





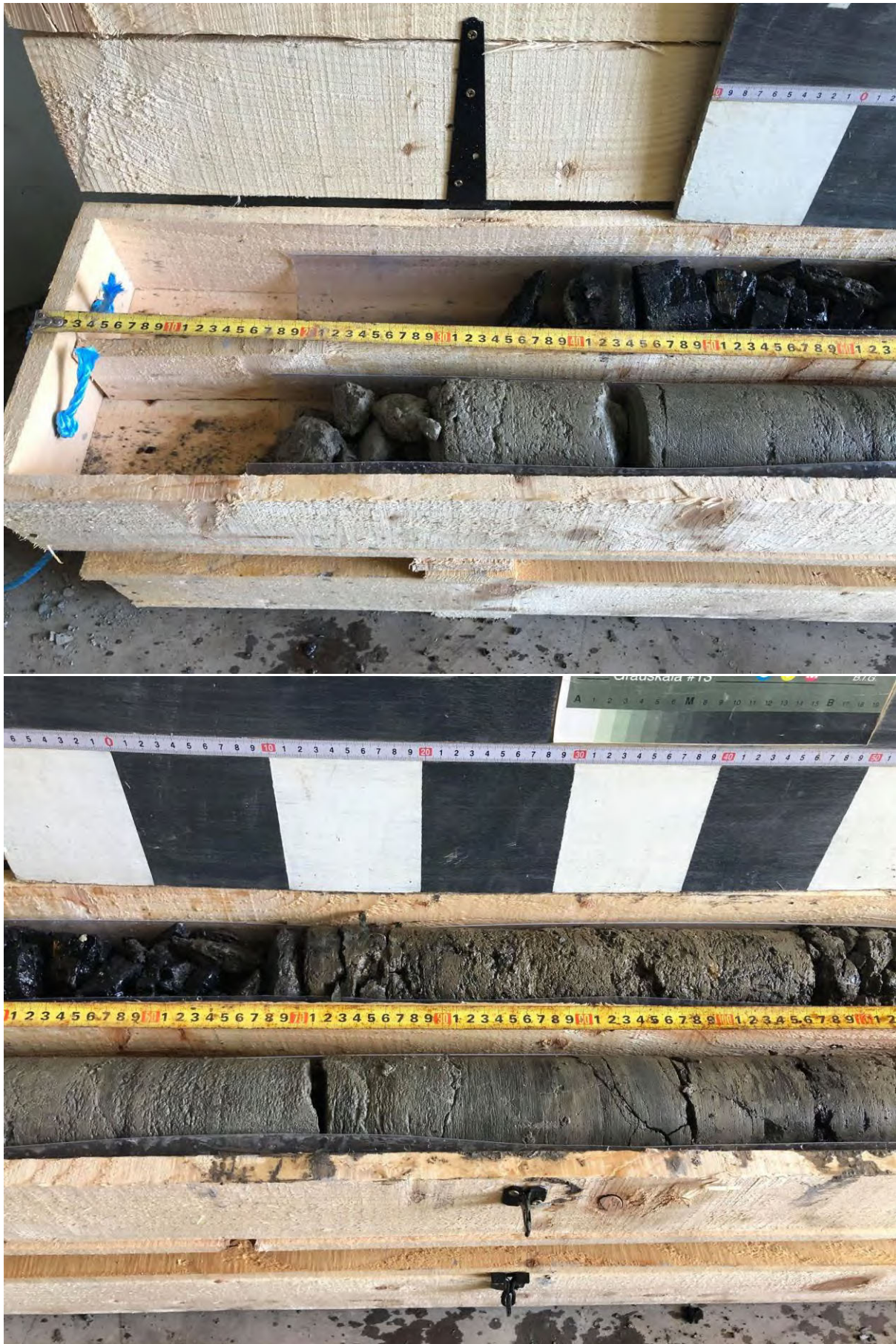
















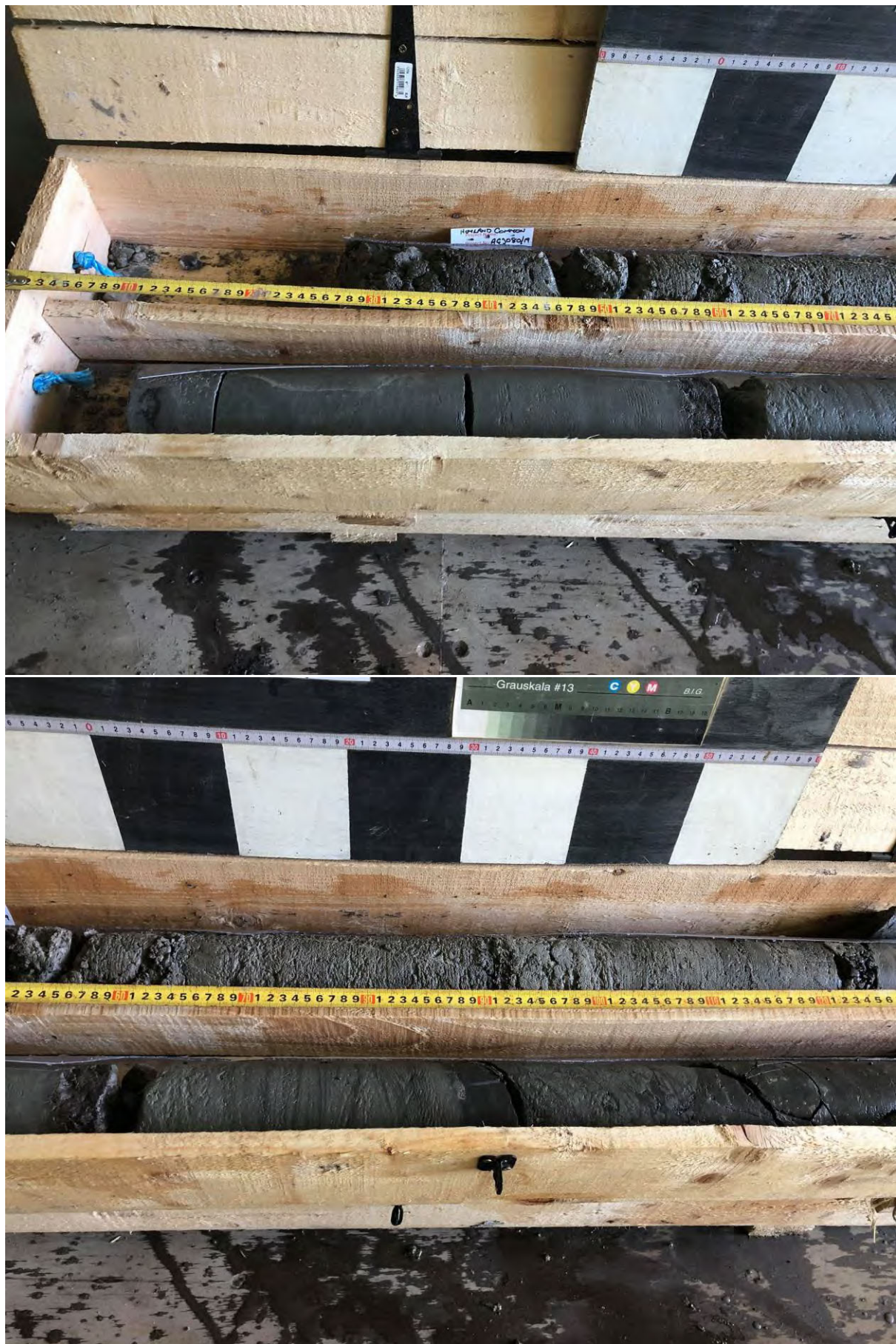










































APPENDIX D

Ground Gas Monitoring and Flow Results

Project Number AG3080-19

Project Name Hoyland Common, Barnsley

Date and Time of Monitoring Monday 1st June 2020 - AM

Phase of Monitoring 1 of 4

BH No.	Flow Range (litres/hr over 3 mins)			Differential Pressure (mb)	Methane % v/v		Carbon dioxide % v/v		Oxygen % v/v		Diameter of installation (mm)	Water level (m bgl)
	Max	Min	Avg		Peak	Steady	Peak	Steady	Min	Steady		
RC4101	<0.1	<0.1	<0.1	<1	<0.1	<0.1	3.6	3.6	15.5	15.5	50	1.98
RC4102	<0.1	<0.1	<0.1	<1	<0.1	<0.1	2.3	2.3	19.1	19.1	50	3.12
RC4103	0.1	<0.1	0.1	<1	<0.1	<0.1	1.6	1.6	18.7	18.7	50	10.24
RC4104	<0.1	<0.1	<0.1	<1	<0.1	<0.1	6.9	6.9	13.9	13.9	50	Dry
RC4105	0.1	<0.1	0.1	<1	<0.1	<0.1	1.4	1.4	17.4	17.4	50	Dry

Additional gases (if required)

BH No.	VOCs (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
RC4101	1.7	1	<1	
RC4102	1.2	<1	<1	
RC4103	1.0	1	<1	
RC4104	4.8	2	<1	
RC4105	4.3	1	<1	

Borehole specific comments/observations
Well developed by purging 3x well volume
Well developed by purging 3x well volume
Well developed by purging 3x well volume

Site Data

Atmospheric Pressure (mb)	Start: 1013
Atmospheric Pressure (mb)	Finish: 1011
Pressure Rising or Falling	Falling
Weather Conditions	2/8 cloud cover
Atmospheric Oxygen (% vol)	21.2
Wind Speed & Direction	Gentle Breeze- NE
Ambient Air Temperature (°C)	20.0

Monitoring Personnel	Jack Welch
GPS Instrument	
Gasmeter Serial Number	G503948
PID Serial Number	110423
Ground Conditions (vegetation stress, visual contamination):	

General Notes

1. Instrument specification data and calibration information provided on a separate sheet

APPLIED GEOLOGY

Ground Gas Monitoring and Flow Results

Project Number AG3080-19

Project Name Hoyland Common, Barnsley

Date and Time of Monitoring Tuesday 9th June 2020 - AM

Phase of Monitoring 2 of 4

BH No.	Flow Range (litres/hr over 3 mins)			Differential Pressure (mb)	Methane % v/v		Carbon dioxide % v/v		Oxygen % v/v		Diameter of installation (mm)	Water level (m bgl)
	Max	Min	Avg		Peak	Steady	Peak	Steady	Min	Steady		
RC4101	<0.1	<0.1	<0.1	<1	<0.1	<0.1	1.9	1.9	19.4	19.4	50	1.98
RC4102	<0.1	<0.1	<0.1	<1	<0.1	<0.1	2.3	2.3	20.1	20.1	50	3.07
RC4103	<0.1	<0.1	<0.1	<1	<0.1	<0.1	3.1	3.1	16.6	16.6	50	10.70
RC4104	<0.1	<0.1	<0.1	<1	<0.1	<0.1	4.6	4.6	16.4	16.4	50	Dry
RC4105	<0.1	<0.1	<0.1	<1	<0.1	<0.1	0.5	0.5	20.8	20.8	50	Dry

Additional gases (if required)

BH No.	VOCs (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
RC4101	0.8	2	<1	
RC4102	0.5	<1	<1	
RC4103	0.9	<1	<1	
RC4104	2.7	<1	<1	
RC4105	1.5	<1	<1	

Borehole specific comments/observations
Well sampled for groundwater after monitoring
Well sampled for groundwater after monitoring
Well sampled for groundwater after monitoring

Site Data

Atmospheric Pressure (mb)	Start: 1008
Atmospheric Pressure (mb)	Finish: 1008
Pressure Rising or Falling	Rising
Weather Conditions	8/8 cloud cover
Atmospheric Oxygen (% vol)	21.1
Wind Speed & Direction	Light Breeze- SW
Ambient Air Temperature (°C)	13.0

Monitoring Personnel	Jack Welch
GPS Instrument	
Gasmeter Serial Number	G503948
PID Serial Number	110423
Ground Conditions (vegetation stress, visual contamination):	

General Notes

1. Instrument specification data and calibration information provided on a separate sheet

APPLIED GEOLOGY

Ground Gas Monitoring and Flow Results

Project Number AG3080-19

Date and Time of Monitoring Tuesday 23rd June 2020 - PM

Project Name Hoyland Common, Barnsley

Phase of Monitoring 3 of 4

BH No.	Flow Range (litres/hr over 3 mins)			Differential Pressure (mb)	Methane % v/v		Carbon dioxide % v/v		Oxygen % v/v		Diameter of installation (mm)	Water level (m bgl)
	Max	Min	Avg		Peak	Steady	Peak	Steady	Min	Steady		
RC4101	3.4	0.1	0.1	<1	<0.1	<0.1	2.9	2.9	18.0	18.0	50	2.03
RC4102	0.1	0.1	0.1	<1	<0.1	<0.1	7.0	7.0	9.9	9.9	50	3.10
RC4103	<0.1	<0.1	<0.1	<1	<0.1	<0.1	5.2	5.2	10.2	10.2	50	10.80
RC4104	<0.1	<0.1	<0.1	<1	<0.1	<0.1	3.2	3.2	18.3	18.3	50	7.81
RC4105	<0.1	<0.1	<0.1	<1	<0.1	<0.1	2.9	2.9	13.0	13.0	50	3.57

Additional gases (if required)

BH No.	VOCs (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
RC4101	1.2	2	<1	
RC4102	0.9	1	<1	
RC4103	4.6	2	<1	
RC4104	3.3	<1	<1	
RC4105	2.7	1	<1	

Borehole specific comments/observations

Site Data

Atmospheric Pressure (mb)	Start: 1010
Atmospheric Pressure (mb)	Finish: 1010
Pressure Rising or Falling	Steady
Weather Conditions	1/8 cloud cover
Atmospheric Oxygen (% vol)	20.7
Wind Speed & Direction	Gentle Breeze- SW
Ambient Air Temperature (°C)	22.0

Monitoring Personnel	Jack Welch
GPS Instrument	
Gasmeter Serial Number	G503948
PID Serial Number	110423
Ground Conditions (vegetation stress, visual contamination):	

General Notes

1. Instrument specification data and calibration information provided on a separate sheet

APPLIED GEOLOGY

Ground Gas Monitoring and Flow Results

Project Number AG3080-19

Date and Time of Monitoring Thursday 9th July 2020 - PM

Project Name Hoyland Common, Barnsley

Phase of Monitoring 4 of 4

BH No.	Flow Range (litres/hr over 3 mins)			Differential Pressure (mb)	Methane % v/v		Carbon dioxide % v/v		Oxygen % v/v		Diameter of installation (mm)	Water level (m bgl)
	Max	Min	Avg		Peak	Steady	Peak	Steady	Min	Steady		
RC4101	5.6	0.1	0.1	<1	0.1	0.1	6.1	6.1	13.3	13.3	50	1.97
RC4102	<0.1	<0.1	<0.1	<1	<0.1	<0.1	3.8	3.8	10.6	10.6	50	3.10
RC4103	<0.1	<0.1	<0.1	<1	<0.1	<0.1	2.8	2.8	15.7	15.7	50	10.83
RC4104	<0.1	<0.1	<0.1	<1	<0.1	<0.1	8.9	8.9	13.5	13.5	50	7.80
RC4105	3.3	0.1	0.1	<1	<0.1	<0.1	4.0	4.0	14.7	14.7	50	2.80

Additional gases (if required)

BH No.	VOCs (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
RC4101	1.5	4	<1	
RC4102	0.5	<1	<1	
RC4103	2.5	2	<1	
RC4104	3.4	1	<1	
RC4105	1.7	1	<1	

Borehole specific comments/observations

Site Data

Atmospheric Pressure (mb)	Start: 1000
Atmospheric Pressure (mb)	Finish: 1000
Pressure Rising or Falling	Falling
Weather Conditions	8/8 cloud cover
Atmospheric Oxygen (% vol)	20.8
Wind Speed & Direction	Gentle Breeze- NE
Ambient Air Temperature (°C)	12.0

Monitoring Personnel	Jack Welch
GPS Instrument	
Gasmeter Serial Number	G501374
PID Serial Number	110423
Ground Conditions (vegetation stress, visual contamination):	

General Notes

1. Instrument specification data and calibration information provided on a separate sheet

APPLIED GEOLOGY

Instrument Specifications

Instrument	Atmospheric Pressure Range	Temperature Range	Flow Range	Flow Resolution	Borehole Pressure Range
GA5000	500-1500 mb +/- 5 mb	-10°C to + 50°C	0-20 l/hr +/- 0.3 l/hr	0.1l/hr	+500/-500 mbar +/- 4 mbar
Phocheck Tiger	-	-20 to + 60°C (Certified to -15 to + 45°C)	-	-	-

Instrument Accuracy

Instrument		Methane	Lower Explosive Limit	Carbon Dioxide	Oxygen	Volatile Organic Compounds	Hydrogen Sulphide	Carbon Monoxide
GA5000	Detection Range	0-100%	-	0 -100%	0-25%	NA	0 -50ppm response <30 secs	0 - 1000ppm response <30 Secs
	Detection Accuracy	+/- 0.5% @ 0 to 70%, +/-1.5% @ 70 to 100% Response < 10 secs	N/A	+/- 0.5% @ 0 to 60%, +/-1.5% @ 60 to 100% Response < 10 secs	+/- 1.0% @ 0 to 25%, Response < 20 secs	NA	+/- 1.5% FS	+/- 2% of FS
Phocheck Tiger	Detection Range	N/A	N/A	N/A	N/A	1 ppb - 10,000 ppm	N/A	N/A
	Detection Accuracy	N/A	N/A	N/A	N/A	+/- 1ppb +/- 5% of actual displayed accuracy +/- One digit Response < 2sec	N/A	N/A

Calibration Frequency

Equipment Serial Numbers

Instruments are calibrated annually. Details of the instrument calibration certificates and service records are available if required.		
	GA5000 (G503948, G505383, G505737)	
	Phocheck Tiger - (T-108308, T-109597, T-109598, T-110423)	

GROUNDWATER SAMPLING RECORD

PROJECT: Hoyland Common, Barnsley	AG3080-19
DATE: 09/06/2020	PHASE OF SAMPLING: Water Sampling
WEATHER: 8/8 cloud cover	AIR TEMP (°C) 13
FIELD PERSONNEL: Jack Welch	

Monitoring Well	Standpipe Depth (m bgl)	Standpipe Diameter (mm)	Purging Method*1	Sampling Depth (m bgl)	Groundwater Level Before Purging (m bgl)	Groundwater Level After Purging (m bgl)	Purge Volume (l)	Sample Colour, Odour & Turbidity	Samples Taken *2			LNAPL/DNAPL *3	Product Thickness (mm)
									P (l)	G (300 ml)	V (no.)		
RC4101	5.97	50	B	2.00-2.50	1.98	2.07	3x well volume	Light brown colour, odourless		2	1	NPD	—
				5.50-5.95				Light brown colour, odourless		2	1	NPD	—
RC4102	3.45	50	B	3.10-3.45	3.07	3.17	3x well volume	Light brown colour, odourless		2	1	NPD	—
RC4103	11.15	50	B	10.70-11.15	10.70	Dry (>11.15)	3x well volume	Light brown colour, odourless		2	1	NPD	—

COMMENTS:

***Notes:**

1. W = Waterra Inertia Tubing, B = Disposable Bailer, P = Downhole Pump
2. P = Plastic Bottle (l), G = Glass Bottle (l), V = Glass Vial (no.)
3. npd = No Product Detected

See Accompanying Gas Monitoring Sheet:

Yes >>>> Visit 2

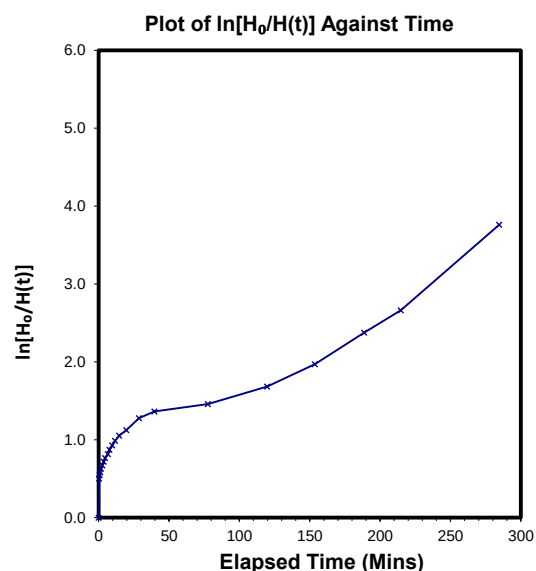
Sample Storage Method:

Cool box

Variable Head Permeability Test - Velocity Graph Method

Borehole No.	RC4101	Test No.	1
Date	01/06/2020	Type of Test	FHT
Operator	JW	Ground level (mOD)	106.60
Diameter of response zone, D (mm)	123	Diameter of standpipe, d (mm)	50.00
Top of response zone (m bgl)	2.00	Height of standpipe above GL (m)	0
Base of response zone (m bgl)	6.00	Water level before test, below top of pipe (m)	1.98

Field Data				
Elapsed Time (t) (mins)	Depth to water from top of casing or standpipe (m)	Head (H) (m)	Head Ratio $H_0/H(t)$	$\ln[H_0/H(t)]$
0.00	1.55	0.43	1.000	0.000
0.33	1.72	0.26	1.654	0.503
0.67	1.73	0.25	1.720	0.542
1.17	1.74	0.24	1.792	0.583
1.67	1.75	0.23	1.870	0.626
2.67	1.76	0.22	1.955	0.670
3.67	1.77	0.21	2.048	0.717
4.67	1.78	0.20	2.150	0.765
6.67	1.79	0.19	2.263	0.817
7.67	1.80	0.18	2.389	0.871
9.67	1.81	0.17	2.529	0.928
11.67	1.82	0.16	2.688	0.989
14.67	1.83	0.15	2.867	1.053
19.67	1.84	0.14	3.071	1.122
28.67	1.86	0.12	3.583	1.276
39.67	1.87	0.11	3.909	1.363
77.67	1.88	0.10	4.300	1.459
119.67	1.90	0.08	5.375	1.682
153.67	1.92	0.06	7.167	1.969
188.67	1.94	0.04	10.750	2.375
214.67	1.95	0.03	14.333	2.663
284.67	1.97	0.01	43.000	3.761



Permeability Results

Using BS EN ISO
22282-2 Equation B.5

$k = \alpha \cdot S/F$ for straight line graph, where α = slope gradient

$t_0 =$	28.67	1.276	$\ln[H_0/H(t)]$
$t =$	284.67	3.761	$\ln[H_0/H(t)]$

Permeability $k =$ **5.3E-08** m/sec

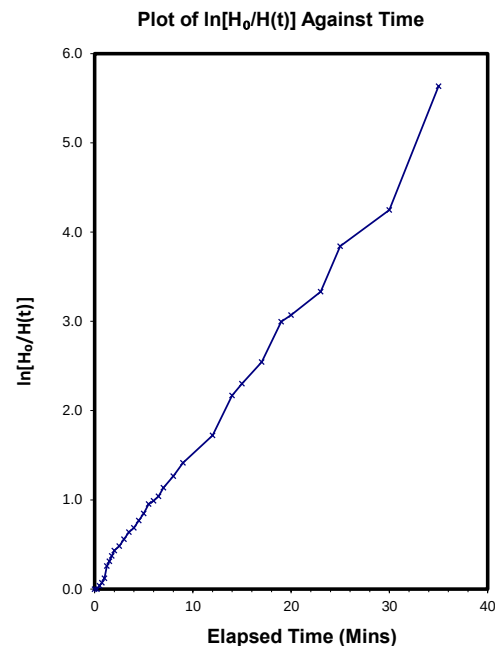
Client:	Newland Developments	APPLIED GEOLOGY
Project:	Hoyland Common, Barnsley	
Project No.	AG3080-19	

Variable Head Permeability Test - Velocity Graph Method

Borehole No.	RC4102	Test No.	1
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Date	26/05/2020	Type of Test	FHT
Operator	FC	Ground level (mOD)	105.22
Diameter of response zone, D (mm)	140	Diameter of standpipe, d (mm)	50.00
Top of response zone (m bgl)	0.50	Height of standpipe above GL (m)	0
Base of response zone (m bgl)	3.50	Water level before test, below top of pipe (m)	3.50

Field Data				
Elapsed Time (t) (mins)	Depth to water from top of casing or standpipe (m)	Head (H) (m)	Head Ratio $H_0/H(t)$	$\ln[H_0/H(t)]$
0.0	0.36	2.80	1.000	0.000
0.3	0.36	2.80	1.000	0.000
0.5	0.46	2.70	1.037	0.036
0.8	0.55	2.61	1.073	0.070
1.0	0.68	2.48	1.129	0.121
1.3	1.00	2.16	1.296	0.260
1.5	1.11	2.05	1.366	0.312
1.8	1.23	1.93	1.451	0.372
2.0	1.34	1.82	1.538	0.431
2.5	1.43	1.73	1.618	0.481
3.0	1.56	1.60	1.750	0.560
3.5	1.68	1.48	1.892	0.638
4.0	1.75	1.41	1.986	0.686
4.5	1.86	1.30	2.154	0.767
5.0	1.96	1.20	2.333	0.847
5.5	2.08	1.08	2.593	0.953
6.0	2.12	1.04	2.692	0.990
6.5	2.17	0.99	2.828	1.040
7.0	2.26	0.90	3.111	1.135
8.0	2.37	0.79	3.544	1.265
9.0	2.48	0.68	4.118	1.415
12.0	2.66	0.50	5.600	1.723
20.0	3.03	0.13	21.538	3.070
23.0	3.06	0.10	28.000	3.332
25.0	3.10	0.06	46.667	3.843
30.0	3.12	0.04	70.000	4.248
35.0	3.15	0.01	280.000	5.635



Permeability Results

Using BS EN ISO
22282-2 Equation B.5

$k = \alpha \cdot S/F$ for straight line graph, where α = slope gradient

$t_0 =$

1.00
35.00

0.121
5.635

 $\ln[H_0/H(t)]$

Permeability $k =$ **1.1E-06** m/sec

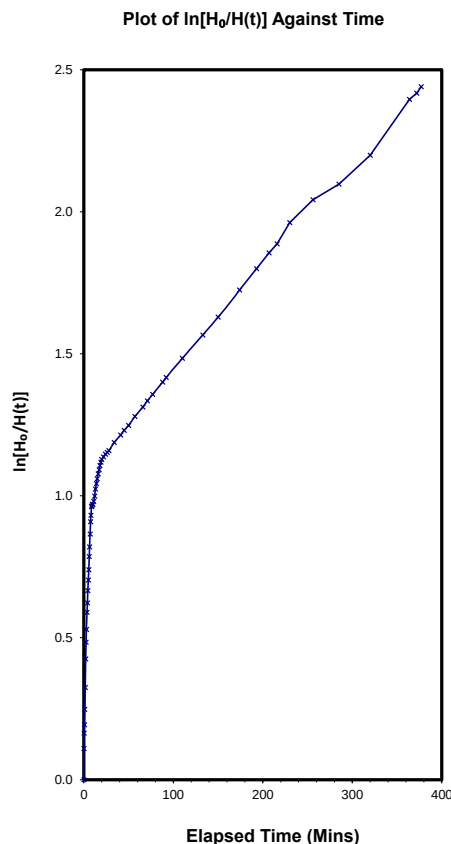
Client:	Newland Developments
Project:	Hoyland Common, Barnsley
Project No.	AG3080-19

APPLIED GEOLOGY

Variable Head Permeability Test - Velocity Graph Method

Borehole No.	RC4103	Test No.	1
Date	28/05/2020	Type of Test	FHT
Operator	JW	Ground level (mOD)	109.52
Diameter of response zone, D (mm)	123	Diameter of standpipe, d (mm)	50.00
Top of response zone (m bgl)	6.00	Height of standpipe above GL (m)	0
Base of response zone (m bgl)	11.00	Water level before test, below top of pipe (m)	10.10

Field Data				
Elapsed Time (t) (mins)	Depth to water from top of casing or standpipe (m)	Head (H) (m)	Head Ratio $H_0/H(t)$	$\ln[H_0/H(t)]$
0 00	0 00	10.10	1 000	0 000
0 17	1 05	9.05	1.116	0.110
0 33	1 53	8.57	1.179	0.164
0 75	1 78	8.32	1 214	0.194
1 00	2 22	7.88	1 282	0.248
1 50	2 80	7.30	1 384	0.325
2 00	3 50	6.60	1 530	0.425
2 50	3 88	6.22	1 624	0.485
3 00	4.15	5.95	1 697	0.529
3 50	4 50	5.60	1 804	0.590
4 00	4 68	5.42	1 863	0.622
4 50	4 91	5.19	1 946	0.666
5 00	5.10	5.00	2 020	0.703
5 50	5 28	4.82	2 095	0.740
6 00	5 50	4.60	2.196	0.786
6 50	5 65	4.45	2 270	0.820
7 00	5 85	4.25	2 376	0.866
8 00	6.12	3.98	2 538	0.931
9 00	6 25	3.85	2 623	0.964
10.00	6 27	3.83	2 637	0.970
12.00	6 38	3.72	2.715	0.999
14.00	6 54	3.56	2 837	1.043
16.00	6 66	3.44	2 936	1.077
18.00	6.76	3.34	3 024	1.107
20.00	6 83	3.27	3 089	1.128
24.00	6 89	3.21	3.146	1.146
28.00	6 93	3.17	3.186	1.159
34.00	7 02	3.08	3 279	1.188
41.00	7.10	3.00	3 367	1.214
50.00	7 20	2.90	3.483	1.248
66.00	7 38	2.72	3.713	1.312
77.00	7 50	2.60	3 885	1.357
88.00	7 61	2.49	4 056	1.400
110.00	7 81	2.29	4.410	1.484
133.00	7 99	2.11	4.787	1.566
150.00	8.12	1.98	5.101	1.629
174.00	8 30	1.80	5 611	1.725
207.00	8 52	1.58	6 392	1.855
230.00	8 68	1.42	7.113	1.962
256.00	8.79	1.31	7.710	2.043
285.00	8 86	1.24	8.145	2.097
320.00	8 98	1.12	9 018	2.199
364.00	9.18	0.92	10.978	2.396
377.00	9 22	0.88	11.477	2.440



Permeability Results

Using BS EN ISO
22282-2 Equation B.5

$k = \alpha \cdot S/F$ for straight line graph, where α = slope gradient

$t_0 =$ 19 00
 $t =$ 377 00

1.119
2.440

$\ln[H_0/H(t)]$
 $\ln[H_0/H(t)]$

Permeability $k =$ **1.7E-08** m/sec

Client:

Newland Developments

Project:

Hoyland Common, Barnsley

Project No.

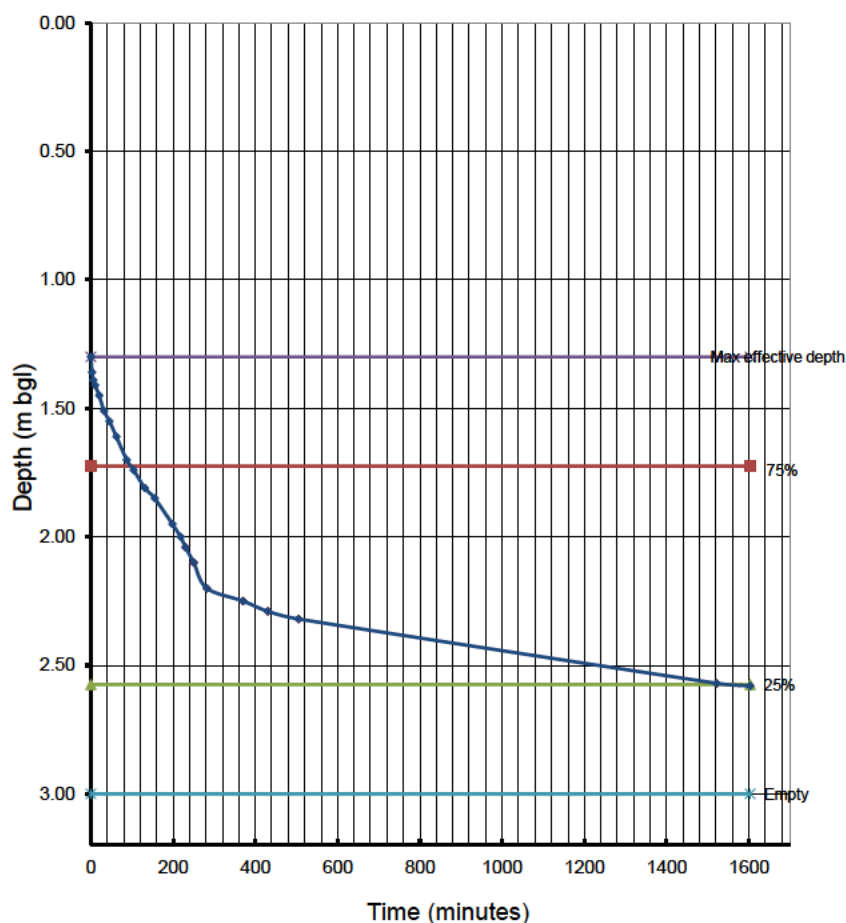
AG3080-19

APPLIED GEOLOGY

IN SITU SOAKAWAY TEST RESULT

Trial Pit No.	TP1302
Date	27/05/2020
Operator	JW
Test Strata	OC
Stability of pit	Good
Backfill used	N/A

Filling	1 of 3
Trial Pit Length (m)	3.20
Trial Pit Width (m)	0.70
Trial Pit Depth (m)	3.00
Amount of Backfill placed (m)	0
Assumed Backfill Void Ratio	N/A

[illegible]

Initial Water Level (m)	1.30	Total internal surface area of pit (m ²)	25.64
Final Water Level (m)	2.58	Internal surface area of trial pit within effective depth range (m ²)	8.87
Change in Water Level (m)	1.28	Volume outflowing between 75% and 25% effective depth (m ³)	1.90
Effective Depth at 25% (tp25) (m)	2.58	Time at 25% (tp25) (minutes)	1560
Effective Depth at 75% (tp75) (m)	1.73	Time at 75% (tp75) (minutes)	100

Soil Infiltration Rate (m/s)	2.45E-06
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Notes: 1. Undertaken in general accordance with BRE DG 365 method
2. Based on extrapolated data NO

Client:	Newlands Developments	
Project:	Hoyland Common, Barnsley	
Project No.	AG3080-19	

Filling	2 of 3
Trial Pit Length (m)	3.20
Trial Pit Width (m)	0.70
Trial Pit Depth (m)	2.50
Amount of Backfill placed (m)	0
Assumed Backfill Void Ratio	N/A

8.07E-07

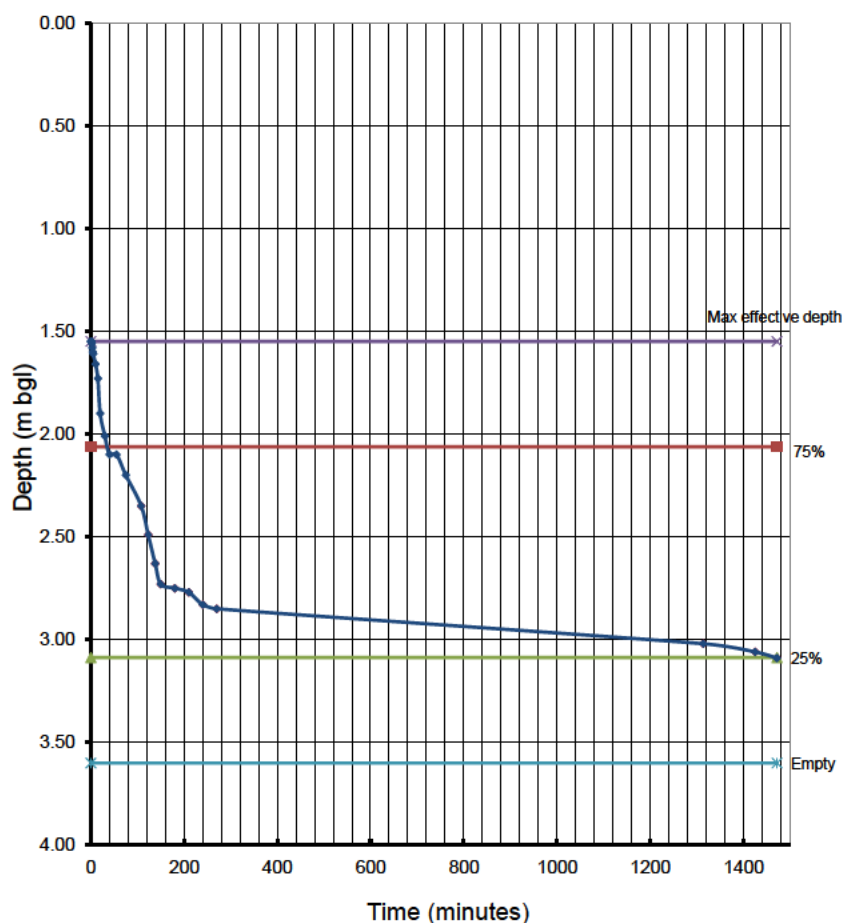
* Water level did not drop sufficiently for the calculation to be made

APPLIED GEOLOGY

IN SITU SOAKAWAY TEST RESULT

Trial Pit No.	TP1303
Date	26/05/2020
Operator	FC
Test Strata	OC
Stability of pit	Good
Backfill used	None

Filling	1 of 3
Trial Pit Length (m)	3.00
Trial Pit Width (m)	0.60
Trial Pit Depth (m)	3.60
Amount of Backfill placed (m)	0
Assumed Backfill Void Ratio	N/A

[illegible]

Initial Water Level (m)	1.55	Total internal surface area of pit (m ²)	27.72
Final Water Level (m)	3.09	Internal surface area of trial pit within effective depth range (m ²)	9.18
Change in Water Level (m)	1.54	Volume outflowing between 75% and 25% effective depth (m ³)	1.85
Effective Depth at 25% (tp25) (m)	3.09	Time at 25% (tp25) (minutes)	1472
Effective Depth at 75% (tp75) (m)	2.06	Time at 75% (tp75) (minutes)	35

Soil Infiltration Rate (m/s)	2.33E-06
------------------------------	----------

Notes: 1. Undertaken in general accordance with BRE DG 365 method
2. Based on extrapolated data NO

Client:	Newlands Developments	
Project:	Hoyland Common, Barnsley	
Project No.	AG3080-19	

IN SITU SOAKAWAY TEST RESULT

Trial Pit No.	TP1303
Date	28/05/2020
Operator	JW
Test Strata	OC
Stability of pit	Minor spalling from Fill 1
Backfill used	None

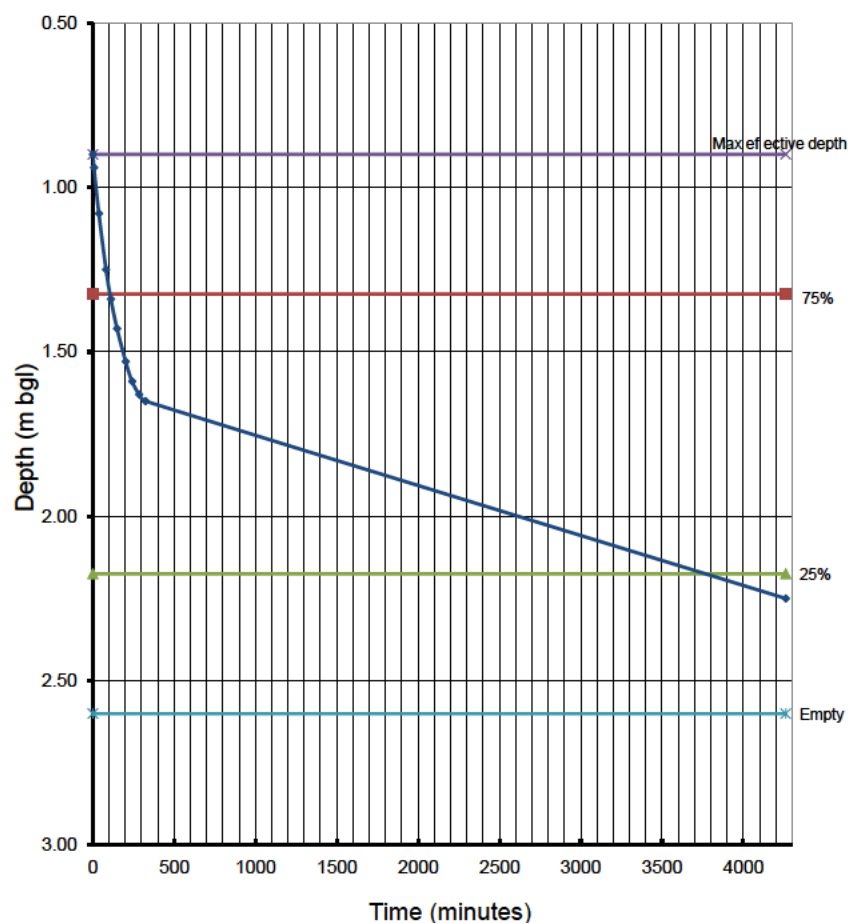
Filling	2 of 3
Trial Pit Length (m)	3.00
Trial Pit Width (m)	0.60
Trial Pit Depth (m)	2.65
Amount of Backfill placed (m)	0
Assumed Backfill Void Ratio	N/A

[illegible]

IN SITU SOAKAWAY TEST RESULT

Trial Pit No.	TP1303
Date	29/05/2020
Operator	JW
Test Strata	OC
Stability of pit	Minor spalling from Fills 1 & 2
Backfill used	Arisings

Filling	3 of 3
Trial Pit Length (m)	3.00
Trial Pit Width (m)	0.60
Trial Pit Depth (m)	2.60
Amount of Backfill placed (m)	0.00
Assumed Backfill Void Ratio	N/A

[illegible]

Initial Water Level (m)	0.90	Total internal surface area of pit (m ²)	20.52
Final Water Level (m)	2.25	Internal surface area of trial pit within effective depth range (m ²)	7.92
Change in Water Level (m)	1.35	Volume outflowing between 75% and 25% effective depth (m ³)	1.53
Effective Depth at 25% (tp25) (m)	2.18	Time at 25% (tp25) (minutes)	3750
Effective Depth at 75% (tp75) (m)	1.33	Time at 75% (tp75) (minutes)	105

Soil Infiltration Rate (m/s)	8.83E-07
------------------------------	----------

Notes: 1. Undertaken in general accordance with BRE DG 365 method
2. Based on extrapolated data NO

Client:	Newlands Developments	
Project:	Hoyland Common, Barnsley	
Project No.	AG3080-19	

Filling	1 of 1
Trial Pit Length (m)	3.80
Trial Pit Width (m)	0.70
Trial Pit Depth (m)	3.10
Amount of Backfill placed (m)	0.00
Assumed Backfill Void Ratio	N/A

Figure 10 is a line graph showing the depth of a 1000 kg net over time. The y-axis represents Depth (m bgl) from 0.00 to 3.00, and the x-axis represents Time (minutes) from 0 to 3500. The net's depth starts at approximately 1.55 m and decreases to about 1.85 m after 3100 minutes. Horizontal lines indicate reference depths: 'Max effective depth' at 1.50 m, '75%' at 1.85 m, '25%' at 2.70 m, and 'Empty' at 3.10 m.

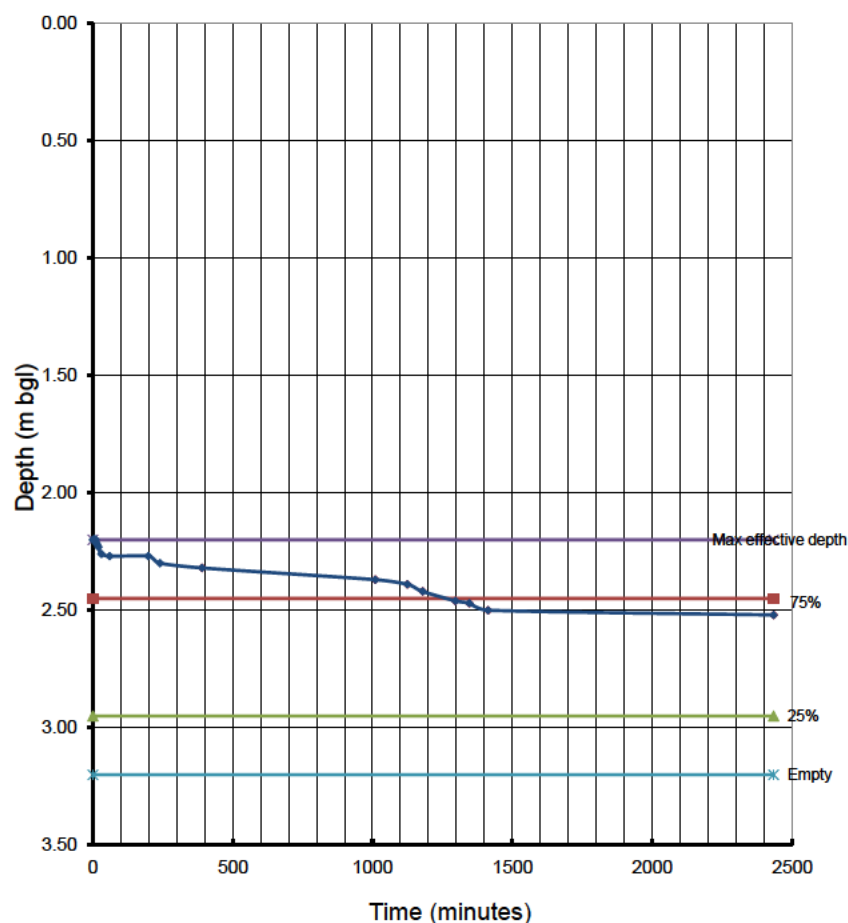
Time (minutes)	Depth (m bgl)
0	1.55
100	1.58
200	1.60
300	1.62
400	1.65
500	1.68
1000	1.72
1500	1.75
2000	1.78
2500	1.82
3000	1.85
3100	1.85

Soil Infiltration Rate (m/s)	*
------------------------------	---

* Water level did not drop sufficiently for the calculation to be made

Client:	Newlands Developments	
Project:	Hoyland Common, Barnsley	
Project No.	AG3080-19	

Filling	1 of 2
Trial Pit Length (m)	3.00
Trial Pit Width (m)	0.60
Trial Pit Depth (m)	3.20
Amount of Backfill placed (m)	0
Assumed Backfill Void Ratio	N/A



Soil Infiltration Rate (m/s)	*
------------------------------	---

* Water level did not drop sufficiently for the calculation to be made

Client:	Newlands Developments	
Project:	Hoyland Common, Barnsley	
Project No.	AG3080-19	

Filling	2 of 2
Trial Pit Length (m)	3.00
Trial Pit Width (m)	0.60
Trial Pit Depth (m)	2.80
Amount of Backfill placed (m)	0.00
Assumed Backfill Void Ratio	N/A

Figure 10 is a line graph showing the relationship between Depth (m bgl) and Time (minutes) for a 1000 m³ storage tank. The y-axis represents Depth (m bgl) from 0.00 to 3.00, and the x-axis represents Time (minutes) from 0 to 10000. The graph includes five data series: 'Max effective depth' (purple line with 'x' markers at ~1.25 m), '75%' (red line with square markers at ~1.65 m), '25%' (green line with triangle markers at ~2.40 m), 'Empty' (cyan line with 'x' markers at ~2.80 m), and a blue line with circular markers representing the tank's emptying curve, which starts at ~1.25 m and decreases to ~2.40 m at 8000 minutes.

Soil Infiltration Rate (m/s)	4.54E-07
------------------------------	----------

Client:	Newlands Developments
Project:	Hoyland Common, Barnsley
Project No.	AG3080-19

APPLIED GEOLOGY

APPENDIX E



LABORATORY REPORT



4043

Contract Number: PSL20/2661

Report Date: 23 June 2020
Client's Reference: AG3080-19
Client Name: Applied Geology Limited
Unit 23, Abbey Park
Stareton
Kenilworth
Warwickshire
CV8 2LY

For the attention of: Adam Perks

Contract Title: Hoylands Common, Barnsley
Date Received: 1/6/2020
Date Commenced: 1/6/2020
Date Completed: 23/6/2020

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

R Gunson
(Director)



S Royle
(Laboratory Manager)

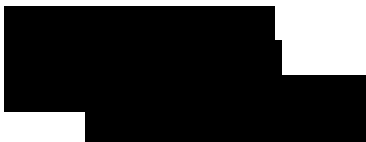
A Watkins
(Director)

S Eyre
(Senior Technician)

R Berriman
(Quality Manager)

L Knight
(Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR



Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
RC4101		B	2.00	3.00	OC - Brown mottled grey highly weathered MUDSTONE.
RC4101		D	6.00		CM - Brown mottled grey highly weathered MUDSTONE.
RC4102		D	0.40		OC - Brown mottled grey slightly gravelly CLAY.
RC4102		D	1.30		OC - Dark grey gravelly sandy CLAY.
RC4102		D	3.70		CM - Grey GRAVEL.
RC4102		D	7.00		CM - Brown mottled grey highly weathered MUDSTONE.
RC4103		B	2.10	3.10	OC - Brown mottled grey highly weathered MUDSTONE.
RC4103		D	3.40		OC - Brown mottled grey highly weathered MUDSTONE.
RC4103		C	5.56	5.75	CM - Brown mottled grey highly weathered MUDSTONE.
RC4103		C	6.77	6.97	CM - Grey SILTSTONE.
RC4103		C	6.97	7.25	CM - Grey SILTSTONE.
RC4103		C	11.10	11.32	CM - Grey SILTSTONE.
RC4104		B	2.50	3.20	OC - Brown mottled grey highly weathered MUDSTONE.
RC4104		C	8.78	8.99	CM - Grey SILTSTONE.
RC4104		C	8.99	9.36	CM - Grey SILTSTONE.
RC4105		D	0.65		CM - Brown mottled grey highly weathered MUDSTONE.
RC4105		D	1.70		CM - Brown mottled grey highly weathered MUDSTONE.
RC4105		D	2.70		CM - Grey SILTSTONE.
RC4105		D	3.50		CM - Grey SILTSTONE.



4043

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Professional Soils Laboratory

Hoylands Common, Barnsley

Contract No:

PSL20/2661

Client Ref:

AG3080-19

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
RC4105		D	4.60		CM - Grey SILTSTONE.
TP1301		D	0.80		OC - Brown mottled grey highly weathered MUDSTONE.
TP1301		D	3.00		OC - Brown mottled grey highly weathered MUDSTONE.
TP1301		LB	4.00		OC - Brown mottled grey highly weathered MUDSTONE.
TP1302		LB	2.00		OC - Brown mottled grey highly weathered MUDSTONE.
TP1302		LB	2.50	3.00	OC - Dark grey highly weathered MUDSTONE.
TP1303		D	1.20		OC - Brown mottled grey highly weathered MUDSTONE.
TP1303		LB	2.00	3.00	OC - Grey mottled brown gravelly slightly sandy CLAY.
TP1304		LB	1.50	2.00	OC - Brown mottled grey highly weathered MUDSTONE.
TP1304		D	1.50		OC - Brown mottled grey highly weathered MUDSTONE.
TP1304		D	3.00		OC - Brown mottled grey highly weathered MUDSTONE.
TP1305		LB	1.60	1.80	CM - Brown slightly sandy CLAY.
TP1305		D	2.00		CM - Brown slightly sandy CLAY.
TP1306		D	0.80		OC - Brown mottled grey highly weathered MUDSTONE.
TP1306		LB	2.50		CM - Brown mottled highly weathered MUDSTONE.
TP1307		D	2.00		CM - Brown mottled highly weathered MUDSTONE.
TP1308		D	0.80		CM - Brown slightly gravelly sandy CLAY.
TP1310		D	0.50		CM - Brown mottled highly weathered MUDSTONE.
TP1310		D	1.00		CM - Brown mottled highly weathered MUDSTONE.



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Contract No:

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Client Ref:

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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

[illegible]

4043

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Hoylands Common, Barnsley

Contract No:**PSL20/2661**

Client Ref:

AG3080-19

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
RC4101		B	2.00	3.00	16			44	21	23	43	Intermediate plasticity CI.
RC4101		D	6.00		7.7			57	26	31	80	High plasticity CH.
RC4102		D	0.40		22			55	25	30	94	High plasticity CH.
RC4102		D	1.30		23			49	22	27	81	Intermediate plasticity CI.
RC4102		D	3.70		3.9				NP			
RC4102		D	7.00		4.9			38	19	19	75	Intermediate plasticity CI.
RC4103		D	3.40		20			47	22	25	82	Intermediate plasticity CI.
RC4103		C	5.56	5.75	14							
RC4103		C	6.77	6.97	4.2							
RC4103		C	6.97	7.25	3.3							
RC4103		C	11.10	11.32	3.1							
RC4104		B	2.50	3.20	13			39	20	19	45	Intermediate plasticity CI.
RC4104		C	8.78	8.99	4.1							
RC4104		C	8.99	9.36	3.9							
RC4105		D	0.65		17			43	22	21	100	Intermediate plasticity CI.
RC4105		D	1.70		20							
RC4105		D	2.70		4.2							
RC4105		D	3.50		5.1							
RC4105		D	4.60		5.1				NP			

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



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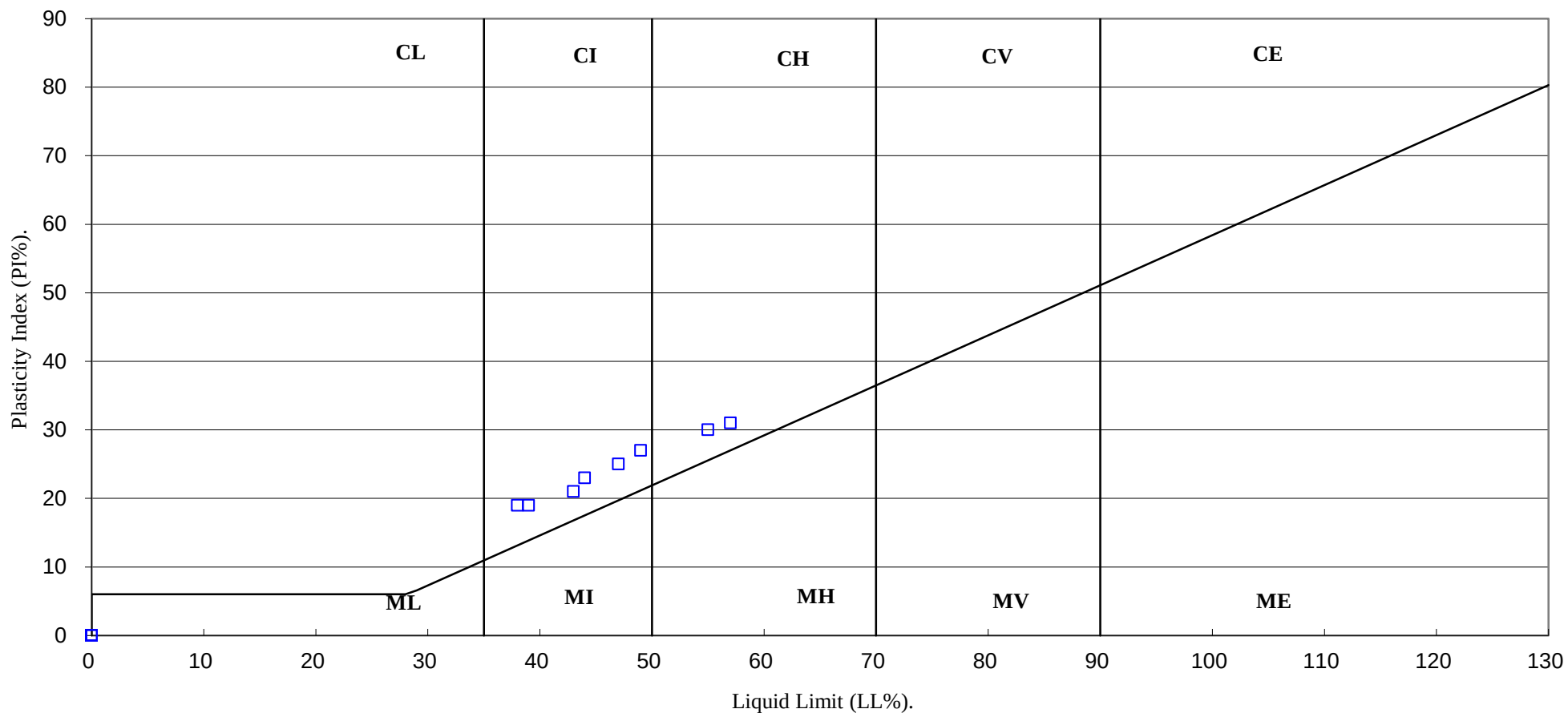
Contract No:

PSL20/2661

Client Ref:

AG3080-19

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



4043

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Contract No:

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Client Ref:

AG3080-19

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
TP1301		D	0.80		14							
TP1301		D	3.00		14			48	23	25	75	Intermediate plasticity CI.
TP1301		LB	4.00		18		2.65	41	20	21	49	Intermediate plasticity CI.
TP1303		D	1.20		20							
TP1303		LB	2.00	3.00	21		2.61	55	24	31	85	High plasticity CH.
TP1304		D	1.50		17			44	21	23	71	Intermediate plasticity CI.
TP1304		D	3.00		14							
TP1305		LB	1.60	1.80	19		2.68	51	23	28	100	High plasticity CH.
TP1305		D	2.00		16							
TP1306		D	0.80		10							
TP1306		LB	2.50		18		2.67	48	23	25	71	Intermediate plasticity CI.
TP1307		D	2.00		18							
TP1308		D	0.80		25							
TP1310		D	0.50		10			36	20	16	68	Intermediate plasticity CI.
TP1310		D	1.00		8.0			39	21	18	77	Intermediate plasticity CI.
TP1310		LB	1.70	2.70	6.8		2.62	36	19	17	30	Intermediate plasticity CI.

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



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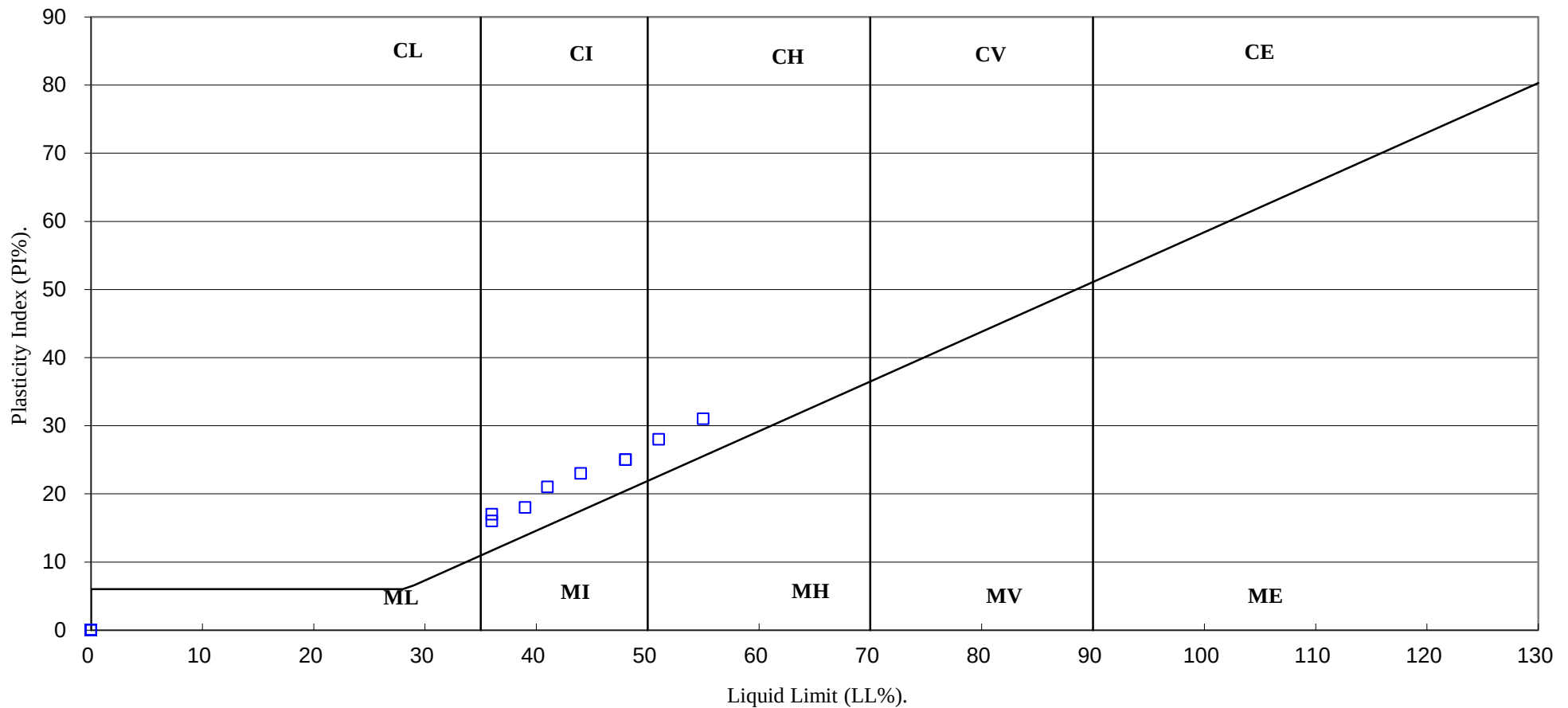
Contract No:

PSL20/2661

Client Ref:

AG3080-19

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



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Contract No:

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Client Ref:

AG3080-19

SUMMARY OF LABORATORY HAND VANES

(BS1377 : PART 7 : 1990)

[illegible]

* This test is out of our UKAS scope



Hoylands Common, Barnsley

Contract No:

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Client Ref:

AG3080-19

PARTICLE SIZE DISTRIBUTION TEST

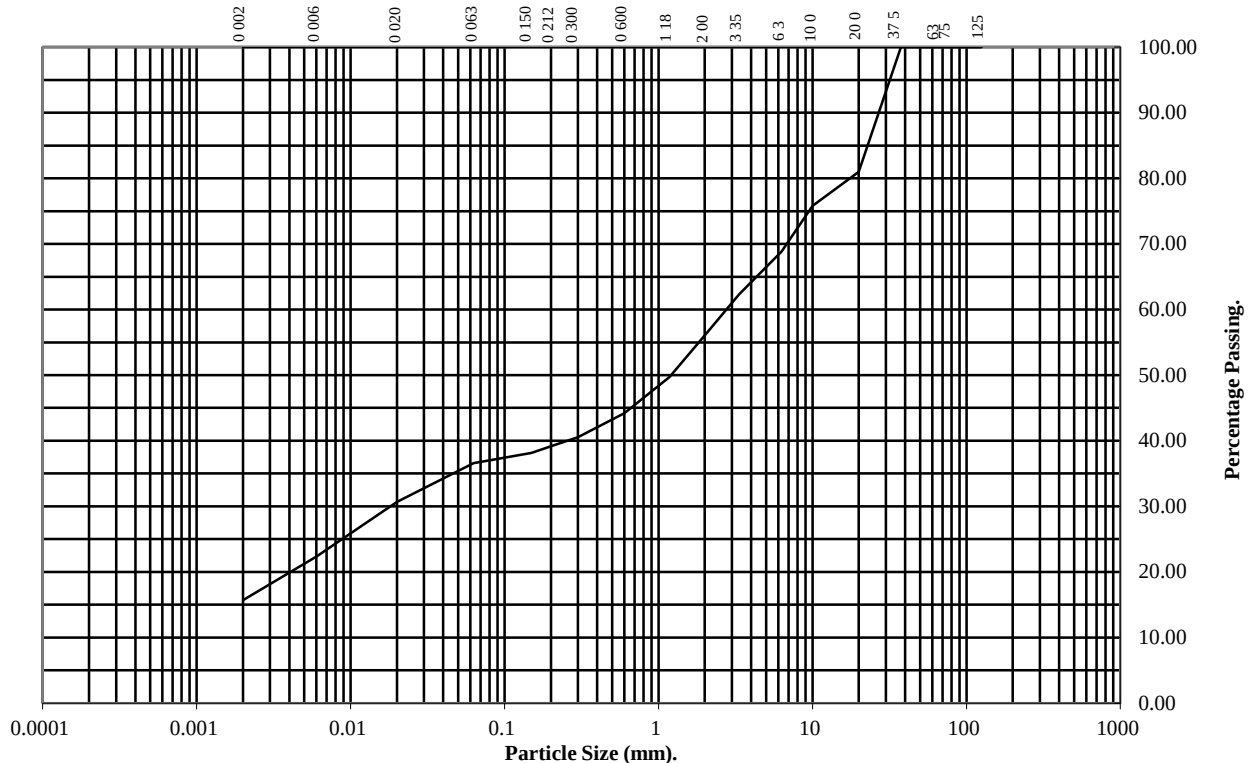
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: RC4101 Top Depth (m): 2.00

Sample Number: Base Depth(m): 3.00

Sample Type: B

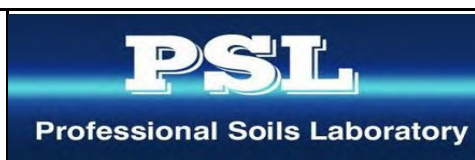


BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	81
10	76
6.3	69
3.35	62
2	56
1.18	50
0.6	44
0.3	41
0.212	39
0.15	38
0.063	37

Particle Diameter	Percentage Passing
0.02	31
0.006	22
0.002	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	44
Sand	19
Silt	21
Clay	16

Remarks:
See Summary of Soil Descriptions



Hoylands Common, Barnsley

Contract No:
PSL20/2661
Client Ref:
AG3080-19

PARTICLE SIZE DISTRIBUTION TEST

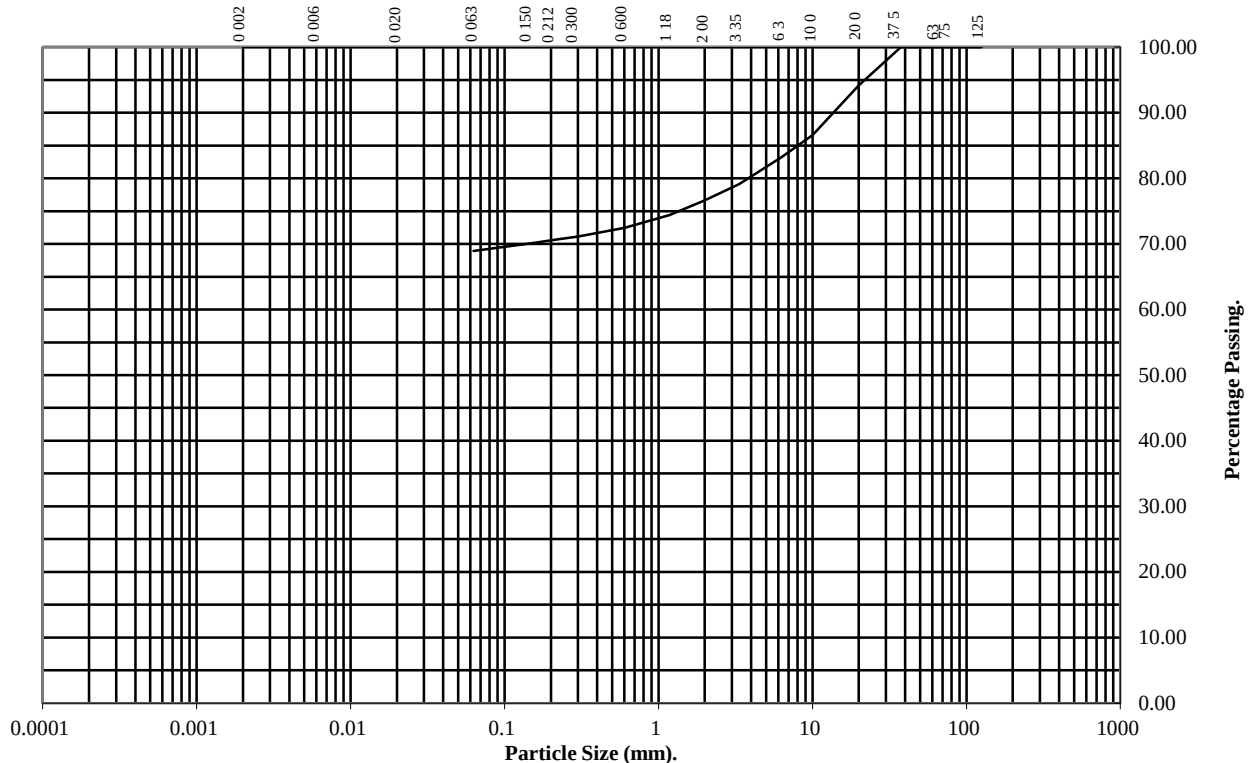
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: RC4103 Top Depth (m): 2.10

Sample Number: Base Depth(m): 3.10

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	87
6.3	83
3.35	79
2	77
1.18	74
0.6	72
0.3	71
0.212	71
0.15	70
0.063	69

Soil Fraction	Total Percentage
Cobbles	0
Gravel	23
Sand	8
Silt/Clay	69

Remarks:

See Summary of Soil Descriptions



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Contract No:
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Client Ref:
AG3080-19

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

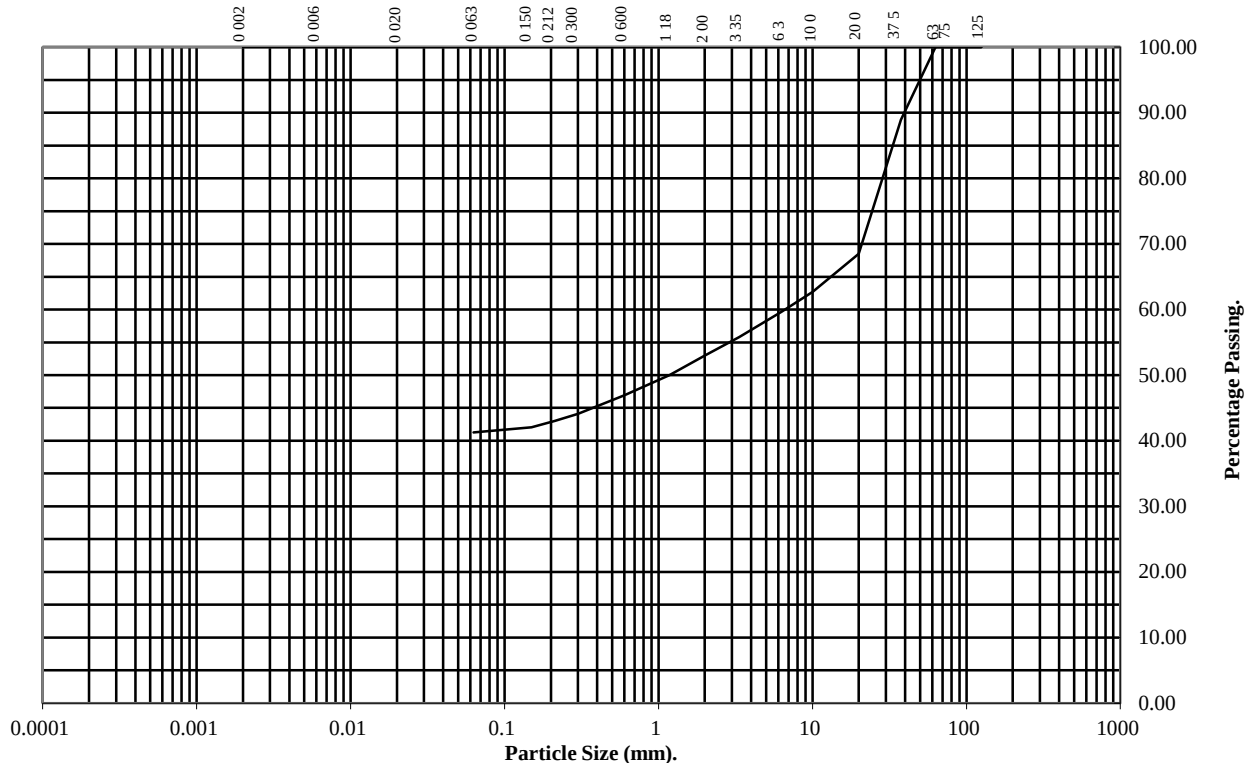
Hole Number: RC4104

Top Depth (m): 2.50

Sample Number:

Base Depth(m): 3.20

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	89
20	69
10	63
6.3	60
3.35	56
2	53
1.18	50
0.6	47
0.3	44
0.212	43
0.15	42
0.063	41

Soil Fraction	Total Percentage
Cobbles	0
Gravel	47
Sand	12
Silt/Clay	41

Remarks:

See Summary of Soil Descriptions



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Hoylands Common, Barnsley

Contract No:
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Client Ref:
AG3080-19

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

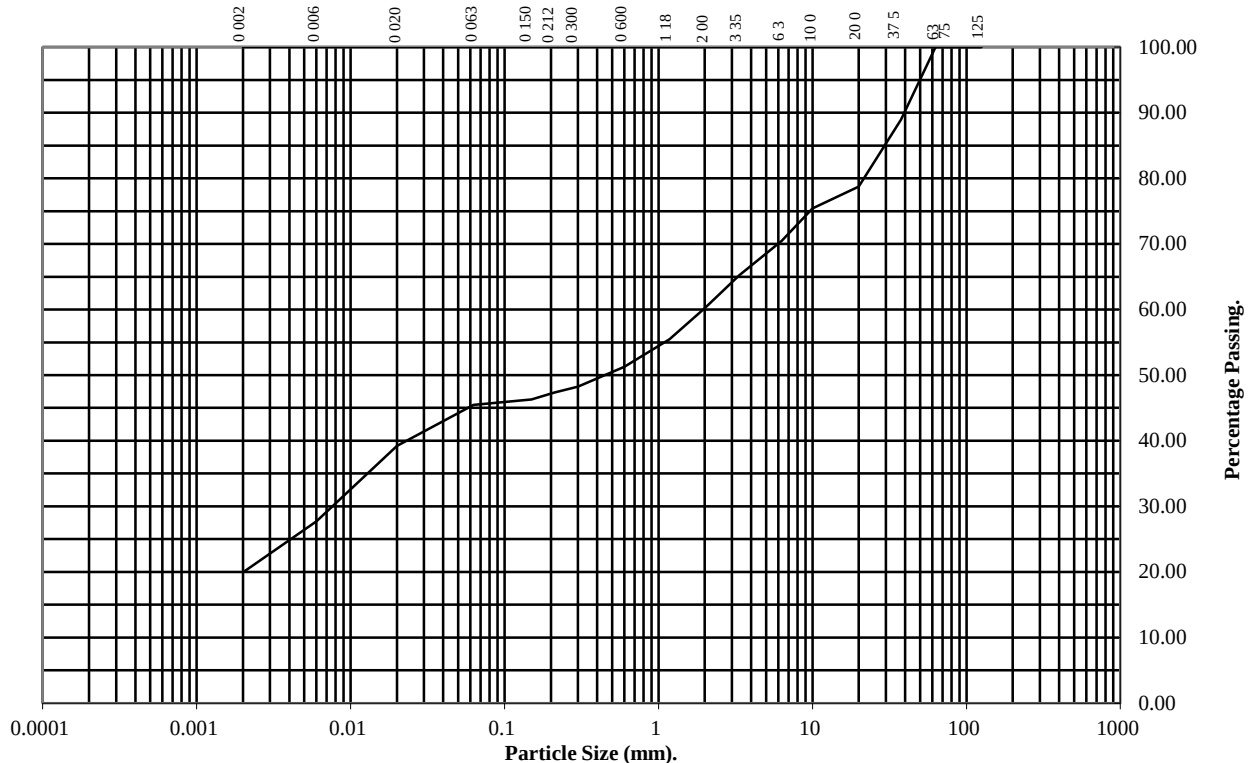
Hole Number: TP1301

Top Depth (m): 4.00

Sample Number:

Base Depth(m):

Sample Type: LB



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	89
20	79
10	75
6.3	70
3.35	65
2	60
1.18	55
0.6	51
0.3	48
0.212	47
0.15	46
0.063	45

Particle Diameter	Percentage Passing
0.02	39
0.006	28
0.002	20

Soil Fraction	Total Percentage
Cobbles	0
Gravel	40
Sand	15
Silt	25
Clay	20

Remarks:

See Summary of Soil Descriptions



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Contract No:
PSL20/2661
Client Ref:
AG3080-19

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

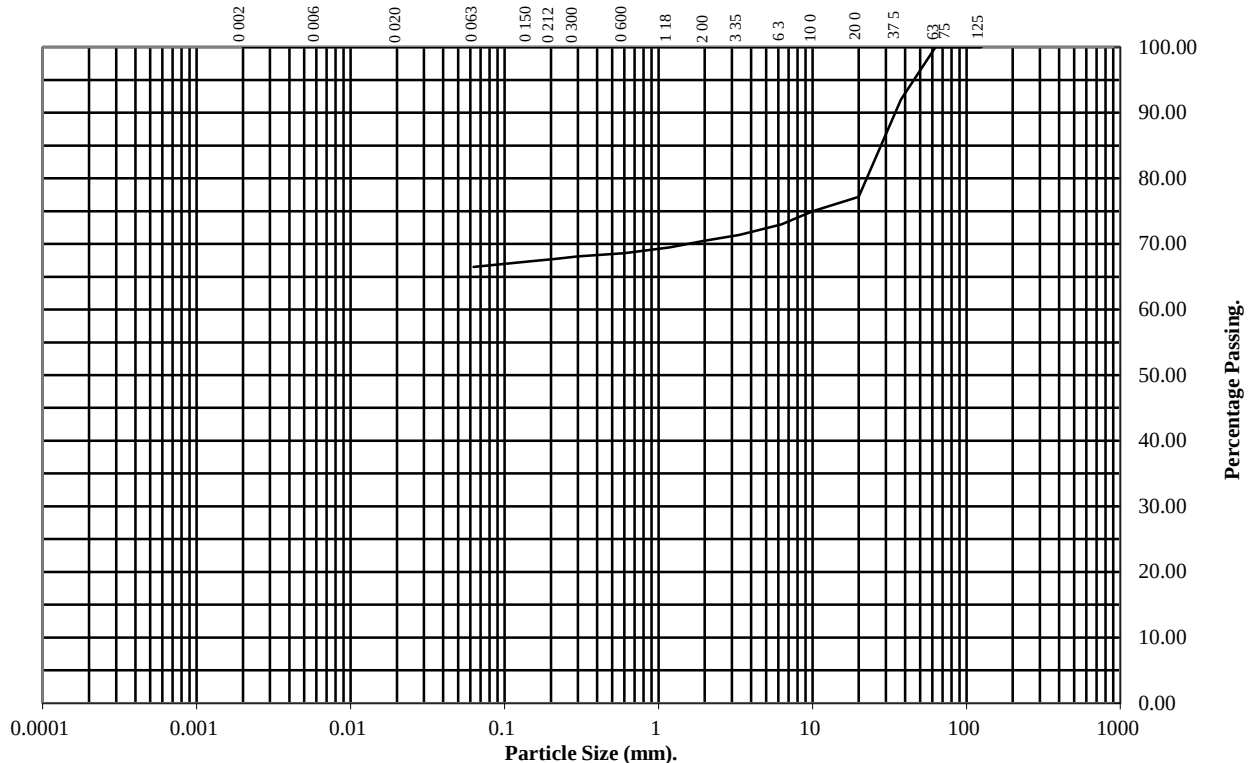
Hole Number: TP1302

Top Depth (m): 2.00

Sample Number:

Base Depth(m):

Sample Type: LB



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	92
20	77
10	75
6.3	73
3.35	71
2	71
1.18	69
0.6	69
0.3	68
0.212	68
0.15	67
0.063	67

Soil Fraction	Total Percentage
Cobbles	0
Gravel	29
Sand	4
Silt/Clay	67

Remarks:

See Summary of Soil Descriptions



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Hoylands Common, Barnsley

Contract No:
PSL20/2661
Client Ref:
AG3080-19

PARTICLE SIZE DISTRIBUTION TEST

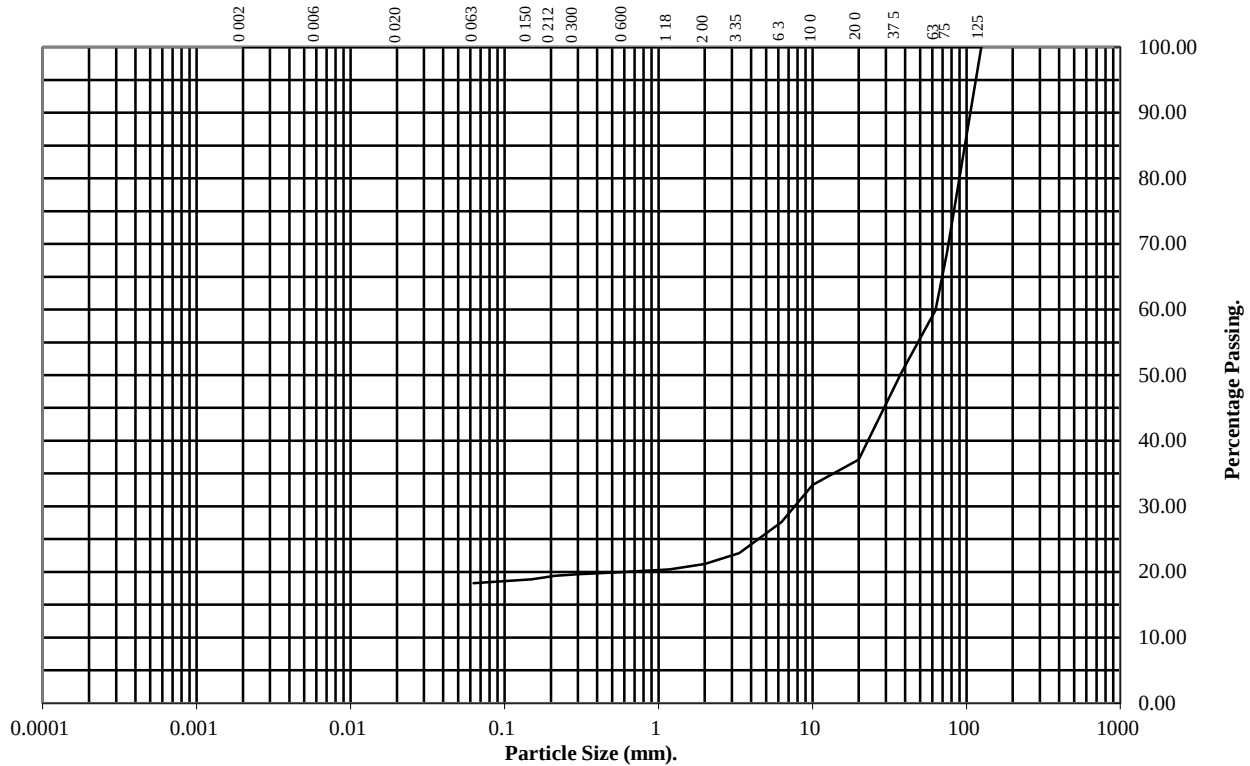
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP1302 Top Depth (m): 2.50

Sample Number: Base Depth(m): 3.00

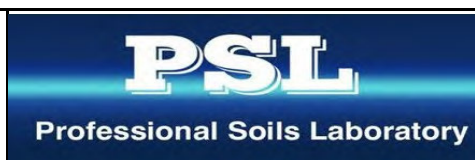
Sample Type: LB



BS Test Sieve (mm)	Percentage Passing
125	100
75	69
63	60
37.5	50
20	37
10	33
6.3	28
3.35	23
2	21
1.18	20
0.6	20
0.3	20
0.212	19
0.15	19
0.063	18

Soil Fraction	Total Percentage
Cobbles	40
Gravel	39
Sand	3
Silt/Clay	18

Remarks:
See Summary of Soil Descriptions



Hoylands Common, Barnsley

Contract No:
PSL20/2661
Client Ref:
AG3080-19

PARTICLE SIZE DISTRIBUTION TEST

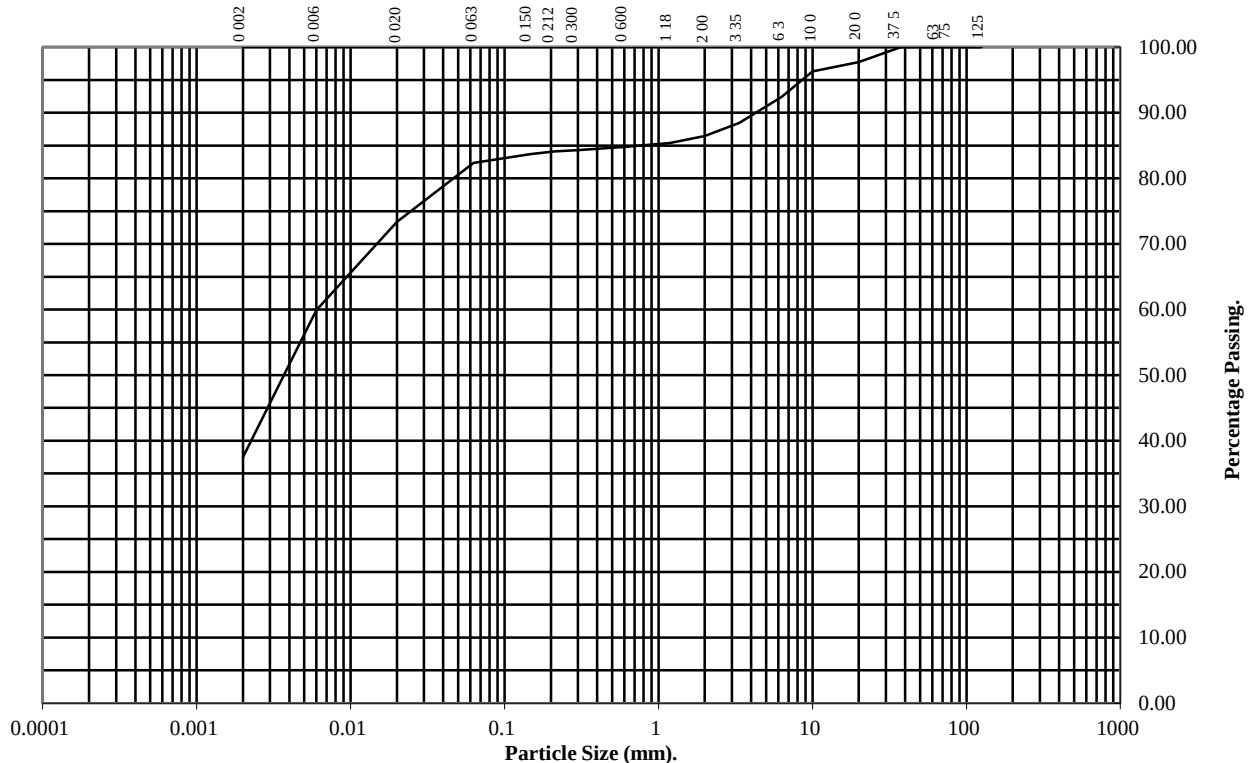
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: TP1303 Top Depth (m): 2.00

Sample Number: Base Depth(m): 3.00

Sample Type: LB

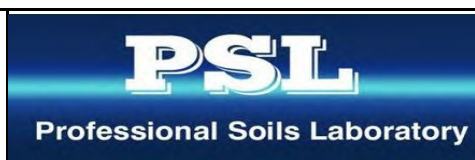


BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	96
6.3	92
3.35	88
2	86
1.18	85
0.6	85
0.3	84
0.212	84
0.15	84
0.063	82

Particle Diameter	Percentage Passing
0.02	73
0.006	60
0.002	37

Soil Fraction	Total Percentage
Cobbles	0
Gravel	14
Sand	4
Silt	45
Clay	37

Remarks:
See Summary of Soil Descriptions



Hoylands Common, Barnsley

Contract No:
PSL20/2661
Client Ref:
AG3080-19

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

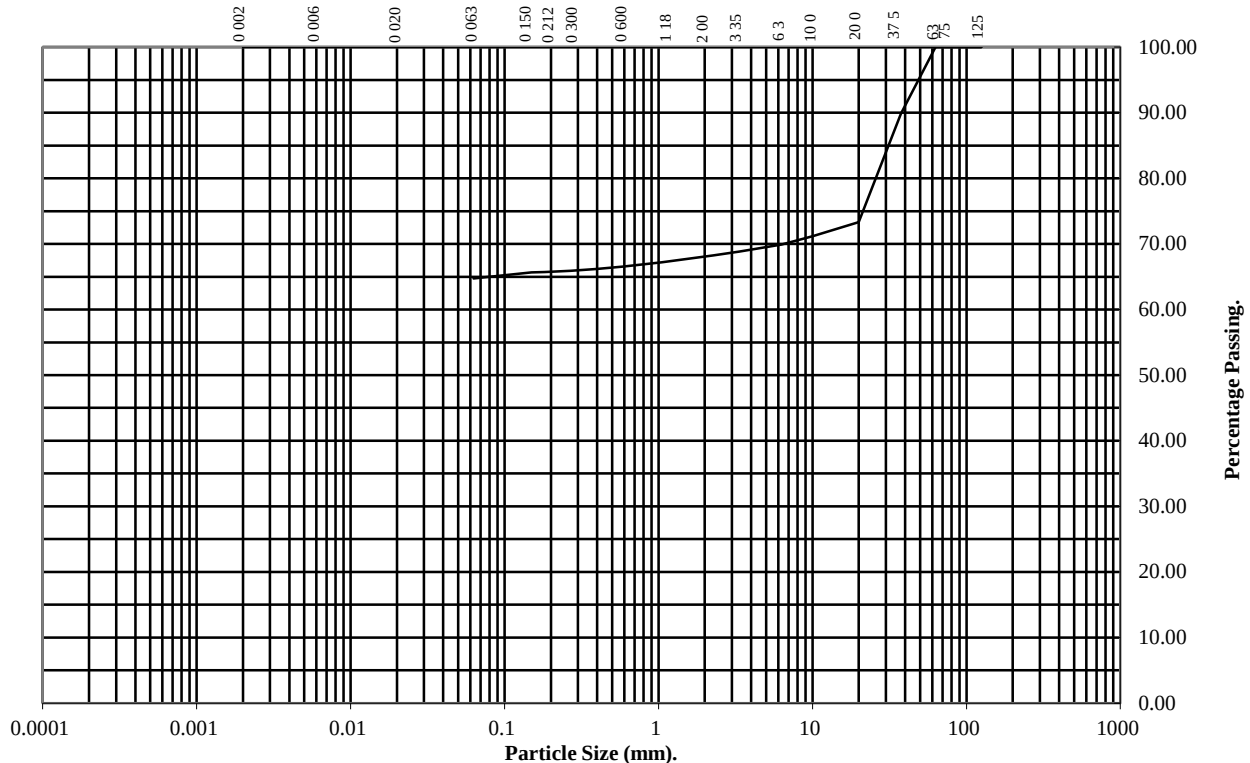
Hole Number: TP1304

Top Depth (m): 1.50

Sample Number:

Base Depth(m): 2.00

Sample Type: LB



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	90
20	73
10	71
6.3	70
3.35	69
2	68
1.18	67
0.6	67
0.3	66
0.212	66
0.15	66
0.063	65

Soil Fraction	Total Percentage
Cobbles	0
Gravel	32
Sand	3
Silt/Clay	65

Remarks:

See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

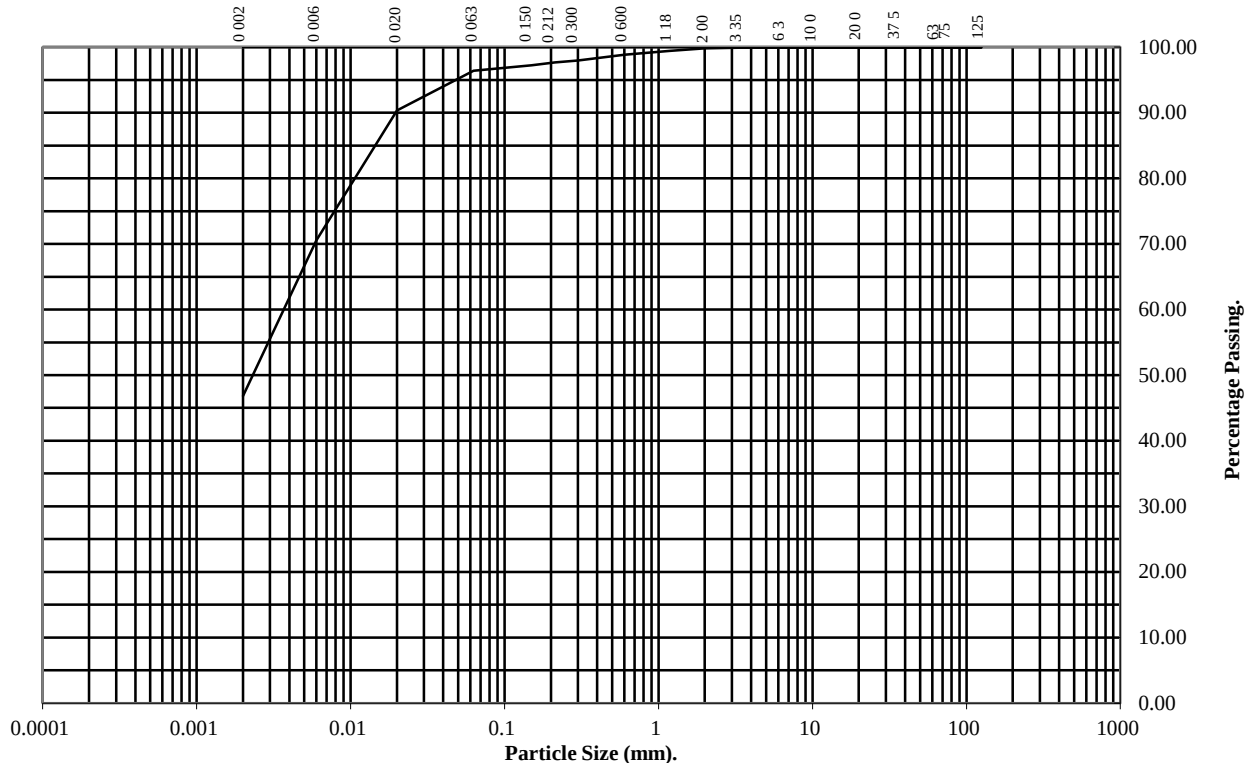
Hole Number: TP1305

Top Depth (m): 1.60

Sample Number:

Base Depth(m): 1.80

Sample Type: LB



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	99
0.3	98
0.212	98
0.15	97
0.063	96

Particle Diameter	Percentage Passing
0.02	90
0.006	71
0.002	47

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	4
Silt	49
Clay	47

Remarks:

See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

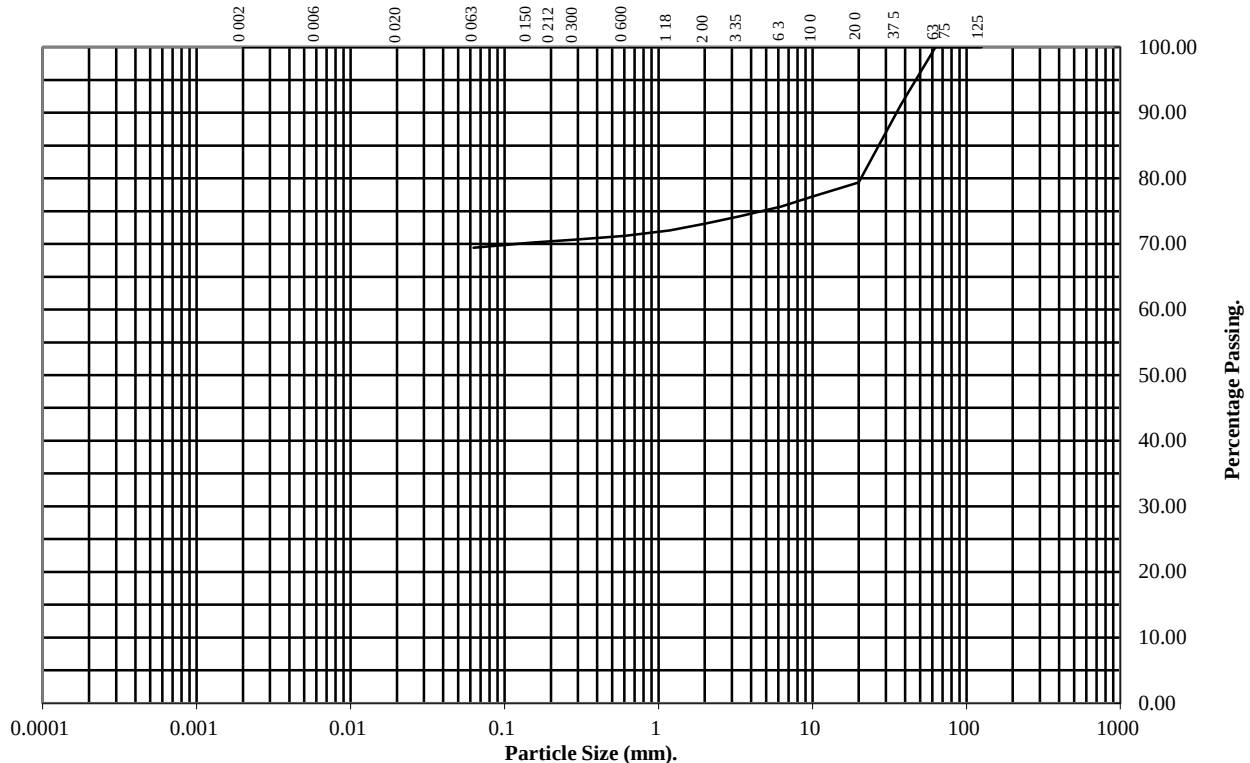
Hole Number: TP1306

Top Depth (m): 2.50

Sample Number:

Base Depth(m):

Sample Type: LB



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	91
20	79
10	77
6.3	76
3.35	74
2	73
1.18	72
0.6	71
0.3	71
0.212	70
0.15	70
0.063	69

Soil Fraction	Total Percentage
Cobbles	0
Gravel	27
Sand	4
Silt/Clay	69

Remarks:

See Summary of Soil Descriptions



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PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

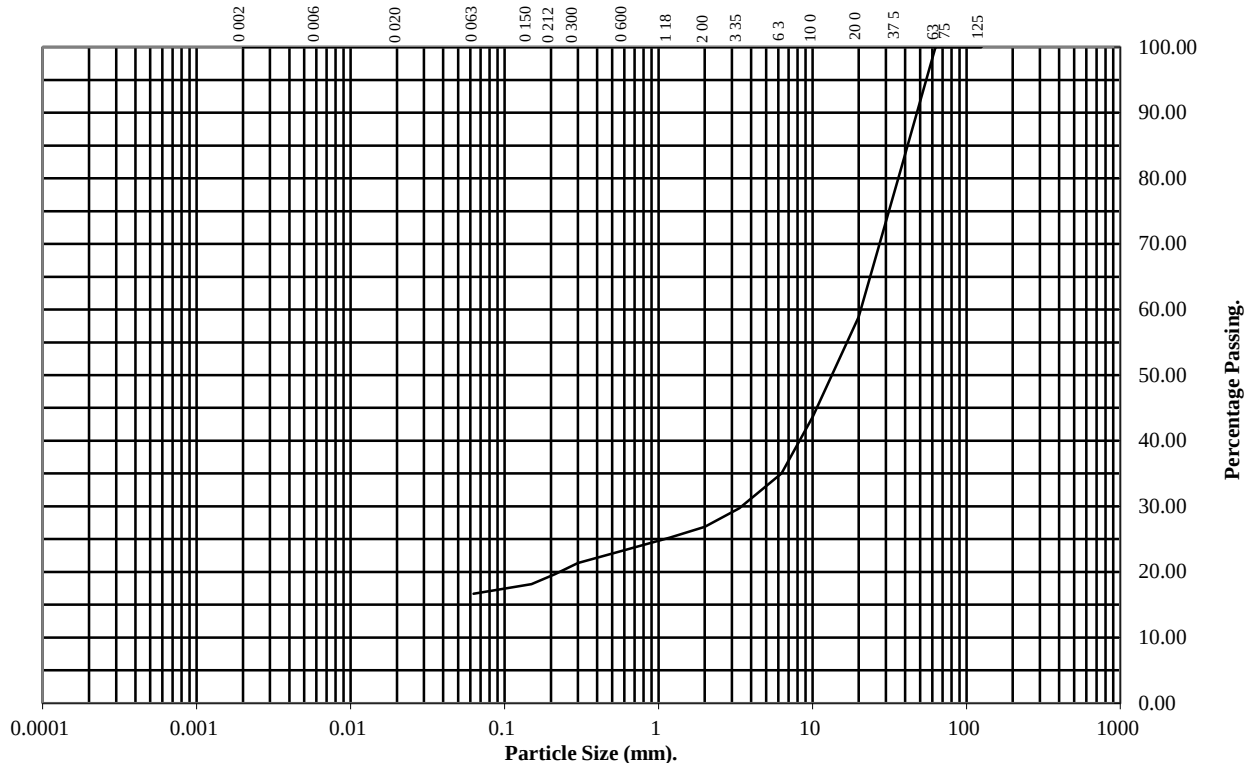
Hole Number: TP1310

Top Depth (m): 1.70

Sample Number:

Base Depth(m): 2.70

Sample Type: LB



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	81
20	59
10	44
6.3	35
3.35	30
2	27
1.18	25
0.6	23
0.3	21
0.212	20
0.15	18
0.063	17

Soil Fraction	Total Percentage
Cobbles	0
Gravel	73
Sand	10
Silt/Clay	17

Remarks:

See Summary of Soil Descriptions



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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Non compliance with BS 1377 : Part 4 : Clause 3.6 : 1990

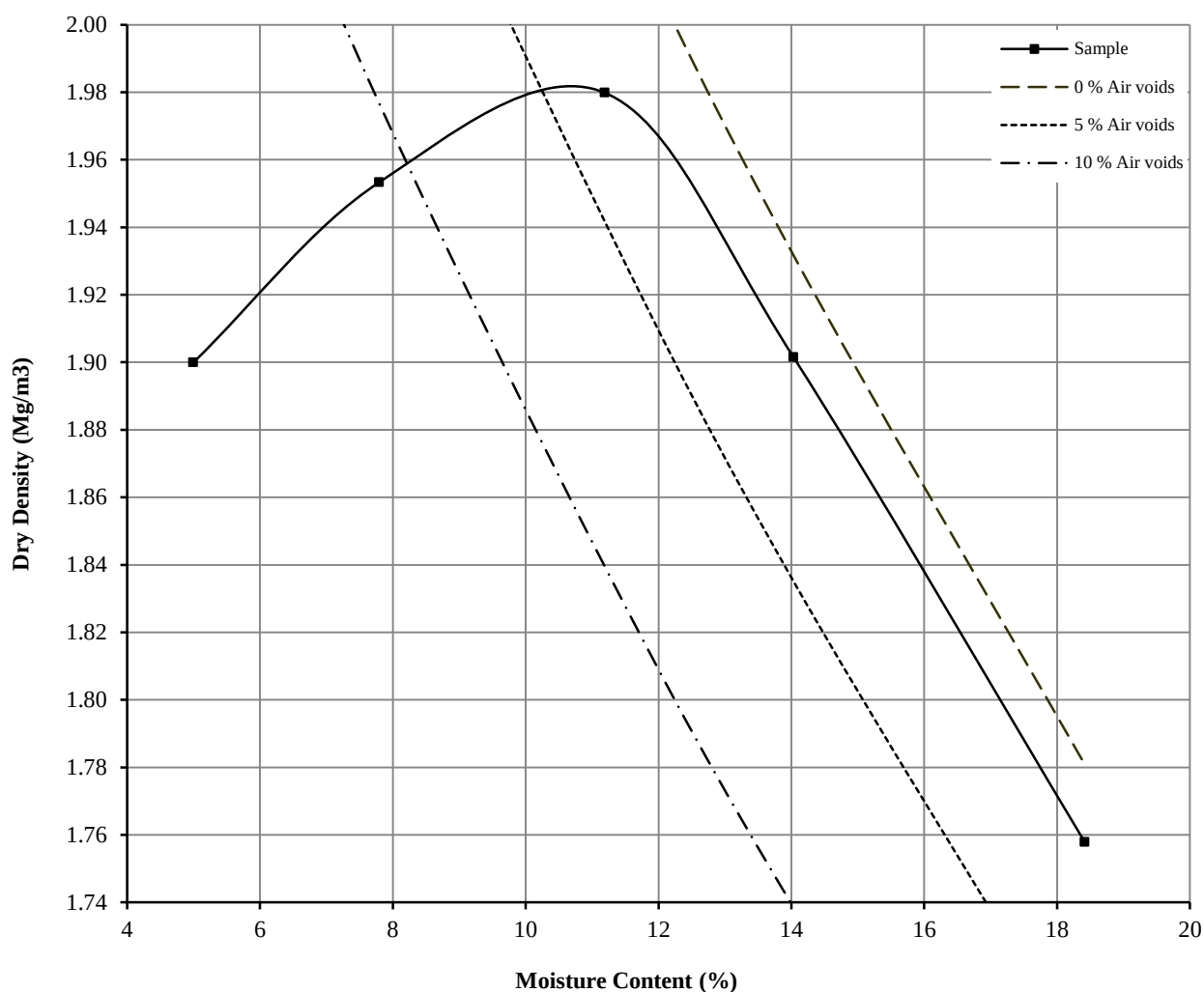
Hole Number: TP1301

Top Depth (m) : 4.00

Sample Number:

Base Depth (m) :

Sample Type: LB



Initial Moisture Content:	18	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m3):	2.65	Measured	Material Retained on 37.5 mm Test Sieve (%):	11
Maximum Dry Density (Mg/m3):	1.98		Material Retained on 20.0 mm Test Sieve (%):	10
Optimum Moisture Content (%):	11			
Remarks				
See summary of soil descriptions.				



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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

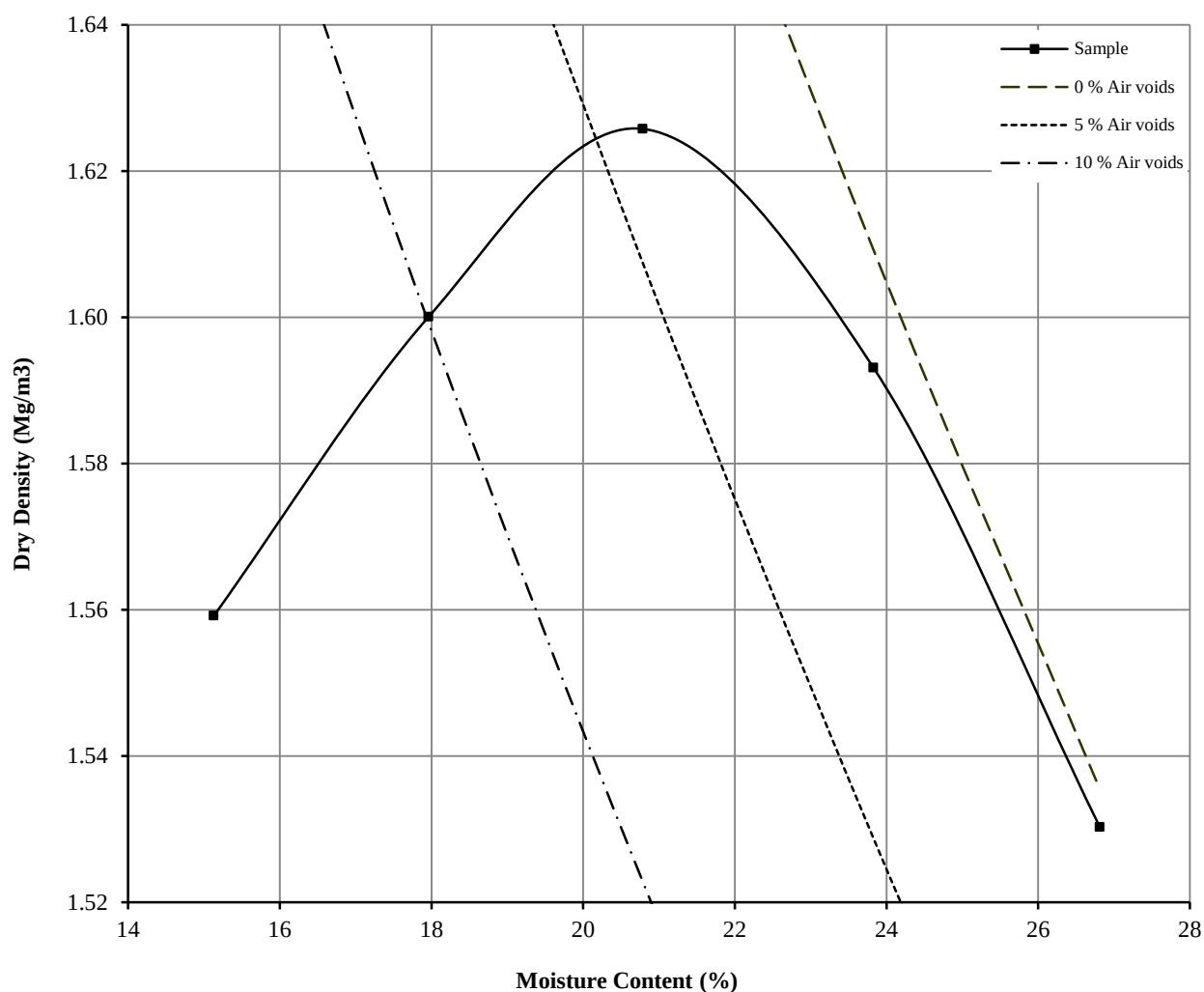
Hole Number: TP1303

Top Depth (m) : 2.00

Sample Number:

Base Depth (m) : 3.00

Sample Type: LB



Initial Moisture Content:	21	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.61	Measured	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m3):	1.63		Material Retained on 20.0 mm Test Sieve (%):	2
Optimum Moisture Content (%):	21			
Remarks				
See summary of soil descriptions.				



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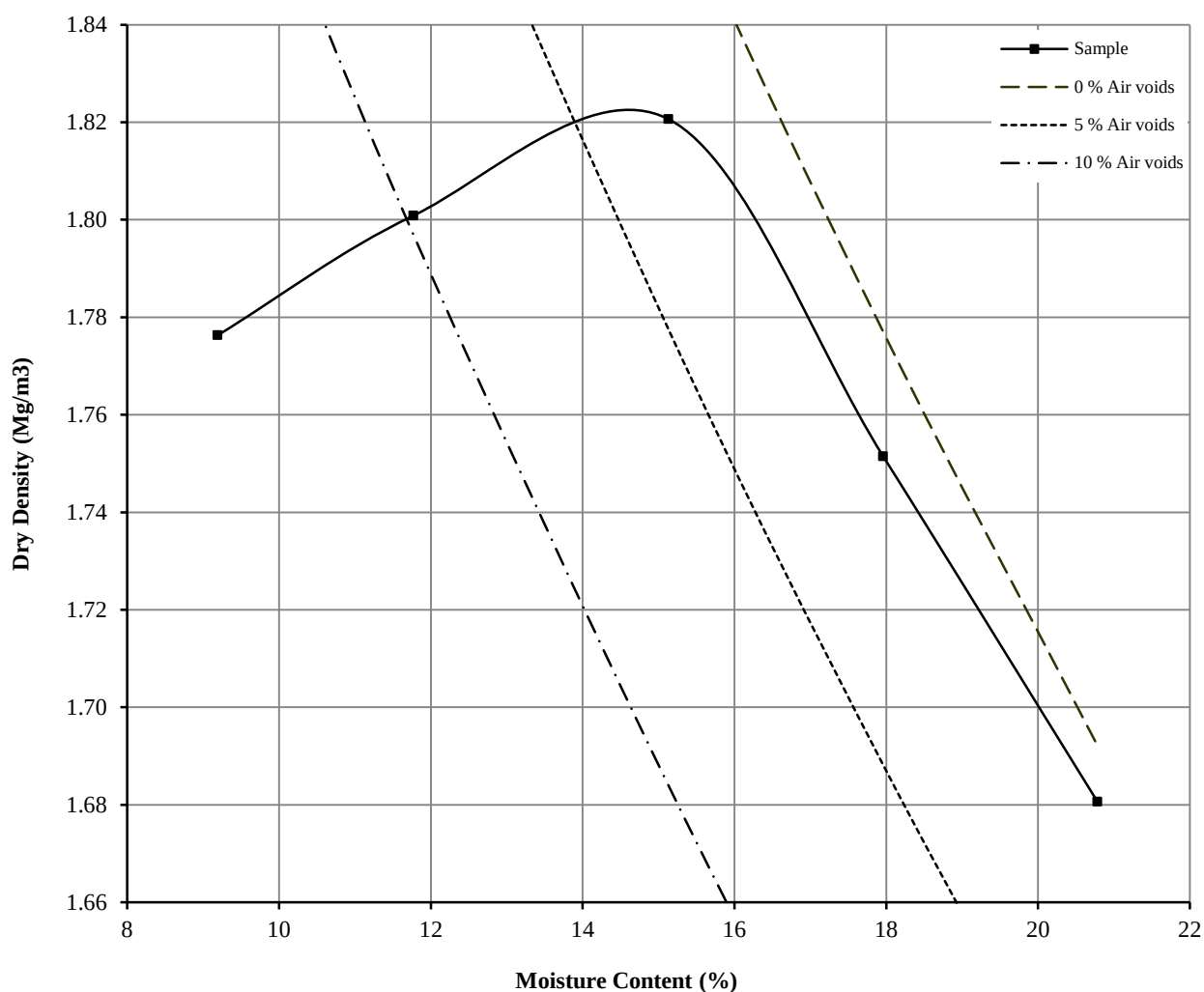
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.5 : 1990

Hole Number: TP1303 Top Depth (m) : 2.00

Sample Number: Base Depth (m) : 3.00

Sample Type: LB



Initial Moisture Content:	21	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m ³):	2.61	Measured	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	1.82		Material Retained on 20.0 mm Test Sieve (%):	2
Optimum Moisture Content (%):	15			
Remarks				
See summary of soil descriptions.				



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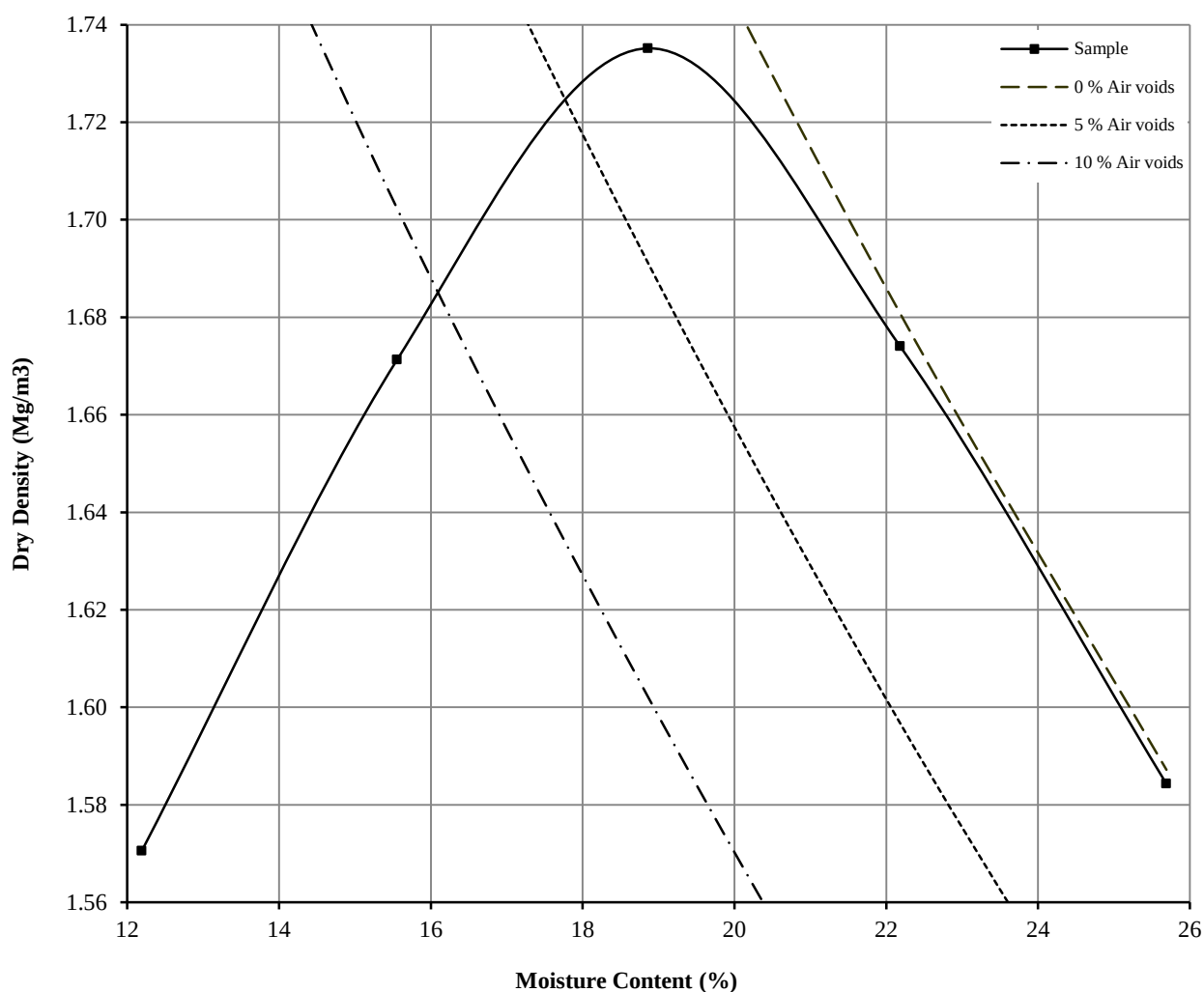
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

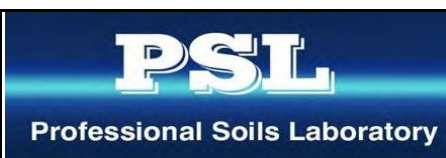
Hole Number: TP1305 Top Depth (m) : 1.60

Sample Number: Base Depth (m) : 1.80

Sample Type: LB



Initial Moisture Content:	19	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.68	Measured	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	1.74		Material Retained on 20.0 mm Test Sieve (%):	0
Optimum Moisture Content (%):	19			
Remarks				
See summary of soil descriptions.				



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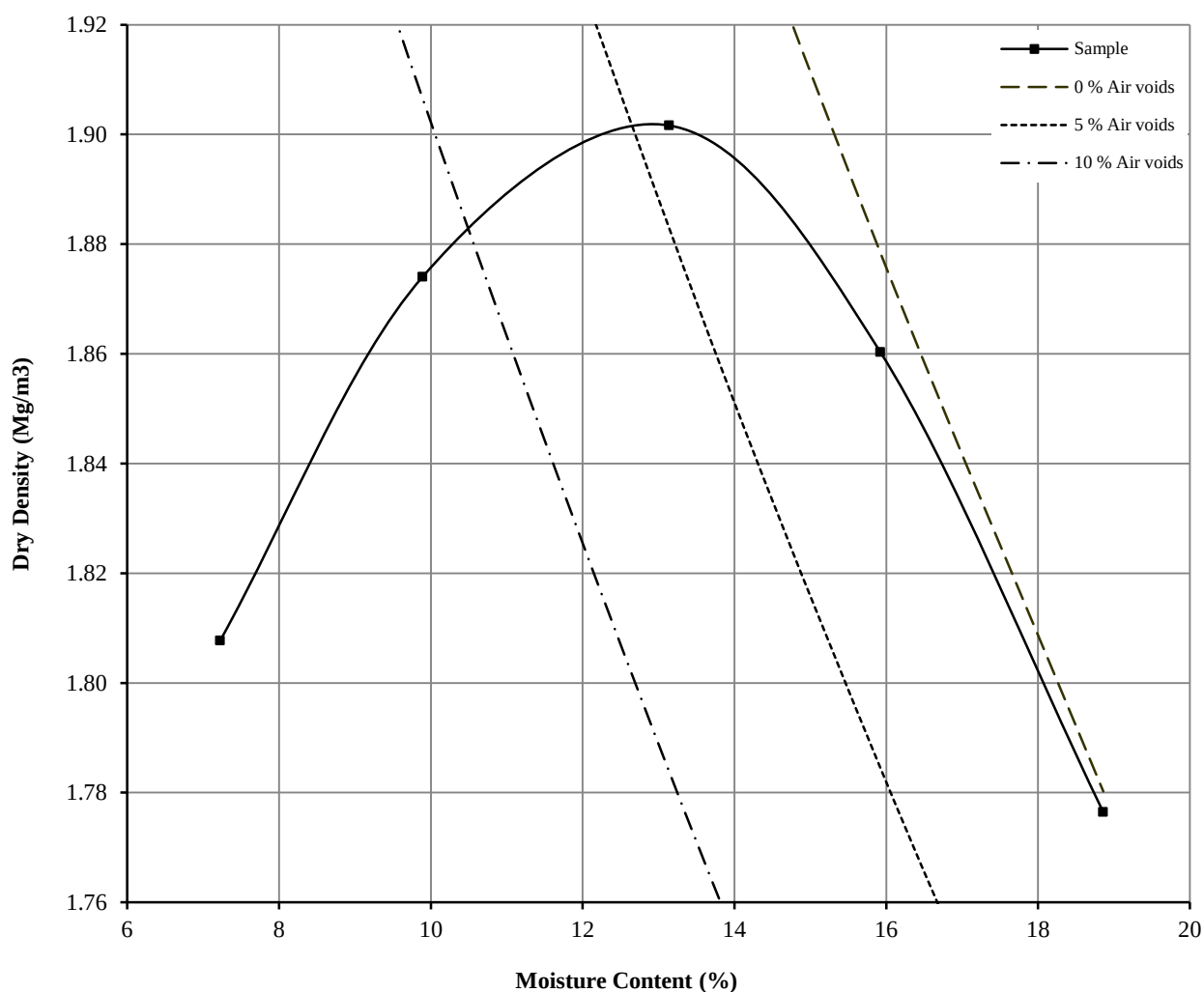
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.5 : 1990

Hole Number: TP1305 Top Depth (m) : 1.60

Sample Number: Base Depth (m) : 1.80

Sample Type: LB



Initial Moisture Content:	19	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m ³):	2.68	Measured	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (Mg/m ³):	1.90		Material Retained on 20.0 mm Test Sieve (%):	0
Optimum Moisture Content (%):	13			
Remarks				
See summary of soil descriptions.				



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DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.6 : 1990

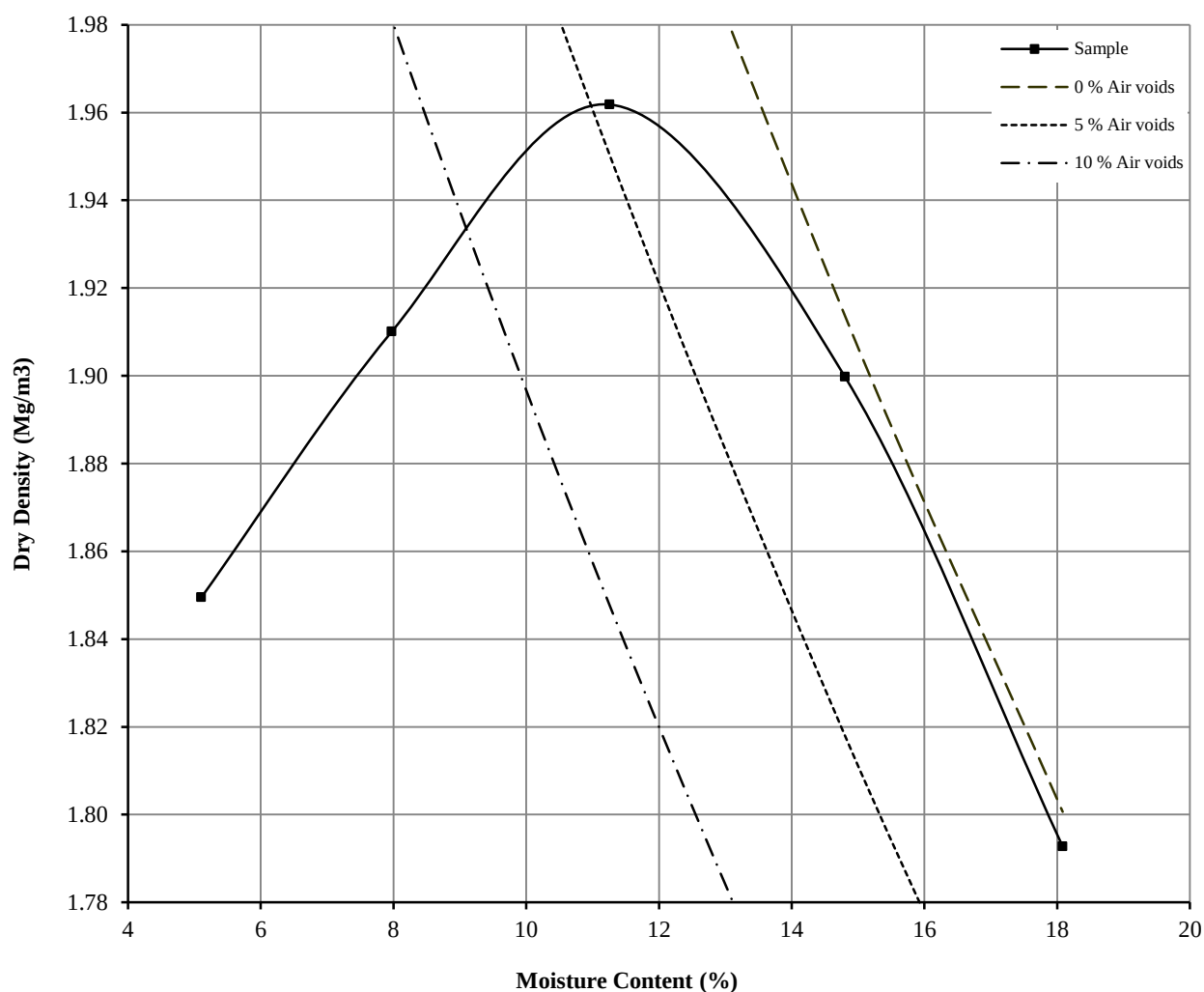
Hole Number: TP1306

Top Depth (m) : 2.50

Sample Number:

Base Depth (m) :

Sample Type: LB



Initial Moisture Content:	18	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m ³):	2.67	Measured	Material Retained on 37.5 mm Test Sieve (%):	9
Maximum Dry Density (Mg/m ³):	1.96		Material Retained on 20.0 mm Test Sieve (%):	12
Optimum Moisture Content (%):	11			
Remarks				
See summary of soil descriptions.				



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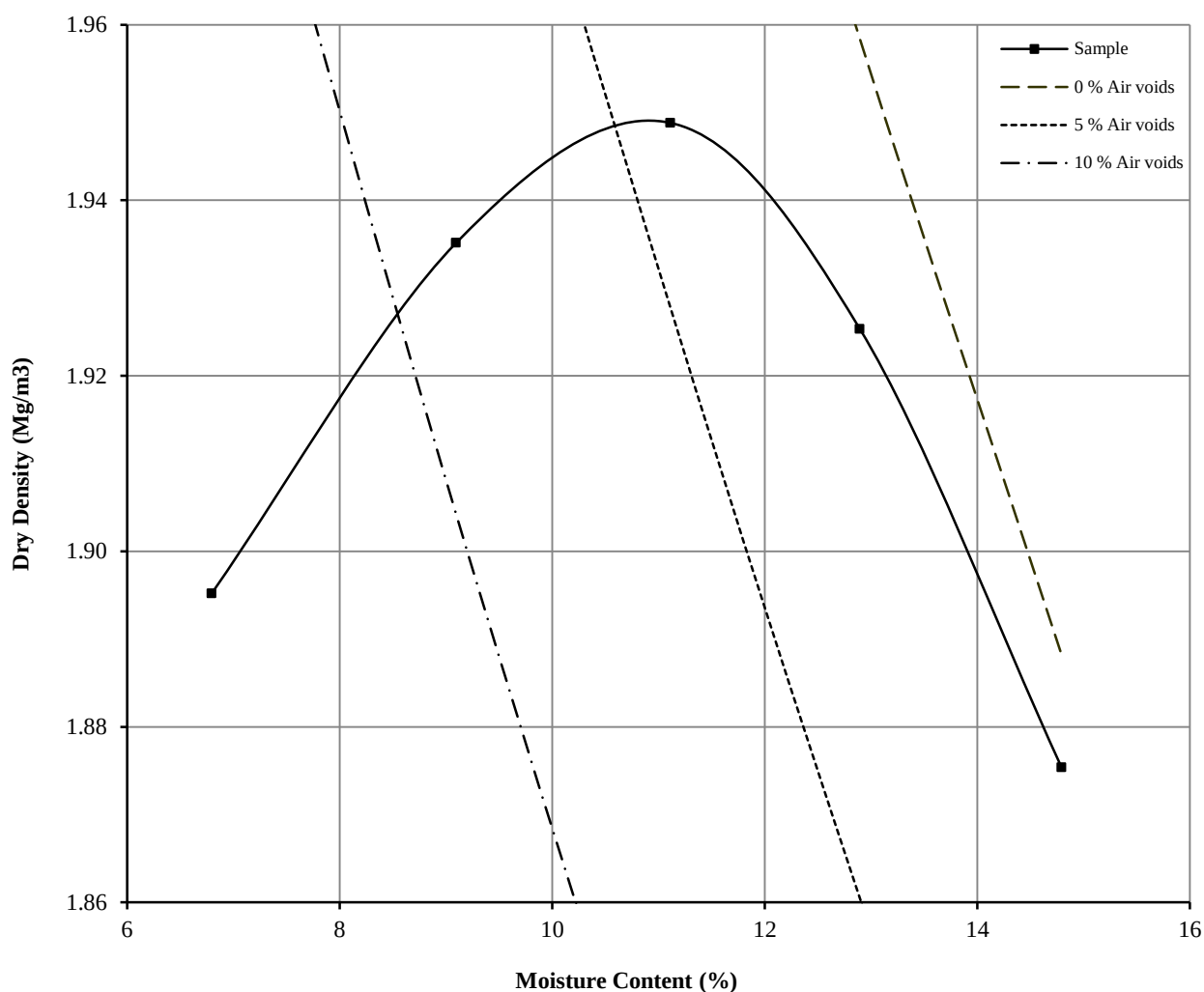
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Non compliance with BS 1377 : Part 4 : Clause 3.4 : 1990

Hole Number: TP1310 Top Depth (m) : 1.70

Sample Number: Base Depth (m) : 2.70

Sample Type: LB



Initial Moisture Content:	6.8	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m ³):	2.62	Measured	Material Retained on 37.5 mm Test Sieve (%):	19
Maximum Dry Density (Mg/m ³):	1.95		Material Retained on 20.0 mm Test Sieve (%):	22
Optimum Moisture Content (%):	11			
Remarks				
See summary of soil descriptions.				



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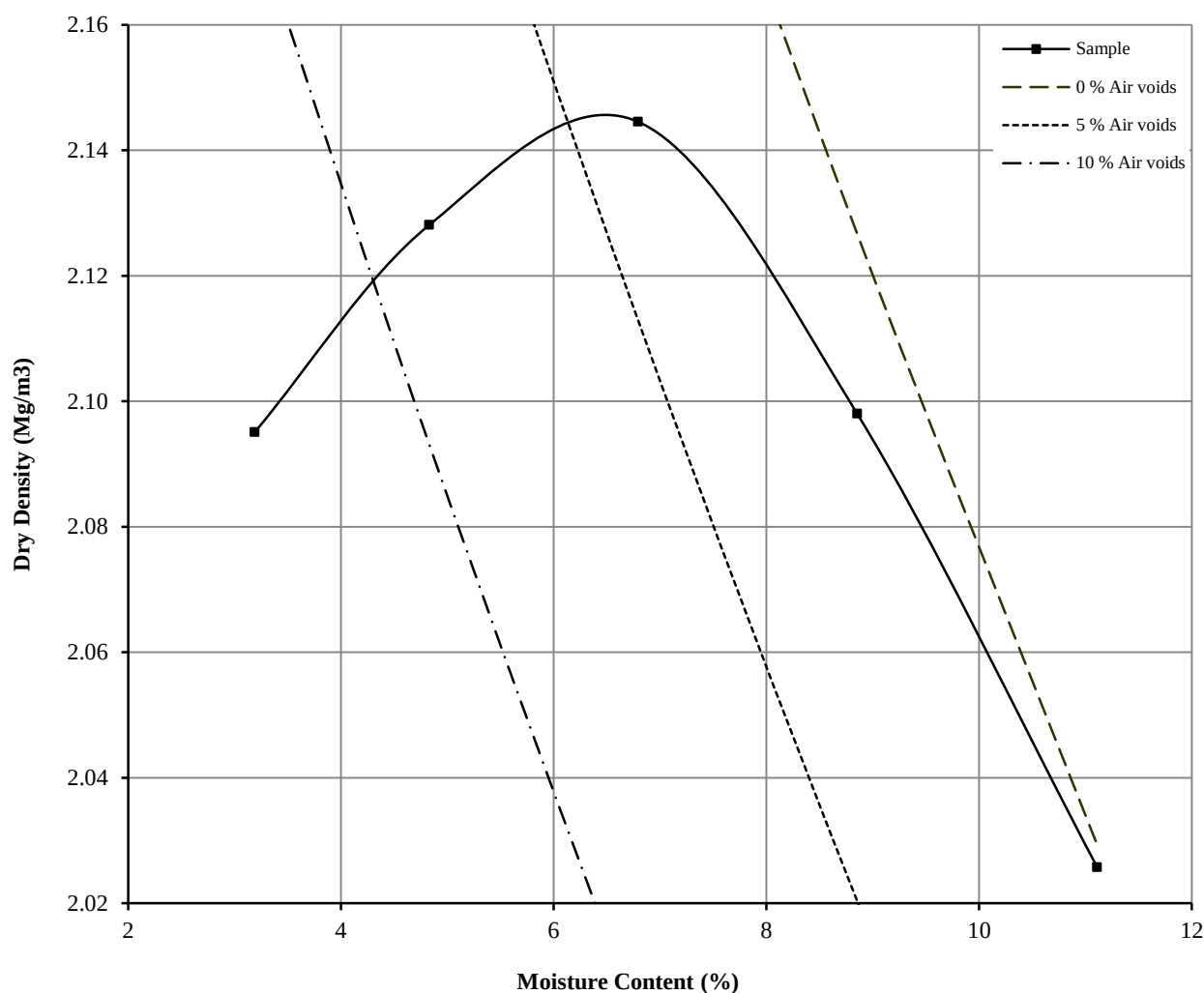
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

Non compliance with BS 1377 : Part 4 : Clause 3.6 : 1990

Hole Number: TP1310 Top Depth (m) : 1.70

Sample Number: Base Depth (m) : 2.70

Sample Type: LB



Initial Moisture Content:	6.8	Method of Compaction:	4.5kg	Separate Samples
Particle Density (Mg/m ³):	2.62	Measured	Material Retained on 37.5 mm Test Sieve (%):	19
Maximum Dry Density (Mg/m ³):	2.14		Material Retained on 20.0 mm Test Sieve (%):	22
Optimum Moisture Content (%):	7			
Remarks				
See summary of soil descriptions.				

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CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

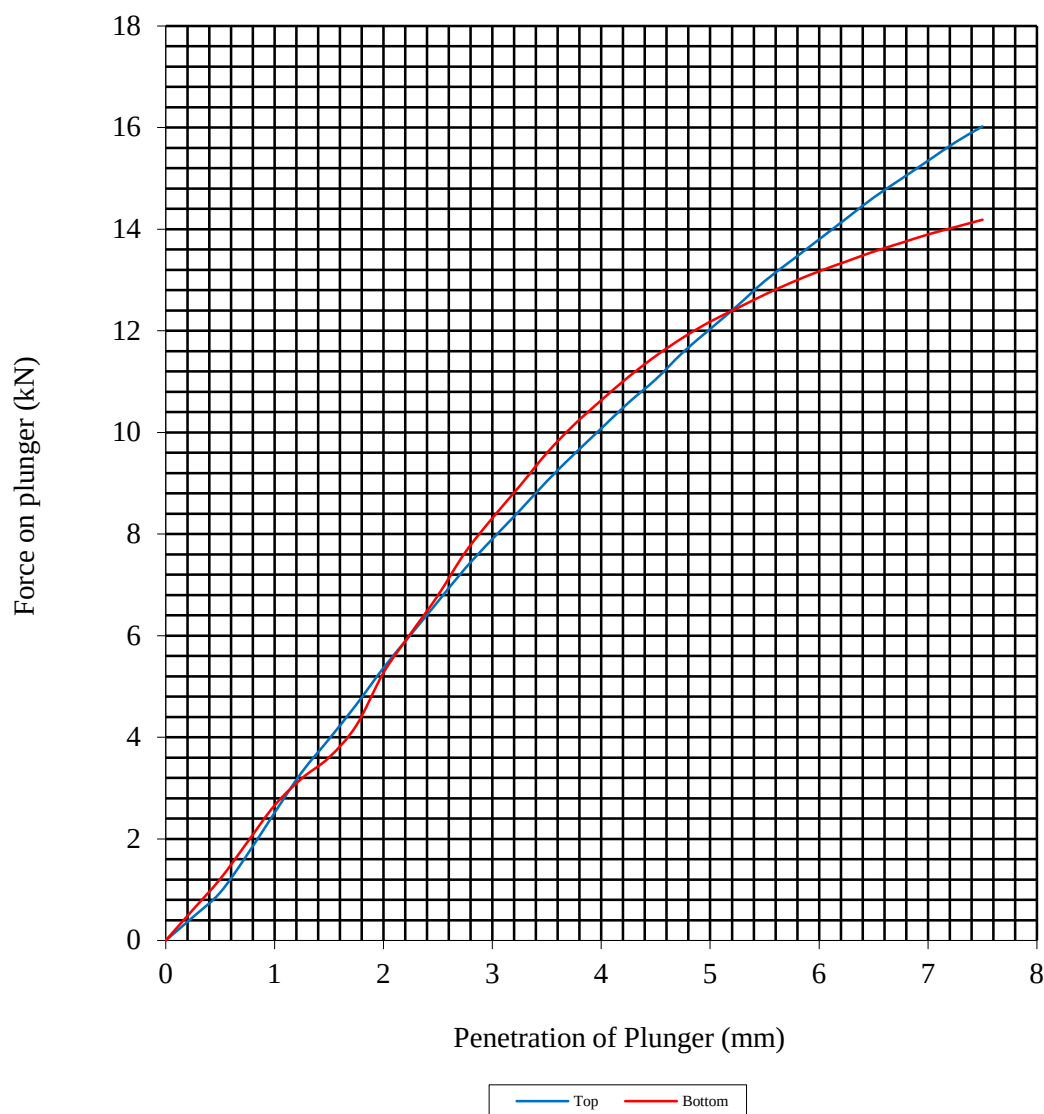
Hole Number: TP1301

Top Depth (m): 4.00

Sample Number:

Base Depth (m):

Sample Type: LB



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	11	Surcharge Kg:	4.20	Sample Top	11	Sample Top	60.2
Bulk Density Mg/m3:	2.20	Soaking Time hrs	0	Sample Bottom	11	Sample Bottom	60.9
Dry Density Mg/m3:	1.98	Swelling mm:	0.00	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:		21					
Compaction Conditions		4.5kg					



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CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

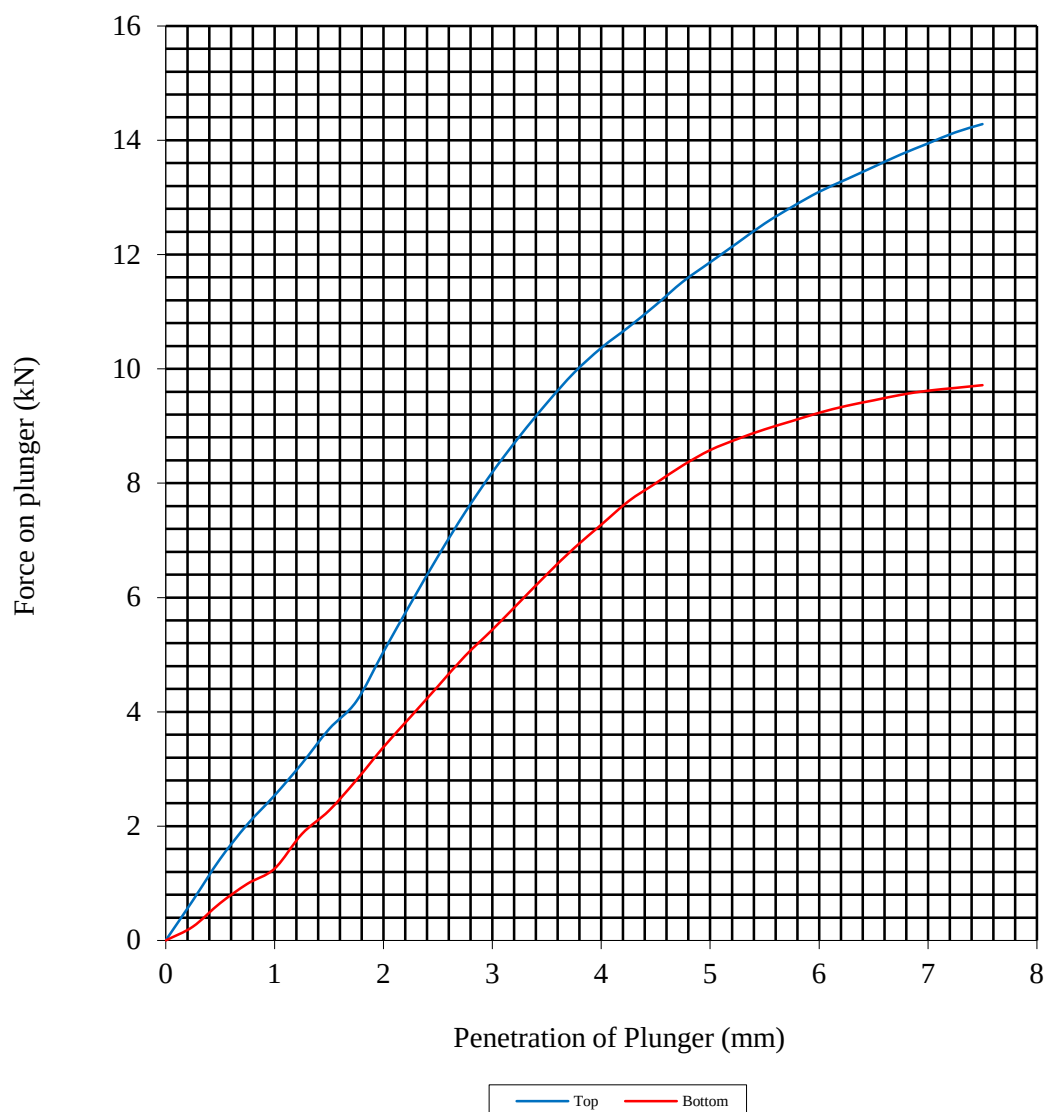
Hole Number: TP1303

Top Depth (m): 2.00

Sample Number:

Base Depth (m): 3.00

Sample Type: LB



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	15	Surcharge Kg:	4.20	Sample Top	15	Sample Top	59.3
Bulk Density Mg/m3:	2.09	Soaking Time hrs	0	Sample Bottom	15	Sample Bottom	42.9
Dry Density Mg/m3:	1.82	Swelling mm:	0.00	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			2				
Compaction Conditions		4.5kg					



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CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

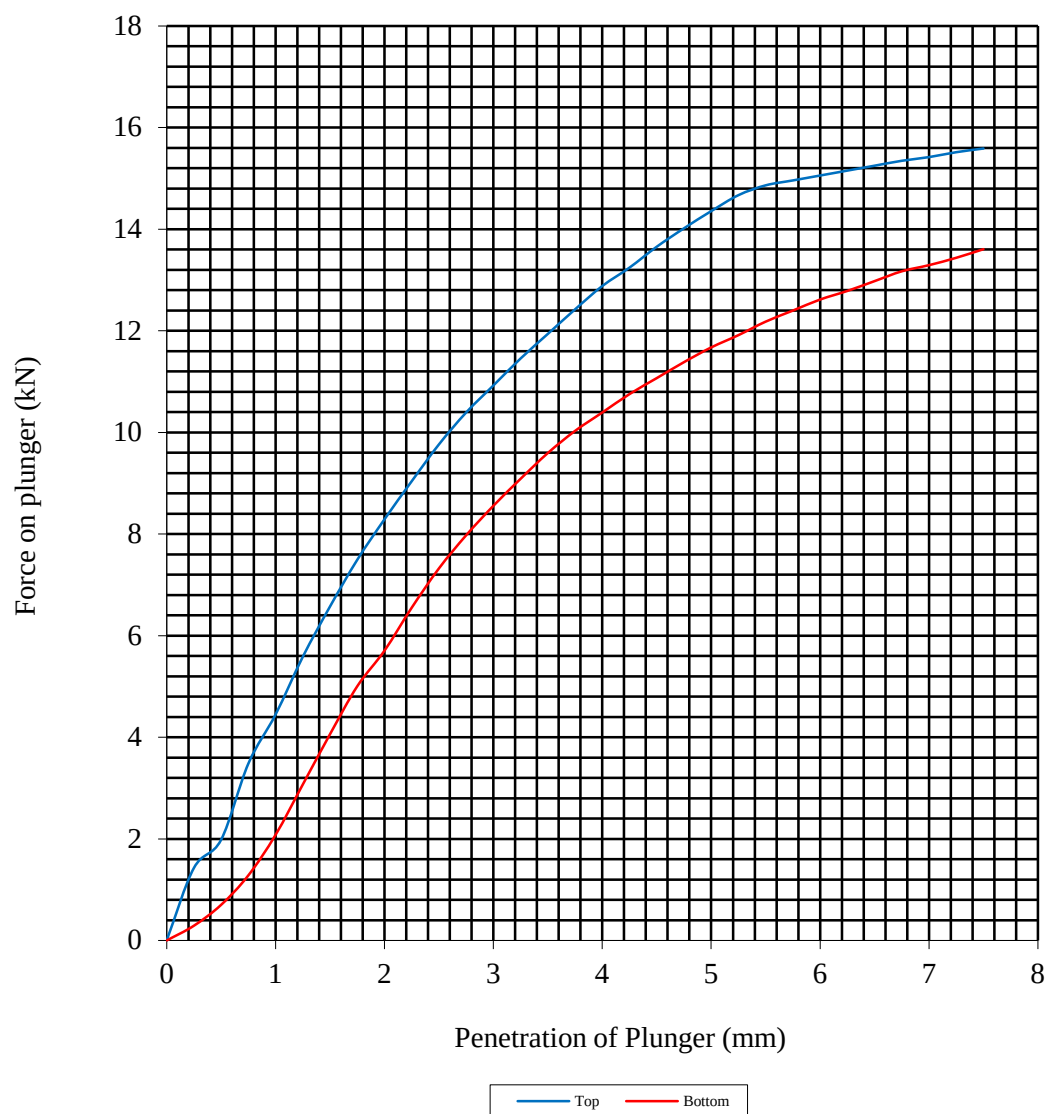
Hole Number: TP1305

Top Depth (m): 1.60

Sample Number:

Base Depth (m): 1.80

Sample Type: LB



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	13	Surcharge Kg:	4.20	Sample Top	13	Sample Top	74.0
Bulk Density Mg/m ³ :	2.14	Soaking Time hrs	0	Sample Bottom	13	Sample Bottom	58.4
Dry Density Mg/m ³ :	1.90	Swelling mm:	0.00	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			0				
Compaction Conditions		4.5kg					



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CALIFORNIA BEARING RATIO TEST

BS 1377 : Part 4 : 1990

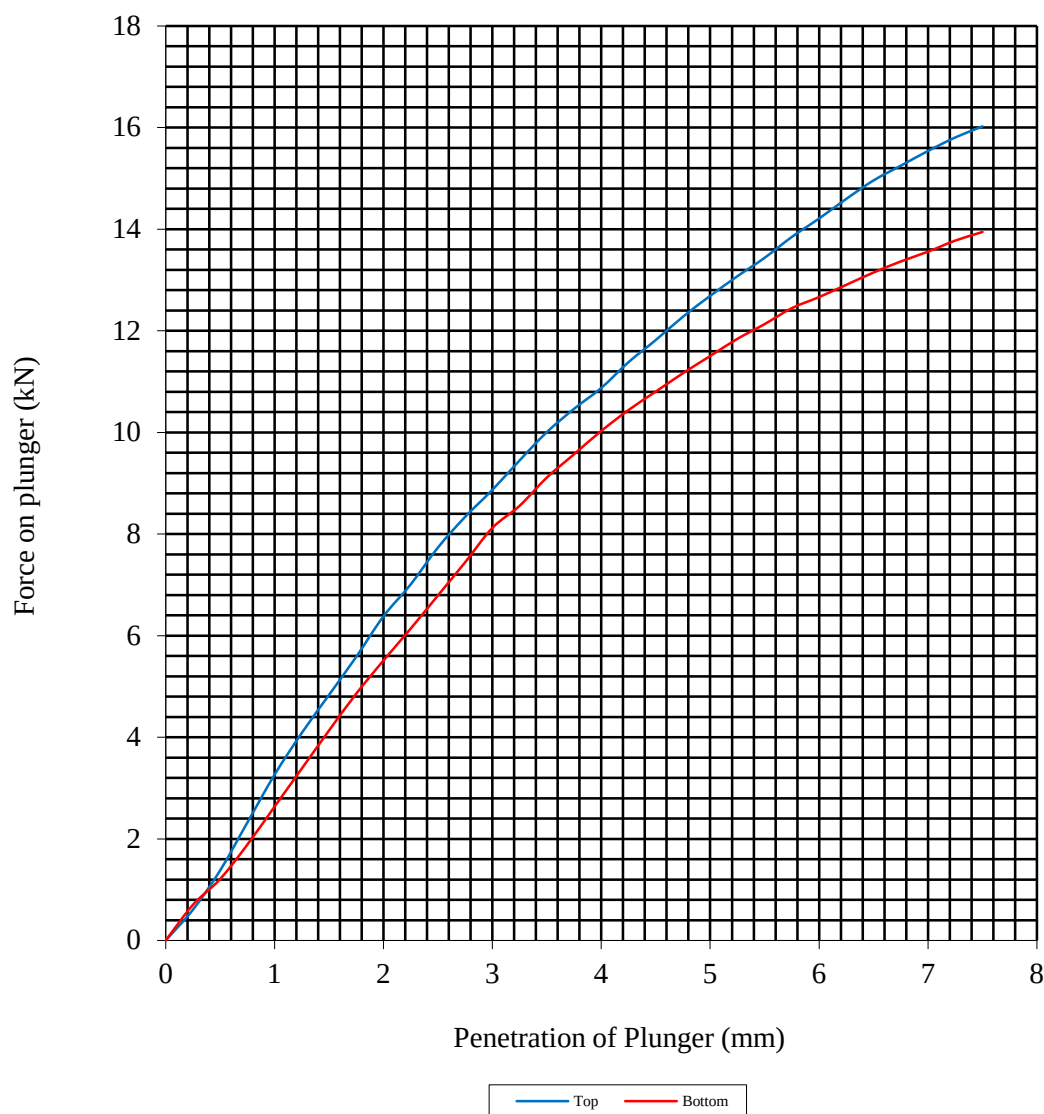
Hole Number: TP1306

Top Depth (m): 2.50

Sample Number:

Base Depth (m):

Sample Type: LB



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	11	Surcharge Kg:	4.20	Sample Top	11	Sample Top	63.4
Bulk Density Mg/m ³ :	2.18	Soaking Time hrs	0	Sample Bottom	11	Sample Bottom	57.5
Dry Density Mg/m ³ :	1.96	Swelling mm:	0.00	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			21				
Compaction Conditions		4.5kg					



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CALIFORNIA BEARING RATIO TEST

Non compliance with BS 1377 : Part 4 : 1990

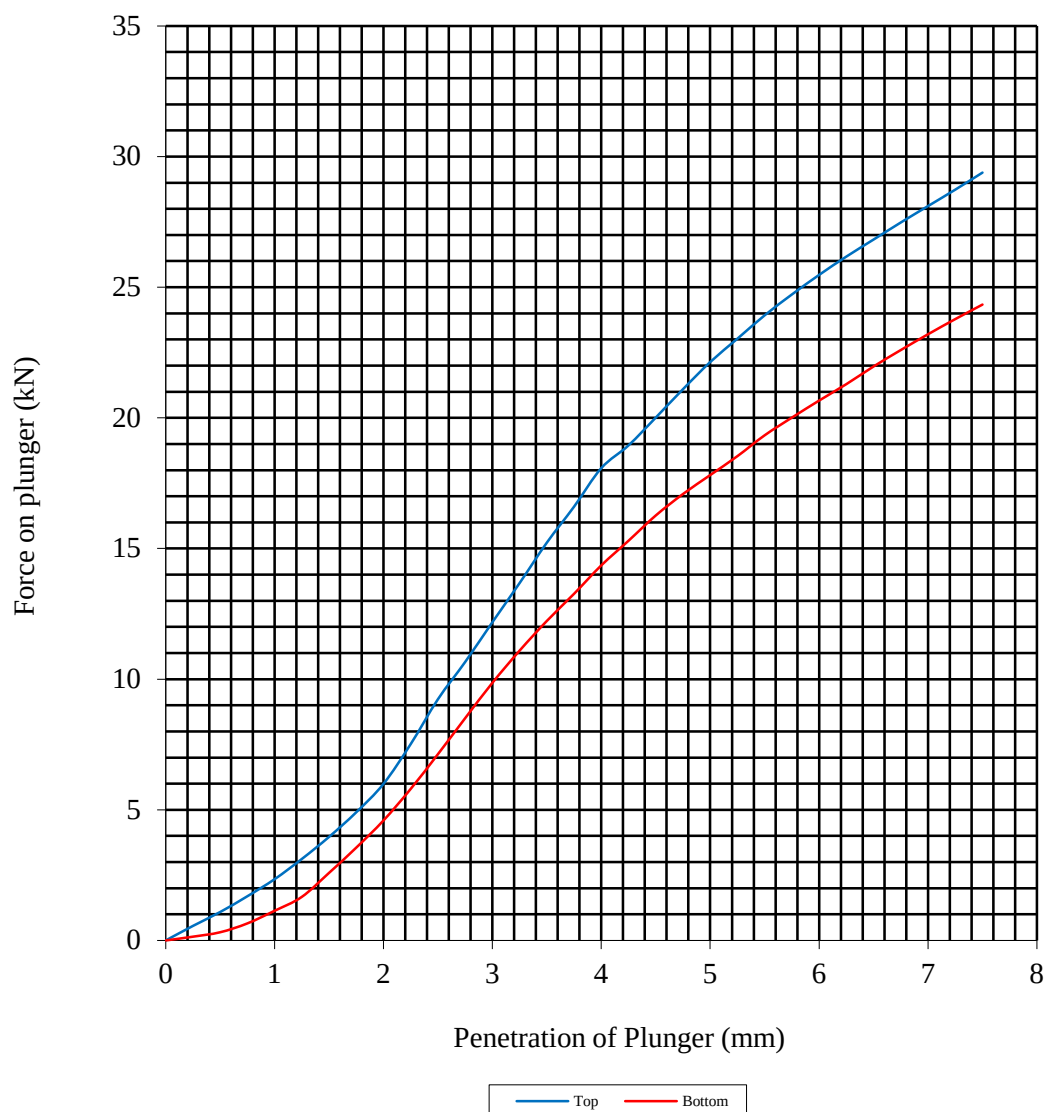
Hole Number: TP1310

Top Depth (m): 1.70

Sample Number:

Base Depth (m): 2.70

Sample Type: LB



Initial Sample Conditions		Sample Preparation		Final Moisture Content %		C.B.R. Value %	
Moisture Content:	6.8	Surcharge Kg:	4.20	Sample Top	6.6	Sample Top	110.7
Bulk Density Mg/m3:	2.29	Soaking Time hrs	0	Sample Bottom	7.0	Sample Bottom	89.1
Dry Density Mg/m3:	2.14	Swelling mm:	0.00	Remarks : See Summary of Soil Descriptions.			
Percentage retained on 20mm BS test sieve:			41				
Compaction Conditions		4.5kg					



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SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

[illegible]

***Note** All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular



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SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D _e ²	D _e (mm)	Failure Load		I _s (MPa)	Corr Fac F	I _{s50} (MPa)	Failure Type	Remarks
				Par / Perp	L	D			(Mpa)	(kN)					
RC4103	5.56		D	Par	-	85	7225	85.00	-	0.25	0.035	1.270	0.04	Valid	
RC4103	6.77		D	Par	-	85	7225	85.00	-	1.68	0.233	1.270	0.30	Valid	
RC4103	6.97		D	Par	-	85	7225	85.00	-	1.46	0.202	1.270	0.26	Valid	
RC4103	11.10		D	Par	-	85	7225	85.00	-	4.36	0.603	1.270	0.77	Valid	
RC4104	8.78		D	Par	-	85	7225	85.00	-	2.49	0.345	1.270	0.44	Valid	
RC4104	8.99		D	Par	-	85	7225	85.00	-	11.85	1.640	1.270	2.08	Valid	

***Note** All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random



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DETERMINATION OF UNCONFINED COMPRESSIVE STRENGTH

ISRM Suggested Methods, pp 111 –116, 1981.

[illegible]

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Client Ref:

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