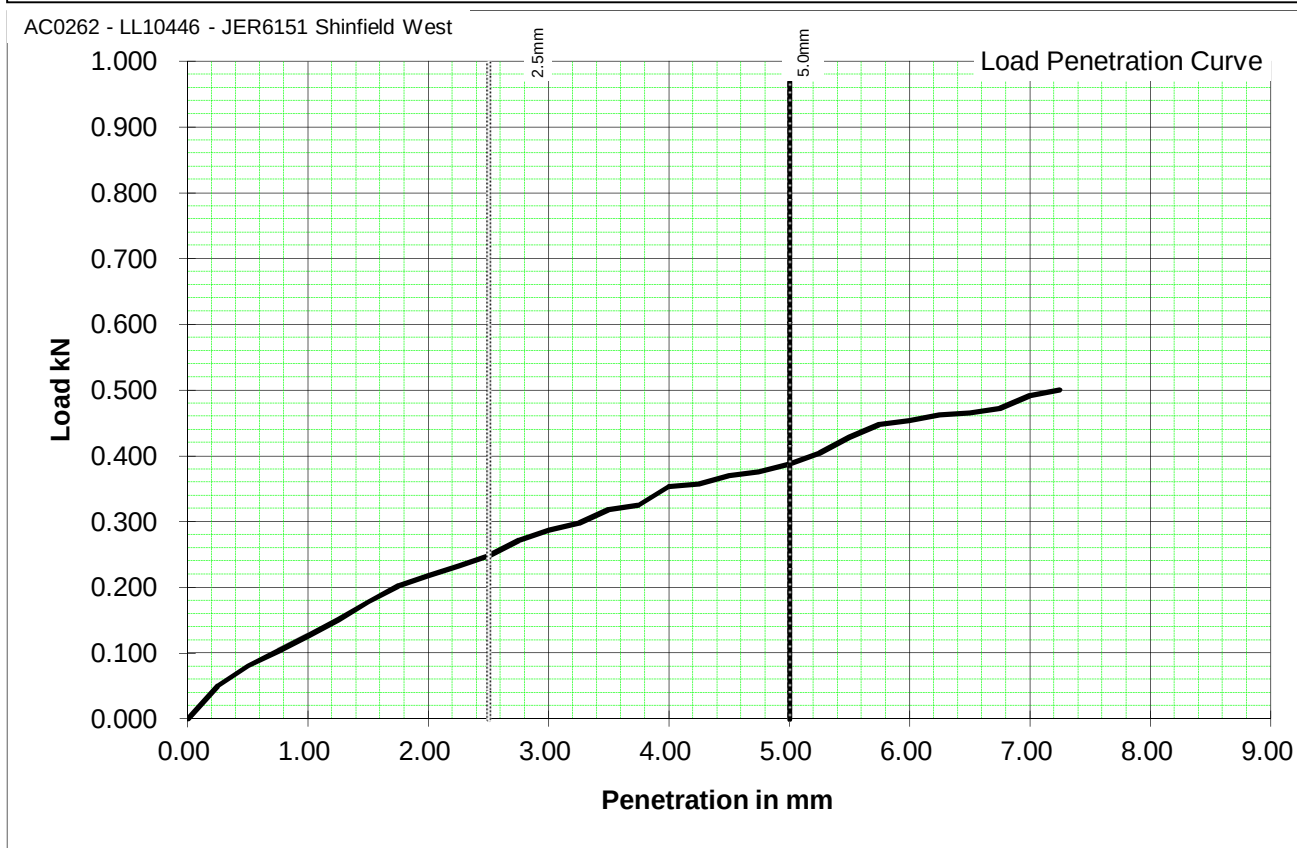
Hole	SFW-TP15
Sample	B
Depth [m]	3.0

UKAS Testing
Laboratory
1429

Soaked	[Y/N]	N
Percentage > 20mm	[%]	0
Initial Moisture Content	[%]	25
Initial Bulk Density	[Mg/m3]	1.91
Initial Dry Density	[Mg/m3]	1.50
Surface Tested		Top
Correction Applied	[Y/N]	N
Final Moisture Content	[%] at plunger	28
CBR 2.5mm	[%]	1.9
CBR 5.0mm	[%]	1.9
DESIGN CBR	[%]	1.9

Description/Comments

Orangish brown mottled grey slightly gravelly silty CLAY



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[Signature]

Determination of Undrained Shear Strength in Triaxial Compression Without Measurement of Pore Pressure

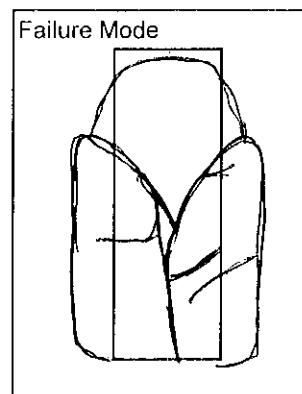
cjassociates

BS1377:Part 7:1990: Clause 8

Site JER6151 Shinfield West
Client RPS
Job Number AC0262
Lab Number L10446

Hole	CP1	Description
Sample	U	Stiff dark brown silty CLAY
Depth	m	4.00
Depth within original sample	mm	30

Orientation within original sample		Vertical
Preparation		Undisturbed
Mean initial sample height	mm	210.0
Mean initial sample diameter	mm	100.7
Sample mass	g	3335.71
Initial moisture content	%	29
Rate of strain	%/min	2.38
Initial bulk density	Mg/m ³	1.99
Initial dry density	Mg/m ³	1.55



Membrane type	Latex
Membrane thickness	0.3

Cell pressure	kPa	80
Membrane correction	kPa	1.1
Deviator stress	kPa	161
Cumulative strain at failure	%	19
Shear strength	kPa	81
Consistency	Firm to Stiff	

Checked 

Approved 

Issue Date 20/05/2014 14:57

Triaxial test Result Page [] of []

Lab Report Page [] of []

Determination of Undrained Shear Strength in Triaxial Compression Without Measurement of Pore Pressure

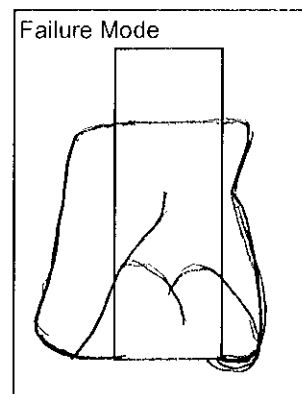
cjassociates

BS1377:Part 7:1990: Clause 8

Site JER6151 Shinfield West
Client RPS
Job Number AC0262
Lab Number L10446

Hole	CP1	Description
Sample	U	Firm dark brown slightly sandy clayey SILT
Depth	m	6.50
Depth within original sample	mm	30

Orientation within original sample		Vertical
Preparation		Undisturbed
Mean initial sample height	mm	210.0
Mean initial sample diameter	mm	101.6
Sample mass	g	3566.16
Initial moisture content	%	22
Rate of strain	%/min	2.38
Initial bulk density	Mg/m ³	2.10
Initial dry density	Mg/m ³	1.72



Membrane type	Latex
Membrane thickness	0.3

Cell pressure	kPa	130
Membrane correction	kPa	1.0
Deviator stress	kPa	257
Cumulative strain at failure	%	18
Shear strength	kPa	128
Consistency		Stiff

Checked

[Signature]

Approved

[Signature]

Issue Date 20/05/2014 14:58

Triaxial test Result Page [] of []

Lab Report Page [] of []

Determination of Undrained Shear Strength in Triaxial Compression Without Measurement of Pore Pressure

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BS1377:Part 7:1990: Clause 8

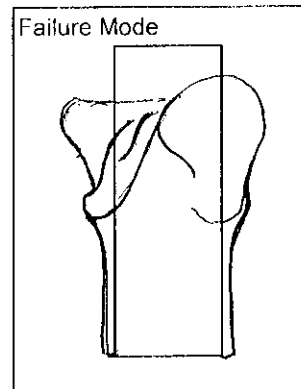
Site JER6151 Shinfield West
Client RPS
Job Number AC0262
Lab Number L10446

Hole	CP2	Description
Sample	U	Dark brown clayey SILT
Depth	m 5.00	
Depth within original sample	mm 30	

Orientation within original sample	Vertical
Preparation	Undisturbed
Mean initial sample height	mm 210.0
Mean initial sample diameter	mm 100.9
Sample mass	g 3252.92
Initial moisture content	% 30
Rate of strain	%/min 2.38
Initial bulk density	Mg/m ³ 1.94
Initial dry density	Mg/m ³ 1.49

Membrane type	Latex
Membrane thickness	0.3

Cell pressure	kPa	100
Membrane correction	kPa	1.1
Deviator stress	kPa	144
Cumulative strain at failure	%	20
Shear strength	kPa	72
Consistency		Firm



Checked *[Signature]*

Approved *[Signature]*

Issue Date 20/05/2014 14:58

Triaxial test Result Page [] of []

Lab Report Page [] of []

Determination of Undrained Shear Strength in Triaxial Compression Without Measurement of Pore Pressure

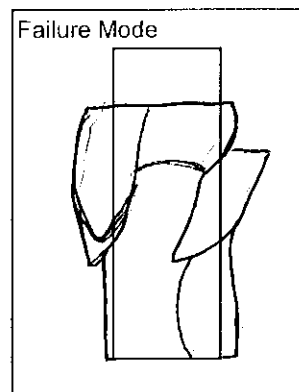
CJ ASSOCIATES

BS1377:Part 7:1990: Clause 8

Site JER6151 Shinfield West
Client RPS
Job Number AC0262
Lab Number L10446

Hole	CP3	Description
Sample	U	Stiff dark brown silty CLAY
Depth m	5.00	
Depth within original sample mm	10	

Orientation within original sample	Vertical
Preparation	Undisturbed
Mean initial sample height mm	210.0
Mean initial sample diameter mm	100.6
Sample mass g	3487.84
Initial moisture content %	24
Rate of strain %/min	2.38
Initial bulk density Mg/m ³	2.09
Initial dry density Mg/m ³	1.69



Membrane type	Latex
Membrane thickness	0.3

Cell pressure kPa	80
Membrane correction kPa	1.0
Deviator stress kPa	240
Cumulative strain at failure %	18
Shear strength kPa	120
Consistency	Stiff

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Issue Date 21/05/2014 13:58

Triaxial test Result Page [] of []

Lab Report Page [] of []

Determination of Undrained Shear Strength in Triaxial Compression Without Measurement of Pore Pressure

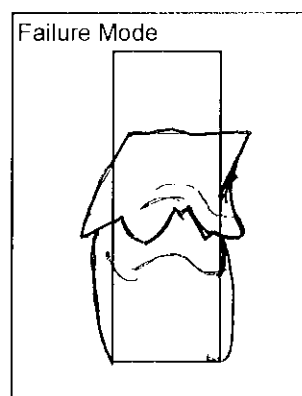
cjassociates

BS1377:Part 7:1990: Clause 8

Site JER6151 Shinfield West
Client RPS
Job Number AC0262
Lab Number L10446

Hole	CP3	Description
Sample	U	Stiff dark grey slightly sandy clayey Silt
Depth	m	8.00
Depth within original sample	mm	40

Orientation within original sample		Vertical
Preparation		Undisturbed
Mean initial sample height	mm	210.0
Mean initial sample diameter	mm	97.2
Sample mass	g	3133.59
Initial moisture content	%	25
Rate of strain	%/min	2.38
Initial bulk density	Mg/m ³	2.01
Initial dry density	Mg/m ³	1.61



Membrane type	Latex
Membrane thickness	0.3

Cell pressure	kPa	160
Membrane correction	kPa	1.0
Deviator stress	kPa	221
Cumulative strain at failure	%	16
Shear strength	kPa	111
Consistency		Stiff

Checked *[Signature]*

Approved *[Signature]*

Issue Date 20/05/2014 14:58

Triaxial test Result Page [] of []

Lab Report Page [] of []

Determination of Undrained Shear Strength in Triaxial Compression Without Measurement of Pore Pressure

cjassociates

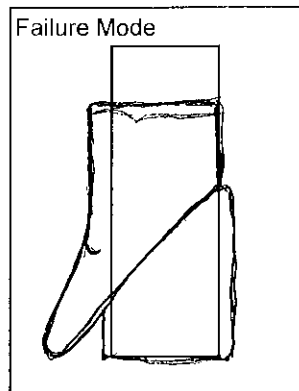
BS1377:Part 7:1990: Clause 8

Site JER6151 Shinfield West
Client RPS
Job Number AC0262
Lab Number L10446

Hole	CP4	Description
Sample	U	Stiff dark brown silty CLAY
Depth m	4.00	
Depth within original sample mm	30	

Orientation within original sample	Vertical
Preparation	Undisturbed
Mean initial sample height mm	210.0
Mean initial sample diameter mm	107.5
Sample mass g	3500.19
Initial moisture content %	29
Rate of strain %/min	2.38
Initial bulk density Mg/m ³	1.84
Initial dry density Mg/m ³	1.42

Membrane type	Latex
Membrane thickness	0.3



Cell pressure kPa	80
Membrane correction kPa	0.7
Deviator stress kPa	201
Cumulative strain at failure %	11
Shear strength kPa	101
Consistency	Stiff

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[Signature]

Approved

[Signature]

Issue Date 21/05/2014 14:27

Triaxial test Result Page [] of []

Lab Report Page [] of []

Summary of Laboratory Sample Descriptions

[illegible]

Note: Results on this table are in summary format and may not meet the requirements of the relevant standards, additional information is held by the laboratory

End

Checked by

30 Sept

Approved by

30/5/14

Date

GSTL
GEO Site & Testing Services Limited

JER 6151 Shinfield West

Contract No:

23303-130514

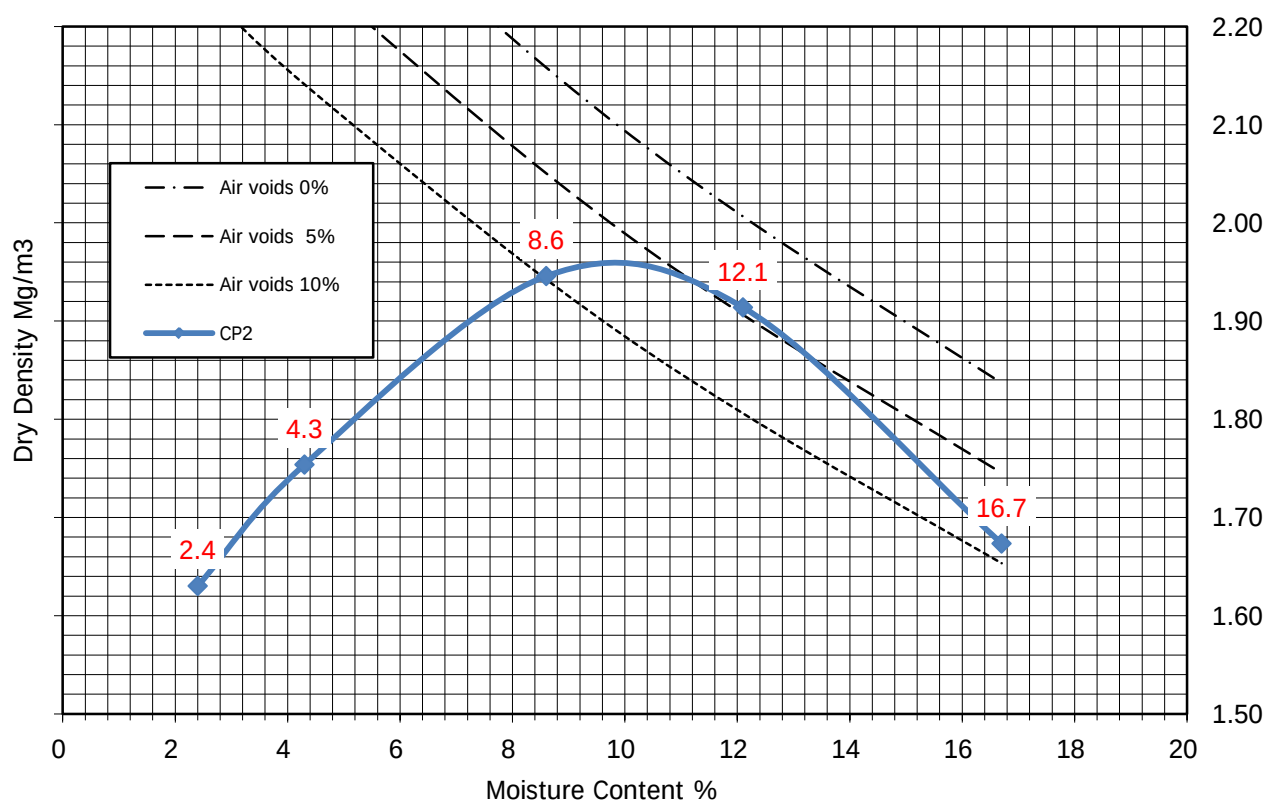
Client ref:

AC0262 L10446 S48

Dry Density/Moisture Content Relationship Vibro Compaction

BS 1377:Part 4:1990 . CI 3.7

Client ref: AC02062 L10446 S48
Location: JER6151 Shinfield W
Contract Number: 23303-130514
Hole Number: CP2
Sample Number: N/A
Depth (m) : 2.00
Sample Type B



Compaction Point:	1	2	3	4	5
Moisture Content	2	4	9	12	17
Bulk Density (Mg/m ³):	1.67	1.83	2.11	2.15	1.95
Dry Density (Mg/m ³):	1.63	1.75	1.95	1.91	1.67

Initial Moisture Content:	11	Method of Compaction	Vibro Hammer / Single Sample
Particle Density (Mg/m ³):	2.65* Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (mg/m ³):	1.95	Material Retained on 20.0 mm Test Sieve (%):	0
Optimum Moisture Content (%):	8.6	Sample Preparation Clause :	3.2.4.2

Remarks

GSTL
GEO Site & Testing Services Limited

Checked By
B. Sharp

Date Approved:

Approved By:
D.P. Gons

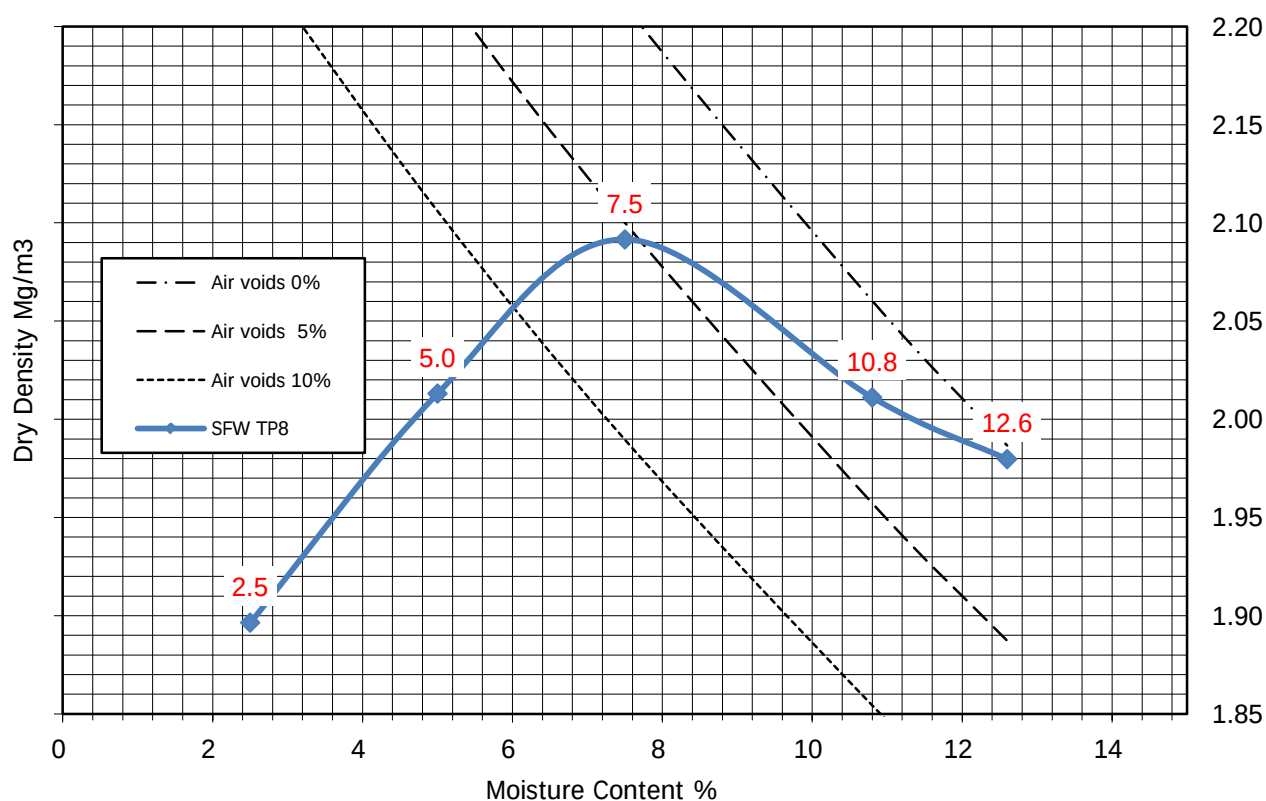
30.5.14



Dry Density/Moisture Content Relationship Vibro Compaction

BS 1377:Part 4:1990 . CI 3.7

Client ref: AC02062 L10446 S41
 Location: JER6151 Shinfield West
 Contract Number: 23303-130514
 Hole Number: SFW TP8
 Sample Number: N/A
 Depth (m) : 1.50
 Sample Type B



Compaction Point:	1	2	3	4	5
Moisture Content	3	5	8	11	13
Bulk Density (Mg/m ³):	1.94	2.11	2.25	2.23	2.23
Dry Density (Mg/m ³):	1.90	2.01	2.09	2.01	1.98

Initial Moisture Content:	11	Method of Compaction	Vibro Hammer / Single Sample
Particle Density (Mg/m ³):	2.65* Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (mg/m ³):	2.09	Material Retained on 20.0 mm Test Sieve (%):	0
Optimum Moisture Content (%):	7.5	Sample Preparation Clause :	3.2.4.2

Remarks

GSTL
 GEO Site & Testing Services Limited

Checked By

Date Approved:

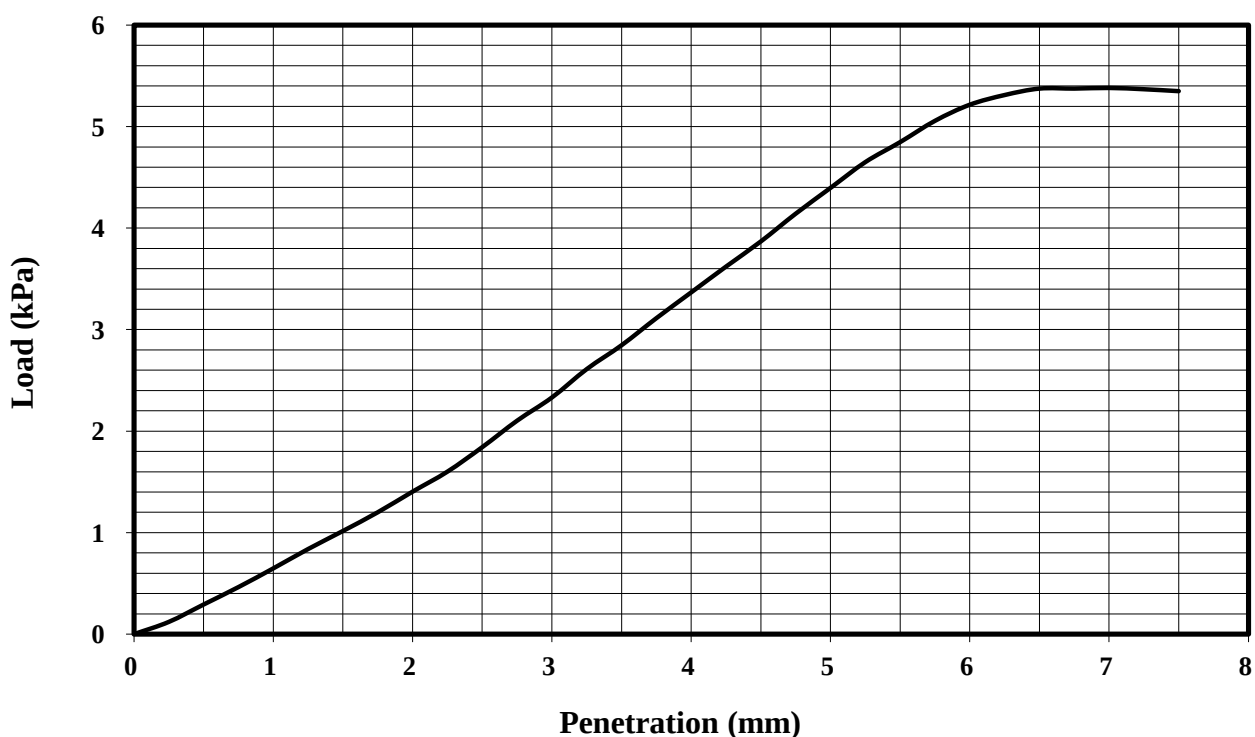
Approved By:

30.5.14



Test Report: Determination of the California Bearing Ratio
BS 1377: Part 4: 1990 Clause 7

Client ref: AC0262-L10446-S4838
Location: JER6151 Shinfield West
Contract Number: 23303-130514
Sample Type: B
Hole Number: CP2
Sample Number: N/A
Depth (m) : 2.00



Initial Sample Conditions

Moisture Content: **13.6**
 Bulk Density Mg/m³: **2.19**
 Dry Density Mg/m³: **1.93**
 C.B.R. Value %
 Percentage retained on 20mm BS test sieve:

Test Conditions

Surcharge Kg: 2.0
 Soaking Time hrs: n/a
 Swelling mm: n/a

21.98

Method of Compaction:

Vibro

Final Moisture Content %
 Sample Top: **13.6**
 Sample Bottom: **N/A**
 Sample Bottom: **N/A**

Remarks:



B. Sharp

Checked By

Date Approved:

DP Gnan

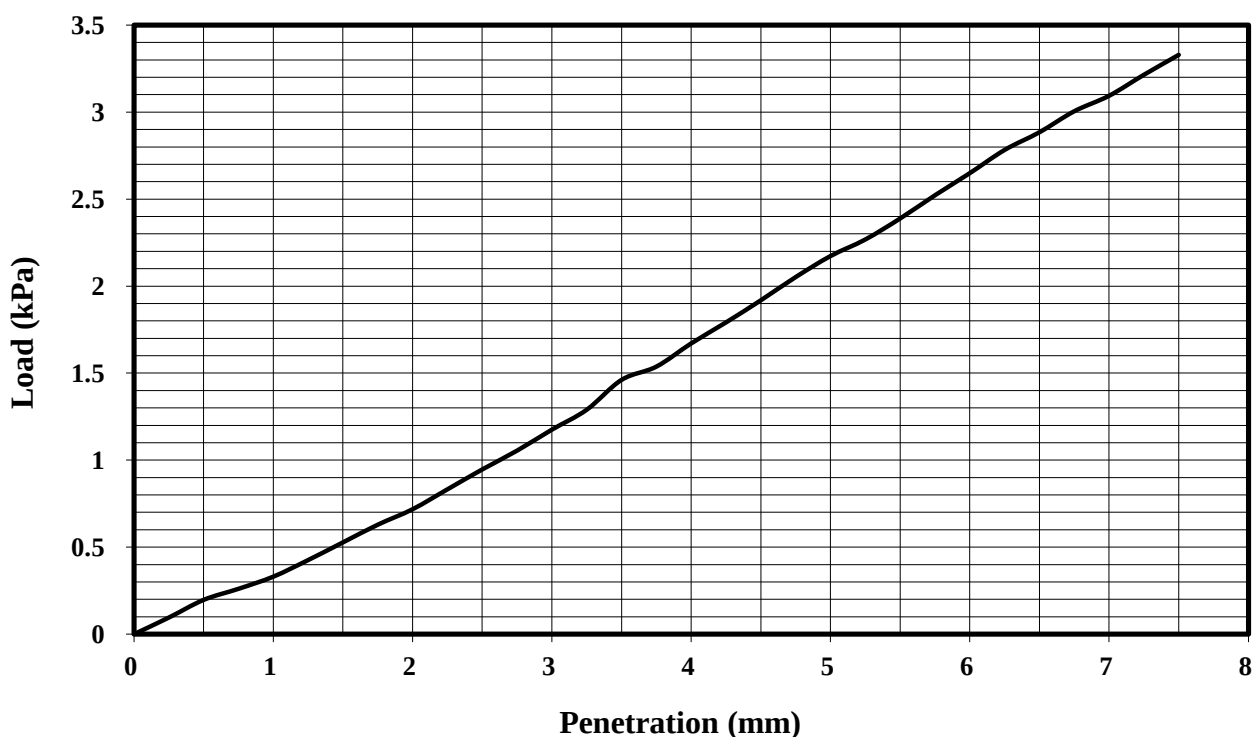
Approved By:

30.5.14



Test Report: Determination of the California Bearing Ratio
BS 1377: Part 4: 1990 Clause 7

Client ref: AC0262-L10446-S4838
Location: JER6151 Shinfield West
Contract Number: 23303-130514
Sample Type: B
Hole Number: SFW TP8
Sample Number: N/A
Depth (m) : 1.50



Initial Sample Conditions

Moisture Content: **11.9**
 Bulk Density Mg/m3: **2.22**
 Dry Density Mg/m3: **1.98**
 C.B.R. Value % Sample Top
 Percentage retained on 20mm BS test sieve:

Test Conditions

Surcharge Kg: 2.0
 Soaking Time hrs: n/a
 Swelling mm: n/a

10.86

Method of Compaction:

Vibro

Final Moisture Content %
 Sample Top **11.9**
 Sample Bottom **N/A**
 Sample Bottom **N/A**

Remarks:



B. Sharp

Checked By

Date Approved:

DP Gnan

Approved By:

30.5.14





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Wales (No 2514788) whose address is at
Hadfield House, Hadfield Street, Manchester M16 9FE

Scientific Analysis Laboratories Ltd

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 394902-1

Date of Report: 20-May-2014

Customer: CJ Associates Ltd
King Road Avenue
Avonmouth
Bristol
BS11 9HF

Customer Contact: Ms Lorna Logan

Customer Job Reference: AC0262-L10446-S4845

Customer Site Reference: JER6151 Shinfield West

Date Job Received at SAL: 14-May-2014

Date Analysis Started: 19-May-2014

Date Analysis Completed: 20-May-2014

The results reported relate to samples received in the laboratory
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
Tests covered by this certificate were conducted in accordance with SAL SOPs
All results have been reviewed in accordance with QP22



1549

Report checked
and authorised by :
Mr Richard Wong
Project Manager

Issued by :
Mr Richard Wong
Project Manager

SAL Reference: 394902 Project Site: JER6151 Shinfield West Customer Reference: AC0262-L10446-S4845								
Soil Suite B								
Analysed as Soil								
SAL Reference					394902 001	394902 003	394902 004	394902 005
Customer Sample Reference					CP4 U	CP3 U	SFW-TP9 D	CP2 U
Date Sampled					10-APR-2014	04-APR-2014	10-APR-2014	03-FEB-2014
Depth					4.00	8.00	2.00	5.00
Determinand	Method	Test Sample	LOD	Units				
Sulphur (total)	T6	AR	0.01	%	0.06	0.42	0.39	0.53
(Acid Soluble) SO4	T192	AR	0.01	%	0.05	0.03	1.2	0.20
(Water Soluble) SO4 expressed as SO4	T242	AR	0.01	g/l	0.22	<0.01	2.0	0.28
pH	T7	AR			8.0	8.3	7.8	8.0

Index to symbols used in 394902-1

Value	Description
AR	As Received
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Notes

These samples have been analysed exceeding recommended holding times. It is possible therefore that the results provided may be compromised.

Method Index

Value	Description
T6	ICP/OES
T242	2:1 Extraction/ICP/OES (TRL 447 T1)
T7	Probe
T192	HCl Extraction/ICP/OES (TRL 447 T2)

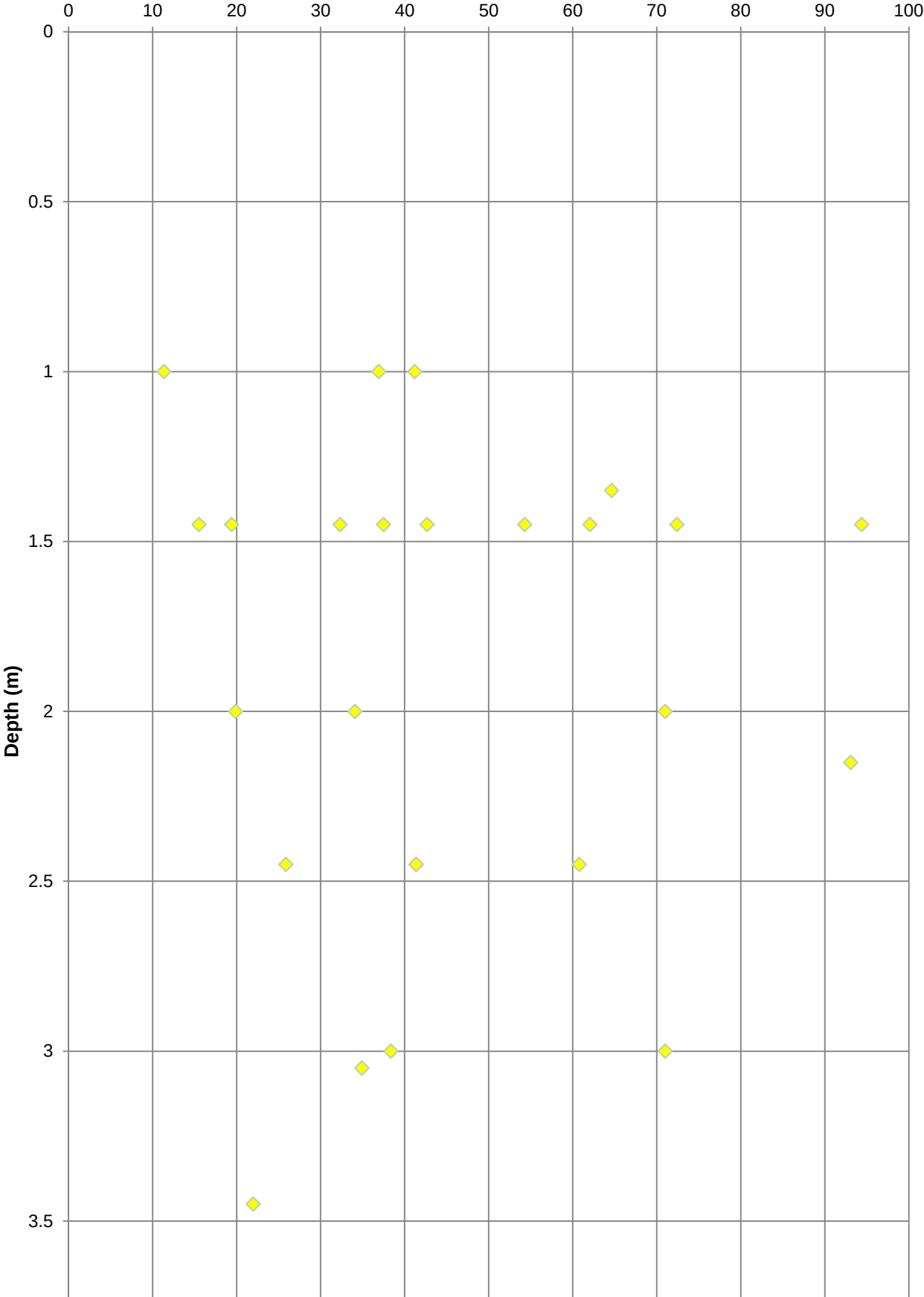
Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Sulphur (total)	T6	AR	0.01	%	N	001,003-005
(Acid Soluble) SO4	T192	AR	0.01	%	N	001,003-005
(Water Soluble) SO4 expressed as SO4	T242	AR	0.01	g/l	N	001,003-005
pH	T7	AR			U	001,003-005



SPT N₆₀ Value - coarse RTD

Project ID: JER6151	Project Title: Shinfield West	
Client: University of Reading	Location: Reading	



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Date Reported: **13/06/2014**

Data Status:



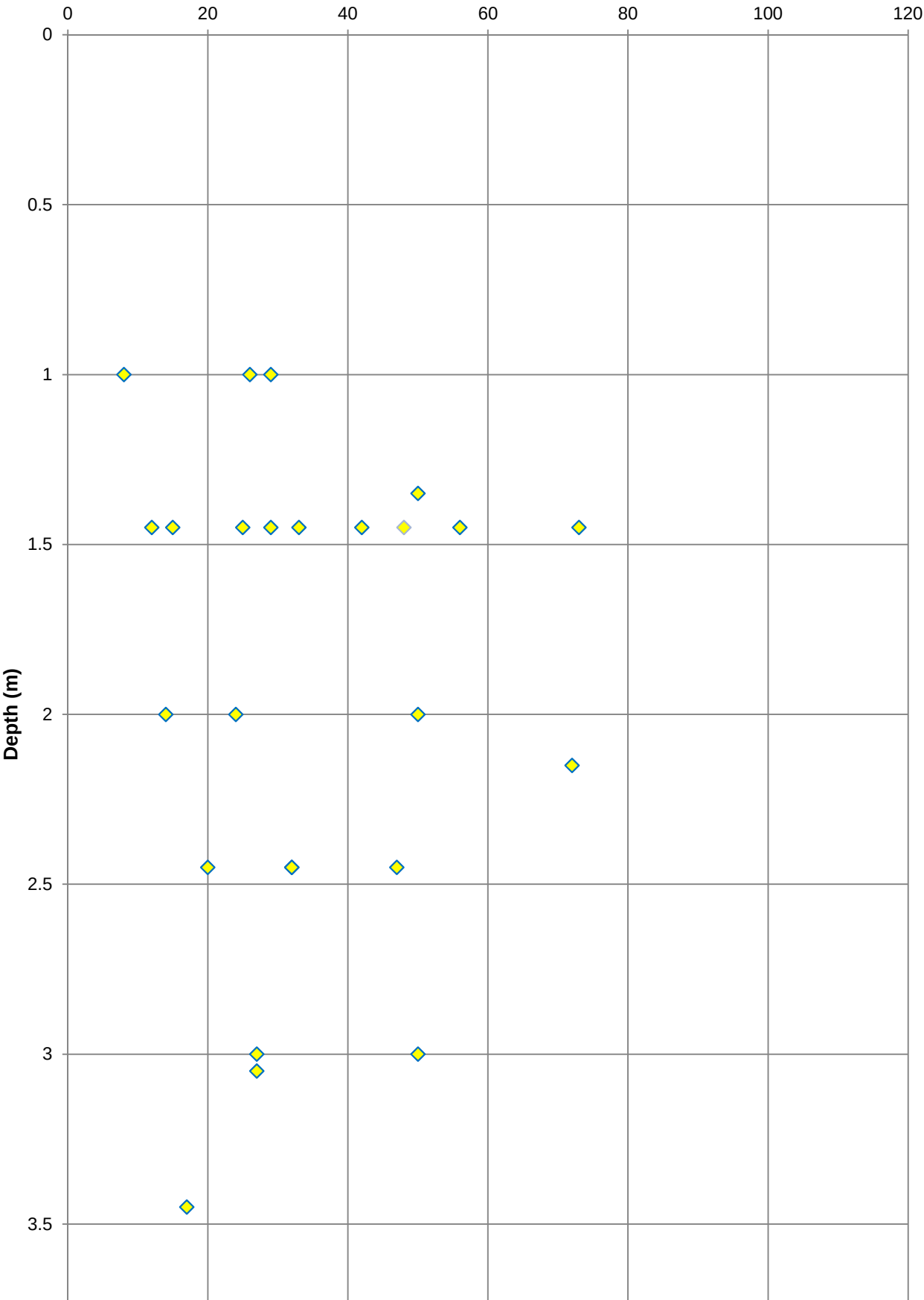
SPT N Value - coarse RTD

Project ID: JER6151

Project Title: Shinfield West

Client: University of Reading

Location: Reading



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Date Reported: **13/06/2014**

Data Status:



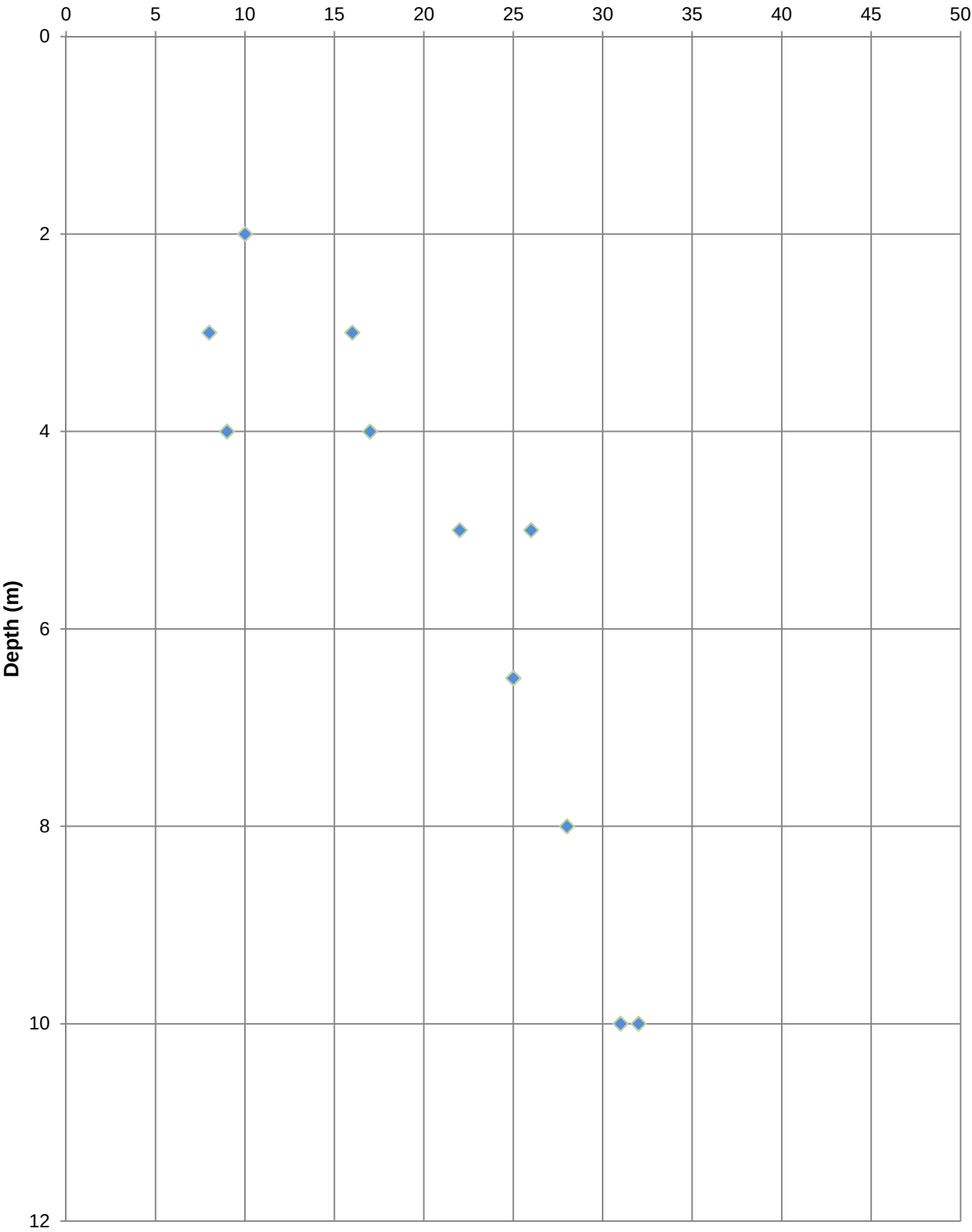
SPT N Value - London Clay

Project ID: **JER6151**

Project Title: **Shinfield West**

Client: **University of Reading**

Location: **Reading**





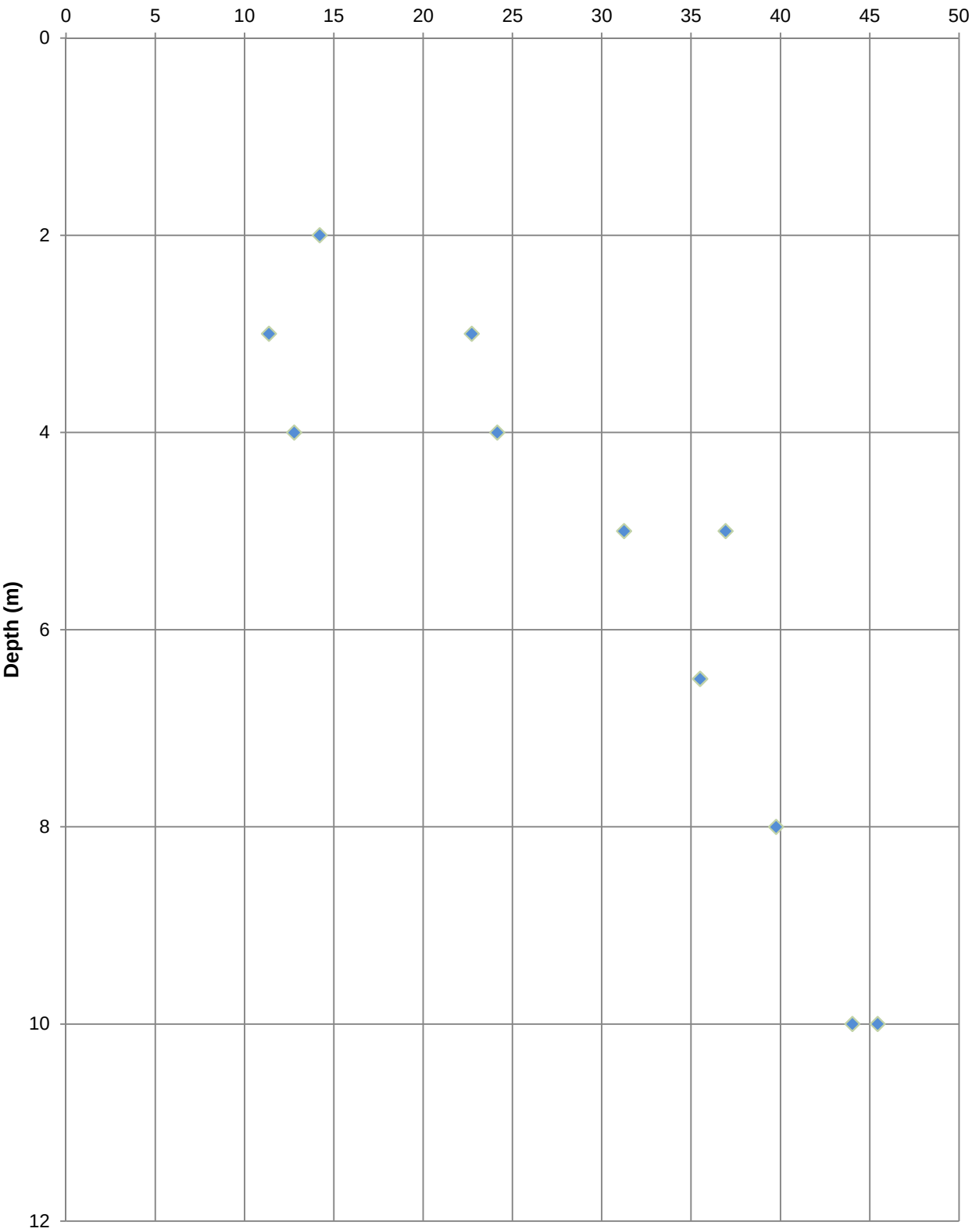
SPT N₆₀ Value - London Clay

Project ID: **JER6151**

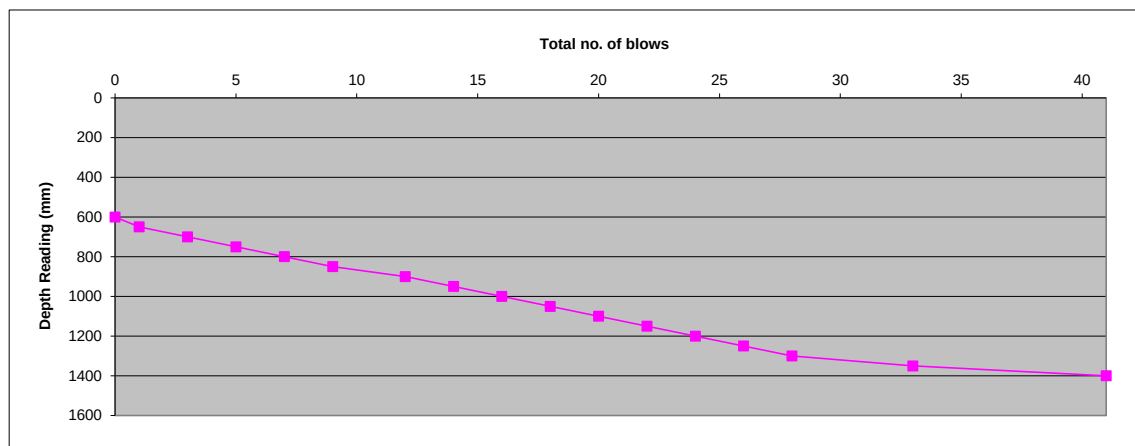
Project Title: **Shinfield West**

Client: **University of Reading**

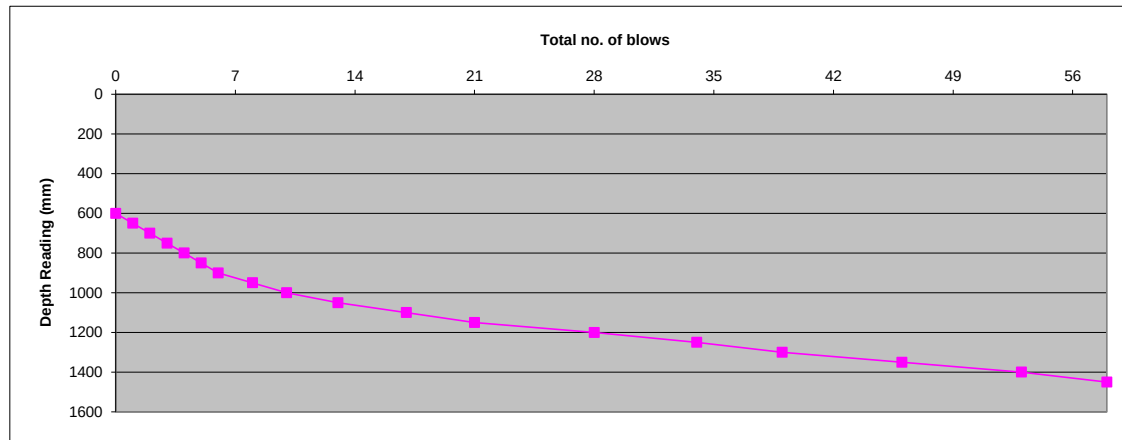
Location: **Reading**



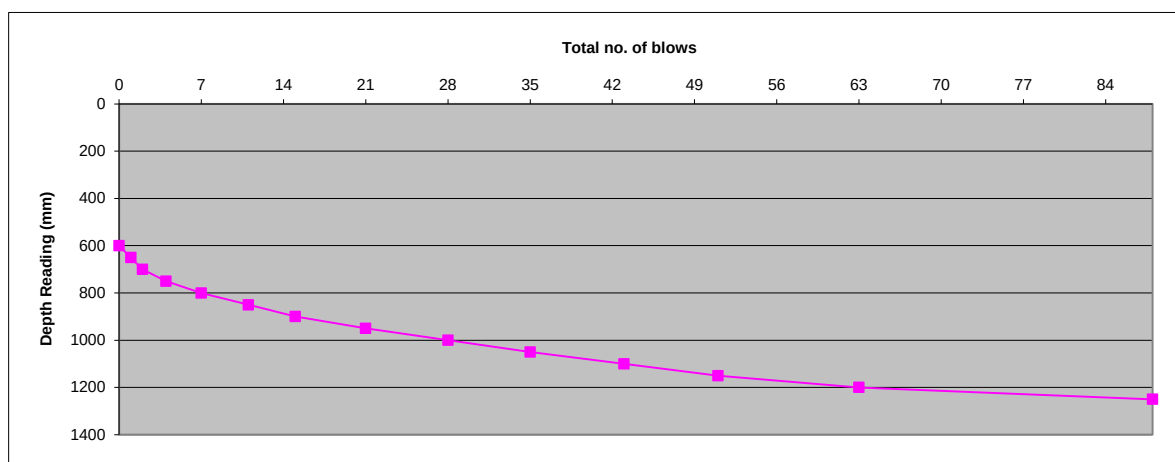
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151		RPS		
Date:	03/04/2014				Job Number:					
Job No:	JER6151				Location No:	SFW-TP01				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	1300	0	28	25.0	10.1
1	1	650		Layer 2	1300	1400	28	41	7.7	34.9
2	3	700								
2	5	750								
2	7	800								
2	9	850								
3	12	900								
2	14	950								
2	16	1000								
2	18	1050								
2	20	1100								
2	22	1150								
2	24	1200								
2	26	1250								
2	28	1300								
5	33	1350								
8	41	1400								



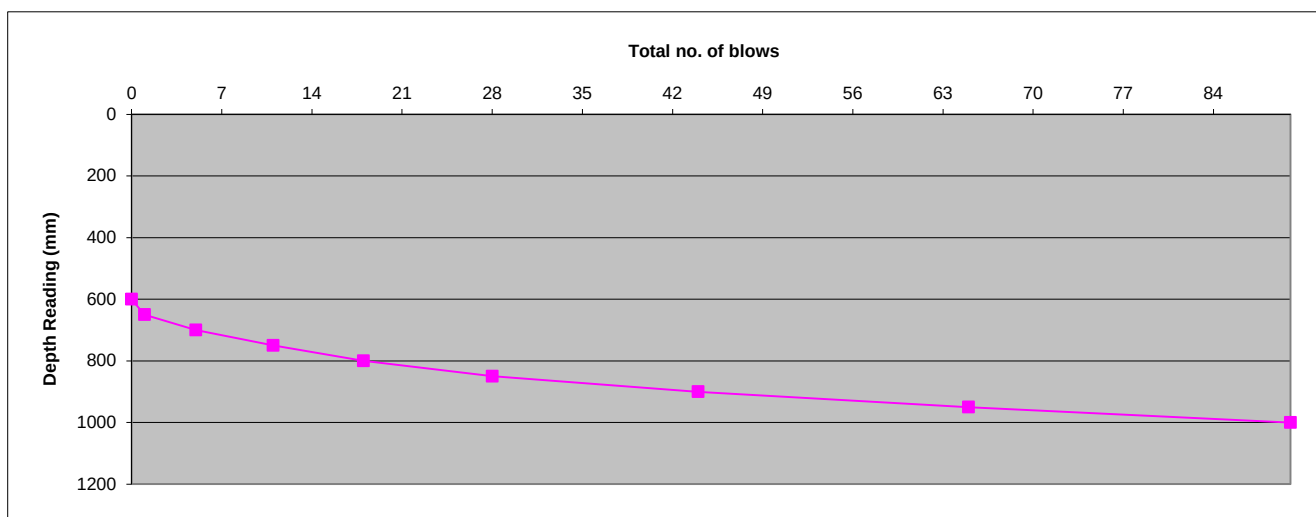
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151				
Date:	04/04/2014				Job Number:					
Job No:	JER6151				Location No:	SFW-TP02				
					Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	900	0	6	50.0	4.8
1	1	650		Layer 2	900	1450	6	58	10.6	25.0
1	2	700								
1	3	750								
1	4	800								
1	5	850								
1	6	900								
2	8	950								
2	10	1000								
3	13	1050								
4	17	1100								
4	21	1150								
7	28	1200								
6	34	1250								
5	39	1300								
7	46	1350								
7	53	1400								
5	58	1450								



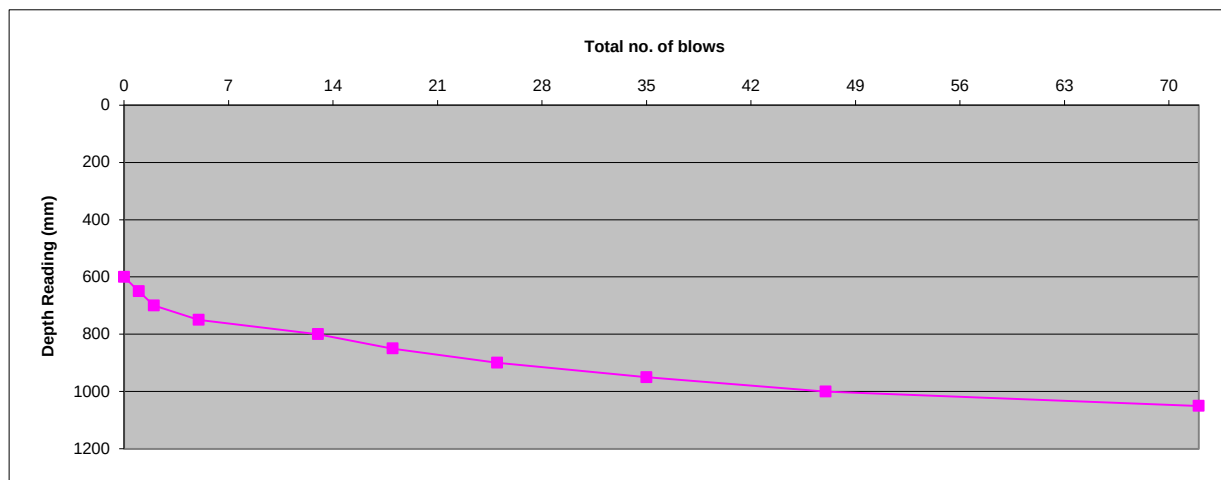
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151		RPS		
					Job Number:					
Date:	03/04/2014				Location No:	SFW-TP03				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	800	0	7	28.6	8.7
1	1	650		Layer 2	800	1200	7	63	7.1	37.8
1	2	700								
2	4	750								
3	7	800								
4	11	850								
4	15	900								
6	21	950								
7	28	1000								
7	35	1050								
8	43	1100								
8	51	1150								
12	63	1200								
25	88	1250								



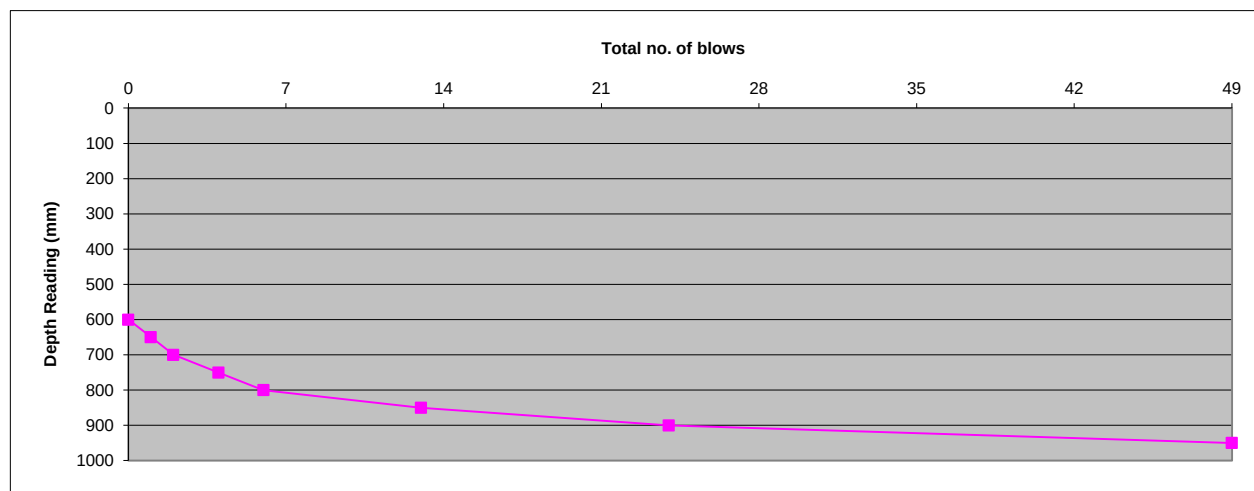
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151		RPS		
					Job Number:					
Date:	021/04/2014				Location No:	SFW-TP04				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	850	0	5	50.0	4.8
1	1	650		Layer 2	850	1000	5	90	1.8	165.7
4	5	700								
6	11	750								
7	18	800								
10	28	850								
16	44	900								
21	65	950								
25	90	1000								



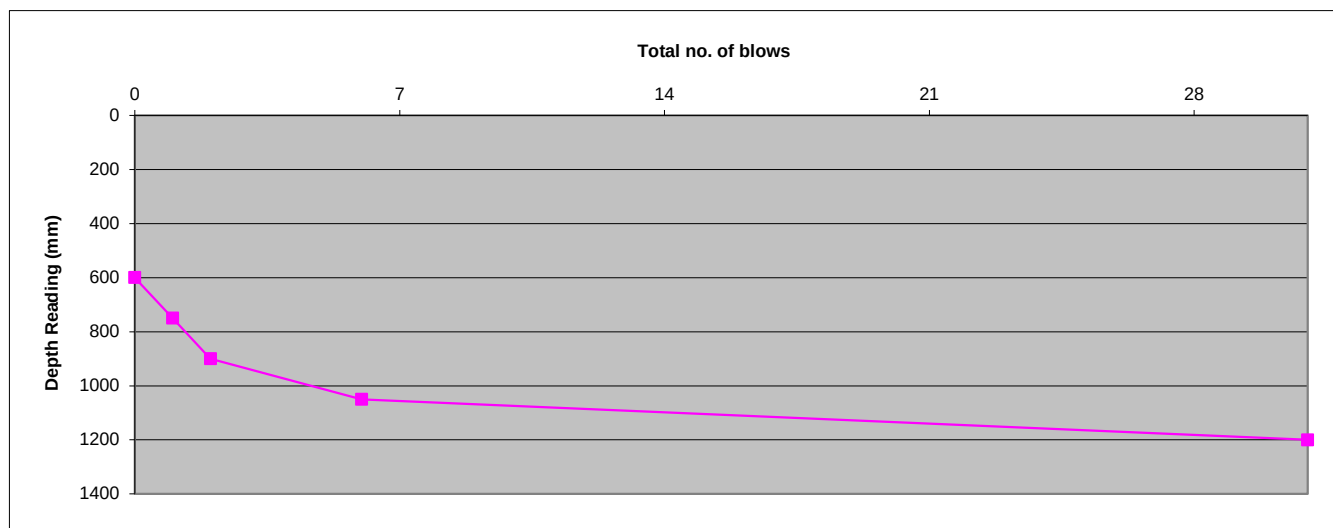
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151			RPS	
Date:	02/04/2014				Job Number:					
Job No:	JER6151				Location No:	SFW-TP05				
					Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	700	0	2	50.0	4.8
1	1	650		Layer 2	500	1050	2	72	7.9	34.2
1	2	700								
3	5	750								
8	13	800								
5	18	850								
7	25	900								
10	35	950								
12	47	1000								
25	72	1050								



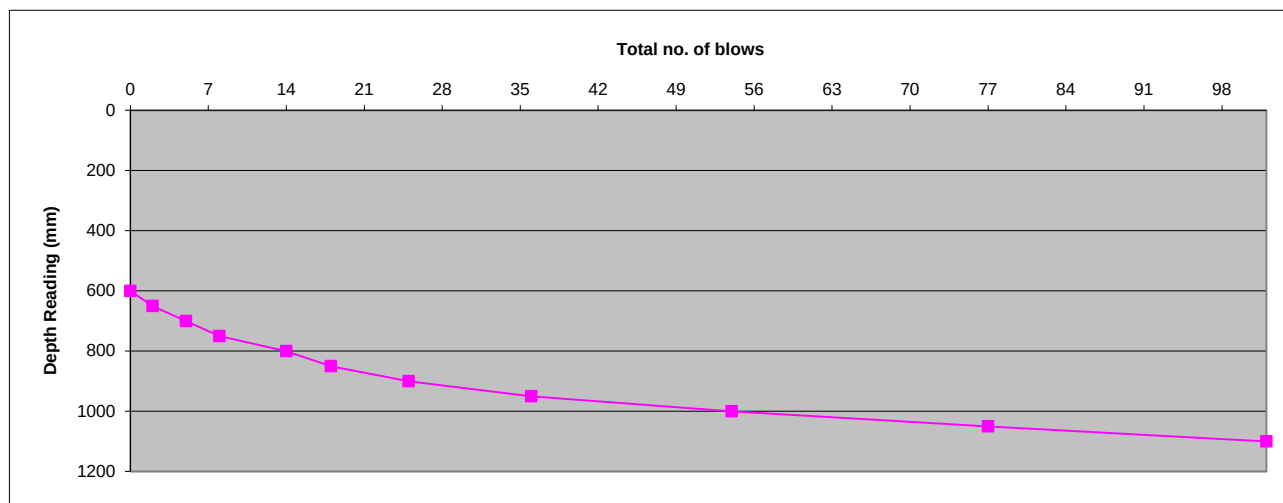
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151			RPS		
					Job Number:						
Date:	04/04/2014				Location No:	SFW-TP06					
Job No:	JER6151				Depth:	0.6 mbgl					
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)	
0	0	600		Layer 1	600	800	0	6	33.3	7.4	
1	1	650		Layer 2	800	950	6	49	3.5	80.6	
1	2	700									
2	4	750									
2	6	800									
7	13	850									
11	24	900									
25	49	950									



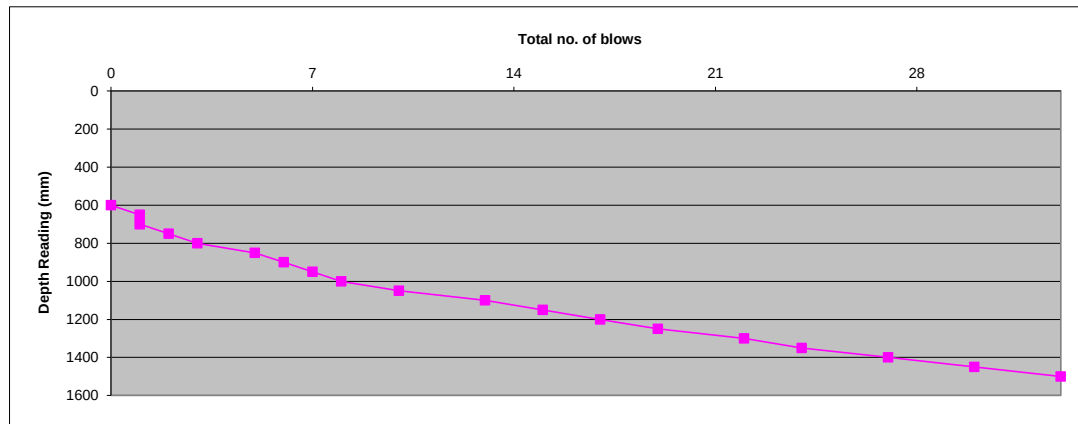
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151				
Date:	02/04/2014				Job Number:					
Job No:	JER6150				Location No:	SFW-TP07				
					Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	900	0	2	150.0	1.5
1	1	750		Layer 2	900	1200	2	31	10.3	25.6
1	2	900								
4	6	1050								
25	31	1200								



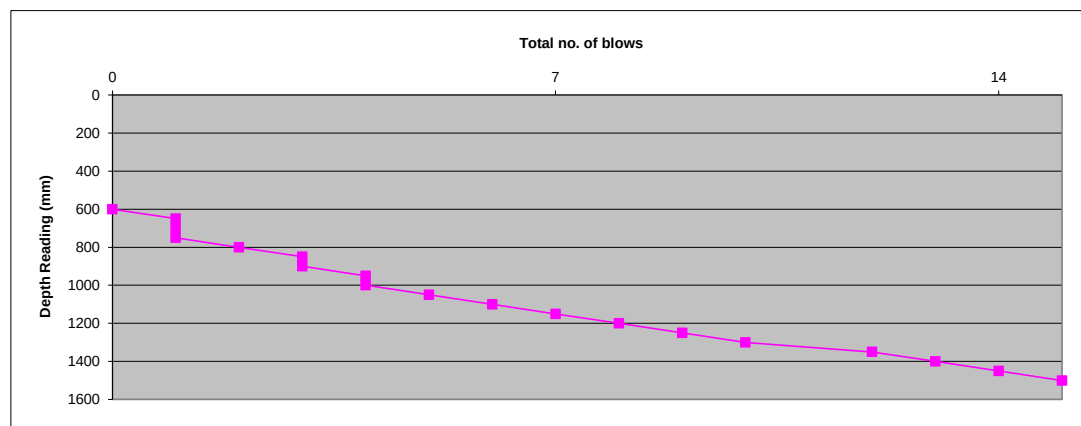
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151		RPS		
					Job Number:					
Date:	01/04/2014				Location No:	SFW-TP08				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	900	0	25	12.0	21.8
2	2	650		Layer 2	900	1100	25	102	2.6	110.1
3	5	700								
3	8	750								
6	14	800								
4	18	850								
7	25	900								
11	36	950								
18	54	1000								
23	77	1050								
25	102	1100								



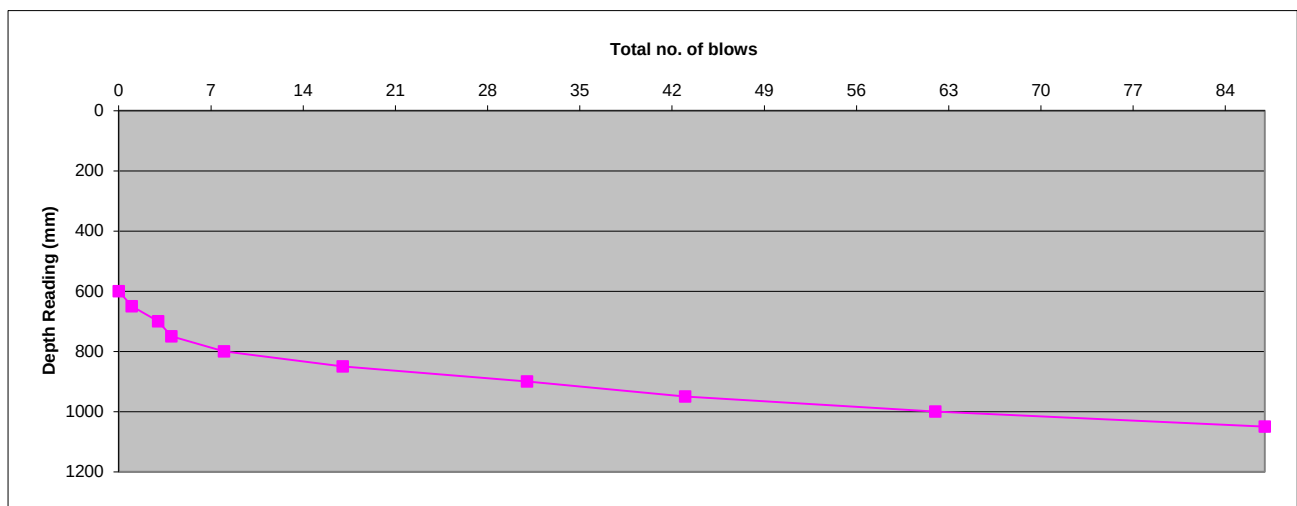
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151		RPS		
					Job Number:					
Date:	03/04/2014				Location No:	SFW-TP09				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	1500	0	33	27.3	9.2
1	1	650								
0	1	700								
1	2	750								
1	3	800								
2	5	850								
1	6	900								
1	7	950								
1	8	1000								
2	10	1050								
3	13	1100								
2	15	1150								
2	17	1200								
2	19	1250								
3	22	1300								
2	24	1350								
3	27	1400								
3	30	1450								
3	33	1500								



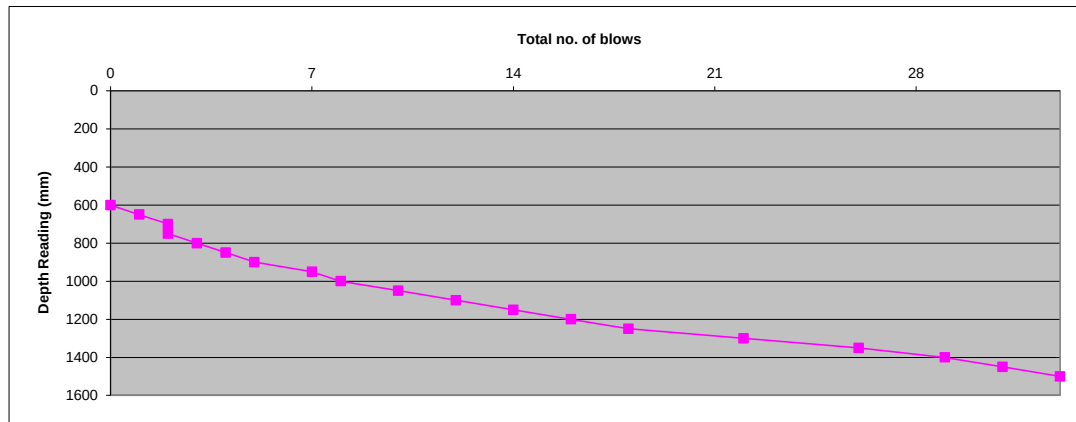
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151		RPS			
Date:					Job Number:						
Job No:					Location No:	SFW-TP10					
03/04/2014					Depth:	0.6 mbgl					
JER6151											
		Depth Reading			Top of layer	Base of layer	Blows at	Blows at	Mean		
No of Blows	Total Blows	(mm)		Layer	below FL (mm)	below FL (mm)	top of layer	base of layer	penetration	CBR of	
0	0	600		Layer 1	600	1500	0	15	60.0	4.0	
1	1	650									
0	1	700									
0	1	750									
1	2	800									
1	3	850									
0	3	900									
1	4	950									
0	4	1000									
1	5	1050									
1	6	1100									
1	7	1150									
1	8	1200									
1	9	1250									
1	10	1300									
2	12	1350									
1	13	1400									
1	14	1450									
1	15	1500									



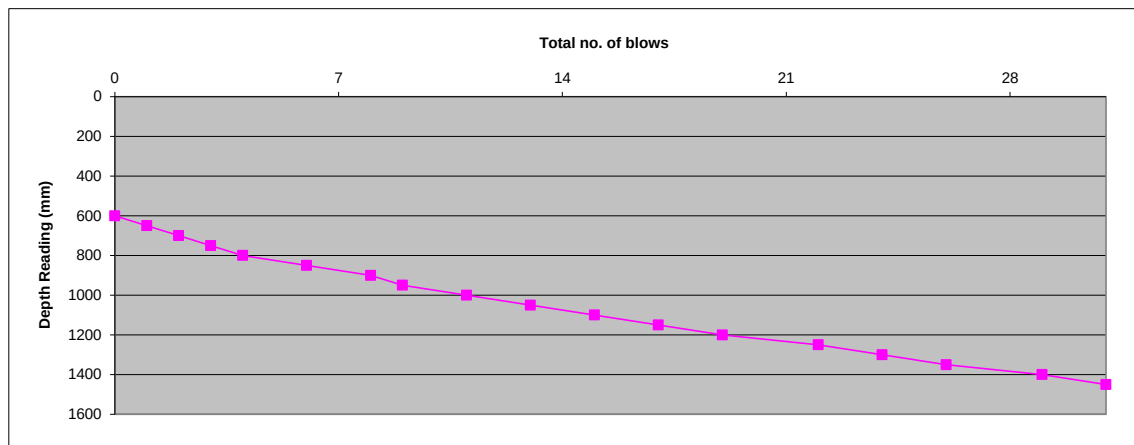
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151			RPS		
					Job Number:						
Date:	03/04/2014				Location No:						
Job No:	JER6151				Depth:	SFW-TP11 0.6 mbgl					
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)	
0	0	600		Layer 1	600	800	0	8	25.0	10.1	
1	1	650		Layer 2	800	1050	8	87	3.2	89.4	
2	3	700									
1	4	750									
4	8	800									
9	17	850									
14	31	900									
12	43	950									
19	62	1000									
25	87	1050									



DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151		RPS		
					Job Number:					
Date:	01/04/2014				Location No:	SFW-TP12				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	1500	0	33	27.3	9.2
1	1	650								
1	2	700								
0	2	750								
1	3	800								
1	4	850								
1	5	900								
2	7	950								
1	8	1000								
2	10	1050								
2	12	1100								
2	14	1150								
2	16	1200								
2	18	1250								
4	22	1300								
4	26	1350								
3	29	1400								
2	31	1450								
2	33	1500								



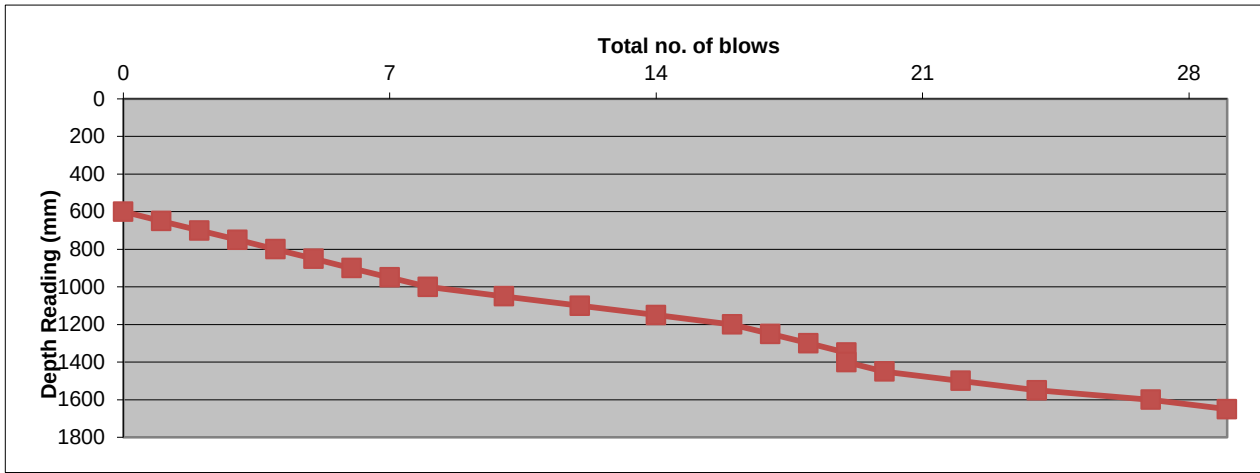
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151				
Date:	31/03/2014				Job Number:					
Job No:	JER6151				Location No:	SFW-TP13				
					Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	1450	0	31	27.4	9.1
1	1	650								
1	2	700								
1	3	750								
1	4	800								
2	6	850								
2	8	900								
1	9	950								
2	11	1000								
2	13	1050								
2	15	1100								
2	17	1150								
2	19	1200								
3	22	1250								
2	24	1300								
2	26	1350								
3	29	1400								
2	31	1450								



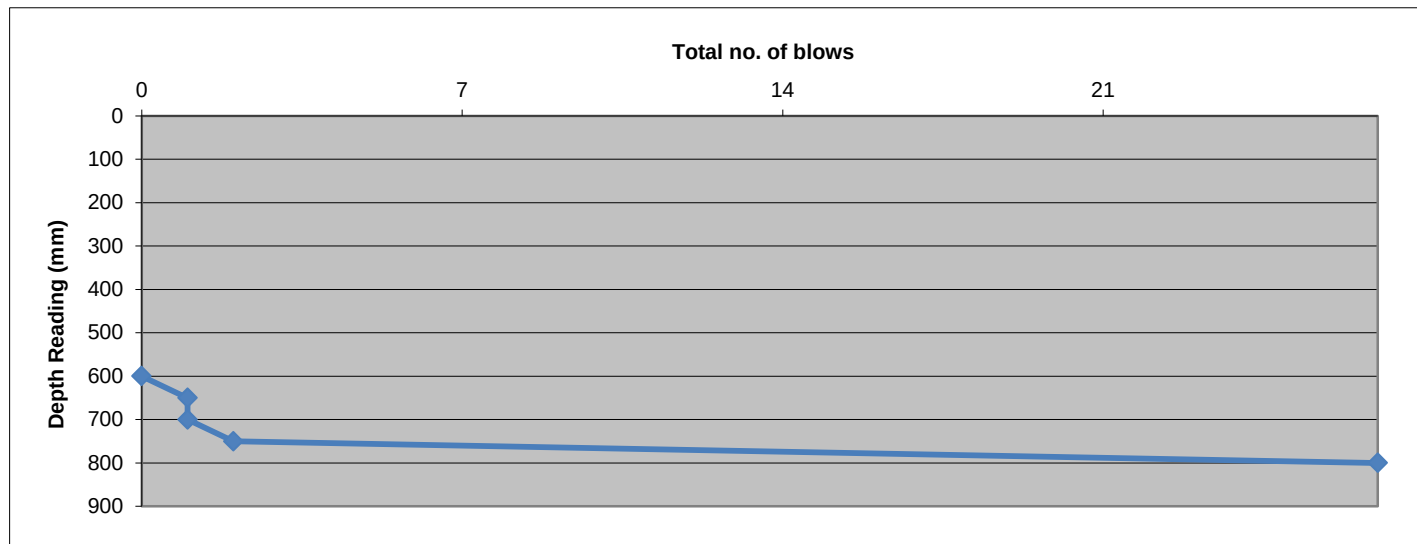
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151		RPS		
					Job Number:					
Date:	02/04/2014				Location No:	SFW-TP14				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	1650	0	29	36.2	6.8
1	1	650								
1	2	700								
1	3	750								
1	4	800								
1	5	850								
1	6	900								
1	7	950								
1	8	1000								
2	10	1050								
2	12	1100								
2	14	1150								
2	16	1200								
1	17	1250								
1	18	1300								
1	19	1350								
0	19	1400								
1	20	1450								
2	22	1500								
2	24	1550								
3	27	1600								
2	29	1650								

Total no. of blows

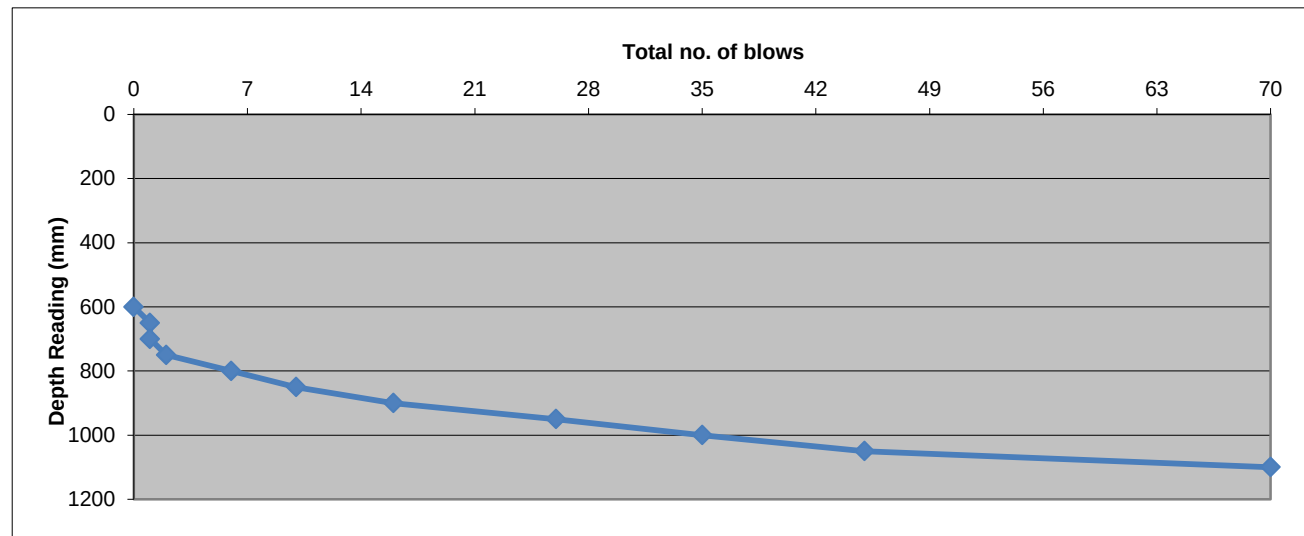
Total no. of blows	Depth Reading (mm)
0	600
1	650
2	700
3	750
4	800
5	850
6	900
7	950
8	1000
10	1050
12	1100
14	1150
16	1200
17	1250
18	1300
19	1350
19	1400
20	1450
22	1500
24	1550
27	1600
29	1650



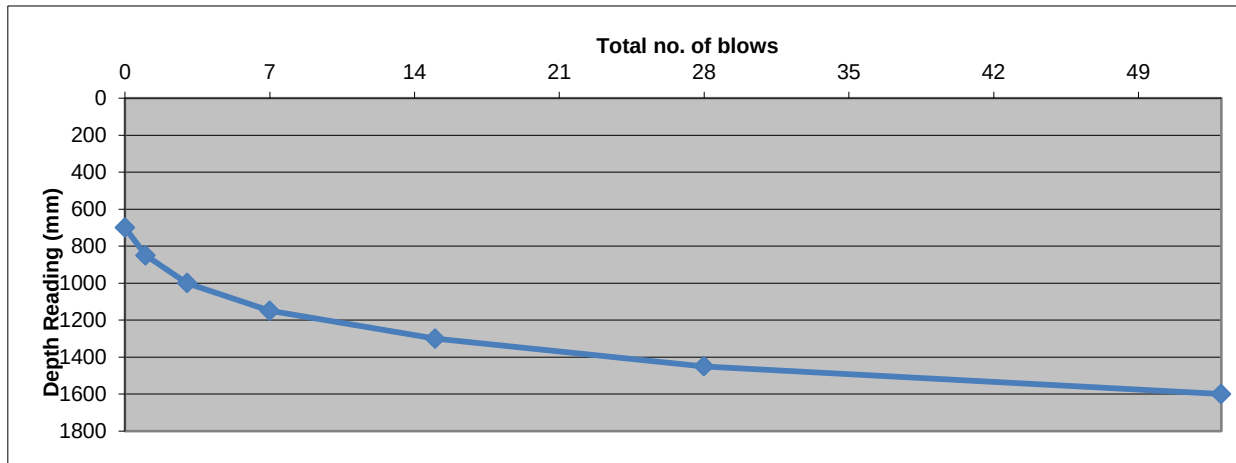
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151		RPS		
					Job Number:					
Date:	31/03/2014				Location No:	SFW-TP15				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	750	0	2	75.0	3.1
1	1	650		Layer 2	750	800	2	27	2.0	145.1
0	1	700								
1	2	750								
25	27	800								



DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151		RPS		
					Job Number:					
Date:	01/04/2014				Location No:	SFW-TP16				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	750	0	2	75.0	3.1
1	1	650		Layer 2	750	1100	2	70	5.1	53.4
0	1	700								
1	2	750								
4	6	800								
4	10	850								
6	16	900								
10	26	950								
9	35	1000								
10	45	1050								
25	70	1100								



DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151				
					Job Number:					
Date:	03/04/2014				Location No:	SFW-TP17				
Job No:	JER6151				Depth:	0.7 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	700		Layer 1	700	1150	0	7	64.3	3.7
1	1	850		Layer 2	1150	1600	7	53	9.8	27.1
2	3	1000								
4	7	1150								
8	15	1300								
13	28	1450								
25	53	1600								



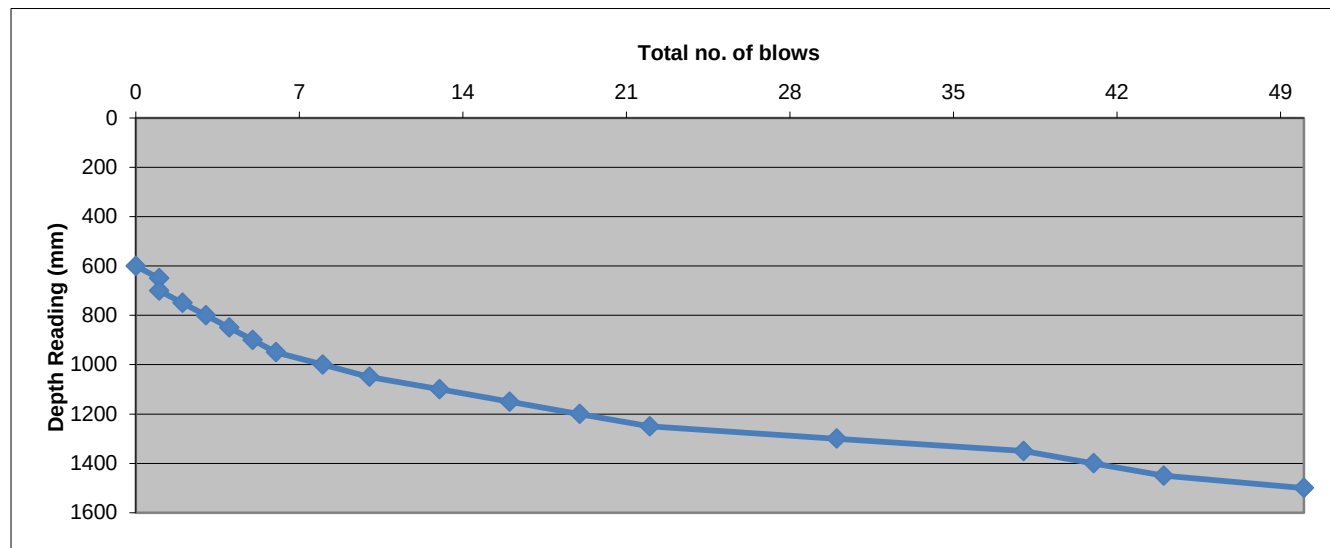
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151		RPS				
					Job Number:							
					Location No:	SFW-TP18						
Date:	31/03/2014				Depth:	0.6 mbgl						
Job No:	JER6151											
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)		
0	0	600		Layer 1	600	950	0	6	58.3	4.1		
1	1	650		Layer 2	950	1500	6	50	12.5	20.9		
0	1	700										
1	2	750										
1	3	800										
1	4	850										
1	5	900										
1	6	950										
2	8	1000										
2	10	1050										
3	13	1100										
3	16	1150										
3	19	1200										
3	22	1250										
8	30	1300										
8	38	1350										
3	41	1400										
3	44	1450										
6	50	1500										

Total no. of blows

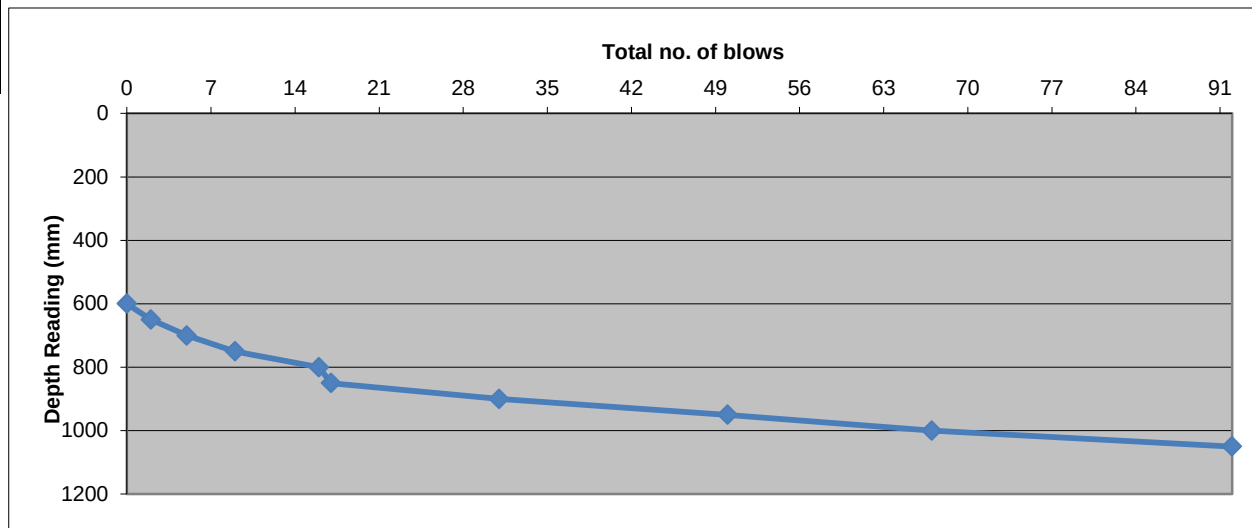
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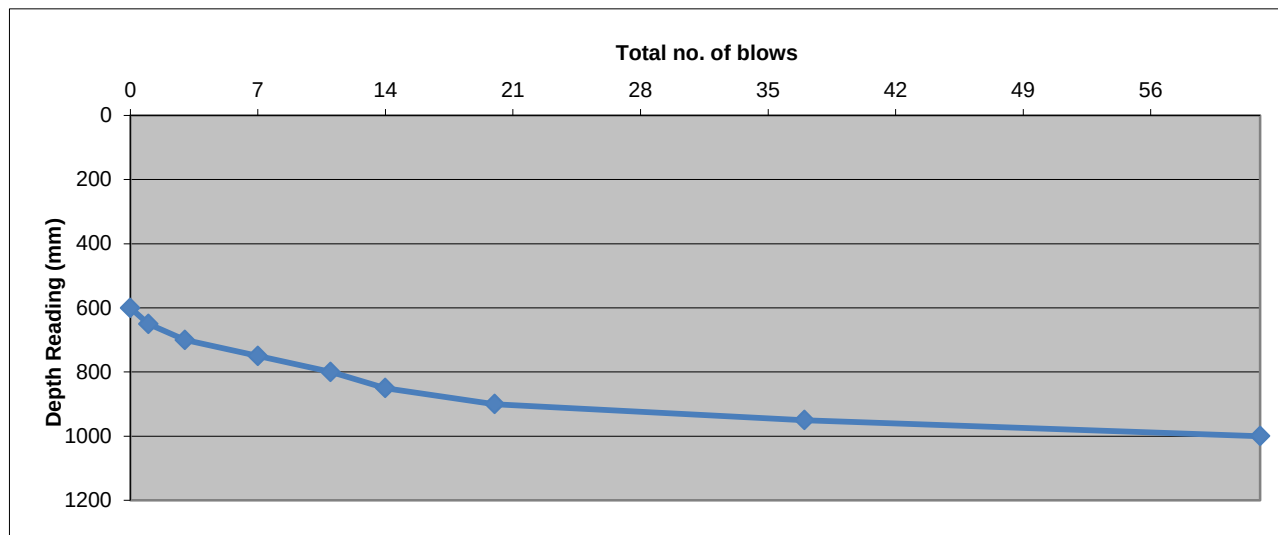
Reading (mm)



DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151		RPS		
					Job Number:					
Date:	01/04/2014				Location No:	SFW-TP19				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	800	0	16	12.5	20.9
2	2	650		Layer 2	800	1050	16	92	3.3	85.8
3	5	700								
4	9	750								
7	16	800								
1	17	850								
14	31	900								
19	50	950	Total no. of blows							
17	67	1000								
25	92	1050								
0 7 14 21 28 35 42 49 56 63 70 77 84										



DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151		RPS		
					Job Number:					
Date:	03/04/2014				Location No:	SFW-TP20				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	900	0	20	15.0	17.3
1	1	650		Layer 2	900	1000	20	62	2.4	120.7
2	3	700								
4	7	750								
4	11	800								
3	14	850								
6	20	900								
17	37	950								
25	62	1000								

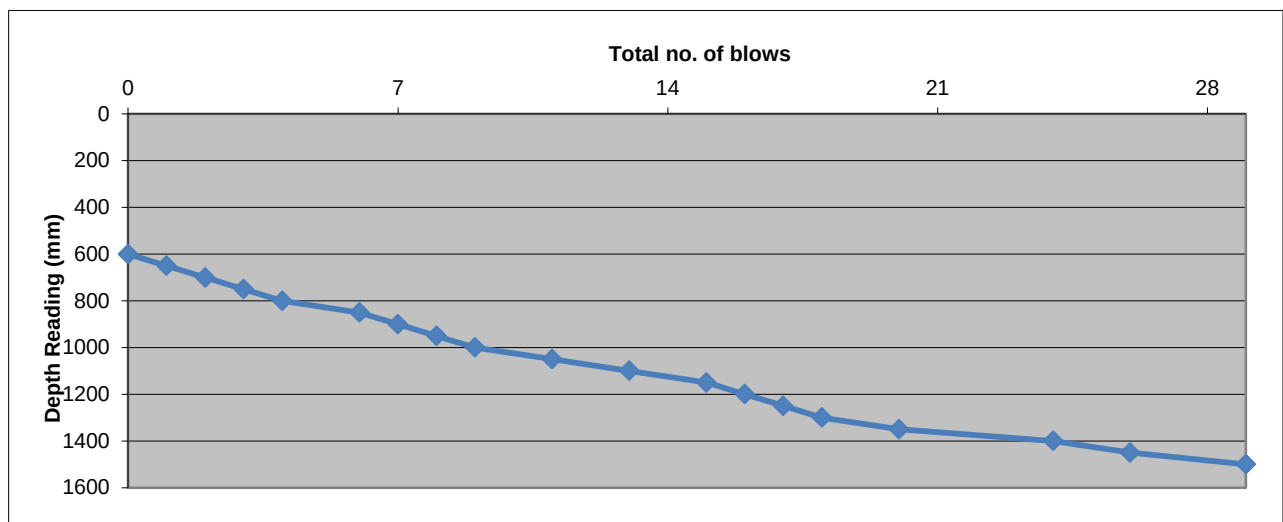


DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151		RPS		
					Job Number:					
					Date:	04/04/2014				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	1500	0	29	31.0	8.0
1	1	650								
1	2	700								
1	3	750								
1	4	800								
2	6	850								
1	7	900								
1	8	950								
1	9	1000								
2	11	1050								
2	13	1100								
2	15	1150								
1	16	1200								
1	17	1250								
1	18	1300								
2	20	1350								
4	24	1400								
2	26	1450								
3	29	1500								

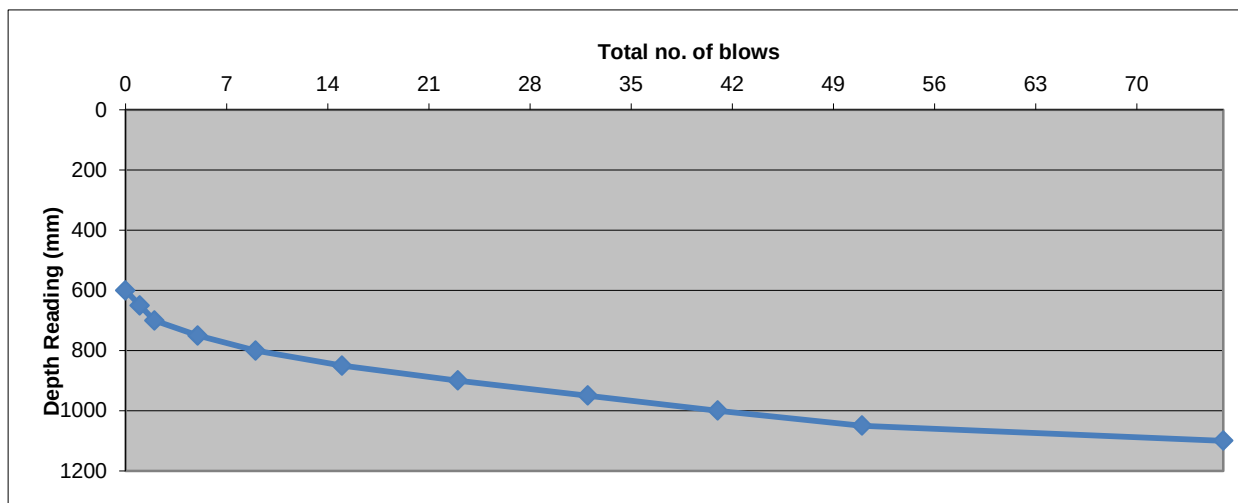
Total no. of blows

071421

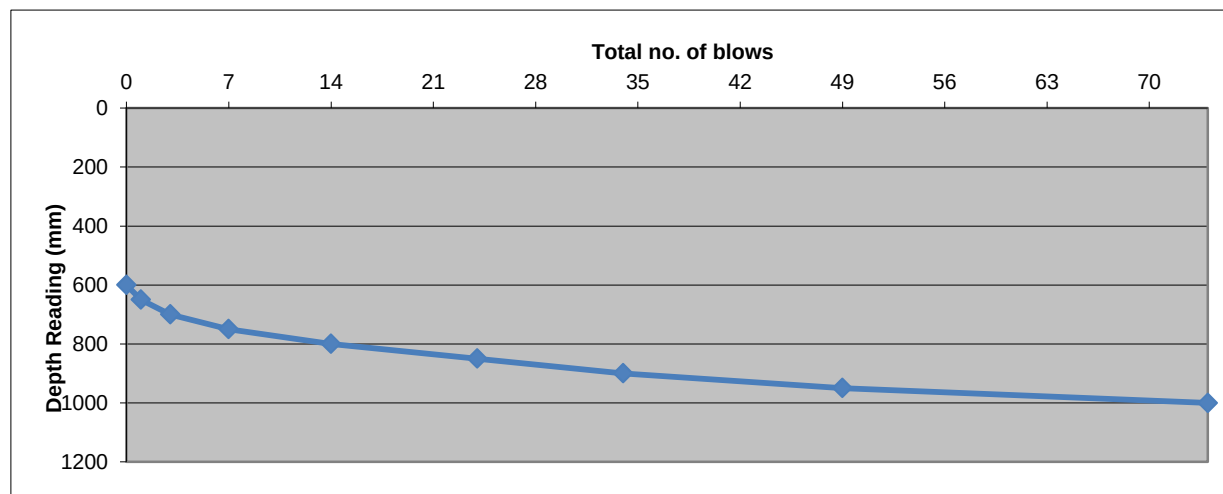
Total no. of blows	Depth (mm)
0	600
1	650
2	700
3	750
4	800
6	850
7	900
8	950
9	1000
11	1050
13	1100
15	1150
16	1200
17	1250
18	1300
20	1350
24	1400
26	1450
29	1500



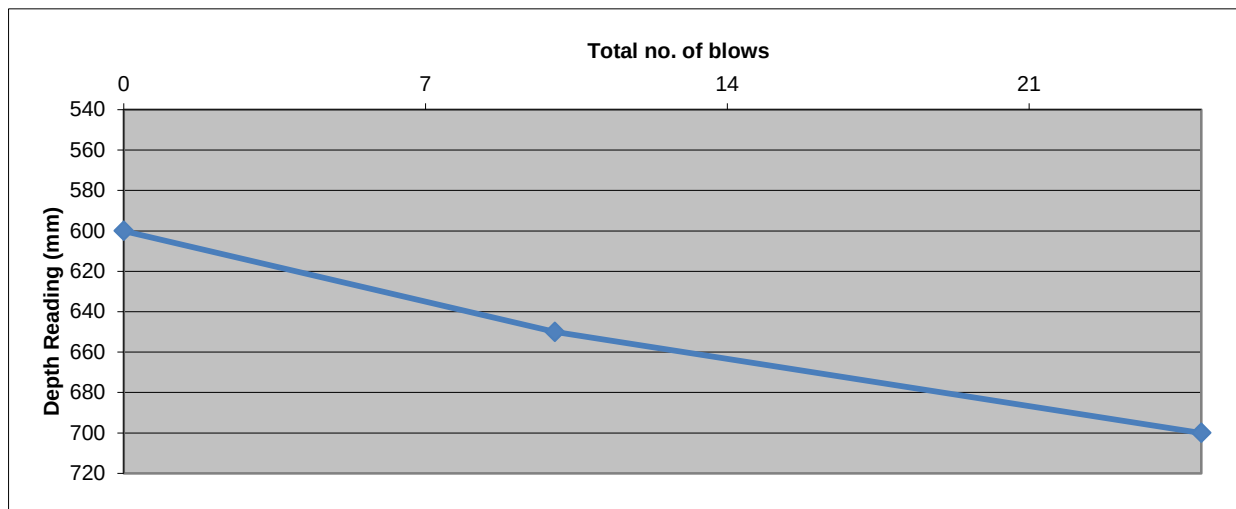
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151				
					Job Number:					
Date:	04/04/2014				Location No:	SFW-TP22				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	750	0	5	30.0	8.3
1	1	650		Layer 2	750	1100	5	76	4.9	55.9
1	2	700								
3	5	750								
4	9	800								
6	15	850								
8	23	900								
9	32	950								
9	41	1000								
10	51	1050								
25	76	1100								



DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151				
					Job Number:					
Date:	03/04/2014				Location No:	SFW-TP23				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	700	0	3	33.3	7.4
1	1	650		Layer 2	700	1000	3	74	4.2	65.8
2	3	700								
4	7	750								
7	14	800								
10	24	850								
10	34	900								
15	49	950								
25	74	1000								



DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West,				
					Job Number:	JER6151				
Date:	02/04/2014				Location No:	SFW-TP24				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	700	0	25	4.0	69.8
10	10	650								
15	25	700								



DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West,		RPS				
					Job Number:	JER6151						
Date:	04/04/2014				Location No:	SFW-TP25						
Job No:	JER6151				Depth:	0.6 mbgl						
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)		
0	0	600		Layer 1	600	1350	0	53	14.2	18.3		
1	1	650										
0	1	700										
2	3	750										
3	6	800										
2	8	850										
2	10	900										
7	17	950										
4	21	1000										
3	24	1050										
5	29	1100										
6	35	1150										
5	40	1200										
4	44	1250										
5	49	1300										
4	53	1350										

Total no. of blows

0

7

14

21

28

35

42

49

0

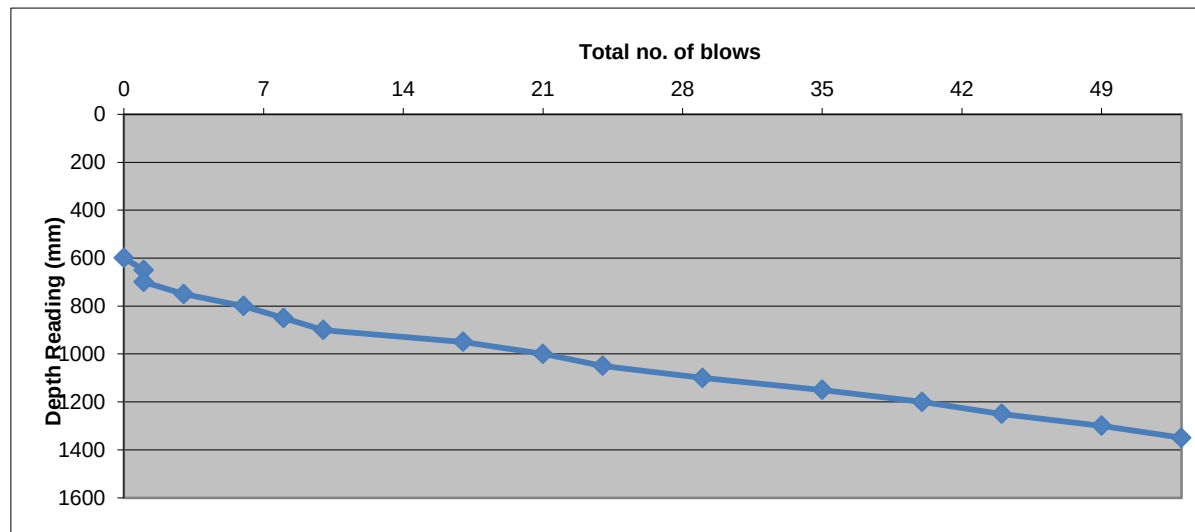
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400

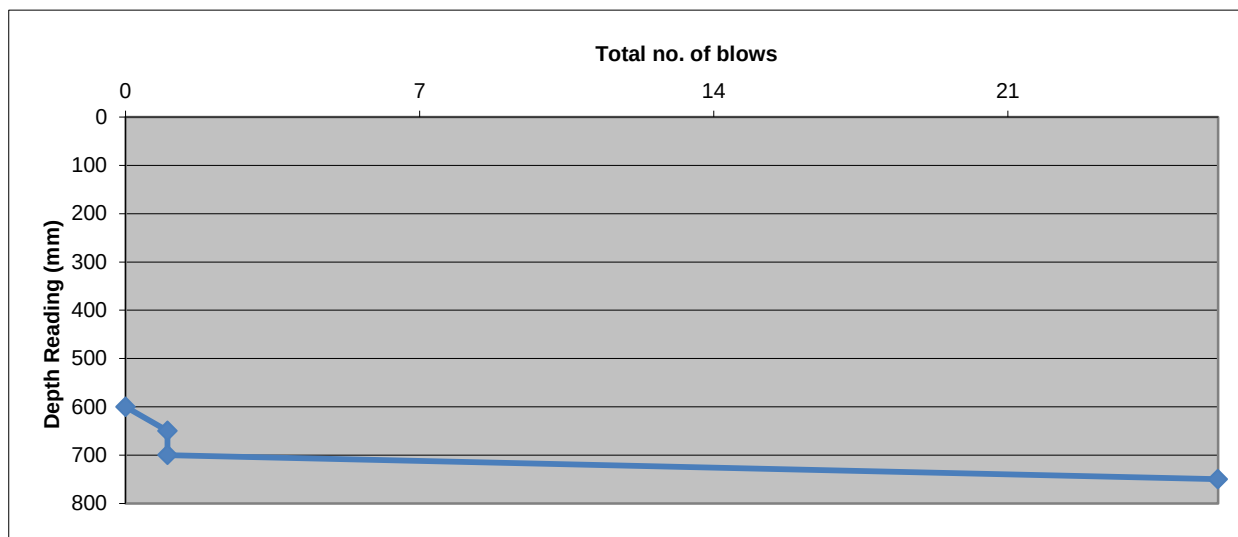
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g (mm)

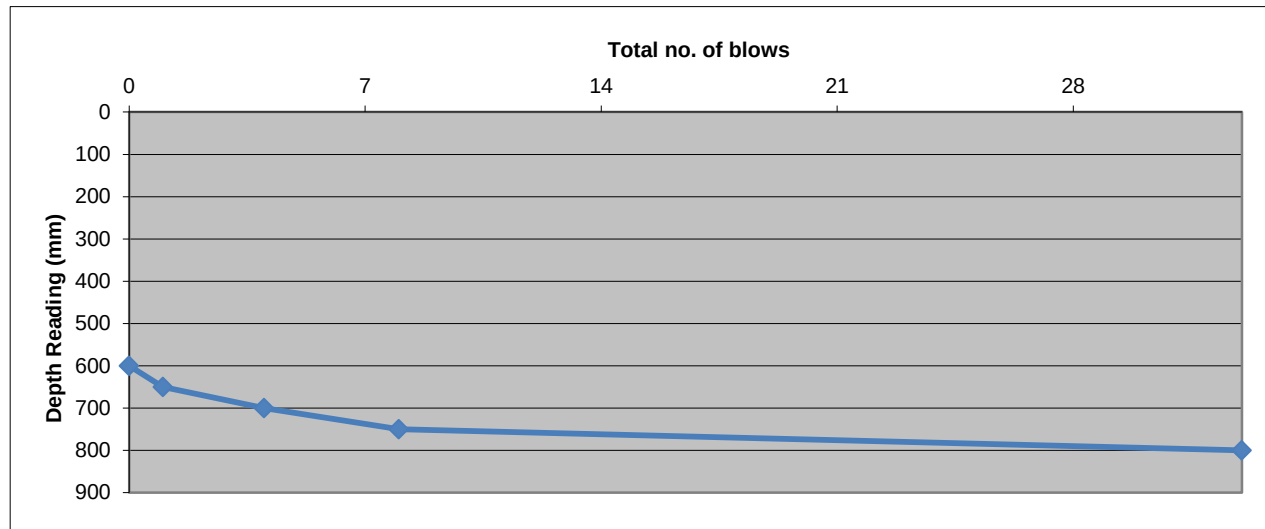
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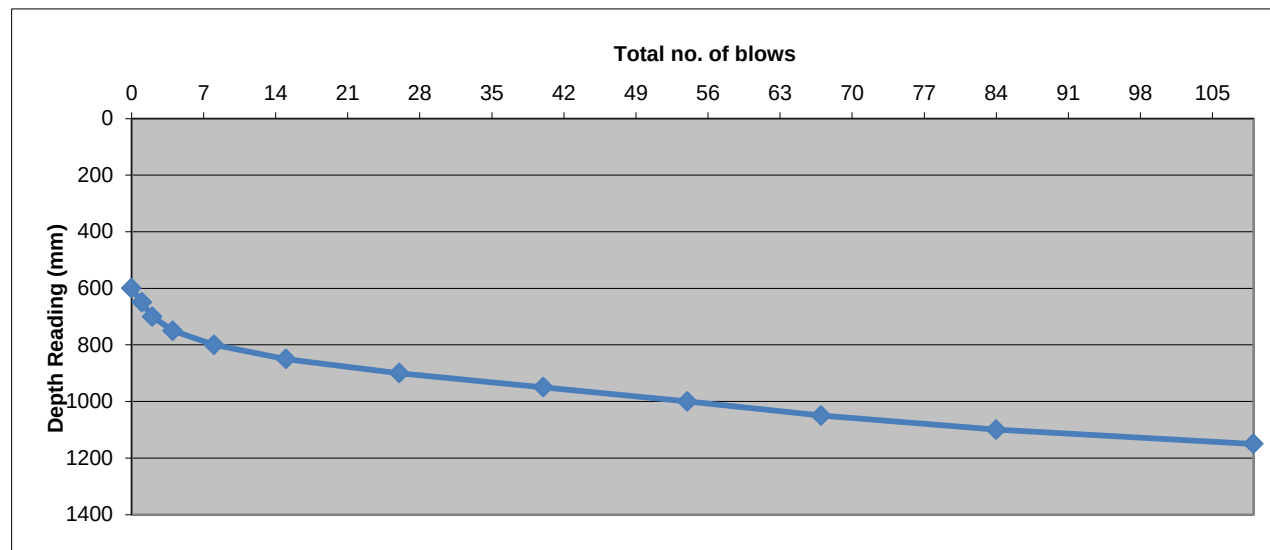
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151				
					Job Number:					
Date:	02/04/2014				Location No:	SFW-TP26				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	700	0	1	100.0	2.3
1	1	650		Layer 2	700	750	1	26	2.0	145.1
0	1	700								
25	26	750								



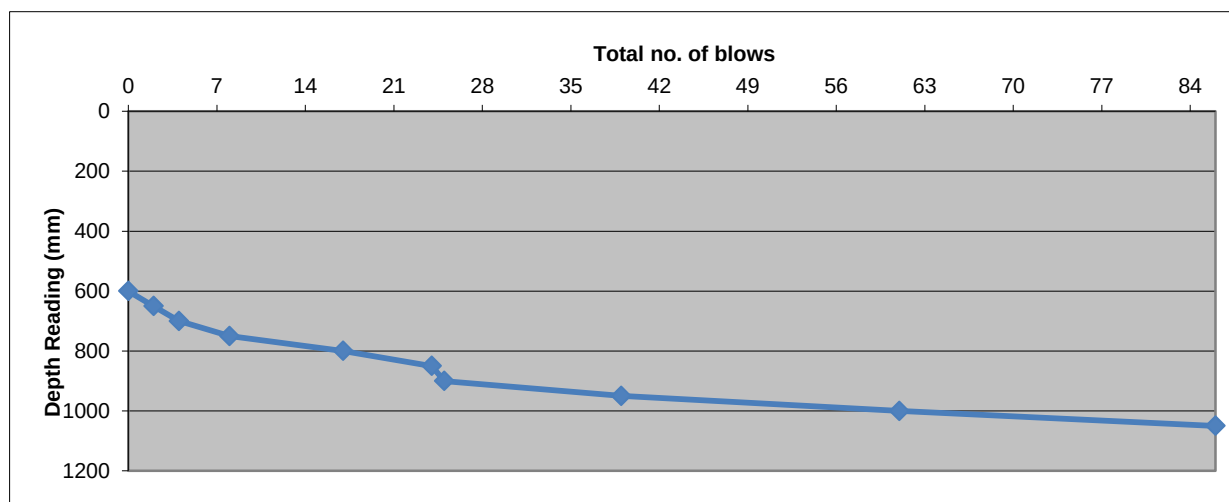
DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151				
					Job Number:					
Date:	02/04/2014				Location No:	SFW-TP27				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	750	0	8	18.8	13.6
1	1	650		Layer 2	750	800	8	33	2.0	145.1
3	4	700								
4	8	750								
25	33	800								



DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West, JER6151				
					Job Number:					
Date:	04/04/2014				Location No:	SFW-TP28				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	750	0	4	37.5	6.6
1	1	650		Layer 2	750	1150	4	109	3.8	73.5
1	2	700								
2	4	750								
4	8	800								
7	15	850								
11	26	900								
14	40	950								
14	54	1000								
13	67	1050								
17	84	1100								
25	109	1150								

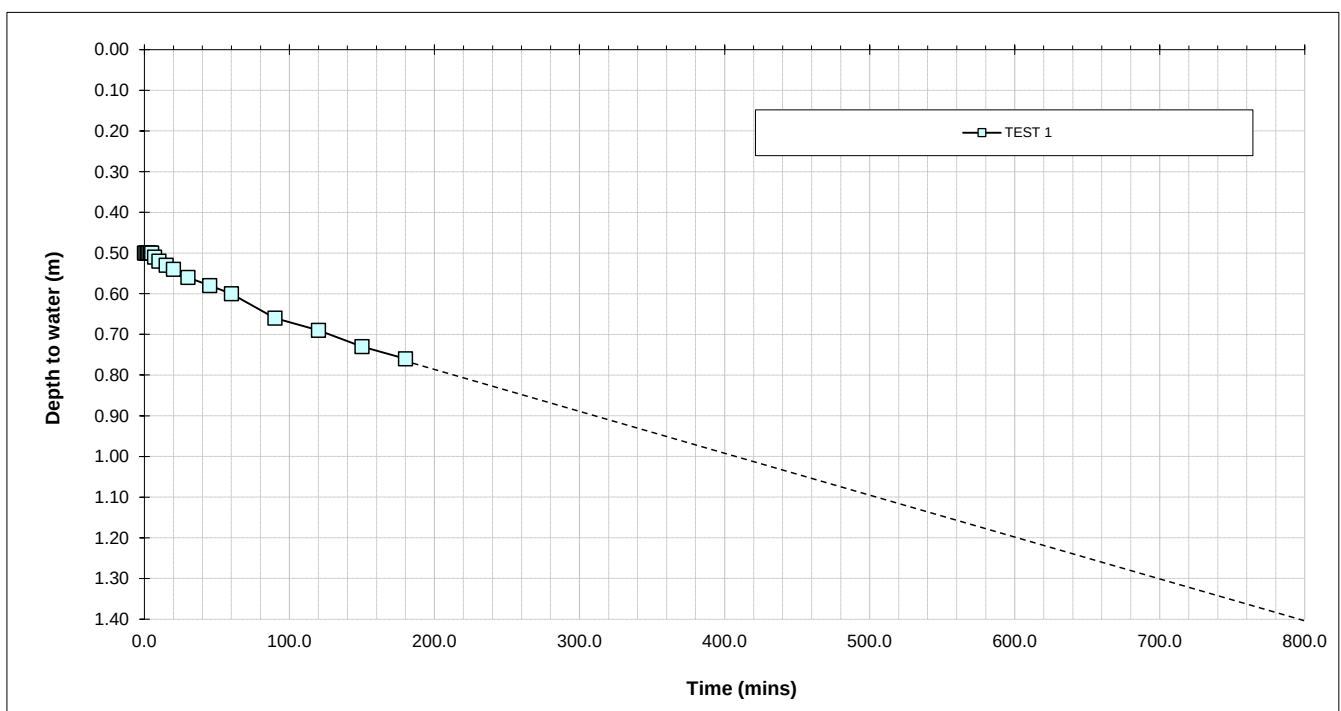


DYNAMIC CONE PENETRATION TEST RESULTS					Client Name:	Shinfield West,		RPS		
					Job Number:	JER6151				
Date:	04/04/2014				Location No:	SFW-TP29				
Job No:	JER6151				Depth:	0.6 mbgl				
No of Blows	Total Blows	Depth Reading (mm)		Layer	Top of layer below FL (mm)	Base of layer below FL (mm)	Blows at top of layer	Blows at base of layer	Mean penetration per blow (mm)	CBR of layer (%)
0	0	600		Layer 1	600	750	0	8	18.8	13.6
2	2	650		Layer 2	750	850	8	24	6.3	43.5
2	4	700		Layer 3	850	1050	24	86	3.2	87.6
4	8	750								
9	17	800								
7	24	850								
1	25	900								
14	39	950								
22	61	1000								
25	86	1050								
Total no. of blows										



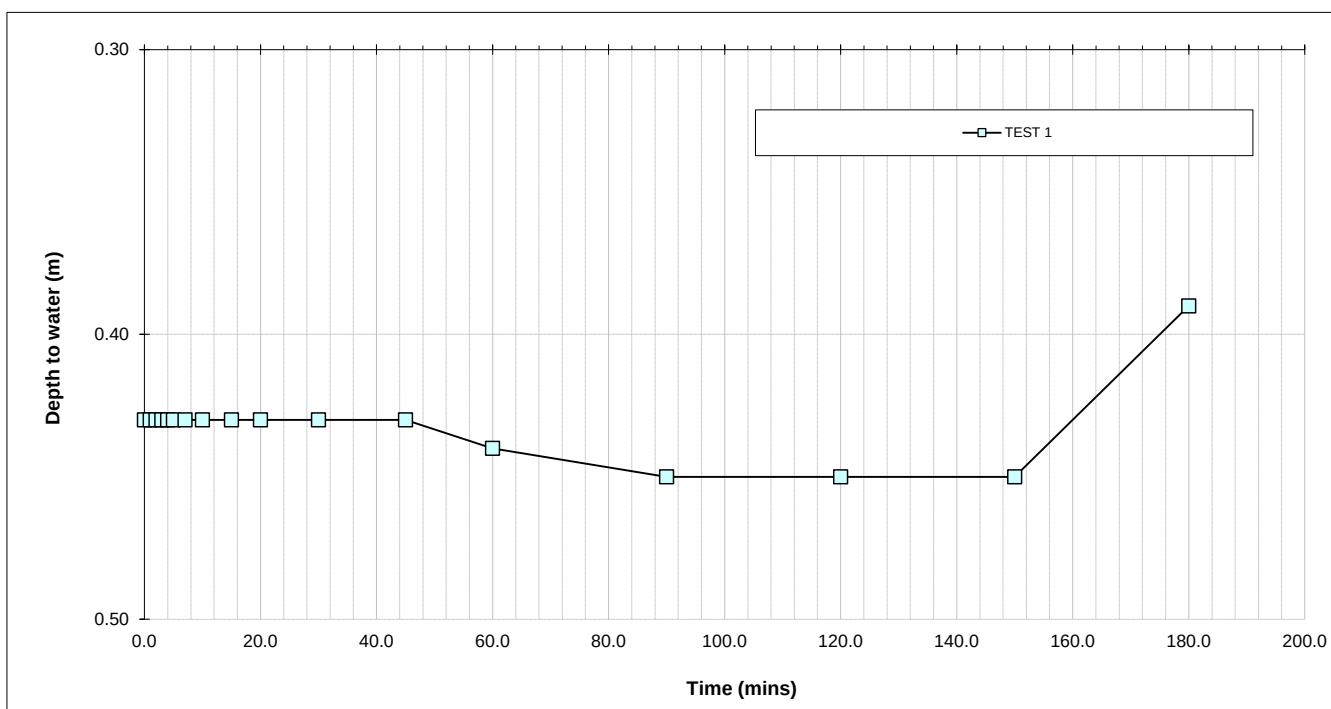
C.J. ASSOCIATES GEOTECHNICAL LTD. SOIL INFILTRATION RATE TEST See B.R.E. Digest 365, 1991, Soakaway Design.		Site..... Shinfield		Trial Pit Number..... TP1		
		Job Number..... AC0262		Length..... 1.50 m		
		Client..... RPS		Width..... 0.80 m		
		Date of Test..... 03/04/2014		Depth..... 1.70 m		
				Groundwater Level..... Dry m		
Remarks - Trial pit logged by RPS engineer. Infiltration rate inferred from graph.	TEST 1		TEST 2		TEST 3	
	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
	0.0	0.50	0.0		0.0	
	1.0	0.50	1.0		1.0	
	2.0	0.50	2.0		2.0	
	3.0	0.50	3.0		3.0	
	4.0	0.50	4.0		4.0	
	5.0	0.50	5.0		5.0	
	7.0	0.51	7.0		7.0	
	10.0	0.52	10.0		10.0	
	15.0	0.53	15.0		15.0	
	20	0.54	20		20	
	30	0.56	30		30	
	45	0.58	45		45	
	60	0.60	60		60	
	90	0.66	90		90	
	120	0.69	120		120	
	150	0.73	150		150	
	180	0.76	180		180	
	Effective Storage Depth	m	1.20			
75% Effective Storage Depth	m	0.90				
(i.e. depth below GL)	m	0.80				
25% Effective Storage Depth	m	0.30				
(i.e. depth below GL)	m	1.40				
Effective Storage Depth 75%-25%	m	0.60				
Time to fall to 75% effective depth	mins	210				
Time to fall to 25% effective depth	mins	800				
V (75%-25%)	m3	0.72				
a (50%)	m2	3.96				
t (75%-25%)	mins	590				
SOIL INFILTRATION RATE	m/s	5.14E-06				

DESIGN SOIL INFILTRATION RATE, f	5.14E-06
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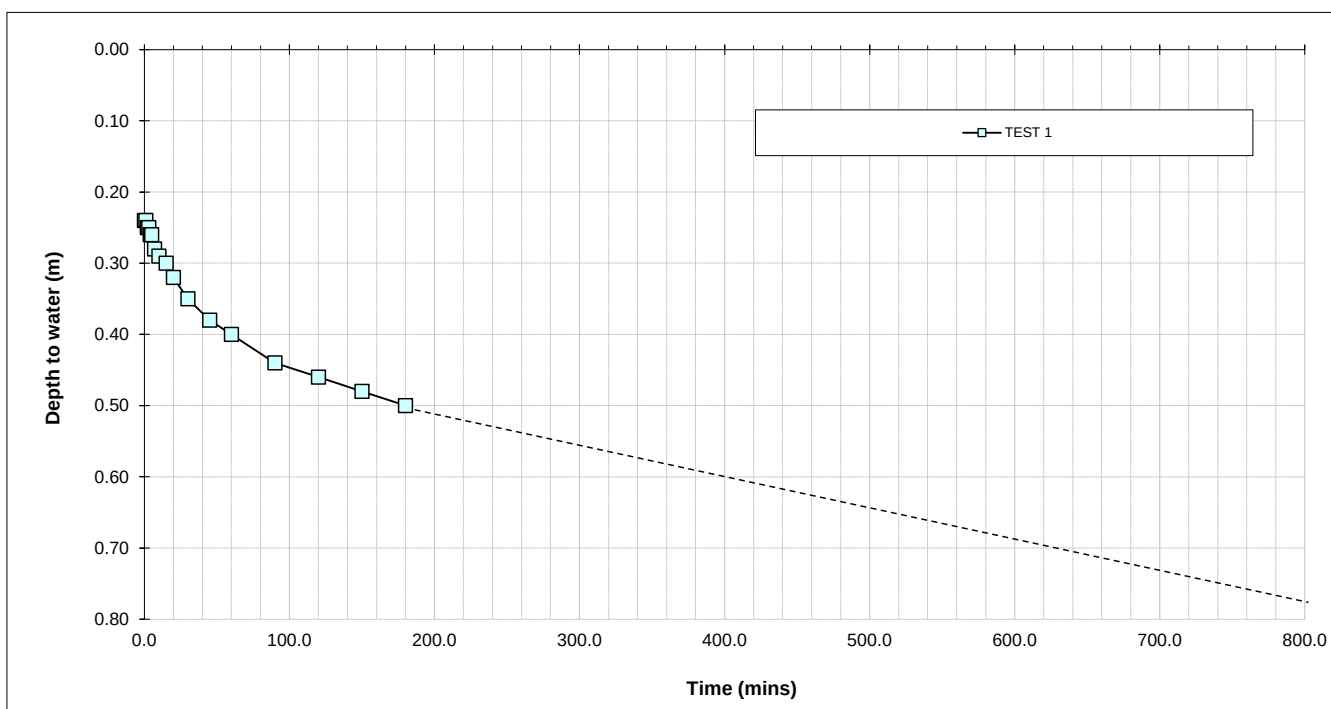
C.J. ASSOCIATES GEOTECHNICAL LTD.		Site..... Shinfield		Trial Pit Number..... TP3		
SOIL INFILTRATION RATE TEST		Job Number..... AC0262		Length..... 1.70 m		
See B.R.E. Digest 365, 1991, Soakaway Design.		Client..... RPS		Width..... 0.80 m		
		Date of Test..... 03/04/2014		Depth..... 1.23 m		
				Groundwater Level..... 1.19 m		
Remarks -	TEST 1		TEST 2		TEST 3	
	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
Trial pit logged by RPS engineer.	0.0	0.43	0.0		0.0	
Sidewall collapse at 180 minutes.	1.0	0.43	1.0		1.0	
	2.0	0.43	2.0		2.0	
	3.0	0.43	3.0		3.0	
	4.0	0.43	4.0		4.0	
	5.0	0.43	5.0		5.0	
	7.0	0.43	7.0		7.0	
	10.0	0.43	10.0		10.0	
	15.0	0.43	15.0		15.0	
	20	0.43	20		20	
	30	0.43	30		30	
	45	0.43	45		45	
	60	0.44	60		60	
	90	0.45	90		90	
	120	0.45	120		120	
	150	0.45	150		150	
	180	0.39	180		180	
	Effective Storage Depth	m	0.80			
75% Effective Storage Depth	m	0.60				
(i.e. depth below GL)	m	0.63				
25% Effective Storage Depth	m	0.20				
(i.e. depth below GL)	m	1.03				
Effective Storage Depth 75%-25%	m	0.40				
Time to fall to 75% effective depth	mins	na				
Time to fall to 25% effective depth	mins	na				
V (75%-25%)	m3	0.54				
a (50%)	m2	3.36				
t (75%-25%)	mins	na				
SOIL INFILTRATION RATE	m/s	Insufficient uptake				

DESIGN SOIL INFILTRATION RATE, f	Insufficient uptake
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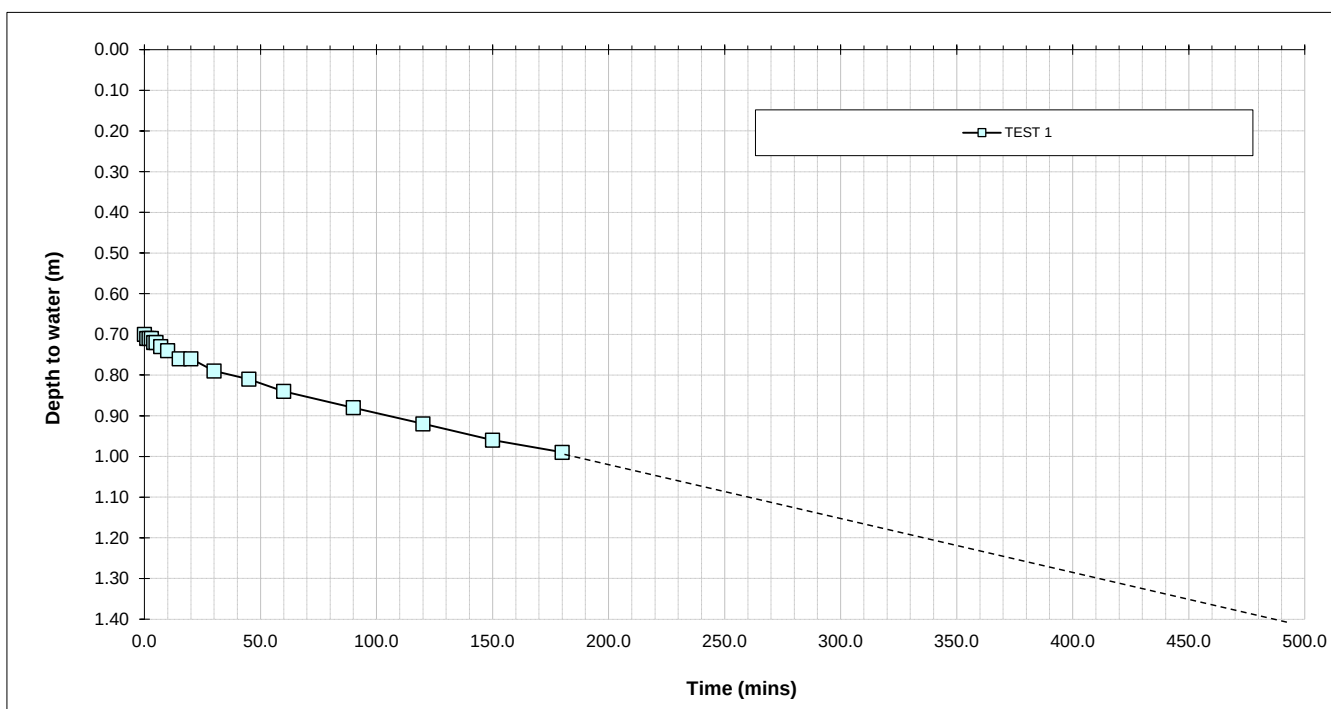
C.J. ASSOCIATES GEOTECHNICAL LTD.		Site..... Shinfield		Trial Pit Number..... TP4		
SOIL INFILTRATION RATE TEST		Job Number..... AC0262		Length..... 1.60 m		
See B.R.E. Digest 365, 1991, Soakaway Design.		Client..... RPS		Width..... 0.75 m		
		Date of Test..... 02/04/2014		Depth..... 0.95 m		
				Groundwater Level..... 0.80 m		
Remarks -	TEST 1		TEST 2		TEST 3	
	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
Trial pit logged by RPS engineer.	0.0	0.24	0.0		0.0	
Infiltration rate inferred from graph.	1.0	0.24	1.0		1.0	
	2.0	0.25	2.0		2.0	
	3.0	0.25	3.0		3.0	
	4.0	0.26	4.0		4.0	
	5.0	0.26	5.0		5.0	
	7.0	0.28	7.0		7.0	
	10.0	0.29	10.0		10.0	
	15.0	0.30	15.0		15.0	
	20	0.32	20		20	
	30	0.35	30		30	
	45	0.38	45		45	
	60	0.40	60		60	
	90	0.44	90		90	
	120	0.46	120		120	
	150	0.48	150		150	
	180	0.50	180		180	
Effective Storage Depth	m	0.71				
75% Effective Storage Depth	m	0.53				
(i.e. depth below GL)	m	0.42				
25% Effective Storage Depth	m	0.18				
(i.e. depth below GL)	m	0.77				
Effective Storage Depth 75%-25%	m	0.36				
Time to fall to 75% effective depth	mins	75				
Time to fall to 25% effective depth	mins	800				
V (75%-25%)	m3	0.43				
a (50%)	m2	2.87				
t (75%-25%)	mins	725				
SOIL INFILTRATION RATE	m/s	3.41E-06				

DESIGN SOIL INFILTRATION RATE, f	3.41E-06
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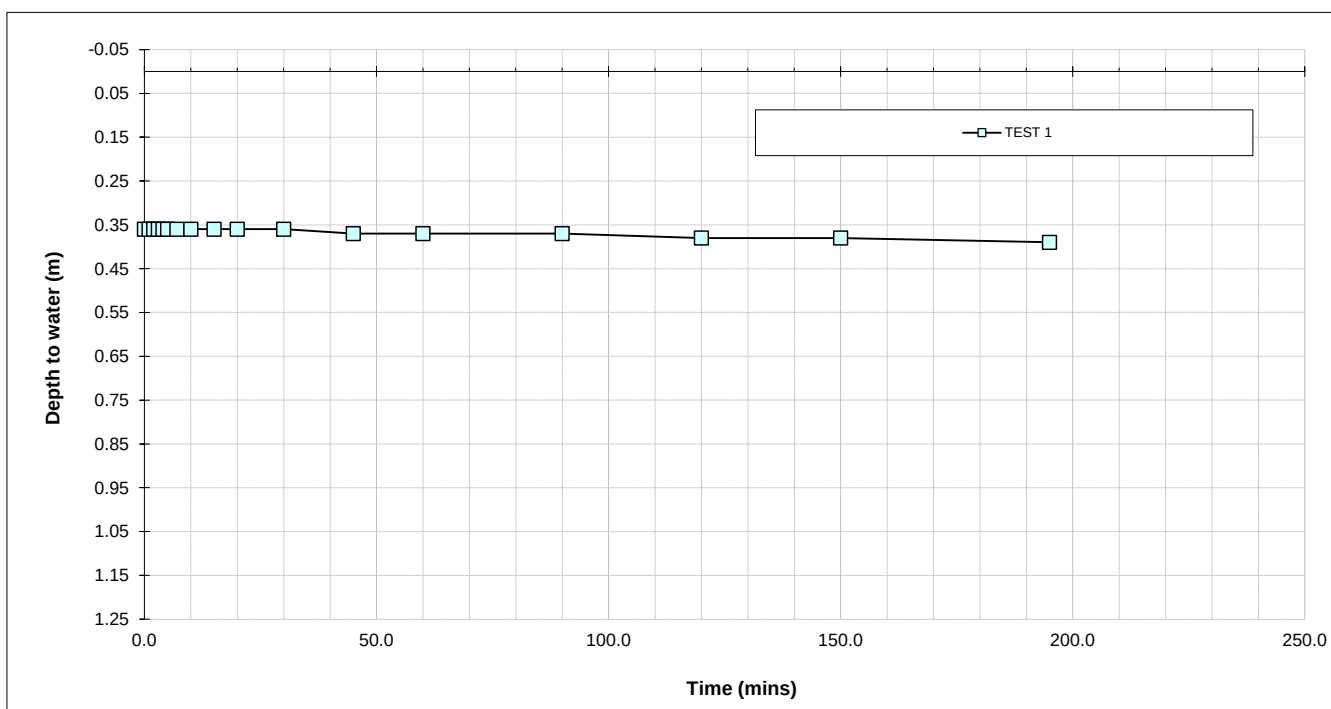
C.J. ASSOCIATES GEOTECHNICAL LTD. SOIL INFILTRATION RATE TEST See B.R.E. Digest 365, 1991, Soakaway Design.		Site..... Shinfield Job Number..... AC0262 Client..... RPS Date of Test..... 02/04/2014	Trial Pit Number..... TP7 Length..... 1.80 m Width..... 0.70 m Depth..... 1.63 m Groundwater Level..... 1.49 m
Remarks - Trial pit logged by RPS engineer. Infiltration rate inferred from graph.	TEST 1 Time(min) Depth to Water (m)		TEST 2 Time(min) Depth to Water (m)
	0.0	0.70	0.0
	1.0	0.71	1.0
	2.0	0.71	2.0
	3.0	0.71	3.0
	4.0	0.72	4.0
	5.0	0.72	5.0
	7.0	0.73	7.0
	10.0	0.74	10.0
	15.0	0.76	15.0
	20	0.76	20
	30	0.79	30
	45	0.81	45
	60	0.84	60
	90	0.88	90
	120	0.92	120
	150	0.96	150
	180	0.99	180
Effective Storage Depth m	0.93		
75% Effective Storage Depth m	0.70		
(i.e. depth below GL) m	0.93		
25% Effective Storage Depth m	0.23		
(i.e. depth below GL) m	1.40		
Effective Storage Depth 75%-25% m	0.47		
Time to fall to 75% effective depth mins	130		
Time to fall to 25% effective depth mins	485		
V (75%-25%) m3	0.59		
a (50%) m2	3.59		
t (75%-25%) mins	355		
SOIL INFILTRATION RATE m/s	7.67E-06		

DESIGN SOIL INFILTRATION RATE, f	7.67E-06
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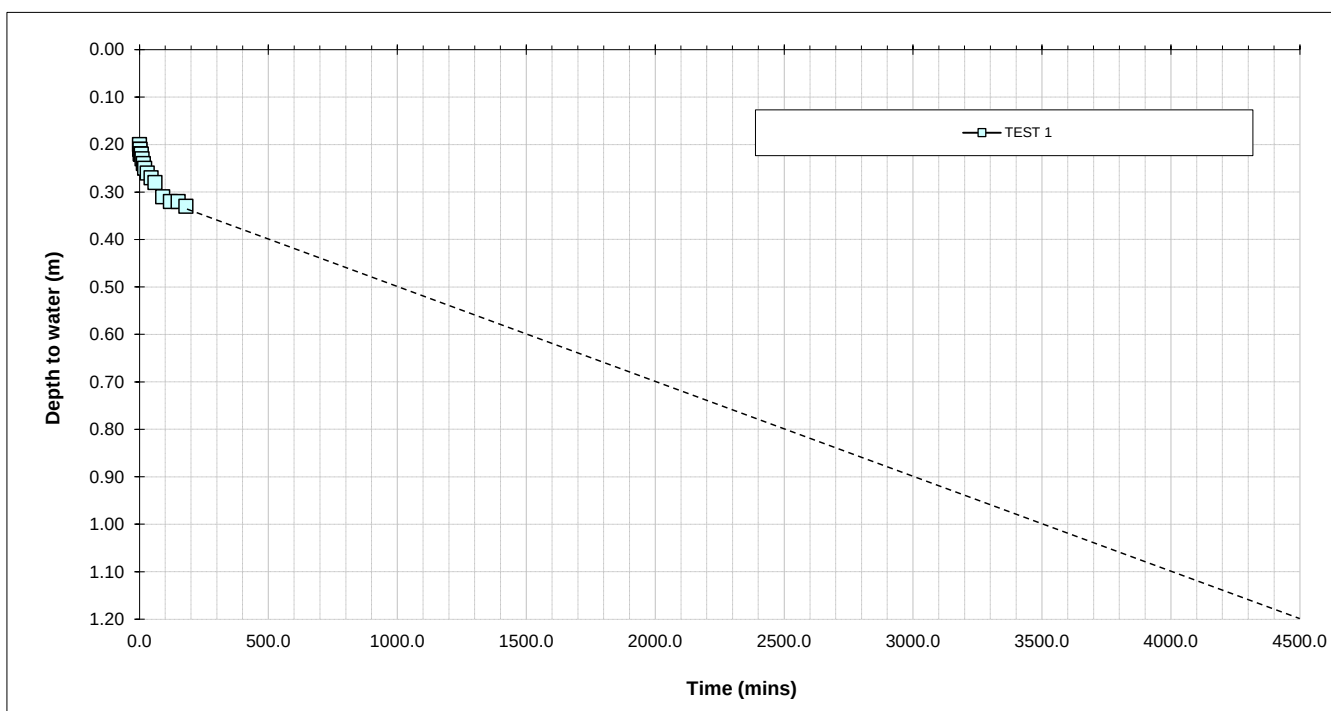
C.J. ASSOCIATES GEOTECHNICAL LTD.		Site..... Shinfield		Trial Pit Number..... TP12			
SOIL INFILTRATION RATE TEST		Job Number..... AC0262		Length..... 1.40 m			
See B.R.E. Digest 365, 1991, Soakaway Design.		Client..... RPS		Width..... 0.85 m			
		Date of Test..... 02/04/2014		Depth..... 1.50 m			
				Groundwater Level..... Dry m			
Remarks -		TEST 1		TEST 2		TEST 3	
		Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
Trial pit logged by RPS engineer.		0.0	0.36	0.0		0.0	
		1.0	0.36	1.0		1.0	
		2.0	0.36	2.0		2.0	
		3.0	0.36	3.0		3.0	
		4.0	0.36	4.0		4.0	
		5.0	0.36	5.0		5.0	
		7.0	0.36	7.0		7.0	
		10.0	0.36	10.0		10.0	
		15.0	0.36	15.0		15.0	
		20	0.36	20		20	
		30	0.36	30		30	
		45	0.37	45		45	
		60	0.37	60		60	
		90	0.37	90		90	
		120	0.38	120		120	
		150	0.38	150		150	
		195	0.39	180		180	
Effective Storage Depth	m	1.14					
75% Effective Storage Depth	m	0.86					
(i.e. depth below GL)	m	0.65					
25% Effective Storage Depth	m	0.29					
(i.e. depth below GL)	m	1.22					
Effective Storage Depth 75%-25%	m	0.57					
Time to fall to 75% effective depth	mins	na					
Time to fall to 25% effective depth	mins	na					
V (75%-25%)	m3	0.68					
a (50%)	m2	3.76					
t (75%-25%)	mins	na					
SOIL INFILTRATION RATE	m/s	Insufficient uptake					

DESIGN SOIL INFILTRATION RATE, f	Insufficient uptake
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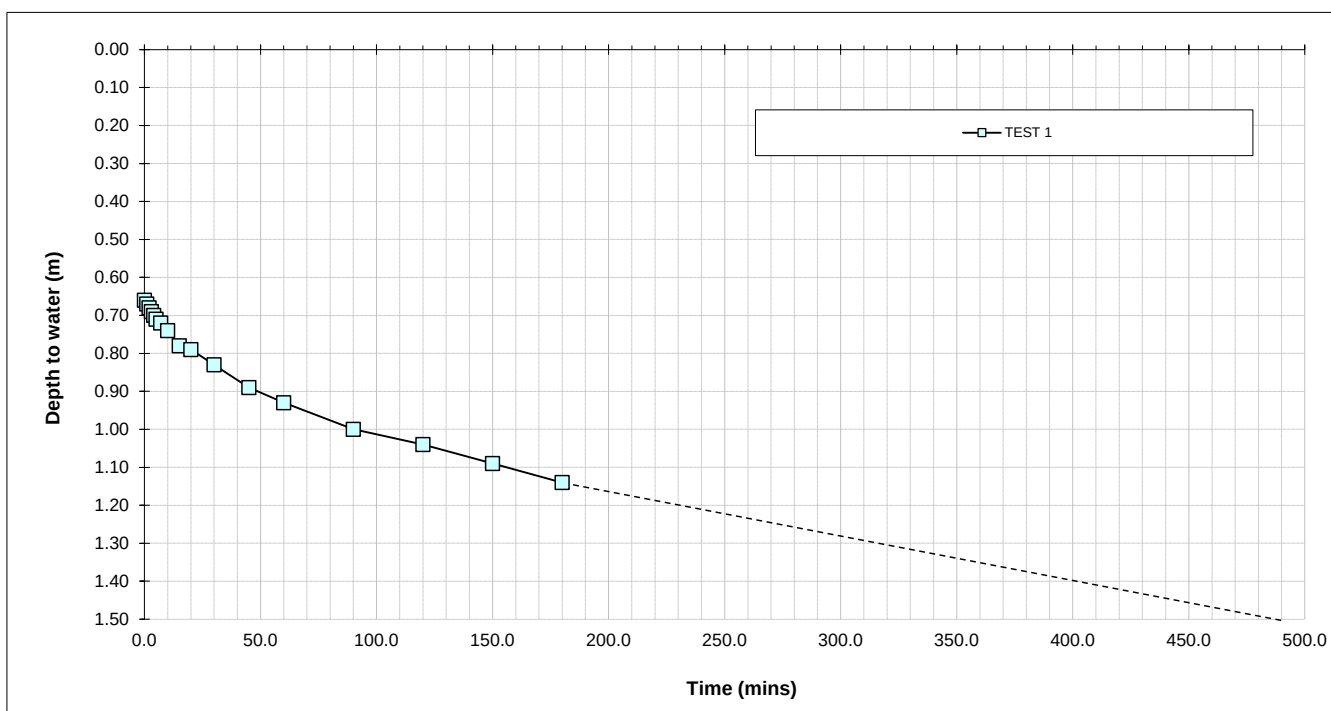
C.J. ASSOCIATES GEOTECHNICAL LTD.		Site..... Shinfield		Trial Pit Number..... TP16		
		Job Number..... AC0262		Length..... 1.30 m		
SOIL INFILTRATION RATE TEST		Client..... RPS		Width..... 0.70 m		
See B.R.E. Digest 365, 1991, Soakaway Design.		Date of Test..... 02/04/2014		Depth..... 1.50 m		
				Groundwater Level..... 1.48 m		
Remarks -	TEST 1		TEST 2		TEST 3	
	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
Trial pit logged by RPS engineer.						
Infiltration rate inferred from graph.	0.0	0.20	0.0		0.0	
	1.0	0.21	1.0		1.0	
	2.0	0.21	2.0		2.0	
	3.0	0.22	3.0		3.0	
	4.0	0.22	4.0		4.0	
	5.0	0.22	5.0		5.0	
	7.0	0.22	7.0		7.0	
	10.0	0.23	10.0		10.0	
	15.0	0.24	15.0		15.0	
	20	0.25	20		20	
	30	0.26	30		30	
	45	0.27	45		45	
	60	0.28	60		60	
	90	0.31	90		90	
	120	0.32	120		120	
	150	0.32	150		150	
	180	0.33	180		180	
Effective Storage Depth	m	1.30				
75% Effective Storage Depth	m	0.98				
(i.e. depth below GL)	m	0.53				
25% Effective Storage Depth	m	0.33				
(i.e. depth below GL)	m	1.18				
Effective Storage Depth 75%-25%	m	0.65				
Time to fall to 75% effective depth	mins	1100				
Time to fall to 25% effective depth	mins	4500				
V (75%-25%)	m3	0.59				
a (50%)	m2	3.51				
t (75%-25%)	mins	3400				
SOIL INFILTRATION RATE	m/s	8.26E-07				

DESIGN SOIL INFILTRATION RATE, f	8.26E-07
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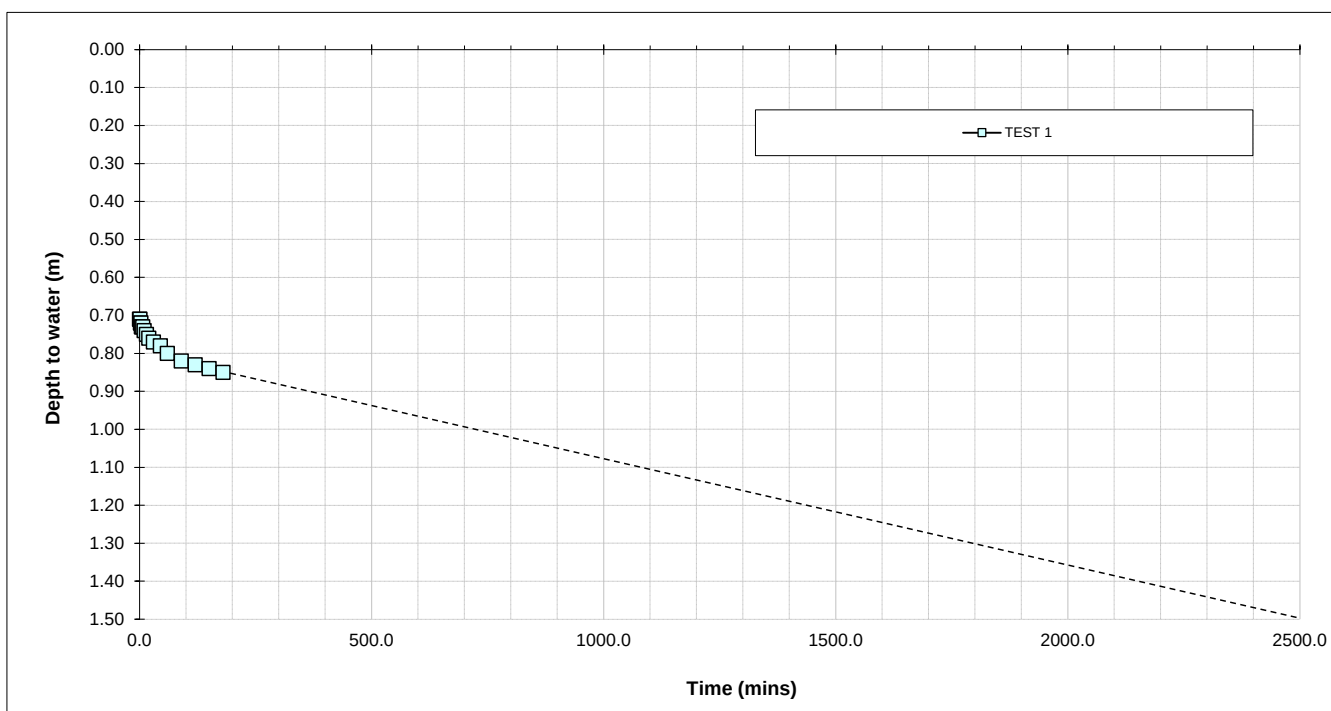
C.J. ASSOCIATES GEOTECHNICAL LTD.		Site..... Shinfield		Trial Pit Number..... TP20		
SOIL INFILTRATION RATE TEST		Job Number..... AC0262		Length..... 1.50 m		
See B.R.E. Digest 365, 1991, Soakaway Design.		Client..... RPS		Width..... 0.80 m		
		Date of Test..... 03/04/2014		Depth..... 1.70 m		
				Groundwater Level..... Dry m		
Remarks -	TEST 1		TEST 2		TEST 3	
	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
Trial pit logged by RPS engineer.						
Infiltration rate inferred from graph.	0.0	0.66	0.0		0.0	
	1.0	0.67	1.0		1.0	
	2.0	0.68	2.0		2.0	
	3.0	0.69	3.0		3.0	
	4.0	0.70	4.0		4.0	
	5.0	0.71	5.0		5.0	
	7.0	0.72	7.0		7.0	
	10.0	0.74	10.0		10.0	
	15.0	0.78	15.0		15.0	
	20	0.79	20		20	
	30	0.83	30		30	
	45	0.89	45		45	
	60	0.93	60		60	
	90	1.00	90		90	
	120	1.04	120		120	
	150	1.09	150		150	
	180	1.14	180		180	
Effective Storage Depth	m	1.04				
75% Effective Storage Depth	m	0.78				
(i.e. depth below GL)	m	0.92				
25% Effective Storage Depth	m	0.26				
(i.e. depth below GL)	m	1.44				
Effective Storage Depth 75%-25%	m	0.52				
Time to fall to 75% effective depth	mins	57				
Time to fall to 25% effective depth	mins	440				
V (75%-25%)	m3	0.62				
a (50%)	m2	3.59				
t (75%-25%)	mins	383				
SOIL INFILTRATION RATE	m/s	7.56E-06				

DESIGN SOIL INFILTRATION RATE, f	7.56E-06
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C.J. ASSOCIATES GEOTECHNICAL LTD.		Site..... Shinfield		Trial Pit Number..... TP23		
SOIL INFILTRATION RATE TEST		Job Number..... AC0262		Length..... 1.50 m		
See B.R.E. Digest 365, 1991, Soakaway Design.		Client..... RPS		Width..... 0.80 m		
		Date of Test..... 03/04/2014		Depth..... 1.70 m		
				Groundwater Level..... Dry m		
Remarks -	TEST 1		TEST 2		TEST 3	
	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
Trial pit logged by RPS engineer.	0.0	0.71	0.0		0.0	
Infiltration rate inferred from graph.	1.0	0.71	1.0		1.0	
	2.0	0.72	2.0		2.0	
	3.0	0.72	3.0		3.0	
	4.0	0.73	4.0		4.0	
	5.0	0.73	5.0		5.0	
	7.0	0.73	7.0		7.0	
	10.0	0.74	10.0		10.0	
	15.0	0.75	15.0		15.0	
	20	0.76	20		20	
	30	0.77	30		30	
	45	0.78	45		45	
	60	0.80	60		60	
	90	0.82	90		90	
	120	0.83	120		120	
	150	0.84	150		150	
	180	0.85	180		180	
Effective Storage Depth	m	0.99				
75% Effective Storage Depth	m	0.74				
(i.e. depth below GL)	m	0.96				
25% Effective Storage Depth	m	0.25				
(i.e. depth below GL)	m	1.45				
Effective Storage Depth 75%-25%	m	0.50				
Time to fall to 75% effective depth	mins	600				
Time to fall to 25% effective depth	mins	2300				
V (75%-25%)	m3	0.59				
a (50%)	m2	3.48				
t (75%-25%)	mins	1700				
SOIL INFILTRATION RATE	m/s	1.67E-06				

DESIGN SOIL INFILTRATION RATE, f	1.67E-06
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Enclosure D

Updated Human Health Risk Assessment

To assess the human health risk contaminant concentrations have been screened against the Suitable 4 Use Levels (S4ULs) and Category 4 Screening Levels (C4SL) for a Public Open Space residential end use. Available chemical test results recorded above laboratory limits of detection, from the following exploratory locations within or adjacent to RM planning application boundary, have been assessed:

- SFW TP24;
- SW TP33;
- SFW TP36;
- SFW TP37;
- SW TP49;
- SFW TP60; and
- SFW BH05.

These samples were analysed for the following suite of determinands:

- Inorganic Contaminations (metals – As, Cd, Cr, Cu, Pb, Ni and Zn);
- Polynuclear Aromatic Hydrocarbons (PAHs); and
- Total Petroleum Hydrocarbons (TPHs) with carbon banding.

It should be noted that in the absence of encountered Made Ground and / or identified sources of potential contamination from the previous RPS assessments (see Enclosure C), additional suites of testing such as Volatile Organic Compounds (VOCs), Semi-VOCs (SVOCs) and asbestos were not undertaken on samples from within and surrounding the area that constitutes the Northern Sports Pitches.

The maximum concentration for each determinand has been compared against the S4ULs and C4SL (lead only) for the proposed Public Open Space Residential criteria as set out in Table 1. It should be noted that the most conservative criteria has been adopted for TPH values.

Table 1 – Human Health Risk Assessment (Public Open Space Residential End Use)

Determinand	Maximum Concentration (mg/kg)	S4ULs (mg/kg)	Exceedance Above S4UL	Exploratory Location of Maximum Concentration
Metals				
Arsenic	16.9	79	No	SFW BH05
Beryllium	0.45	2.2	No	SW 33 / SW 49
Boron	0.8	21,000	No	SFW TP36
Cadmium	0.28	120	No	SW TP33
Chromium	45	1,500	No	SFW TP24
Copper	20	12,000	No	SFW TP36
Lead	21.8	630	No	SFW TP36
Nickel	35.5	230	No	SFW TP24
Selenium	1	1100	No	SFW BH05

Determinand	Maximum Concentration (mg/kg)	S4ULs (mg/kg)	Exceedance Above S4UL	Exploratory Location of Maximum Concentration
Vanadium	31.4	2,000	No	SW TP49
Zinc	69.1	81,000	No	SFW TP24
PAHs				
Naphthalene	<0.08	4900	No	All
Acenaphthylene	<0.08	15000	No	All
Acenaphthene	<0.08	15000	No	All
Fluorene	<0.08	9900	No	All
Phenanthrene	<0.08	3100	No	All
Anthracene	<0.08	74000	No	All
Fluoranthene	<0.08	3100	No	All
Pyrene	<0.08	7400	No	All
Benzo(a)anthracene	<0.08	29	No	All
Chrysene	<0.08	57	No	All
Benzo(b)fluoranthene	<0.08	7.1	No	All
Benzo(k)fluoranthene	<0.08	190	No	All
Benzo(a)pyrene	<0.08	5.7	No	All
Indeno(1,2,3-cd)pyrene	<0.08	82	No	All
Dibenzo(a,h)anthracene	<0.08	0.57	No	All
Benzo(g,h,i)perylene	<0.08	640	No	All
TPH CWG				
>C8 - C10	<4.04	5000	No	SFW TP36
>C10 – C12	<4.04	5000	No	SFW TP36
>C12 – C16	<4.04	5100	No	SFW TP36
>C16 – C21	4.09	3800	No	SW TP33
>C21 – C35	33.4	3800	No	SW TP33

Available data indicates that all contaminants tested for within samples taken from the above exploratory locations, fall below the respective S4ULs for a Public Open Space residential end use scenario.

Enclosure E

Discovery Strategy

DISCOVERY STRATEGY

Northern Sports Pitches, Shinfield West

JER9918

V01

R00

6 December 2022

Document status

Version	Revision	Authored by	Reviewed by	Approved by	Review date
V01	R00	Lauren Davies	Phil Thomas	Phil Thomas	6 December 2022

Approval for issue

Phil Thomas	Technical Director	-	6 December 2022
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File Name

221206 R JER9918 Shinfield West Northern Sports Pitches Discovery Strategy

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Drawings

Drawing 1 RG-L-550-Northern Pitches GA- Layout1-A0

Drawing 2 JER9918-SI-001

1 INTRODUCTION

- 1.1.1 RPS has been appointed by University of Reading to support discharge of Planning Condition 29 of the outline planning consent VAR/2014/0624 in support of a Reserved Matters (RM) application for a series of sports pitches, known as the northern sports pitches. The northern sports pitches relate to the south-western part of the wider site and comprise a series of football and rugby pitches with surrounding areas of open space.
- 1.1.2 A redline boundary plan for the RM applications and general layout is presented in Drawing RG-L-550-Northern Pitches GA-Layout1-A0. This area is herein referred to as the 'Assessment Site'. Drawing JER9918-SI-001 details the location of current RM application with respects to the wider development.
- 1.1.3 Planning Condition 29 relates to the discovery of ground contamination and is as follows:

"If, during development, contamination not previously identified is found to be present at the site then no further development within that phase, unless otherwise agreed in writing by the local planning authority, shall be carried out until the developer has submitted to and received written approval from the local planning authority for an amendment to the remediation strategy detailing how this unsuspected contamination is to be dealt with."
- 1.1.4 To support discharge of the above condition, a discovery strategy has been produced by RPS which outlines the procedures to be implemented where unforeseen contamination is identified during the works.
- 1.1.5 The remainder of this document sets out any known evidence of contamination and the discovery strategy.

2 KNOWN EVIDENCE OF CONTAMINATION

- 2.1.1 A Preliminary Risk Assessment and ground investigations have been undertaken at the wider Shinfield West site as detailed within the following documents:
- RPS - Shinfield West, Ground Conditions Report, September 2009;
 - RPS - Shinfield West, Ground Investigation Interpretative Report, June 2014; and
 - RPS - Shinfield West, Additional Ground Investigation Interpretative Report, November 2014.
- 2.1.2 Whilst the previous investigations were undertaken across the wider Shinfield West site, a number of exploratory holes were located within the Assessment Site boundary, as detailed within Drawing JER9918-SI-001.
- 2.1.3 No visual or olfactory evidence of contamination was recorded at the exploratory locations within the Assessment Site and laboratory testing confirmed contaminants to be below screening criteria. A statistical outlier was considered to be present at exploratory location SFW-TP24 in relation to chromium, nickel and zinc, within a topsoil sample, located on the south western boundary of the RM application. A review of the borehole log did not identify any visual or olfactory evidence of contamination at this location and concentrations were generally an order of magnitude below the assessment criteria for the assessed land use scenario of 'residential with plant uptake'.

3 DISCOVERY STRATEGY

3.1 Introduction

- 3.1.1 Where evidence of potential contamination is encountered during construction works it shall be managed following the procedures set out in this section of the discovery strategy.

3.2 Lines of Evidence

- 3.2.1 The lines of evidence that should be considered representative of contamination to be reported under discovery are outlined below:
- Unusual odours or colouration of materials;
 - Free oils;
 - Oil staining and / or hydrocarbon odour;
 - Ash or clinker; and
 - Fibrous or cement bound materials or evidence of Asbestos Containing Materials (ACMs).
- 3.2.2 Incidental infrequent inclusions of brick or glass shall not be considered as potential evidence of contamination.

3.3 Further Characterisation / Management of Discovered Contamination

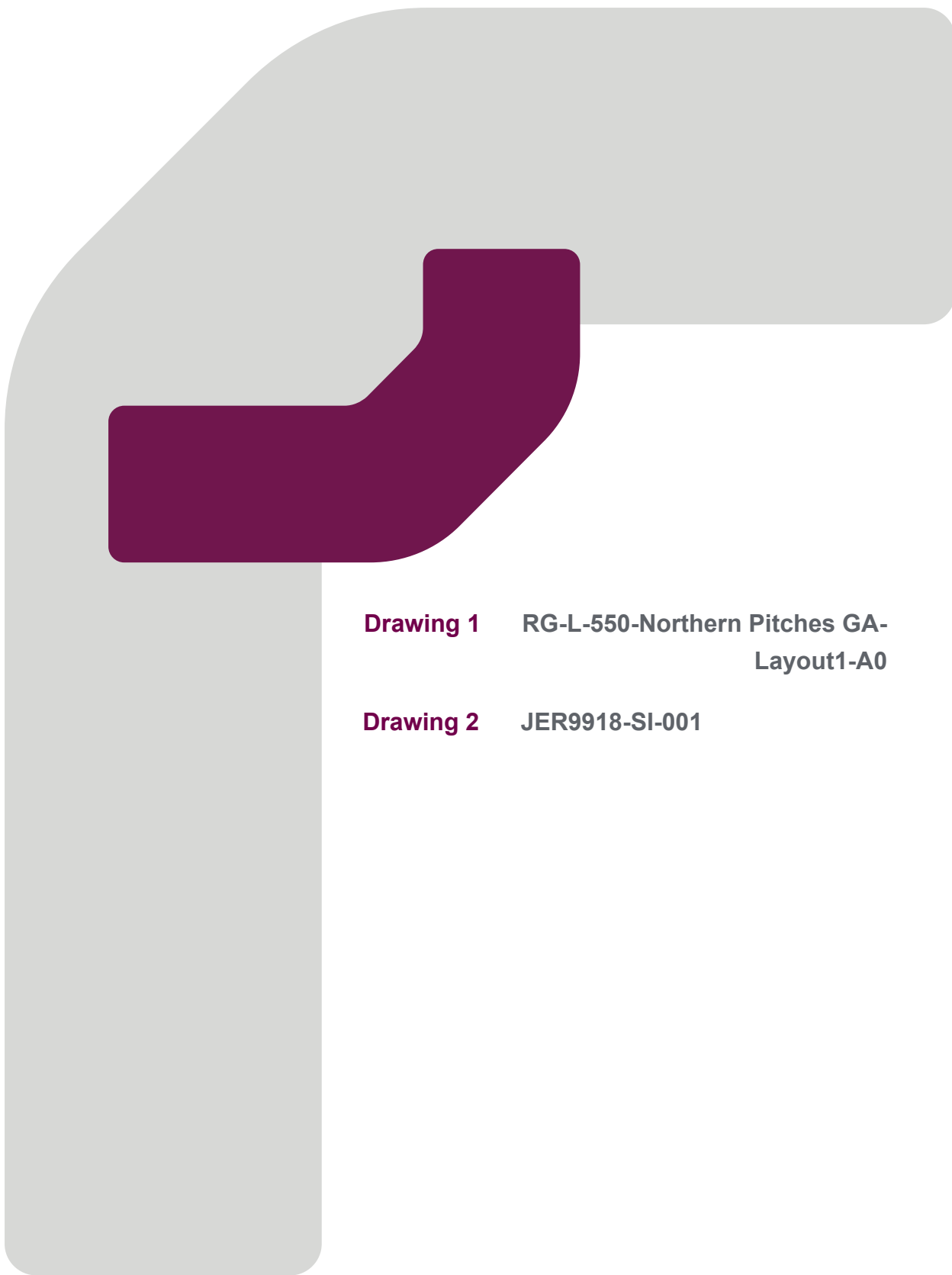
- 3.3.1 Where potential evidence of contamination is discovered it shall be reported to the Client's appointed Environmental Consultant. Particular vigilance is required in the area of location SFW-TP24, located on the south western area of the Assessment Site, as a statistical outlier has been identified at this location.
- 3.3.2 An inspection of the discovered potential contamination shall be undertaken. Where construction timescales allow, the contamination shall be characterised in situ as set out in 3.3.2. Where required to maintain construction programme, the potentially contaminated materials shall be excavated and stockpiled for ex situ characterisation, as set out in 3.3.3.

3.3.2 In situ characterisation

- 3.3.1 The area of potential contamination shall be delineated through a series of boreholes or trial pits based on the extent of the visual and olfactory impacted materials. Samples of the potentially contaminated material and the adjacent uncontaminated material shall be recovered. As a minimum, the following samples shall be recovered:
- 3 No. samples of the potential contaminated material.
 - 1 No. to the north, south, east and west of the potentially contaminated material.
 - 2 No. samples from beneath the potentially contaminated material.
- 3.3.2 The samples shall be analysed for a suite of analysis defined by the appointed Environmental Consultant. Contaminant concentrations shall be screened against the Suitable 4 Use Levels (S4ULs) and Category 4 Screening Levels (C4SL) for a Public Open Space end use. Where an exceedance of these criterion is identified the materials shall be considered to require remediation. The scope of remediation shall be agreed with the Local Authority.

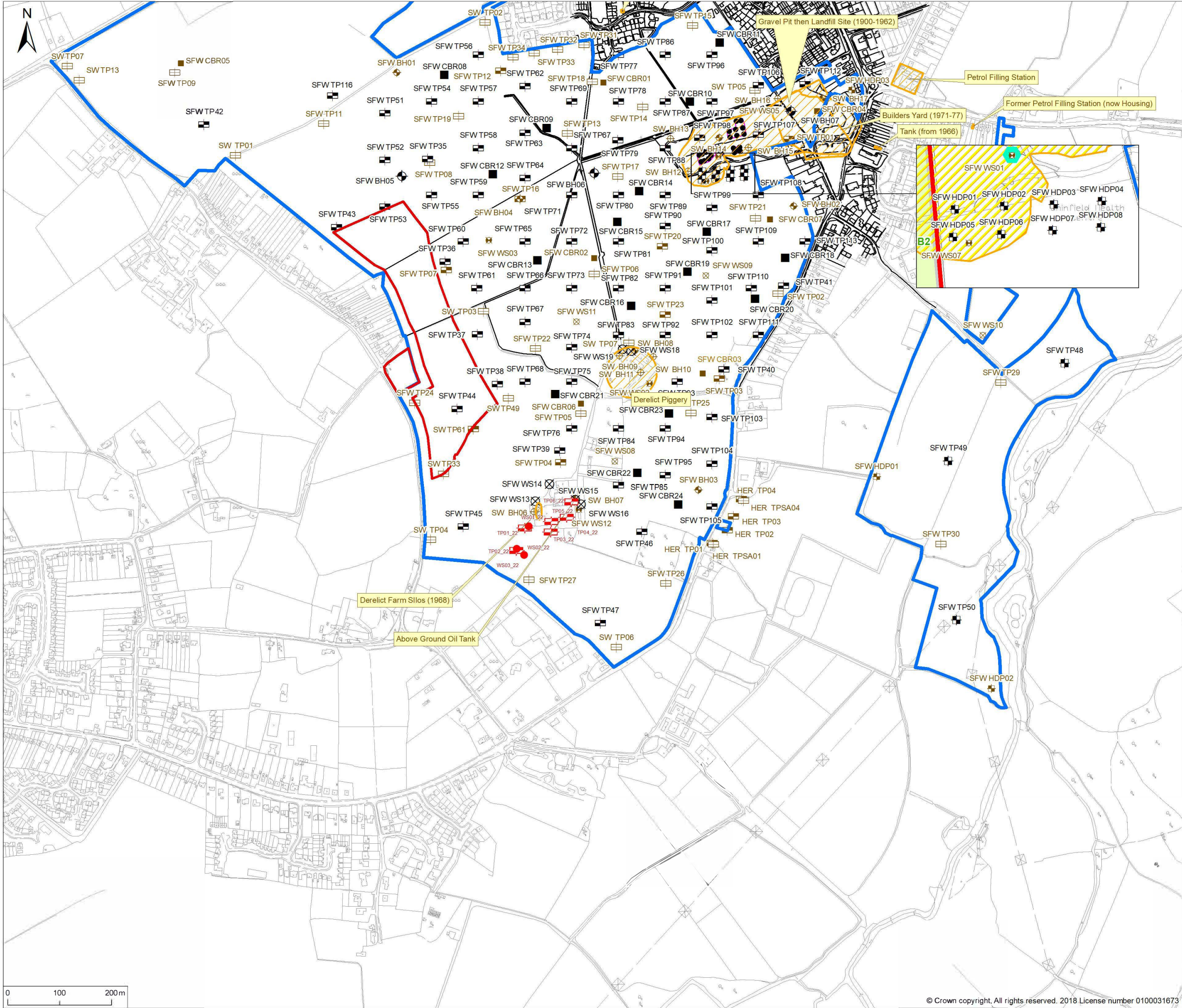
3.3.3 Ex Situ Characterisation

- 3.3.1 The area of potential contamination shall be excavated based on the extent of the visual and olfactory impacted materials. The excavated materials shall be placed on plastic sheeting and covered to prevent rainwater infiltration and run off and dust generation.
- 3.3.2 Samples of the potentially contaminated and the adjacent uncontaminated materials shall be recovered. As a minimum the following samples shall be recovered:
- 3 No. samples of the stockpiled potential contaminated material.
 - 1 No. on the north, south, east and west of the excavation.
 - 2 No. samples from the base of the excavation.
- 3.3.3 The samples shall be analysed for a suite of analysis defined by the appointed Environmental Consultant. Contaminant concentrations shall be screened against the Sutable 4 Use Levels (S4ULs) and Category 4 Screening Levels (C4SL) for a Public Open Space end use. Where an exceedance of these criterion is identified the materials shall be considered to require remediation. The scope of remediation shall be agreed with the Local Authority. Where there are no exceedances of the criterion the materials shall be considered for reuse onsite within the development scheme.



Drawing 1 RG-L-550-Northern Pitches GA-
Layout1-A0

Drawing 2 JER9918-SI-001



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Notes

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- Legend**
- Outline Planning Consent Boundary
 - Northern Sports Pitches Planning Application Boundary
 - Historic Land Use Constraints

- Historic Investigation Locations**
- RPS (2008 - 2014)**
- Borehole with Monitoring Well Installation
 - Borehole (No Installation)
 - Window Sample (No Installation)
 - Trial Pit with Infiltration Test
 - Hand Dug Pit
 - California Bearing Ratio (CBR)
 - Trial Pit
 - Window Sample with Monitoring Well Installation

- RPS (October 2014)**
- Cable Percussive Borehole (20m Depth)
 - Hand Dug Pit
 - California Bearing Ratio (CBR)
 - Window Sample
 - Trial Pit

- RPS September 2022**
- Trial pit
 - Ground Investigation

Rev	Description	Date	Initial	Checked

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Project **SHINFIELD WEST**

Title **Ground Investigation Locations, Areas of Contamination and Northern Sports Pitches Planning Application Boundary**

Status	Drawn By	PM/Checked By
FINAL	RD	PT
Job Ref	Scale @ A3	Date Created
JER9918	1:7,000	NOV 22

Drawing Number	Rev
JER9918-SI-001	-

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DISCOVERY STRATEGY

Sports Pavillion and Pitches, Shinfield West

2022-12-06

JER9918

V01

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