Area I Severnside

Compilation Validation Report on Imported Earthworks

Project No: 731391

Client: Rhonda Limited

FEBRUARY 2017

STRUCTURAL SOILS LTD

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REVISION RECORD

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00	Feb 2017	Final report	AW

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CONTENTS

1 INTRODUCTION

This investigation was carried out on the instructions of Ridge & Partners LLP on behalf of Rhonda Limited.

The purpose of the work was to undertake independent check testing of the status of material imported onto Area I site against the classification requirements of the Specification for Highway Works, degree of compaction achieved and screen contamination against appropriate guidance. Ground levels on the site have been raised by around 1m by the placement of fill under the management of Keyway.

The work included a nominally weekly intrusive investigation, laboratory testing and the preparation of a report detailing the findings of each weekly validation visit to the site.

This report details the work carried out both on site and in the geotechnical and chemical testing laboratories; it contains a description of the site and the works undertaken, the exploratory hole logs and a summary of the laboratory testing results. It compares the results obtained against relevant guidelines and discusses the results.

All information, comments and opinions given in this report are based on the ground conditions encountered during the site work, and on the results of laboratory and field tests performed during the investigation. However, there may be conditions at the site that have not been taken into account, such as unpredictable soil strata, contaminant concentrations, and water conditions between or below exploratory holes. It should be noted that groundwater levels usually vary due to seasonal and/or other effects and may at times differ to those measured during the investigation.

This report was prepared by Structural Soils Ltd for the sole and exclusive use of Rhonda Limited. However no liability will be accepted after a period of 6 years from the date of the report. Any other parties using the information contained in this report do so at their own risk and a duty of care to those parties is excluded.

2 SITE DESCRIPTION

2.1 Location and Topography

The site is located approximately 10km north-west of Bristol city centre (see Site Location Plan in Appendix A). The British National Grid Reference of the site is ST 543 817.

The site is one section of a wider land raising exercise located between the existing Copart Vehicle Reclamation Yard, the Severn Road Industrial Estate and the National Grid Avonmouth LNG storage facility. The site is rhomboidal in shape, measuring 230 m by 160 m and covering an area of 3.5 hectares (see Combined Exploratory Hole and Nuclear Density Test Location Plan in Appendix A).

At the start of the works the site had already been partially filled and work was on-going on the plot.

2.2 Geology

Information on the geology of the site was obtained from the following sources published by the British Geological Survey (BGS):

- BGS map (sheet 264, scale 1:50,000 published 2004).
- The BGS digital geology map, which utilises the most up to date names for geological units (www.bgs.ac.uk/data).
- The BGS Lexicon of Named Rock Units, which provides typical descriptions for most geological units (www.bgs.ac.uk/lexicon).

The site is shown to be underlain by superficial Tidal Flat Deposits overlaying the Triassic Mercia Mudstone Group described as *'Mudstone, red with greenish grey sandstone'*. At depth these sediment are unconformably underlain by the Upper Coal Measures of the Upper Carboniferous period that include the Avonmouth No 1 and No 2 coal seams of the Avonmouth Basin.

3 FIELDWORK

3.1 Trial Pits

6 visits to the site were made between 9 March 2016 and 13 May 2016 after which date filling on the plot was suspended.

On the first visit 12 machine dug trial pits (TP1-1 to TP1-12) were undertaken to investigate the fill already placed. These pits were excavated using a tracked excavator through the entire thickness of the fill, and were used to facilitate Nuclear Density Measurements of the placed material, and for the collection of samples for geotechnical and chemical laboratory analysis.

On each subsequent visit 3 trial pits were hand dug to a depth of 0.30m, as required in order to investigate the nature of the material imported since the previous visit.

The locations of the trial pits (TP1-1 to TP6-3, total 44 samples) are shown on the Combined Exploratory Hole and Nuclear Density Test Location Plans in Appendix A.

The trial pits were logged by an engineer in general accordance with the recommendations of BS5930: 1999 (2010 Amendment 2, which incorporates the requirements of BS EN ISO 14688-1, 14688-2 and 14689-1). Detailed descriptions, together with relevant comments, are given in the logs included in Appendix B. The positions of the exploratory holes were selected at random and the approximate location of each sampling point was recorded using hand held GPS equipment. The approximate coordinates of each location as measured with the GPS unit (typical accuracy +/-3m) are stated on the logs.

Small disturbed and bulk soil samples for geotechnical testing were taken from the trial pits. Samples for contamination testing were also taken from the base of each trial pit. Samples for contamination testing were placed in appropriate contamination sample containers that were supplied by the laboratory. Containers for volatiles and organics testing of soil samples were filled to capacity. All samples were then kept in cool boxes with ice packs and were transported to the laboratories under Chain of Custody documentation, as promptly as possible to maintain sample integrity.

On completion the trial pits were backfilled with arisings.

3.2 In-Situ Testing

2 visits to the site to conduct nuclear density probe tests were completed on 10 March 2016 and 3 May 2016 (TP1-1 to TP1-10; 50 tests and NDM 51 to 70; 20 tests). The locations of the tests are shown on the Combined Exploratory Hole and Nuclear Density Test Location Plan in Appendix A. Samples of fill material from areas in which the in-situ density testing had been undertaken were taken for further laboratory compaction testing at a ratio of 1 compaction test per 5 NDMs, selected randomly (total 14 samples).

4 LABORATORY TESTING

Samples for potential geotechnical testing were returned to the company's laboratory in Bristol and those for potential contamination testing were sent to an accredited chemical testing laboratory.

4.1 Geotechnical Laboratory Testing

Geotechnical laboratory testing was generally carried out in accordance with the relevant part of BS1377: 1990, *Methods of Test for Soils for Civil Engineering Purposes*, or, where superseded, by the relevant part of BS EN ISO 17892:2014+ *Geotechnical investigation and testing – Laboratory Testing of Soil*. The number of tests completed and the test methods used are summarised below. Where non-standard procedures have been undertaken, this is recorded on the report sheet. The results are reported in tabular and/or graphical form and included as Appendix C of this report.

Contamination testing was carried out in accordance with MCERTs/UKAS standards. The results are reported in Appendix D of this report, along with the accreditation certificate for the laboratory.

4.2 Moisture Content

35 moisture content tests were undertaken, taken at a ratio of 2 samples from each trial pit TP1-1 to TP1-10, and 1 sample from each of the trial pits (TP2-1 to TP6-3) using the oven-drying method in accordance with BS1377: Part 2: 1990. The results are tabulated in the Summary of Soil Classification Tests in Appendix C and below the Plasticity Chart (see Section 4.2, below).

4.3 Liquid Limit, Plastic Limit and Plasticity Index

35 liquid and plastic limit tests were performed in accordance with BS1377: Part 2: 1990. The results are plotted on the Plasticity Chart (in accordance with BS5930: 1999) and tabulated below the chart, and in the Summary of Soil Classification Tests.

4.4 Particle Size Distribution

35 particle size distribution tests were undertaken by sieving. All tests were in accordance with BS1377: Part 2: 1990. The results are represented graphically as particle size distribution curves and in tabular format. It was noted that a number of large cobbles and boulders of concrete were present at the surface during the site visits, and as these are too large to sample, they are not reflected in the laboratory results. Such materials are oversized and consideration should be given to separation.

4.5 Dry Density/Moisture Content Relationship

14 dry density/moisture content relationship tests were undertaken, one for every five of the nuclear density tests in accordance with BS1377: Part 4: 1990 to determine the

maximum dry density and optimum moisture content. All 14 of the tests were carried out using a California Bearing Ratio (CBR) mould, using a 4.5 kg rammer. The results are presented graphically as dry density/moisture content curves together with values of maximum dry density and optimum moisture content identified from the plot.

4.6 Contamination

44 soil samples, sampled at a ratio of between 2 and 4 samples per trial pit from TP1-1 to TP1-12, and 1 sample from each trial pit TP2-1 to TP6-3 were analysed for a screening suite of contaminants comprised of arsenic, cadmium, chromium (total), lead, mercury, selenium, copper, nickel, zinc, speciated polycyclic aromatic hydrocarbons (PAH), total petroleum hydrocarbons (banded TPH with Identification), organic matter, soluble sulphate and pH.

5 GROUND CONDITIONS

5.1 General

The exploratory holes were logged by an engineer and the ground conditions encountered are detailed on the logs contained in Appendix B and are summarised below.

5.2 Made Ground

All of the soil encountered was made ground and comprised mostly clay, with varying constituents of gravel and sand. Anthropogenic components of the made ground included brick, concrete, metals, glass and plastics. The classification of the fill is discussed in Section 6.

5.3 Indications of Contamination

There were no visual or olfactory indications of contamination in any of the exploratory holes.

6 RESULTS & DISCUSSION

6.1 Summary of results

Table 1: Summary of classification and contamination results					
Week	**Date**	**Sample Reference**	**Depth (m)**	**Class of Fill**	**Contamination Analysis**
Week 1	09 Mar–10 Mar 16	TP1-1	0-0.3	Class 2C	-
		TP1-1	0.3	-	Below Commercial GAC
		TP1-1	0.6-0.9	Class 2C	-
		TP1-1	0.9	-	Below Commercial GAC
		TP1-1	1.8	-	Below Commercial GAC
		TP1-2	0.6-0.9	Class 2C	-
		TP1-2	0.6	-	Below Commercial GAC
		TP1-2	0.9-1.2	Class 2C	-
		TP1-2	1.9	-	Below Commercial GAC
		TP1-3	0- 0.3	Class 2C	-
		TP1-3	0.3	-	Below Commercial GAC
		TP1-3	0.6-0.9	Class 2C	-
		TP1-3	0.6	-	Below Commercial GAC
		TP1-4	0.6-0.9	Class 2C	-
		TP1-4	1.2	-	Below Commercial GAC
		TP1-4	1.2-1.5	Class 2C	-
		TP1-4	1.5	-	Below Commercial GAC
		TP1-4	1.8	-	Below Commercial GAC
		TP1-5	0.3	-	Below Commercial GAC
		TP1-5	0.3-0.6	Class 2C	-
		TP1-5	0.9	-	Below Commercial GAC
		TP1-5	0.9-1.2	Class 2C	-
		TP1-6	0.3	-	Below Commercial GAC
		TP1-6	0.3-0.6	Class 2C	-
		TP1-6	0.9-1.2	Class 2C	-
		TP1-6	1.5	-	Below Commercial GAC
		TP1-7	0.6	-	Below Commercial GAC
		TP1-7	0.6-0.9	Class 2C	-
		TP1-7	1.2	-	Below Commercial GAC
		TP1-7	1.2-1.5	Class 2C	-
		TP1-8	0.3	-	Below Commercial GAC
		TP1-8	0.3-0.6	Class 2C	-
		TP1-8	0.9	-	Below Commercial GAC
		TP1-8	0.9-1.2	Class 2C	-
		TP1-9	0.6	-	Below Commercial GAC
		TP1-9	0.6-0.9	Class 2C	-

Table 1: Summary of classification and contamination results					
Week	**Date**	**Sample Reference**	**Depth (m)**	**Class of Fill**	**Contamination Analysis**
		TP1-9	1.2	-	Below Commercial GAC
		TP1-9	0.9-1.2	Class 2C	-
		TP1-10	0.3	-	Below Commercial GAC
		TP1-10	0.3-0.6	Class 2C	-
		TP1-10	1.2	-	Below Commercial GAC
		TP1-10	1.2-1.5	Class 2C	-
		TP1-11	1	-	Below guidelines
		TP1-11	1.5	-	Below guidelines
		TP1-11	2	-	Below guidelines
		TP1-12	1	-	Below guidelines
		TP1-12	1.5	-	Below guidelines
		TP1-12	1.8	-	Below guidelines
Week 2	18 Mar 16	TP2-1	0.30	Class 2A	Below guidelines
		TP2-2	0.30	Class 2A	Below guidelines
		TP2-3	0.30	Class 2C	Below guidelines
Week 3	24 Mar 16	TP3-1	0.30	Class 2A	Below guidelines
		TP3-2	0.30	Class 2C	Below guidelines
		TP3-3	0.30	Class 2C	Below guidelines
Week 4	01 Apr 16	TP4-1	0.30	Class 2C	Below guidelines
		TP4-2	0.30	Class 2C	Below guidelines
		TP4-3	0.30	Class 2C	Below guidelines
Week 5	15 Apr 16	TP5-1	0.30	Class 2A	Below guidelines
		TP5-2	0.30	Class 2C	Below guidelines
		TP5-3	0.30	Class 2B	Below guidelines
Week 6	13 May 16	TP6-1	0.30	Class 2C	Below guidelines
		TP6-2	0.30	Class 2A	Below guidelines
		TP6-3	0.30	Class 2C	Below guidelines

6.2 Classification

The results of particle size analyses undertaken on the samples tested were compared against the grading requirements for engineered fill contained in Table 6/1 and 6/2 of series 600 *Earthworks* of the Specification for Highway Works.

As shown in Table 1, above, all samples tested with the exception of 6 samples tested meet the grading requirement of Class 2C stony cohesive material. 5 samples met the grading requirement for Class 2A wet cohesive material, and 1 sample met the grading requirements for Class 2B dry cohesive material.

For class 2A fill there is also a requirement that the moisture content of the sample does not fall below the plastic limit minus 4% (the grading requirements for 2A and 2B are the same). The samples of 2A fill identified above meet these respective requirements.

6.3 Nuclear Density Testing/Compaction Testing

The 70 in-situ density nuclear probe tests recorded in-situ dry densities of between 1.33 Mg/m^3 and 1.95 Mg/m^3, with the average result of 1.66 Mg/m^3.

Laboratory compaction tests were carried out on the fill material from the area in which the in-situ density testing had been undertaken. These gave dry densities between 1.54 Mg/m^3 and 1.98 Mg/m^3, with an average of 1.84 Mg/m^3.

Table 2: Dry densities recorded on site and in the laboratory

Location	Dry Densities (Mg/m^3)		Degree of compaction achieved
	In situ test	Laboratory test (maximum achieved)	
TP1-1 0.3m	1.73	1.93	90%
TP1-2 0.6m	1.94	1.74	111%
TP1-3 0.0m	1.89	1.98	95%
TP1-4 1.2m	1.67	1.92	87%
TP1-5 0.9m	1.48	1.81	82%
TP1-6 0.9m	1.55	1.87	83%
TP1-7 0.6m	1.74	1.94	90%
TP1-8 0.0m	1.67	1.85	90%
TP1-9 0.6m	1.50	1.91	79%
TP1-10 1.2m	1.60	1.87	86%
NDM51	1.33	1.54	86%
NDM57	1.82	1.78	102%
NDM64	1.79	1.77	101%
NDM70	1.70	1.85	92%

The fill density was generally less than the achieved density in the laboratory and was on average 91 % of the actual achieved. The moisture content of the compaction samples was generally higher, on average by 9.86 %, than the optimum moisture content.

6.4 Contamination

The principal purpose of the work was to provide independent 3rd party data on the composition of the fill, for validation of analysis undertaken by others. However to assist with identifying whether the results indicated material that may be unsuitable for use on a commercial development, the results of this screening have been compared to the RSK generic assessment criteria (GAC) for a commercial end use.

The background to the GAC is detailed on the enclosed GAC sheets. For consistency the GAC selected are those that were current at the commencement of the project. The

concentrations determined of the contaminants were below the stated guidelines for a commercial end land use scenario.

6.4.1 Summary of Contamination

Consideration of the available contamination analysis results has shown contaminant concentrations to be below the assessment criteria for commercial development land use. Accordingly, no long term risks to human health have been identified from the contaminants considered.

7 SUMMARY

7.1 This investigation was carried out on the instructions of Ridge & Partners LLP on behalf of Rhonda Limited.

7.2 The purpose of the work was to undertake independent check testing of the status of material imported onto Area I site against the classification requirements of the Specification for Highway Works, degree of compaction achieved and screen contamination against appropriate guidance.

7.3 The site is located approximately 10 km north-west of Bristol city centre (see Site Location Plan in Appendix A). The British National Grid Reference of the site is ST 544 817.

7.4 6 nominally weekly visits to the site were made between 9 March 2016 and 13 May 2016. On each visit, 3 hand dug trial pits were dug to a depth of 0.30m, with the exception of visit 1 where 12 pits were mechanically excavated to a maximum depth of 2.3m, and samples were taken for geotechnical and contamination testing.

7.5 2 visits to the site to conduct in-situ density tests using a nuclear density probe were completed on 10 Mar 2016 and 13 May 2016. One sample for laboratory compaction testing was taken for every five in-situ tests undertaken.

7.6 There were no visual or olfactory indications of contamination in any of the exploratory holes.

7.7 All the samples tested meet the grading requirement of either Class 2A wet cohesive material, 2B dry cohesive material or Class 2C stony cohesive material.

7.8 The 70 in-situ density nuclear probe tests recorded in-situ dry densities of between 1.33 Mg/m^3 and 1.95 Mg/m^3, with the average result of 1.66 Mg/m^3.

7.9 Laboratory compaction tests gave dry densities between 1.54 Mg/m^3 and 1.98 Mg/m^3, with an average of 1.84 Mg/m^3.

7.10 The in-situ fill density was on average 91 % of the laboratory maximum dry density.

7.11 The investigation has shown contaminant levels in the soil to be below generic assessment criteria, which indicates that no long term risks to human health on a commercial development are likely to be posed by the contaminants considered.

8 REFERENCES

8.1 BS 5930:2015 *Code of practice for ground investigations*

8.2 BS 10175:2011 *Investigation of potentially contaminated sites: Code of practice*, including amendment A1 (2013)

8.3 British Geological Survey sheet 264 scale 1:50,000, published 2004

8.4 British Geological Survey online digital geological map, www.bgs.ac.uk/data

8.5 British Geological Survey Lexicon of Named Rock Units, www.bgs.ac.uk/lexicon

8.6 BS EN ISO 14688-1:2002 *Geotechnical investigation and testing – Identification and classification of soil: Part 1: Identification and description*, including Amendment A1 2013

8.7 Environment Agency Policy. Part IIA – *Detailed Quantitative Assessment of Chronic Risks to Human Health from Contaminated Soils*. Policy Number 199_04, dated 9 March 2004

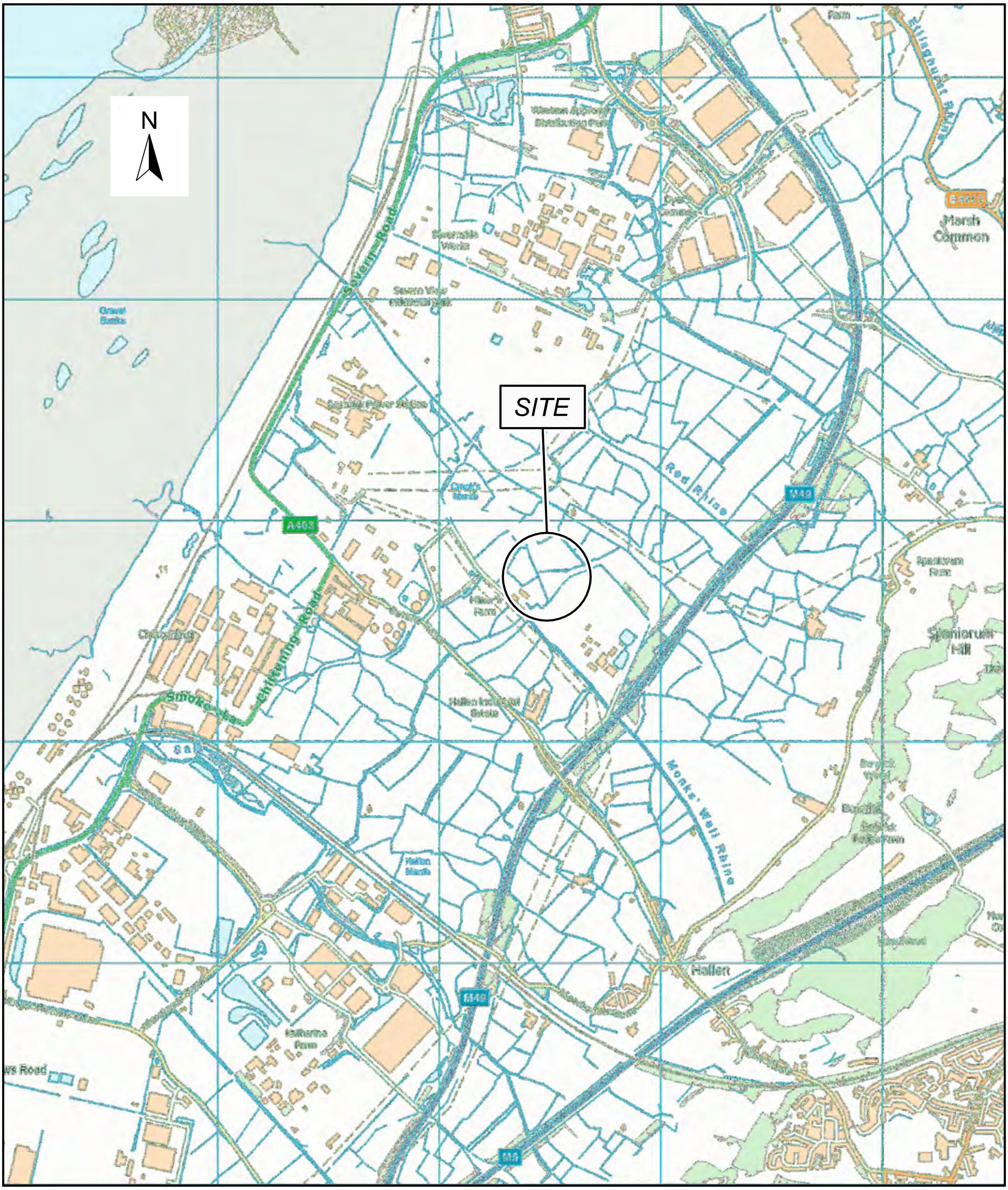
8.8 BS 1377:1990 *Methods of Test for Soils for Civil Engineering Purposes*

Department for Transport, Manual of Contract Documents for Highway Works (MCHW), *Volume One: Specification for Highway Works, Section 600 Earthworks*, February 2016

APPENDIX A -
PLANS AND DRAWINGS

(i) Site Location Plan

(ii) Exploratory Hole Location Plan



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CLIENT: Rhonda Ltd

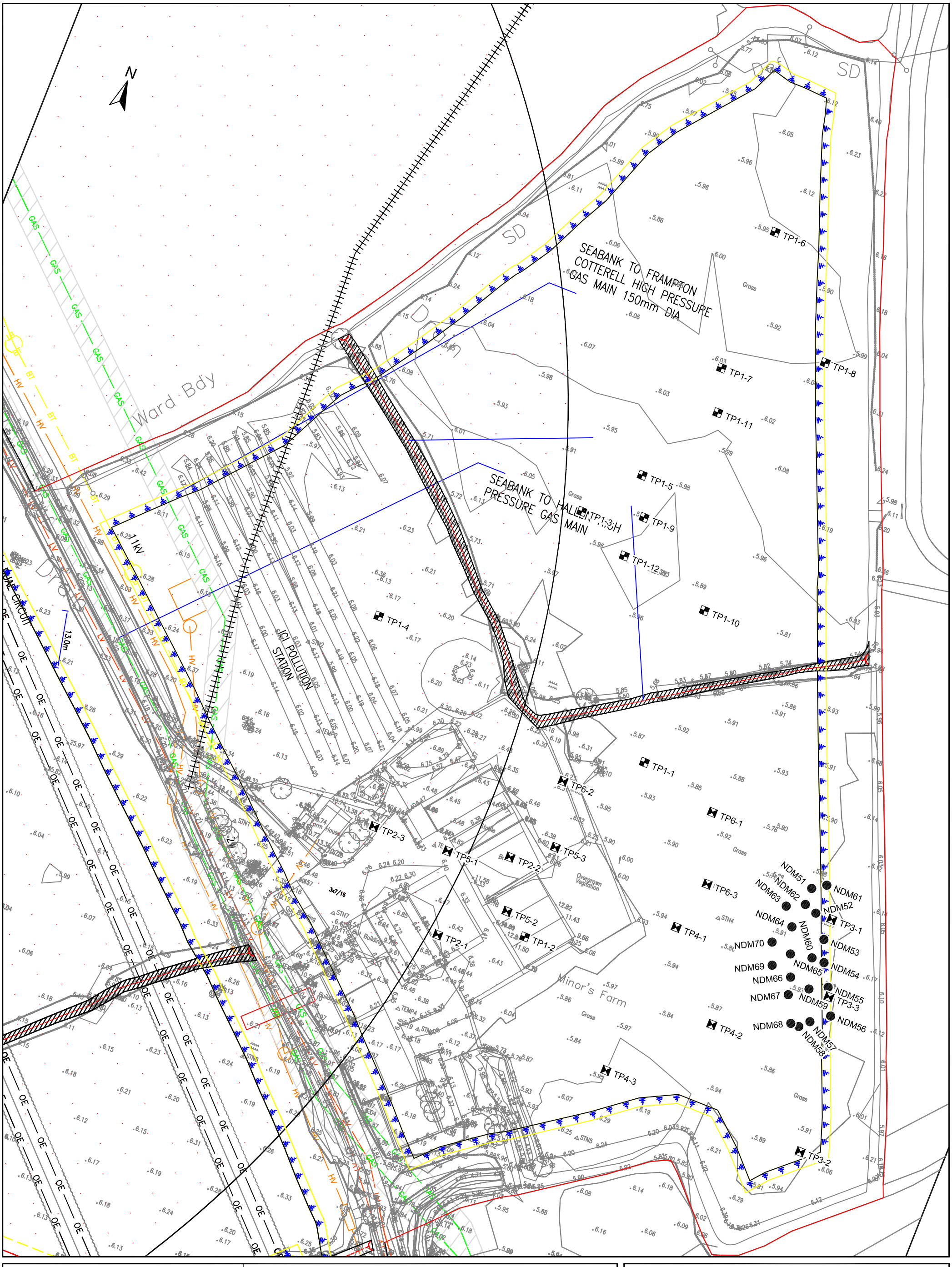
PROJECT: Area I, Severnside

TITLE: SITE LOCATION MAP

REV.	DATE	DESCRIPTION	BY	CHD.	APR.
00	16.12.2016	-	JH	GC	-

DIMENSION	SCALE	DRAWING STATUS
m	1:25,000	-

JOB NO	GRID REF	SCALE BAR	ORIGIN SIZE	FIGURE
731391	ST 543 817	0 250 500 750 1,000m	A4	1



00	16.12.2016	-	JH	GC	-
REV	DATE	DESCRIPTION	BY	CHD	APR

DIMENSION	SCALE	ORIGIN SIZE
m	1:800	A3

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CLIENT: Rhonda Ltd

PROJECT: Area I, Severnside

TITLE: EXPLORATORY HOLE LOCATION PLAN

JOB NO	SCALE BAR	FIGURE
731391	0 5 10 15 20 25 30 35 40 45 50m	2

LEGEND

- Trial Pit Location
- Nuclear Density Method (NDM) Test Location
- Trial Pit with NDM Test Location

APPENDIX B - EXPLORATORY HOLE RECORDS

(i) Key to Exploratory Hole Logs

(ii) Trial Pit Logs

STRUCTURAL SOILS

Contract Reference: **731391**

KEY TO EXPLORATORY HOLE LOGS - SUMMARY OF GRAPHIC SYMBOLS

MATERIAL GRAPHIC LEGENDS


MADE GROUND


Sandy CLAY


Sandy gravelly CLAY

INSTRUMENTATION SYMBOLS


Backfill

KEY TO EXPLORATORY HOLE LOGS - SUMMARY OF ABBREVIATIONS

SAMPLING

Sample type codes

B	=	Bulk disturbed sample.
ES	=	Soil sample for environmental testing.
LB	=	Large bulk disturbed sample (for earthworks testing).

ADDITIONAL NOTES

1. All soil and rock descriptions and legends in general accordance with BS EN ISO 14688-1, 14688-2, 14689-1, and BS5930:2015.
2. Material types divided by a broken line (- - -) indicates an unclear boundary.
3. The data on any sheet within the report showing the AGS icon is available in the AGS format.

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STRUCTURAL SOILS

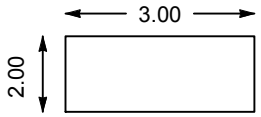
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP1-1**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**09.03.16**	**---**	**E:354404.0 N:181704.0**	**1** of **1**
	End: **09.03.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	2	B				MADE GROUND: Firm, locally stiff brown and grey slightly sandy gravelly CLAY with a low cobble and boulder content. Gravel is of asphalt, mudstone, brick, and concrete. Cobbles are up to 110mm across of concrete. Boulders are upto 350mm across of concrete and asphalt. Frequent ceramic, glass and shell fragments.	(2.00)	
0.30	1	ES						
0.30-0.60	5	LB						
0.60-0.90	4	B						
0.90	3	ES						
1.80	6	ES					2.00	
						Firm pale grey slightly sandy CLAY. (ALLUVIUM)	(0.30)	
							2.30	
						Trial pit terminated at 2.30m depth.		

Plan (Not to Scale)



General Remarks

1. NDM in-situ testing conducted at 0mm, 300mm, 600mm, 900mm and 1200mm depth below ground level.
2. Trial pit remained stable throughout.
3. No groundwater encountered in trial pit.
4. Trial pit backfilled with arisings and compacted in layers upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**JSimmonds**	AW.

STRUCTURAL SOILS

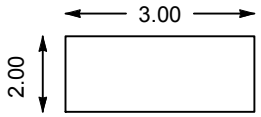
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP1-2**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**09.03.16**	**---**	**E:354393.0 N:181656.0**	**1** of **1**
	End: **09.03.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.60	1	ES				MADE GROUND: Firm to stiff brownish red and grey slightly sandy gravelly CLAY with a low cobble content and a low boulder content. Gravel is of asphalt, mudstone, brick and limestone. Cobbles are of asphalt, concrete and limestone. Boulders are up to 350mm of asphalt and concrete. Frequent glass fragments.	(2.00)	
0.60-0.90	2	B						
0.60-0.90	5	LB						
0.90	3	ES						
0.90-1.20	4	B						
1.90	6	ES					2.00	
						Stiff grey slightly sandy slightly gravelly organic CLAY. Gravel is fine to medium of mudstone. (ALLUVIUM)	(0.30)	
2.20	7	ES					2.30	
						Trial pit terminated at 2.30m depth.		

Plan (Not to Scale)



General Remarks

1. NDM in-situ testing conducted at 0mm, 300mm, 600mm, 900mm and 1200mm depth below ground level.
2. Trial pit remained stable throughout.
3. No groundwater encountered in trial pit.
4. Trial pit backfilled with arisings and compacted in layers upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**JSimmonds**	AW.

STRUCTURAL SOILS

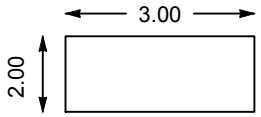
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP1-3**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**09.03.16**	**---**	**E:354369.0 N:181753.0**	**1** of **1**
	End: **09.03.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	2	B				MADE GROUND: Firm, locally stiff brownish orange and grey slightly sandy locally sandy gravelly CLAY with a low cobble and boulder content. Gravel is of limestone, asphalt, mudstone and concrete. Cobbles and boulders are up to 300mm of limestone and concrete.	(1.50)	
0.00-0.30	5A	B						
0.30	1	ES						
0.60	3	ES						
0.60-0.90	4	B						
							1.50	
						Trial pit terminated at 1.50m depth.		

Plan (Not to Scale)



General Remarks

1. NDM in-situ testing conducted at 0mm, 300mm, 600mm, 900mm and 1200mm depth below ground level.
2. Trial pit remained stable throughout.
3. No groundwater encountered in trial pit.
4. Trial pit backfilled with arisings and compacted in layers upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**JSimmonds**	AW.

STRUCTURAL SOILS

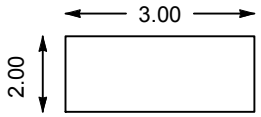
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP1-4**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**09.03.16** End: **09.03.16**	**---**	**E:354334.0 N:181713.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Firm, locally stiff dark brown, brownish red and grey slightly sandy locally sandy gravelly CLAY with a low cobble and boulder content. Gravel is of limestone, mudstone, brick, asphalt, concrete and clinker. Cobbles and boulders are up to 400mm across of brick, asphalt and concrete. Boulders upto 400mm. Frequent glass and ceramic fragments.	(1.90)	
0.60	1	ES						
0.60-0.90	5A	B						
1.20	3	ES						
1.20-1.50	4	B						
1.20-1.50	5	LB						
1.50	6	ES						
1.80	7	ES					1.90	
						Stiff grey slightly sandy CLAY with frequent rootlets. (ALLUVIUM)	(0.30)	
							2.20	
						Trial pit terminated at 2.20m depth.		

Plan (Not to Scale)



General Remarks

1. NDM in-situ testing conducted at 0mm, 300mm, 600mm, 900mm and 1200mm depth below ground level.
2. Trial pit remained stable throughout.
3. No groundwater encountered in trial pit.
4. Trial pit backfilled with arisings and compacted in layers upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**JSimmonds**	AW.

STRUCTURAL SOILS

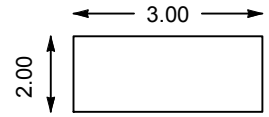
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP1-5**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**09.03.16**	**---**	**E:354379.0 N:181766.0**	**1** of **1**
	End: **09.03.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.30	1	ES				MADE GROUND: Firm, locally stiff dark brown, brownish red and grey slightly sandy locally sandy gravelly CLAY with a low cobble and boulder content. Gravel is of limestone, mudstone, brick, asphalt, concrete and clinker. Cobbles and boulders are up to 400mm across of brick, asphalt and concrete. Frequent glass and ceramic fragments.	(1.50)	
0.30-0.60	2	B						
0.90	3	ES						
0.90-1.20	4	B						
0.90-1.20	5A	B						
							1.50	
						Trial pit terminated at 1.50m depth.		

Plan (Not to Scale)



General Remarks

1. NDM in-situ testing conducted at 0mm, 300mm, 600mm, 900mm and 1200mm depth below ground level.
2. Trial pit remained stable throughout.
3. No groundwater encountered in trial pit.
4. Trial pit backfilled with arisings and compacted in layers upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**JSimmonds**	AW.

STRUCTURAL SOILS

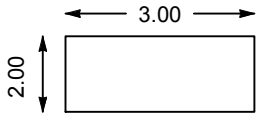
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP1-6**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**10.03.16**	**---**	**E:354387.0 N:181830.0**	**1** of **1**
	End: **10.03.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.30	1	ES				MADE GROUND: Firm to stiff reddish brown slightly sandy gravelly CLAY with a medium cobble content and low boulder content. Gravel is mudstone, limestone, asphalt, chalk and flint. Cobbles and boulders are brick, concrete and medium dense chalk. Boulders are up to 350mm.	(0.80)	
0.30-0.60	2	B					0.80	
0.90	3	ES				MADE GROUND: Firm to stiff reddish brown slightly sandy slightly gravelly CLAY with a medium cobble content. Gravel is of mortar, brick, limestone. Cobbles are of brick and concrete. Frequent ceramic fragments. . . . at 1.00m to 1.10m stiff grey clay layer.	(1.00)	
0.90-1.20	4	B						
0.90-1.20	5B	B						
1.50	6	ES					1.80	
2.00	7	ES				Stiff grey mottled pale orangish grey slightly sandy CLAY with frequent rootlets. (ALLUVIUM)	(0.40)	
							2.20	
						Trial pit terminated at 2.20m depth.		

Plan (Not to Scale)



General Remarks

1. NDM in-situ testing conducted at 0mm, 300mm, 600mm, 900mm and 1200mm depth below ground level.
2. Trial pit remained stable throughout.
3. No groundwater encountered in trial pit.
4. Trial pit backfilled with arisings and compacted in layers upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**JSimmonds**	AW.

STRUCTURAL SOILS

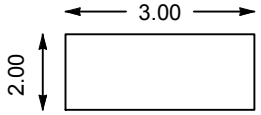
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP1-7**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**10.03.16**	**---**	**E:354387.0 N:181796.0**	**1** of **1**
	End: **10.03.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.60	1	ES				MADE GROUND: Firm to stiff reddish brown and grey slightly sandy gravelly CLAY with a low cobble and boulder content. Gravel is of limestone, chalk, brick, mortar, mudstone and asphalt. Cobbles are of brick, asphalt and chalk. Boulders are of brick, asphalt and concrete. Frequent glass fragments.	(1.50)	
0.60-0.90	5A	B						
0.60-0.90	5B	B						
1.20	3	ES						
1.20-1.50	4	B						
							1.50	
						Trial pit terminated at 1.50m depth.		

Plan (Not to Scale)



General Remarks

1. NDM in-situ testing conducted at 0mm, 300mm, 600mm, 900mm and 1200mm depth below ground level.
2. Trial pit remained stable throughout.
3. No groundwater encountered in trial pit.
4. Trial pit backfilled with arisings and compacted in layers upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**JSimmonds**	AW.

STRUCTURAL SOILS

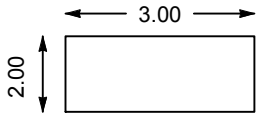
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP1-8**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**10.03.16**	**---**	**E:354409.0 N:181806.0**	**1** of **1**
	End: **10.03.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	5A	B				MADE GROUND: Firm reddish brown and orange slightly sandy gravelly CLAY with a low cobble and boulder content. Gravel is of limestone, mortar and clinker. Cobbles and boulders are of concrete, brick and asphalt. Frequent ceramic fragments.	(1.50)	
0.30	1	ES						
0.30-0.60	2	B						
0.90	3	ES						
0.90-1.20	4	B						
							1.50	
						Trial pit terminated at 1.50m depth.		

Plan (Not to Scale)



General Remarks

1. NDM in-situ testing conducted at 0mm, 300mm, 600mm, 900mm and 1200mm depth below ground level.
2. Trial pit remained stable throughout.
3. No groundwater encountered in trial pit.
4. Trial pit backfilled with arisings and compacted in layers upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**JSimmonds**	AW.

STRUCTURAL SOILS

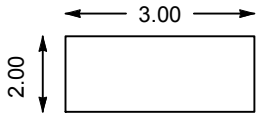
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP1-9**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**10.03.16**	**---**	**E:354383.0 N:181757.0**	**1** of **1**
	End: **10.03.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.60	1	ES				MADE GROUND: Firm to stiff reddish brown and dark grey slightly sandy gravelly CLAY with low cobble and boulder content. Gravel is of limestone, mudstone, brick, mortar and asphalt. Cobbles are of brick and concrete. Boulders are of concrete. Frequent glass fragments.	(1.50)	
0.60-0.90	5A	B						
0.60-0.90	5B	B						
0.90-1.20	4	B						
1.20	3	ES					1.50	
						Trial pit terminated at 1.50m depth.		

Plan (Not to Scale)



General Remarks

1. NDM in-situ testing conducted at 0mm, 300mm, 600mm, 900mm and 1200mm depth below ground level.
2. Trial pit remained stable throughout.
3. No groundwater encountered in trial pit.
4. Trial pit backfilled with arisings and compacted in layers upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**JSimmonds**	AW.

STRUCTURAL SOILS

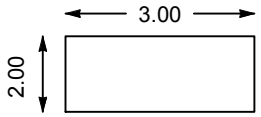
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP1-10**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**10.03.16**	**---**	**E:354404.0 N:181742.0**	**1** of **1**
	End: **10.03.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.30	1	ES				MADE GROUND: Firm to stiff reddish brown and dark grey slightly sandy gravelly CLAY with a low cobble and boulder content. Gravel is of limestone, mudstone, brick, mortar and asphalt. Cobbles are of brick and concrete. Boulders are of concrete. Frequent glass fragments.		
0.30-0.60	2	B						
							(2.10)	
1.20	3	ES						
1.20-1.50	4	B						
1.20-1.50	5A	B						
							2.10	
2.10-2.30	6	B				Stiff grey mottled pale brown slightly sandy CLAY with frequent rootlets. (ALLUVIUM)	2.30	
						Trial pit terminated at 2.30m depth.		

Plan (Not to Scale)



General Remarks

1. NDM in-situ testing conducted at 0mm, 300mm, 600mm, 900mm and 1200mm depth below ground level.
2. Trial pit remained stable throughout.
3. No groundwater encountered in trial pit.
4. Trial pit backfilled with arisings and compacted in layers upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**JSimmonds**	AW.

STRUCTURAL SOILS

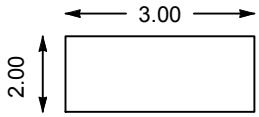
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP1-11**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**10.03.16**	**---**	**E:354390.0 N:181786.0**	**1** of **1**
	End: **10.03.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
1.00	1	ES				MADE GROUND: Firm to stiff reddish brown and grey slightly sandy gravelly CLAY with a low cobble and boulder content. Gravel is of limestone, mudstone, mortar, brick, asphalt and and concrete. Cobbles and boulders are of concrete and brick. Frequent glass fragments.	(1.90)	
1.50	2	ES					1.90	
2.00	3	ES				Stiff grey mottled pale orangish grey slightly sandy CLAY. (ALLUVIUM)	(0.40)	
						Trial pit terminated at 2.30m depth.	2.30	

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings and compacted in layers upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**JSimmonds**	AW.

STRUCTURAL SOILS

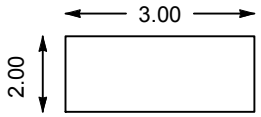
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP1-12**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**10.03.16**	**---**	**E:354382.0 N:181747.0**	**1** of **1**
	End: **10.03.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
1.00	1	ES				MADE GROUND: Firm, locally stiff dark brown, brownish red and grey slightly sandy locally sandy gravelly CLAY with a low cobble and boulder content. Gravel is of limestone, mudstone, brick, asphalt, concrete and clinker. Cobbles and boulders are of brick, asphalt and concrete up to 400mm across. Frequent glass and ceramic fragments.	(1.90)	
1.50	2	ES						
1.90	3	ES					1.90	
						Stiff grey mottled orange slightly sandy CLAY with abundant rootlets. (ALLUVIUM)	(0.40)	
							2.30	
						Trial pit terminated at 2.30m depth.		

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings and compacted in layers upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**JSimmonds**	AW.

STRUCTURAL SOILS

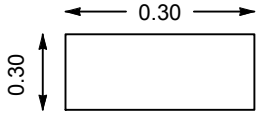
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP2-1**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**18.03.16**	**---**	**E:354374.0 N:181649.0**	**1** of **1**
	End: **18.03.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	2	B				MADE GROUND: Stiff grey mottled yellow silty CLAY.	(0.30)	
0.30	1	ES				Trial pit terminated at 0.30m depth.	0.30	

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings on completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**STaylor**	AW.

STRUCTURAL SOILS

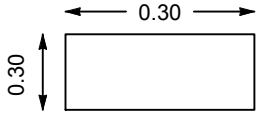
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP2-2**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**18.03.16** End: **18.03.16**	**---**	**E:354383.0 N:181672.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	2	B				MADE GROUND: Reddish brown sandy gravelly CLAY. Gravel is angular to subangular, fine to coarse of brick, concrete and asphalt. Frequent wood fragments.	(0.30)	
							0.30	
0.30	1	ES				Trial pit terminated at 0.30m depth.		

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings on completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**STaylor**	AW.

STRUCTURAL SOILS

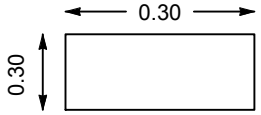
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP2-3**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**18.03.16** End: **18.03.16**	**---**	**E:354351.0 N:181667.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	2	B				MADE GROUND: Yellow slightly clayey sandy subangular to subrounded fine to coarse GRAVEL of brick and concrete.	(0.30)	
0.30	1	ES				Trial pit terminated at 0.30m depth.	0.30	

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings on completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**STaylor**	AW.

STRUCTURAL SOILS

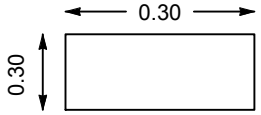
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP3-1**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**24.03.16**	**---**	**E:354458.0 N:181686.0**	**1** of **1**
	End: **24.03.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	2	B				MADE GROUND: Firm to stiff dark grey slightly sandy slightly gravelly CLAY with a medium cobble content. Gravel is of limestone, mudstone, brick and asphalt. Cobbles are of limestone up to 200mm across.	(0.30)	
0.30	1	ES				Trial pit terminated at 0.30m depth.	0.30	

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings on completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**JSimmonds**	AW.

STRUCTURAL SOILS

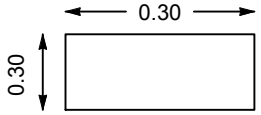
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP3-2**

Contract Ref:	Start: **24.03.16**	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	End: **24.03.16**	**---**	**E:354471.0 N:181633.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	2	B				MADE GROUND: Firm reddish brown and grey slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is of mudstone, limestone and brick. Cobbles are of limestone up to 130mm across.	(0.30)	
							0.30	
0.30	1	ES				Trial pit terminated at 0.30m depth.		

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings on completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**JSimmonds**	AW.

STRUCTURAL SOILS

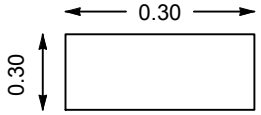
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP3-3**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**24.03.16**	**---**	**E:354464.0 N:181669.0**	**1** of **1**
	End: **24.03.16**			

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	2	B				MADE GROUND: Firm to stiff reddish brown and grey slightly sandy slightly gravelly CLAY. Gravel is of mudstone, limestone and chalk. Frequent expanded foam insulation board fragments.	(0.30)	
0.30	1	ES				Trial pit terminated at 0.30m depth.	0.30	

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings on completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**JSimmonds**	AW.

STRUCTURAL SOILS

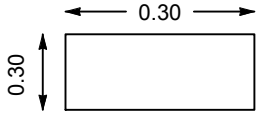
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP4-1**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**01.04.16** End: **01.04.16**	**---**	**E:354425.0 N:181671.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	2	B				MADE GROUND: Firm reddish brown and grey slightly sandy slightly gravelly CLAY. Gravel is of chalk, limestone, asphalt, clinker, mudstone, brick and concrete. Rare wood fragments.	(0.30)	
0.30	1	ES				Trial pit terminated at 0.30m depth.	0.30	

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings on completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**JSimmonds**	AW.

STRUCTURAL SOILS

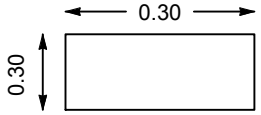
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP4-2**

Contract Ref:	Start: **01.04.16**	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	End: **01.04.16**	**---**	**E:354441.0 N:181653.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	2	B				MADE GROUND: Firm to stiff reddish brown and greyish brown slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is of limestone, chalk, brick, concrete, asphalt and mudstone. Cobbles are of brick and asphalt.	(0.30)	
0.30	1	ES				Trial pit terminated at 0.30m depth.	0.30	

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings on completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**JSimmonds**	AW.

STRUCTURAL SOILS

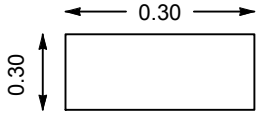
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP4-3**

Contract Ref:	Start: **01.04.16**	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	End: **01.04.16**	**---**	**E:354422.0 N:181634.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	2	B				MADE GROUND: Firm to stiff reddish brown and greyish brown slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is of limestone, chalk, brick, concrete, asphalt and mudstone. Cobbles are of brick and asphalt.	(0.30)	
0.30	1	ES				Trial pit terminated at 0.30m depth.	0.30	

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings on completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**JSimmonds**	AW.

STRUCTURAL SOILS

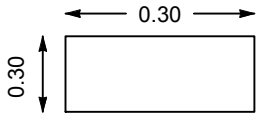
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP5-1**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**15.04.16** End: **15.04.16**	**---**	**E:354369.0 N:181668.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	2	B				MADE GROUND: Stiff dark grey and greyish brown slightly sandy slightly gravelly CLAY. Gravel is of mudstone and mortar.	(0.30)	
							0.30	
0.30	1	ES				Trial pit terminated at 0.30m depth.		

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings on completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**JSimmonds**	AW.

STRUCTURAL SOILS

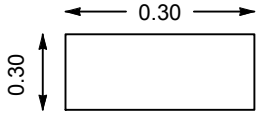
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP5-2**

Contract Ref:	Start: **15.04.16**	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	End: **15.04.16**	**---**	**E:354387.0 N:181660.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	2	B				MADE GROUND: Stiff dark grey and greyish brown slightly sandy slightly gravelly CLAY. Gravel is of mudstone and mortar.	(0.30)	
							0.30	
0.30	1	ES				Trial pit terminated at 0.30m depth.		

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings on completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**JSimmonds**	AW.

STRUCTURAL SOILS

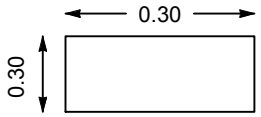
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP5-3**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**15.04.16** End: **15.04.16**	**---**	**E:354392.0 N:181678.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	2	B				MADE GROUND: Stiff dark grey and greyish brown slightly sandy slightly gravelly CLAY. Gravel is of mudstone and mortar.	(0.30) 0.30	
0.30	1	ES				Trial pit terminated at 0.30m depth.		

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings on completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**JSimmonds**	AW.

STRUCTURAL SOILS

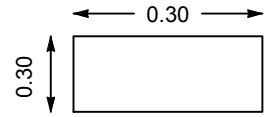
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP6-1**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**13.05.16** End: **13.05.16**	**---**	**E:354423.0 N:181699.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Light brownish yellow sandy gravelly CLAY with a low cobble content. Sand is fine to coarse. Gravel is angular to subangular of concrete and brick. Cobbles are angular of concrete.	(0.30)	
0.30	1	ES					0.30	
0.30	2	B				Trial pit terminated at 0.30m depth.		

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings on completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**STaylor**	AW.

STRUCTURAL SOILS

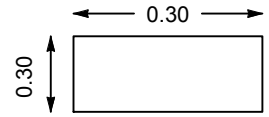
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Area I, Severnside	**Severnside Distribution Land Ltd**	**TP6-2**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	**13.05.16** End: **13.05.16**	**---**	**E:354388.0 N:181693.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Yellow mottled light brown slightly sandy gravelly CLAY with a low cobble content. Sand is fine to coarse. Gravel is angular to subangular, fine to coarse of concrete, brick and flint. Cobbles are angular of brick.	(0.30)	
0.30	1	ES					0.30	
0.30	2	B				Trial pit terminated at 0.30m depth.		

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings on completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**STaylor**	AW.

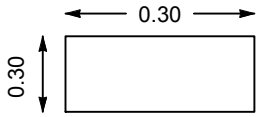
STRUCTURAL SOILS

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Area I, Severnside		**Severnside Distribution Land Ltd**		**TP6-3**
Contract Ref:	Start: **13.05.16**	Ground Level:	National Grid Co-ordinate:	Sheet:
731391	End: **13.05.16**	**---**	**E:354428.0 N:181683.0**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Red slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular, fine to coarse of limestone.	(0.30)	
0.30	1	ES					0.30	
0.30	2	B				Trial pit terminated at 0.30m depth.		

Plan (Not to Scale)



General Remarks

1. Trial pit remained stable throughout.
2. No groundwater encountered in trial pit.
3. Trial pit backfilled with arisings on completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Hand dug	**Hand tools**	**STaylor**	AW.

APPENDIX C - GEOTECHNICAL LABORATORY & IN-SITU TESTING

(i) Laboratory Test Verification Sheet

(ii) Laboratory Test Results

(iii) In-situ Test Results

(iv) In-situ Test Validation Certificate

TESTING VERIFICATION CERTIFICATE

1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **13/04/2016 09:22:00**.

Testing reported after this date is not covered by this Verification Certificate.

Dimitris Xirouchakis

Approved Signatory
Dimitris Xirouchakis (Associate Laboratory Director)

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HP3 9RT

Tonbridge Laboratory
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TN11 9HU

STRUCTURAL SOILS LTD	Contract: **Area I, Severnside**	Job No: **731391**

TESTING VERIFICATION CERTIFICATE

1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

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This testing verification certificate covers all testing compiled on or before the following datetime: **11/04/2016 15:57:24**.

Testing reported after this date is not covered by this Verification Certificate.

Dimitris Xirouchakis

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STRUCTURAL SOILS LTD	Contract: **Area I, Severnside**	Job No: **731391**

TESTING VERIFICATION CERTIFICATE

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ISSUE STATUS: **FINAL**

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This testing verification certificate covers all testing compiled on or before the following datetime: **10/05/2016 14:46:20**.

Testing reported after this date is not covered by this Verification Certificate.

Dimitris Xirouchakis

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STRUCTURAL SOILS LTD	Contract: **Area I, Severnside**	Job No: **731391**

TESTING VERIFICATION CERTIFICATE

1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **13/04/2016 09:17:00**.

Testing reported after this date is not covered by this Verification Certificate.

Dimitris Xirouchakis

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STRUCTURAL SOILS LTD	Contract: **Area I, Severnside**	Job No: **731391**

TESTING VERIFICATION CERTIFICATE

1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **21/04/2016 11:21:15**.

Testing reported after this date is not covered by this Verification Certificate.

Dimitris Xirouchakis

Approved Signatory
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STRUCTURAL SOILS LTD	Contract: **Area I, Severnside**	Job No: **731391**

TESTING VERIFICATION CERTIFICATE

1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **21/06/2016 14:25:17**.

Testing reported after this date is not covered by this Verification Certificate.

Dimitris Xirouchakis

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Dimitris Xirouchakis (Associate Laboratory Director)

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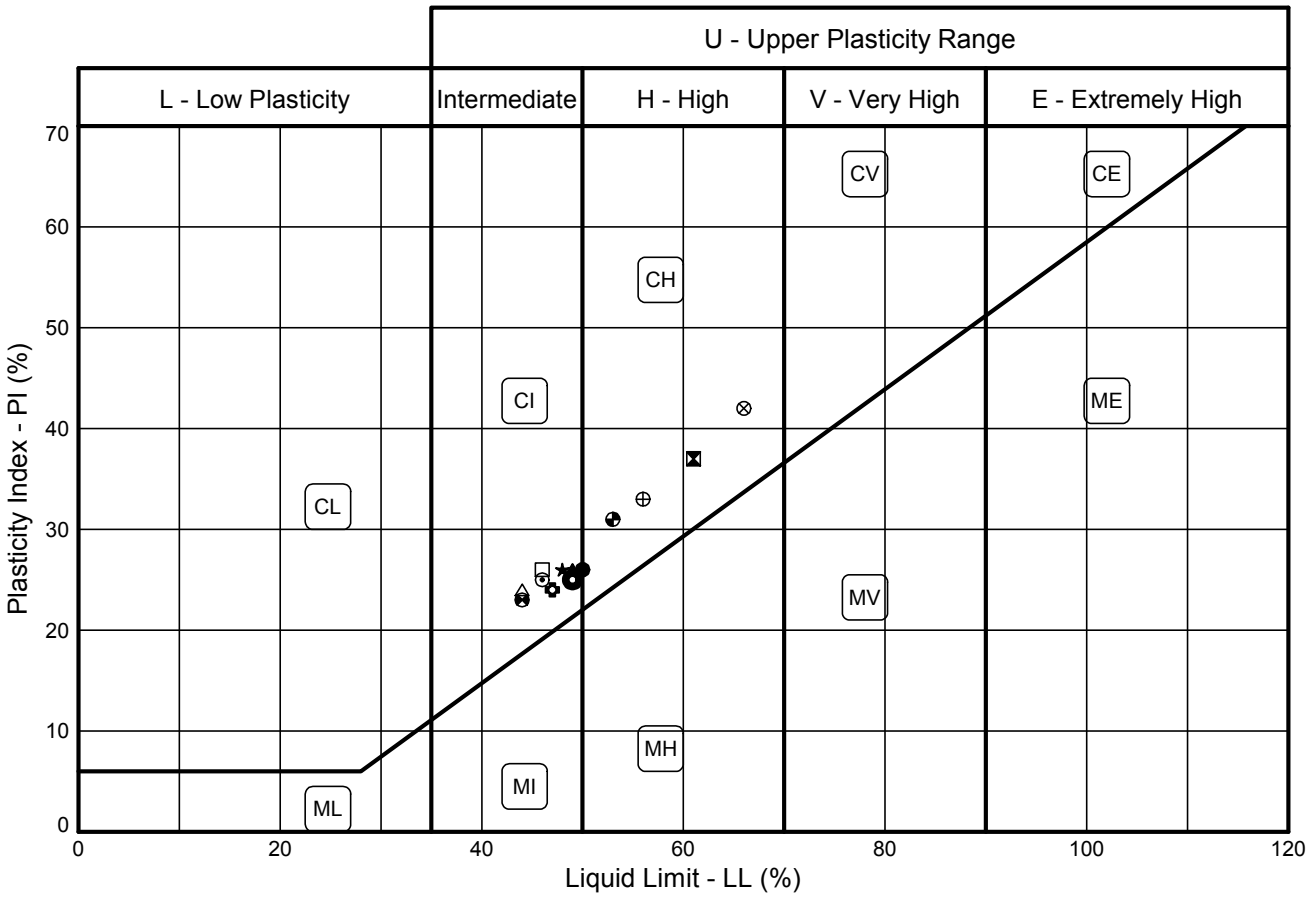
STRUCTURAL SOILS LTD	Contract: **Area I, Severnside**	Job No: **731391**

PLASTICITY CHART - PI Vs LL

In accordance with clause 42.3 of BS5930:1999
Testing in accordance with BS1377-2:1990



Sample Identification				BS Test Method #	Preparation Method +	MC	LL	PL	PI	<425um	Lab location
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%	
●	TP1-1	2B	0.00	3.2/4.4/5.3/5.4	4.2.4	15	50	24	26	43	B
⊠	TP1-1	4B	0.60	3.2/4.4/5.3/5.4	4.2.4	23	61	24	37	59	B
▲	TP1-2	2B	0.60	3.2/4.4/5.3/5.4	4.2.4	18	49	23	26	66	B
★	TP1-2	4B	0.90	3.2/4.4/5.3/5.4	4.2.4	18	48	22	26	53	B
⊙	TP1-3	2B	0.00	3.2/4.4/5.3/5.4	4.2.4	19	46	21	25	49	B
✿	TP1-3	4B	0.60	3.2/4.4/5.3/5.4	4.2.4	20	47	23	24	35	B
◉	TP1-4	2B	0.60	3.2/4.4/5.3/5.4	4.2.4	16	49	24	25	55	B
△	TP1-4	4B	1.20	3.2/4.4/5.3/5.4	4.2.4	20	44	20	24	54	B
⊗	TP1-5	2B	0.30	3.2/4.4/5.3/5.4	4.2.4	22	66	24	42	19	B
⊕	TP1-5	4B	0.90	3.2/4.4/5.3/5.4	4.2.4	27	56	23	33	48	B
□	TP1-6	2B	0.30	3.2/4.4/5.3/5.4	4.2.4	19	46	20	26	58	B
⊛	TP1-6	4B	0.90	3.2/4.4/5.3/5.4	4.2.4	23	44	21	23	70	B
◒	TP1-7	2B	0.60	3.2/4.4/5.3/5.4	4.2.4	21	53	22	31	72	B

Tested in accordance with the following clauses of BS1377-2:1990.

3.2 - Moisture Content
4.3 - Cone Penetrometer Method
4.4 - One Point Cone Penetrometer Method
4.6 - One Point Casagrande Method
5.3 - Plastic Limit Method
5.4 - Plasticity Index

+ Tested in accordance with the following clauses of BS1377-2:1990.

4.2.3 - Natural State
4.2.4 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
1a Princess Street
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Bristol
BS3 4AG

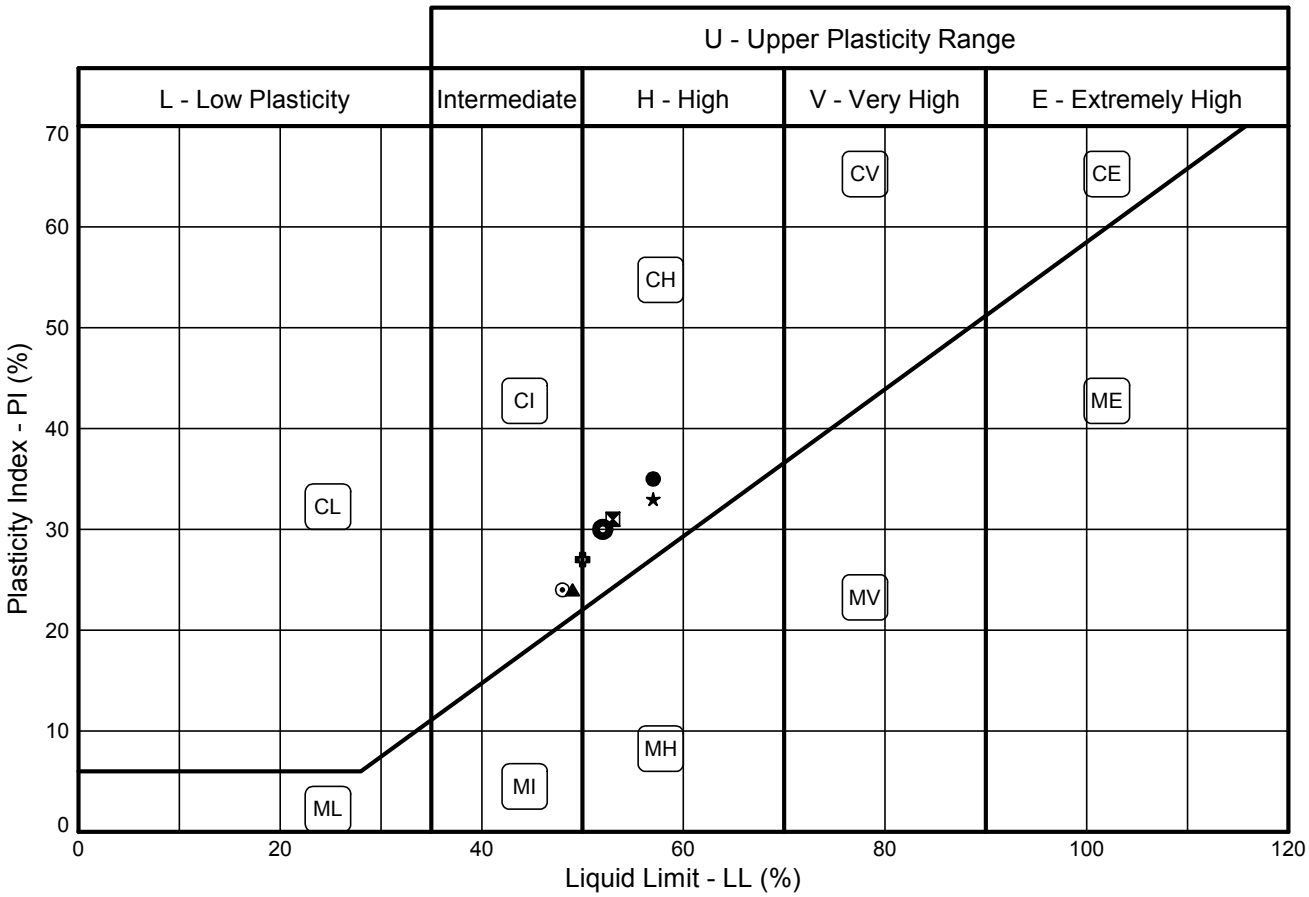
Compiled By		Date
A.D. Frost	**ALAN FROST**	**05/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

AGS

PLASTICITY CHART - PI Vs LL

In accordance with clause 42.3 of BS5930:1999
Testing in accordance with BS1377-2:1990



Sample Identification				BS Test Method #	Preparation Method +	MC %	LL %	PL %	PI %	<425um %	Lab location	
	Exploratory Position ID	Sample	Depth (m)									
●	TP1-7	4B	1.20	3.2/4.4/5.3/5.4	4.2.4	22	57	22	35	54	B	
⊠	TP1-8	2B	0.30	3.2/4.4/5.3/5.4	4.2.4	21	53	22	31	59	B	
▲	TP1-8	4B	0.90	3.2/4.4/5.3/5.4	4.2.4	20	49	25	24	60	B	
★	TP1-9	2B	0.60	3.2/4.4/5.3/5.4	4.2.4	26	57	24	33	61	B	
⊙	TP1-9	4B	0.90	3.2/4.4/5.3/5.4	4.2.4	20	48	24	24	39	B	
✿	TP1-10	2B	0.30	3.2/4.4/5.3/5.4	4.2.4	23	50	23	27	51	B	
●	TP1-10	4B	1.20	3.2/4.4/5.3/5.4	4.2.4	17	52	22	30	65	B	

Tested in accordance with the following clauses of BS1377-2:1990.

3.2 - Moisture Content
4.3 - Cone Penetrometer Method
4.4 - One Point Cone Penetrometer Method
4.6 - One Point Casagrande Method
5.3 - Plastic Limit Method
5.4 - Plasticity Index

+ Tested in accordance with the following clauses of BS1377-2:1990.

4.2.3 - Natural State
4.2.4 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**05/04/16**

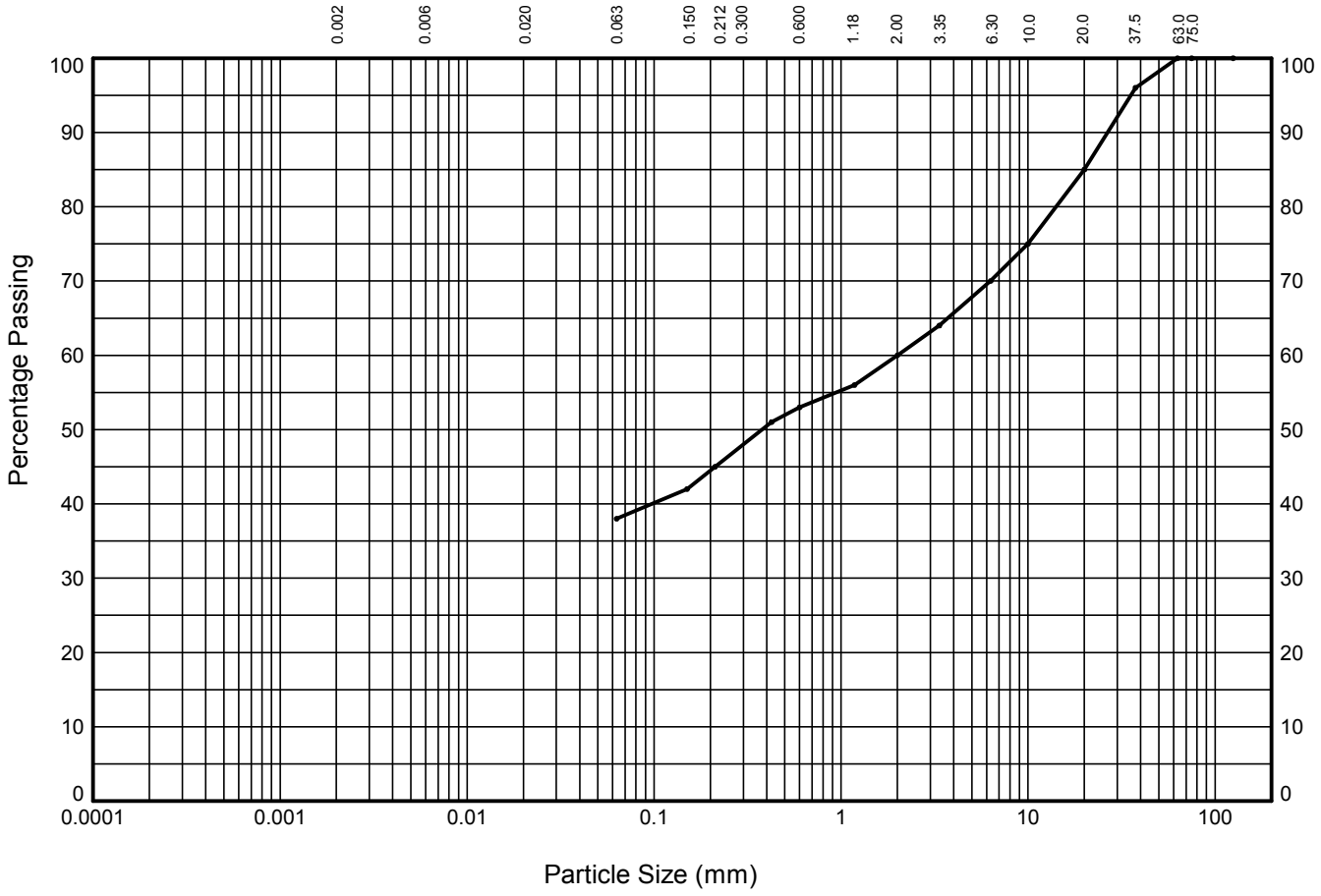
Contract	Contract Ref:
Area I, Severnside	**731391**

AGS

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-1** Sample Ref: **2** Sample Type: **B** Depth (m): **0.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**96**
20.0	**85**
10.0	**75**
6.30	**70**
3.35	**64**
2.00	**60**
1.18	**56**
0.600	**53**
0.425	**51**
0.212	**45**
0.150	**42**
0.063	**38**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**40**
SAND	**22**
SILT/CLAY	**38**

Soil Description:

Brown mottled grey slightly sandy gravelly CLAY

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

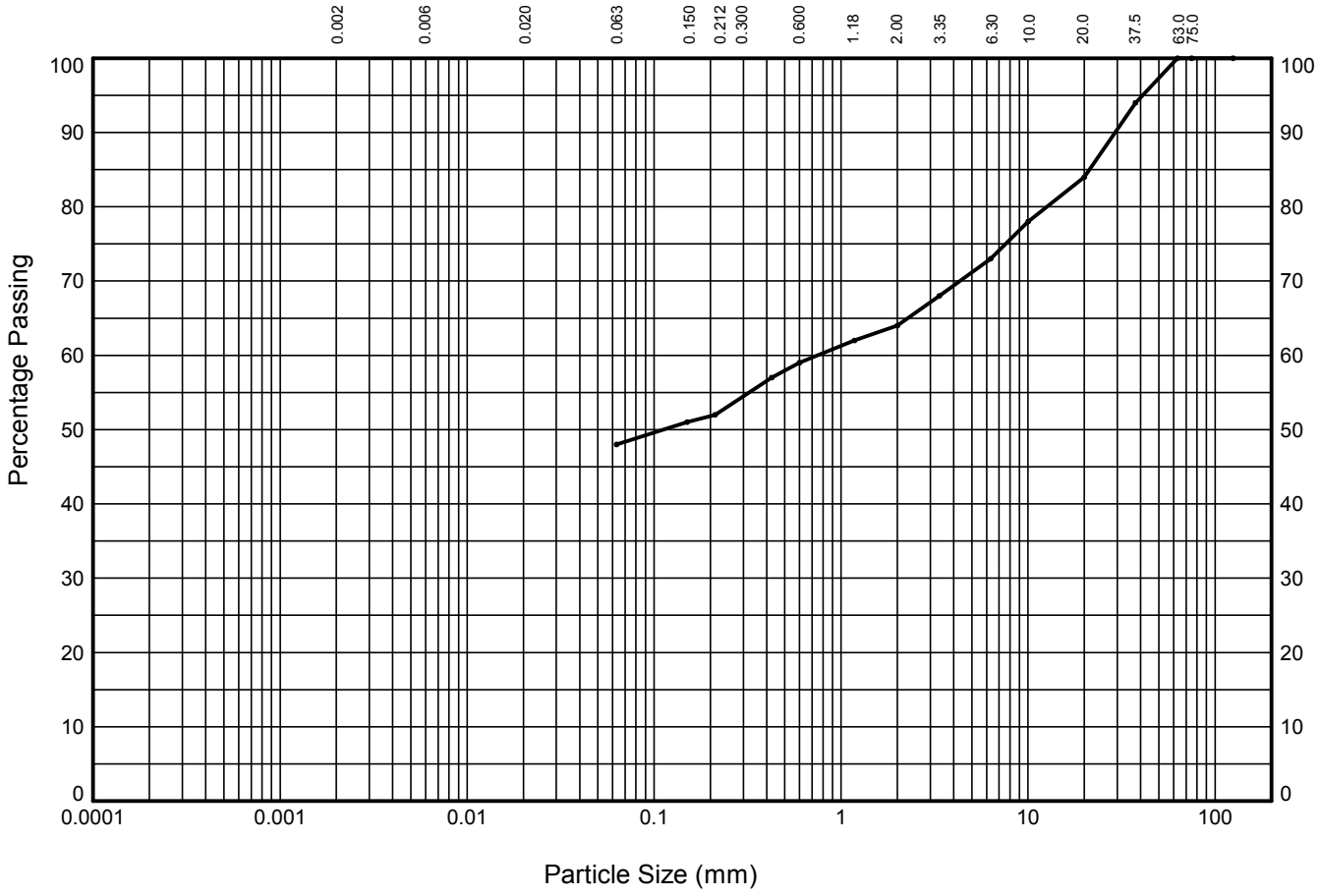
Compiled By		Date
A.D. Frost	**ALAN FROST**	**05/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-1** Sample Ref: **4** Sample Type: **B** Depth (m): **0.60**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**94**
20.0	**84**
10.0	**78**
6.30	**73**
3.35	**68**
2.00	**64**
1.18	**62**
0.600	**59**
0.425	**57**
0.212	**52**
0.150	**51**
0.063	**48**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**36**
SAND	**16**
SILT/CLAY	**48**

Soil Description:

Grey mottled brown slightly sandy gravelly CLAY

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**05/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

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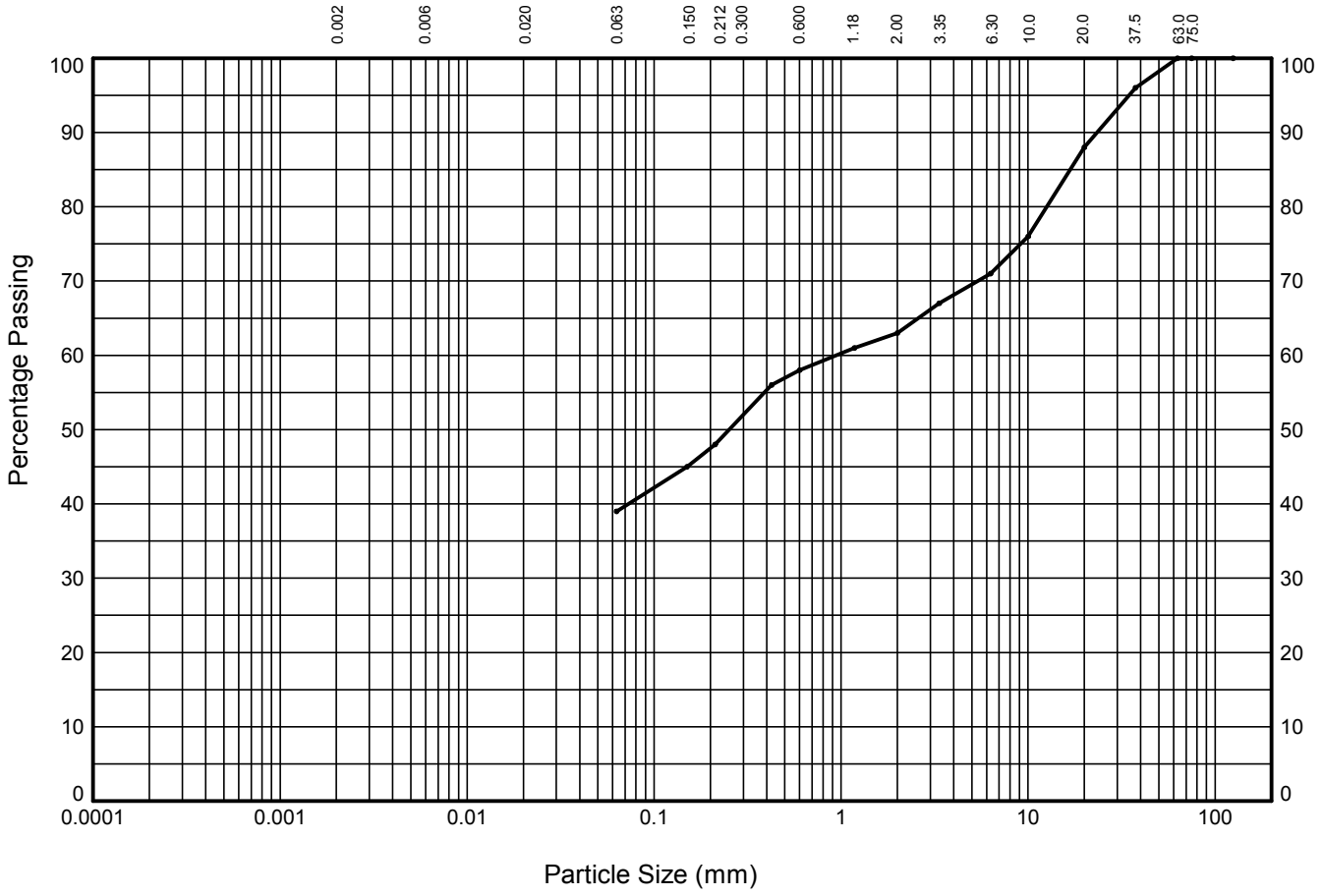
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-2** Sample Ref: **2** Sample Type: **B** Depth (m): **0.60**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**96**
20.0	**88**
10.0	**76**
6.30	**71**
3.35	**67**
2.00	**63**
1.18	**61**
0.600	**58**
0.425	**56**
0.212	**48**
0.150	**45**
0.063	**39**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**37**
SAND	**24**
SILT/CLAY	**39**

Soil Description:

Brown mottled reddish brown and grey slightly sandy gravelly CLAY

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

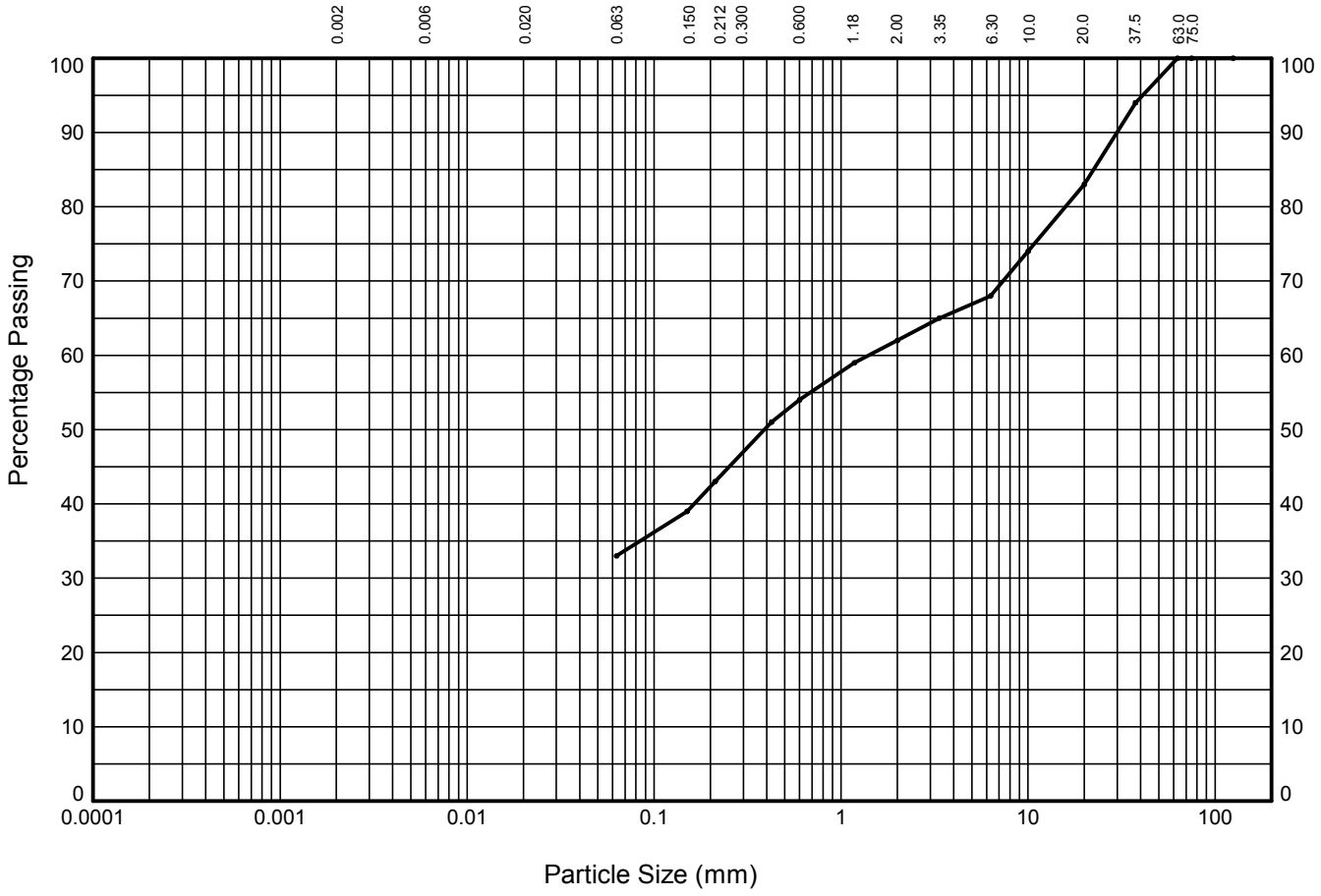
Compiled By		Date
A.D. Frost	**ALAN FROST**	**05/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-2** Sample Ref: **4** Sample Type: **B** Depth (m): **0.90**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**94**
20.0	**83**
10.0	**74**
6.30	**68**
3.35	**65**
2.00	**62**
1.18	**59**
0.600	**54**
0.425	**51**
0.212	**43**
0.150	**39**
0.063	**33**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**38**
SAND	**29**
SILT/CLAY	**33**

Soil Description:

Brown mottled grey very sandy very clayey GRAVEL

STRUCTURAL SOILS
1a Princess Street
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BS3 4AG

Compiled By		Date
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Contract	Contract Ref:
Area I, Severnside	**731391**

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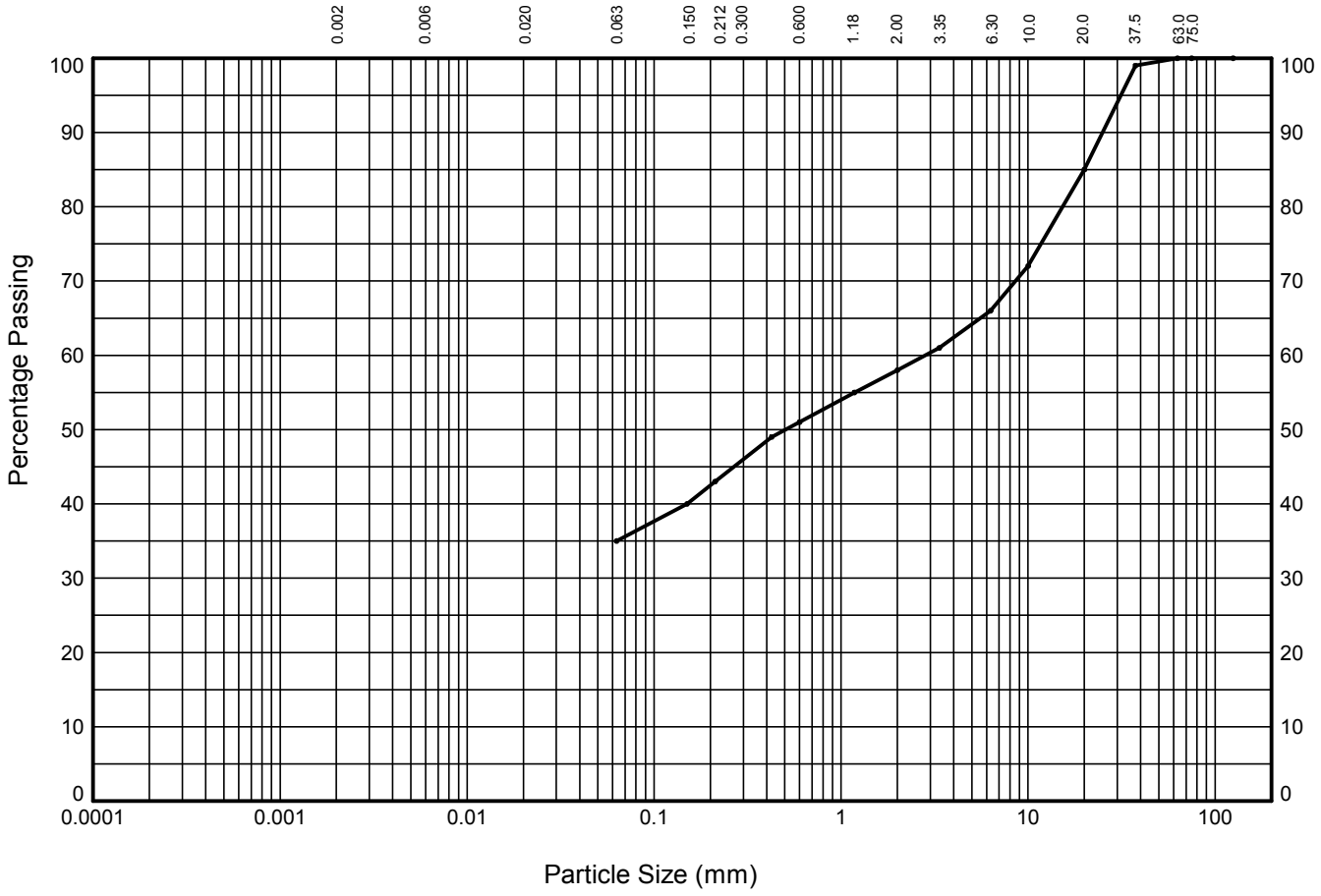
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-3** Sample Ref: **2** Sample Type: **B** Depth (m): **0.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**99**
20.0	**85**
10.0	**72**
6.30	**66**
3.35	**61**
2.00	**58**
1.18	**55**
0.600	**51**
0.425	**49**
0.212	**43**
0.150	**40**
0.063	**35**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**42**
SAND	**23**
SILT/CLAY	**35**

Soil Description:

Brown mottled grey slightly sandy gravelly CLAY

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

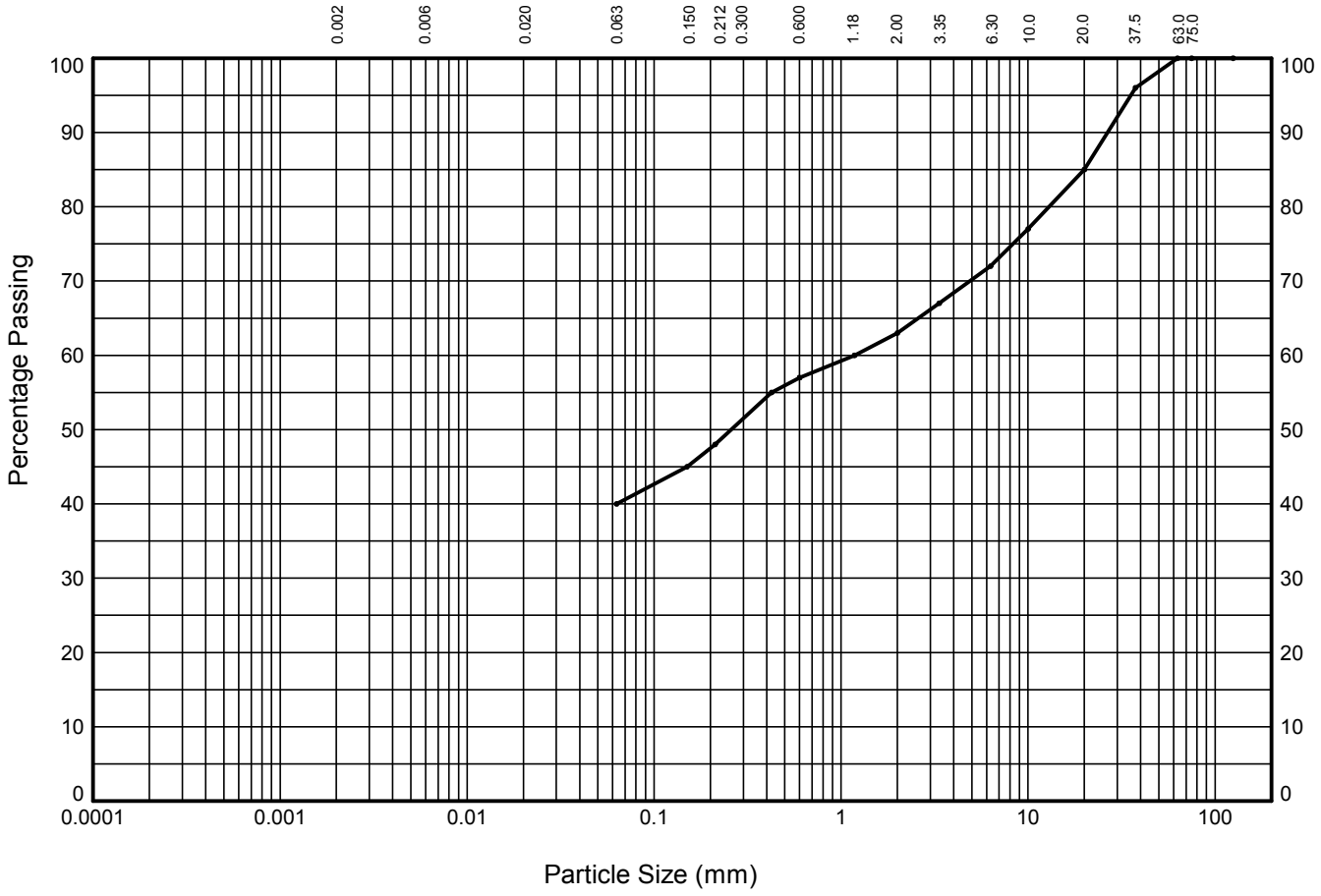
Compiled By		Date
A.D. Frost	**ALAN FROST**	**05/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-3** Sample Ref: **4** Sample Type: **B** Depth (m): **0.60**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**96**
20.0	**85**
10.0	**77**
6.30	**72**
3.35	**67**
2.00	**63**
1.18	**60**
0.600	**57**
0.425	**55**
0.212	**48**
0.150	**45**
0.063	**40**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**37**
SAND	**23**
SILT/CLAY	**40**

Soil Description:

Brown mottled grey slightly sandy gravelly CLAY

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

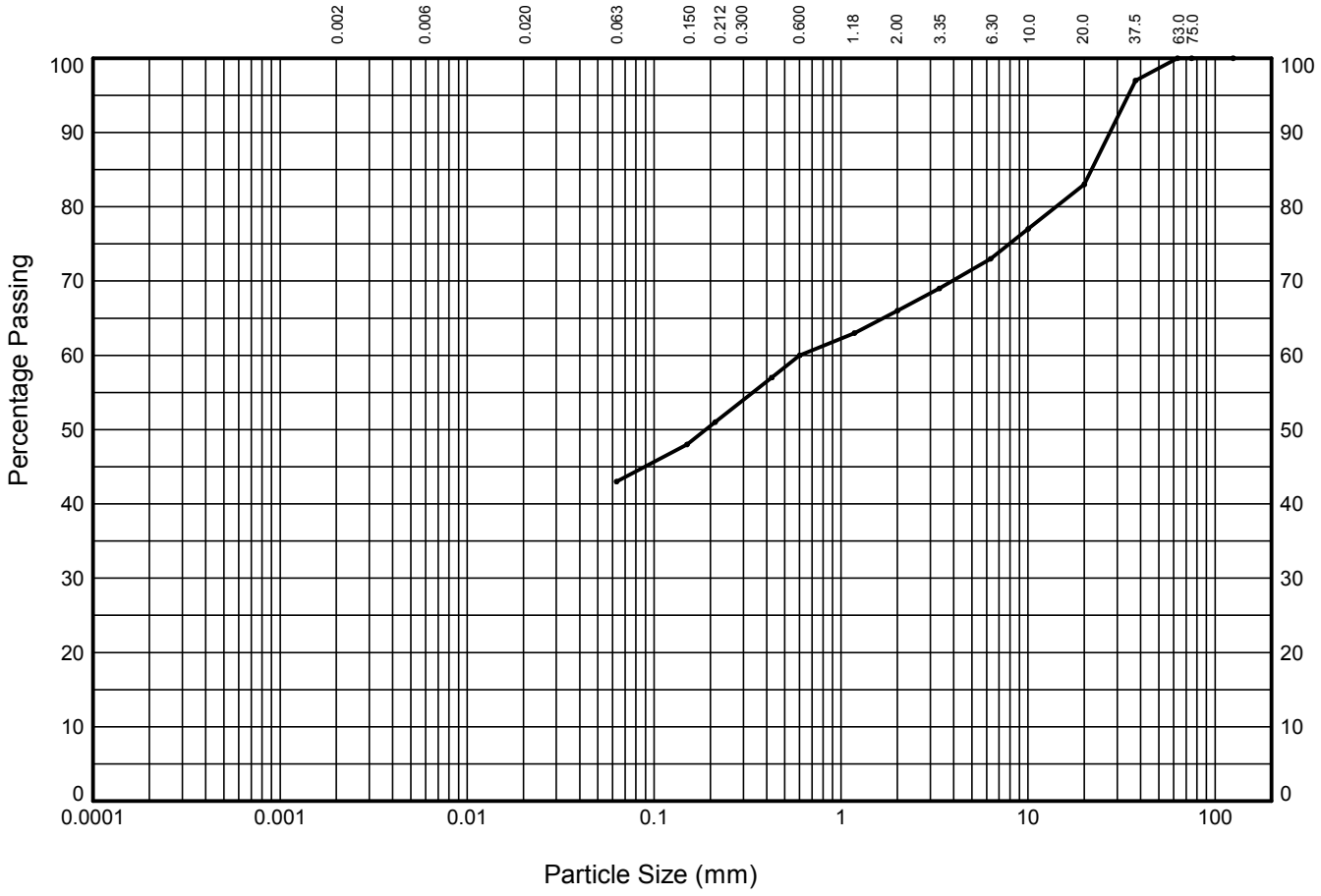
Compiled By		Date
A.D. Frost	**ALAN FROST**	**05/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-4** Sample Ref: **2** Sample Type: **B** Depth (m): **0.60**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**97**
20.0	**83**
10.0	**77**
6.30	**73**
3.35	**69**
2.00	**66**
1.18	**63**
0.600	**60**
0.425	**57**
0.212	**51**
0.150	**48**
0.063	**43**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**34**
SAND	**23**
SILT/CLAY	**43**

Soil Description:

Brown mottled reddish brown and grey slightly sandy slightly gravelly CLAY

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**05/04/16**

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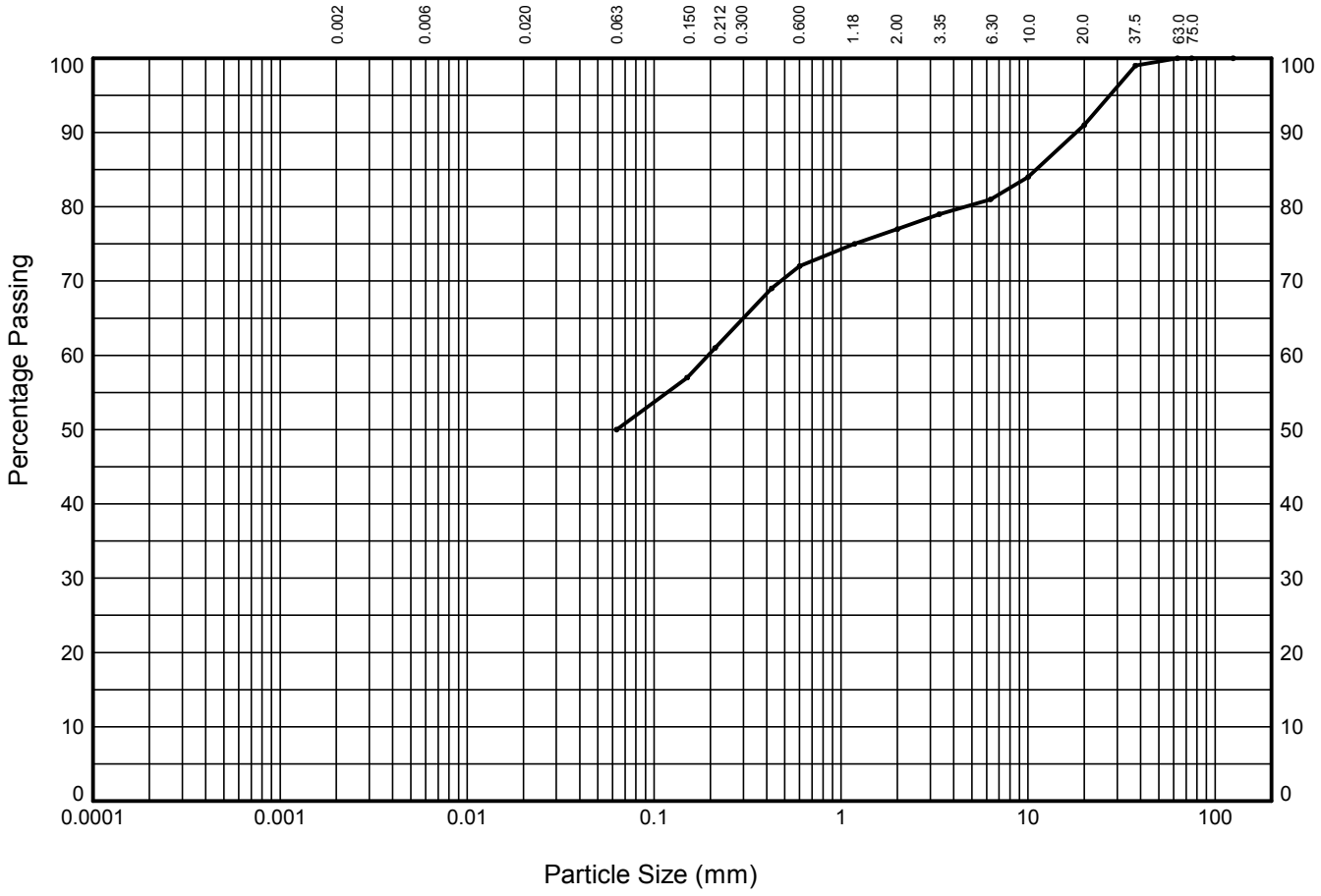
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-4** Sample Ref: **4** Sample Type: **B** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**99**
20.0	**91**
10.0	**84**
6.30	**81**
3.35	**79**
2.00	**77**
1.18	**75**
0.600	**72**
0.425	**69**
0.212	**61**
0.150	**57**
0.063	**50**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**23**
SAND	**27**
SILT/CLAY	**50**

Soil Description:

Brown mottled reddish brown and grey slightly gravelly slightly sandy CLAY

STRUCTURAL SOILS
1a Princess Street
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Bristol
BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**05/04/16**

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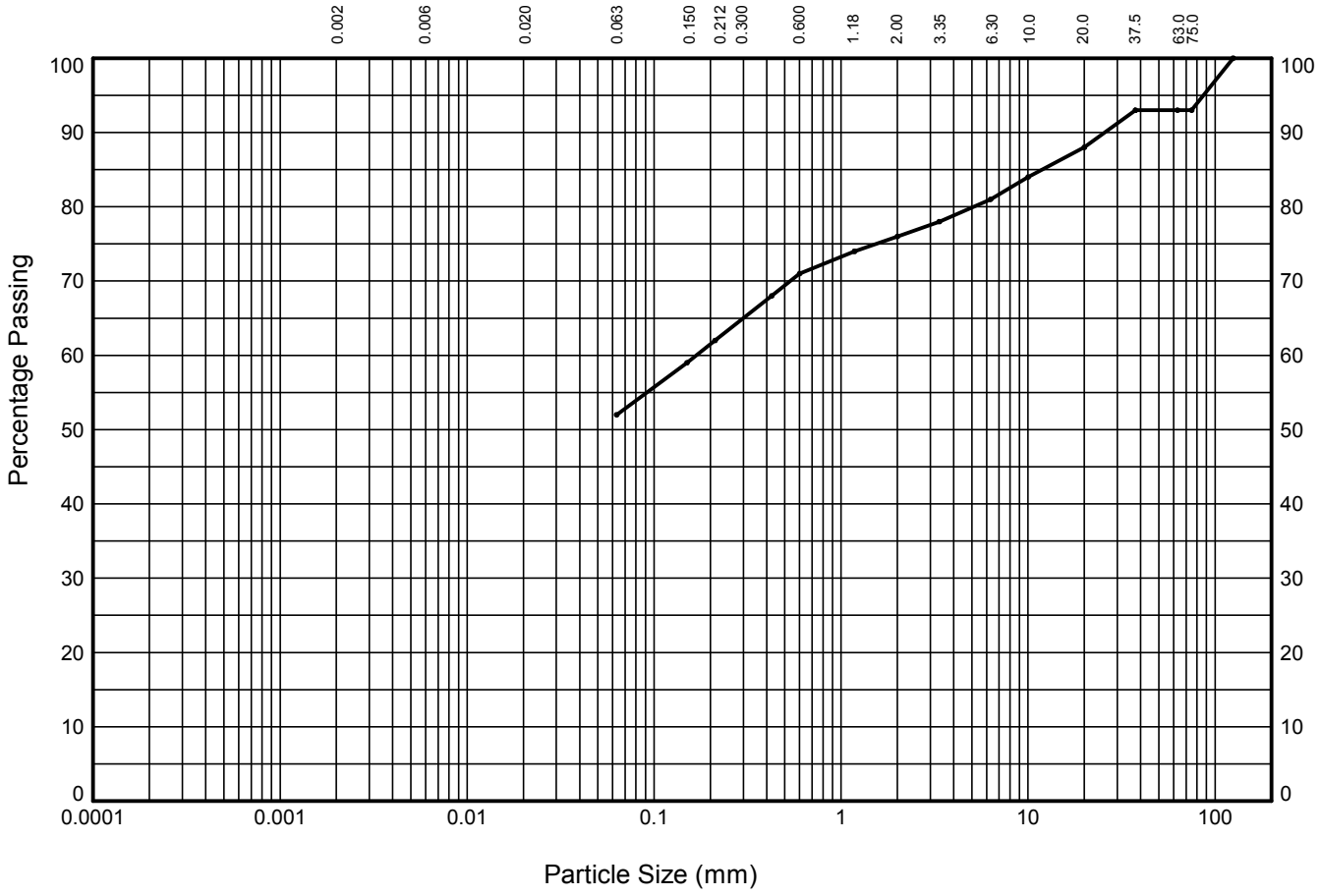
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990
NON-STANDARD TEST

Trial Pit: **TP1-5** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**93**
63.0	**93**
37.5	**93**
20.0	**88**
10.0	**84**
6.30	**81**
3.35	**78**
2.00	**76**
1.18	**74**
0.600	**71**
0.425	**68**
0.212	**62**
0.150	**59**
0.063	**52**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
COBBLES	**7**
GRAVEL	**17**
SAND	**24**
SILT/CLAY	**52**

Soil Description:
Brown mottled reddish brown and grey slightly gravelly slightly sandy CLAY with low cobble content

STRUCTURAL SOILS
1a Princess Street
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Bristol
BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**05/04/16**

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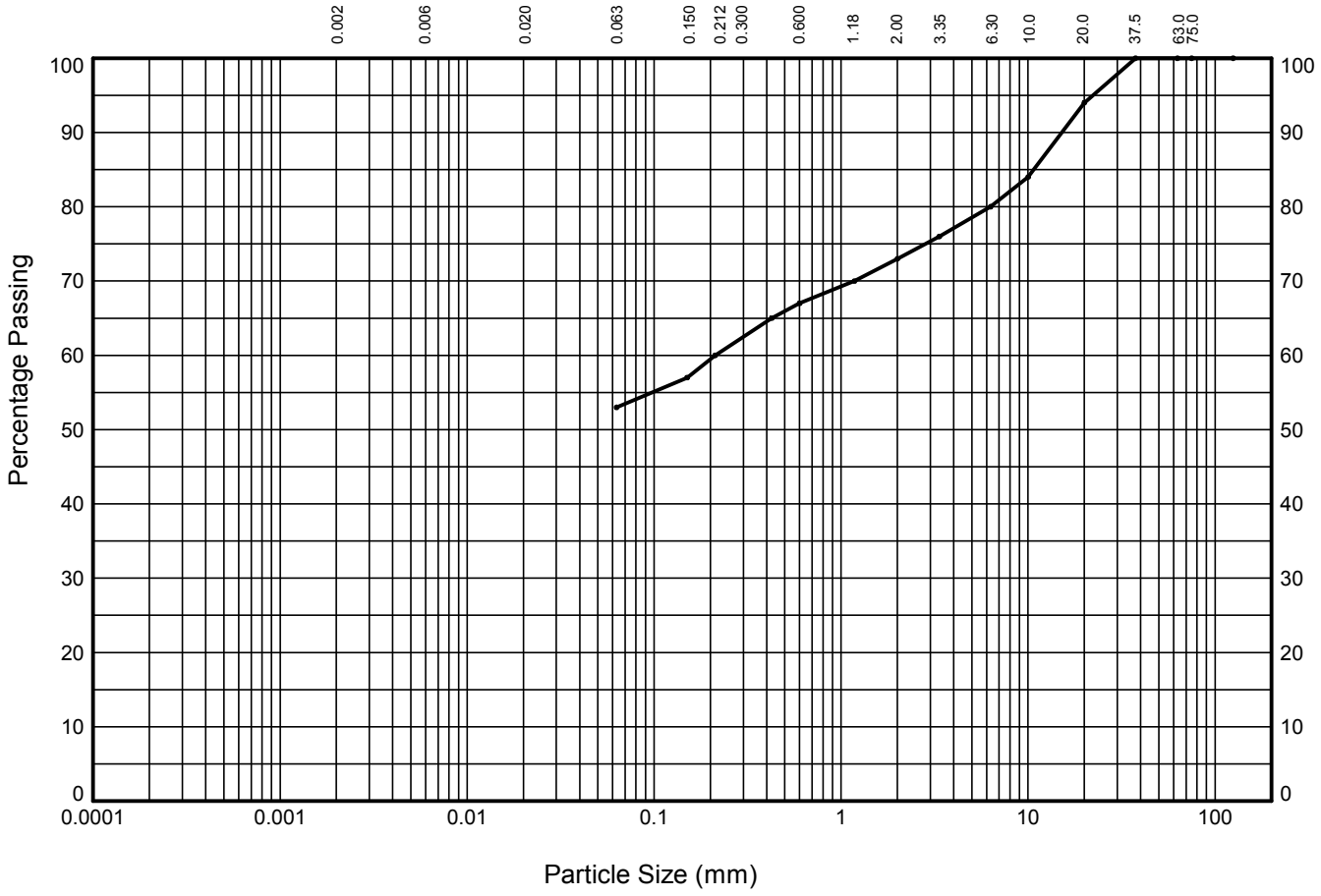
Area I, Severnside	**731391**

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-5** Sample Ref: **4** Sample Type: **B** Depth (m): **0.90**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**94**
10.0	**84**
6.30	**80**
3.35	**76**
2.00	**73**
1.18	**70**
0.600	**67**
0.425	**65**
0.212	**60**
0.150	**57**
0.063	**53**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**27**
SAND	**20**
SILT/CLAY	**53**

Soil Description:

Brown mottled grey slightly sandy slightly gravelly CLAY

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

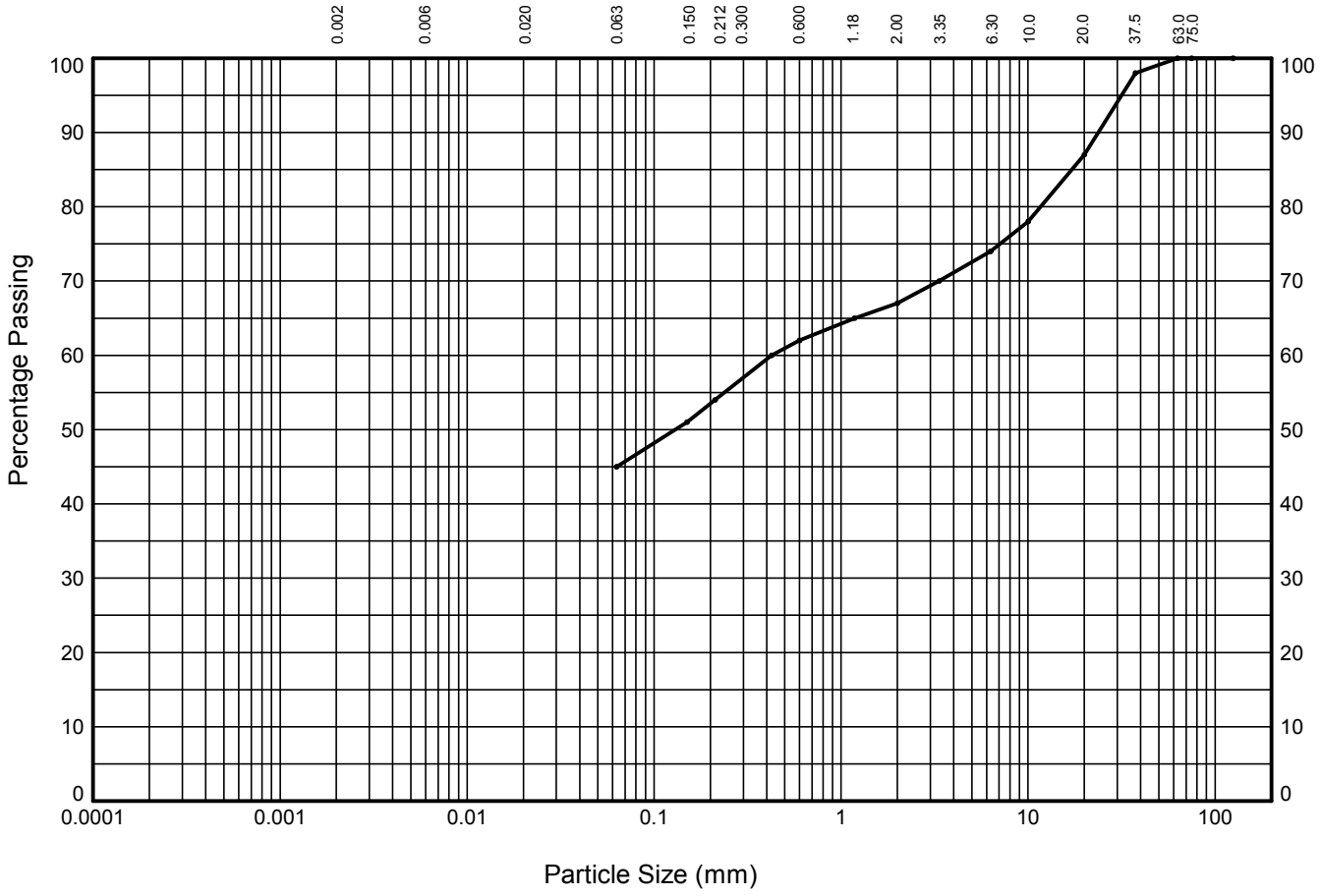
Compiled By		Date
A.D. Frost	**ALAN FROST**	**05/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-6** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**98**
20.0	**87**
10.0	**78**
6.30	**74**
3.35	**70**
2.00	**67**
1.18	**65**
0.600	**62**
0.425	**60**
0.212	**54**
0.150	**51**
0.063	**45**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**33**
SAND	**22**
SILT/CLAY	**45**

Soil Description:

Reddish brown slightly sandy slightly gravelly CLAY

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**05/04/16**

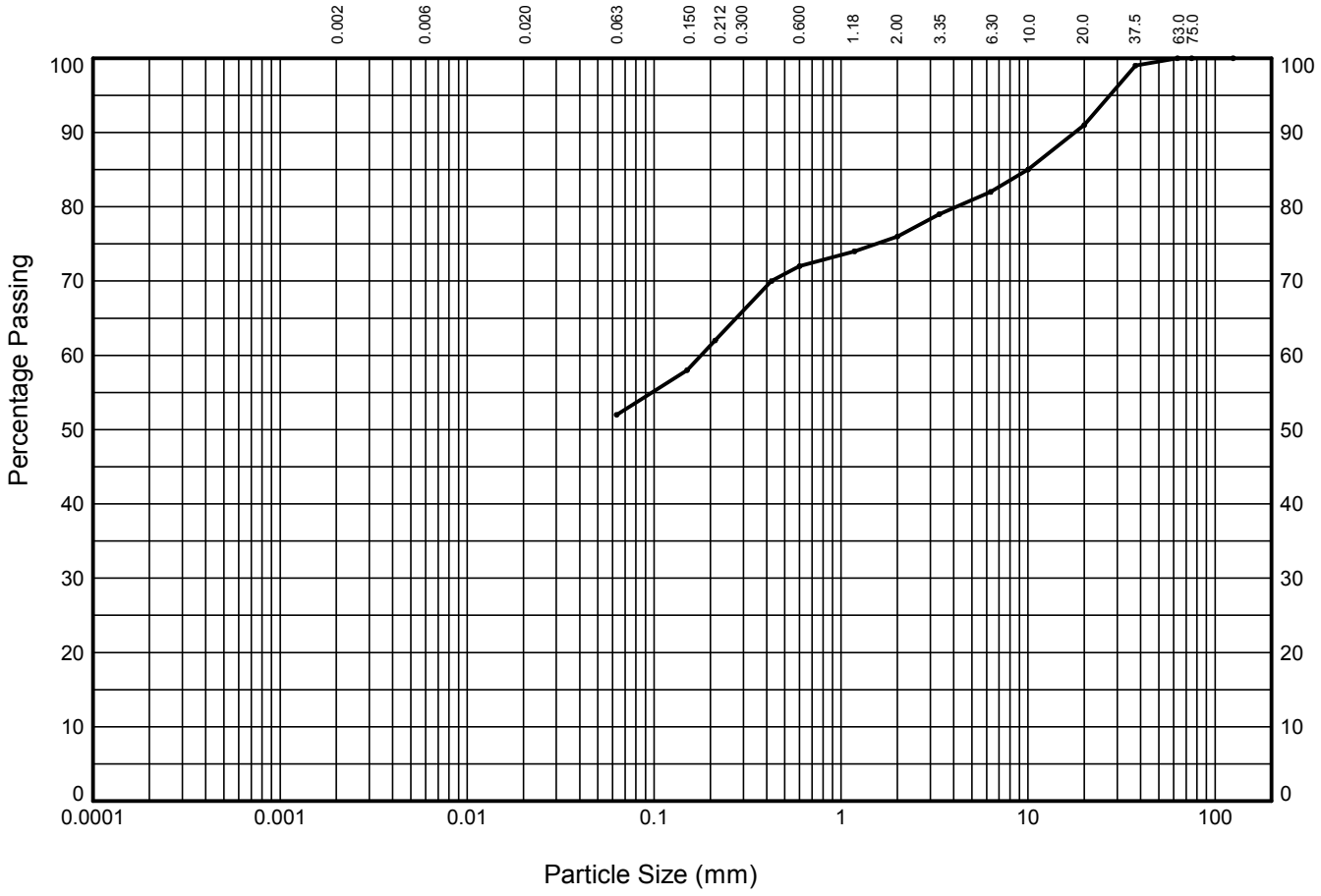
Contract	Contract Ref:
Area I, Severnside	**731391**

AGS

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-6** Sample Ref: **4** Sample Type: **B** Depth (m): **0.90**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**99**
20.0	**91**
10.0	**85**
6.30	**82**
3.35	**79**
2.00	**76**
1.18	**74**
0.600	**72**
0.425	**70**
0.212	**62**
0.150	**58**
0.063	**52**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**24**
SAND	**24**
SILT/CLAY	**52**

Soil Description:

Reddish brown mottled grey slightly gravelly slightly sandy CLAY

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

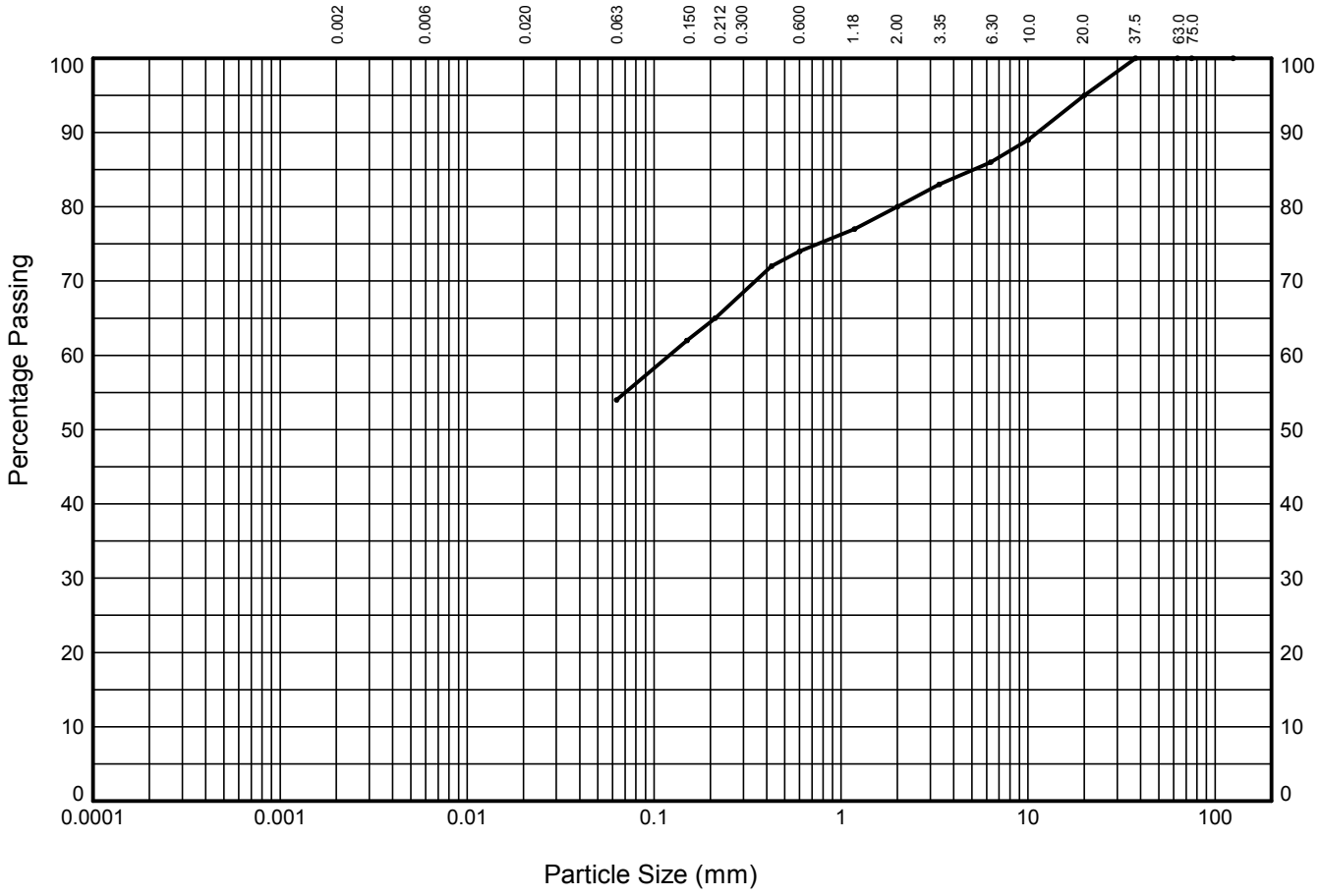
Compiled By		Date
A.D. Frost	**ALAN FROST**	**05/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-7** Sample Ref: **2** Sample Type: **B** Depth (m): **0.60**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**95**
10.0	**89**
6.30	**86**
3.35	**83**
2.00	**80**
1.18	**77**
0.600	**74**
0.425	**72**
0.212	**65**
0.150	**62**
0.063	**54**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**20**
SAND	**26**
SILT/CLAY	**54**

Soil Description:

Reddish brown mottled yellowish brown slightly gravelly slightly sandy CLAY

STRUCTURAL SOILS
1a Princess Street
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BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**05/04/16**

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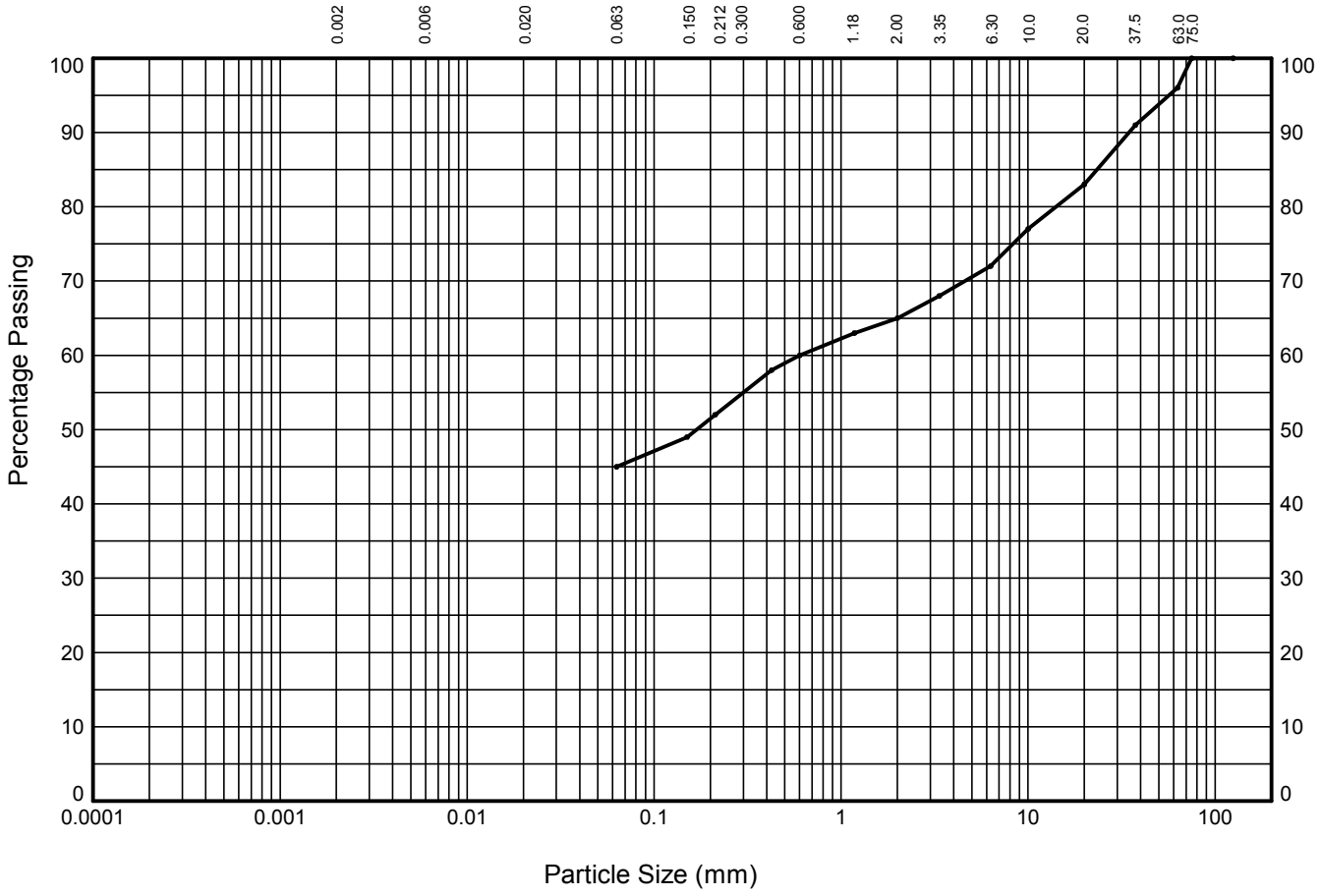
Area I, Severnside	**731391**

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990
NON-STANDARD TEST

Trial Pit: **TP1-7** Sample Ref: **4** Sample Type: **B** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**96**
37.5	**91**
20.0	**83**
10.0	**77**
6.30	**72**
3.35	**68**
2.00	**65**
1.18	**63**
0.600	**60**
0.425	**58**
0.212	**52**
0.150	**49**
0.063	**45**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
COBBLES	**4**
GRAVEL	**31**
SAND	**20**
SILT/CLAY	**45**

Soil Description:
Brown mottled grey slightly sandy slightly gravelly CLAY with low cobble content

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

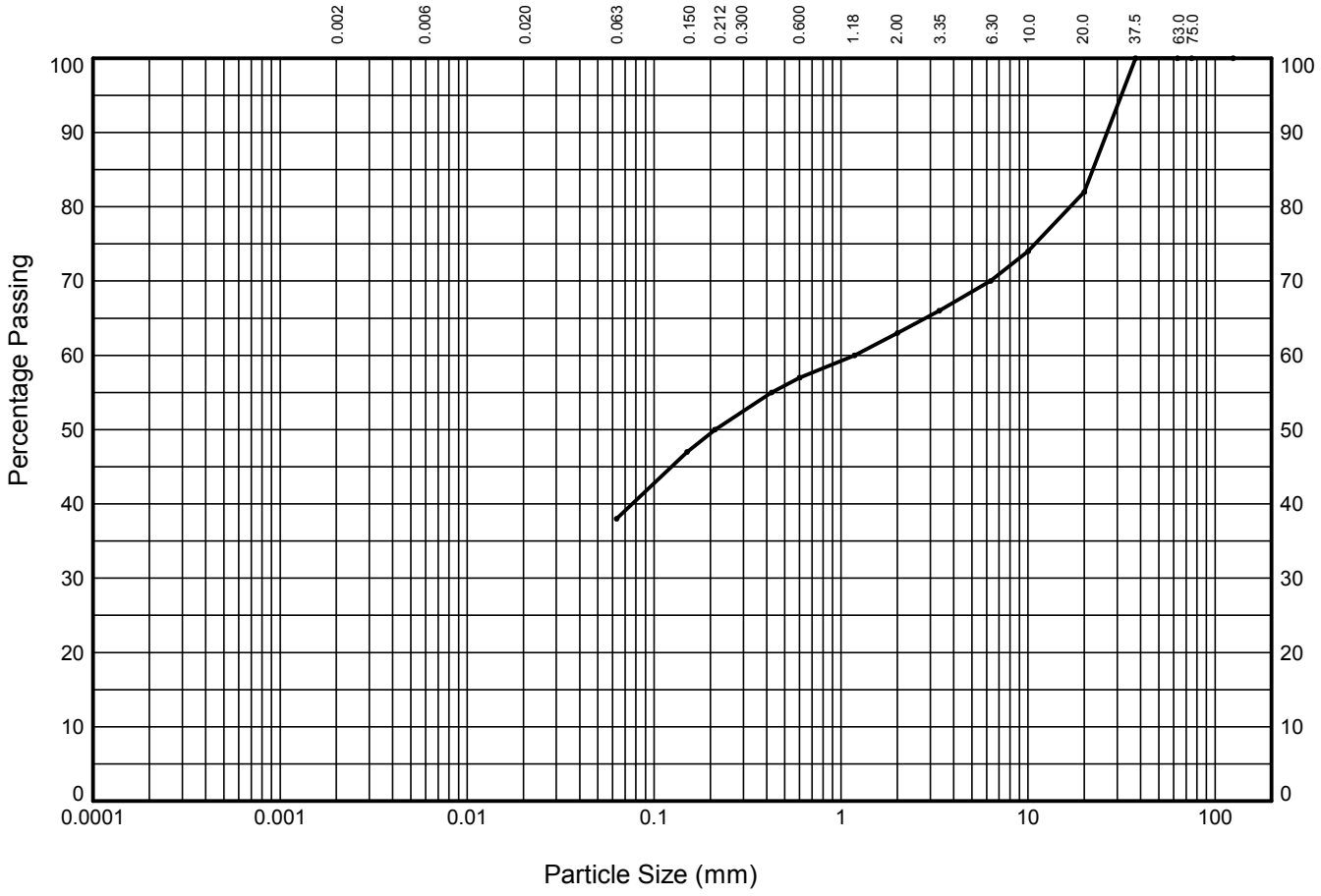
Compiled By		Date
A.D. Frost	**ALAN FROST**	**05/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-8** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**82**
10.0	**74**
6.30	**70**
3.35	**66**
2.00	**63**
1.18	**60**
0.600	**57**
0.425	**55**
0.212	**50**
0.150	**47**
0.063	**38**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**37**
SAND	**25**
SILT/CLAY	**38**

Soil Description:

Brown mottled yellowish brown and grey slightly sandy gravelly CLAY

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A.D. Frost	**ALAN FROST**	**05/04/16**

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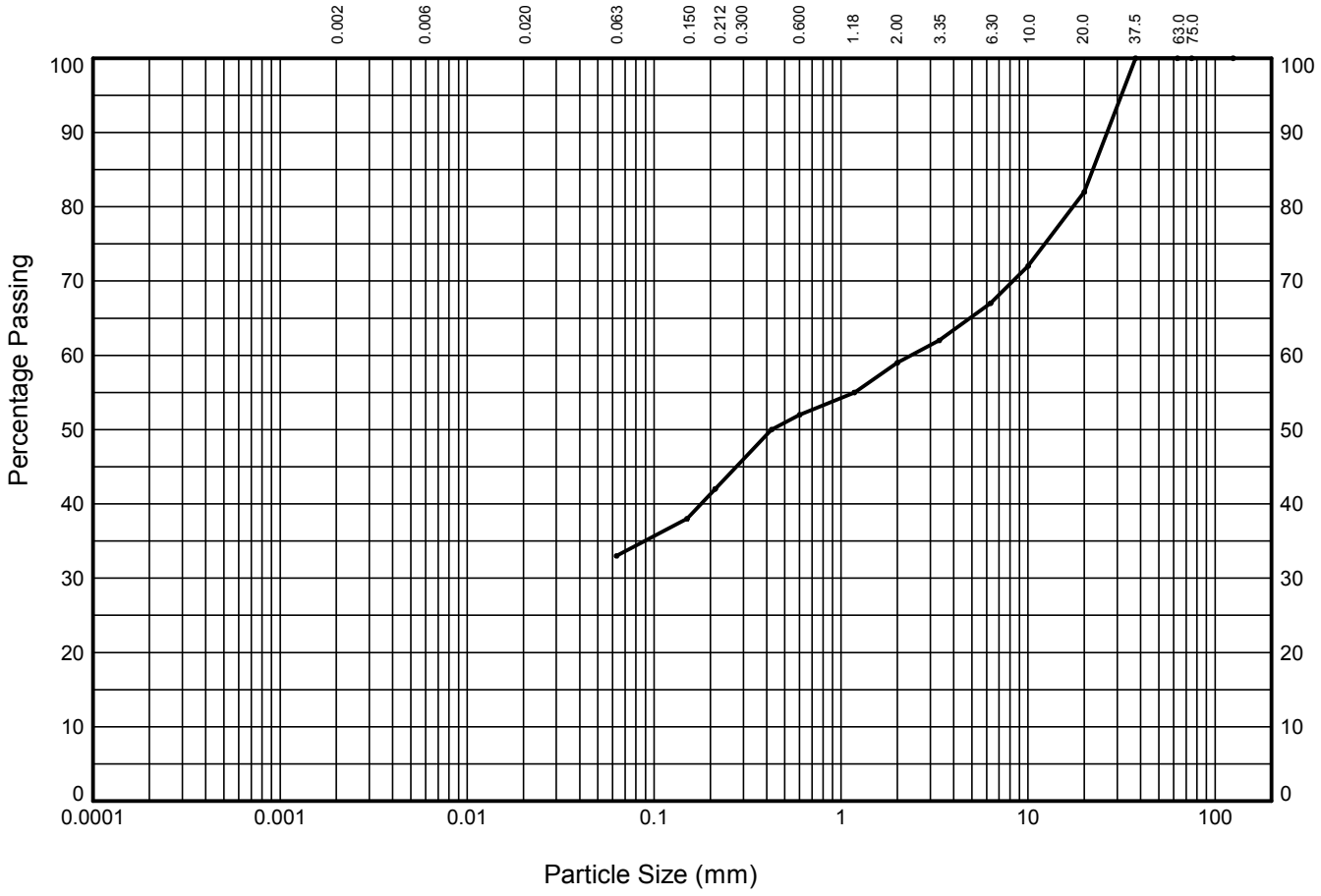
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-8** Sample Ref: **4** Sample Type: **B** Depth (m): **0.90**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**82**
10.0	**72**
6.30	**67**
3.35	**62**
2.00	**59**
1.18	**55**
0.600	**52**
0.425	**50**
0.212	**42**
0.150	**38**
0.063	**33**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**41**
SAND	**26**
SILT/CLAY	**33**

Soil Description:

Brown mottled reddish brown and yellowish brown very sandy very clayey GRAVEL

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Area I, Severnside	**731391**

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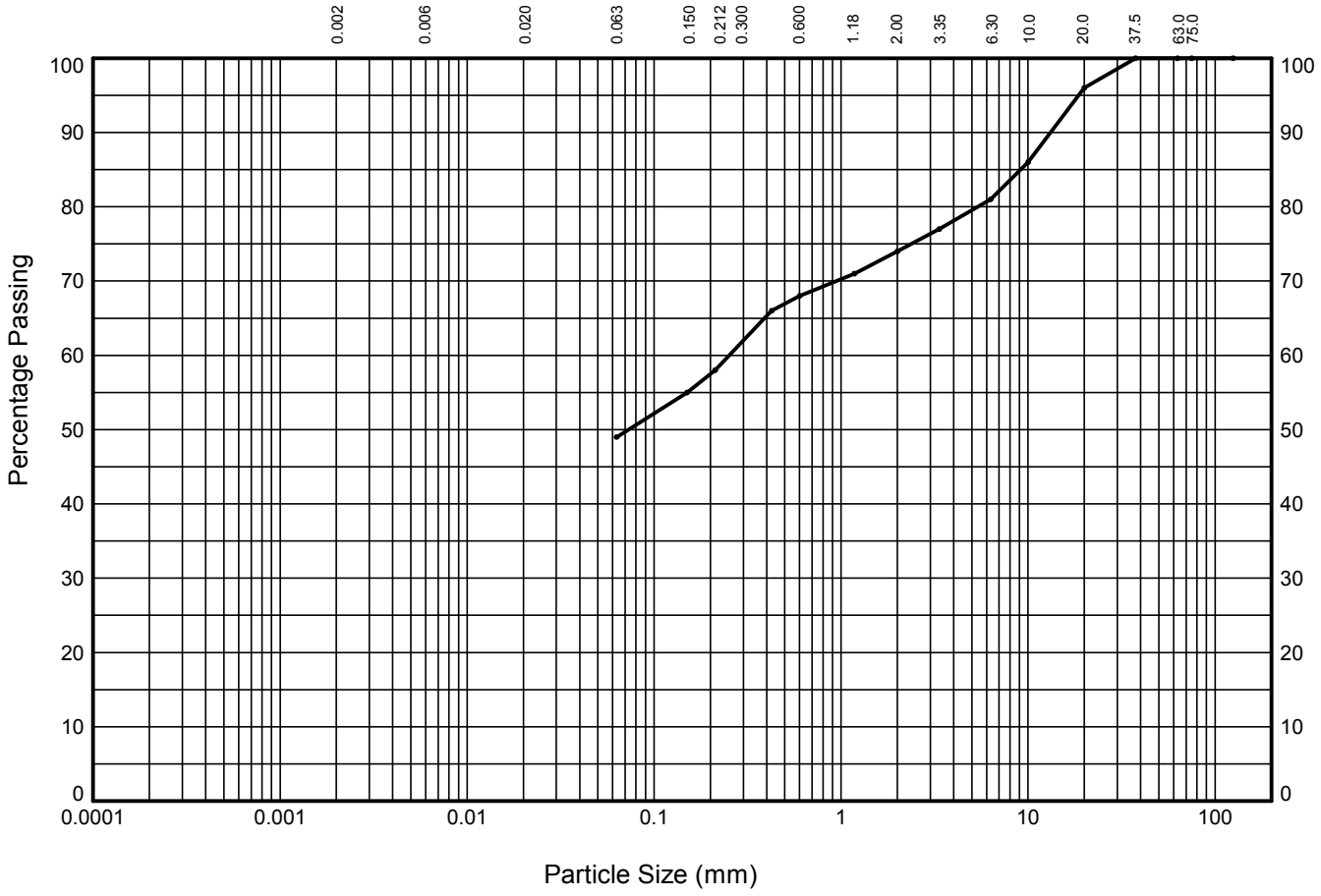
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-9** Sample Ref: **2** Sample Type: **B** Depth (m): **0.60**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**96**
10.0	**86**
6.30	**81**
3.35	**77**
2.00	**74**
1.18	**71**
0.600	**68**
0.425	**66**
0.212	**58**
0.150	**55**
0.063	**49**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**26**
SAND	**25**
SILT/CLAY	**49**

Soil Description:

Reddish brown mottled grey slightly sandy slightly gravelly CLAY

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A.D. Frost	**ALAN FROST**	**05/04/16**

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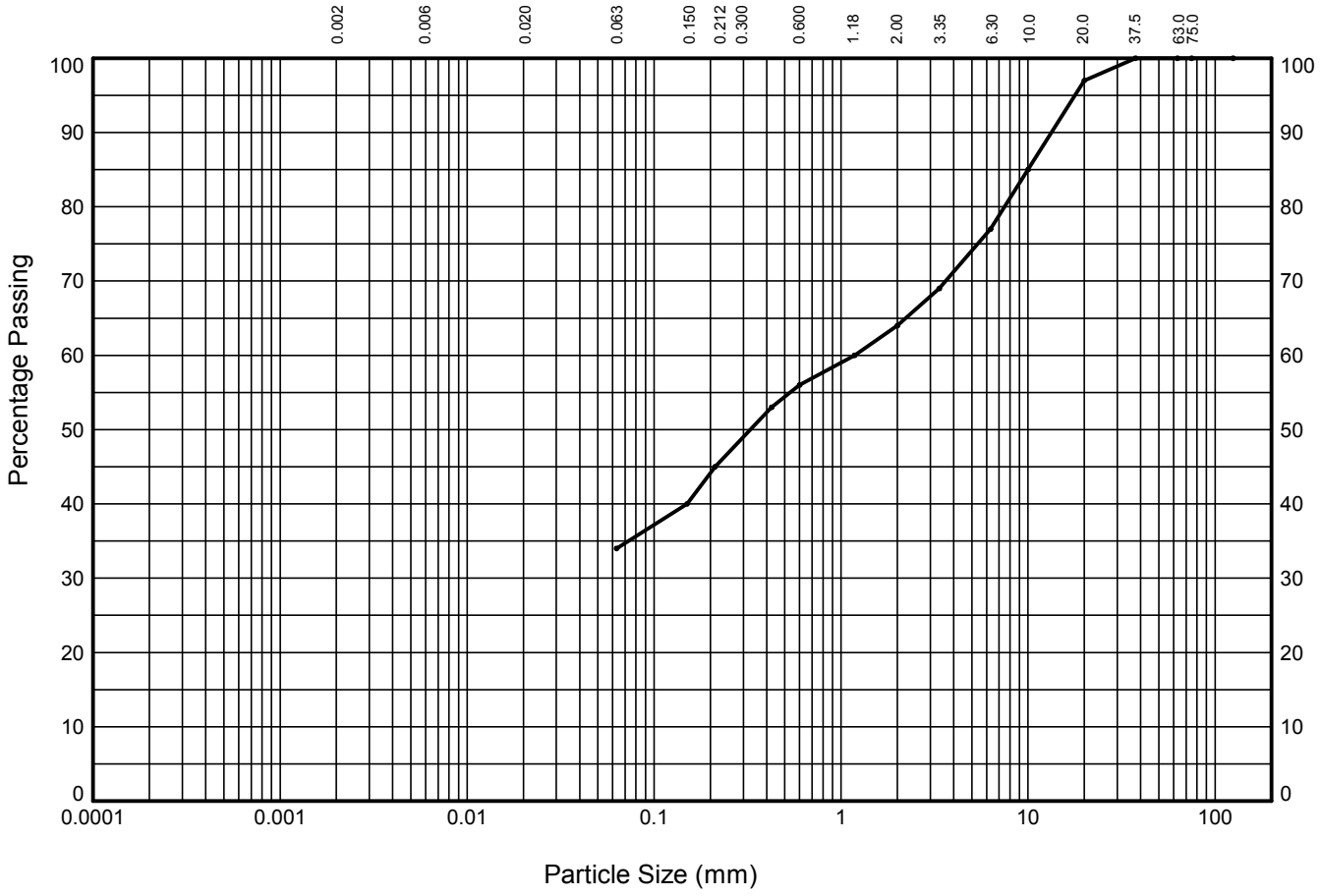
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-9** Sample Ref: **4** Sample Type: **B** Depth (m): **0.90**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**97**
10.0	**85**
6.30	**77**
3.35	**69**
2.00	**64**
1.18	**60**
0.600	**56**
0.425	**53**
0.212	**45**
0.150	**40**
0.063	**34**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**36**
SAND	**30**
SILT/CLAY	**34**

Soil Description:

Brown mottled reddish brown and yellowish brown very sandy very clayey GRAVEL

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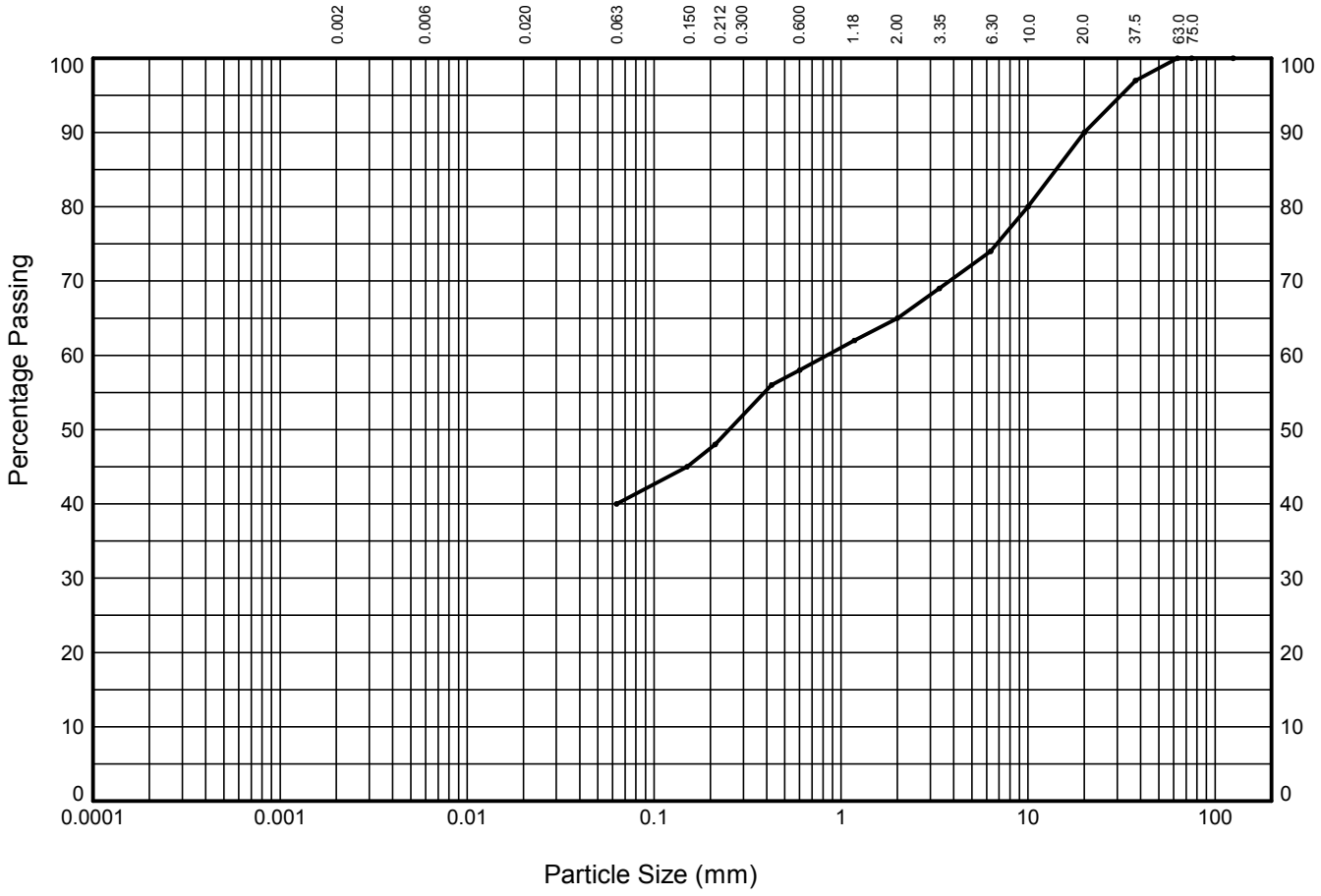
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-10** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**97**
20.0	**90**
10.0	**80**
6.30	**74**
3.35	**69**
2.00	**65**
1.18	**62**
0.600	**58**
0.425	**56**
0.212	**48**
0.150	**45**
0.063	**40**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**35**
SAND	**25**
SILT/CLAY	**40**

Soil Description:

Reddish brown mottled grey slightly sandy gravelly CLAY

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Compiled By		Date
A.D. Frost	**ALAN FROST**	**05/04/16**

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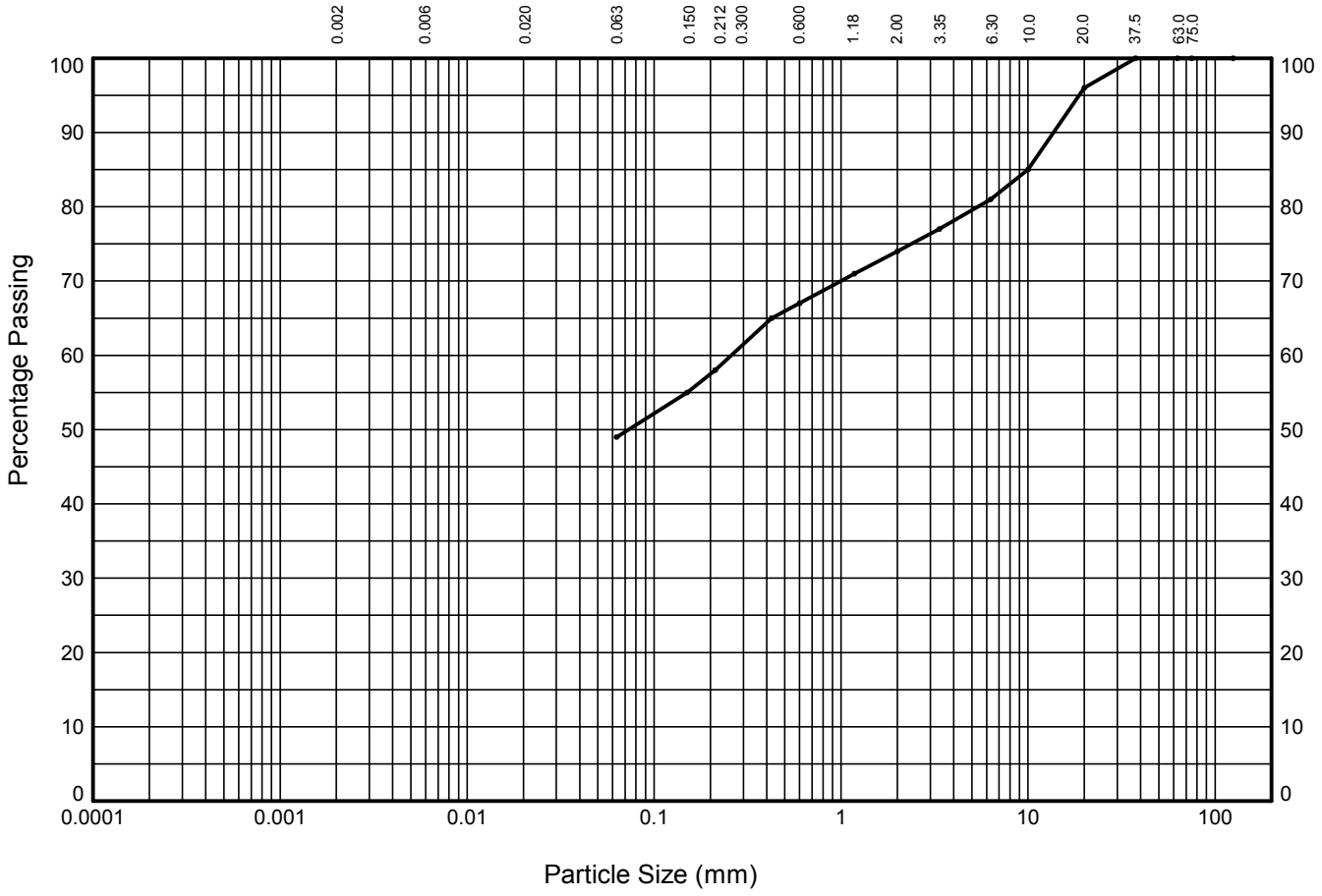
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP1-10** Sample Ref: **4** Sample Type: **B** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**96**
10.0	**85**
6.30	**81**
3.35	**77**
2.00	**74**
1.18	**71**
0.600	**67**
0.425	**65**
0.212	**58**
0.150	**55**
0.063	**49**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**26**
SAND	**25**
SILT/CLAY	**49**

Soil Description:

Reddish brown mottled brown slightly sandy slightly gravelly CLAY

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SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
TP1-1	2	B	0.00	15	50	24	26	43	Brown mottled grey slightly sandy gravelly CLAY
TP1-1	4	B	0.60	23	61	24	37	59	Grey mottled brown slightly sandy gravelly CLAY
TP1-2	2	B	0.60	18	49	23	26	66	Brown mottled reddish brown and grey slightly sandy gravelly CLAY
TP1-2	4	B	0.90	18	48	22	26	53	Brown mottled grey very sandy very clayey GRAVEL
TP1-3	2	B	0.00	19	46	21	25	49	Brown mottled grey slightly sandy gravelly CLAY
TP1-3	4	B	0.60	20	47	23	24	35	Brown mottled grey slightly sandy gravelly CLAY
TP1-4	2	B	0.60	16	49	24	25	55	Brown mottled reddish brown and grey slightly sandy slightly gravelly CLAY
TP1-4	4	B	1.20	20	44	20	24	54	Brown mottled reddish brown and grey slightly gravelly slightly sandy CLAY

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
TP1-5	2	B	0.30	22	66	24	42	19	Brown mottled reddish brown and grey slightly gravelly slightly sandy CLAY with low cobble content
TP1-5	4	B	0.90	27	56	23	33	48	Brown mottled grey slightly sandy slightly gravelly CLAY
TP1-6	2	B	0.30	19	46	20	26	58	Reddish brown slightly sandy slightly gravelly CLAY
TP1-6	4	B	0.90	23	44	21	23	70	Reddish brown mottled grey slightly gravelly slightly sandy CLAY
TP1-7	2	B	0.60	21	53	22	31	72	Reddish brown mottled yellowish brown slightly gravelly slightly sandy CLAY
TP1-7	4	B	1.20	22	57	22	35	54	Brown mottled grey slightly sandy slightly gravelly CLAY with low cobble content
TP1-8	2	B	0.30	21	53	22	31	59	Brown mottled yellowish brown and grey slightly sandy gravelly CLAY
TP1-8	4	B	0.90	20	49	25	24	60	Brown mottled reddish brown and yellowish brown very sandy very clayey GRAVEL

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
TP1-9	2	B	0.60	26	57	24	33	61	Reddish brown mottled grey slightly sandy slightly gravelly CLAY
TP1-9	4	B	0.90	20	48	24	24	39	Brown mottled reddish brown and yellowish brown very sandy very clayey GRAVEL
TP1-10	2	B	0.30	23	50	23	27	51	Reddish brown mottled grey slightly sandy gravelly CLAY
TP1-10	4	B	1.20	17	52	22	30	65	Reddish brown mottled brown slightly sandy slightly gravelly CLAY

STRUCTURAL SOILS LTD

Contract:

Area I, Severnside

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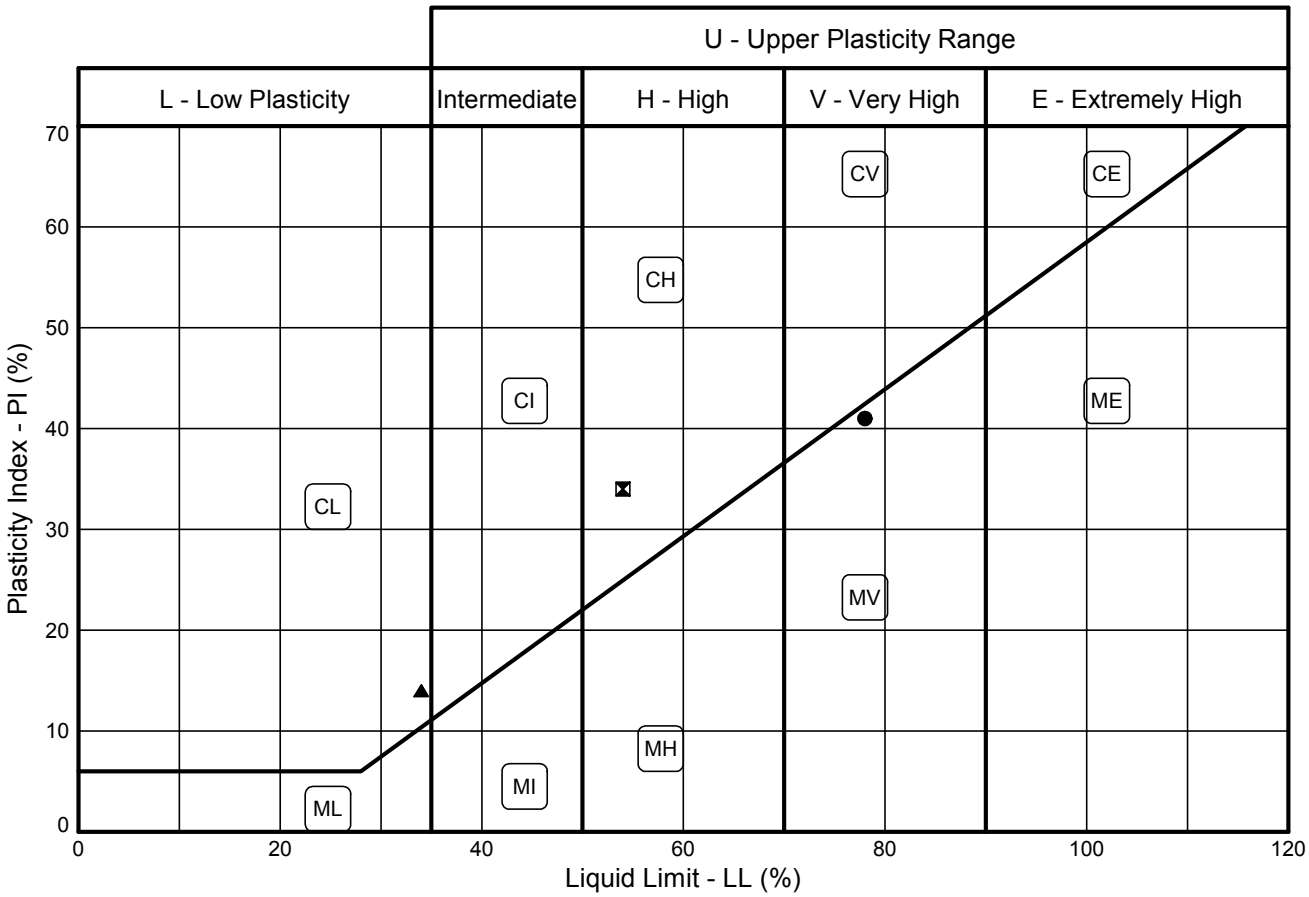
PLASTICITY CHART - PI Vs LL

In accordance with clause 42.3 of BS5930:1999
Testing in accordance with BS1377-2:1990



Sample Identification				BS Test Method #	Preparation Method +	MC %	LL %	PL %	PI %	<425um %	Lab location	
	Exploratory Position ID	Sample	Depth (m)									
●	TP2-1	2B	0.00	3.2/4.4/5.3/5.4	4.2.3	34	78	37	41	100	B	
⊠	TP2-2	2B	0.00	3.2/4.4/5.3/5.4	4.2.3	21	54	20	34	99	B	
▲	TP2-3	2B	0.00	3.2/4.4/5.3/5.4	4.2.4	12	34	20	14	41	B	

Tested in accordance with the following clauses of BS1377-2:1990.

3.2 - Moisture Content
4.3 - Cone Penetrometer Method
4.4 - One Point Cone Penetrometer Method
4.6 - One Point Casagrande Method
5.3 - Plastic Limit Method
5.4 - Plasticity Index

+ Tested in accordance with the following clauses of BS1377-2:1990.

4.2.3 - Natural State
4.2.4 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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1a Princess Street
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A.D. Frost	**ALAN FROST**	**12/04/16**

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Area I, Severnside	**731391**

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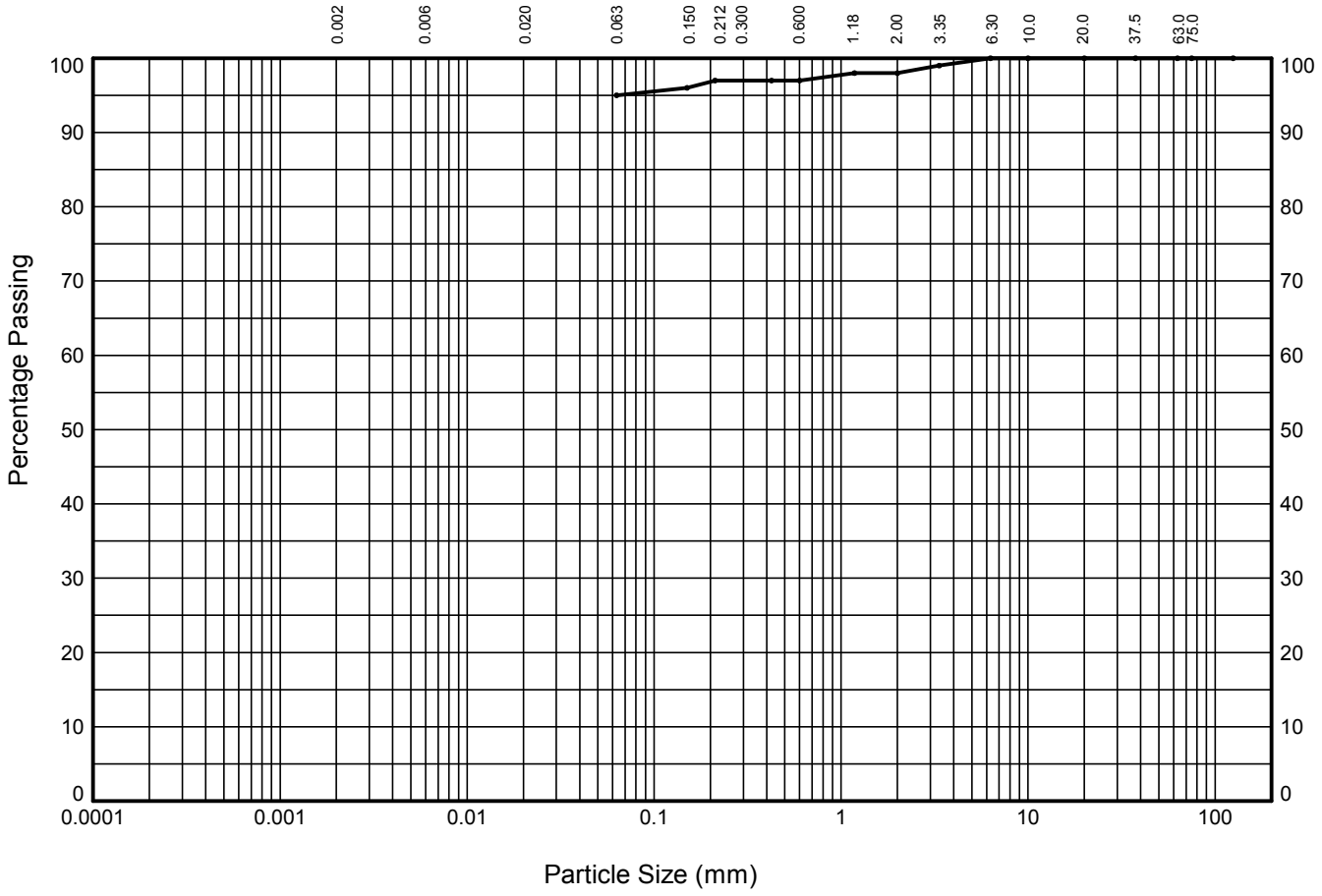
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP2-1** Sample Ref: **2** Sample Type: **B** Depth (m): **0.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**99**
2.00	**98**
1.18	**98**
0.600	**97**
0.425	**97**
0.212	**97**
0.150	**96**
0.063	**95**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**2**
SAND	**3**
SILT/CLAY	**95**

Soil Description:

Brown mottled grey slightly gravelly slightly sandy clayey SILT

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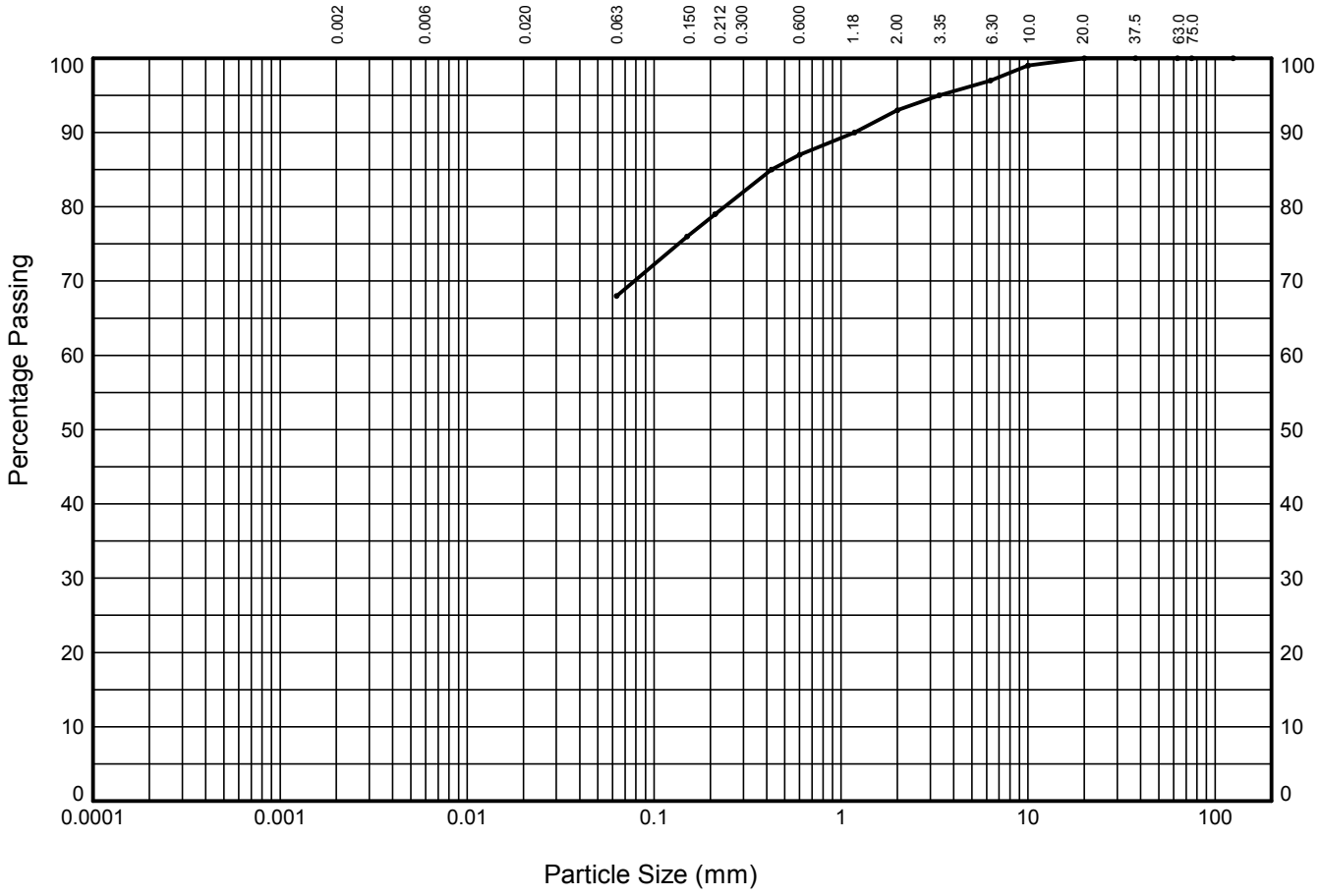
Area I, Severnside	**731391**

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP2-2** Sample Ref: **2** Sample Type: **B** Depth (m): **0.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**99**
6.30	**97**
3.35	**95**
2.00	**93**
1.18	**90**
0.600	**87**
0.425	**85**
0.212	**79**
0.150	**76**
0.063	**68**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**7**
SAND	**25**
SILT/CLAY	**68**

Soil Description:

Reddish brown slightly gravelly slightly sandy CLAY

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Compiled By		Date
A.D. Frost	**ALAN FROST**	**12/04/16**

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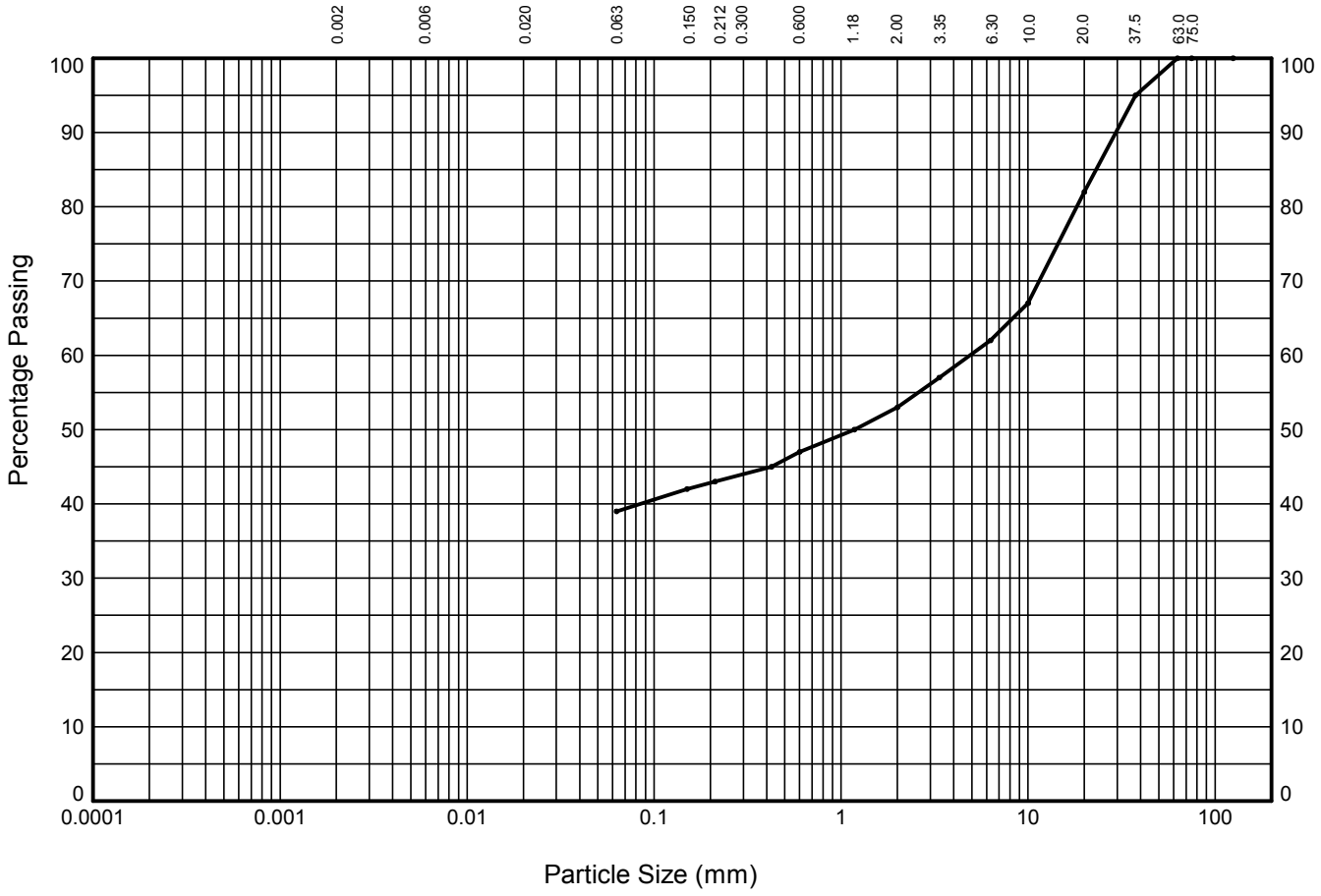
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP2-3** Sample Ref: **2** Sample Type: **B** Depth (m): **0.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**95**
20.0	**82**
10.0	**67**
6.30	**62**
3.35	**57**
2.00	**53**
1.18	**50**
0.600	**47**
0.425	**45**
0.212	**43**
0.150	**42**
0.063	**39**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**47**
SAND	**14**
SILT/CLAY	**39**

Soil Description:

Yellowish brown slightly sandy gravelly CLAY

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BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**12/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

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SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
TP2-1	2	B	0.00	34	78	37	41	100	Brown mottled grey slightly gravelly slightly sandy clayey SILT
TP2-2	2	B	0.00	21	54	20	34	99	Reddish brown slightly gravelly slightly sandy CLAY
TP2-3	2	B	0.00	12	34	20	14	41	Yellowish brown slightly sandy gravelly CLAY

STRUCTURAL SOILS LTD

Contract:

Area I, Severnside

Contract Ref:

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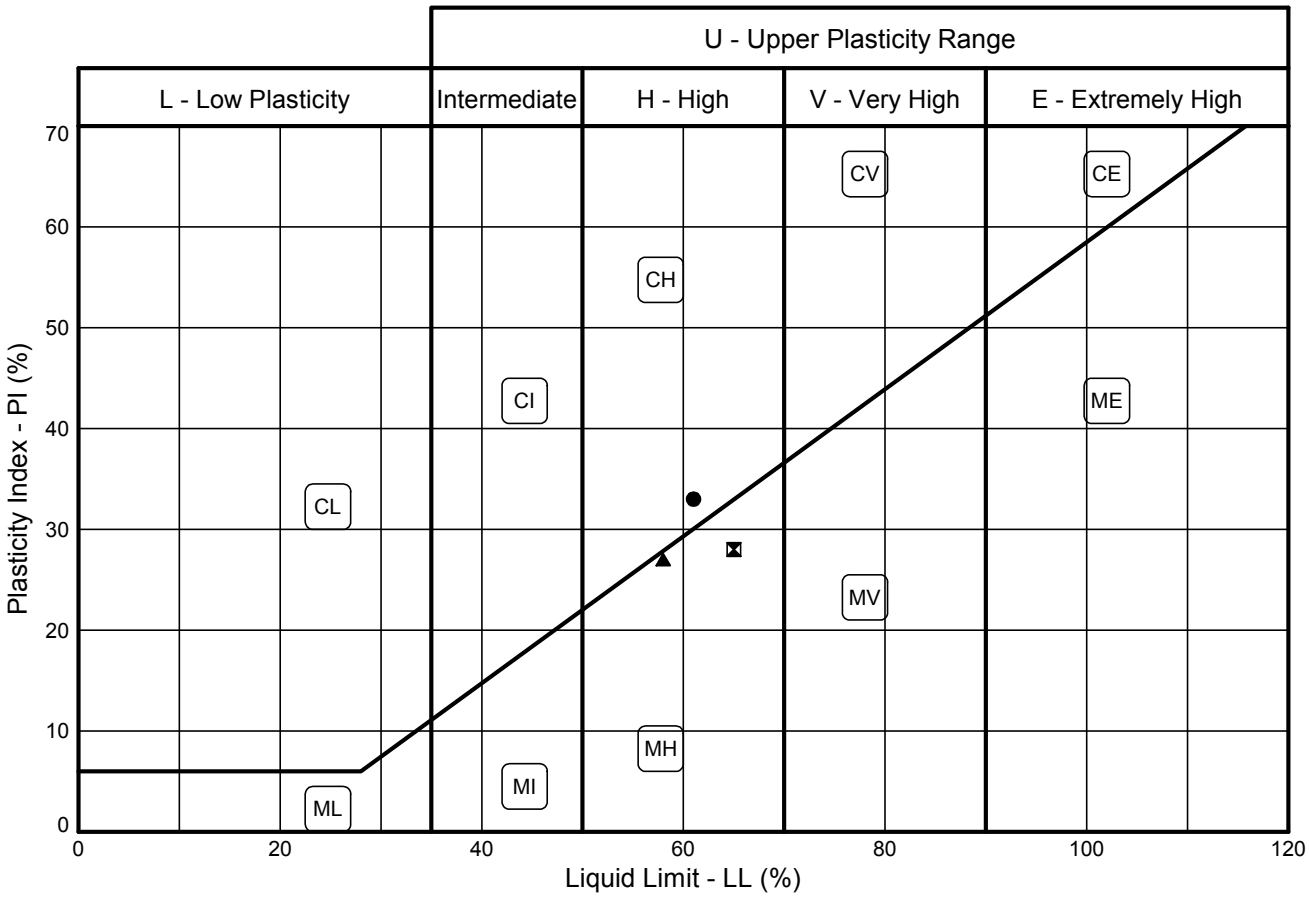
PLASTICITY CHART - PI Vs LL

In accordance with clause 42.3 of BS5930:1999
Testing in accordance with BS1377-2:1990



Sample Identification				BS Test Method #	Preparation Method +	MC %	LL %	PL %	PI %	<425um %	Lab location	
	Exploratory Position ID	Sample	Depth (m)									
●	TP3-1	2B	0.00	3.2/4.4/5.3/5.4	4.2.4	24	61	28	33	90	B	
⊠	TP3-2	2B	0.00	3.2/4.4/5.3/5.4	4.2.4	24	65	37	28	66	B	
▲	TP3-3	2B	0.00	3.2/4.4/5.3/5.4	4.2.4	27	58	31	27	59	B	

Tested in accordance with the following clauses of BS1377-2:1990.

3.2 - Moisture Content
4.3 - Cone Penetrometer Method
4.4 - One Point Cone Penetrometer Method
4.6 - One Point Casagrande Method
5.3 - Plastic Limit Method
5.4 - Plasticity Index

+ Tested in accordance with the following clauses of BS1377-2:1990.

4.2.3 - Natural State
4.2.4 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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BS3 4AG

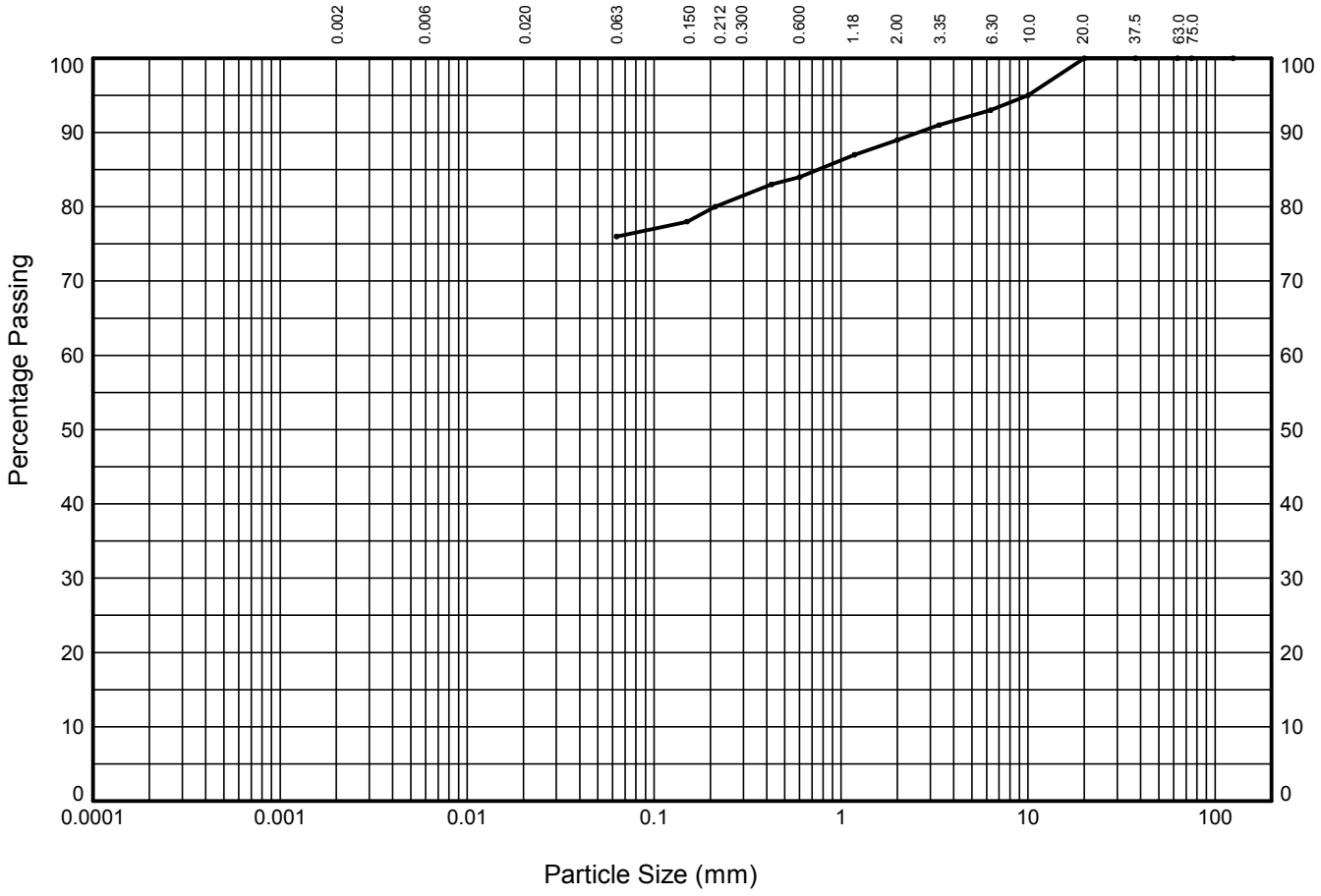
Compiled By		Date
A.D. Frost	**ALAN FROST**	**12/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP3-1** Sample Ref: **2** Sample Type: **B** Depth (m): **0.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**95**
6.30	**93**
3.35	**91**
2.00	**89**
1.18	**87**
0.600	**84**
0.425	**83**
0.212	**80**
0.150	**78**
0.063	**76**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**11**
SAND	**13**
SILT/CLAY	**76**

Soil Description:

Dark grey slightly gravelly slightly sandy CLAY

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

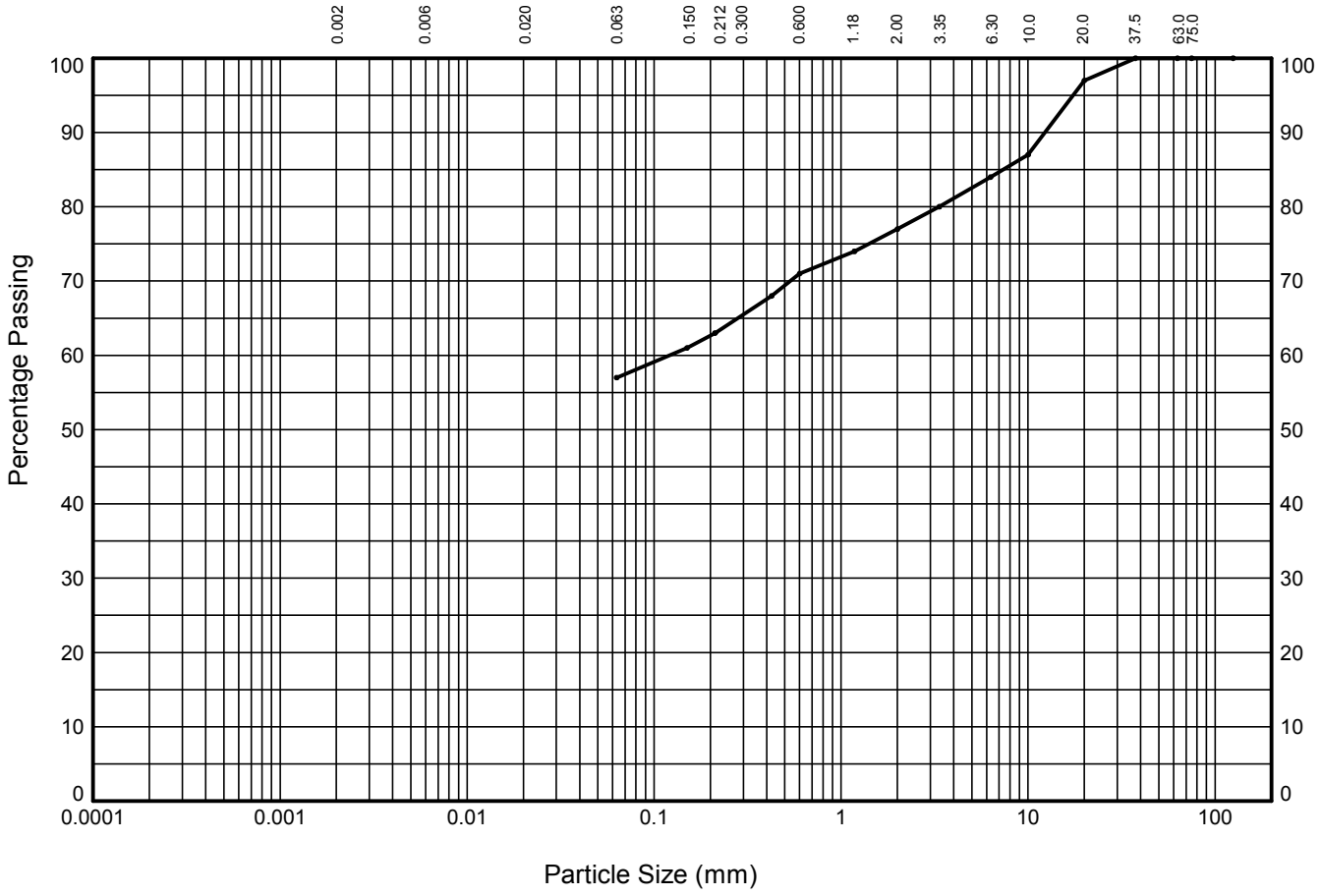
Compiled By		Date
A.D. Frost	**ALAN FROST**	**12/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP3-2** Sample Ref: **2** Sample Type: **B** Depth (m): **0.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**97**
10.0	**87**
6.30	**84**
3.35	**80**
2.00	**77**
1.18	**74**
0.600	**71**
0.425	**68**
0.212	**63**
0.150	**61**
0.063	**57**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**23**
SAND	**20**
SILT/CLAY	**57**

Soil Description:

Reddish brown mottled grey slightly sandy slightly gravelly SILT

STRUCTURAL SOILS
1a Princess Street
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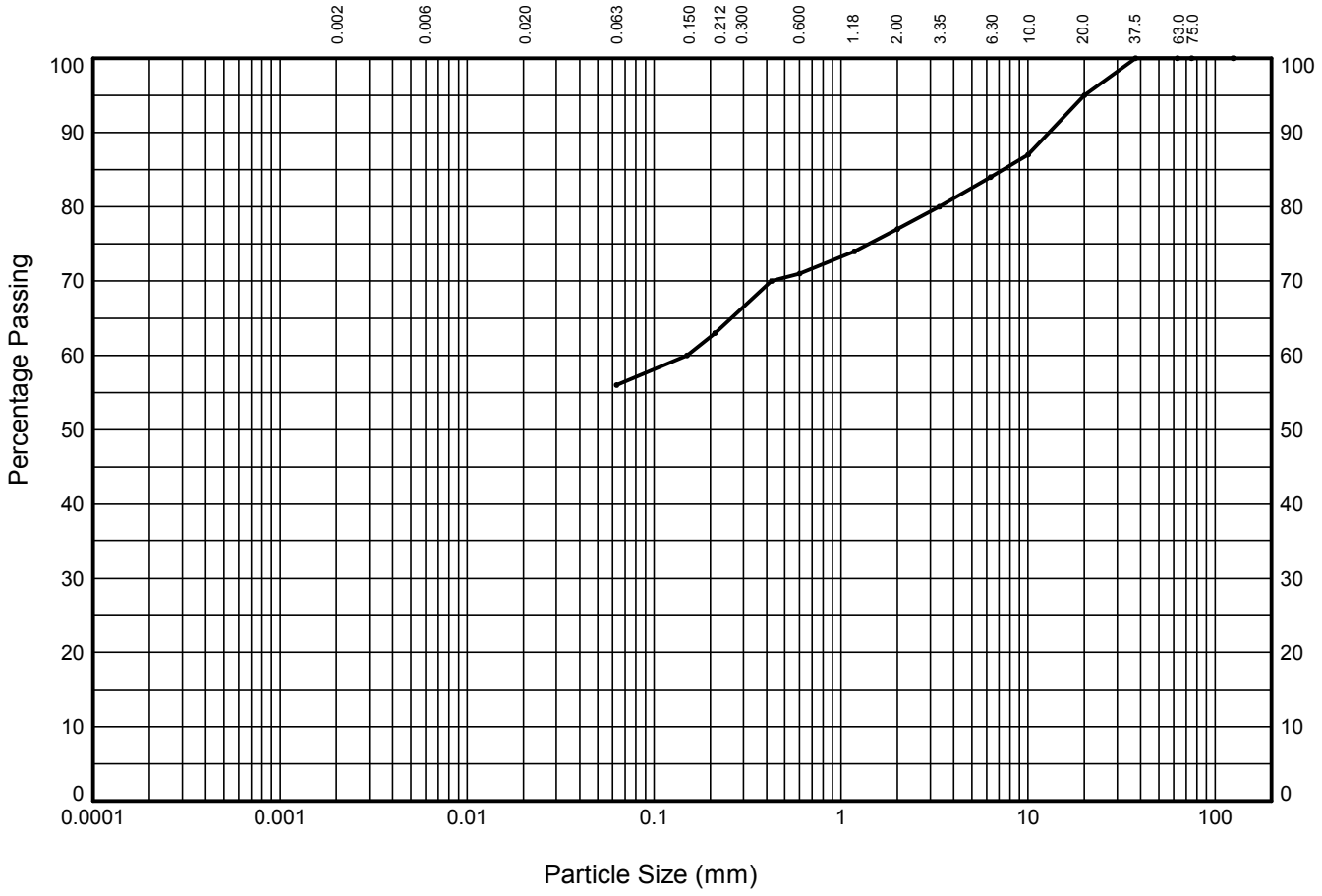
Compiled By		Date
A.D. Frost	**ALAN FROST**	**12/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP3-3** Sample Ref: **2** Sample Type: **B** Depth (m): **0.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**95**
10.0	**87**
6.30	**84**
3.35	**80**
2.00	**77**
1.18	**74**
0.600	**71**
0.425	**70**
0.212	**63**
0.150	**60**
0.063	**56**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**23**
SAND	**21**
SILT/CLAY	**56**

Soil Description:

Reddish brown mottled grey slightly sandy slightly gravelly clayey SILT

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**12/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

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SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
TP3-1	2	B	0.00	24	61	28	33	90	Dark grey slightly gravelly slightly sandy CLAY
TP3-2	2	B	0.00	24	65	37	28	66	Reddish brown mottled grey slightly sandy slightly gravelly SILT
TP3-3	2	B	0.00	27	58	31	27	59	Reddish brown mottled grey slightly sandy slightly gravelly clayey SILT

STRUCTURAL SOILS LTD

Contract:

Area I, Severnside

Contract Ref:

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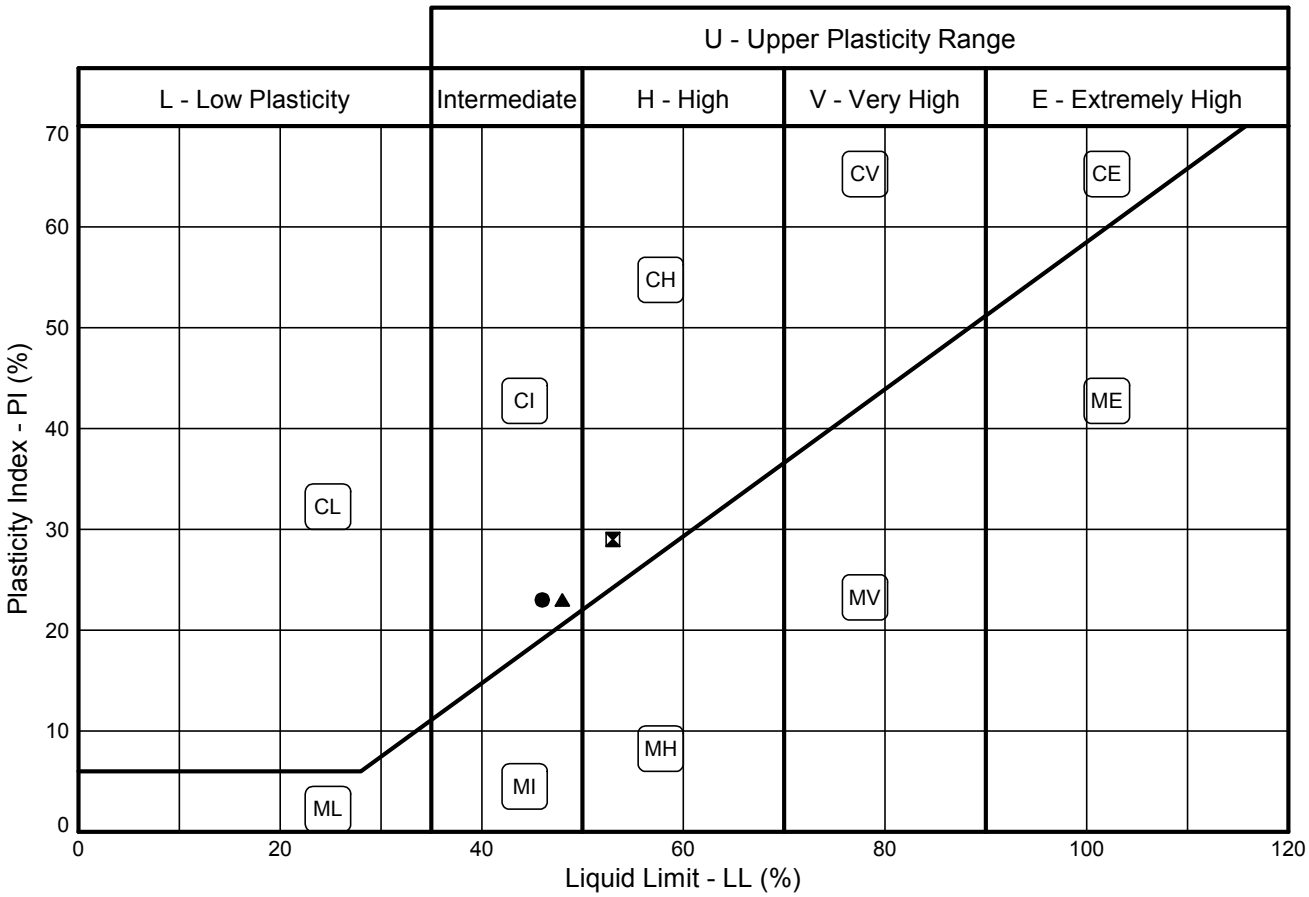
PLASTICITY CHART - PI Vs LL

In accordance with clause 42.3 of BS5930:1999
Testing in accordance with BS1377-2:1990



Sample Identification				BS Test Method #	Preparation Method +	MC %	LL %	PL %	PI %	<425um %	Lab location	
	Exploratory Position ID	Sample	Depth (m)									
●	TP4-1	2B	0.00	3.2/4.4/5.3/5.4	4.2.4	24	46	23	23	68	B	
⊠	TP4-2	2B	0.00	3.2/4.4/5.3/5.4	4.2.4	23	53	24	29	68	B	
▲	TP4-3	2B	0.00	3.2/4.4/5.3/5.4	4.2.4	23	48	25	23	61	B	

Tested in accordance with the following clauses of BS1377-2:1990.

3.2 - Moisture Content
4.3 - Cone Penetrometer Method
4.4 - One Point Cone Penetrometer Method
4.6 - One Point Casagrande Method
5.3 - Plastic Limit Method
5.4 - Plasticity Index

+ Tested in accordance with the following clauses of BS1377-2:1990.

4.2.3 - Natural State
4.2.4 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

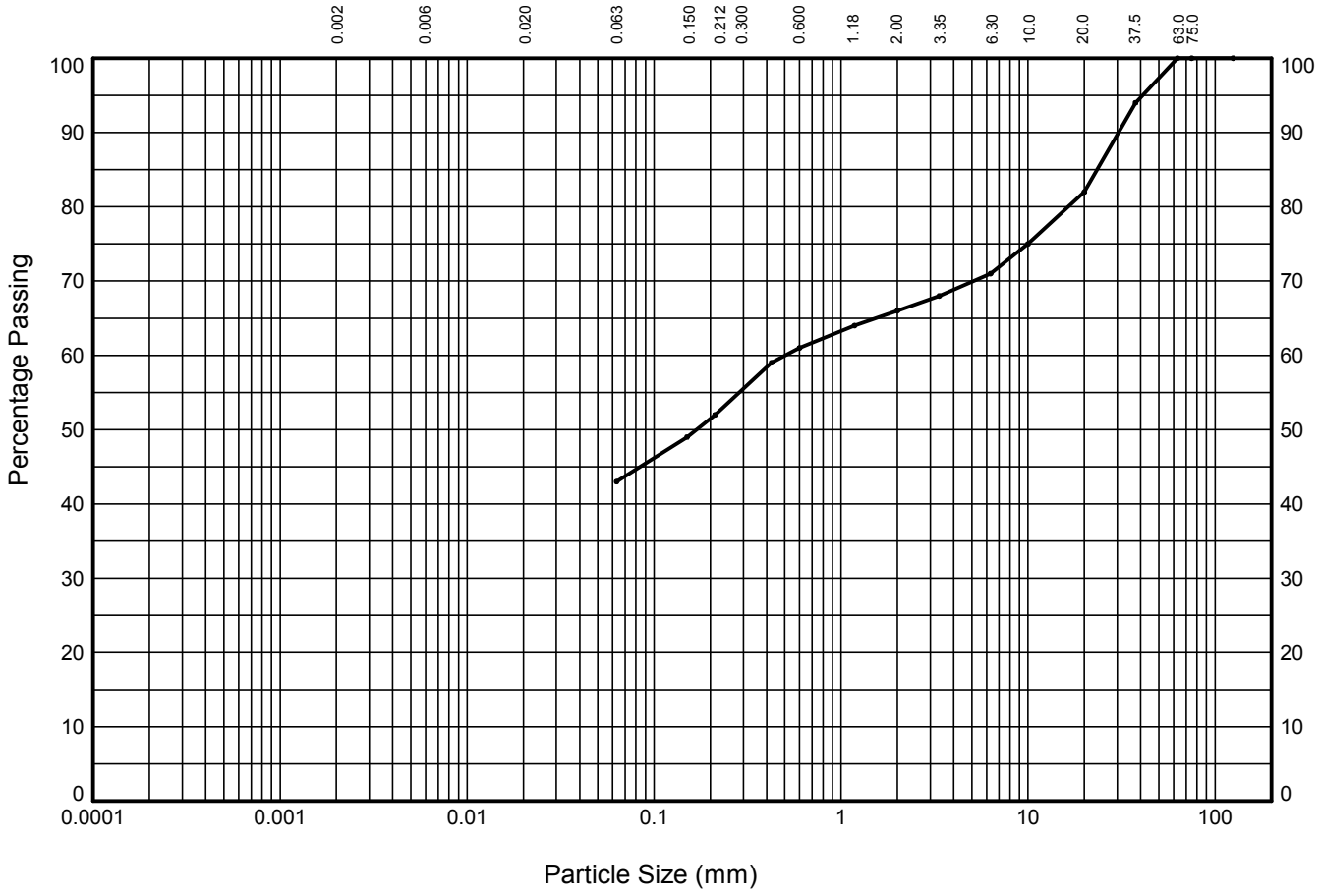
Compiled By		Date
A.D. Frost	**ALAN FROST**	**21/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP4-1** Sample Ref: **2** Sample Type: **B** Depth (m): **0.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**94**
20.0	**82**
10.0	**75**
6.30	**71**
3.35	**68**
2.00	**66**
1.18	**64**
0.600	**61**
0.425	**59**
0.212	**52**
0.150	**49**
0.063	**43**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**34**
SAND	**23**
SILT/CLAY	**43**

Soil Description:

Reddish brown mottled yellowish brown and grey slightly sandy slightly gravelly CLAY

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**21/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

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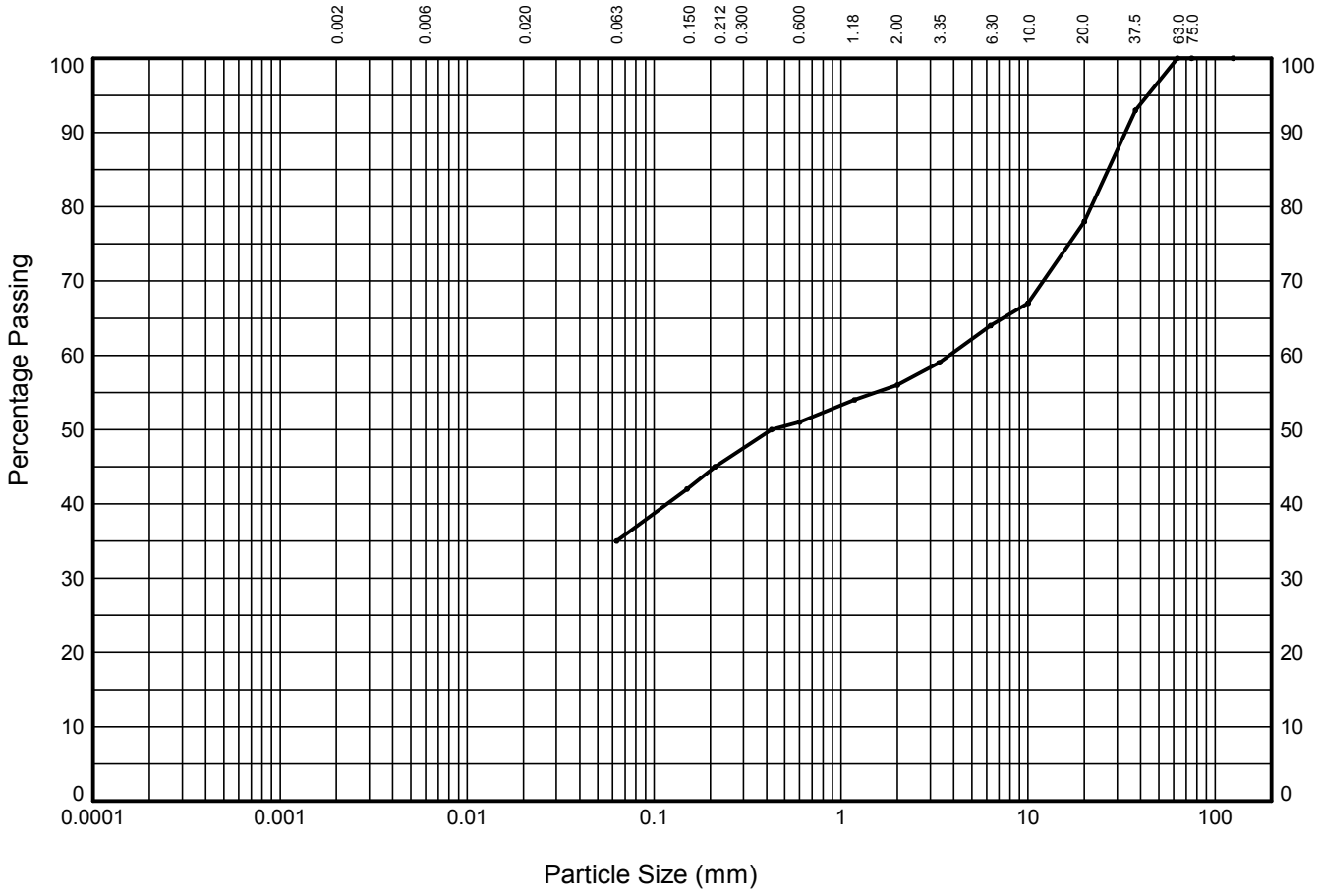
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP4-2** Sample Ref: **2** Sample Type: **B** Depth (m): **0.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**93**
20.0	**78**
10.0	**67**
6.30	**64**
3.35	**59**
2.00	**56**
1.18	**54**
0.600	**51**
0.425	**50**
0.212	**45**
0.150	**42**
0.063	**35**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**44**
SAND	**21**
SILT/CLAY	**35**

Soil Description:

Reddish brown mottled yellowish brown and grey slightly sandy gravelly CLAY

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**21/04/16**

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Area I, Severnside	**731391**

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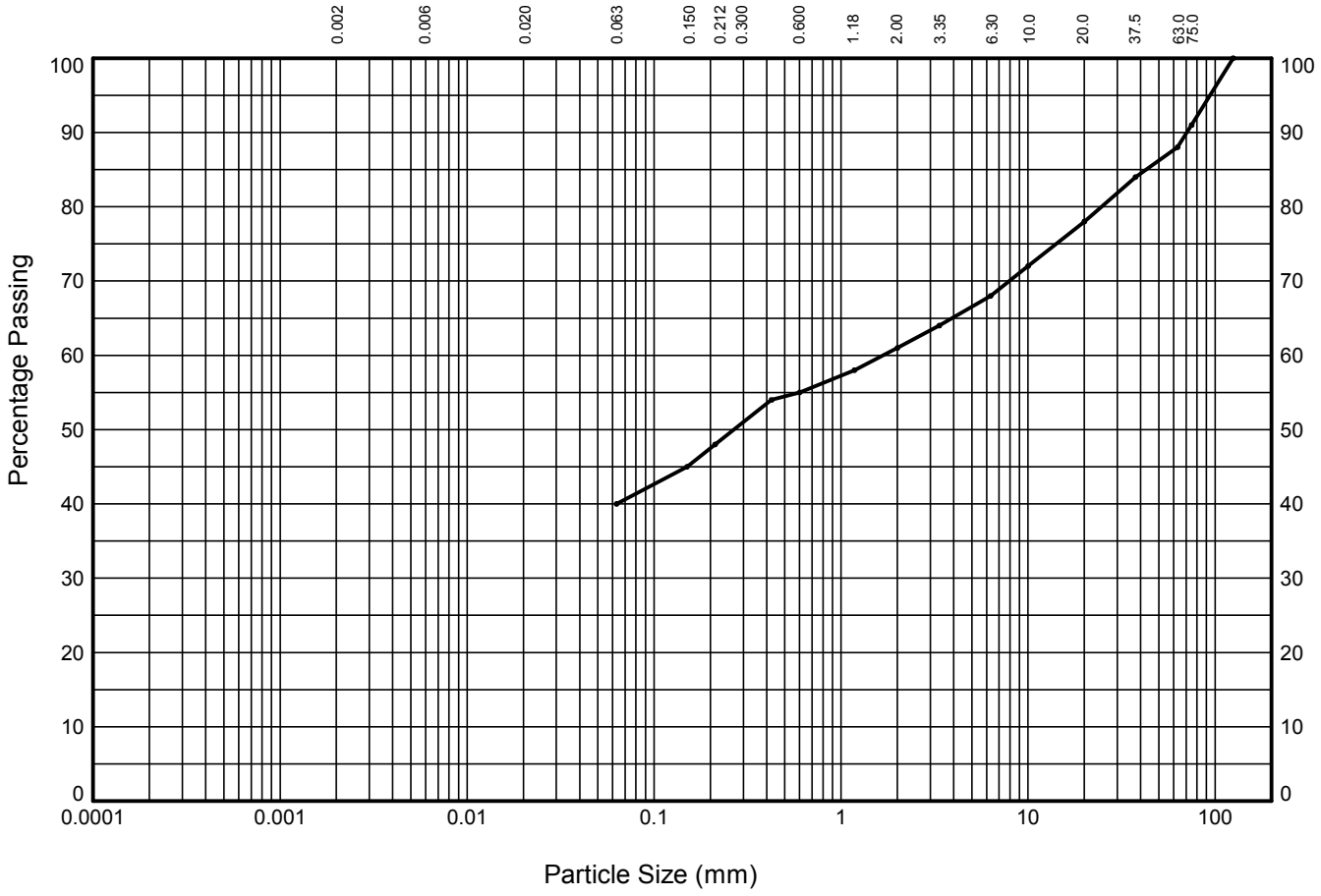
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

NON-STANDARD TEST

Trial Pit: **TP4-3** Sample Ref: **2** Sample Type: **B** Depth (m): **0.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**91**
63.0	**88**
37.5	**84**
20.0	**78**
10.0	**72**
6.30	**68**
3.35	**64**
2.00	**61**
1.18	**58**
0.600	**55**
0.425	**54**
0.212	**48**
0.150	**45**
0.063	**40**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
COBBLES	**12**
GRAVEL	**27**
SAND	**21**
SILT/CLAY	**40**

Soil Description:

Reddish brown mottled grey slightly sandy slightly gravelly CLAY with medium cobble content

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**21/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

AGS

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
TP4-1	2	B	0.00	24	46	23	23	68	Reddish brown mottled yellowish brown and grey slightly sandy slightly gravelly CLAY
TP4-2	2	B	0.00	23	53	24	29	68	Reddish brown mottled yellowish brown and grey slightly sandy gravelly CLAY
TP4-3	2	B	0.00	23	48	25	23	61	Reddish brown mottled grey slightly sandy slightly gravelly CLAY with medium cobble content

STRUCTURAL SOILS LTD

Contract:

Area I, Severnside

Contract Ref:

731391

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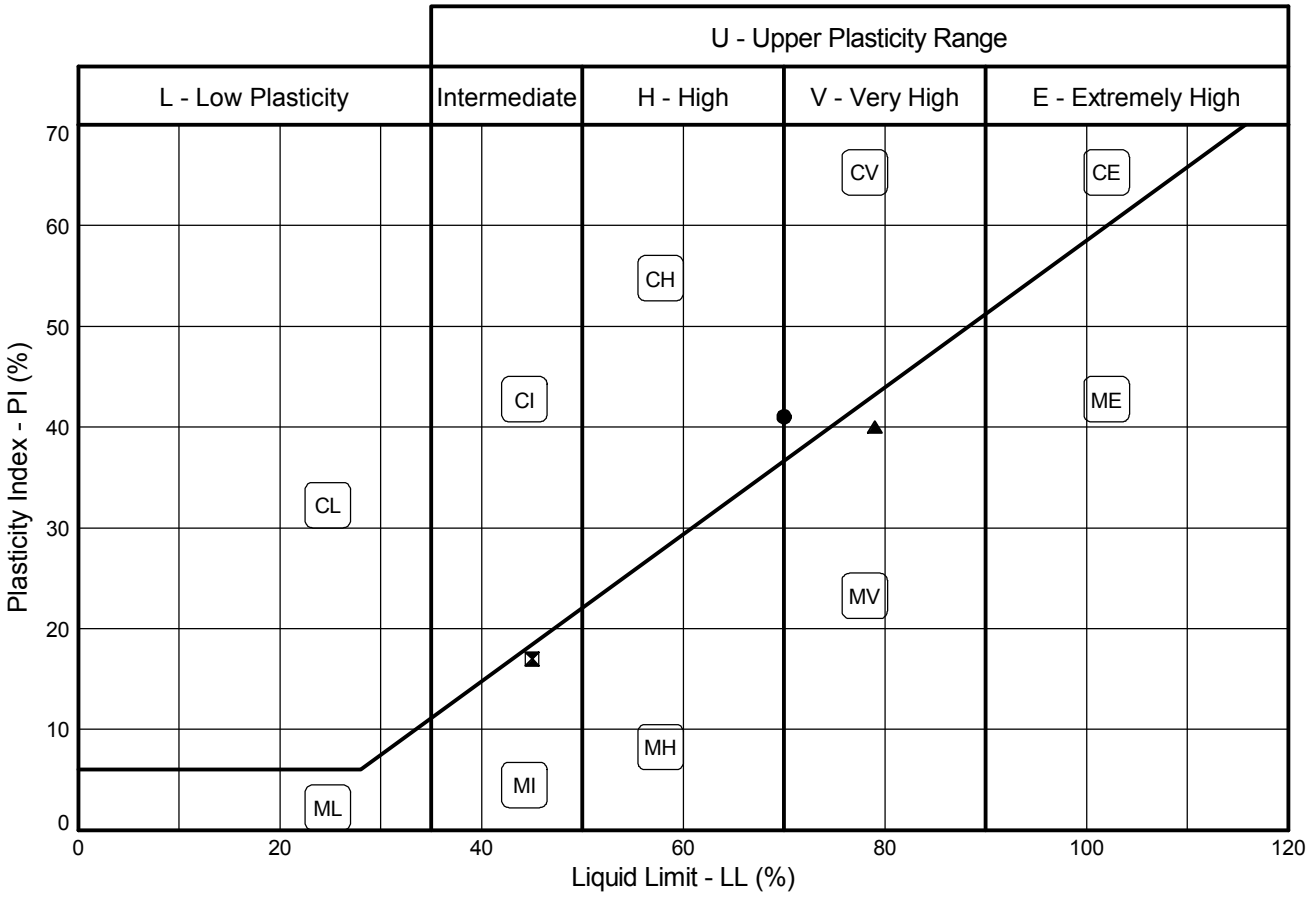
PLASTICITY CHART - PI Vs LL

In accordance with clause 42.3 of BS5930:1999
Testing in accordance with BS1377-2:1990



Sample Identification				BS Test Method #	Preparation Method +	MC	LL	PL	PI	<425um	Lab location	
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	TP5-1	2B	0.00	3.2/4.4/5.3/5.4	4.2.3	44	70	29	41	99	B	
⊠	TP5-2	2B	0.00	3.2/4.4/5.3/5.4	4.2.4	18	45	28	17	55	B	
▲	TP5-3	2B	0.00	3.2/4.4/5.3/5.4	4.2.4	25	79	39	40	93	B	

Tested in accordance with the following clauses of BS1377-2:1990.

3.2 - Moisture Content
4.3 - Cone Penetrometer Method
4.4 - One Point Cone Penetrometer Method
4.6 - One Point Casagrande Method
5.3 - Plastic Limit Method
5.4 - Plasticity Index

+ Tested in accordance with the following clauses of BS1377-2:1990.

4.2.3 - Natural State
4.2.4 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

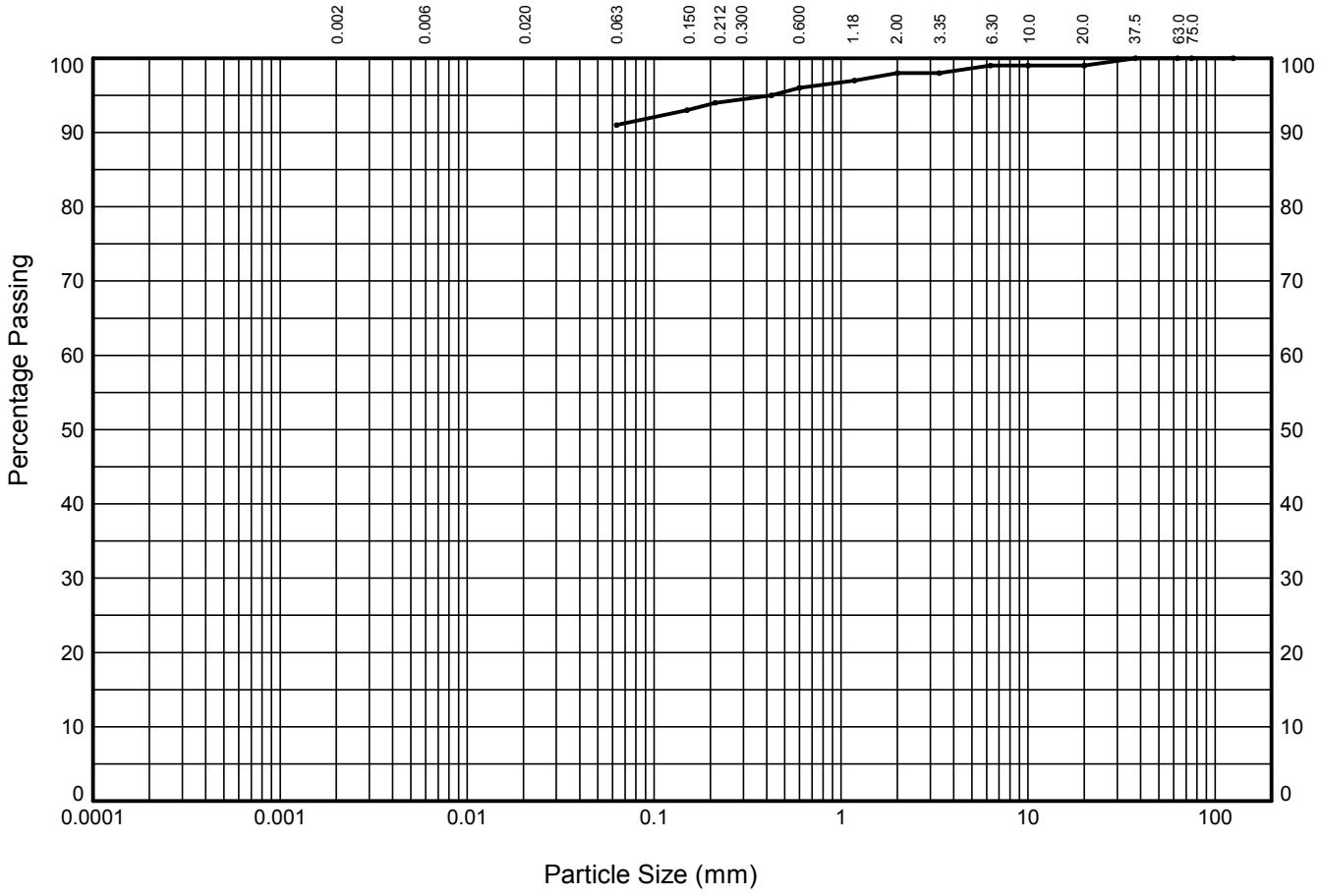
Compiled By		Date
A.D. Frost	**ALAN FROST**	**10/05/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP5-1** Sample Ref: **2** Sample Type: **B** Depth (m): **0.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**99**
10.0	**99**
6.30	**99**
3.35	**98**
2.00	**98**
1.18	**97**
0.600	**96**
0.425	**95**
0.212	**94**
0.150	**93**
0.063	**91**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**2**
SAND	**7**
SILT/CLAY	**91**

Soil Description:

Dark grey mottled greyish brown slightly gravelly slightly sandy CLAY

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**10/05/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

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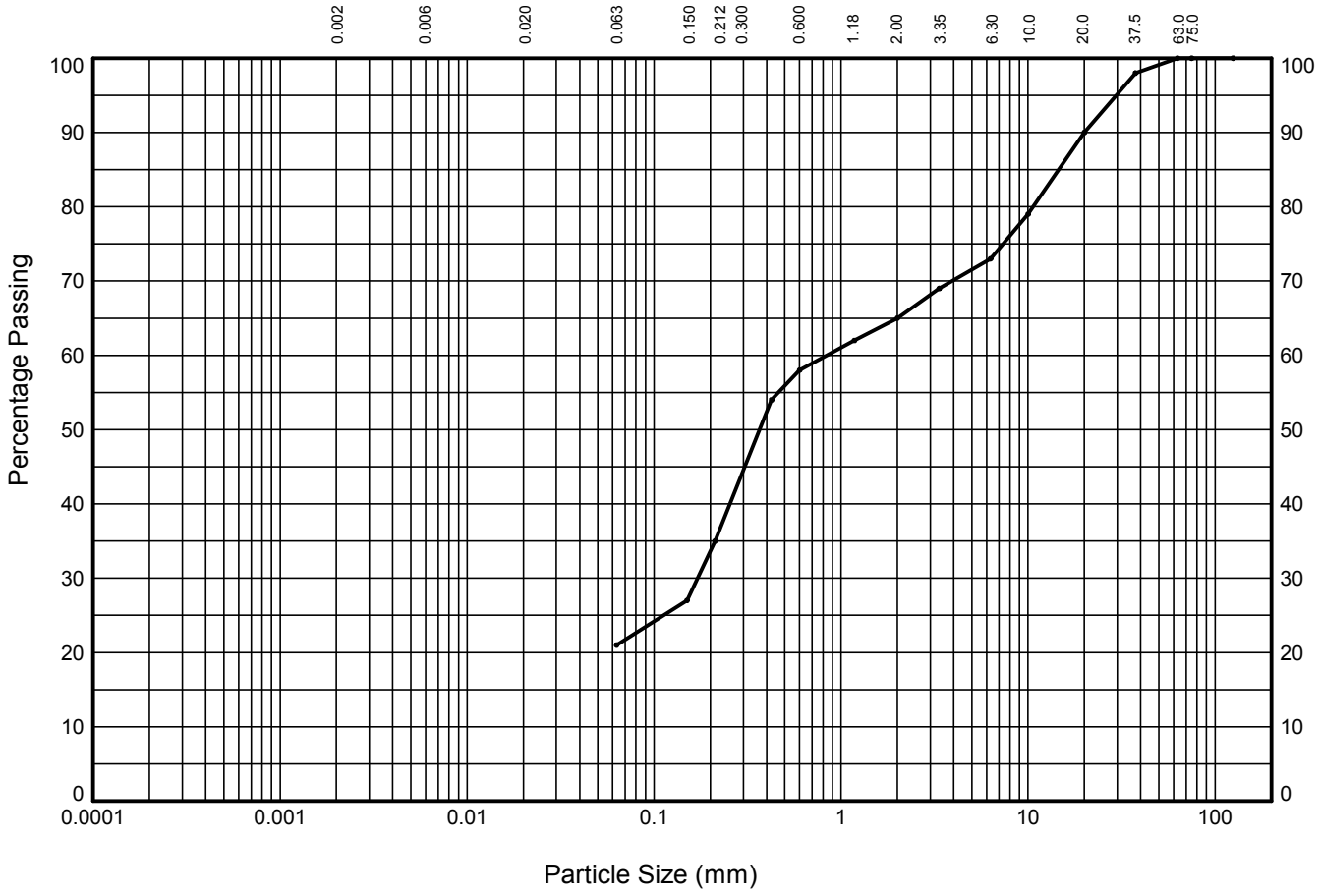
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP5-2** Sample Ref: **2** Sample Type: **B** Depth (m): **0.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**98**
20.0	**90**
10.0	**79**
6.30	**73**
3.35	**69**
2.00	**65**
1.18	**62**
0.600	**58**
0.425	**54**
0.212	**35**
0.150	**27**
0.063	**21**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**35**
SAND	**44**
SILT/CLAY	**21**

Soil Description:

Dark brown very silty very gravelly SAND

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**10/05/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

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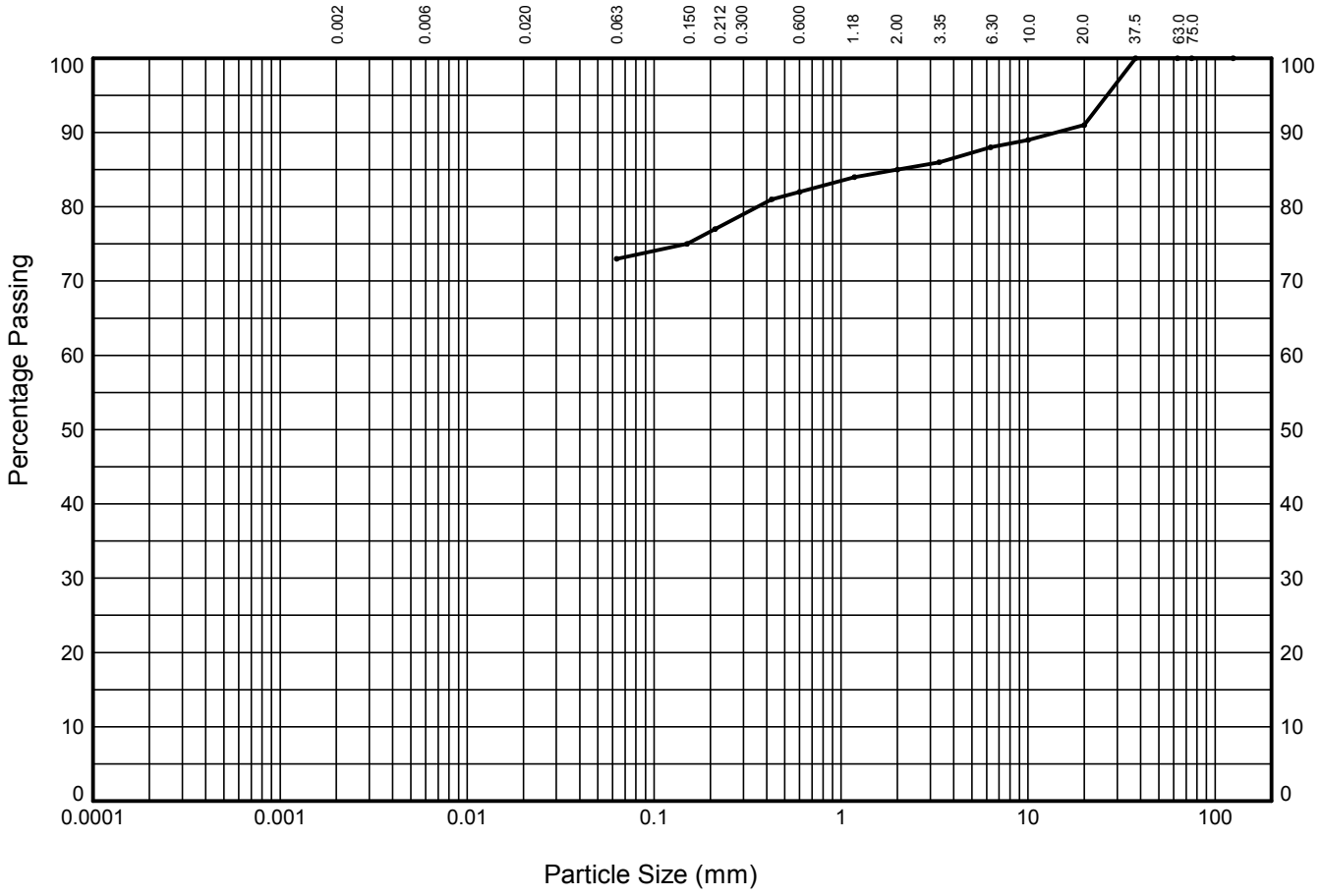
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP5-3** Sample Ref: **2** Sample Type: **B** Depth (m): **0.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**91**
10.0	**89**
6.30	**88**
3.35	**86**
2.00	**85**
1.18	**84**
0.600	**82**
0.425	**81**
0.212	**77**
0.150	**75**
0.063	**73**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**15**
SAND	**12**
SILT/CLAY	**73**

Soil Description:

Grey slightly sandy slightly gravelly SILT

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**10/05/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

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SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
TP5-1	2	B	0.00	44	70	29	41	99	Dark grey mottled greyish brown slightly gravelly slightly sandy CLAY
TP5-2	2	B	0.00	18	45	28	17	55	Dark brown very silty very gravelly SAND
TP5-3	2	B	0.00	25	79	39	40	93	Grey slightly sandy slightly gravelly SILT

STRUCTURAL SOILS LTD

Contract:

Area I, Severnside

Contract Ref:

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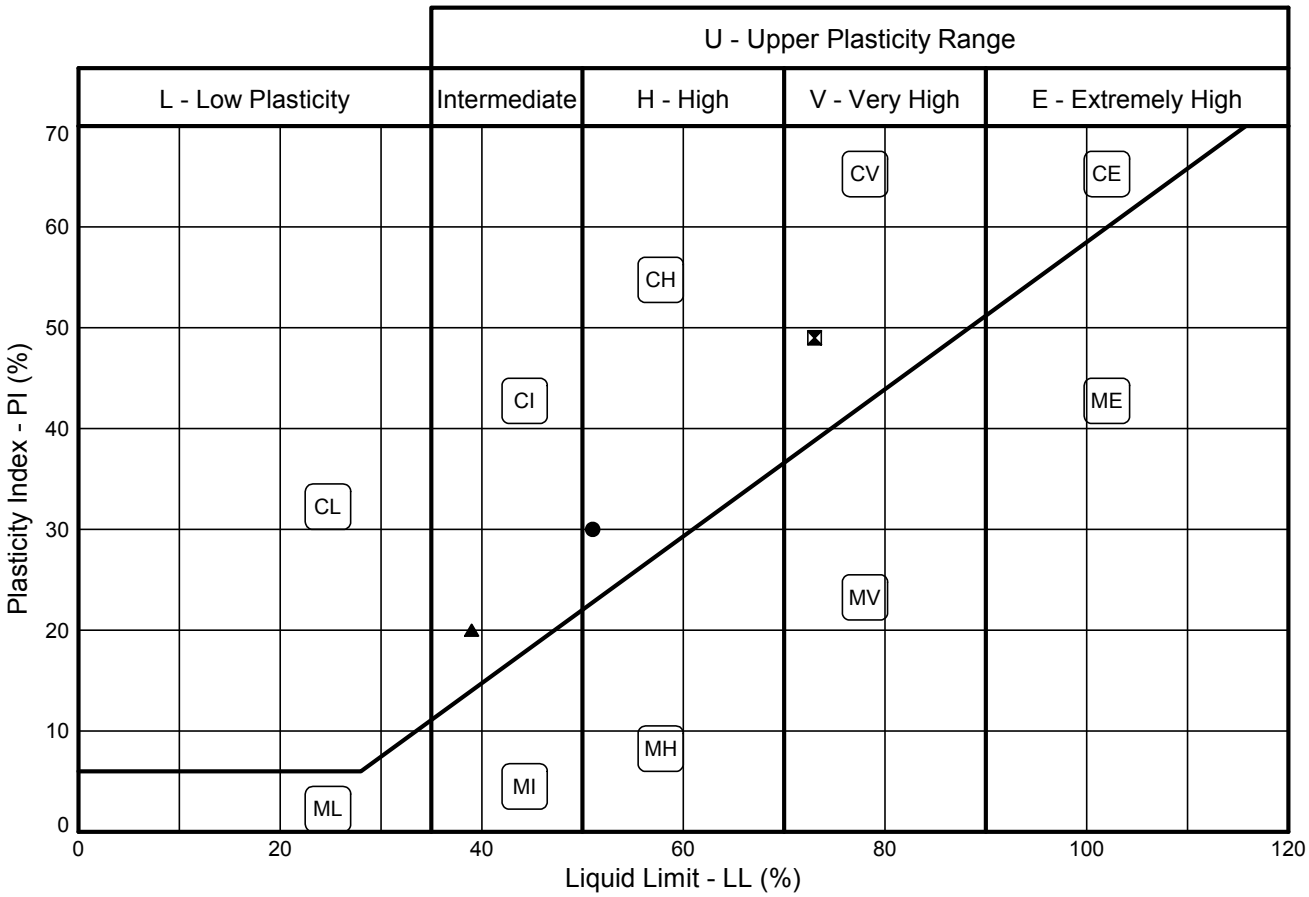
PLASTICITY CHART - PI Vs LL

In accordance with clause 42.3 of BS5930:1999
Testing in accordance with BS1377-2:1990



Sample Identification				BS Test Method #	Preparation Method +	MC %	LL %	PL %	PI %	<425um %	Lab location	
	Exploratory Position ID	Sample	Depth (m)									
●	TP6-1	2B	0.30	3.2/4.4/5.3/5.4	4.2.4	13	51	21	30	56	B	
⊠	TP6-2	2B	0.30	3.2/4.4/5.3/5.4	4.2.3	37	73	24	49	83	B	
▲	TP6-3	2B	0.30	3.2/4.4/5.3/5.4	4.2.4	12	39	19	20	87	B	

Tested in accordance with the following clauses of BS1377-2:1990.

3.2 - Moisture Content
4.3 - Cone Penetrometer Method
4.4 - One Point Cone Penetrometer Method
4.6 - One Point Casagrande Method
5.3 - Plastic Limit Method
5.4 - Plasticity Index

+ Tested in accordance with the following clauses of BS1377-2:1990.

4.2.3 - Natural State
4.2.4 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**21/06/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

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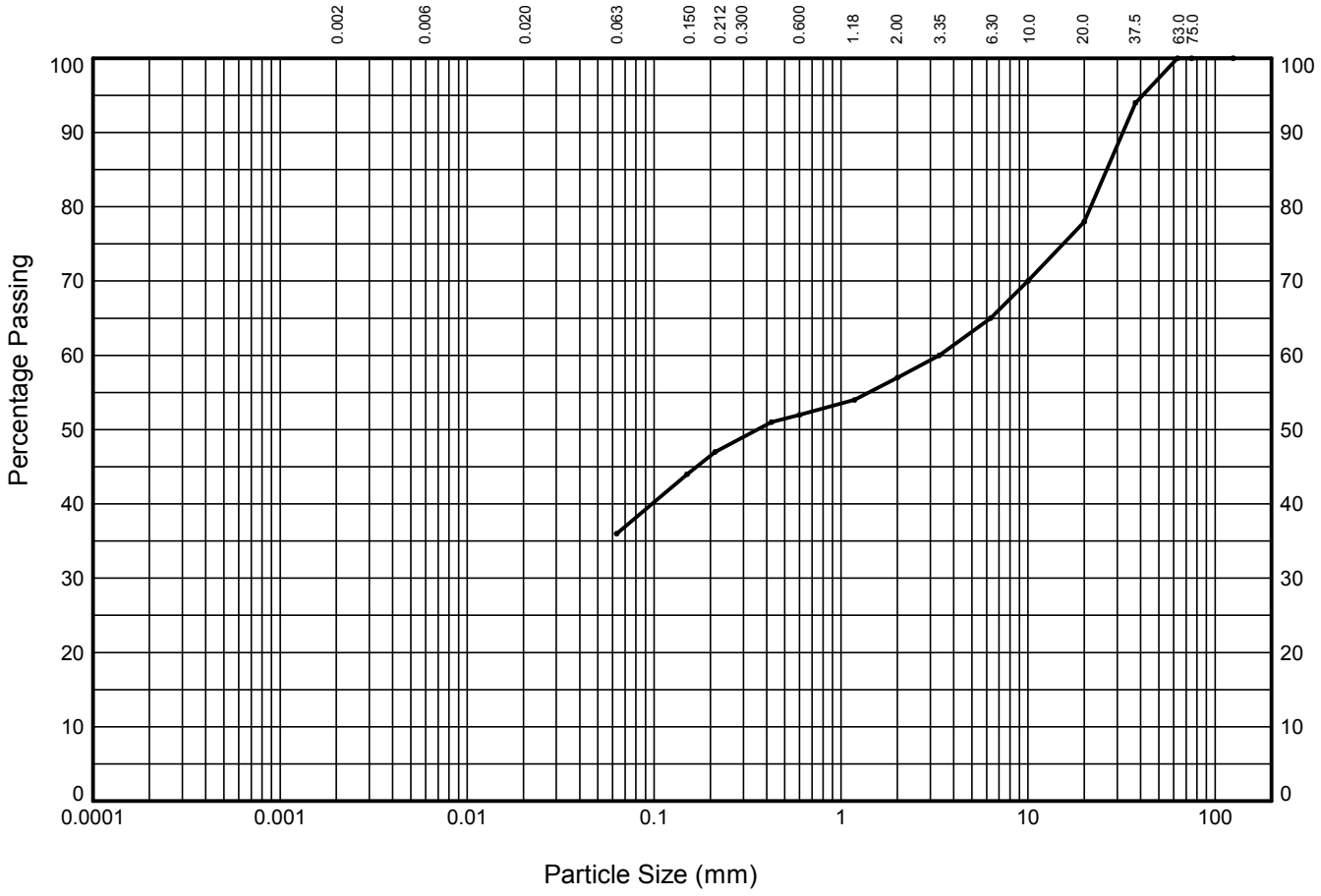
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP6-1** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**94**
20.0	**78**
10.0	**70**
6.30	**65**
3.35	**60**
2.00	**57**
1.18	**54**
0.600	**52**
0.425	**51**
0.212	**47**
0.150	**44**
0.063	**36**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**43**
SAND	**21**
SILT/CLAY	**36**

Soil Description:

Brown slightly sandy gravelly CLAY

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**21/06/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

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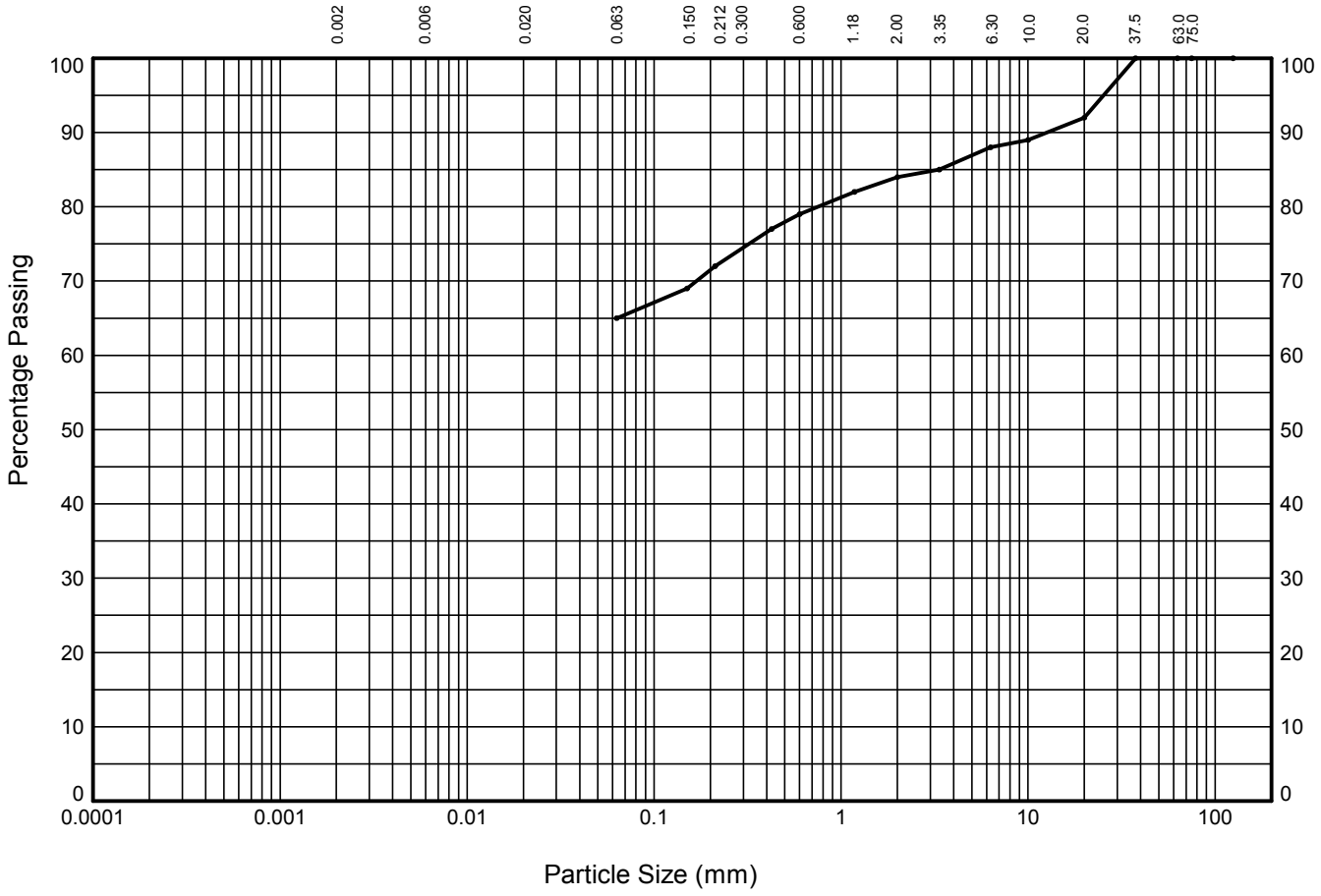
PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP6-2** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**92**
10.0	**89**
6.30	**88**
3.35	**85**
2.00	**84**
1.18	**82**
0.600	**79**
0.425	**77**
0.212	**72**
0.150	**69**
0.063	**65**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**16**
SAND	**19**
SILT/CLAY	**65**

Soil Description:

Brown mottled grey slightly gravelly slightly sandy CLAY

STRUCTURAL SOILS
1a Princess Street
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Bristol
BS3 4AG

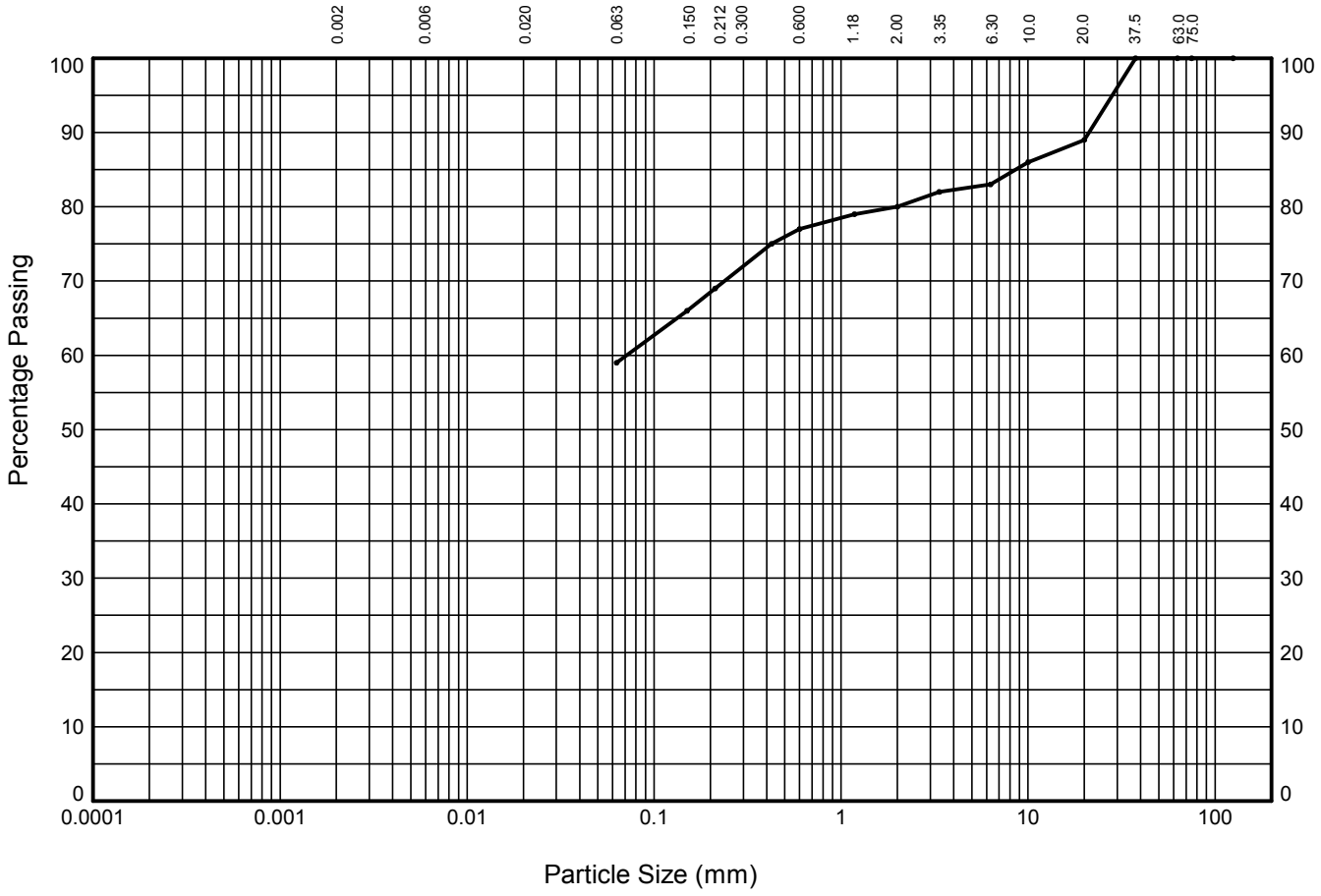
Compiled By		Date
A.D. Frost	**ALAN FROST**	**21/06/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2 of BS1377:Part 2:1990

Trial Pit: **TP6-3** Sample Ref: **2** Sample Type: **B** Depth (m): **0.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**89**
10.0	**86**
6.30	**83**
3.35	**82**
2.00	**80**
1.18	**79**
0.600	**77**
0.425	**75**
0.212	**69**
0.150	**66**
0.063	**59**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	**20**
SAND	**21**
SILT/CLAY	**59**

Soil Description:

Reddish brown mottled grey slightly gravelly slightly sandy CLAY

STRUCTURAL SOILS
1a Princess Street
Bedminster
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BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**21/06/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

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SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
TP6-1	2	B	0.30	13	51	21	30	56	Brown slightly sandy gravelly CLAY
TP6-2	2	B	0.30	37	73	24	49	83	Brown mottled grey slightly gravelly slightly sandy CLAY
TP6-3	2	B	0.30	12	39	19	20	87	Reddish brown mottled grey slightly gravelly slightly sandy CLAY

STRUCTURAL SOILS LTD

Contract:

Area I, Severnside

Contract Ref:

731391

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SUMMARY OF IN-SITU DENSITY TESTS - NUCLEAR DENSITY PROBE METHOD
BS1377:Part 9:1990

Device : Troxler 3440 Serial No. 21681

Location	Depth of Test (m)	Depth of Probe (m)	Date of Test	NDG Bulk density (Mg/m^3)	Corrected Bulk density (Mg/m^3)	Dry density (Mg/m^3) (Note 3)	Moisture Content (%) (Note 2)	Mode of Operation	Description of Sample
TP1-1	0.00	0.30	09/03/16	2.01	2.03	1.69	20	DT	Reddish brown mottled grey slightly gravelly CLAY
TP1-1	0.30	0.30	09/03/16	2.04	2.07	1.73	20	DT	Brown mottled grey slightly sandy slightly gravelly CLAY
TP1-1	0.60	0.30	09/03/16	1.84	1.76	1.46	21	DT	Brown mottled grey slightly sandy slightly gravelly CLAY
TP1-1	0.90	0.30	09/03/16	1.98	1.98	1.62	22	DT	Brown mottled grey slightly sandy slightly gravelly CLAY
TP1-1	1.20	0.30	09/03/16	1.98	1.98	1.58	25	DT	Brown mottled grey slightly gravelly CLAY
TP1-2	0.00	0.30	09/03/16	1.89	1.85	1.59	17	DT	Grey mottled brown slightly sandy slightly gravelly CLAY
TP1-2	0.30	0.30	09/03/16	2.02	2.05	1.63	26	DT	Grey mottled reddish brown slightly gravelly CLAY
TP1-2	0.60	0.30	09/03/16	2.16	2.26	1.94	17	DT	Reddish brown mottled grey slightly gravelly CLAY

Notes
1) Bulk density corrected using data obtained by comparison with a sample recompacted in the laboratory (factor = 1.5298pn -1.0436). 2) Moisture content undertaken in the laboratory in accordance with BS1377:Part 2:1990, clause 3.2.
3) Dry density calculated using the laboratory moisture content.
Key to Abbreviations : DT = Direct transmission, BS = Back scatter.

	Compiled By		Date	Contract Ref:
STRUCTURAL SOILS LTD	JMajor	**JESSICA MAJOR**	**12.04.16**	**731391**
	Contract: **Area I, Severnside**			

SUMMARY OF IN-SITU DENSITY TESTS - NUCLEAR DENSITY PROBE METHOD
BS1377:Part 9:1990

Device : Troxler 3440 Serial No. 21681

Location	Depth of Test (m)	Depth of Probe (m)	Date of Test	NDG Bulk density (Mg/m^3)	Corrected Bulk density (Mg/m^3)	Dry density (Mg/m^3) (Note 3)	Moisture Content (%) (Note 2)	Mode of Operation	Description of Sample
TP1-2	0.90	0.30	09/03/16	1.96	1.95	1.57	24	DT	Grey mottled reddish brown slightly gravelly CLAY
TP1-2	1.20	0.30	09/03/16	1.98	1.99	1.56	27	DT	Reddish brown mottled grey slightly gravelly CLAY
TP1-3	0.00	0.30	09/03/16	2.15	2.24	1.89	19	DT	Brown slightly gravelly CLAY
TP1-3	0.30	0.30	09/03/16	2.02	2.05	1.76	16	DT	Brown slightly sandy slightly gravelly CLAY
TP1-3	0.60	0.30	09/03/16	1.99	2.00	1.66	21	DT	Brown slightly sandy slightly gravelly CLAY
TP1-3	0.90	0.30	09/03/16	2.00	2.01	1.65	22	DT	Brown slightly slightly gravelly CLAY
TP1-3	1.20	0.30	09/03/16	1.93	1.91	1.54	24	DT	Grey mottled brown slightly sandy slightly gravelly CLAY
TP1-4	0.00	0.30	09/03/16	2.02	2.04	1.65	23	DT	Brown slightly gravelly CLAY

Notes
1) Bulk density corrected using data obtained by comparison with a sample recompacted in the laboratory (factor = 1.5298pn -1.0436). 2) Moisture content undertaken in the laboratory in accordance with BS1377:Part 2:1990, clause 3.2.
3) Dry density calculated using the laboratory moisture content.
Key to Abbreviations : DT = Direct transmission, BS = Back scatter.

	Compiled By		Date	Contract Ref:
STRUCTURAL SOILS LTD	JMajor	**JESSICA MAJOR**	**12.04.16**	**731391**
	Contract: **Area I, Severnside**			

SUMMARY OF IN-SITU DENSITY TESTS - NUCLEAR DENSITY PROBE METHOD
BS1377:Part 9:1990

Device : Troxler 3440 Serial No. 21681

Location	Depth of Test (m)	Depth of Probe (m)	Date of Test	NDG Bulk density (Mg/m^3)	Corrected Bulk density (Mg/m^3)	Dry density (Mg/m^3) (Note 3)	Moisture Content (%) (Note 2)	Mode of Operation	Description of Sample
TP1-4	0.30	0.30	09/03/16	1.97	1.97	1.58	24	DT	Grey mottled brown slightly sandy slightly gravelly CLAY
TP1-4	0.60	0.30	09/03/16	2.00	2.01	1.69	19	DT	Brown slightly sandy slightly gravelly CLAY
TP1-4	0.90	0.30	09/03/16	2.06	2.10	1.75	20	DT	Brown slightly sandy slightly gravelly CLAY
TP1-4	1.20	0.30	09/03/16	1.99	2.00	1.67	20	DT	Brown mottled grey slightly sandy slightly gravelly CLAY
TP1-5	0.00	0.30	09/03/16	2.06	2.10	1.71	23	DT	Brown slightly sandy slightly gravelly CLAY
TP1-5	0.30	0.30	09/03/16	2.04	2.08	1.67	25	DT	Reddish brown mottled grey slightly gravelly CLAY
TP1-5	0.60	0.30	09/03/16	1.98	1.99	1.66	20	DT	Brown slightly sandy slightly gravelly CLAY
TP1-5	0.90	0.30	09/03/16	1.91	1.88	1.48	27	DT	Greenish grey mottled grey slightly gravelly CLAY

Notes
1) Bulk density corrected using data obtained by comparison with a sample recompacted in the laboratory (factor = 1.5298pn -1.0436). 2) Moisture content undertaken in the laboratory in accordance with BS1377:Part 2:1990, clause 3.2.
3) Dry density calculated using the laboratory moisture content.
Key to Abbreviations : DT = Direct transmission, BS = Back scatter.

	Compiled By		Date	Contract Ref:
STRUCTURAL SOILS LTD	JMajor	**JESSICA MAJOR**	**12.04.16**	**731391**
	Contract: **Area I, Severnside**			

SUMMARY OF IN-SITU DENSITY TESTS - NUCLEAR DENSITY PROBE METHOD
BS1377:Part 9:1990

Device : Troxler 3440 Serial No. 21681

Location	Depth of Test (m)	Depth of Probe (m)	Date of Test	NDG Bulk density (Mg/m^3)	Corrected Bulk density (Mg/m^3)	Dry density (Mg/m^3) (Note 3)	Moisture Content (%) (Note 2)	Mode of Operation	Description of Sample
TP1-5	1.20	0.30	09/03/16	1.92	1.89	1.57	20	DT	Brown slightly sandy slightly gravelly CLAY
TP1-6	0.00	0.30	10/03/16	2.09	2.15	1.78	21	DT	Reddish brown slightly gravelly CLAY
TP1-6	0.30	0.30	10/03/16	2.00	2.01	1.68	20	DT	Reddish brown slightly gravelly CLAY
TP1-6	0.60	0.30	10/03/16	2.02	2.05	1.72	19	DT	Reddish brown slightly gravelly CLAY
TP1-6	0.90	0.30	10/03/16	1.88	1.83	1.55	18	DT	Reddish brown slightly gravelly CLAY
TP1-6	1.20	0.30	10/03/16	1.97	1.97	1.63	21	DT	Reddish brown slightly gravelly CLAY with cobbles
TP1-7	0.00	0.30	10/03/16	1.92	1.90	1.56	22	DT	Reddish brown slightly gravelly CLAY
TP1-7	0.30	0.30	10/03/16	2.02	2.05	1.68	23	DT	Reddish brown slightly gravelly CLAY

Notes
1) Bulk density corrected using data obtained by comparison with a sample recompacted in the laboratory (factor = 1.5298pn -1.0436). 2) Moisture content undertaken in the laboratory in accordance with BS1377:Part 2:1990, clause 3.2.
3) Dry density calculated using the laboratory moisture content.
Key to Abbreviations : DT = Direct transmission, BS = Back scatter.

	Compiled By		Date	Contract Ref:
STRUCTURAL SOILS LTD	JMajor	**JESSICA MAJOR**	**12.04.16**	**731391**
	Contract: **Area I, Severnside**			

SUMMARY OF IN-SITU DENSITY TESTS - NUCLEAR DENSITY PROBE METHOD
BS1377:Part 9:1990

Device : Troxler 3440 Serial No. 21681

Location	Depth of Test (m)	Depth of Probe (m)	Date of Test	NDG Bulk density (Mg/m^3)	Corrected Bulk density (Mg/m^3)	Dry density (Mg/m^3) (Note 3)	Moisture Content (%) (Note 2)	Mode of Operation	Description of Sample
TP1-7	0.60	0.30	10/03/16	2.03	2.07	1.74	19	DT	Reddish brown slightly gravelly CLAY
TP1-7	0.90	0.30	10/03/16	2.07	2.13	1.79	19	DT	Reddish brown slightly gravelly CLAY
TP1-7	1.20	0.30	10/03/16	1.95	1.94	1.54	26	DT	Brown mottled grey slightly gravelly CLAY
TP1-8	0.00	0.30	10/03/16	2.01	2.04	1.67	22	DT	Brown mottled grey slightly gravelly CLAY
TP1-8	0.30	0.30	10/03/16	1.92	1.90	1.52	25	DT	Brown mottled grey slightly gravelly CLAY
TP1-8	0.60	0.30	10/03/16	1.98	1.98	1.62	22	DT	Brown slightly gravelly CLAY
TP1-8	0.90	0.30	10/03/16	1.89	1.84	1.48	24	DT	Brown mottled grey slightly gravelly CLAY
TP1-8	1.20	0.30	10/03/16	1.96	1.96	1.49	32	DT	Greyish brown slightly gravelly CLAY

Notes
1) Bulk density corrected using data obtained by comparison with a sample recompacted in the laboratory (factor = 1.5298pn -1.0436). 2) Moisture content undertaken in the laboratory in accordance with BS1377:Part 2:1990, clause 3.2.
3) Dry density calculated using the laboratory moisture content.
Key to Abbreviations : DT = Direct transmission, BS = Back scatter.

	Compiled By		Date	Contract Ref:
STRUCTURAL SOILS LTD	JMajor	**JESSICA MAJOR**	**12.04.16**	**731391**
	Contract: **Area I, Severnside**			

SUMMARY OF IN-SITU DENSITY TESTS - NUCLEAR DENSITY PROBE METHOD
BS1377:Part 9:1990

Device : Troxler 3440 Serial No. 21681

Location	Depth of Test (m)	Depth of Probe (m)	Date of Test	NDG Bulk density (Mg/m^3)	Corrected Bulk density (Mg/m^3)	Dry density (Mg/m^3) (Note 3)	Moisture Content (%) (Note 2)	Mode of Operation	Description of Sample
TP1-9	0.00	0.30	10/03/16	2.00	2.02	1.69	19	DT	Brown slightly gravelly CLAY
TP1-9	0.30	0.30	10/03/16	1.93	1.90	1.59	20	DT	Brown slightly gravelly CLAY
TP1-9	0.60	0.30	10/03/16	1.94	1.92	1.50	28	DT	Brown slightly gravelly CLAY
TP1-9	0.90	0.30	10/03/16	1.92	1.90	1.57	21	DT	Brown slightly gravelly CLAY
TP1-9	1.20	0.30	10/03/16	1.99	2.00	1.70	18	DT	Brown slightly gravelly CLAY
TP1-10	0.00	0.30	10/03/16	1.99	2.01	1.66	21	DT	Reddish brown slightly gravelly CLAY
TP1-10	0.30	0.30	10/03/16	1.80	1.71	1.45	18	DT	Brown slightly gravelly CLAY
TP1-10	0.60	0.30	10/03/16	2.00	2.01	1.62	24	DT	Reddish brown slightly gravelly CLAY

Notes
1) Bulk density corrected using data obtained by comparison with a sample recompacted in the laboratory (factor = 1.5298pn -1.0436). 2) Moisture content undertaken in the laboratory in accordance with BS1377:Part 2:1990, clause 3.2.
3) Dry density calculated using the laboratory moisture content.
Key to Abbreviations : DT = Direct transmission, BS = Back scatter.

	Compiled By		Date	Contract Ref:
STRUCTURAL SOILS LTD	JMajor	**JESSICA MAJOR**	**12.04.16**	**731391**
	Contract: **Area I, Severnside**			

SUMMARY OF IN-SITU DENSITY TESTS - NUCLEAR DENSITY PROBE METHOD
BS1377:Part 9:1990

Device : Troxler 3440 Serial No. 21681

Location	Depth of Test (m)	Depth of Probe (m)	Date of Test	NDG Bulk density (Mg/m^3)	Corrected Bulk density (Mg/m^3)	Dry density (Mg/m^3) (Note 3)	Moisture Content (%) (Note 2)	Mode of Operation	Description of Sample
TP1-10	0.90	0.30	10/03/16	1.96	1.96	1.61	21	DT	Reddish brown slightly gravelly CLAY
TP1-10	1.20	0.30	10/03/16	1.93	1.91	1.60	19	DT	Brown slightly gravelly CLAY

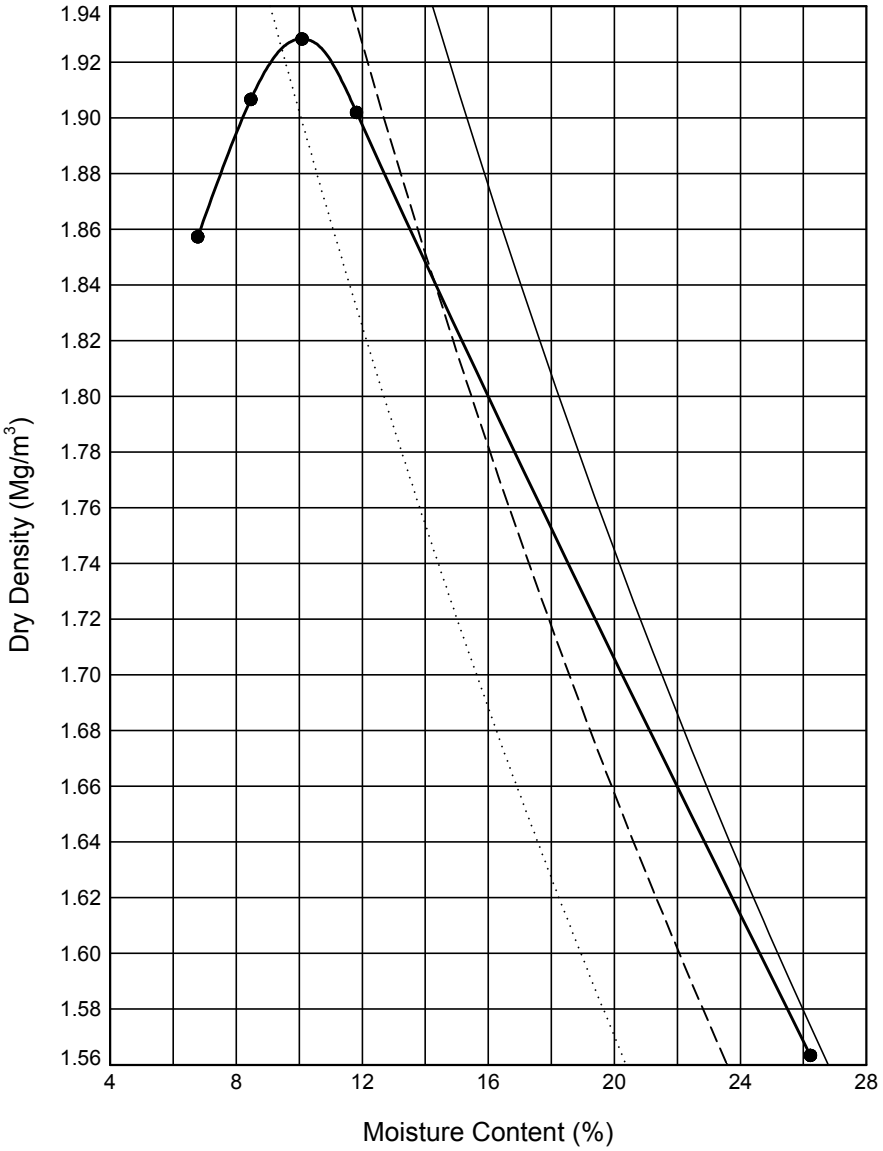
Notes
1) Bulk density corrected using data obtained by comparison with a sample recompacted in the laboratory (factor = 1.5298pn -1.0436). 2) Moisture content undertaken in the laboratory in accordance with BS1377:Part 2:1990, clause 3.2.
3) Dry density calculated using the laboratory moisture content.
Key to Abbreviations : DT = Direct transmission, BS = Back scatter.

	Compiled By		Date	Contract Ref:
STRUCTURAL SOILS LTD	JMajor	**JESSICA MAJOR**	**12.04.16**	**731391**
	Contract: **Area I, Severnside**			

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP1-1** Sample Ref: **5** Sample Type: **LB** Depth (m): **0.30**



Initial Sample Conditions			Test Details			Test Results		
Initial Moisture Content (%)	:	**26**	Compaction Type	:	**Heavy**	Maximum Dry Density (Mg/m³)	:	**1.93**
% Retained on 37.5mm BS Sieve	:	**4**	Mass of Rammer (kg):		**4.5**	Optimum Moisture Content (%)	:	**10**
% Retained on 20.0mm BS Sieve	:	**6**	Type of Mould	:	**CBR**	Method Used: **Clause 3.6**		
Particle Density - assumed (Mg/m³)	:	**2.68**				Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.					

Sample Description	Key to Air Voids Lines		
Brown mottled grey slightly sandy gravelly CLAY	——— 0%	– – – – 5%	····· 10%

STRUCTURAL SOILS
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Compiled By		Date
A.D. Frost	**ALAN FROST**	**08/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

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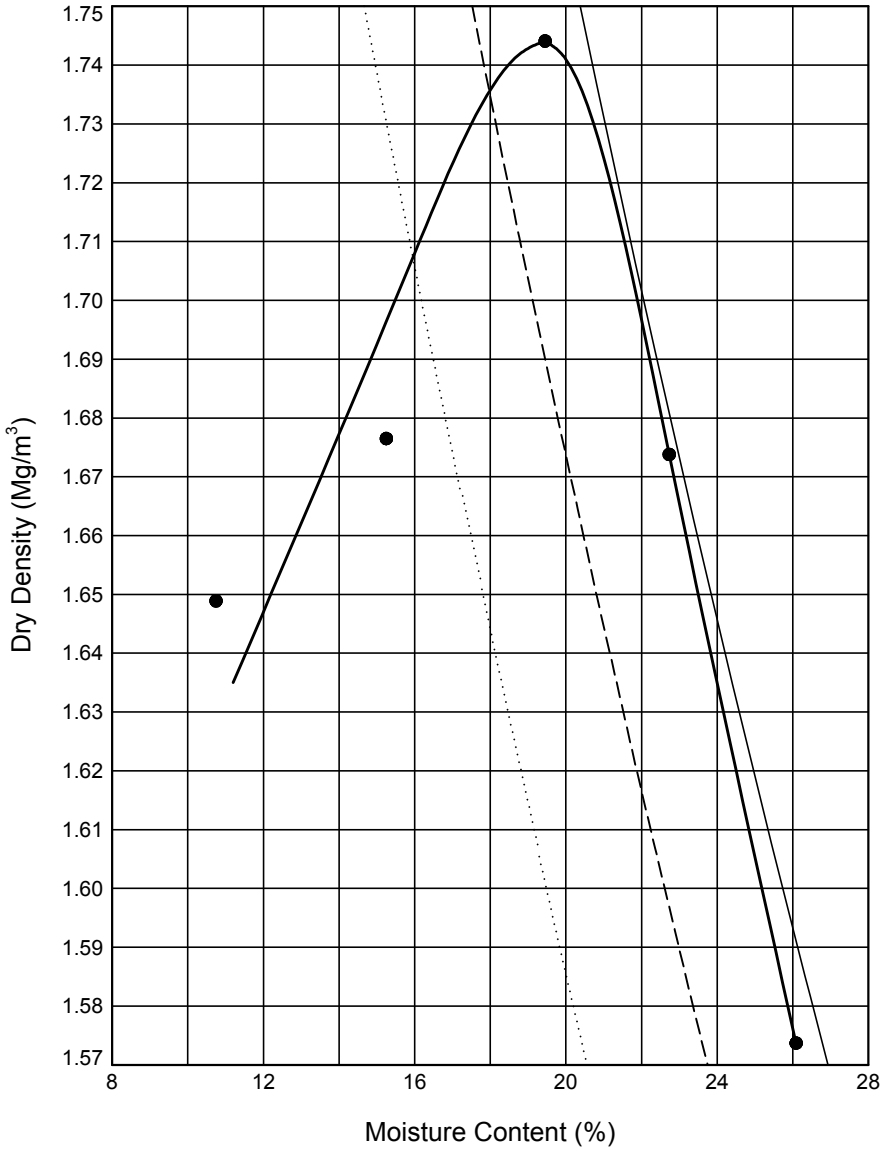
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP1-2** Sample Ref: **5** Sample Type: **LB** Depth (m): **0.60**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**26**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.74**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**19**
% Retained on 20.0mm BS Sieve	:	**5**	Type of Mould	: **Proctor**	Method Used: **Clause 3.5**		
Particle Density - assumed (Mg/m^3)	:	**2.72**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown mottled reddish brown and grey slightly sandy gravelly CLAY	——— 0%	– – – – 5%	····· 10%

STRUCTURAL SOILS
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Compiled By		Date
A.D. Frost	**ALAN FROST**	**08/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

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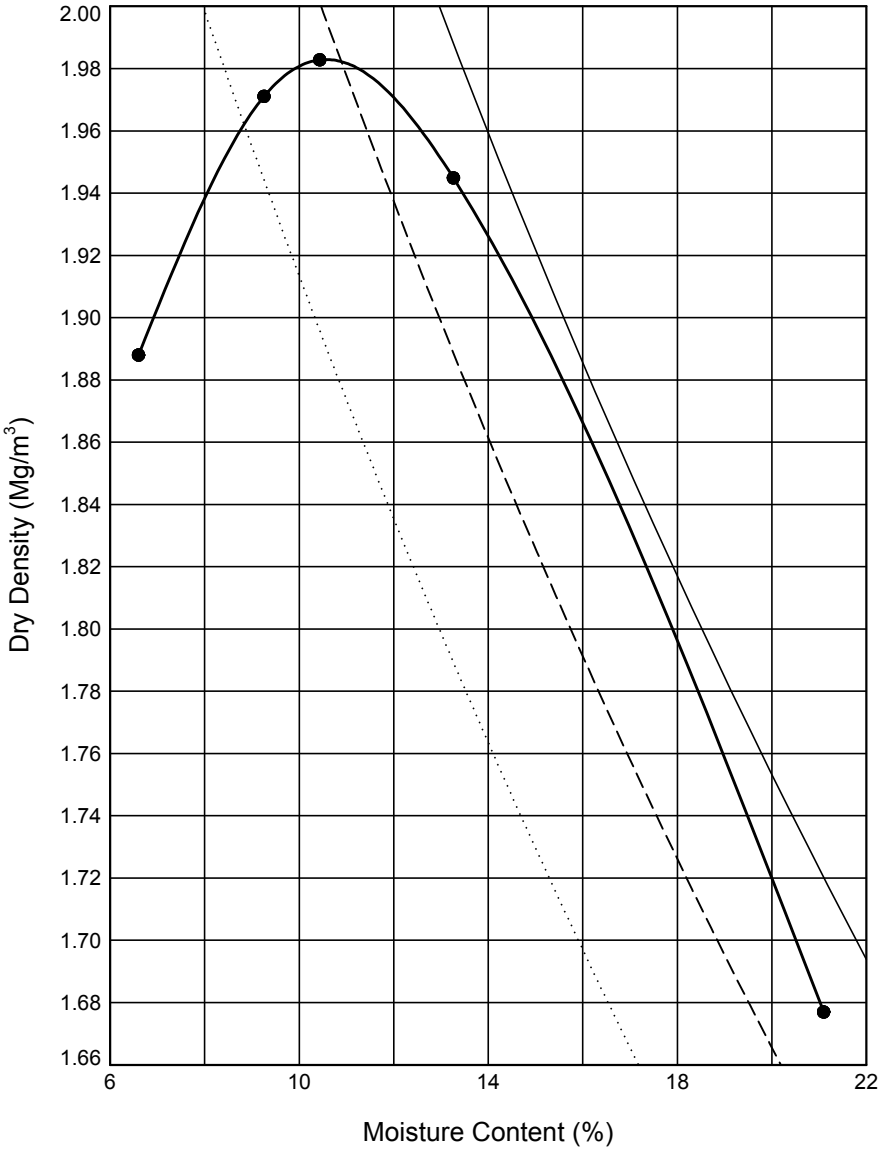
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP1-3** Sample Ref: **5** Sample Type: **LB** Depth (m): **0.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**21**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.98**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**10**
% Retained on 20.0mm BS Sieve	:	**6**	Type of Mould	: **Proctor**	Method Used: **Clause 3.5**		
Particle Density - assumed (Mg/m^3)	:	**2.70**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown mottled grey slightly sandy gravelly CLAY	——— 0%	– – – – 5%	····· 10%

STRUCTURAL SOILS
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Bristol
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Compiled By		Date
A.D. Frost	**ALAN FROST**	**08/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

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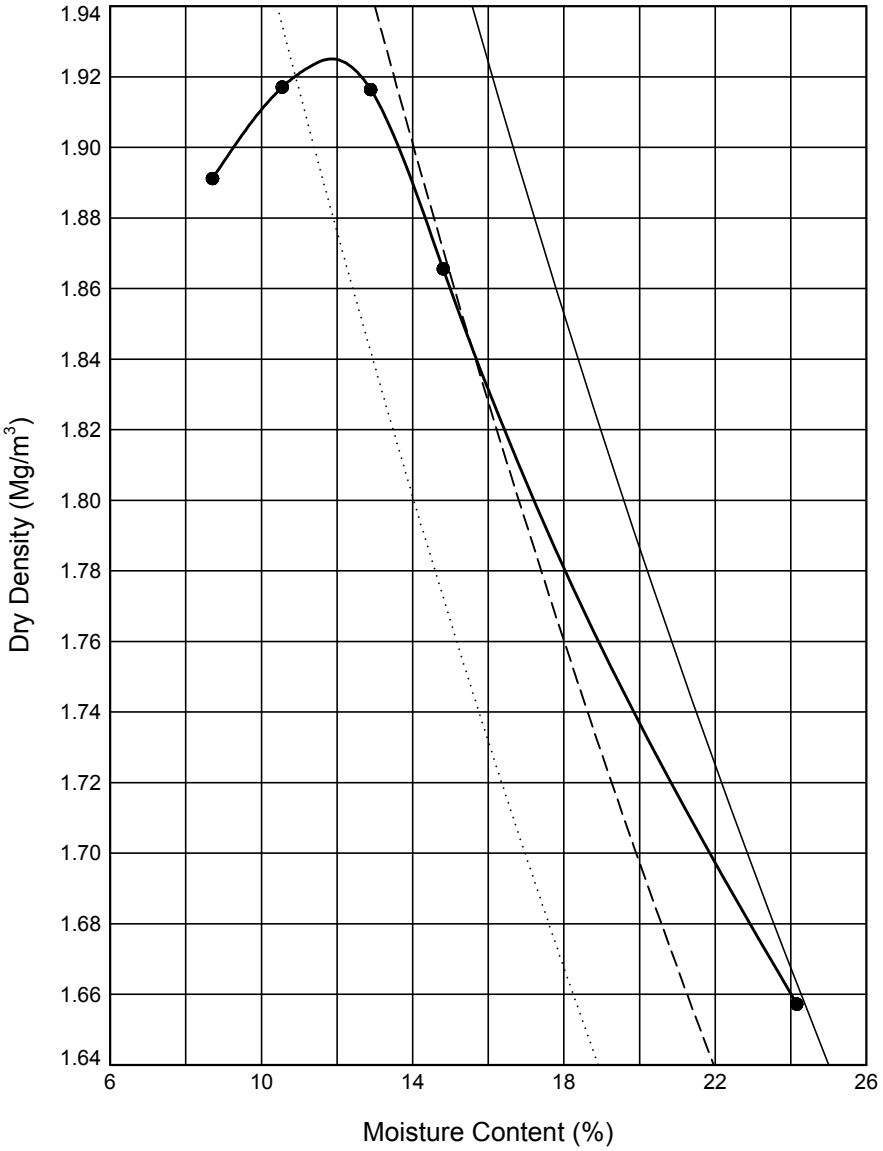
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP1-4** Sample Ref: **5** Sample Type: **LB** Depth (m): **1.20**



Initial Sample Conditions			Test Details			Test Results		
Initial Moisture Content (%)	:	**24**	Compaction Type	:	**Heavy**	Maximum Dry Density (Mg/m³)	:	**1.92**
% Retained on 37.5mm BS Sieve	:	**8**	Mass of Rammer (kg):		**4.5**	Optimum Moisture Content (%)	:	**12**
% Retained on 20.0mm BS Sieve	:	**7**	Type of Mould	:	**CBR**	Method Used: **Clause 3.6**		
Particle Density - assumed (Mg/m³)	:	**2.78**				Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.					

Sample Description	Key to Air Voids Lines		
Brown mottled reddish brown and grey slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

STRUCTURAL SOILS
1a Princess Street
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Compiled By		Date
A.D. Frost	**ALAN FROST**	**08/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

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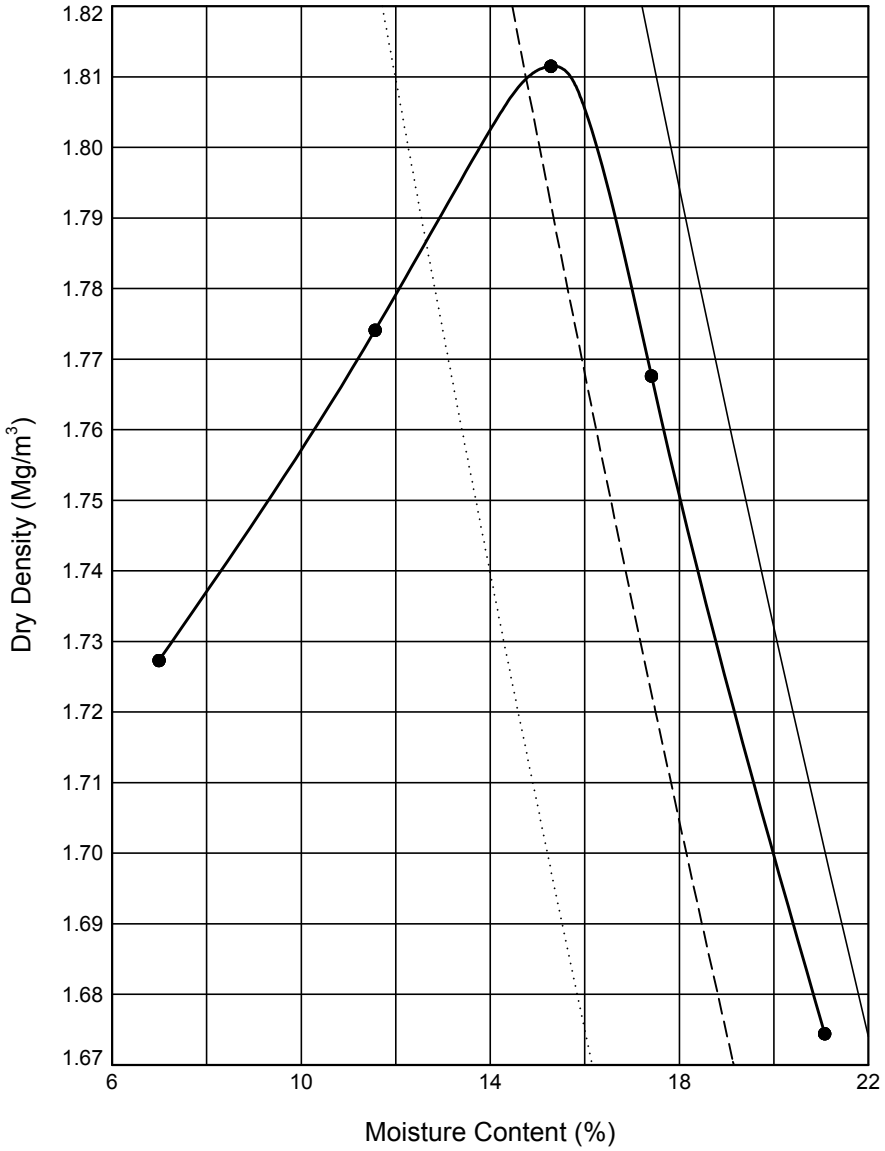
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP1-5** Sample Ref: **5** Sample Type: **LB** Depth (m): **0.90**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**25**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.81**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**15**
% Retained on 20.0mm BS Sieve	:	**5**	Type of Mould	: **Proctor**	Method Used: **Clause 3.5**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown mottled grey slightly sandy slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

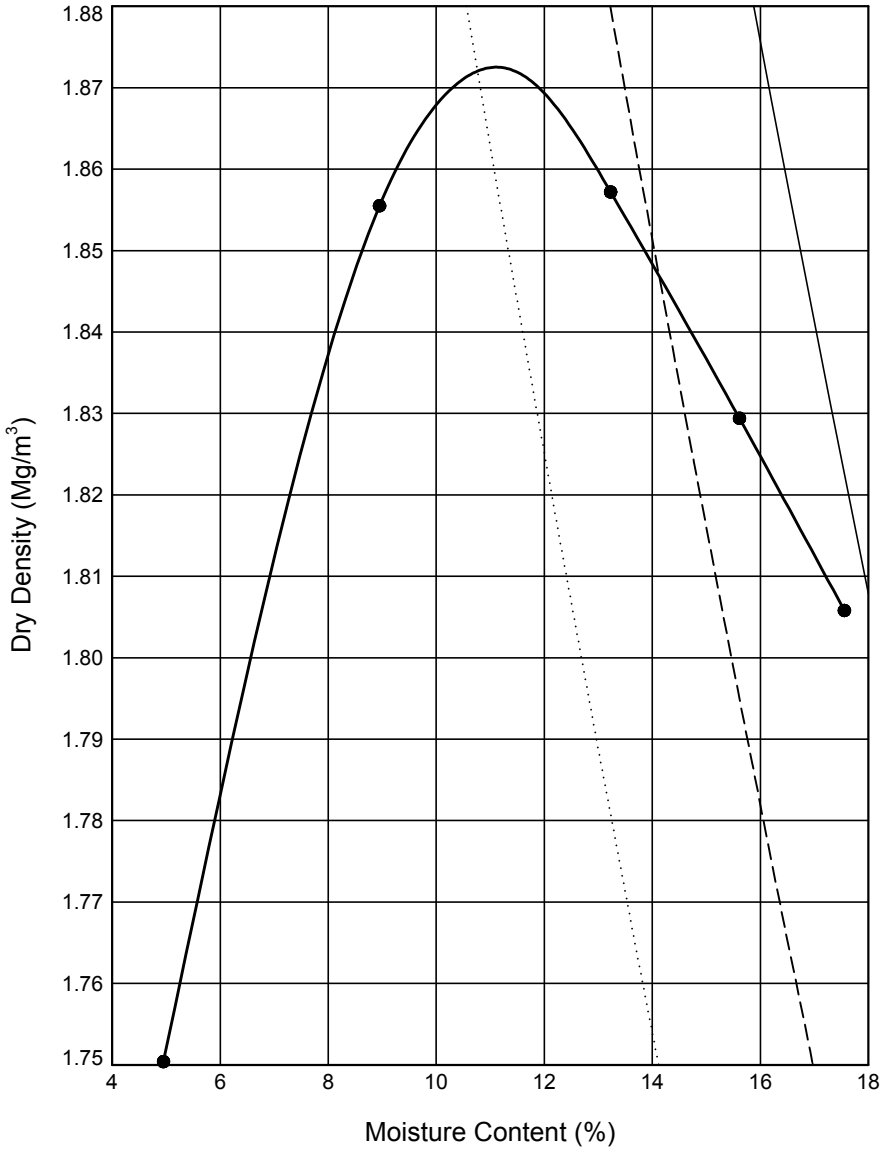
Compiled By		Date
A.D. Frost	**ALAN FROST**	**11/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP1-6** Sample Ref: **5** Sample Type: **LB** Depth (m): **0.90**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**24**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m³)	:	**1.87**
% Retained on 37.5mm BS Sieve	:	**7**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**11**
% Retained on 20.0mm BS Sieve	:	**6**	Type of Mould	: **CBR**	Method Used: **Clause 3.6**		
Particle Density - assumed (Mg/m³)	:	**2.68**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Reddish brown mottled grey slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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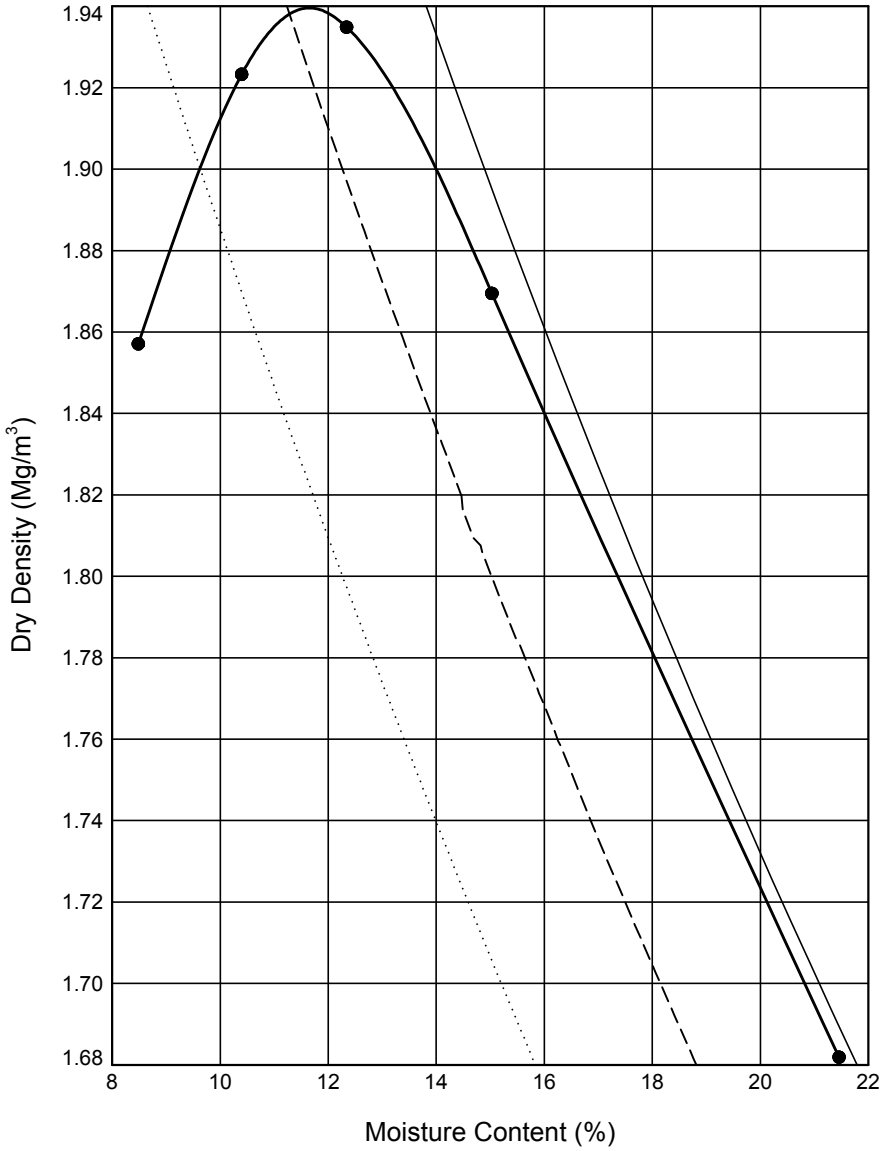
Compiled By		Date
A.D. Frost	**ALAN FROST**	**11/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP1-7** Sample Ref: **5** Sample Type: **LB** Depth (m): **0.60**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**21**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m³)	:	**1.94**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**12**
% Retained on 20.0mm BS Sieve	:	**6**	Type of Mould	: **Proctor**	Method Used: **Clause 3.5**		
Particle Density - assumed (Mg/m³)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Reddish brown mottled yellowish brown slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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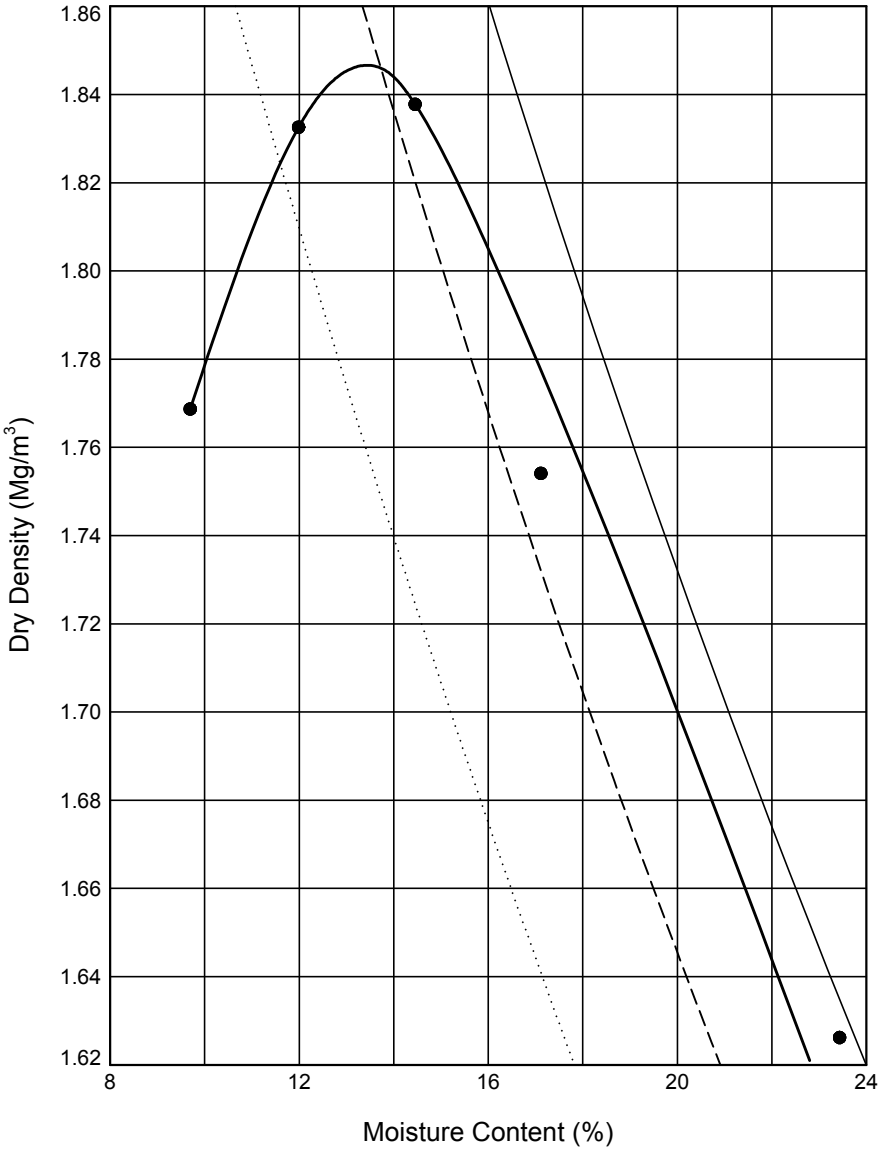
Compiled By		Date
A.D. Frost	**ALAN FROST**	**11/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP1-8** Sample Ref: **5** Sample Type: **LB** Depth (m): **0.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**23**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.85**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**13**
% Retained on 20.0mm BS Sieve	:	**4**	Type of Mould	: **Proctor**	Method Used: **Clause 3.5**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown mottled yellowish brown and grey slightly sandy gravelly CLAY	——— 0%	– – – – 5%	····· 10%

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Compiled By		Date
A.D. Frost	**ALAN FROST**	**11/04/16**

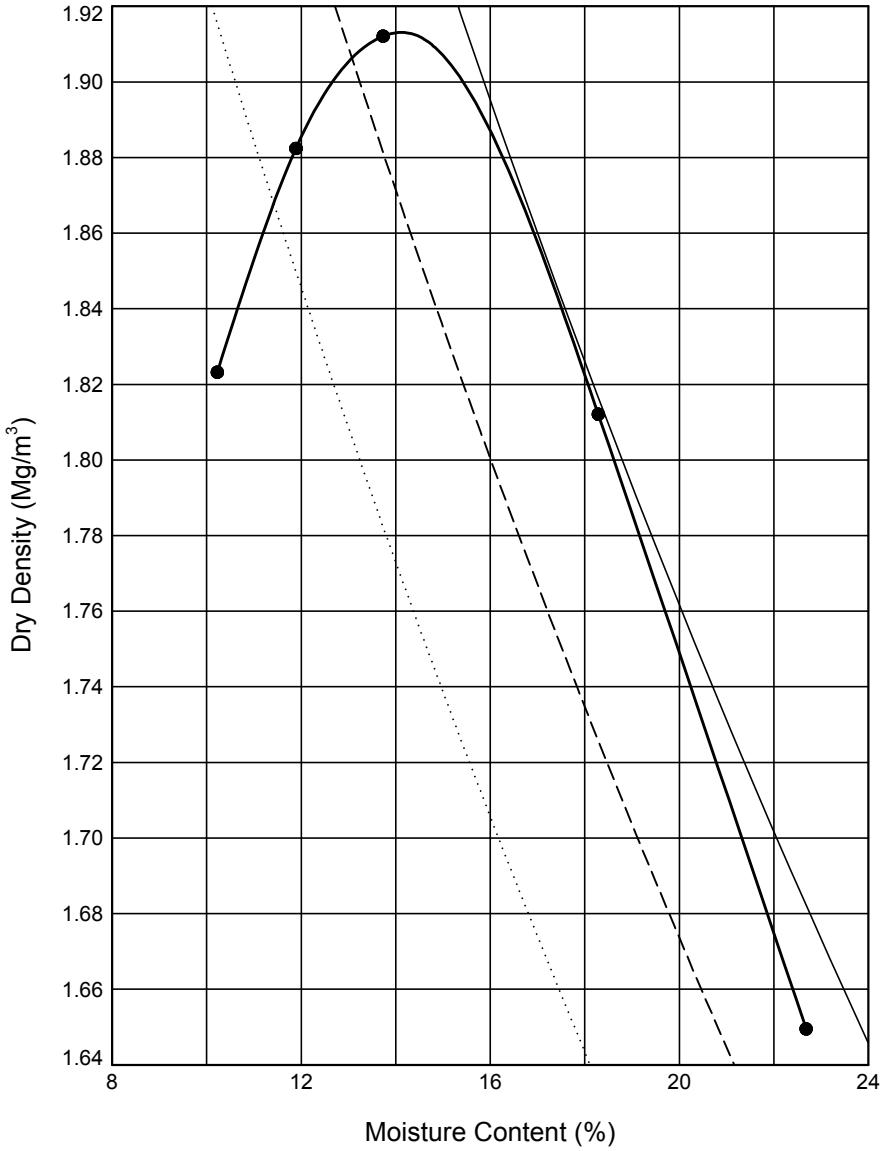
Contract	Contract Ref:
Area I, Severnside	**731391**

AGS

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP1-9** Sample Ref: **5** Sample Type: **LB** Depth (m): **0.60**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**23**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.91**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**14**
% Retained on 20.0mm BS Sieve	:	**5**	Type of Mould	: **Proctor**	Method Used: **Clause 3.5**		
Particle Density - assumed (Mg/m^3)	:	**2.72**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Reddish brown mottled grey slightly sandy slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

STRUCTURAL SOILS
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Compiled By		Date
A.D.Frost	**ALAN FROST**	**11/04/16**

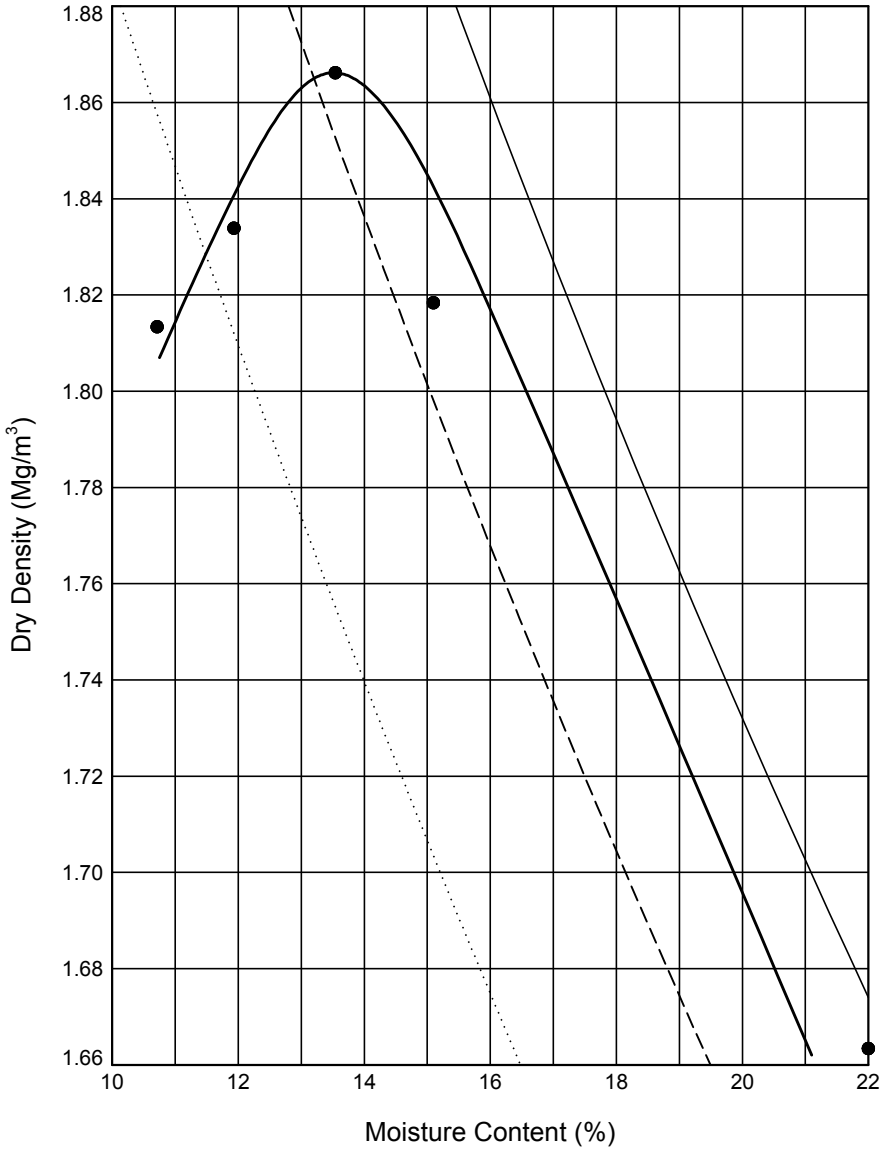
Contract	Contract Ref:
Area I, Severnside	**731391**

AGS

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Trial Pit: **TP1-10** Sample Ref: **5** Sample Type: **LB** Depth (m): **1.20**



Initial Sample Conditions		Test Details		Test Results	
Initial Moisture Content (%)	: **22**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	: **1.87**
% Retained on 37.5mm BS Sieve	: **7**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	: **14**
% Retained on 20.0mm BS Sieve	: **8**	Type of Mould	: **CBR**	Method Used: **Clause 3.6**	
Particle Density - assumed (Mg/m^3)	: **2.65**			Remarks:	
Size of Soil Pieces	: **<20mm**	Separate samples were used.			

Sample Description	Key to Air Voids Lines		
Reddish brown mottled brown slightly sandy slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

STRUCTURAL SOILS
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Compiled By		Date
A.D. Frost	**ALAN FROST**	**11/04/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

AGS

SUMMARY OF IN-SITU DENSITY TESTS - NUCLEAR DENSITY PROBE METHOD
BS1377:Part 9:1990

Device : Troxler 3440 Serial No. 21681

Location	SSL Ref. No.	Depth of Probe (m)	Date of Test	NDG Bulk density (Mg/m^3)	Corrected Bulk density (Mg/m^3)	Dry density (Mg/m^3) (Note 3)	Moisture Content (%) (Note 2)	Mode of Operation	Description of Sample
354451, 181691	NDM51	0.20	13/05/16	1.80	1.71	1.33	28	DT	Dark brown slightly gravelly slightly sandy CLAY
354454, 181686	NDM52	0.20	13/05/16	2.09	2.16	1.72	26	DT	Light brown slighty gravelly CLAY
354458, 181681	NDM53	0.20	13/05/16	2.06	2.10	1.65	27	DT	Dark brown slightly gravelly slightly sandy CLAY
354460, 181676	NDM54	0.20	13/05/16	1.98	1.99	1.52	31	DT	Greenish brown slightly gravelly CLAY
354463, 181671	NDM55	0.20	13/05/16	2.10	2.17	1.85	17	DT	Dark brown slightly sandy slightly gravelly CLAY
354466, 181665	NDM56	0.20	13/05/16	2.01	2.03	1.62	25	DT	Reddish brown slightly gravelly CLAY
354462, 181662	NDM57	0.20	13/05/16	2.16	2.27	1.82	24	DT	Reddish brown slightly gravelly CLAY
354460, 181660	NDM58	0.20	13/05/16	2.02	2.04	1.73	18	DT	Reddish brown slightly sandy slightly gravelly CLAY

Notes
1) Bulk density corrected using data obtained by comparison with a sample recompacted in the laboratory (factor = 1.5298pn -1.0436). 2) Moisture content undertaken in the laboratory in accordance with BS1377:Part 2:1990, clause 3.2.
3) Dry density calculated using the laboratory moisture content.
Key to Abbreviations : DT = Direct transmission, BS = Back scatter.

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date	Contract Ref:
MDStrowger	**MICHAEL STROWGER**	**23.06.16**	**731391**
Contract: **Area I, Severnside**			

SUMMARY OF IN-SITU DENSITY TESTS - NUCLEAR DENSITY PROBE METHOD
BS1377:Part 9:1990

Device : Troxler 3440 Serial No. 21681

Location	SSL Ref. No.	Depth of Probe (m)	Date of Test	NDG Bulk density (Mg/m^3)	Corrected Bulk density (Mg/m^3)	Dry density (Mg/m^3) (Note 3)	Moisture Content (%) (Note 2)	Mode of Operation	Description of Sample
354459, 181669	NDM59	0.20	13/05/16	2.11	2.18	1.82	20	DT	Reddish brown slightly gravelly CLAY
354457, 181676	NDM60	0.20	13/05/16	2.07	2.12	1.72	24	DT	Light brown slightly gravelly CLAY
354454, 181693	NDM61	0.20	13/05/16	2.25	2.40	1.80	33	DT	Light brown slightly gravelly CLAY
354451, 181687	NDM62	0.20	13/05/16	2.17	2.28	1.85	23	DT	Brown slightly gravelly slightly sandy CLAY
354447, 181685	NDM63	0.20	13/05/16	2.17	2.28	1.95	17	DT	Dark brown slightly sandy slightly gravelly CLAY
354450, 181601	NDM64	0.20	13/05/16	2.13	2.21	1.79	24	DT	Brown slightly gravelly slightly sandy CLAY
354452, 181675	NDM65	0.20	13/05/16	2.09	2.15	1.72	25	DT	Dark brown slightly gravelly slightly sandy CLAY
354454, 181670	NDM66	0.20	13/05/16	2.09	2.15	1.82	19	DT	Dark brown slightly sandy slightly gravelly CLAY

Notes
1) Bulk density corrected using data obtained by comparison with a sample recompacted in the laboratory (factor = 1.5298pn -1.0436). 2) Moisture content undertaken in the laboratory in accordance with BS1377:Part 2:1990, clause 3.2.
3) Dry density calculated using the laboratory moisture content.
Key to Abbreviations : DT = Direct transmission, BS = Back scatter.

STRUCTURAL SOILS
1a Princess Street
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Bristol
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Compiled By		Date	Contract Ref:
MDStrowger	**MICHAEL STROWGER**	**23.06.16**	**731391**
Contract: **Area I, Severnside**			

SUMMARY OF IN-SITU DENSITY TESTS - NUCLEAR DENSITY PROBE METHOD
BS1377:Part 9:1990

Device : Troxler 3440 Serial No. 21681

Location	SSL Ref. No.	Depth of Probe (m)	Date of Test	NDG Bulk density (Mg/m^3)	Corrected Bulk density (Mg/m^3)	Dry density (Mg/m^3) (Note 3)	Moisture Content (%) (Note 2)	Mode of Operation	Description of Sample
354455, 181666	NDM67	0.20	13/05/16	2.00	2.01	1.60	26	DT	Dark brown slightly gravelly slightly sandy CLAY
354458, 181660	NDM68	0.20	13/05/16	1.99	2.00	1.58	26	DT	Dark brown slightly gravelly CLAY
354449, 181671	NDM69	0.20	13/05/16	2.08	2.14	1.75	22	DT	Dark brown slightly sandy slightly gravelly CLAY
354447, 181676	NDM70	0.20	13/05/16	2.10	2.17	1.70	28	DT	Dark brown slightly sandy slightly gravelly CLAY

Notes
1) Bulk density corrected using data obtained by comparison with a sample recompacted in the laboratory (factor = 1.5298pn -1.0436). 2) Moisture content undertaken in the laboratory in accordance with BS1377:Part 2:1990, clause 3.2.
3) Dry density calculated using the laboratory moisture content.
Key to Abbreviations : DT = Direct transmission, BS = Back scatter.

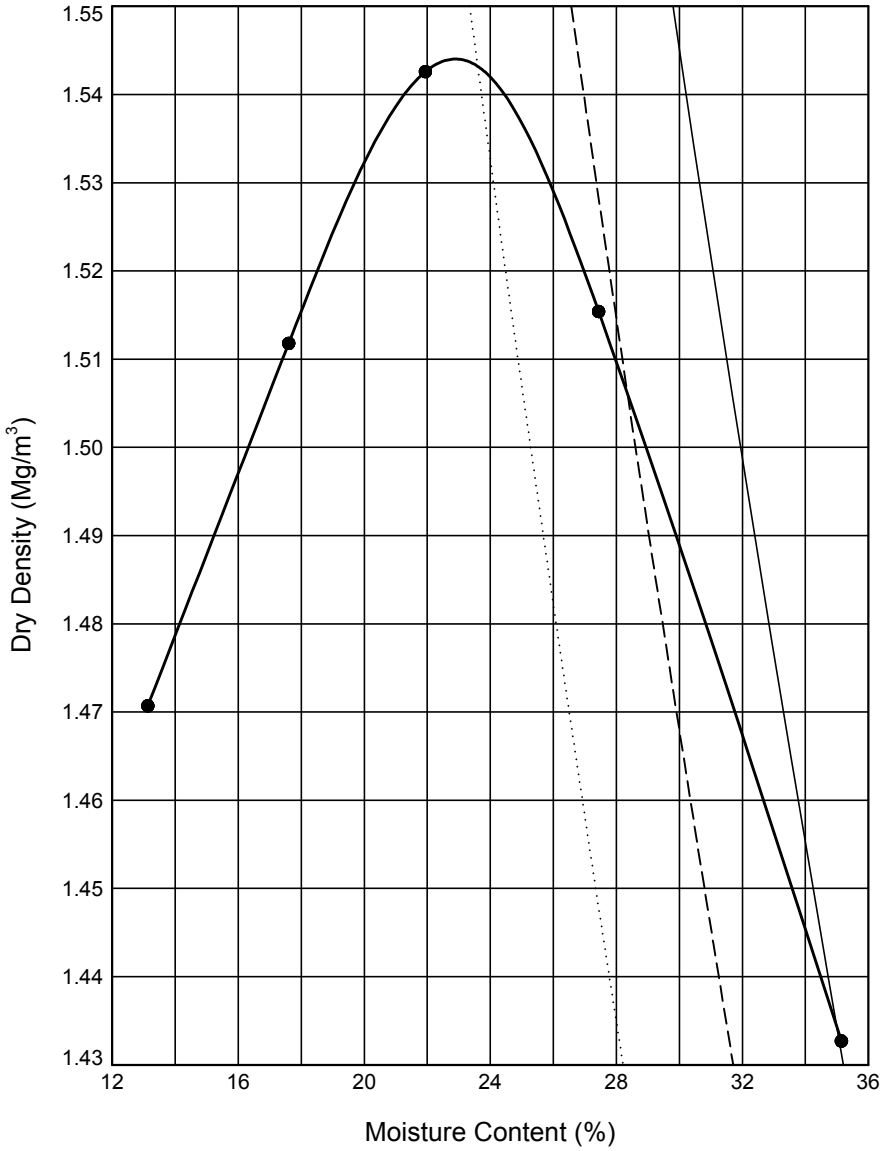
STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date	Contract Ref:
MDStrowger	**MICHAEL STROWGER**	**23.06.16**	**731391**
Contract: **Area I, Severnside**			

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Position ID: **NDM51** Date Sampled: **13/05/16** Sample Type: **B** Depth (m): **0.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**35**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.54**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**23**
% Retained on 20.0mm BS Sieve	:	**2**	Type of Mould	: **Proctor**	Method Used: **Clause 3.5**		
Particle Density - assumed (Mg/m^3)	:	**2.88**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Brown slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

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Bristol
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Compiled By		Date
A.D. Frost	**ALAN FROST**	**21/06/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

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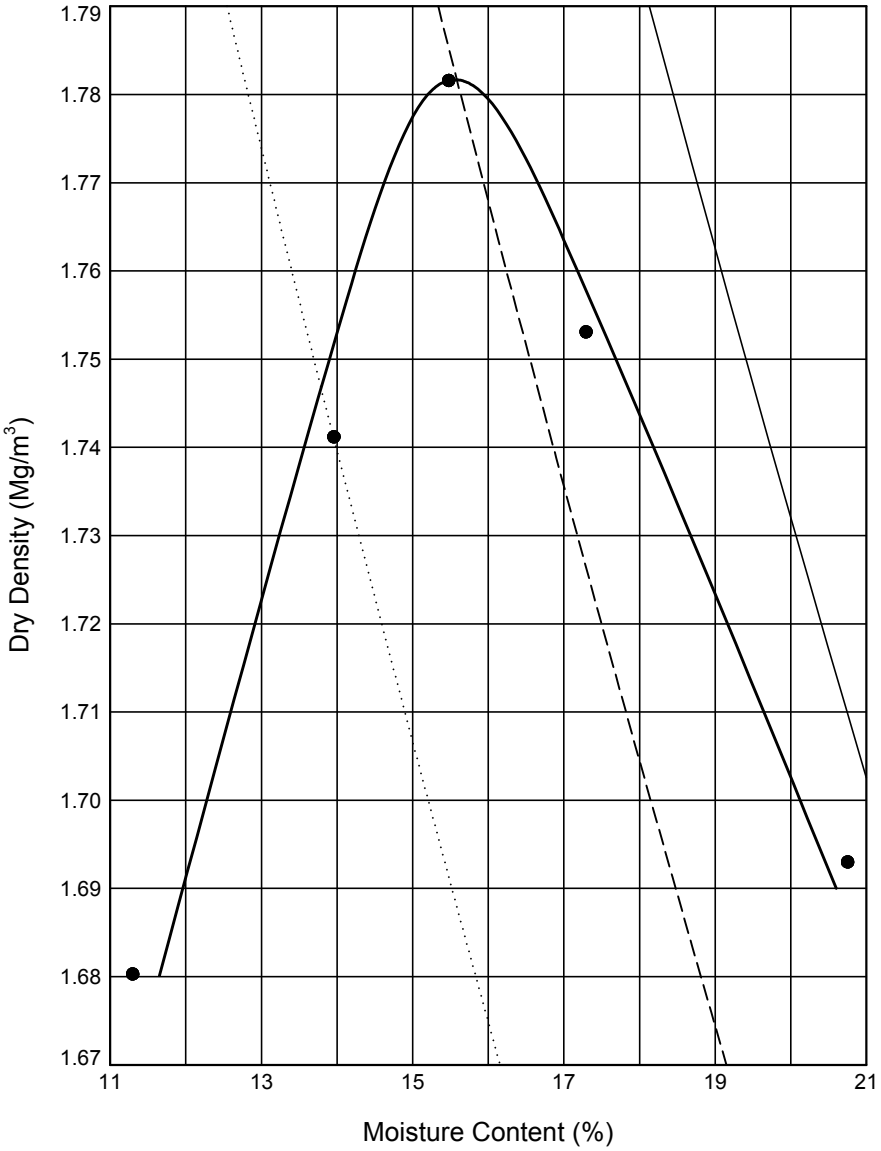
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Position ID: **NDM57** Date Sampled: **13/05/16** Sample Type: **B** Depth (m): **0.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**22**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.78**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**16**
% Retained on 20.0mm BS Sieve	:	**5**	Type of Mould	: **Proctor**	Method Used: **Clause 3.5**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Reddish brown slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

STRUCTURAL SOILS
1a Princess Street
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Compiled By		Date
A.D. Frost	**ALAN FROST**	**21/06/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

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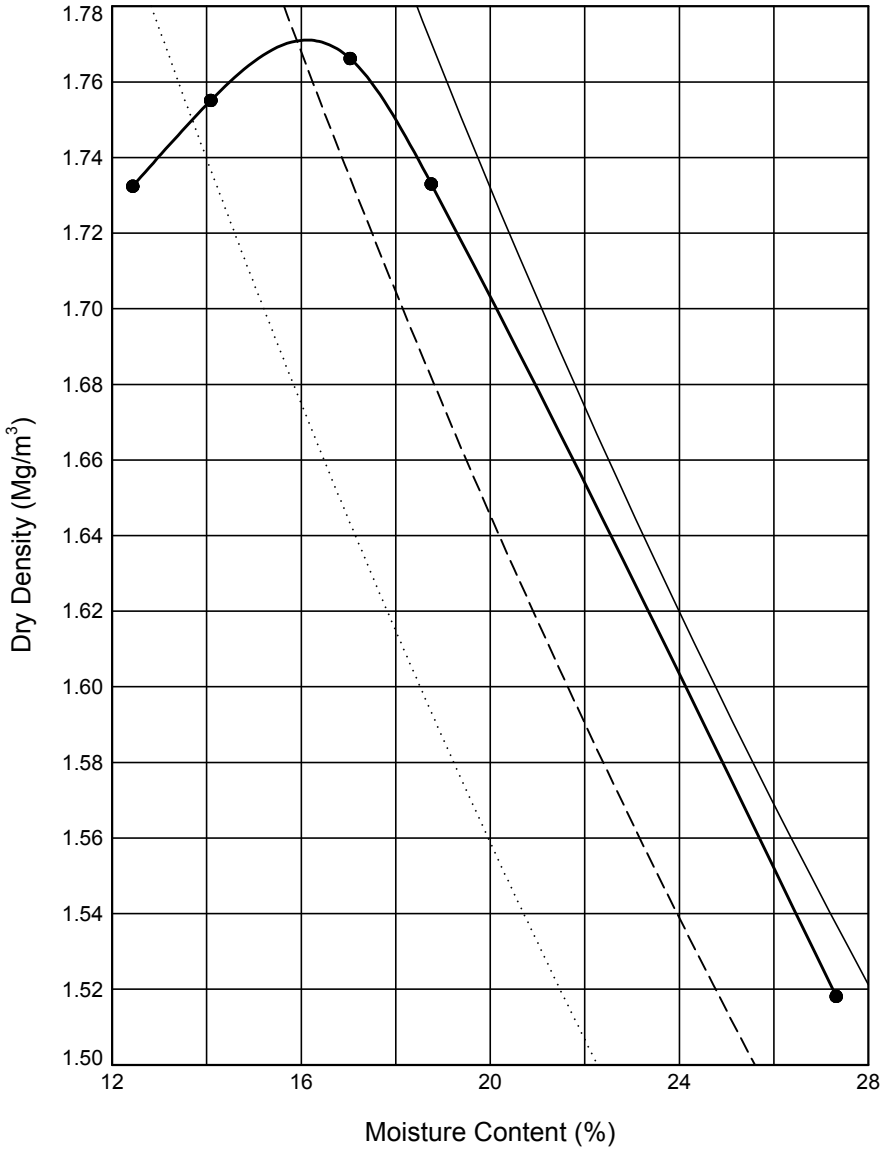
DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Position ID: **NDM64** Date Sampled: **13/05/16** Sample Type: **B** Depth (m): **0.00**



Initial Sample Conditions			Test Details			Test Results		
Initial Moisture Content (%)	:	**27**	Compaction Type	:	**Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.77**
% Retained on 37.5mm BS Sieve	:	**8**	Mass of Rammer (kg):		**4.5**	Optimum Moisture Content (%)	:	**16**
% Retained on 20.0mm BS Sieve	:	**6**	Type of Mould	:	**CBR**	Method Used: **Clause 3.6**		
Particle Density - assumed (Mg/m^3)	:	**2.65**				Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.					

Sample Description	Key to Air Voids Lines		
Brown slightly sandy slightly gravelly CLAY	——— 0%	– – – – 5%	····· 10%

STRUCTURAL SOILS
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Compiled By		Date
A.D. Frost	**ALAN FROST**	**21/06/16**

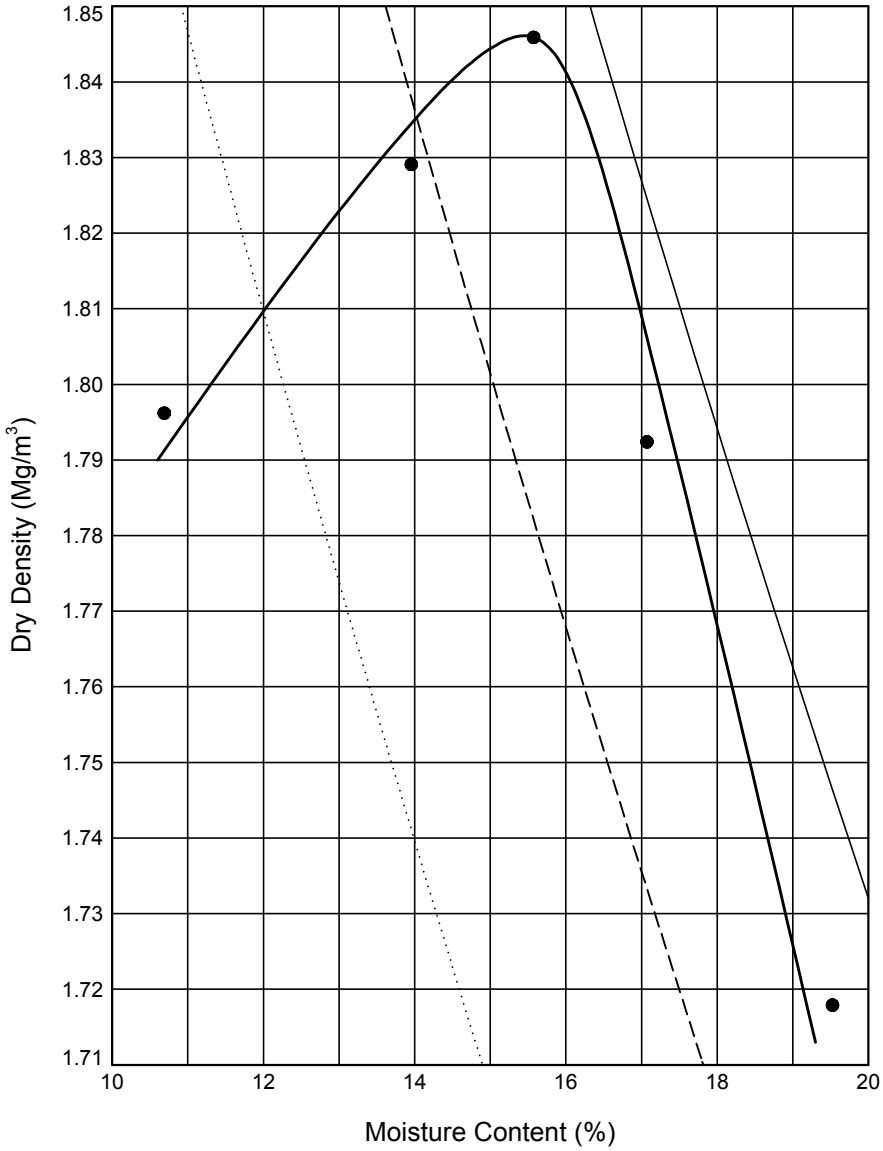
Contract	Contract Ref:
Area I, Severnside	**731391**

AGS

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP TEST

In accordance with clauses 3.3,3.4,3.5,3.6,3.7 of BS1377:Part 4:1990

Position ID: **NDM70** Date Sampled: **13/05/16** Sample Type: **B** Depth (m): **0.00**



Initial Sample Conditions			Test Details		Test Results		
Initial Moisture Content (%)	:	**20**	Compaction Type	: **Heavy**	Maximum Dry Density (Mg/m^3)	:	**1.85**
% Retained on 37.5mm BS Sieve	:	**0**	Mass of Rammer (kg):	**4.5**	Optimum Moisture Content (%)	:	**16**
% Retained on 20.0mm BS Sieve	:	**3**	Type of Mould	: **Proctor**	Method Used: **Clause 3.5**		
Particle Density - assumed (Mg/m^3)	:	**2.65**			Remarks:		
Size of Soil Pieces	:	**<20mm**	Separate samples were used.				

Sample Description	Key to Air Voids Lines		
Reddish brown slightly gravelly slightly sandy CLAY	——— 0%	– – – – 5%	····· 10%

STRUCTURAL SOILS
1a Princess Street
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Bristol
BS3 4AG

Compiled By		Date
A.D. Frost	**ALAN FROST**	**21/06/16**

Contract	Contract Ref:
Area I, Severnside	**731391**

AGS

TESTING VERIFICATION CERTIFICATE

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **12/04/2016 09:51:34**.

Testing reported after this date is not covered by this Verification Certificate.

Approved Signatory
Sam Handcock (Site Testing Manager)

(Head Office)
Bristol Laboratory
Unit 1A, Princess Street
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BS3 4AG

Castleford Laboratory
The Potteries, Pottery Street
Castleford
West Yorkshire
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18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Tonbridge Laboratory
Anerley Court, Half Moon Lane
Hildenborough
Tonbridge
TN11 9HU

STRUCTURAL SOILS LTD	Contract: **Area I, Severnside**	Job No: **731391**

TESTING VERIFICATION CERTIFICATE

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **24/05/2016 14:19:50**.

Testing reported after this date is not covered by this Verification Certificate.

Approved Signatory
Steven Philp (Laboratory/ Site Technician)

(Head Office)
Bristol Laboratory
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Castleford Laboratory
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Anerley Court, Half Moon Lane
Hildenborough
Tonbridge
TN11 9HU

STRUCTURAL SOILS LTD	Contract: **Area I, Severnside**	Job No: **731391**

APPENDIX D - GEOENVIRONMENTAL TESTING

(i) Laboratory Test Results

(ii) RSK Group Generic Assessment Criteria (GAC)

(iii) Laboratory UKAS Accreditation Certificate

Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 16/01590
Issue Number: 1 **Date:** 04 April, 2016

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: Adam Dingle/enviro@soils.co.uk/Josh Simmonds
Project Name: Area I, Severnside
Project Ref: 731391
Order No: N/A
Date Samples Received: 11/03/16
Date Instructions Received: 17/03/16
Date Analysis Completed: 04/04/16

Prepared by:

Kate Ellison
Administrative Assistant

Approved by:

Lianne Bromiley
Senior Client Manager

Envirolab Job Number: 16/01590

Client Project Name: Area I, Severnside

Client Project Ref: 731391

Lab Sample ID	16/01590/1	16/01590/2	16/01590/3	16/01590/4	16/01590/6	16/01590/8	16/01590/9	16/01590/10	Units	Method ref
Client Sample No	1	3	6	1	6	1	3	1		
Client Sample ID	TP1-1	TP1-1	TP1-1	TP1-2	TP1-2	TP1-3	TP1-3	TP1-4		
Depth to Top	0.30	0.90	1.80	0.60	1.90	0.30	0.60	0.60		
Depth To Bottom										
Date Sampled	09-Mar-16	09-Mar-16	10-Mar-16	09-Mar-16	10-Mar-16	09-Mar-16	09-Mar-16	09-Mar-16		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	6A	5AE	5A	5A	5A	5A	6A	3A		
% Stones >10mm$_A^{\#}$	<0.1	<0.1	<0.1	<0.1	19.4	<0.1	1.0	<0.1	% w/w	A-T-044
pH$_D^{M\#}$	8.26	8.52	8.49	8.57	9.27	10.06	8.66	8.58	pH	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	0.61	1.49	1.49	0.71	0.34	0.57	0.64	0.62	g/l	A-T-026s
Organic matter$_D^{M\#}$	1.9	3.8	4.0	4.5	1.0	4.0	3.1	1.3	% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	10	12	10	10	9	12	10	14	mg/kg	A-T-024s
Cadmium$_D^{M\#}$	1.1	1.0	1.3	1.1	0.7	0.9	1.0	1.0	mg/kg	A-T-024s
Copper$_D^{M\#}$	20	17	20	14	10	17	15	14	mg/kg	A-T-024s
Chromium$_D^{M\#}$	36	20	18	19	13	17	16	20	mg/kg	A-T-024s
Lead$_D^{M\#}$	31	67	50	60	45	51	100	42	mg/kg	A-T-024s
Mercury$_D$	0.43	0.65	0.88	0.35	0.29	0.49	0.53	0.47	mg/kg	A-T-024s
Nickel$_D^{M\#}$	28	18	20	15	10	14	13	22	mg/kg	A-T-024s
Selenium$_D$	2	<1	<1	<1	<1	2	<1	1	mg/kg	A-T-024s
Zinc$_D^{M\#}$	61	98	86	107	68	84	68	70	mg/kg	A-T-024s

Envirolab Job Number: 16/01590

Client Project Name: Area I, Severnside

Client Project Ref: 731391

Lab Sample ID	16/01590/1	16/01590/2	16/01590/3	16/01590/4	16/01590/6	16/01590/8	16/01590/9	16/01590/10	Units	Method ref
Client Sample No	1	3	6	1	6	1	3	1		
Client Sample ID	TP1-1	TP1-1	TP1-1	TP1-2	TP1-2	TP1-3	TP1-3	TP1-4		
Depth to Top	0.30	0.90	1.80	0.60	1.90	0.30	0.60	0.60		
Depth To Bottom										
Date Sampled	09-Mar-16	09-Mar-16	10-Mar-16	09-Mar-16	10-Mar-16	09-Mar-16	09-Mar-16	09-Mar-16		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	6A	5AE	5A	5A	5A	5A	6A	3A		
PAH 16										
Acenaphthene$_A^{M\#}$	0.04	0.02	0.68	0.04	0.05	0.01	0.05	0.11	mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.06	mg/kg	A-T-019s
Anthracene$_A^{M\#}$	0.06	0.05	0.86	0.04	0.10	0.02	0.11	0.46	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.27	0.13	0.92	0.11	0.29	0.09	0.31	0.92	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.25	0.12	0.61	0.10	0.30	0.08	0.30	0.60	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	0.34	0.17	0.85	0.13	0.39	0.11	0.40	0.80	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.18	0.08	0.30	0.07	0.19	<0.05	0.20	0.32	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	0.13	<0.07	0.32	<0.07	0.13	<0.07	0.13	0.28	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	0.30	0.14	0.98	0.12	0.33	0.09	0.31	0.84	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	0.11	<0.04	0.05	<0.04	<0.04	0.09	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	0.58	0.32	2.73	0.25	0.64	0.21	0.65	2.04	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	0.04	0.02	0.56	0.02	0.05	0.01	0.05	0.21	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.19	0.08	0.37	0.07	0.21	0.06	0.21	0.35	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.03	<0.03	0.06	<0.03	0.05	<0.03	<0.03	0.05	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	0.38	0.20	3.16	0.16	0.35	0.13	0.34	1.76	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	0.49	0.26	2.05	0.22	0.56	0.18	0.54	1.65	mg/kg	A-T-019s
PAH (total 16)$_A^{M\#}$	3.26	1.61	14.6	1.31	3.70	1.01	3.60	10.6	mg/kg	A-T-019s
TPH Banded 1 with ID										
>C6-C8$_A^{\#}$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
>C8-C10$_A^{\#}$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
>C10-C12$_A^{\#}$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
>C12-C16$_A^{\#}$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
>C16-C21$_A^{\#}$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
>C21-C40$_A$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
TPH Total (sum of bands) (>C6-C40)$_A$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
TPH ID (for FID characterisations)$_A$	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		A-T-007s

Envirolab Job Number: 16/01590

Client Project Name: Area I, Severnside

Client Project Ref: 731391

Lab Sample ID	16/01590/11	16/01590/12	16/01590/13	16/01590/14	16/01590/15	16/01590/16	16/01590/18	16/01590/20	Units	Method ref
Client Sample No		6	7	1	3	1	6	1		
Client Sample ID	TP1-4	TP1-4	TP1-4	TP1-5	TP1-5	TP1-6	TP1-6	TP1-7		
Depth to Top	1.20	1.50	1.80	0.30	0.90	0.30	1.50	0.60		
Depth To Bottom										
Date Sampled	09-Mar-16	10-Mar-16	10-Mar-16	09-Mar-16	09-Mar-16	10-Mar-16	10-Mar-16	10-Mar-16		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	3A	3A	3A	3A	3AE	5A	6A	6A		
% Stones >10mm$_A^{\#}$	<0.1	2.1	<0.1	<0.1	15.2	2.2	<0.1	<0.1	% w/w	A-T-044
pH$_D^{M\#}$	8.81	8.26	8.31	8.09	9.03	9.51	8.36	8.42	pH	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	1.46	0.80	0.18	0.61	1.06	0.90	0.95	1.49	g/l	A-T-026s
Organic matter$_D^{M\#}$	2.9	2.1	0.7	1.9	2.5	1.5	2.9	4.4	% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	9	8	20	12	10	11	11	13	mg/kg	A-T-024s
Cadmium$_D^{M\#}$	1.0	0.8	1.1	1.3	0.8	1.0	1.2	1.1	mg/kg	A-T-024s
Copper$_D^{M\#}$	17	10	10	18	25	15	19	21	mg/kg	A-T-024s
Chromium$_D^{M\#}$	16	15	24	23	14	16	18	15	mg/kg	A-T-024s
Lead$_D^{M\#}$	47	25	17	37	74	44	40	57	mg/kg	A-T-024s
Mercury$_D$	0.49	0.22	0.40	0.47	0.55	0.67	0.69	0.54	mg/kg	A-T-024s
Nickel$_D^{M\#}$	16	16	27	24	13	16	21	16	mg/kg	A-T-024s
Selenium$_D$	1	<1	1	3	2	2	1	<1	mg/kg	A-T-024s
Zinc$_D^{M\#}$	82	50	59	90	146	95	79	117	mg/kg	A-T-024s

Envirolab Job Number: 16/01590

Client Project Name: Area I, Severnside

Client Project Ref: 731391

Lab Sample ID	16/01590/11	16/01590/12	16/01590/13	16/01590/14	16/01590/15	16/01590/16	16/01590/18	16/01590/20	Units	Method ref
Client Sample No		6	7	1	3	1	6	1		
Client Sample ID	TP1-4	TP1-4	TP1-4	TP1-5	TP1-5	TP1-6	TP1-6	TP1-7		
Depth to Top	1.20	1.50	1.80	0.30	0.90	0.30	1.50	0.60		
Depth To Bottom										
Date Sampled	09-Mar-16	10-Mar-16	10-Mar-16	09-Mar-16	09-Mar-16	10-Mar-16	10-Mar-16	10-Mar-16		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	3A	3A	3A	3A	3AE	5A	6A	6A		
PAH 16										
Acenaphthene$_A^{M\#}$	0.07	<0.01	<0.01	<0.01	0.02	0.01	0.12	<0.01	mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019s
Anthracene$_A^{M\#}$	0.09	<0.02	<0.02	<0.02	0.05	0.03	0.25	<0.02	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.09	<0.04	<0.04	<0.04	0.30	0.12	0.55	<0.04	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.07	<0.04	<0.04	<0.04	0.28	0.12	0.55	<0.04	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	0.09	<0.05	<0.05	<0.05	0.41	0.17	0.75	<0.05	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	0.16	0.09	0.36	<0.05	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	0.16	<0.07	0.22	<0.07	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	0.07	<0.06	<0.06	<0.06	0.33	0.15	0.64	<0.06	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	0.05	<0.04	0.10	<0.04	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	0.26	<0.08	<0.08	<0.08	0.46	0.26	1.27	<0.08	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	0.07	<0.01	<0.01	<0.01	0.02	0.01	0.12	<0.01	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.05	<0.03	<0.03	<0.03	0.20	0.09	0.40	<0.03	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	0.29	<0.03	<0.03	0.05	0.18	0.15	0.81	0.05	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	0.21	<0.07	<0.07	<0.07	0.39	0.23	1.11	<0.07	mg/kg	A-T-019s
PAH (total 16)$_A^{M\#}$	1.35	<0.08	<0.08	<0.08	3.02	1.44	7.25	<0.08	mg/kg	A-T-019s
TPH Banded 1 with ID										
>C6-C8$_A^{\#}$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
>C8-C10$_A^{\#}$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
>C10-C12$_A^{\#}$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
>C12-C16$_A^{\#}$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
>C16-C21$_A^{\#}$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
>C21-C40$_A$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
TPH Total (sum of bands) (>C6-C40)$_A$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
TPH ID (for FID characterisations)$_A$	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		A-T-007s

Envirolab Job Number: 16/01590

Client Project Name: Area I, Severnside

Client Project Ref: 731391

Lab Sample ID	16/01590/21	16/01590/22	16/01590/23	16/01590/24	16/01590/25	16/01590/26	16/01590/27	16/01590/28	Units	Method ref
Client Sample No	3	1	3	1	3	1	3	1		
Client Sample ID	TP1-7	TP1-8	TP1-8	TP1-9	TP1-9	TP1-10	TP1-10	TP1-11		
Depth to Top	1.20	0.30	0.90	0.60	1.20	0.30	1.20	1.00		
Depth To Bottom										
Date Sampled	10-Mar-16	10-Mar-16	10-Mar-16	10-Mar-16	10-Mar-16	10-Mar-16	10-Mar-16	10-Mar-16		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	3A	3AE	6A	3A	6A	3A	6A	5A		
% Stones >10mm$_A^{\#}$	12.2	8.4	4.7	<0.1	<0.1	2.7	<0.1	<0.1	% w/w	A-T-044
pH$_D^{M\#}$	9.07	8.57	9.21	8.91	8.47	8.85	8.53	9.30	pH	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	0.47	1.31	1.39	1.32	1.45	1.39	1.47	0.48	g/l	A-T-026s
Organic matter$_D^{M\#}$	2.4	3.5	4.1	3.9	2.3	3.4	5.4	3.8	% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	10	11	13	17	11	9	14	10	mg/kg	A-T-024s
Cadmium$_D^{M\#}$	1.1	1.2	1.4	1.0	0.9	1.0	1.2	0.8	mg/kg	A-T-024s
Copper$_D^{M\#}$	14	27	26	20	16	15	132	14	mg/kg	A-T-024s
Chromium$_D^{M\#}$	12	18	20	14	14	12	16	12	mg/kg	A-T-024s
Lead$_D^{M\#}$	45	76	115	63	51	46	63	41	mg/kg	A-T-024s
Mercury$_D$	0.56	0.57	0.56	0.55	0.33	0.55	0.56	0.39	mg/kg	A-T-024s
Nickel$_D^{M\#}$	13	16	19	15	16	13	16	12	mg/kg	A-T-024s
Selenium$_D$	2	<1	<1	<1	<1	<1	2	2	mg/kg	A-T-024s
Zinc$_D^{M\#}$	82	112	150	93	83	84	100	80	mg/kg	A-T-024s

Envirolab Job Number: 16/01590

Client Project Name: Area I, Severnside

Client Project Ref: 731391

Lab Sample ID	16/01590/21	16/01590/22	16/01590/23	16/01590/24	16/01590/25	16/01590/26	16/01590/27	16/01590/28	Units	Method ref
Client Sample No	3	1	3	1	3	1	3	1		
Client Sample ID	TP1-7	TP1-8	TP1-8	TP1-9	TP1-9	TP1-10	TP1-10	TP1-11		
Depth to Top	1.20	0.30	0.90	0.60	1.20	0.30	1.20	1.00		
Depth To Bottom										
Date Sampled	10-Mar-16	10-Mar-16	10-Mar-16	10-Mar-16	10-Mar-16	10-Mar-16	10-Mar-16	10-Mar-16		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	3A	3AE	6A	3A	6A	3A	6A	5A		
PAH 16										
Acenaphthene$_A^{M\#}$	0.03	0.04	0.09	<0.01	0.07	0.05	0.14	0.15	mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.01	mg/kg	A-T-019s
Anthracene$_A^{M\#}$	0.06	0.10	0.18	<0.02	0.11	0.10	0.31	0.26	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.14	0.41	0.73	0.05	0.34	0.30	0.96	0.77	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.13	0.38	0.78	0.05	0.33	0.30	0.94	0.74	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	0.18	0.49	1.01	0.06	0.45	0.41	1.21	1.04	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.08	0.22	0.56	<0.05	0.22	0.23	0.58	0.54	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	0.16	0.40	<0.07	0.12	0.13	0.40	0.32	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	0.16	0.43	0.85	<0.06	0.38	0.37	1.06	0.92	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	0.05	0.14	<0.04	<0.04	<0.04	0.14	0.12	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	0.35	0.82	1.48	0.11	0.75	0.69	2.16	1.80	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	0.03	0.04	0.08	<0.01	0.07	0.05	0.13	0.14	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.08	0.25	0.60	0.05	0.24	0.22	0.67	0.62	mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.03	<0.03	0.06	<0.03	0.05	<0.03	<0.03	0.05	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	0.23	0.41	0.66	0.07	0.42	0.39	1.37	0.87	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	0.29	0.70	1.28	0.09	0.67	0.62	1.90	1.53	mg/kg	A-T-019s
PAH (total 16)$_A^{M\#}$	1.76	4.53	8.94	0.48	4.22	3.83	12	9.87	mg/kg	A-T-019s
TPH Banded 1 with ID										
>C6-C8$_A^{\#}$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
>C8-C10$_A^{\#}$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
>C10-C12$_A^{\#}$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
>C12-C16$_A^{\#}$	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	A-T-007s
>C16-C21$_A^{\#}$	<10	<10	13	<10	<10	<10	<10	<10	mg/kg	A-T-007s
>C21-C40$_A$	<10	<10	43	14	<10	<10	32	<10	mg/kg	A-T-007s
TPH Total (sum of bands) (>C6-C40)$_A$	<10	<10	55	14	<10	<10	32	<10	mg/kg	A-T-007s
TPH ID (for FID characterisations)$_A$	N/A	N/A	Possible PAHs	Unknown profile	N/A	N/A	Unknown profile	N/A		A-T-007s

Envirolab Job Number: 16/01590

Client Project Name: Area I, Severnside

Client Project Ref: 731391

Lab Sample ID	16/01590/29	16/01590/30	16/01590/31	16/01590/32	16/01590/33				Units	Method ref
Client Sample No	2	3	1	2	3					
Client Sample ID	TP1-11	TP1-11	TP1-12	TP1-12	TP1-12					
Depth to Top	1.50	2.00	1.00	1.50	1.80					
Depth To Bottom										
Date Sampled	10-Mar-16	10-Mar-16	10-Mar-16	10-Mar-16	10-Mar-16					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6A	5	5A	5A	6A					
% Stones >10mm$_A^{\#}$	2.1	<0.1	1.2	<0.1	4.2				% w/w	A-T-044
pH$_D^{M\#}$	9.08	8.41	8.76	8.15	8.72				pH	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	0.33	0.02	0.72	1.44	1.01				g/l	A-T-026s
Organic matter$_D^{M\#}$	3.4	0.5	1.8	4.3	3.4				% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	9	5	10	10	11				mg/kg	A-T-024s
Cadmium$_D^{M\#}$	1.1	0.8	0.9	1.1	0.9				mg/kg	A-T-024s
Copper$_D^{M\#}$	22	3	14	29	16				mg/kg	A-T-024s
Chromium$_D^{M\#}$	18	16	17	17	11				mg/kg	A-T-024s
Lead$_D^{M\#}$	41	10	33	42	46				mg/kg	A-T-024s
Mercury$_D$	0.41	<0.17	0.47	0.43	0.39				mg/kg	A-T-024s
Nickel$_D^{M\#}$	20	16	15	20	13				mg/kg	A-T-024s
Selenium$_D$	<1	1	2	<1	<1				mg/kg	A-T-024s
Zinc$_D^{M\#}$	68	42	68	77	61				mg/kg	A-T-024s

Envirolab Job Number: 16/01590

Client Project Name: Area I, Severnside

Client Project Ref: 731391

Lab Sample ID	16/01590/29	16/01590/30	16/01590/31	16/01590/32	16/01590/33				Units	Method ref
Client Sample No	2	3	1	2	3					
Client Sample ID	TP1-11	TP1-11	TP1-12	TP1-12	TP1-12					
Depth to Top	1.50	2.00	1.00	1.50	1.80					
Depth To Bottom										
Date Sampled	10-Mar-16	10-Mar-16	10-Mar-16	10-Mar-16	10-Mar-16					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	6A	5	5A	5A	6A					
PAH 16										
Acenaphthene$_A^{M\#}$	0.10	<0.01	0.05	0.12	0.12				mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01				mg/kg	A-T-019s
Anthracene$_A^{M\#}$	0.17	<0.02	0.08	0.26	0.25				mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.50	<0.04	0.23	0.83	0.79				mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.49	<0.04	0.23	0.74	0.67				mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	0.59	<0.05	0.30	1.02	0.85				mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.39	<0.05	0.16	0.47	0.43				mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	0.22	<0.07	0.10	0.32	0.30				mg/kg	A-T-019s
Chrysene$_A^{M\#}$	0.57	<0.06	0.25	0.90	0.84				mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	0.08	<0.04	<0.04	0.12	0.08				mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	1.09	<0.08	0.53	1.88	1.82				mg/kg	A-T-019s
Fluorene$_A^{M\#}$	0.08	<0.01	0.05	0.12	0.12				mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.38	<0.03	0.20	0.58	0.51				mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	0.07	<0.03	<0.03	0.05	<0.03				mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	0.67	<0.03	0.34	0.96	1.07				mg/kg	A-T-019s
Pyrene$_A^{M\#}$	0.96	<0.07	0.46	1.68	1.41				mg/kg	A-T-019s
PAH (total 16)$_A^{M\#}$	6.32	<0.08	2.99	10	9.22				mg/kg	A-T-019s
TPH Banded 1 with ID										
>C6-C8$_A^{\#}$	<10	<10	<10	<10	<10				mg/kg	A-T-007s
>C8-C10$_A^{\#}$	<10	<10	<10	<10	<10				mg/kg	A-T-007s
>C10-C12$_A^{\#}$	<10	<10	<10	<10	<10				mg/kg	A-T-007s
>C12-C16$_A^{\#}$	<10	<10	<10	<10	<10				mg/kg	A-T-007s
>C16-C21$_A^{\#}$	<10	<10	<10	<10	<10				mg/kg	A-T-007s
>C21-C40$_A$	<10	<10	24	<10	<10				mg/kg	A-T-007s
TPH Total (sum of bands) (>C6-C40)$_A$	<10	<10	24	<10	<10				mg/kg	A-T-007s
TPH ID (for FID characterisations)$_A$	N/A	N/A	Unknown profile	N/A	N/A					A-T-007s

REPORT NOTES

Notes - Soil chemical analysis
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones and brick and concrete fragments >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis. For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

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All analysis is performed on the sample as received for soil samples which are positive for asbestos and/or if they are from outside the European Union and this supercedes any "D" subscripts.
Superscript "M" indicates method accredited to MCERTS.
If results are in italic font they are associated with an AQC failure. These are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

TPH analysis of water by method A-T-007
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Asbestos in soil
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if present as discrete fibres/fragments. Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations.

Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 16/01679
Issue Number: 1 **Date:** 06 April, 2016

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: enviro@soils.co.uk/Josh Simmonds/Sebastian Taylor
Project Name: Area I, Severnside
Project Ref: 731391
Order No: N/A
Date Samples Received: 22/03/16
Date Instructions Received: 22/03/16
Date Analysis Completed: 06/04/16

Prepared by:

Kate Ellison
Administrative Assistant

Approved by:

Iain Haslock
Analytical Consultant

Envirolab Job Number: 16/01679

Client Project Name: Area I, Severnside

Client Project Ref: 731391

Lab Sample ID	16/01679/1	16/01679/2	16/01679/3						Units	Method ref
Client Sample No	1	1	1							
Client Sample ID	TP2-1	TP2-2	TP2-3							
Depth to Top	0.30	0.30	0.30							
Depth To Bottom										
Date Sampled	18-Mar-16	18-Mar-16	18-Mar-16							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6E	3	5A							
% Stones >10mm$_A^{\#}$	<0.1	<0.1	15.7						% w/w	A-T-044
pH$_D^{M\#}$	7.12	7.82	8.90						pH	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	<0.01	<0.01	<0.01						g/l	A-T-026s
Organic matter$_D^{M\#}$	5.5	3.3	3.5						% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	10	13	13						mg/kg	A-T-024s
Cadmium$_D^{M\#}$	4.8	1.2	0.5						mg/kg	A-T-024s
Copper$_D^{M\#}$	87	20	5						mg/kg	A-T-024s
Chromium$_D^{M\#}$	32	25	8						mg/kg	A-T-024s
Lead$_D^{M\#}$	88	61	21						mg/kg	A-T-024s
Mercury$_D$	<0.17	<0.17	0.94						mg/kg	A-T-024s
Nickel$_D^{M\#}$	23	25	8						mg/kg	A-T-024s
Selenium$_D$	<1	1	<1						mg/kg	A-T-024s
Zinc$_D^{M\#}$	344	138	54						mg/kg	A-T-024s

Envirolab Job Number: 16/01679

Client Project Name: Area I, Severnside

Client Project Ref: 731391

Lab Sample ID	16/01679/1	16/01679/2	16/01679/3						Units	Method ref
Client Sample No	1	1	1							
Client Sample ID	TP2-1	TP2-2	TP2-3							
Depth to Top	0.30	0.30	0.30							
Depth To Bottom										
Date Sampled	18-Mar-16	18-Mar-16	18-Mar-16							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6E	3	5A							
PAH 16										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02						mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04						mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04						mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05						mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05						mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07						mg/kg	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06						mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04						mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08						mg/kg	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03						mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.03	<0.03	<0.03						mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03						mg/kg	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07						mg/kg	A-T-019s
PAH (total 16)$_A^{M\#}$	<0.08	<0.08	<0.08						mg/kg	A-T-019s
TPH Banded 1 with ID										
>C6-C8$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C8-C10$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C10-C12$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C12-C16$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C16-C21$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C21-C40$_A$	<10	<10	<10						mg/kg	A-T-007s
TPH Total (sum of bands) (>C6-C40)$_A$	<10	<10	<10						mg/kg	A-T-007s
TPH ID (for FID characterisations)$_A$	N/A	N/A	N/A							A-T-007s

REPORT NOTES

Notes - Soil chemical analysis
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones and brick and concrete fragments >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis. For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

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A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

TPH analysis of water by method A-T-007
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Asbestos in soil
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if present as discrete fibres/fragments. Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations.

Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

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Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 16/01798
Issue Number: 1 **Date:** 12 April, 2016

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: enviro@soils.co.uk/Josh Simmonds
Project Name: Area I, Severnside
Project Ref: 731391
Order No: N/A
Date Samples Received: 29/03/16
Date Instructions Received: 29/03/16
Date Analysis Completed: 12/04/16

Prepared by:

Kate Ellison
Administrative Assistant

Approved by:

Iain Haslock
Analytical Consultant

Envirolab Job Number: 16/01798

Client Project Name: Area I, Severnside

Client Project Ref: 731391

Lab Sample ID	16/01798/1	16/01798/2	16/01798/3						Units	Method ref
Client Sample No	1	1	1							
Client Sample ID	TP3-1	TP3-2	TP3-3							
Depth to Top	0.30	0.30	0.30							
Depth To Bottom										
Date Sampled	24-Mar-16	24-Mar-16	24-Mar-16							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	5A	6AE	6A							
% Stones >10mm$_A^{\#}$	9.8	2.8	5.9						% w/w	A-T-044
pH$_D^{M\#}$	7.83	8.08	8.02						pH	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	1.38	0.25	1.12						g/l	A-T-026s
Organic matter$_D^{M\#}$	2.3	7.3	3.0						% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	6	9	9						mg/kg	A-T-024s
Cadmium$_D^{M\#}$	1.6	1.3	1.2						mg/kg	A-T-024s
Copper$_D^{M\#}$	23	26	24						mg/kg	A-T-024s
Chromium$_D^{M\#}$	23	26	24						mg/kg	A-T-024s
Lead$_D^{M\#}$	28	46	55						mg/kg	A-T-024s
Mercury$_D$	0.79	1.53	0.66						mg/kg	A-T-024s
Nickel$_D^{M\#}$	28	26	25						mg/kg	A-T-024s
Selenium$_D$	5	4	<1						mg/kg	A-T-024s
Zinc$_D^{M\#}$	139	77	74						mg/kg	A-T-024s

Envirolab Job Number: 16/01798

Client Project Name: Area I, Severnside

Client Project Ref: 731391

Lab Sample ID	16/01798/1	16/01798/2	16/01798/3						Units	Method ref
Client Sample No	1	1	1							
Client Sample ID	TP3-1	TP3-2	TP3-3							
Depth to Top	0.30	0.30	0.30							
Depth To Bottom										
Date Sampled	24-Mar-16	24-Mar-16	24-Mar-16							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	5A	6AE	6A							
PAH 16										
Acenaphthene$_A^{M\#}$	<0.01	0.01	<0.01						mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-019s
Anthracene$_A^{M\#}$	<0.02	0.03	<0.02						mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	0.18	0.06						mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	0.14	0.07						mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	0.22	0.10						mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	0.11	0.07						mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	0.11	<0.07						mg/kg	A-T-019s
Chrysene$_A^{M\#}$	<0.06	0.20	0.08						mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04						mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	0.31	0.14						mg/kg	A-T-019s
Fluorene$_A^{M\#}$	<0.01	0.01	<0.01						mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	0.11	0.06						mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.03	<0.03	<0.03						mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	0.13	0.06						mg/kg	A-T-019s
Pyrene$_A^{M\#}$	<0.07	0.28	0.13						mg/kg	A-T-019s
PAH (total 16)$_A^{M\#}$	<0.08	1.84	0.77						mg/kg	A-T-019s
TPH Banded 1 with ID										
>C6-C8$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C8-C10$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C10-C12$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C12-C16$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C16-C21$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C21-C40$_A$	<10	<10	<10						mg/kg	A-T-007s
TPH Total (sum of bands) (>C6-C40)$_A$	<10	<10	<10						mg/kg	A-T-007s
TPH ID (for FID characterisations)$_A$	N/A	N/A	N/A							A-T-007s

REPORT NOTES

Notes - Soil chemical analysis
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones and brick and concrete fragments >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis. For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

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TPH analysis of water by method A-T-007
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Asbestos in soil
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if present as discrete fibres/fragments. Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations.

Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 16/01968
Issue Number: 1 **Date:** 19 April, 2016

Client: Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: enviro@soils.co.uk/Josh Simmonds
Project Name: Area I
Project Ref: 731391
Order No: N/A
Date Samples Received: 04/04/16
Date Instructions Received: 06/04/16
Date Analysis Completed: 19/04/16

Prepared by:

Danielle Brierley
Administrative Assistant

Approved by:

Iain Haslock
Analytical Consultant

Envirolab Job Number: 16/01968

Client Project Name: Area I

Client Project Ref: 731391

Lab Sample ID	16/01968/1	16/01968/2	16/01968/3						Units	Method ref
Client Sample No	1	1	1							
Client Sample ID	TP4-1	TP4-2	TP4-3							
Depth to Top	0.30	0.30	0.30							
Depth To Bottom										
Date Sampled	01-Apr-16	01-Apr-16	01-Apr-16							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6AE	6A	6AE							
% Stones >10mm$_A^{\#}$	5.3	15.4	26.4						% w/w	A-T-044
pH$_D^{M\#}$	8.20	8.19	8.66						pH	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	0.42	0.15	0.21						g/l	A-T-026s
Organic matter$_D^{M\#}$	7.7	2.8	3.8						% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	12	13	10						mg/kg	A-T-024s
Cadmium$_D^{M\#}$	1.2	0.8	0.8						mg/kg	A-T-024s
Copper$_D^{M\#}$	22	8	18						mg/kg	A-T-024s
Chromium$_D^{M\#}$	22	19	13						mg/kg	A-T-024s
Lead$_D^{M\#}$	65	42	76						mg/kg	A-T-024s
Mercury$_D$	<0.17	<0.17	0.52						mg/kg	A-T-024s
Nickel$_D^{M\#}$	22	19	14						mg/kg	A-T-024s
Selenium$_D$	2	2	<1						mg/kg	A-T-024s
Zinc$_D^{M\#}$	131	61	130						mg/kg	A-T-024s

Envirolab Job Number: 16/01968

Client Project Name: Area I

Client Project Ref: 731391

Lab Sample ID	16/01968/1	16/01968/2	16/01968/3						Units	Method ref
Client Sample No	1	1	1							
Client Sample ID	TP4-1	TP4-2	TP4-3							
Depth to Top	0.30	0.30	0.30							
Depth To Bottom										
Date Sampled	01-Apr-16	01-Apr-16	01-Apr-16							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6AE	6A	6AE							
PAH 16										
Acenaphthene$_A^{M\#}$	0.01	<0.01	0.18						mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	0.02						mg/kg	A-T-019s
Anthracene$_A^{M\#}$	0.05	<0.02	0.36						mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.18	0.07	1.00						mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.11	0.08	0.81						mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	0.16	0.10	1.01						mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.07	<0.05	0.49						mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	0.36						mg/kg	A-T-019s
Chrysene$_A^{M\#}$	0.16	0.07	0.89						mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	0.13						mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	0.32	<0.08	1.98						mg/kg	A-T-019s
Fluorene$_A^{M\#}$	0.01	<0.01	0.13						mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.10	0.08	0.69						mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.03	<0.03	<0.03						mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	0.13	<0.03	1.01						mg/kg	A-T-019s
Pyrene$_A^{M\#}$	0.26	<0.07	1.60						mg/kg	A-T-019s
PAH (total 16)$_A^{M\#}$	1.59	0.38	10.7						mg/kg	A-T-019s
TPH Banded 1 with ID										
>C6-C8$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C8-C10$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C10-C12$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C12-C16$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C16-C21$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C21-C40$_A$	<10	<10	55						mg/kg	A-T-007s
TPH Total (sum of bands) (>C6-C40)$_A$	<10	<10	64						mg/kg	A-T-007s
TPH ID (for FID characterisations)$_A$	N/A	N/A	Possible PAHs and Lube Oil							A-T-007s

REPORT NOTES

Notes - Soil chemical analysis
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones and brick and concrete fragments >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis. For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

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All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supersedes any "A" subscripts.
All analysis is performed on the sample as received for soil samples which are positive for asbestos and/or if they are from outside the European Union and this supercedes any "D" subscripts.
Superscript "M" indicates method accredited to MCERTS.
If results are in italic font they are associated with an AQC failure. These are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

TPH analysis of water by method A-T-007
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Asbestos in soil
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if present as discrete fibres/fragments. Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
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envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 16/02264
Issue Number: 1 **Date:** 29 April, 2016

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: enviro@soils.co.uk/Josh Simmonds
Project Name: Area I, Severnside
Project Ref: 731391
Order No: N/A
Date Samples Received: 19/04/16
Date Instructions Received: 19/04/16
Date Analysis Completed: 29/04/16

Prepared by:
Melanie Marshall
Laboratory Coordinator

Approved by:
John Gustafson
Director

Envirolab Job Number: 16/02264

Client Project Name: Area I, Severnside

Client Project Ref: 731391

Lab Sample ID	16/02264/1	16/02264/2	16/02264/3						Units	Method ref
Client Sample No	1	1	1							
Client Sample ID	TP5-1	TP5-2	TP5-3							
Depth to Top	0.30	0.30	0.30							
Depth To Bottom										
Date Sampled	15-Apr-16	15-Apr-16	15-Apr-16							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6E	6AE	6E							
% Stones >10mm$_A^{\#}$	<0.1	3.3	<0.1						% w/w	A-T-044
pH$_D^{M\#}$	7.27	8.43	7.45						pH	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	0.06	0.14	0.10						g/l	A-T-026s
Organic matter$_D^{M\#}$	9.4	5.5	9.0						% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	11	27	12						mg/kg	A-T-024s
Cadmium$_D^{M\#}$	7.1	7.8	5.7						mg/kg	A-T-024s
Copper$_D^{M\#}$	22	339	26						mg/kg	A-T-024s
Chromium$_D^{M\#}$	38	130	38						mg/kg	A-T-024s
Lead$_D^{M\#}$	136	1900	161						mg/kg	A-T-024s
Mercury$_D$	0.33	0.98	0.25						mg/kg	A-T-024s
Nickel$_D^{M\#}$	26	75	28						mg/kg	A-T-024s
Selenium$_D$	2	2	<1						mg/kg	A-T-024s
Zinc$_D^{M\#}$	452	1990	404						mg/kg	A-T-024s

Envirolab Job Number: 16/02264

Client Project Name: Area I, Severnside

Client Project Ref: 731391

Lab Sample ID	16/02264/1	16/02264/2	16/02264/3						Units	Method ref
Client Sample No	1	1	1							
Client Sample ID	TP5-1	TP5-2	TP5-3							
Depth to Top	0.30	0.30	0.30							
Depth To Bottom										
Date Sampled	15-Apr-16	15-Apr-16	15-Apr-16							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6E	6AE	6E							
PAH 16										
Acenaphthene$_A^{M\#}$	<0.01	0.07	<0.01						mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	1.01	<0.01						mg/kg	A-T-019s
Anthracene$_A^{M\#}$	<0.02	0.94	<0.02						mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	2.01	<0.04						mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	3.49	<0.04						mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	3.46	<0.05						mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	2.40	<0.05						mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	1.02	<0.07						mg/kg	A-T-019s
Chrysene$_A^{M\#}$	<0.06	2.25	<0.06						mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	0.48	<0.04						mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	3.63	<0.08						mg/kg	A-T-019s
Fluorene$_A^{M\#}$	<0.01	0.13	<0.01						mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	2.66	0.05						mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.03	0.34	<0.03						mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	1.59	<0.03						mg/kg	A-T-019s
Pyrene$_A^{M\#}$	<0.07	3.69	<0.07						mg/kg	A-T-019s
PAH (total 16)$_A^{M\#}$	<0.08	29.2	<0.08						mg/kg	A-T-019s
TPH Banded 1 with ID										
>C6-C8$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C8-C10$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C10-C12$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C12-C16$_A^{\#}$	<10	13	<10						mg/kg	A-T-007s
>C16-C21$_A^{\#}$	<10	36	<10						mg/kg	A-T-007s
>C21-C40$_A$	<10	126	<10						mg/kg	A-T-007s
TPH Total (sum of bands) (>C6-C40)$_A$	<10	175	<10						mg/kg	A-T-007s
TPH ID (for FID characterisations)$_A$	N/A	Possible PAHs and Lube Oil	N/A							A-T-007s

REPORT NOTES

Notes - Soil chemical analysis
All results are reported as dry weight (<40°C).
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A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

TPH analysis of water by method A-T-007
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Asbestos in soil
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if present as discrete fibres/fragments. Stones etc. are not removed from the sample prior to analysis.
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A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

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Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 16/02967
Issue Number: 1 **Date:** 01 June, 2016

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: enviro@soils.co.uk/Josh Simmonds
Project Name: Area I, Severnside
Project Ref: 731391
Order No: N/A
Date Samples Received: 17/05/16
Date Instructions Received: 18/05/16
Date Analysis Completed: 01/06/16

Prepared by:
Melanie Marshall
Laboratory Coordinator

Approved by:
Iain Haslock
Analytical Consultant

Envirolab Job Number: 16/02967

Client Project Name: Area I, Severnside

Client Project Ref: 731391

Lab Sample ID	16/02967/1	16/02967/2	16/02967/3						Units	Method ref
Client Sample No	1	1	1							
Client Sample ID	TP6-1	TP6-2	TP6-3							
Depth to Top	0.30	0.30	0.30							
Depth To Bottom										
Date Sampled	13-May-16	13-May-16	13-May-16							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	3							
% Stones >10mm$_A^{\#}$	20.5	<0.1	<0.1						% w/w	A-T-044
pH$_D^{M\#}$	8.06	8.02	8.26						pH	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	0.10	0.01	0.04						g/l	A-T-026s
Organic matter$_D^{M\#}$	1.2	4.6	1.8						% w/w	A-T-032 OM
Arsenic$_D^{M\#}$	9	14	21						mg/kg	A-T-024s
Cadmium$_D^{M\#}$	1.0	2.7	1.7						mg/kg	A-T-024s
Copper$_D^{M\#}$	9	32	12						mg/kg	A-T-024s
Chromium$_D^{M\#}$	22	27	24						mg/kg	A-T-024s
Lead$_D^{M\#}$	17	97	35						mg/kg	A-T-024s
Mercury$_D$	<0.17	<0.17	<0.17						mg/kg	A-T-024s
Nickel$_D^{M\#}$	17	37	27						mg/kg	A-T-024s
Selenium$_D$	<1	<1	<1						mg/kg	A-T-024s
Zinc$_D^{M\#}$	63	468	103						mg/kg	A-T-024s

Envirolab Job Number: 16/02967

Client Project Name: Area I, Severnside

Client Project Ref: 731391

Lab Sample ID	16/02967/1	16/02967/2	16/02967/3						Units	Method ref
Client Sample No	1	1	1							
Client Sample ID	TP6-1	TP6-2	TP6-3							
Depth to Top	0.30	0.30	0.30							
Depth To Bottom										
Date Sampled	13-May-16	13-May-16	13-May-16							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6A	6A	3							
PAH 16										
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02						mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04						mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.04	<0.04	<0.04						mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	0.05	<0.05	<0.05						mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05						mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07						mg/kg	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06						mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04						mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08						mg/kg	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.04	<0.03	<0.03						mg/kg	A-T-019s
Naphthalene$_A^{M\#}$	<0.03	<0.03	<0.03						mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03						mg/kg	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07						mg/kg	A-T-019s
PAH (total 16)$_A^{M\#}$	0.13	<0.08	<0.08						mg/kg	A-T-019s
TPH Banded 1 with ID										
>C6-C8$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C8-C10$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C10-C12$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C12-C16$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C16-C21$_A^{\#}$	<10	<10	<10						mg/kg	A-T-007s
>C21-C40$_A$	<10	<10	<10						mg/kg	A-T-007s
TPH Total (sum of bands) (>C6-C40)$_A$	<10	<10	<10						mg/kg	A-T-007s
TPH ID (for FID characterisations)$_A$	N/A	N/A	N/A							A-T-007s

REPORT NOTES

Notes - Soil chemical analysis
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones and brick and concrete fragments >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis. For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

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Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.
All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supersedes any "A" subscripts.
All analysis is performed on the sample as received for soil samples which are positive for asbestos and/or if they are from outside the European Union and this supercedes any "D" subscripts.
Superscript "M" indicates method accredited to MCERTS.
If results are in italic font they are associated with an AQC failure. These are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

TPH analysis of water by method A-T-007
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Asbestos in soil
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if present as discrete fibres/fragments. Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations.

Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

Generic assessment criteria for human health: commercial scenario

Background

RSK's generic assessment criteria (GAC) were initially prepared following the publication by the Environment Agency (EA) of soil guideline value (SGV) and toxicological (TOX) reports, and associated publications in 2009[1]. RSK GAC were updated following the publication of GAC by LQM/CIEH in 2009[2]. RSK GAC are periodically revised when updated information on toxicological, land use or receptor parameters is published.

Updates to the RSK GAC

In 2014, the publication of Category 4 Screening Levels (C4SL)[3,4], as part of the Defra-funded research project SP1010, included modifications to certain exposure assumptions documented within EA Science Report SC050221/SR3 (herein after referred to as SR3)[5] used in the generation of SGVs.

C4SL were published for six substances (cadmium, arsenic, benzene, benzo(a)pyrene, chromium VI and lead) for a sandy loam soil type with 6% soil organic matter, based on a low level of toxicological concern (LLTC; see Section 2.3 of research project report SP1010[3]). Where a C4SL has been published, the RSK GAC duplicates the C4SL published values using all input parameters within the SP1010 final project report[3] and associated appendices[6], and adopts them as GAC for these six substances.

For all other substances the only C4SL exposure modification relevant to a commercial end use are daily inhalation rates.

The RSK GAC have also been revised with updated toxicology published by LQM/CIEH in 2015[7] or by the USEPA[14], where a C4SL has not been published.

RSK GAC derivation for metals and organic compounds

Model selection

Soil assessment criteria (SAC) were calculated using the Contaminated Land Exposure Assessment (CLEA) tool v1.071, supporting EA guidance[5,8,9] and revised exposure scenarios published for the C4SL[3]. Groundwater assessment criteria (GrAC) protective of human health via the inhalation pathway were derived using the RBCA 2.51 model with the Johnson and Ettinger model for soil and groundwater volatilisation. RSK has updated the inputs within RBCA to reflect EA guidance[1,5,8,9]. The SAC and GrAC collectively are termed GAC.

Pathway selection

In accordance with SR3[5] the commercial scenario considers risks to a female worker who works from the age of 16 to 65 years. It should be noted that this end use is not suitable for a workplace nursery but may be appropriate for a sports centre or shopping centre where children are present. In accordance with Box 3.5, SR3[5] the pathways considered for production of the SAC in the commercial scenario are

- direct soil and dust ingestion
- dermal contact with soil both indoors and outdoors

- indoor air inhalation from soil and vapour and outdoor inhalation of soil and vapour.

The pathway considered in production of the GrAC is the volatilisation of compounds from groundwater and subsequent vapour inhalation by residents while indoors. Figure 2 illustrates this linkage. Although the outdoor air inhalation pathway is also valid, this contributes little to the overall risks owing to the dilution in outdoor air. Within RBCA, the solubility limit of the chemical restricts the extent of volatilisation, which in turn drives the indoor air inhalation pathway. While the same restriction is not built into the CLEA model, the CLEA model output cells are flagged red where the soil saturation limit has been exceeded.

With respect to volatilisation, the CLEA model assumes a simple linear partitioning of a chemical in the soil between the sorbed, dissolved and vapour phase[9]. The upper boundaries of this partitioning are represented by the maximum aqueous solubility and pure saturated vapour concentration of the chemical. The CLEA model estimates saturated soil concentrations where these limits are reached[9]. The CLEA software uses a traffic light system to identify when individual and/or combined assessment criteria exceed the lower of either the aqueous- or vapour-based soil saturation limits. Model output cells are flagged red where the saturated soil concentration has been exceeded and the contribution of the indoor and outdoor vapour pathway to total exposure is greater than 10%. In this case, further consideration of the following is required[9]:

- Free phase contamination may be present.
- Exposure from the vapour pathways will be over-predicted by the model, as in reality the vapour phase concentration will not increase at concentrations above saturation limits
- Where the vapour pathway contribution is greater than 90%, it is unlikely the relevant health criteria value (HCV) will be exceeded at soil concentrations at least a factor of ten higher than the relevant HCV.

Where the vapour pathway is the predominant pathway (contributes greater than 90% of exposure) or the only exposure route considered and the cell is highlighted red (SAC exceeds saturation limit), the risk based on the assumed conceptual model is likely to be negligible as the vapour risk is assumed to be tolerable at maximum possible soil concentrations. In such circumstances, the vapour pathway exposure should be considered based on the presence of free phase or non-aqueous phase liquid sources and the measured concentrations of volatile organic compounds (VOC) in the vapour phase. Screening could be considered based on setting the SAC as the modelled soil saturation limits. However, as stated within the CLEA handbook[9], this is likely to not be practical in many cases because of the very low saturation limits and, in any case, is highly conservative.

It should also be noted that for mixtures of compounds, free phase may be present where soil (or groundwater) concentrations are well below saturation limits for individual compounds.

Where the vapour pathway is only one of the exposure pathways considered, an additional approach can then be utilised as detailed within Section 4.12 of the CLEA model handbook[9], which explains how to calculate an effective assessment criterion manually.

SR3[5] states that, as a general rule of thumb, it is recognised that estimating vapour phase concentrations from dissolved and sorbed phase contamination by petroleum hydrocarbons are at least a factor of ten higher than those likely to be measured on-site. RSK has therefore applied an empirical subsurface to indoor air correction factor of 10 into the CLEA model chemical database and to outputs from the RBCA model for all petroleum hydrocarbon fractions (including

BTEX, trimethylbenzenes and the polycyclic aromatic hydrocarbons (PAH) naphthalene, acenaphthene and acenaphthylene) to reduce this conservatism.

Input selection

The most up-to-date published chemical and toxicological data was obtained from EA Report SC050021/SR7[10], the EA TOX[1] reports, the C4SL SP1010 project report and associated appendices[3,6], the 2015 LQM/CIEH report[7] or the USEPA IRIS database[14]. Where a C4SL has been published, the RSK GAC have duplicated the C4SL published values using all input parameters within the SP1010 final project report[3] and associated appendices[6], and has adopted them as GAC for these six substances. Toxicological and specific chemical parameters for aromatic hydrocarbon C_8–C_9 (styrene), 1,2,4-trimethylbenzene and methyl tertiary-butyl ether (MTBE) were obtained from the CL:AIRE Soil Generic Assessment Criteria report[11].

For TPH, aromatic hydrocarbons C_5–C_8 were not modelled, as this range comprises benzene and toluene, which are modelled separately. The aromatic C_8–C_9 hydrocarbon fraction comprises ethylbenzene, xylene and styrene. As ethylbenzene and xylene are being modelled separately, the physical, chemical and toxicological data for aromatic C_8–C_9 have been taken from styrene.

For the GrAC, the HCV used in the modelling were derived using the toxicological data for the SAC amended as follows:

- An adult weighing 70kg and breathing 15.7m^3 air per day in accordance with the revised exposure parameters used in the SP1010 final project report for the Category 4 Screening Levels (C4SL) (Table 3.2[3]) and USEPA data[12]
- Background inhalation (mean daily intake(MDI)) for an adult (Age Class 17).

Physical parameters

For the commercial end use, the CLEA default pre-1970s three-storey office building was used. SR3[5] notes this commercial building type to be the most conservative in terms of protection from vapour intrusion. The default input building parameters presented in Table 3.10 of SR3[5] have been used.

The parameters for a sandy loam soil type were used in line with Table 4.4 of SR3[5]. This includes a value of 6% for the percentage of soil organic matter (SOM) within the soil. In RSK's experience, this is rather high for many sites. To avoid undertaking site-specific risk assessments for this SOM, RSK has produced an additional set of GAC for SOM of 1% and 2.5% for all substances using the CLEA tool.

For the GrAC, the depth to groundwater was taken as 2.5m based on RSK's experience of assessing the volatilisation pathway from groundwater. The GrAC were produced using the input parameters in Table 3. Inhalation rates have not been updated.

Summary of modifications to the default CLEA SR3[5] input parameters for a commercial land use

In summary, the RSK commercial GAC were produced using the default input parameters for soil properties, the air dispersion model, building properties and the vapour model detailed in SR3[5]. Modifications to the default SR3[5] exposure scenarios based on the C4SL exposure scenarios[3]

are presented in Table 2 below. The sole modification to the default commercial input parameters is the updated inhalation rate.

The final selected GAC are presented by pathway in Table 4 with the combined GAC in Table 5.

Figure 1: Conceptual model for CLEA commercial scenario

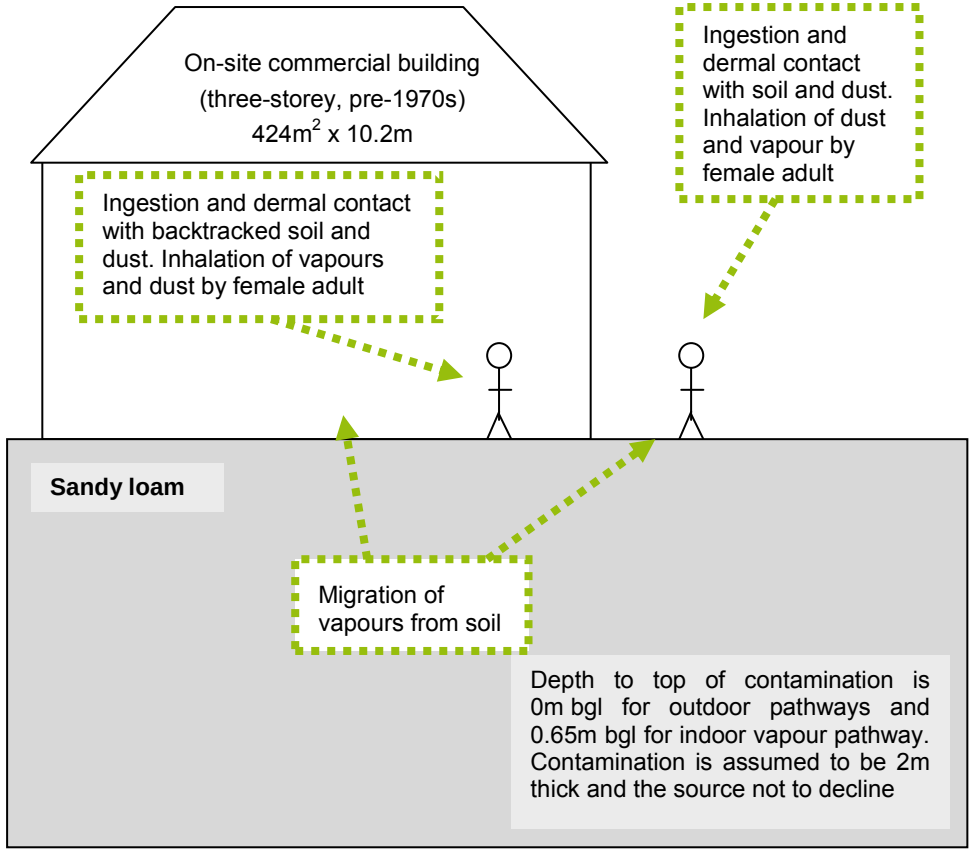

Table 1: Exposure assessment parameters for commercial scenario – inputs for CLEA model

Parameter	Value	Justification
Land use	Commercial	Chosen land use
Receptor	Female worker	Taken as female adult exposed over 49 years from age 16 to 65 years, Box 3.5, SR3[5]
Building	Office (pre-1970)	Key generic assumption given in Box 3.5, SR3[5]. Pre-1970s three-storey office building chosen as it is the most conservative in terms of protection from vapour intrusion (Section 3.4.6, SR3[5])
Soil type	Sandy loam	Most common UK soil type (Section 4.3.1, Table 4.4, SR3[5])
Start age class (AC)	17	AC corresponding to key generic assumption that the critical receptor is a working female adult exposed over a 49-year period from age 16 to 65 years. Assumption given in Box 3.5, SR3[5]
End AC	17	
SOM (%)	6	Representative of sandy loam according to EA guidance note dated January 2009 entitled 'Changes We Have Made to the CLEA Framework Documents'[13]
	1	To provide SAC for sites where SOM < 6% as often observed by RSK
	2.5	
pH	7	Model default

Table 2: Commercial – modified receptor inputs

Parameter	Unit	Value	Justification
Inhalation rate (AC17)	m^3 day^{-1}	15.7	Mean value USEPA, 2011[12]; Table 3.2, SP1010[3]

Figure 2: GrAC conceptual model for RBCA commercial scenario

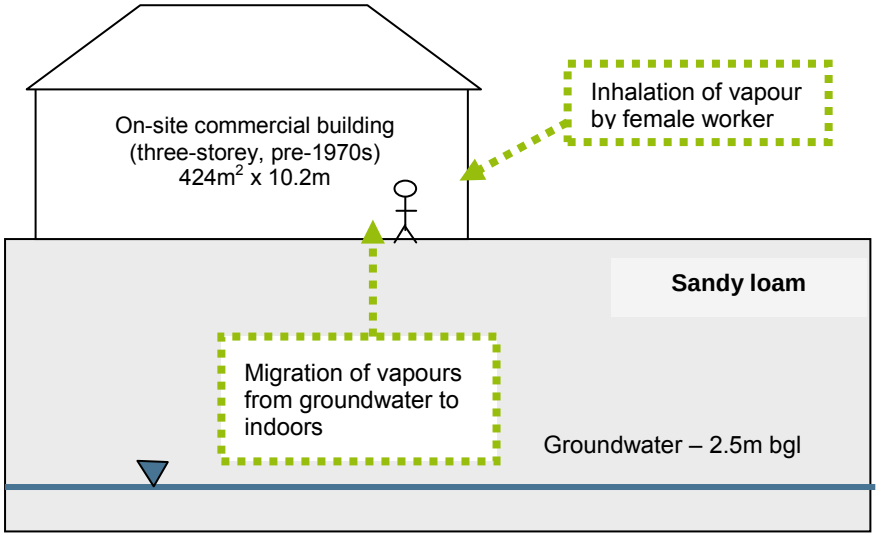

Table 3: Commercial – RBCA inputs

Parameter	Unit	Value	Justification
Receptor			
Averaging time	Years	49	From Box 3.5, SR3[5]
Receptor weight	kg	70	Female adult, Table 4.6, SR3[5]
Exposure duration	Years	49	From Box 3.5, SR3[5]
Exposure frequency	Days/yr	86.25	Weighted using occupancy period of 9 hours per day for 230 days of the year ((9hours x 230 days)/24 hours)
Soil type – sandy loam			
Total porosity	-	0.53	CLEA value for sandy loam. Parameters for sandy loam from Table 4.4, SR3[5]
Volumetric water content	-	0.33	
Volumetric air content	-	0.20	

Parameter	Unit	Value	Justification
Dry bulk density	g cm^{-3} or kg/L	1.21	
Vertical hydraulic conductivity	cm s^{-1}	3.56E-3	CLEA value for saturated conductivity of sandy loam, Table 4.4, SR3[5] equivalent to 307 cm/day
Vapour permeability	m^2	3.05E-12	Calculated for sandy loam using equations in Appendix 1, SR3[5]
Capillary zone thickness	m	0.1	Professional judgement
Building			
Building volume/area ratio	m	9.6	Table 3.10, SR3[5]
Foundation area	m^2	424	Table 3.10, SR3[5]
Foundation perimeter	m	82.40	Based on square root of building area being 20.59m
Building air exchange rate	d^{-1}	24	Table 3.10, SR3[5] Building air exchange rate equivalent to 2.8E-04 s^{-1}
Depth to bottom of foundation slab	m	0.15	
Foundation thickness	m	0.15	Table 3.10, SR3[5]
Foundation crack fraction	-	3.89E-04	Calculated from floor crack area of 0.165m^2 and building footprint of 424m^2 in Table 4.21, SR3[5]
Volumetric water content of cracks	-	0.33	Assumed equal to underlying soil type in assumption that cracks become filled with soil over time. Parameters for sandy loam from Table 4.4, SR3[5]
Volumetric air content of cracks	-	0.2	
Indoor/outdoor differential pressure	Pa	4.4	From Table 3.10, SR3[5] Equivalent to 44 g/cm/s^2

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GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - COMMERCIAL

Table 4

Human health generic assessment criteria by pathway for commercial scenario

Compound	Notes	GrAC (µg/l)	SAC appropriate to pathway SOM 1% (mg/kg)			Soil saturation limit (mg/kg)	SAC appropriate to pathway SOM 2.5% (mg/kg)			Soil saturation limit (mg/kg)	SAC appropriate to pathway SOM 6% (mg/kg)			Soil saturation limit (mg/kg)
			Oral	Inhalation	Combined		Oral	Inhalation	Combined		Oral	Inhalation	Combined	
Metals														
Arsenic	(a,b)	-	6.35E+02	1.25E+03	NR	NR	6.35E+02	1.25E+03	NR	NR	6.35E+02	1.25E+03	NR	NR
Cadmium	(a)	-	7.73E+02	8.57E+02	4.10E+02	NR	7.73E+02	8.57E+02	4.10E+02	NR	7.73E+02	8.57E+02	4.10E+02	NR
Chromium (III) - trivalent	(c)	-	3.31E+05	8.57E+03	NR	NR	3.31E+05	8.57E+03	NR	NR	3.31E+05	8.57E+03	NR	NR
Chromium (VI) - hexavalent	(a,d)	-	9.62E+02	4.91E+01	NR	NR	9.62E+02	4.91E+01	NR	NR	9.62E+02	4.91E+01	NR	NR
Copper		-	1.89E+05	8.96E+04	6.83E+04	NR	1.89E+05	8.96E+04	6.83E+04	NR	1.89E+05	8.96E+04	6.83E+04	NR
Lead	(a)	-	2.32E+03	NR	NR	NR	2.32E+03	NR	NR	NR	2.32E+03	NR	NR	NR
Elemental Mercury (Hg^0)	(d)	5.60E+01	NR	1.54E+01	NR	4.31E+00	NR	3.26E+01	NR	1.07E+01	NR	5.80E+01	NR	2.58E+01
Inorganic Mercury (Hg^{2+})		-	1.18E+03	1.97E+04	1.12E+03	NR	1.18E+03	1.97E+04	1.12E+03	NR	1.18E+03	1.97E+04	1.12E+03	NR
Methyl Mercury (Hg^{4+})		1.00E+05	3.38E+02	2.13E+03	2.92E+02	7.33E+01	3.38E+02	3.87E+03	3.11E+02	1.42E+02	3.38E+02	7.33E+03	3.23E+02	3.04E+02
Nickel	(d)	-	3.06E+03	9.83E+02	NR	NR	3.06E+03	9.83E+02	NR	NR	3.06E+03	9.83E+02	NR	NR
Selenium	(b)	-	1.23E+04	NR	NR	NR	1.23E+04	NR	NR	NR	1.23E+04	NR	NR	NR
Zinc	(b)	-	7.35E+05	1.97E+08	NR	NR	7.35E+05	1.97E+08	NR	NR	7.35E+05	1.97E+08	NR	NR
Cyanide (free)		-	6.56E+02	7.51E+04	6.53E+02	NR	6.56E+02	7.51E+04	6.53E+02	NR	6.56E+02	7.51E+04	6.53E+02	NR
Volatile Organic Compounds														
Benzene	(a)	1.36E+05	1.09E+03	2.79E+01	2.72E+01	1.22E+03	1.09E+03	5.19E+01	4.96E+01	2.26E+03	1.09E+03	1.08E+02	9.80E+01	4.71E+03
Toluene		5.90E+05	4.24E+05	6.49E+04	5.63E+04	8.69E+02	4.24E+05	1.43E+05	1.07E+05	1.92E+03	4.24E+05	3.24E+05	1.84E+05	4.36E+03
Ethylbenzene		1.80E+05	1.91E+05	5.89E+03	5.71E+03	5.18E+02	1.91E+05	1.38E+04	1.28E+04	1.22E+03	1.91E+05	3.21E+04	2.75E+04	2.84E+03
Xylene - m		2.00E+05	3.43E+05	6.26E+03	6.15E+03	6.25E+02	3.43E+05	1.47E+04	1.41E+04	1.47E+03	3.43E+05	3.44E+04	3.12E+04	3.46E+03
Xylene - o		1.73E+05	3.43E+05	6.73E+03	6.60E+03	4.78E+02	3.43E+05	1.57E+04	1.50E+04	1.12E+03	3.43E+05	3.65E+04	3.30E+04	2.62E+03
Xylene - p		2.00E+05	3.43E+05	6.03E+03	5.92E+03	5.76E+02	3.43E+05	1.41E+04	1.36E+04	1.35E+03	3.43E+05	3.28E+04	3.00E+04	3.17E+03
Total xylene		1.73E+05	3.43E+05	6.03E+03	5.92E+03	6.25E+02	3.43E+05	1.41E+04	1.36E+04	1.47E+03	3.43E+05	3.28E+04	3.00E+04	3.46E+03
Methyl tertiary-Butyl ether (MTBE)		4.80E+07	5.72E+05	7.54E+04	6.66E+04	2.04E+04	5.72E+05	1.22E+05	1.01E+05	3.31E+04	5.72E+05	2.31E+05	1.65E+05	6.27E+04
Trichloroethene		3.73E+03	9.53E+02	1.23E+00	1.23E+00	1.54E+03	9.53E+02	2.58E+00	2.57E+00	3.22E+03	9.53E+02	5.72E+00	5.69E+00	7.14E+03
Tetrachloroethene		3.43E+04	1.12E+04	1.86E+01	1.86E+01	4.24E+02	1.12E+04	4.17E+01	4.16E+01	9.51E+02	1.12E+04	9.57E+01	9.49E+01	2.18E+03
1,1,1-Trichloroethane		1.30E+06	1.14E+06	6.60E+02	6.60E+02	1.43E+03	1.14E+06	1.35E+03	1.35E+03	2.92E+03	1.14E+06	2.96E+03	2.95E+03	6.39E+03
1,1,1,2 Tetrachloroethane		1.60E+05	1.10E+04	1.09E+02	1.08E+02	2.60E+03	1.10E+04	2.53E+02	2.47E+02	6.02E+03	1.10E+04	5.88E+02	5.59E+02	1.40E+04
1,1,2,2-Tetrachloroethane		1.63E+05	1.10E+04	2.81E+02	2.74E+02	2.67E+03	1.10E+04	5.75E+02	5.46E+02	5.46E+03	1.10E+04	1.26E+03	1.13E+03	1.20E+04
Carbon Tetrachloride		5.47E+03	7.62E+03	2.87E+00	2.87E+00	1.52E+03	7.62E+03	6.29E+00	6.28E+00	3.32E+03	7.62E+03	1.43E+01	1.42E+01	7.54E+03
1,2-Dichloroethane		5.71E+03	2.29E+02	6.73E-01	6.71E-01	3.41E+03	2.29E+02	9.71E-01	9.67E-01	4.91E+03	2.29E+02	1.67E+00	1.65E+00	8.43E+03
Vinyl Chloride		3.82E+02	2.67E+01	5.95E-02	5.94E-02	1.36E+03	2.67E+01	7.70E-02	7.67E-02	1.76E+03	2.67E+01	1.18E-01	1.17E-01	2.69E+03
1,2,4-Trimethylbenzene		5.59E+04	NR	3.29E+02	NR	4.74E+02	NR	6.41E+02	NR	1.16E+03	NR	1.04E+03	NR	2.76E+03
1,3,5-Trimethylbenzene	(e)	-	NR	NR	NR	2.30E+02	NR	NR	NR	5.52E+02	NR	NR	NR	1.30E+03
Semi-Volatile Organic Compounds														
Acenaphthene		4.11E+03	1.10E+05	2.75E+06	1.06E+05	5.70E+01	1.10E+05	5.36E+06	1.08E+05	1.41E+02	1.10E+05	8.83E+06	1.08E+05	3.36E+02
Acenaphthylene		7.95E+03	1.10E+05	2.68E+06	1.05E+05	8.61E+01	1.10E+05	5.23E+06	1.07E+05	2.12E+02	1.10E+05	8.65E+06	1.08E+05	5.06E+02
Anthracene		-	5.49E+05	1.13E+07	5.23E+05	1.17E+00	5.49E+05	2.35E+07	5.36E+05	2.91E+00	5.49E+05	4.13E+07	5.42E+05	6.96E+00
Benzo(a)anthracene		-	2.84E+02	4.08E+02	1.67E+02	1.71E+00	2.84E+02	4.47E+02	1.74E+02	4.28E+00	2.84E+02	4.67E+02	1.76E+02	1.03E+01
Benzo(b)fluoranthene		-	7.13E+01	1.17E+02	4.43E+01	1.22E+00	7.13E+01	1.20E+02	4.47E+01	3.04E+00	7.13E+01	1.21E+02	4.49E+01	7.29E+00
Benzo(g,h,i)perylene		-	6.29E+03	1.05E+04	3.93E+03	1.54E-02	6.29E+03	1.06E+04	3.95E+03	3.85E-02	6.29E+03	1.07E+04	3.96E+03	9.23E-02
Benzo(k)fluoranthene		-	1.88E+03	3.11E+03	1.17E+03	6.87E-01	1.88E+03	3.17E+03	1.18E+03	1.72E+00	1.88E+03	3.21E+03	1.19E+03	4.12E+00
Chrysene		-	5.67E+02	8.89E+02	3.46E+02	4.40E-01	5.67E+02	9.25E+02	3.52E+02	1.10E+00	5.67E+02	9.47E+02	3.55E+02	2.64E+00
Dibenzo(a,h)anthracene		-	5.67E+00	9.32E+00	3.53E+00	3.93E-03	5.67E+00	9.52E+00	3.55E+00	9.82E-03	5.67E+00	9.64E+00	3.57E+00	2.36E-02
Fluoranthene		-	2.29E+04	1.89E+06	2.26E+04	1.89E+01	2.29E+04	2.72E+06	2.27E+04	4.73E+01	2.29E+04	3.32E+06	2.27E+04	1.13E+02
Fluorene		-	7.31E+04	4.55E+05	6.30E+04	3.09E+01	7.31E+04	1.06E+06	6.84E+04	7.65E+01	7.31E+04	2.24E+06	7.08E+04	1.83E+02
Indeno(1,2,3-cd)pyrene		-	8.10E+02	1.31E+03	5.01E+02	6.13E-02	8.10E+02	1.35E+03	5.06E+02	1.53E-01	8.10E+02	1.37E+03	5.09E+02	3.68E-01
Phenanthrene		-	2.28E+04	5.35E+05	2.19E+04	3.60E+01	2.28E+04	1.09E+06	2.24E+04	8.96E+01	2.28E+04	1.86E+06	2.25E+04	2.14E+02
Pyrene		-	5.49E+04	4.47E+06	5.42E+04	2.20E+00	5.49E+04	6.46E+06	5.44E+04	5.49E+00	5.49E+04	7.91E+06	5.45E+04	1.32E+01
Benzo(a)pyrene	(a)	-	7.68E+01	2.04E+02	5.58E+01	9.11E-01	7.68E+01	2.09E+02	5.61E+01	2.28E+00	7.68E+01	2.11E+02	5.63E+01	5.46E+00
Naphthalene		1.90E+04	3.64E+04	1.87E+03	1.78E+03	7.64E+01	3.64E+04	4.39E+03	3.92E+03	1.83E+02	3.64E+04	9.94E+03	7.81E+03	4.32E+02
Phenol		-	1.10E+06	2.65E+04	2.59E+04	2.42E+04	1.10E+06	3.04E+04	2.96E+04	3.81E+04	1.10E+06	3.46E+04	3.35E+04	7.03E+04

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - COMMERCIAL

Table 4

Human health generic assessment criteria by pathway for commercial scenario

Compound	Notes	GrAC (µg/l)	SAC appropriate to pathway SOM 1% (mg/kg)			Soil saturation limit (mg/kg)	SAC appropriate to pathway SOM 2.5% (mg/kg)			Soil saturation limit (mg/kg)	SAC appropriate to pathway SOM 6% (mg/kg)			Soil saturation limit (mg/kg)
			Oral	Inhalation	Combined		Oral	Inhalation	Combined		Oral	Inhalation	Combined	
Total petroleum hydrocarbons														
Aliphatic hydrocarbons EC5-EC6		3.59E+04	4.77E+06	3.19E+03	3.19E+03	3.04E+02	4.77E+06	5.86E+03	5.86E+03	5.58E+02	4.77E+06	1.21E+04	1.21E+04	1.15E+03
Aliphatic hydrocarbons >EC6-EC8		5.37E+03	4.77E+06	7.79E+03	7.78E+03	1.44E+02	4.77E+06	1.74E+04	1.74E+04	3.22E+02	4.77E+06	3.97E+04	3.96E+04	7.36E+02
Aliphatic hydrocarbons >EC8-EC10		4.27E+02	9.53E+04	2.02E+03	2.00E+03	7.77E+01	9.53E+04	4.91E+03	4.85E+03	1.90E+02	9.53E+04	1.17E+04	1.13E+04	4.51E+02
Aliphatic hydrocarbons >EC10-EC12		3.39E+01	9.53E+04	9.97E+03	9.69E+03	4.75E+01	9.53E+04	2.47E+04	2.29E+04	1.18E+02	9.53E+04	5.89E+04	4.73E+04	2.83E+02
Aliphatic hydrocarbons >EC12-EC16		7.59E-01	9.53E+04	8.26E+04	5.88E+04	2.37E+01	9.53E+04	2.04E+05	8.17E+04	5.91E+01	9.53E+04	4.81E+05	9.02E+04	1.42E+02
Aliphatic hydrocarbons >EC16-EC35	(b)	-	1.58E+06	NR	NR	8.48E+00	1.75E+06	NR	NR	2.12E+01	1.83E+06	NR	NR	5.09E+01
Aliphatic hydrocarbons >EC35-EC44	(b)	-	1.58E+06	NR	NR	8.48E+00	1.75E+06	NR	NR	2.12E+01	1.83E+06	NR	NR	5.09E+01
Aromatic hydrocarbons >EC8-EC9 (styrene)		2.90E+05	2.29E+04	3.66E+04	1.41E+04	6.26E+02	2.29E+04	8.39E+04	1.80E+04	1.44E+03	2.29E+04	1.93E+05	2.04E+04	3.35E+03
Aromatic hydrocarbons >EC_9-EC_{10}		6.46E+04	3.81E+04	3.55E+03	3.46E+03	6.13E+02	3.81E+04	8.66E+03	8.11E+03	1.50E+03	3.81E+04	2.05E+04	1.70E+04	3.58E+03
Aromatic hydrocarbons >EC10-EC12		2.45E+04	3.81E+04	1.92E+04	1.62E+04	3.64E+02	3.81E+04	4.69E+04	2.79E+04	8.99E+02	3.81E+04	1.10E+05	3.42E+04	2.15E+03
Aromatic hydrocarbons >EC12-EC16		5.75E+03	3.81E+04	2.02E+05	3.62E+04	1.69E+02	3.81E+04	4.76E+05	3.73E+04	4.19E+02	3.81E+04	1.03E+06	3.78E+04	1.00E+03
Aromatic hydrocarbons >EC16-EC21	(b)	-	2.82E+04	NR	NR	5.37E+01	2.83E+04	NR	NR	1.34E+02	2.84E+04	NR	NR	3.21E+02
Aromatic hydrocarbons >EC21-EC35	(b)	-	2.84E+04	NR	NR	4.83E+00	2.84E+04	NR	NR	1.21E+01	2.84E+04	NR	NR	2.90E+01
Aromatic hydrocarbons >EC35-EC44	(b)	-	2.84E+04	NR	NR	4.83E+00	2.84E+04	NR	NR	1.21E+01	2.84E+04	NR	NR	2.90E+01

Notes:

EC - equivalent carbon. GrAC - groundwater screening value. SAC - soil screening value.

The CLEA model output is colour coded depending upon whether the soil saturation limit has been exceeded.

Calculated SAC exceeds soil saturation limit and may significantly affect the interpretation of any exceedances as the contribution of the indoor and outdoor vapour pathway to total exposure is >10%. This shading has also been used for the RBCA output where the theoretical solubility limit has been exceeded.

Calculated SAC exceeds soil saturation limit but the exceedance will not affect the SAC significantly as the contribution of the indoor and outdoor vapour pathway to total exposure is <10%.

Calculated SAC does not exceed the soil saturation limit.

For consistency where the theoretical solubility limit within RBCA has been exceeded in production of the GrAC, these cellls have also been hatched red and the GrAC set at the solubility limit.

The SAC for organic compounds are dependant upon soil organic matter (SOM) (%) content. To obtain SOM from total organic carbon (TOC) (%) divide by 0.58. 1% SOM is 0.58% TOC. DL Rowell Soil Science: Methods and Applications, Longmans, 1994.

SAC for TPH fractions, PAHs napthalene, acenaphthene and acenaphthylene, MTBE, BTEX and trimethylbenzene compounds were produced using an attenuation factor for the indoor air inhalation pathway of 10 to reduce conservatism associated with the vapour inhalation pathway (Section 10.1.1, SR3)

(a) SAC for arsenic, benzene, benzo(a)pyrene, cadmium, chromium VI and lead are derived using the C4SL toxicology data.

(b) SAC for selenium should not include the inhalation pathway as no expert group HCV has been derived; aliphatic and aromatic hydrocarbons >EC16 should not include inhalation pathway due to their non-volatile nature and inhalation exposure being minimal (oral, dermal and inhalation exposure is compared to the oral HCV); arsenic should only be based on oral contribution (rather than combined) owing to the relative small contribution from inhalation in accordance with the SGV report. The Oral SAC should be adopted for zinc and benzo(a)pyrene.

(c) SAC for CrIII should be based on the lower of the oral and inhalation SAC (see LQM/CIEH 2015 Section 6.8)

(d) SAC for elemental mercury, chromium VI and nickel should be based on the inhalation pathway only.

(e) SAC for 1,3,5-trimethylbenzene is not recorded owing to the lack of toxicological data, SAC for 1,2,4 trimethylbenzene may be used.

GENERIC ASSESSMENT CRITERIA FOR HUMAN HEALTH - COMMERCIAL

Table 5
Human Health Generic Assessment Criteria for Commercial Scenario

Compound	GrAC for Groundwater (µg/l)	SAC for Soil SOM 1% (mg/kg)	SAC for Soil SOM 2.5% (mg/kg)	SAC for Soil SOM 6% (mg/kg)
Metals				
Arsenic	-	640	640	640
Cadmium	-	410	410	410
Chromium (III) - trivalent	-	8,600	8,600	8,600
Chromium (VI) - hexavalent	-	49	49	49
Copper	-	68,000	68,000	68,000
Lead	-	2,300	2,300	2,300
Elemental Mercury (Hg^0)	56	15 (4)	33 (11)	58 (26)
Inorganic Mercury (Hg^{2+})	-	1,120	1,120	1,120
Methyl Mercury (Hg^{4+})	100000	290 (73)	310 (142)	320
Nickel	-	980	980	980
Selenium	-	12,000	12,000	12,000
Zinc	-	740,000	740,000	740,000
Cyanide (free)	-	650	650	650
Volatile Organic Compounds				
Benzene	136190	27	50	98
Toluene	590000	56,000 (869)	107,000 (1,916)	184,000 (4,357)
Ethylbenzene	180000	6,000 (518)	13,000 (1,216)	27,000 (2,844)
Xylene - m	200000	6,200 (625)	14,100 (1,474)	31,200 (3,457)
Xylene - o	173000	6,600 (478)	15,000 (1,120)	33,000 (2,618)
Xylene - p	200000	5,900 (576)	13,600 (1,353)	30,000 (3,167)
Total xylene	173000	5,900 (625)	13,600 (1,474)	30,000 (3,457)
Methyl tertiary-Butyl ether (MTBE)	48000000	67,000 (20,400)	101,000 (33,100)	165,000 (62,700)
Trichloroethene	3730	1	3	6
Tetrachloroethene	34310	20	40	90
1,1,1-Trichloroethane	1300000	700	1,300	3,000
1,1,1,2 Tetrachloroethane	160000	110	250	560
1,1,2,2-Tetrachloroethane	162840	270	550	1,130
Carbon Tetrachloride	5470	2.9	6.3	14.2
1,2-Dichloroethane	5710	0.67	0.97	1.65
Vinyl Chloride	382	0.06	0.08	0.12
1,2,4-Trimethylbenzene	55900	330	640	1,040
1,3,5-Trimethylbenzene	-	NR	NR	NR
Semi-Volatile Organic Compounds				
Acenaphthene	4110	110,000	110,000	110,000
Acenaphthylene	7950	110,000	110,000	110,000
Anthracene	-	520,000	540,000	540,000
Benzo(a)anthracene	-	170	170	180
Benzo(b)fluoranthene	-	44	45	45
Benzo(g,h,i)perylene	-	3,900	3,900	4,000
Benzo(k)fluoranthene	-	1,200	1,200	1,200
Chrysene	-	350	350	350
Dibenzo(a,h)anthracene	-	3.5	3.6	3.6
Fluoranthene	-	23,000	23,000	23,000
Fluorene	-	63,000 (31)	68,000	71,000
Indeno(1,2,3-cd)pyrene	-	500	510	510
Phenanthrene	-	22,000	22,000	23,000
Pyrene	-	54,000	54,000	54,000
Benzo(a)pyrene	-	77	77	77
Naphthalene	19000	1,800 (76)	3,900 (183)	7,800 (432)
Phenol	-	440*	690*	1,300*
Total Petroleum Hydrocarbons				
Aliphatic hydrocarbons EC_5-EC_6	35900	3,200 (304)	5,900 (558)	12,100 (1,150)
Aliphatic hydrocarbons >EC_6-EC_8	5370	7,800 (144)	17,400 (322)	39,600 (736)
Aliphatic hydrocarbons >EC_8-EC_{10}	427	2,000 (78)	4,800 (190)	11,300 (451)
Aliphatic hydrocarbons >EC_{10}-EC_{12}	34	9,700 (48)	22,900 (118)	47,300 (283)
Aliphatic hydrocarbons >EC_{12}-EC_{16}	0.759	59,000 (24)	82,000 (59)	90,000 (142)
Aliphatic hydrocarbons >EC_{16}-EC_{35}	-	1,000,000**	1,000,000**	1,000,000**
Aliphatic hydrocarbons >EC_{35}-EC_{44}	-	1,000,000**	1,000,000**	1,000,000**
Aromatic hydrocarbons >EC_8-EC_9 (styrene)	290000	14,000 (626)	18,000 (1,440)	20,000 (3,350)
Aromatic hydrocarbons >EC_9-EC_{10}	64600	3,500 (613)	8,100 (1,503)	17,000 (3,580)
Aromatic hydrocarbons >EC_{10}-EC_{12}	24500	16,000 (364)	28,000 (899)	34,000 (2,150)
Aromatic hydrocarbons >EC_{12}-EC_{16}	5750	36,000 (169)	37,000	38,000
Aromatic hydrocarbons >EC_{16}-EC_{21}	-	28,000	28,000	28,000
Aromatic hydrocarbons >EC_{21}-EC_{35}	-	28,000	28,000	28,000
Aromatic hydrocarbons >EC_{35}-EC_{44}	-	28,000	28,000	28,000

Notes:

'-' Generic assessment criteria not calculated owing to low volatility of substance and therefore no pathway, or an absence of toxicological data.

NR - SAC for 1,3,5-trimethylbenzene is not recorded owing to the lack of toxicological data, SAC for 1,2,4 trimethylbenzene may be used

EC - equivalent carbon. GrAC - groundwater assessment criteria. SAC - soil assessment criteria.

* The GAC for Phenol is based on a threshold which is protective of direct contact (SC050021/Phenol SGV report)

** Denoted SAC calculated exceeds 100% contaminant, hence 100% (1,000,000mg/kg) has been taken as SAC

The SAC for organic compounds are dependent on Soil Organic Matter (SOM) (%) content. To obtain SOM from total organic carbon (TOC) (%) divide by 0.58.
1% SOM is 0.58% TOC. DL Rowell Soil Science: Methods and Applications, Longmans, 1994.

SAC and GrAC for TPH fractions, PAHs napthalene, acenaphthene and acenaphthylene, MTBE, BTEX and trimethylbenzene compounds were produced using an attenuation factor for the indoor air inhalation pathway of 10 to reduce conservatism associated with the vapour inhalation pathway, section 10.1.1, SR3.

(VALUE IN BRACKETS) The SAC has been set as the model calculated SAC with the saturation limit shown in brackets.
RSK has adopted an approach for petroleum hydrocarbons in accordance with LQM/CIEH whereby the concentration modelled for each petroleum hydrocarbon fraction has been tabulated as the SAC with the corresponding solubility or vapour saturation limits given in brackets.

For consistency where the GrAC exceeds the solubility limit, GrAC has been set at the solubility limit. The GrAC is conservative since concentrations of the chemical are very unlikely to be at sufficient concentration to result in an exceedance of the health criteria value at the point of exposure (i.e. indoor air) provided free-phase product is absent.

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Initial Accreditation date
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