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Analytical Report Number : 17-48845

Project / Site name:	Black Cat Fireworks	Samples received on:	19/05/2017
Your job number:	11-822	Samples instructed on:	19/05/2017
Your order number:		Analysis completed by:	25/05/2017
Report Issue Number:	1	Report issued on:	25/05/2017
Samples Analysed:	1 soil sample		

Signed: _____

Emma Winter
Assistant Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.



Analytical Report Number: 17-48845

Project / Site name: Black Cat Fireworks

Lab Sample Number				751673				
Sample Reference				WS211				
Sample Number				None Supplied				
Depth (m)				0.80				
Date Sampled				16/05/2017				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	8.5				
Total mass of sample received	kg	0.001	NONE	0.54				

General Inorganics

Total Cyanide	mg/kg	1	MCERTS	< 1				
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05				
Anthracene	mg/kg	0.05	MCERTS	< 0.05				
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Pyrene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Chrysene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05				

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80				
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	1.2				
Barium (aqua regia extractable)	mg/kg	1	MCERTS	18				
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.21				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2				
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	5.5				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	4.0				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	9.1				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0				
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	9.1				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	36				

Petroleum Hydrocarbons

TPH (C5 - C6)	mg/kg	1	NONE	< 1.0				
TPH (C6 - C8)	mg/kg	0.1	NONE	< 0.1				
TPH (C8 - C10)	mg/kg	0.1	NONE	< 0.1				
TPH (C10 - C12)	mg/kg	2	MCERTS	< 2.0				
TPH (C12 - C16)	mg/kg	4	MCERTS	< 4.0				
TPH (C16 - C21)	mg/kg	1	MCERTS	< 1.0				
TPH (C21 - C35)	mg/kg	1	MCERTS	< 1.0				



Analytical Report Number : 17-48845

Project / Site name: Black Cat Fireworks

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
751673	WS211	None Supplied	0.80	Light brown gravelly sand.

Analytical Report Number : 17-48845

Project / Site name: Black Cat Fireworks

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

CONSTITUENT	ORIGIN OF RISK ASSESSMENT VALUE
Arsenic	PC4SL - DEFRA
Cadmium	P4CSL - DEFRA
Chromium	P4CSL - DEFRA
Lead	P4CSL - DEFRA
Mercury	2014 LQM/CIEH S4ULs - methylmercury
Nickel	2014 LQM/CIEH S4ULs
Selenium	2014 LQM/CIEH S4ULs
Copper	2014 LQM/CIEH S4ULs
Zinc	2014 LQM/CIEH S4ULs
Cyanide - Total	2014 LQM/CIEH S4ULs
Phenols - Total.	2014 LQM/CIEH S4ULs
Naphthalene	General Assessment Criteria (GAC) developed by CIEH / LQM Suitable 4 Use Levels with supporting data from SR3, SR7 and existing Tox report where applicable. 1% SOM
Acenaphthylene	
Acenaphthene	
Fluorene	
Phenanthrene	
Anthracene	
Fluoranthene	
Pyrene	
Benzo(a)Anthracene ^f	
Chrysene	
Benzo(b/k)Fluoranthene ^(m)	
Benzo(a)Pyrene	
Indeno(123-cd)Pyrene	
Dibenzo(a,h)Anthracene	
Benzo(ghi)Perylene	
TPH C ₅ -C ₈ (aliphatic)	
TPH C ₆ -C ₈ (aliphatic)	
TPH C ₈ -C ₁₀ (aliphatic)	
TPH C ₁₀ -C ₁₂ (aliphatic)	
TPH C ₁₂ -C ₁₆ (aromatic)	
TPH C ₁₆ -C ₂₁ (aromatic)	
TPH C ₂₁ -C ₃₅ (aromatic)	

APPENDIX IX GEOTECHNICAL TESTING RESULTS





LABORATORY REPORT



4043

Contract Number: PSL17/2171

Report Date: 31 May 2017
Client's Reference: 11-822
Client Name: E3P
Heliport Business Park
Liverpool Road
Eccles
Manchester
M30 7RU

For the attention of: Nicola Sellars

Contract Title: Black Cat Fireworks
Date Received: 9/5/2017
Date Commenced: 9/5/2017
Date Completed: 31/5/2017

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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

Checked and Approved Signatories:


R Gunson
(Director)

A Watkins
(Director)

R Berriman
(Quality Manager)

L Knight
(Senior Technician)

S Eyre
(Senior Technician)

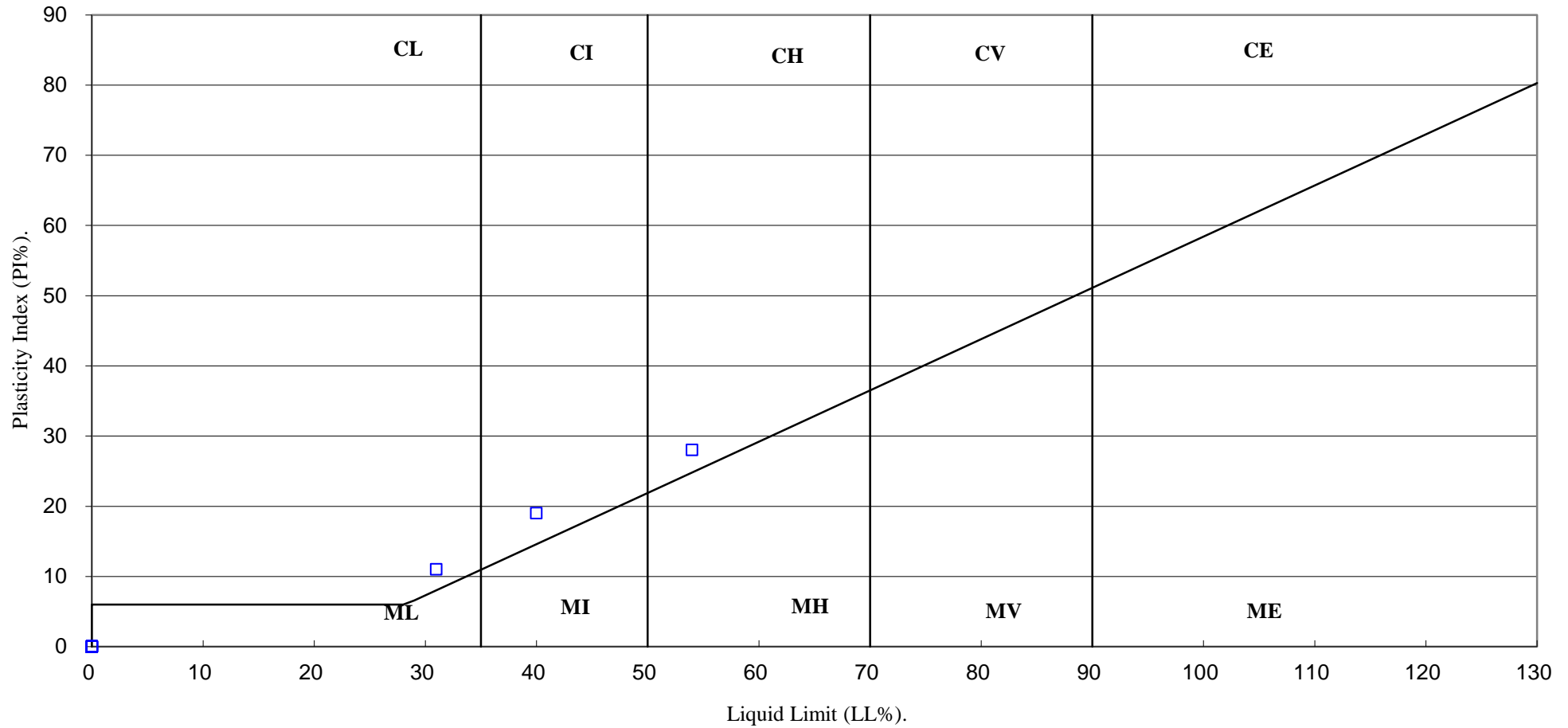
A Fry
(Senior Technician)

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fax: +44 (0)844 815 6642
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awatkins@prosoils.co.uk

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PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(BS5930 :2015)



PSL
Professional Soils Laboratory

11-822 Black Cat Fireworks

Contract No:

PSL17/2171

Client Ref:

11822-5954-NS

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

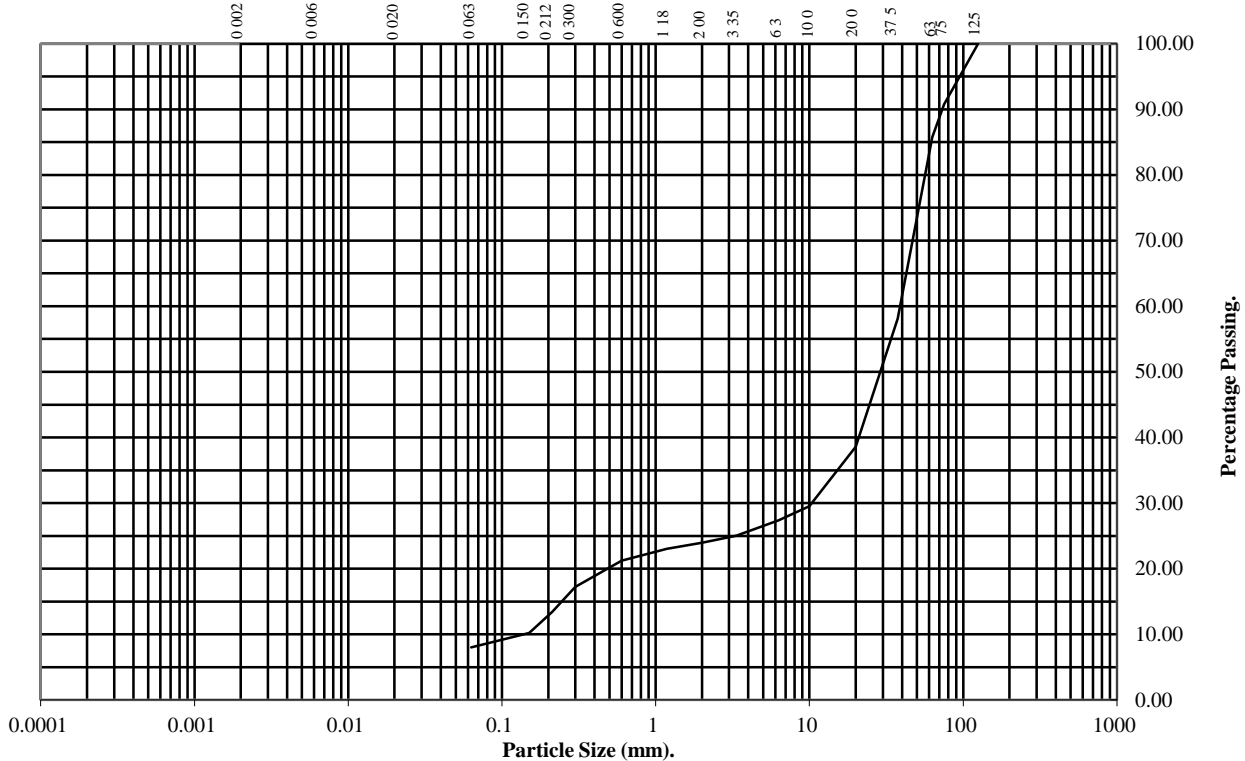
Hole Number: TP111

Top Depth (m): 1.50

Sample Number:

Base Depth(m):

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	91
63	86
37.5	58
20	39
10	30
6.3	27
3.35	25
2	24
1.18	23
0.6	21
0.3	17
0.212	13
0.15	10
0.063	8

Soil Fraction	Total Percentage
Cobbles	14
Gravel	62
Sand	16
Silt/Clay	8

Remarks:
See summary of soil descriptions



11-822 Black Cat Fireworks

Contract No:
PSL17/2171
Client Ref:
11822-5954-NS

PARTICLE SIZE DISTRIBUTION TEST

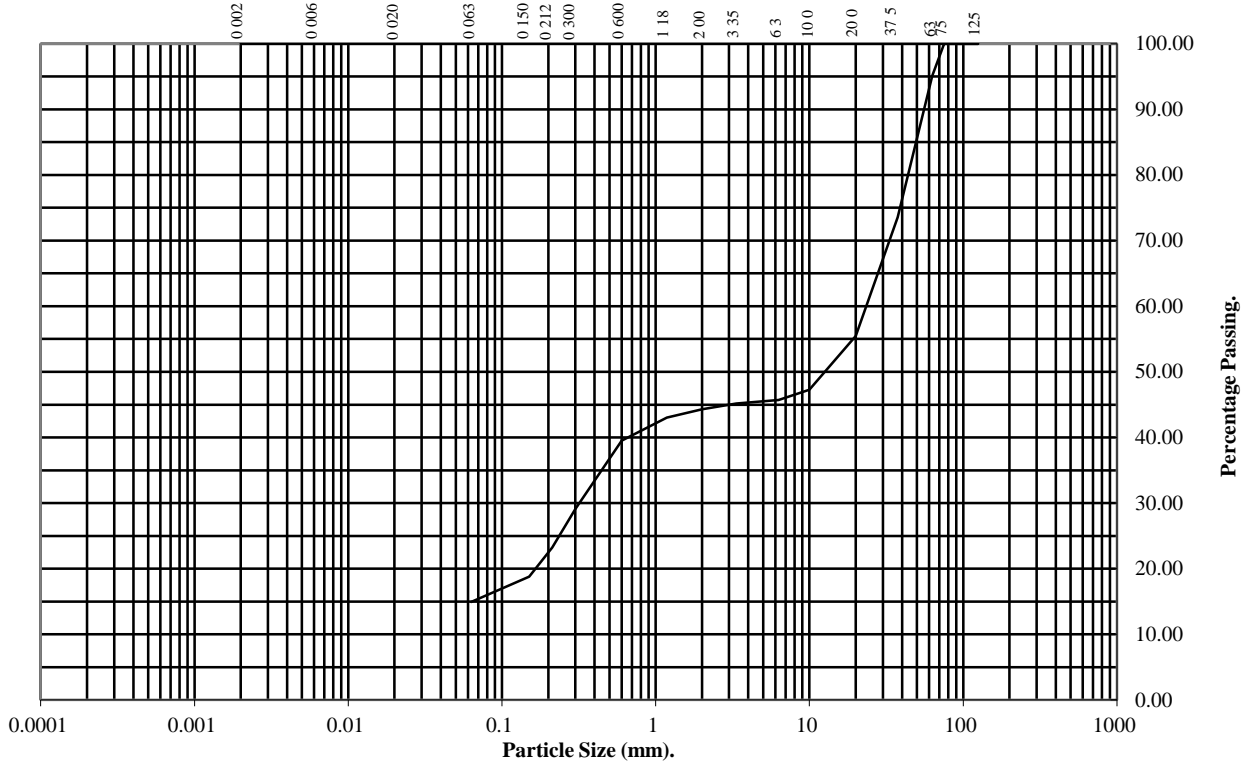
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: TP123 **Top Depth (m):** 1.00

Sample Number: **Base Depth(m):**

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	95
37.5	74
20	55
10	47
6.3	46
3.35	45
2	44
1.18	43
0.6	40
0.3	29
0.212	23
0.15	19
0.063	15

Soil Fraction	Total Percentage
Cobbles	5
Gravel	51
Sand	29
Silt/Clay	15

Remarks:
See summary of soil descriptions.



11-822 Black Cat Fireworks

Contract No:
PSL17/2171
Client Ref:
11822-5954-NS



LABORATORY REPORT



4043

Contract Number: PSL17/2398

Report Date: 15 June 2017
Client's Reference: 11822
Client Name: E3P
Heliport Business Park
Liverpool Road
Eccles
Manchester
M30 7RU

For the attention of: Nicola Sellars

Contract Title: Black Cat Fireworks
Date Received: 23/5/2017
Date Commenced: 23/5/2017
Date Completed: 15/6/2017

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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

Checked and Approved Signatories:

R Gunson
(Director)

A Watkins
(Director)

R Berriman
(Quality Manager)

L Knight
(Senior Technician)


S Eyre
(Senior Technician)

A Fry
(Senior Technician)

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PARTICLE SIZE DISTRIBUTION TEST

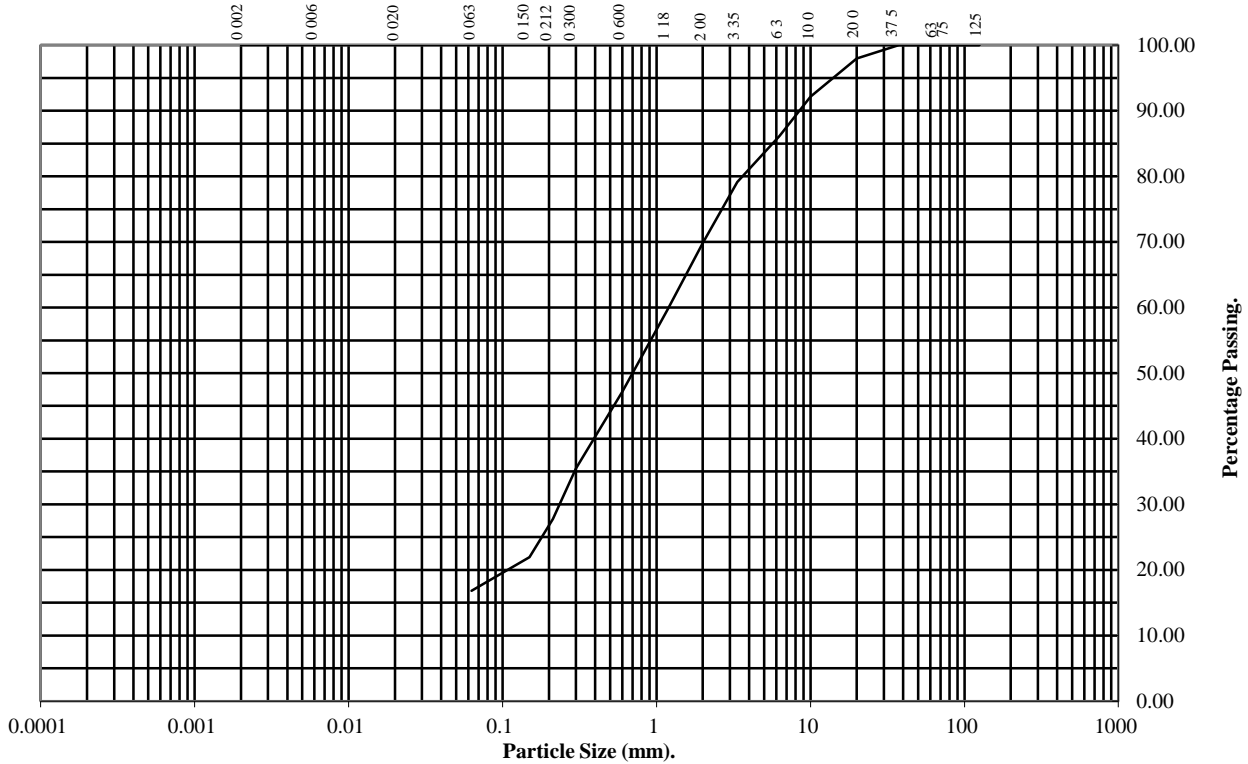
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: CP101 Top Depth (m): 0.30

Sample Number: Base Depth(m): 1.00

Sample Type: Bulk



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	92
6.3	86
3.35	79
2	70
1.18	60
0.6	47
0.3	35
0.212	28
0.15	22
0.063	17

Soil Fraction	Total Percentage
Cobbles	0
Gravel	30
Sand	53
Silt/Clay	17

Remarks:
See Summary of Soil Descriptions



11-822 Black Cat Fireworks

Contract No:
PSL17/2398
Client Ref:
11822-5954-NS

