



The Sizewell C Project

6.3 Volume 2 Main Development Site Chapter 18 Geology and Land Quality Appendix 18A Phase 2 Geo-environmental Interpretative Report Part 11 of 11

Revision: 1.0
Applicable Regulation: Regulation 5(2)(a)
PINS Reference Number: EN010012

May 2020

Planning Act 2008
Infrastructure Planning (Applications: Prescribed
Forms and Procedure) Regulations 2009



NOT PROTECTIVELY MARKED

Appendix F – Ground Investigation Factual Reports

Structural Soils 2015

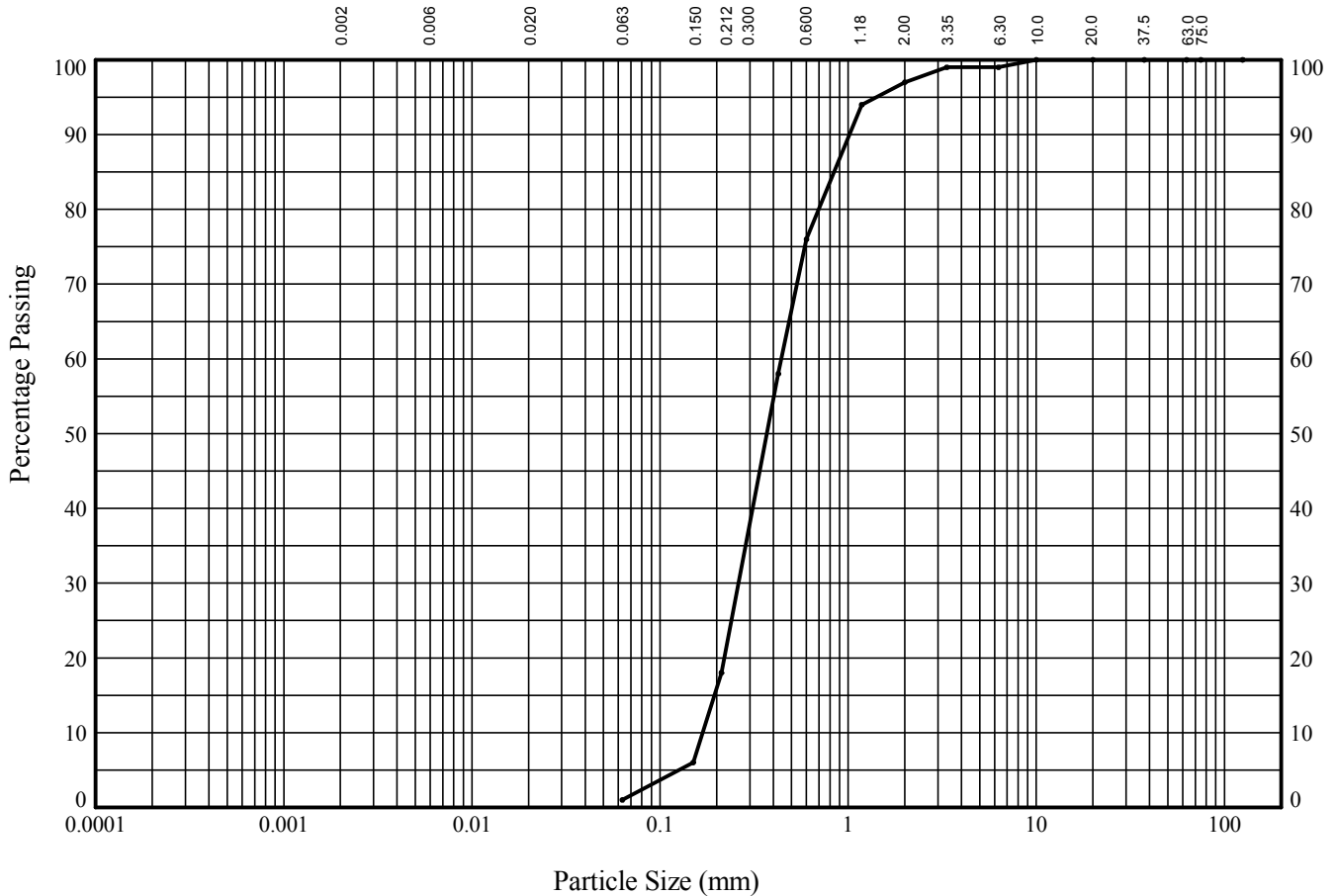
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NOT PROTECTIVELY MARKED

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP9** Sample Ref: **7** Sample Type: **B** Depth (m): **3.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	99
2.00	97
1.18	94
0.600	76
0.425	58
0.212	18
0.150	6
0.063	1

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	99
2.00	97
1.18	94
0.600	76
0.425	58
0.212	18
0.150	6
0.063	1

Soil Fraction	Sieve Percentage
GRAVEL	3
SAND	96
SILT/CLAY	1

Soil Description:
Light brown slightly clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



STRUCTURAL SOILS
 The Potteries
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 Castleford
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Compiled By		Date
		17/09/15
Contract		Contract Ref:
SZC 2015 Onshore GI		763468



PARTICLE SIZE DISTRIBUTION TEST

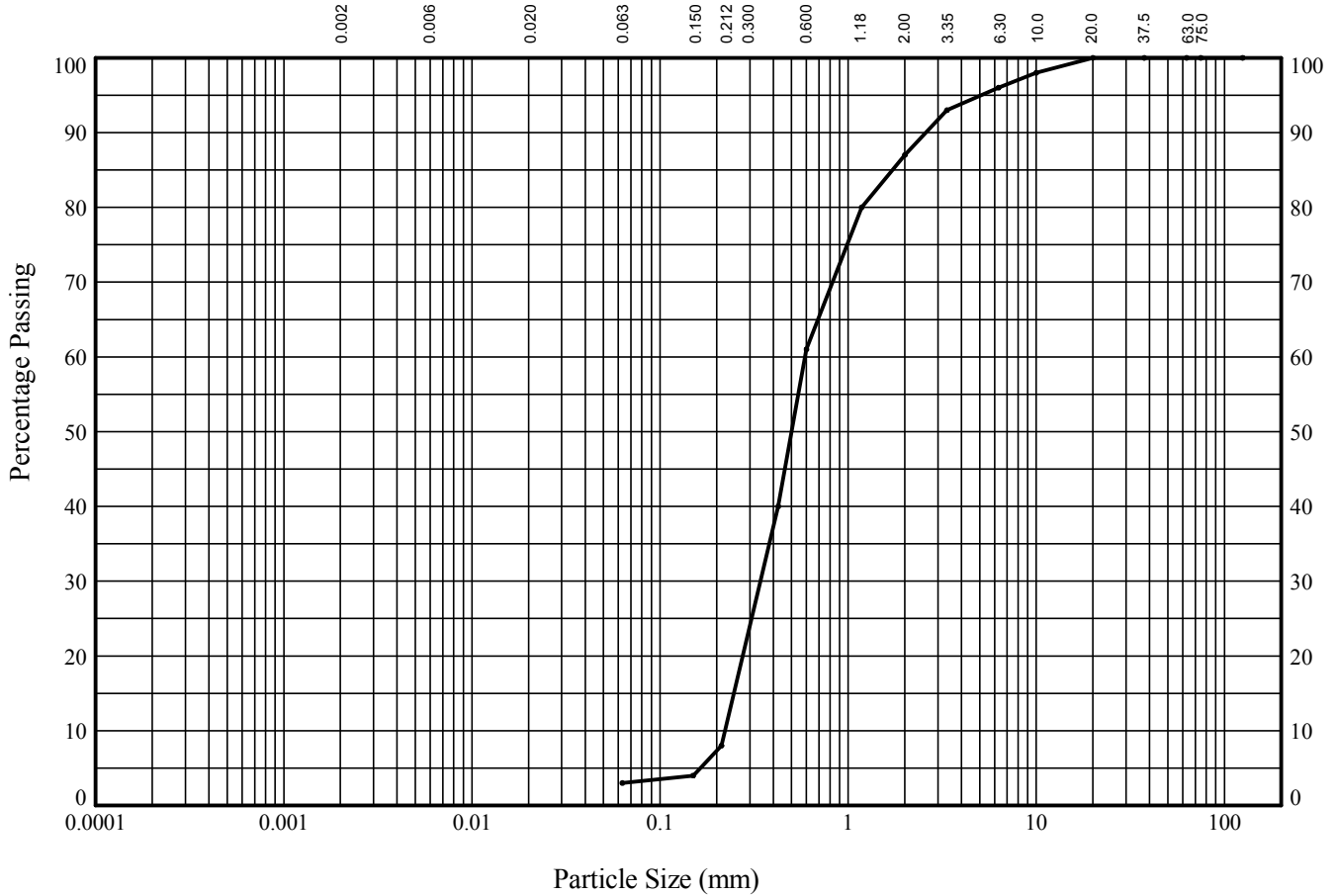
In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP9**

Sample Ref: **9**

Sample Type: **B**

Depth (m): **4.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	98
6.30	96
3.35	93
2.00	87
1.18	80
0.600	61
0.425	40
0.212	8
0.150	4
0.063	3

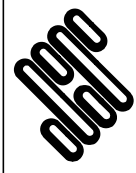
Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	98
6.30	96
3.35	93
2.00	87
1.18	80
0.600	61
0.425	40
0.212	8
0.150	4
0.063	3

Soil Fraction	Sieve Percentage
GRAVEL	13
SAND	84
SILT/CLAY	3

Soil Description:
Orange light brown slightly clayey gravelly SAND

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 Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ, Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk



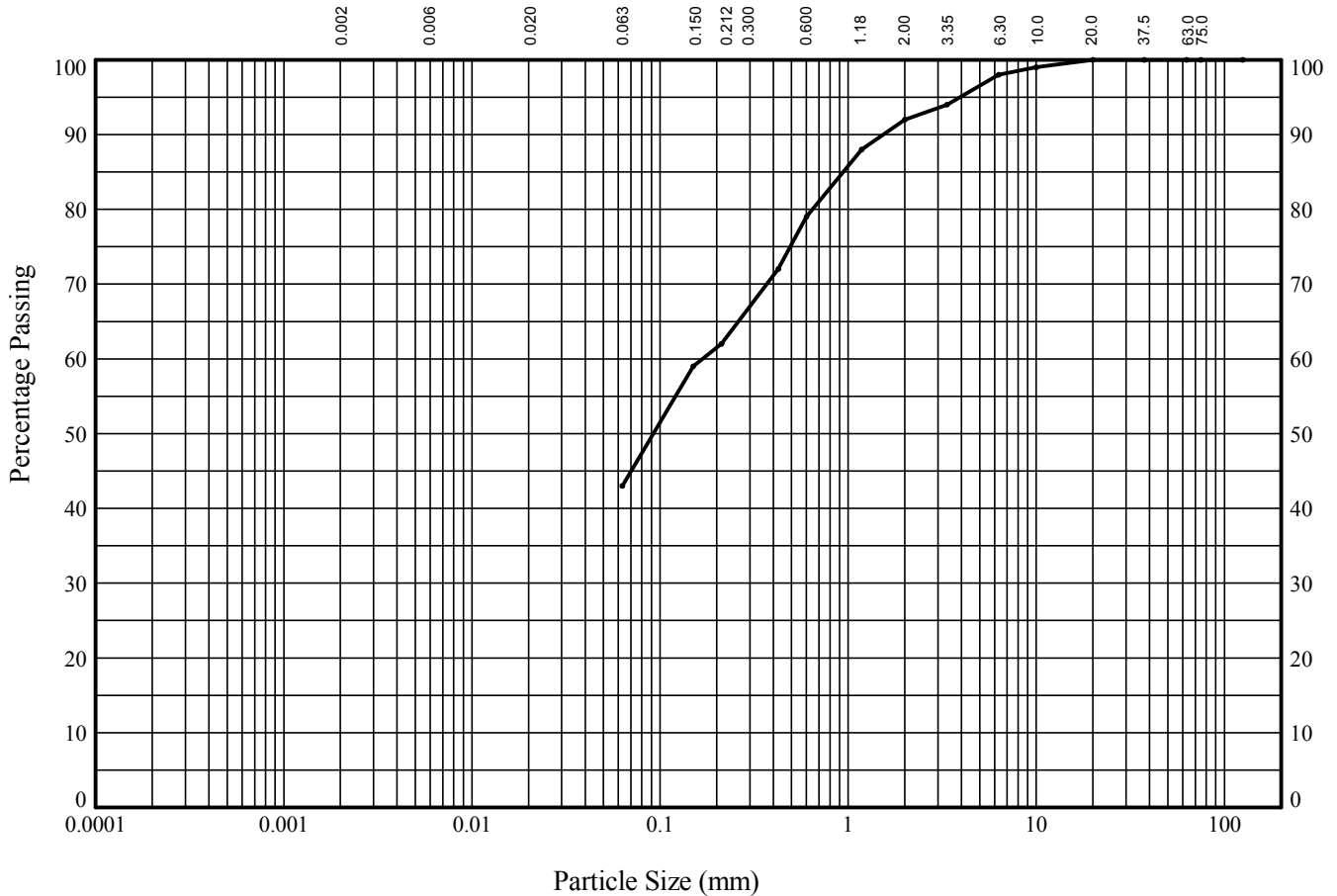
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP9** Sample Ref: **11** Sample Type: **B** Depth (m): **5.00**



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

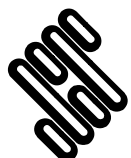
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	94
2.00	92
1.18	88
0.600	79
0.425	72
0.212	62
0.150	59
0.063	43

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	8
SAND	49
SILT/CLAY	43

Soil Description:
Orange brown and grey sandy slightly gravelly CLAY

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PARTICLE SIZE DISTRIBUTION TEST

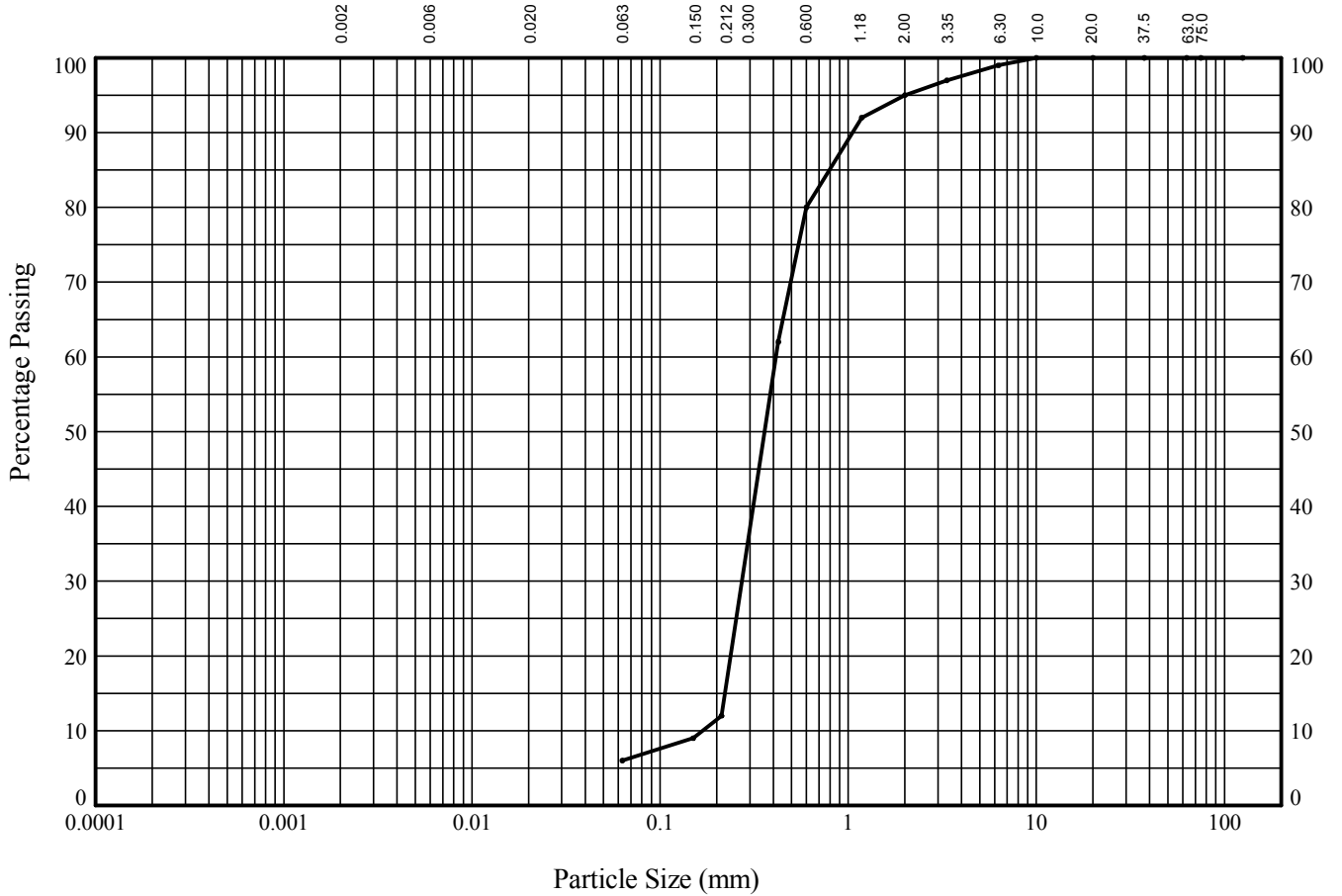
In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP9**

Sample Ref: **13**

Sample Type: **B**

Depth (m): **6.00**



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

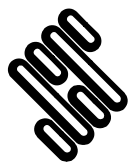
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	97
2.00	95
1.18	92
0.600	80
0.425	62
0.212	12
0.150	9
0.063	6

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	5
SAND	89
SILT/CLAY	6

Soil Description:
Light brown slightly gravelly SAND

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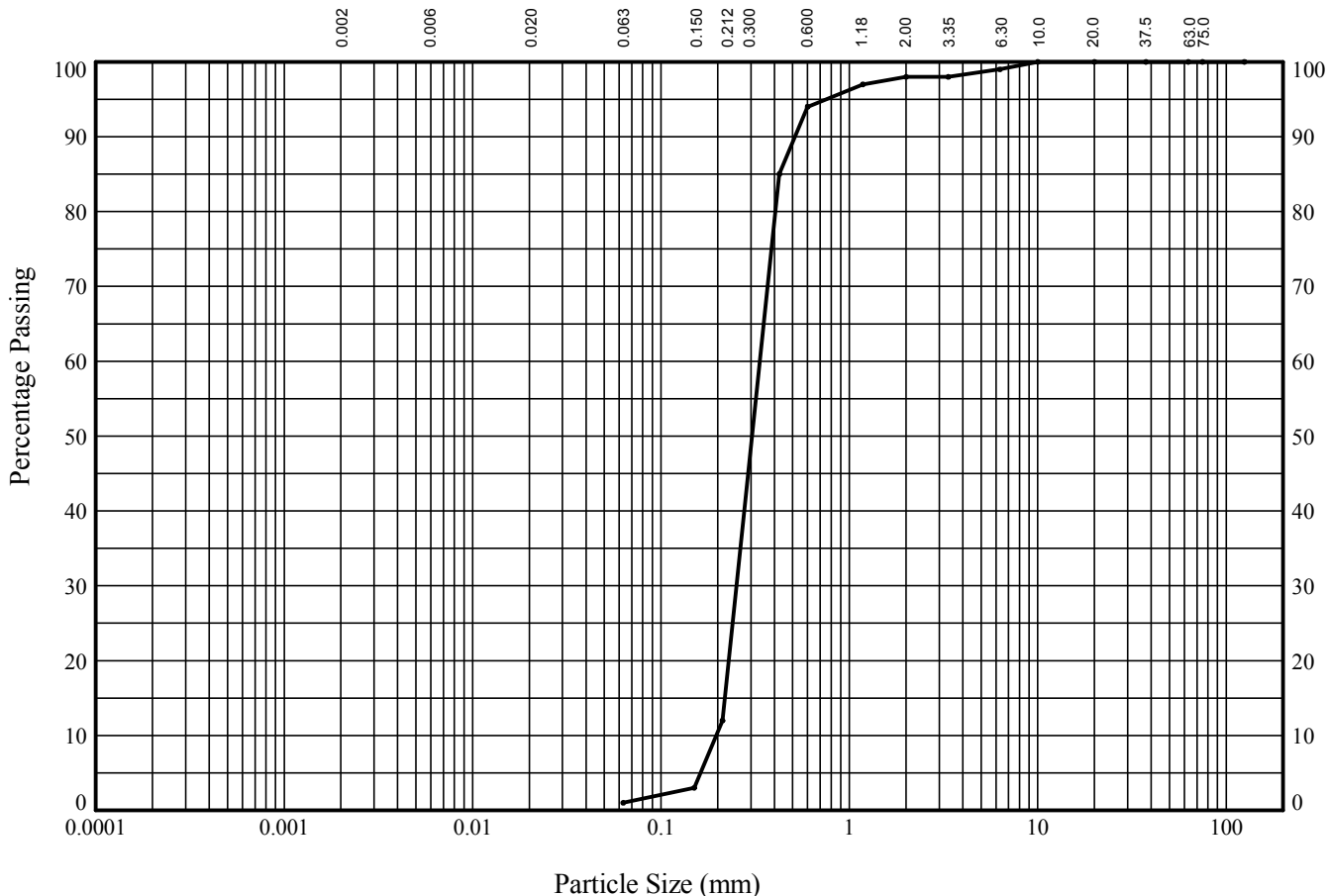
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP9** Sample Ref: **17** Sample Type: **B** Depth (m): **8.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	98
2.00	98
1.18	97
0.600	94
0.425	85
0.212	12
0.150	3
0.063	1

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	97
SILT/CLAY	1

Soil Description:
Light brown slightly clayey slightly gravelly SAND

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PARTICLE SIZE DISTRIBUTION TEST

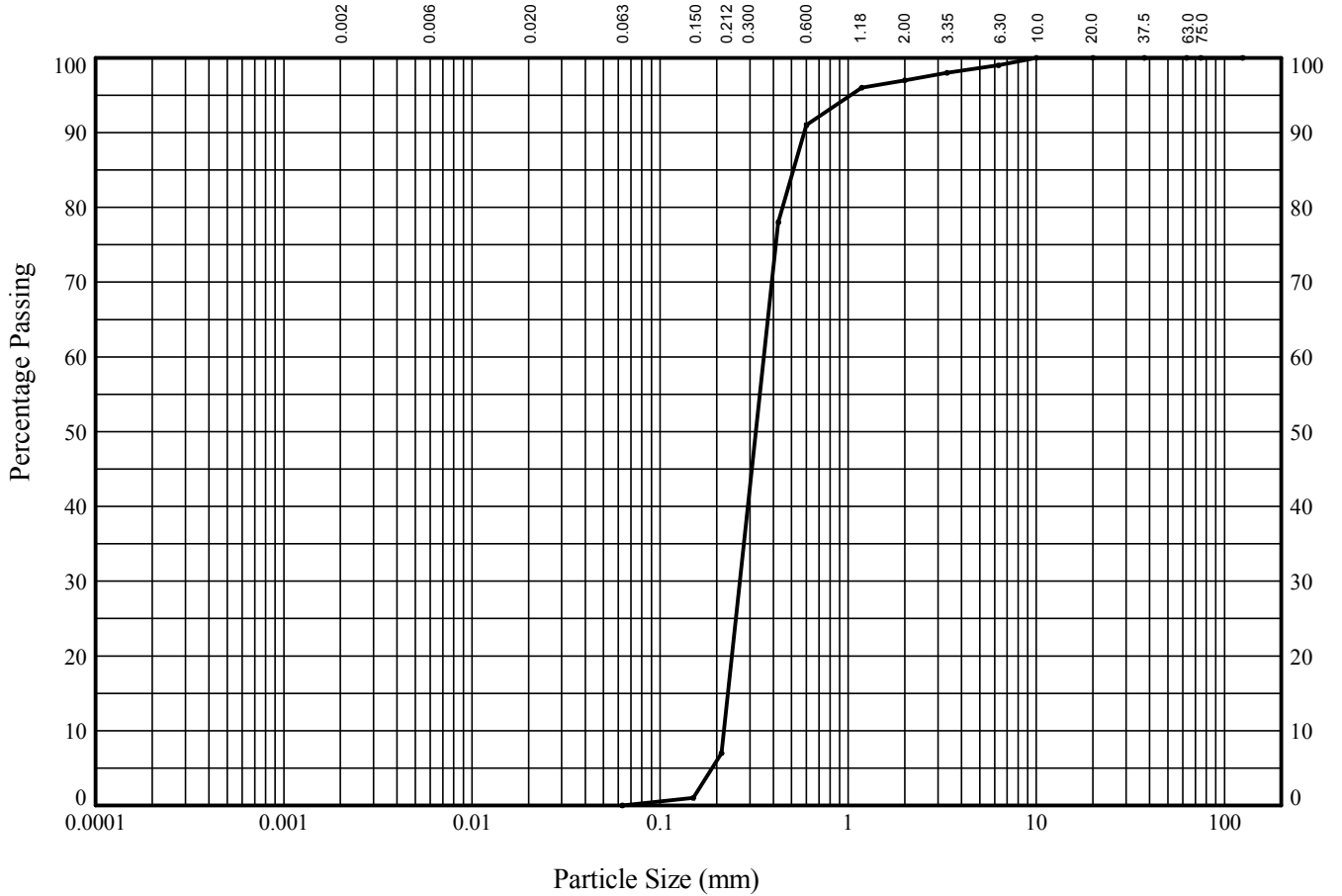
In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP9**

Sample Ref: **19**

Sample Type: **B**

Depth (m): **9.00**



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

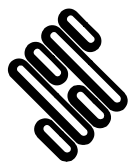
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	98
2.00	97
1.18	96
0.600	91
0.425	78
0.212	7
0.150	1
0.063	0

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	98
2.00	97
1.18	96
0.600	91
0.425	78
0.212	7
0.150	1
0.063	0

Soil Fraction	Sieve Percentage
GRAVEL	3
SAND	97
SILT/CLAY	0

Soil Description:
Light brown slightly gravelly SAND

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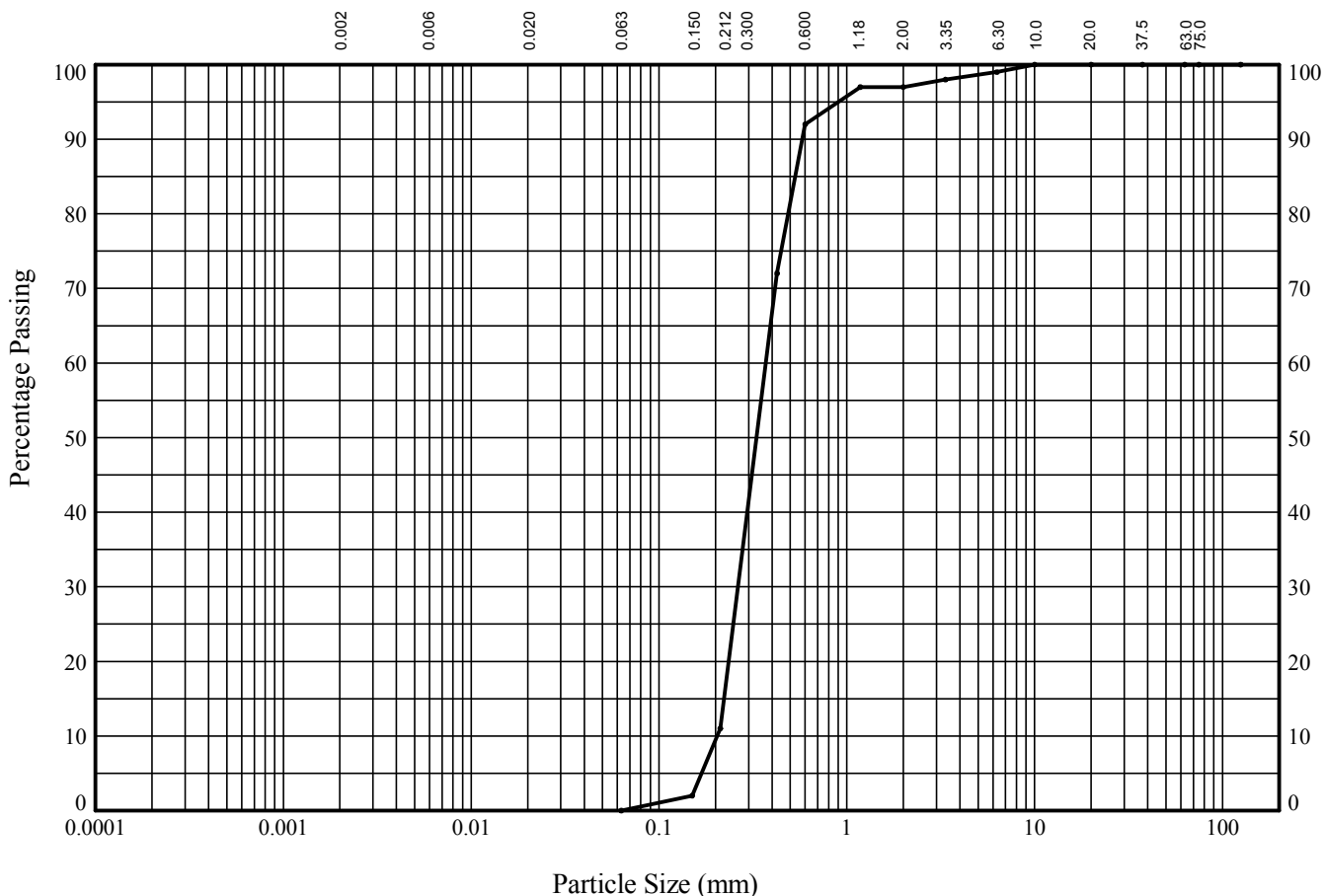
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP9** Sample Ref: **21** Sample Type: **B** Depth (m): **10.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	98
2.00	97
1.18	97
0.600	92
0.425	72
0.212	11
0.150	2
0.063	0

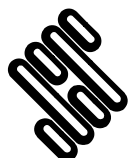
Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	3
SAND	97
SILT/CLAY	0

Soil Description:
Light brown slightly gravelly SAND

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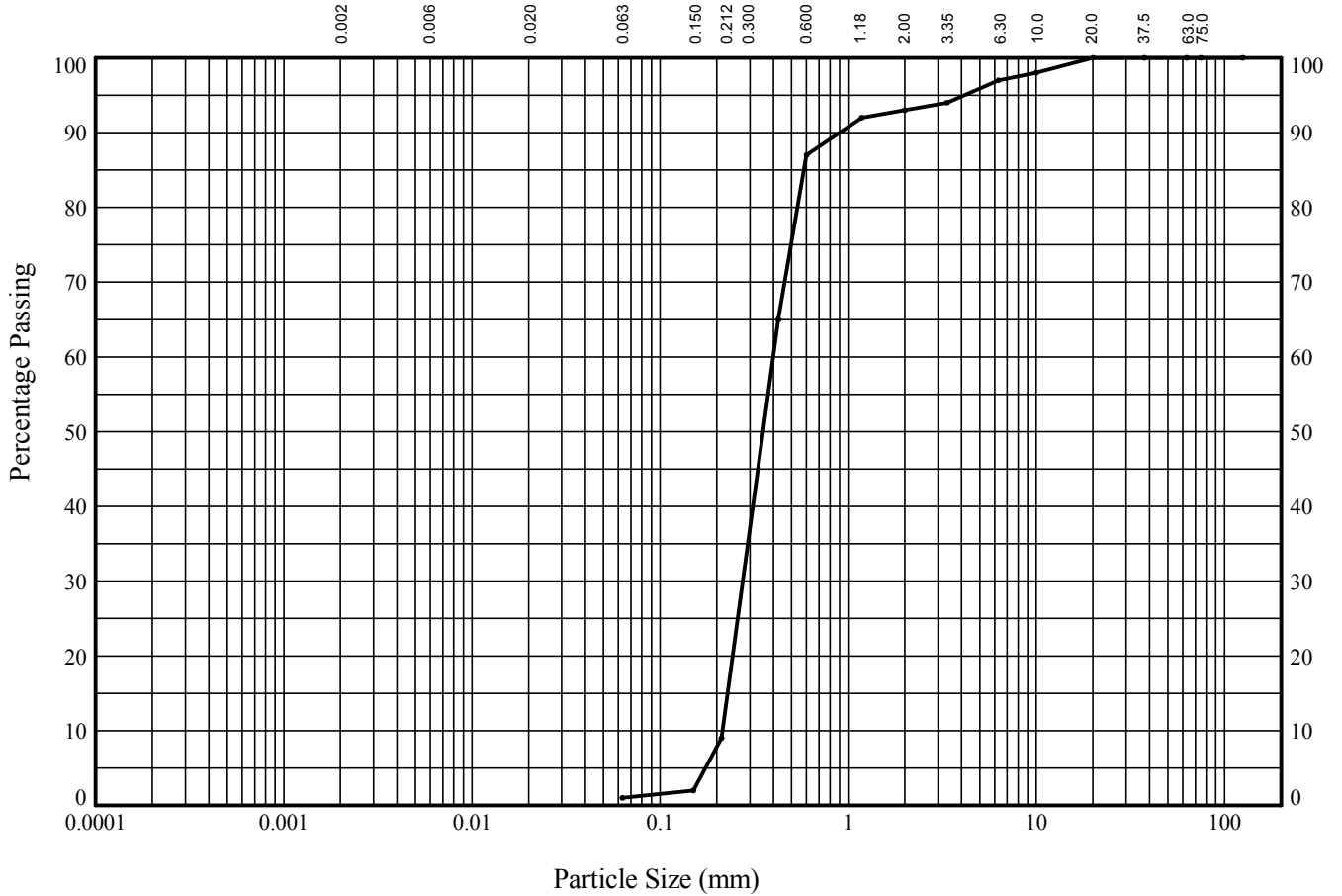
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP9** Sample Ref: **25** Sample Type: **B** Depth (m): **12.00**



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



BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	98
6.30	97
3.35	94
2.00	93
1.18	92
0.600	87
0.425	65
0.212	9
0.150	2
0.063	1

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	7
SAND	92
SILT/CLAY	1

Soil Description:
Orange slightly clayey gravelly SAND

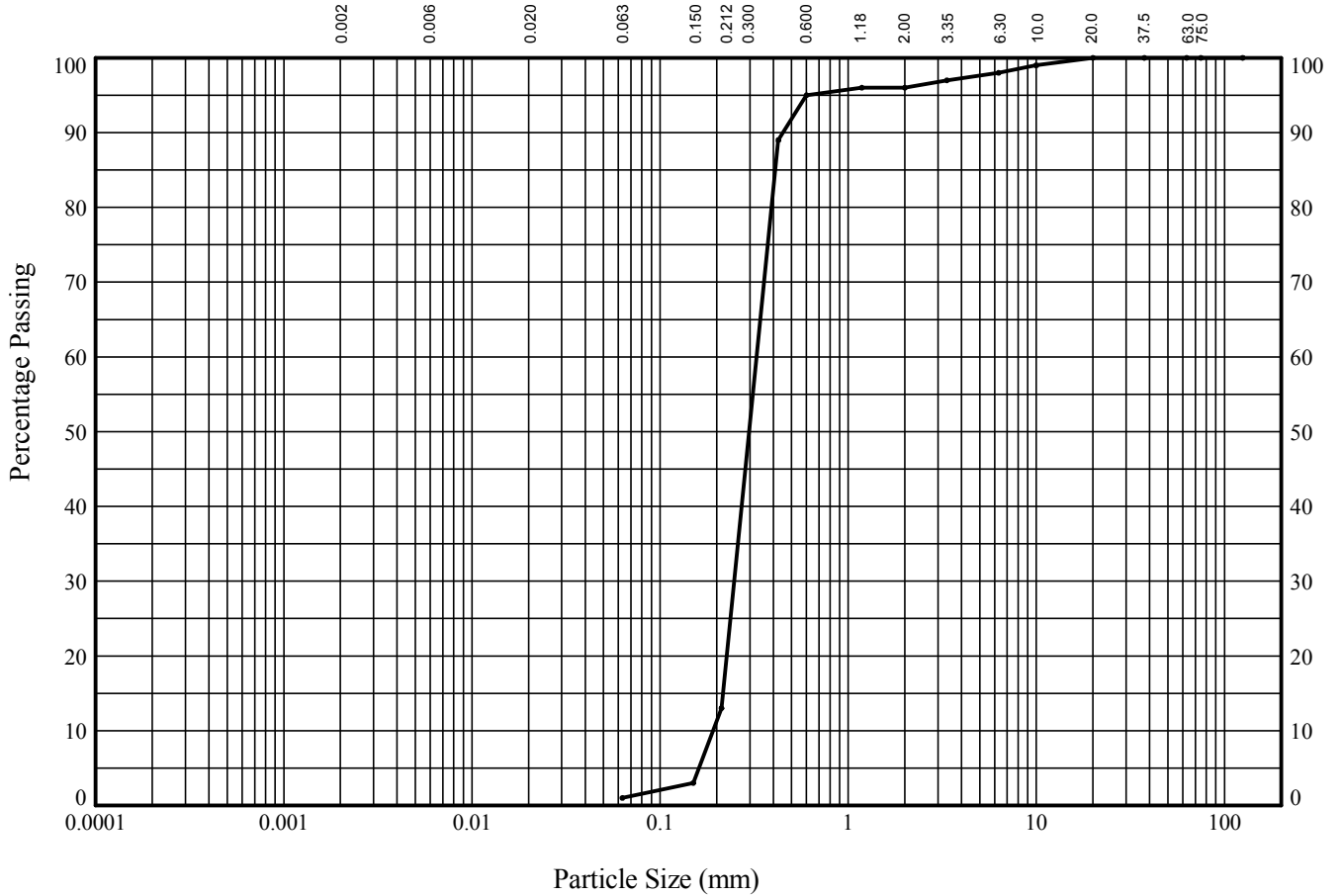
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	Contract		Contract Ref:
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP9** Sample Ref: **27** Sample Type: **B** Depth (m): **13.00**



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

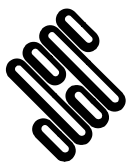
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	97
2.00	96
1.18	96
0.600	95
0.425	89
0.212	13
0.150	3
0.063	1

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	4
SAND	95
SILT/CLAY	1

Soil Description:
Light brown slightly clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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PARTICLE SIZE DISTRIBUTION TEST

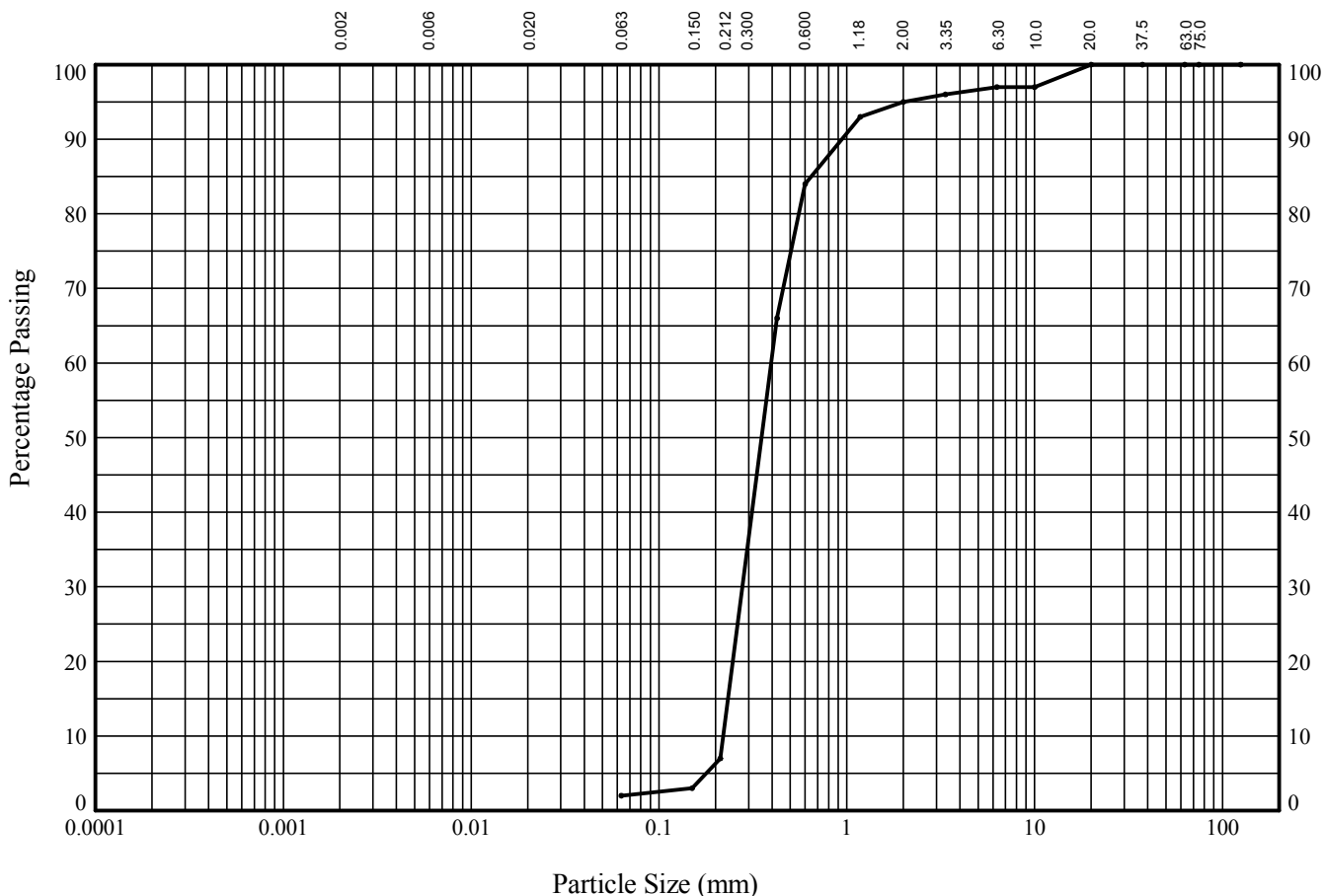
In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP9**

Sample Ref: **29**

Sample Type: **B**

Depth (m): **14.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	97
6.30	97
3.35	96
2.00	95
1.18	93
0.600	84
0.425	66
0.212	7
0.150	3
0.063	2

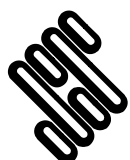
Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	97
6.30	97
3.35	96
2.00	95
1.18	93
0.600	84
0.425	66
0.212	7
0.150	3
0.063	2

Soil Fraction	Sieve Percentage
GRAVEL	5
SAND	93
SILT/CLAY	2

Soil Description:

Dark orange brown slightly clayey gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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Contract Ref:

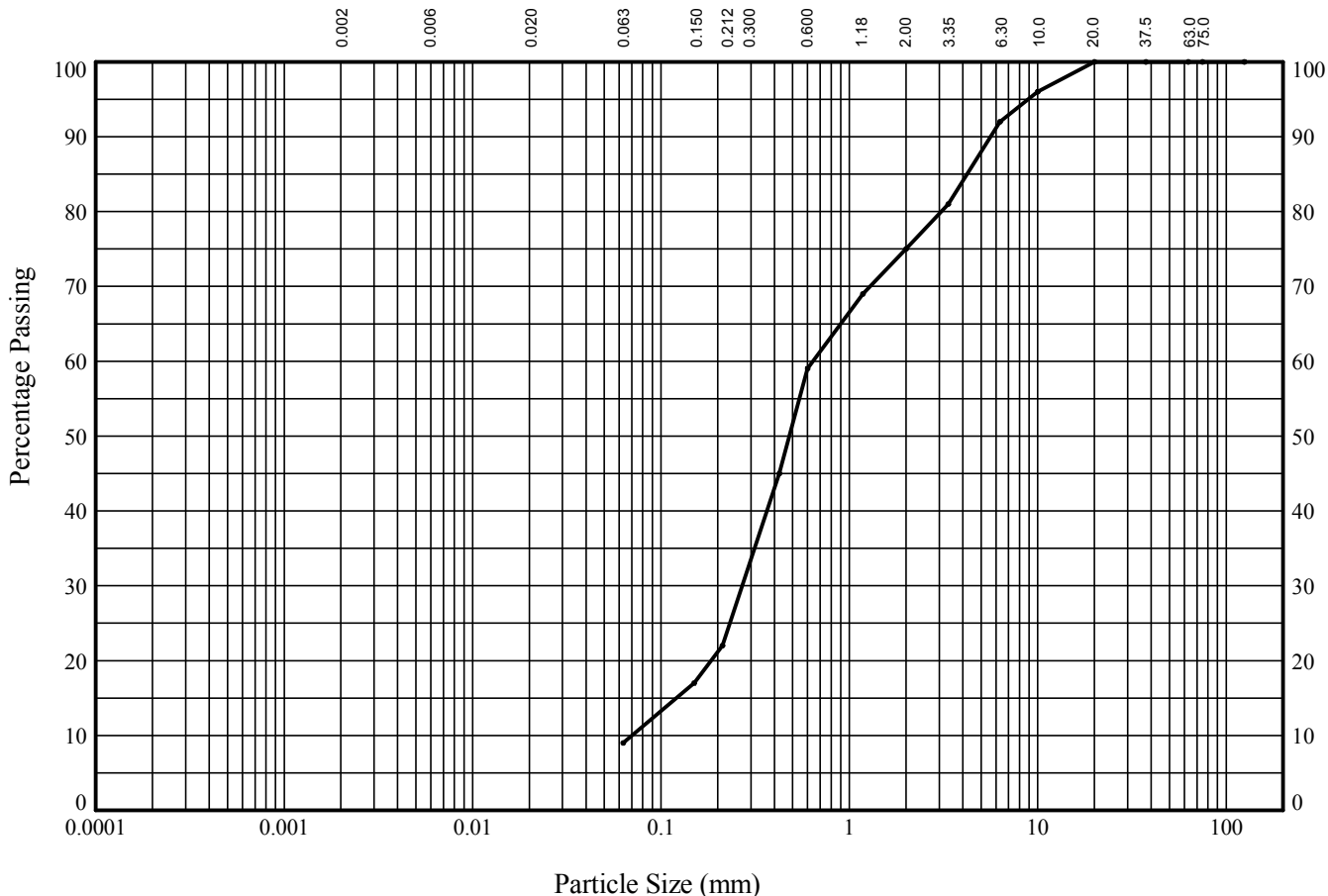
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: CPB BP9 **Sample Ref:** 31 **Sample Type:** B **Depth (m):** 15.00



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

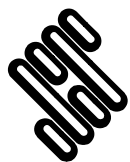
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	96
6.30	92
3.35	81
2.00	75
1.18	69
0.600	59
0.425	45
0.212	22
0.150	17
0.063	9

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	25
SAND	66
SILT/CLAY	9

Soil Description:
Orange brown clayey very gravelly SAND (with shell fragments)

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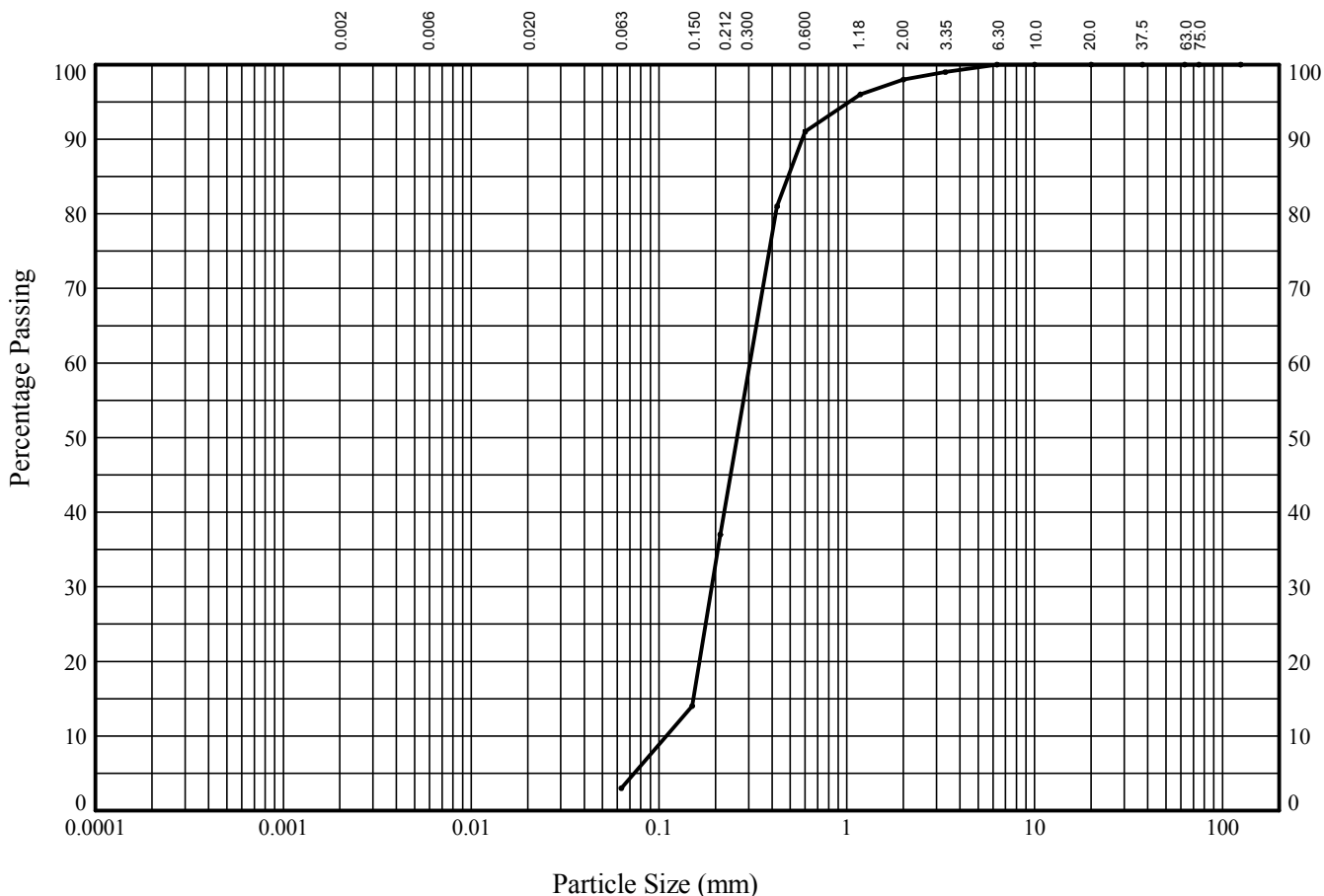
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		17/09/15
Contract		Contract Ref:
SZC 2015 Onshore GI		763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP9** Sample Ref: **33** Sample Type: **B** Depth (m): **16.00**



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

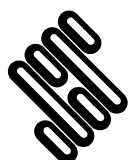
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	99
2.00	98
1.18	96
0.600	91
0.425	81
0.212	37
0.150	14
0.063	3

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	95
SILT/CLAY	3

Soil Description:
Brown orange slightly clayey slightly gravelly SAND

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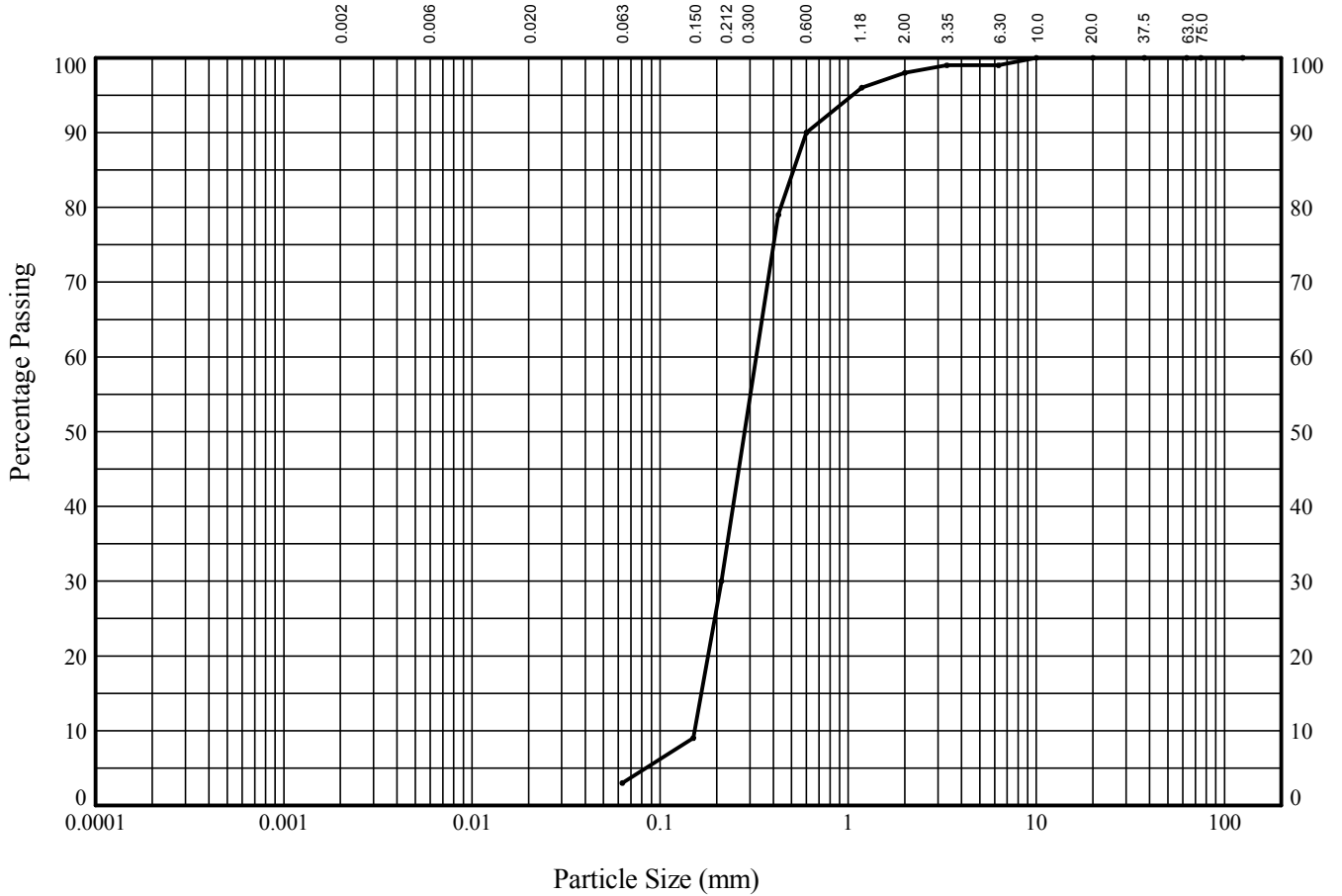
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Compiled By		Date
Contract		17/09/15
SZC 2015 Onshore GI		Contract Ref: 763468

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP9** Sample Ref: **35** Sample Type: **B** Depth (m): **17.00**



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



BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	99
2.00	98
1.18	96
0.600	90
0.425	79
0.212	30
0.150	9
0.063	3

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	99
2.00	98
1.18	96
0.600	90
0.425	79
0.212	30
0.150	9
0.063	3

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	95
SILT/CLAY	3

Soil Description:
Light brown orange slightly clayey slightly gravelly SAND

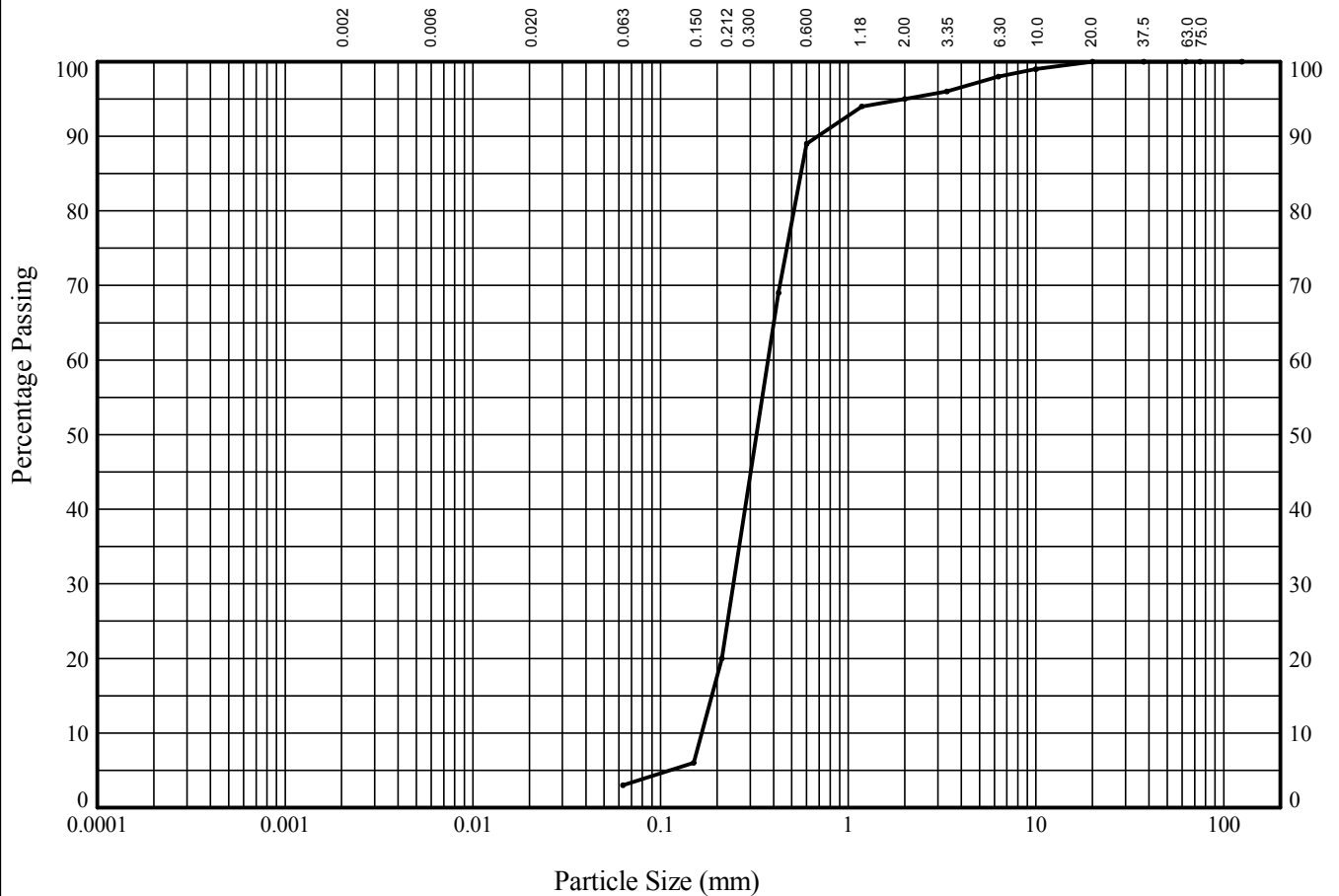
Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

 <p>STRUCTURAL SOILS The Potteries Pottery Street Castleford W. Yorkshire WF10 1NJ</p>	Compiled By		Date
			17/09/15
	Contract		Contract Ref:
SZC 2015 Onshore GI		763468	
			

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP9** Sample Ref: **37** Sample Type: **B** Depth (m): **18.00**



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

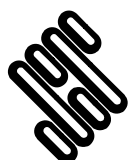
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	96
2.00	95
1.18	94
0.600	89
0.425	69
0.212	20
0.150	6
0.063	3

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	96
2.00	95
1.18	94
0.600	89
0.425	69
0.212	20
0.150	6
0.063	3

Soil Fraction	Sieve Percentage
GRAVEL	5
SAND	92
SILT/CLAY	3

Soil Description:
Dark orange slightly clayey gravelly SAND

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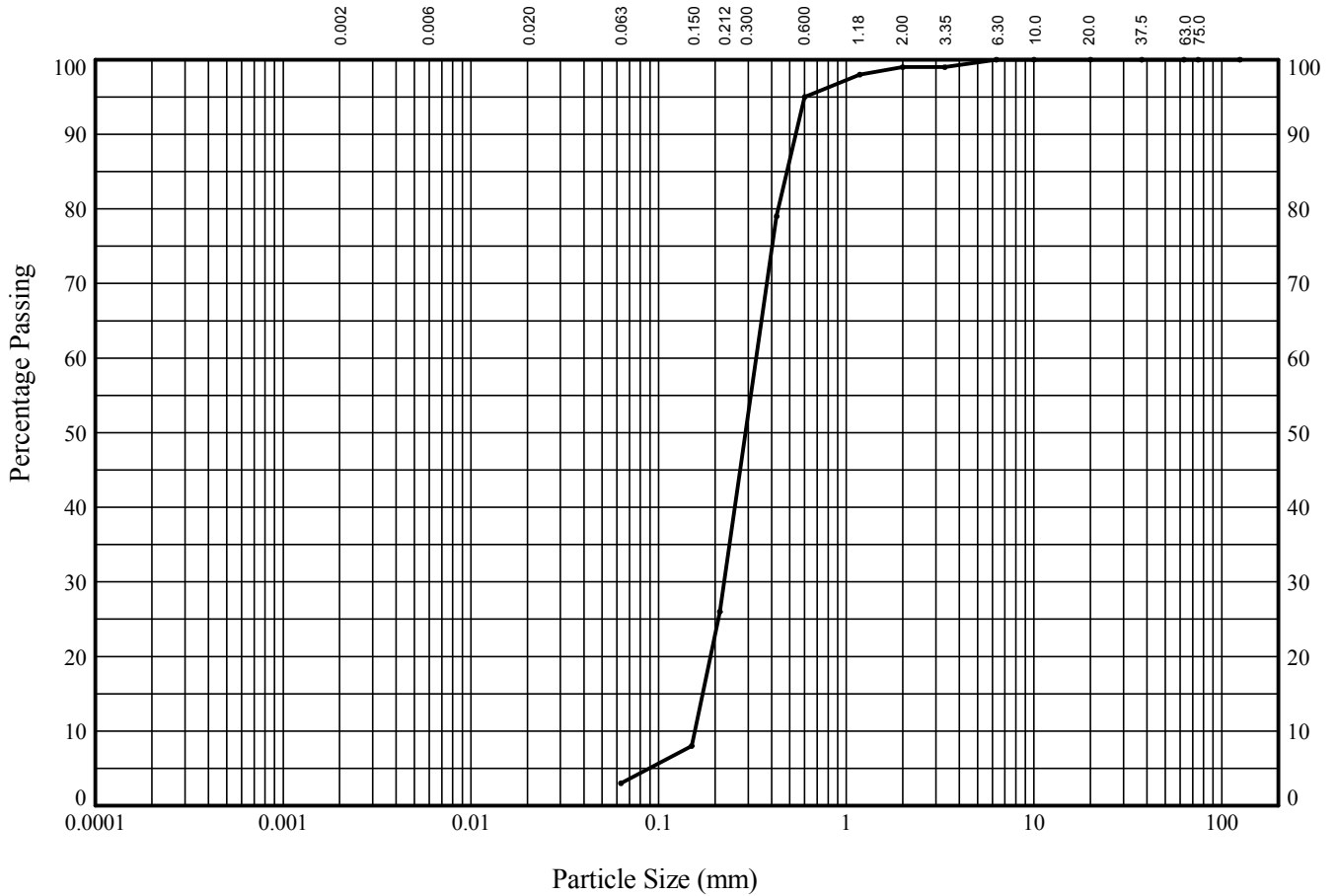
Compiled By		Date
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SZC 2015 Onshore GI	763468	



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP9** Sample Ref: **39** Sample Type: **B** Depth (m): **19.00**



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

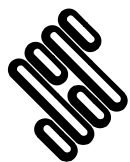
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	99
2.00	99
1.18	98
0.600	95
0.425	79
0.212	26
0.150	8
0.063	3

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	1
SAND	96
SILT/CLAY	3

Soil Description:
Orange brown slightly clayey slightly gravelly SAND

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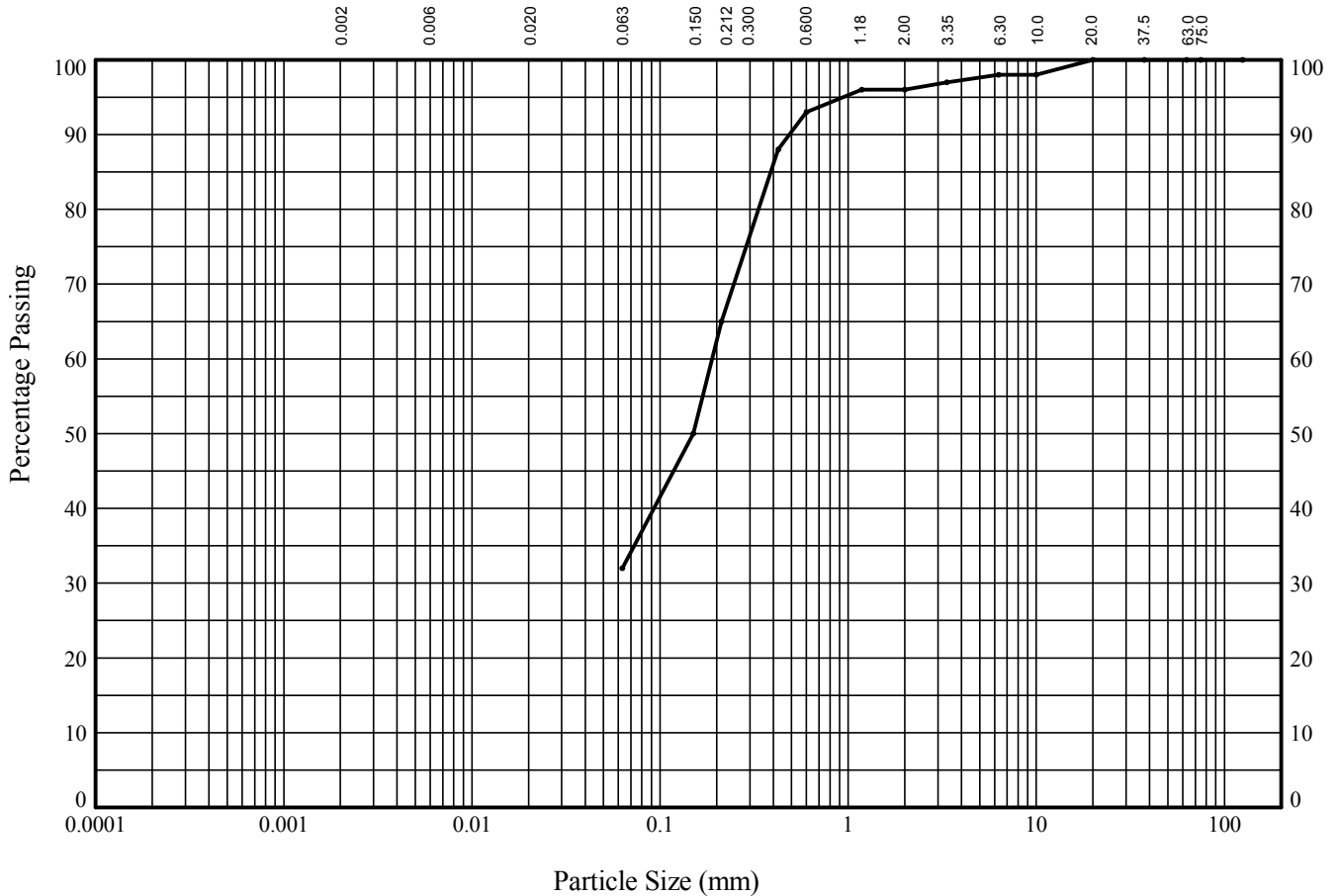
Compiled By		Date
		17/09/15
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10** Sample Ref: **3** Sample Type: **B** Depth (m): **1.00**



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

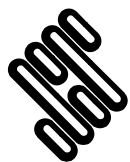
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	98
6.30	98
3.35	97
2.00	96
1.18	96
0.600	93
0.425	88
0.212	65
0.150	50
0.063	32

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	98
6.30	98
3.35	97
2.00	96
1.18	96
0.600	93
0.425	88
0.212	65
0.150	50
0.063	32

Soil Fraction	Sieve Percentage
GRAVEL	4
SAND	64
SILT/CLAY	32

Soil Description:
Brown sandy slightly gravelly CLAY

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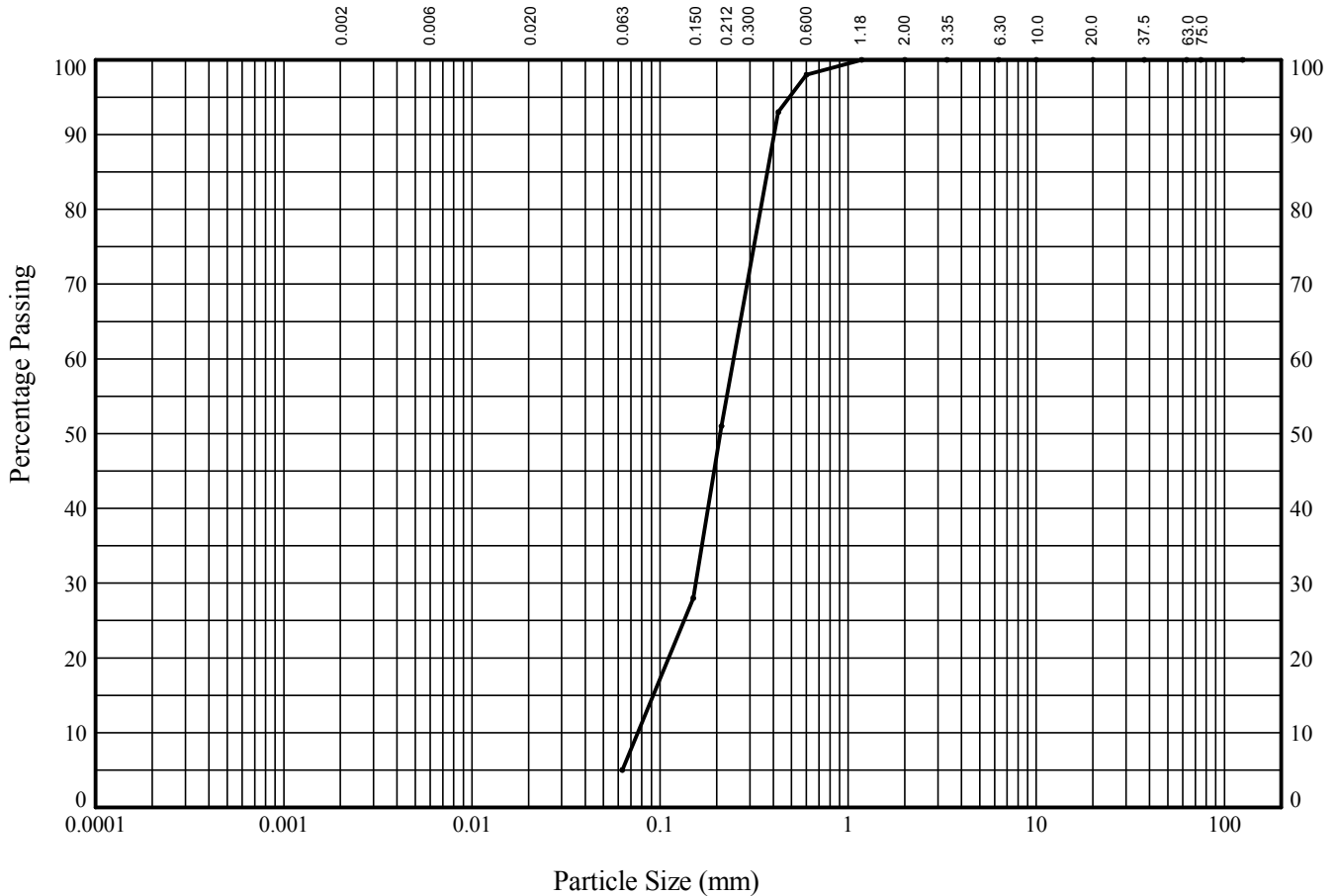
Compiled By		Date
		17/09/15
Contract		Contract Ref:
SZC 2015 Onshore GI		763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10** Sample Ref: **7** Sample Type: **B** Depth (m): **3.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	98
0.425	93
0.212	51
0.150	28
0.063	5

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	95
SILT/CLAY	5

Soil Description:
Orange brown clayey SAND

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PARTICLE SIZE DISTRIBUTION TEST

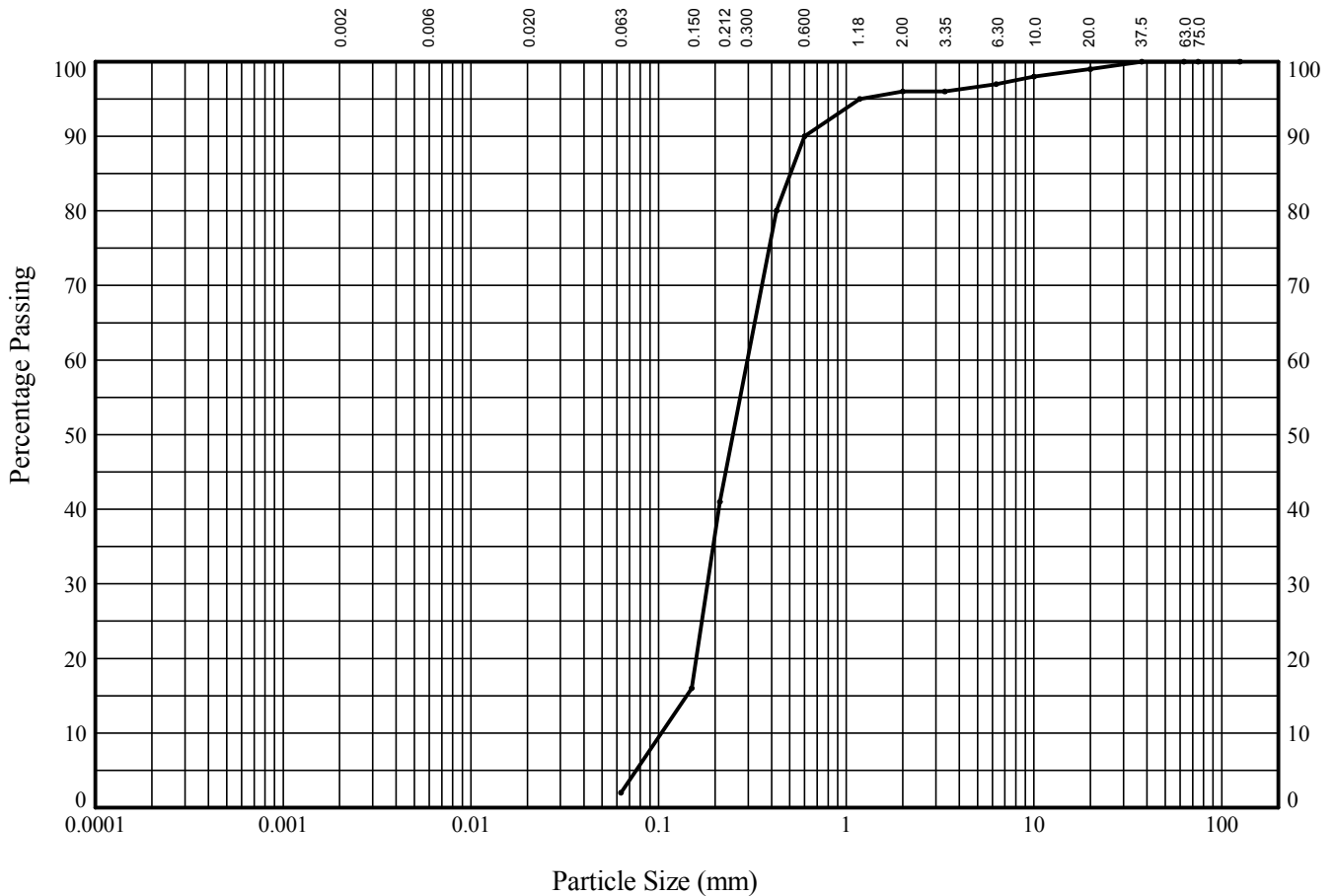
In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10**

Sample Ref: **9**

Sample Type: **B**

Depth (m): **4.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	99
10.0	98
6.30	97
3.35	96
2.00	96
1.18	95
0.600	90
0.425	80
0.212	41
0.150	16
0.063	2

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	4
SAND	94
SILT/CLAY	2

Soil Description:
Light brown slightly clayey slightly gravelly SAND

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GINI_LIBRARY_V8_05 GLB LibVersion: v8_05 - Lib0004 ProjVersion: v8_05 - Core+Logs+Geotech Lab-Bristol - 0003 | Graph L - PSD - EC7 | 763468 - SZC 2015 ONSHORE GI.GPJ - v8_05 | 17/09/15 - 10:46 | SA. Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk



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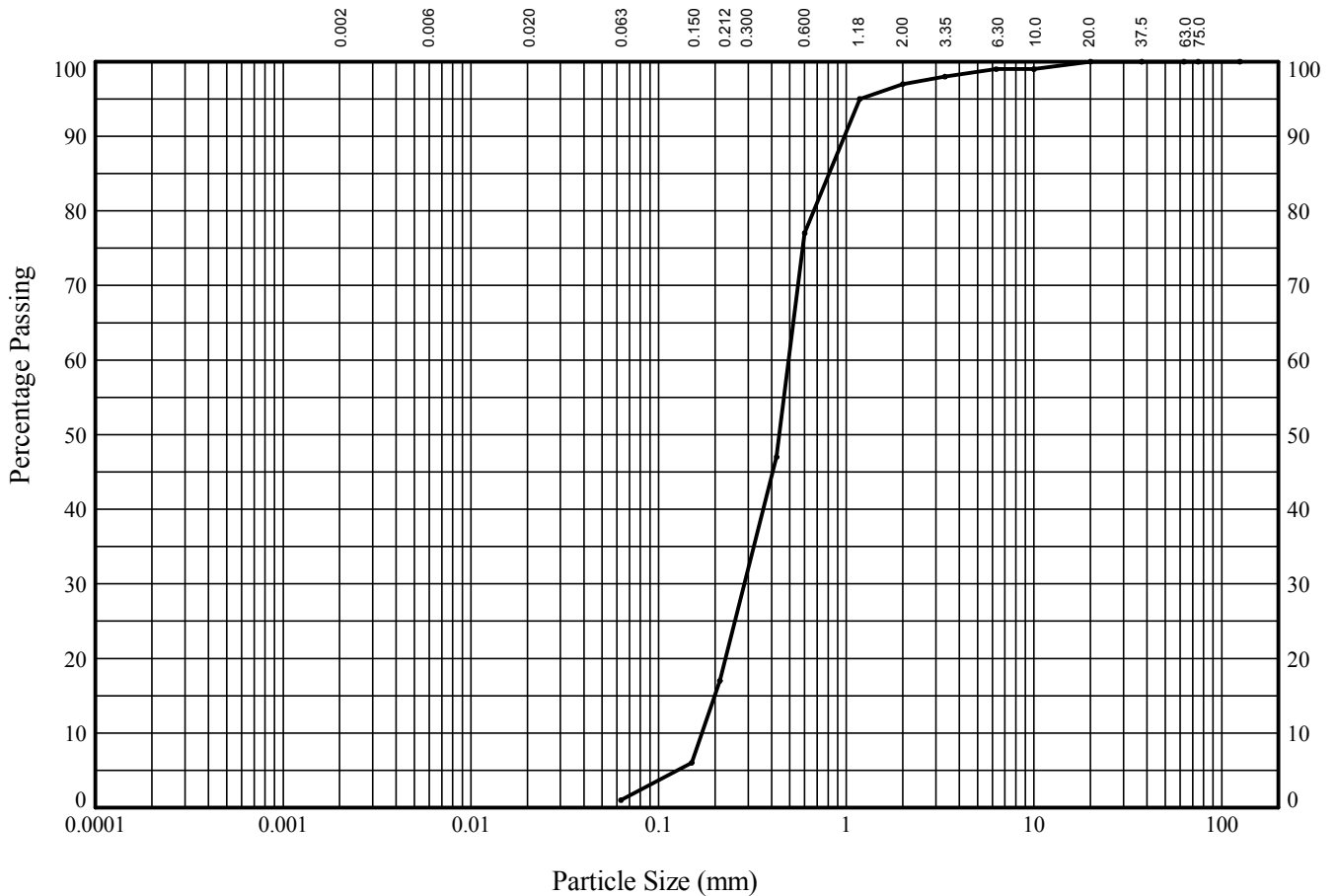
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10** Sample Ref: **11** Sample Type: **B** Depth (m): **5.00**



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

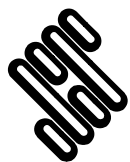
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	99
3.35	98
2.00	97
1.18	95
0.600	77
0.425	47
0.212	17
0.150	6
0.063	1

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	3
SAND	96
SILT/CLAY	1

Soil Description:
Light brown slightly clayey slightly gravelly SAND

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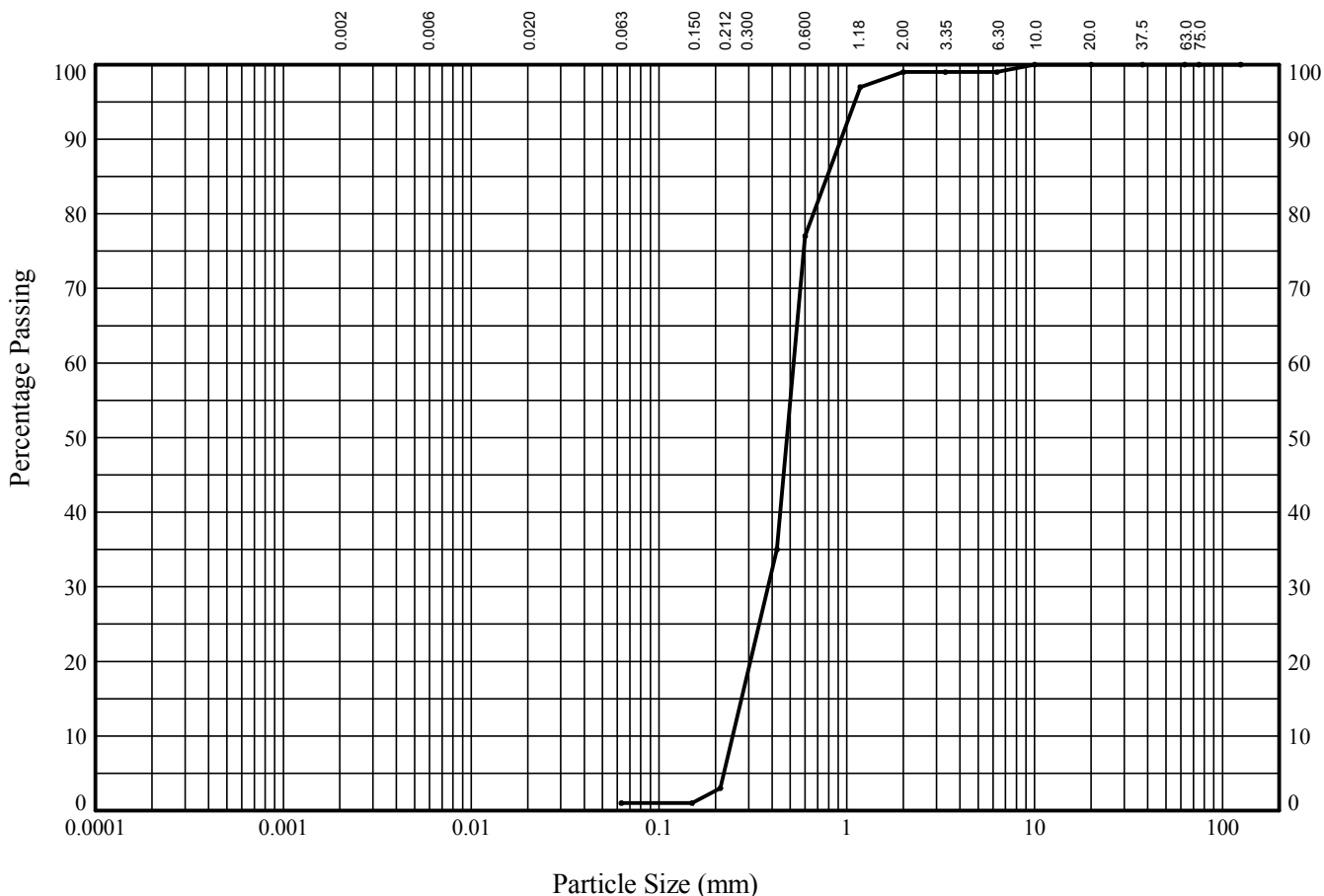
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		17/09/15
Contract SZC 2015 Onshore GI		Contract Ref: 763468

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10** Sample Ref: **13** Sample Type: **B** Depth (m): **6.00**



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

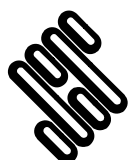
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	99
2.00	99
1.18	97
0.600	77
0.425	35
0.212	3
0.150	1
0.063	1

Particle Diameter	Percentage Passing
0.075	0
0.150	1
0.300	3
0.600	7
1.18	35
2.0	77
4.75	97
10.0	99
20.0	99
42.5	99
75.0	100
150	100

Soil Fraction	Sieve Percentage
GRAVEL	1
SAND	98
SILT/CLAY	1

Soil Description:
Light brown slightly clayey slightly gravelly SAND

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PARTICLE SIZE DISTRIBUTION TEST

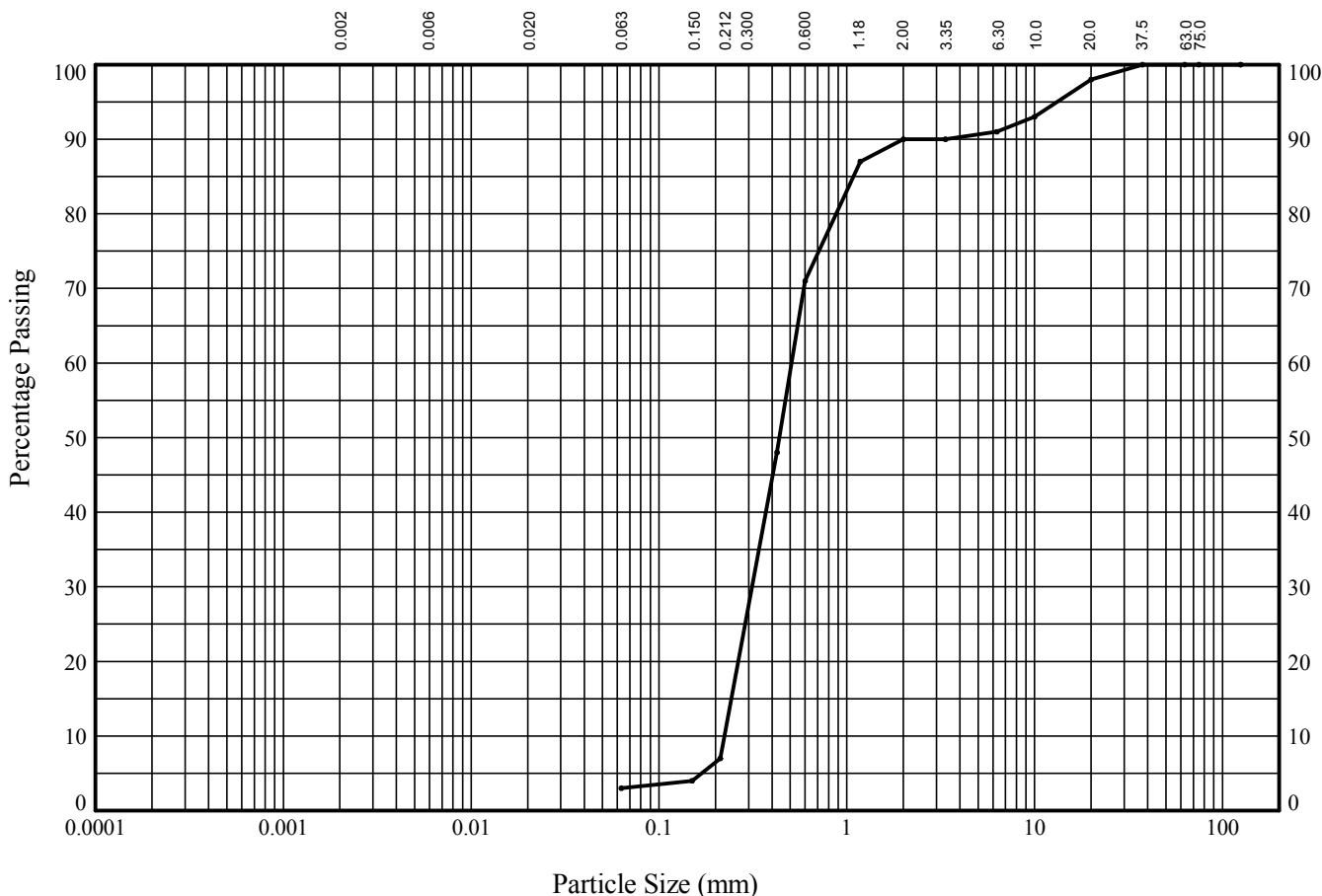
In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10**

Sample Ref: **15**

Sample Type: **B**

Depth (m): **7.00**



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

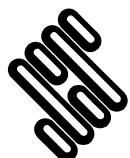
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	98
10.0	93
6.30	91
3.35	90
2.00	90
1.18	87
0.600	71
0.425	48
0.212	7
0.150	4
0.063	3

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	10
SAND	87
SILT/CLAY	3

Soil Description:
Light brown slightly clayey gravelly SAND

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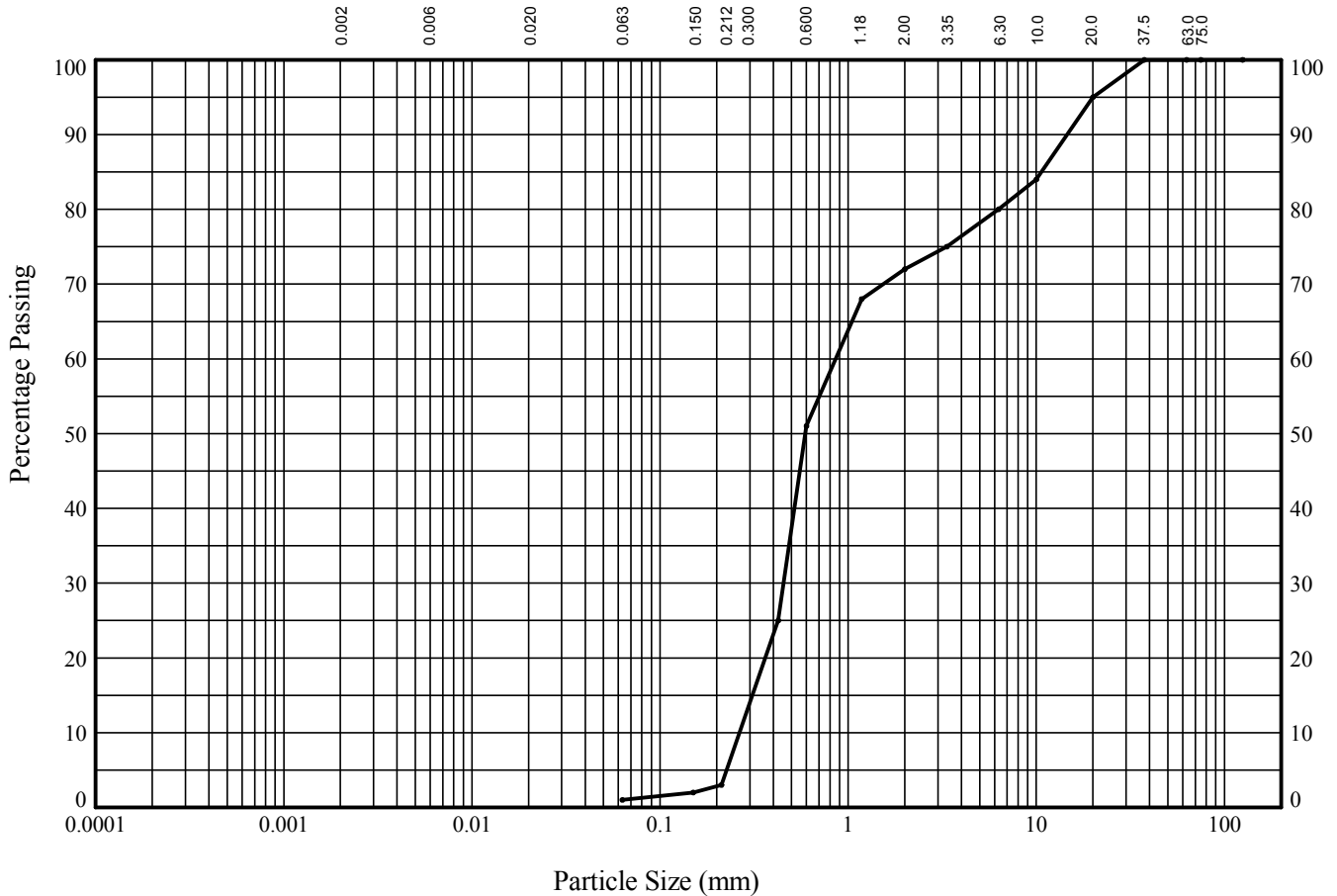
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Contract		Contract Ref:
SZC 2015 Onshore GI		763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10** Sample Ref: **17** Sample Type: **B** Depth (m): **8.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	95
10.0	84
6.30	80
3.35	75
2.00	72
1.18	68
0.600	51
0.425	25
0.212	3
0.150	2
0.063	1

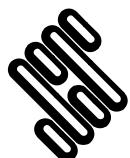
Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	95
10.0	84
6.30	80
3.35	75
2.00	72
1.18	68
0.600	51
0.425	25
0.212	3
0.150	2
0.063	1

Soil Fraction	Sieve Percentage
GRAVEL	28
SAND	71
SILT/CLAY	1

Soil Description:

Dark orange brown slightly clayey very gravelly SAND

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Contract Ref:

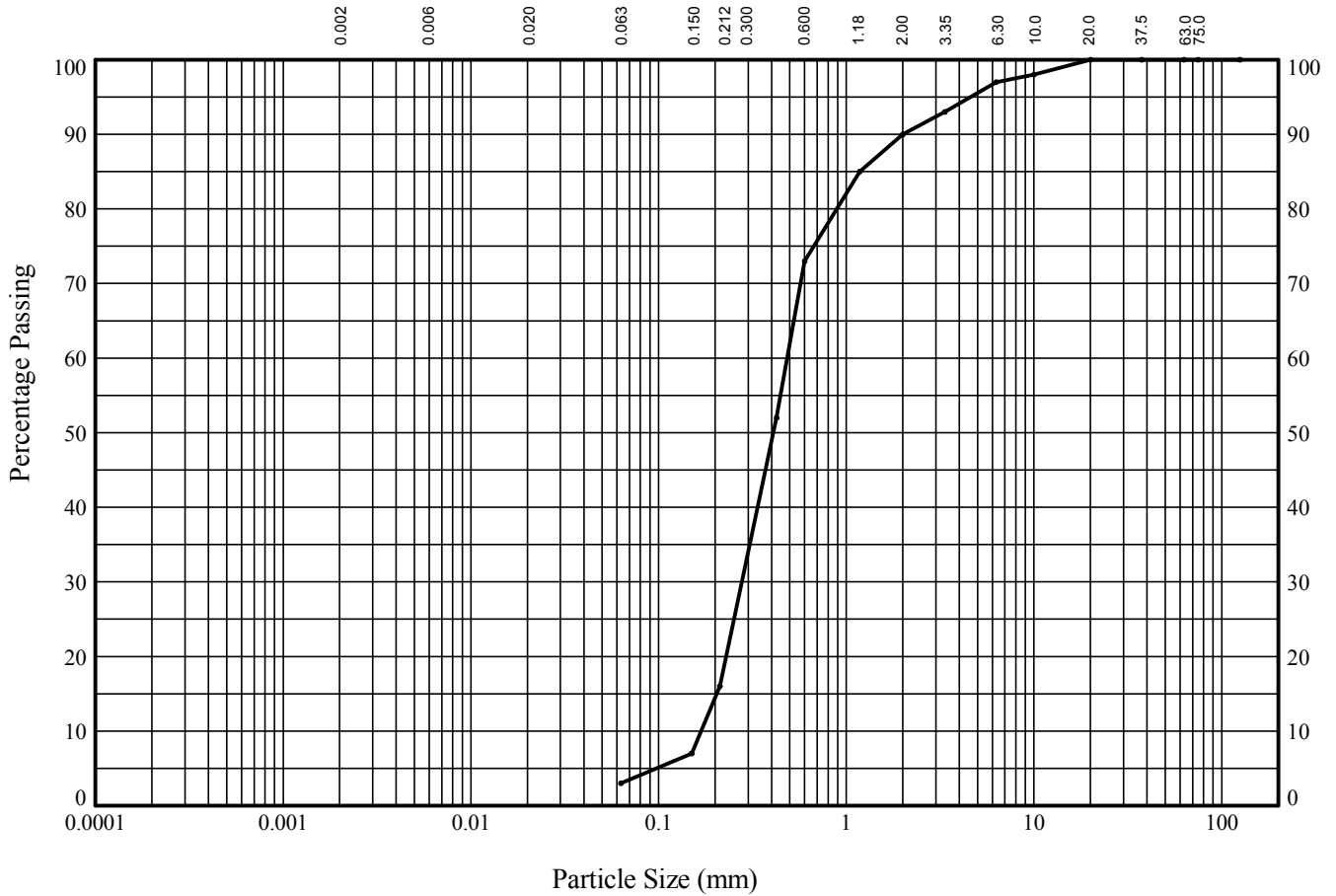
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10** Sample Ref: **19** Sample Type: **B** Depth (m): **9.00**



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

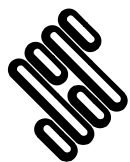
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	98
6.30	97
3.35	93
2.00	90
1.18	85
0.600	73
0.425	52
0.212	16
0.150	7
0.063	3

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	98
6.30	97
3.35	93
2.00	90
1.18	85
0.600	73
0.425	52
0.212	16
0.150	7
0.063	3

Soil Fraction	Sieve Percentage
GRAVEL	10
SAND	87
SILT/CLAY	3

Soil Description:
Orange slightly clayey gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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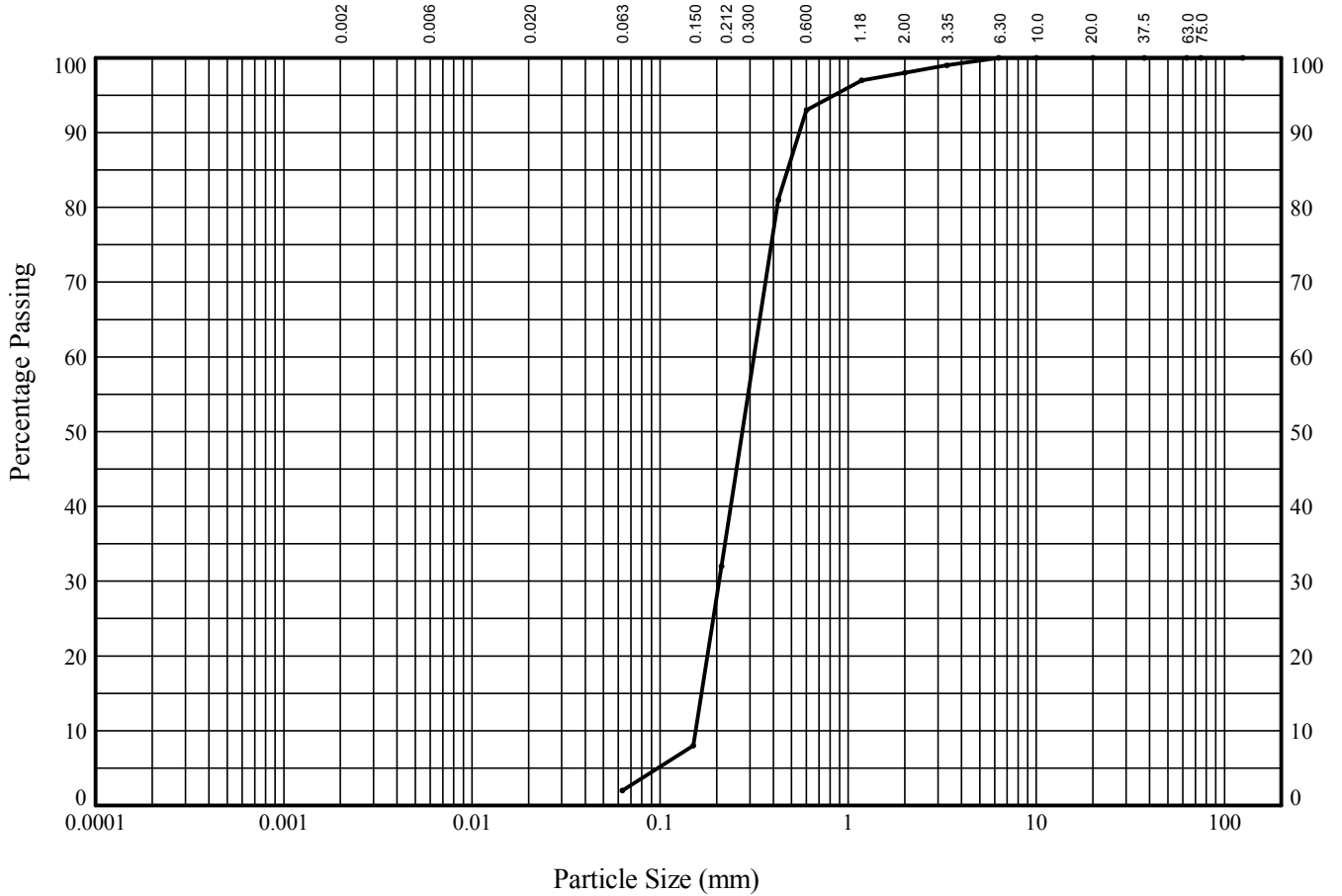
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: CPB BP10 Sample Ref: 21 Sample Type: B Depth (m): 10.00



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

BS Test Sieve (mm)	Percentage 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	97
0.600	93
0.425	81
0.212	32
0.150	8
0.063	2

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	96
SILT/CLAY	2

Soil Description:
Light brown orange slightly clayey slightly gravelly SAND

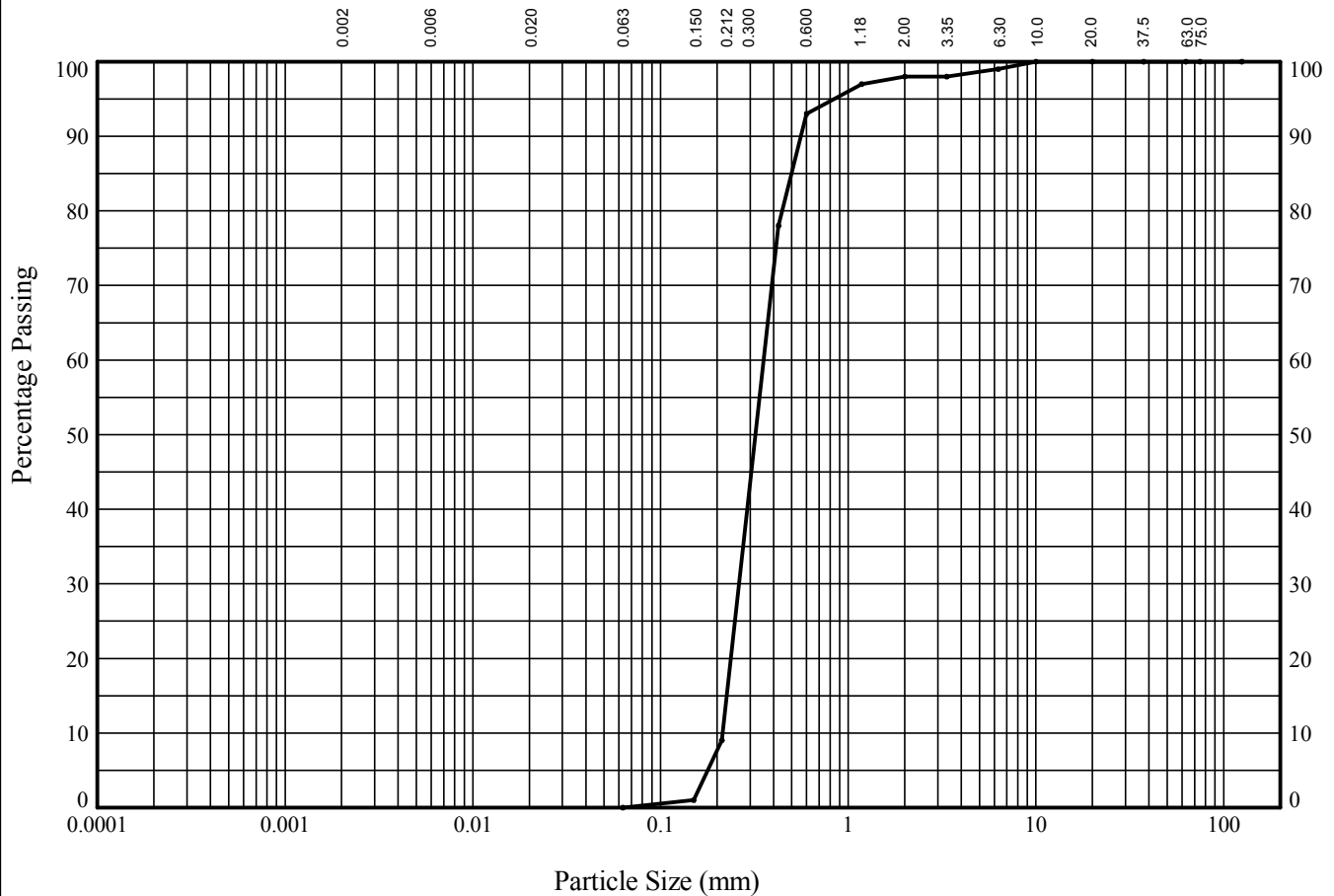
Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10** Sample Ref: **23** Sample Type: **B** Depth (m): **11.00**



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

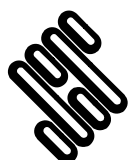
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	98
2.00	98
1.18	97
0.600	93
0.425	78
0.212	9
0.150	1
0.063	0

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	98
2.00	98
1.18	97
0.600	93
0.425	78
0.212	9
0.150	1
0.063	0

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	98
SILT/CLAY	0

Soil Description:
Light brown orange slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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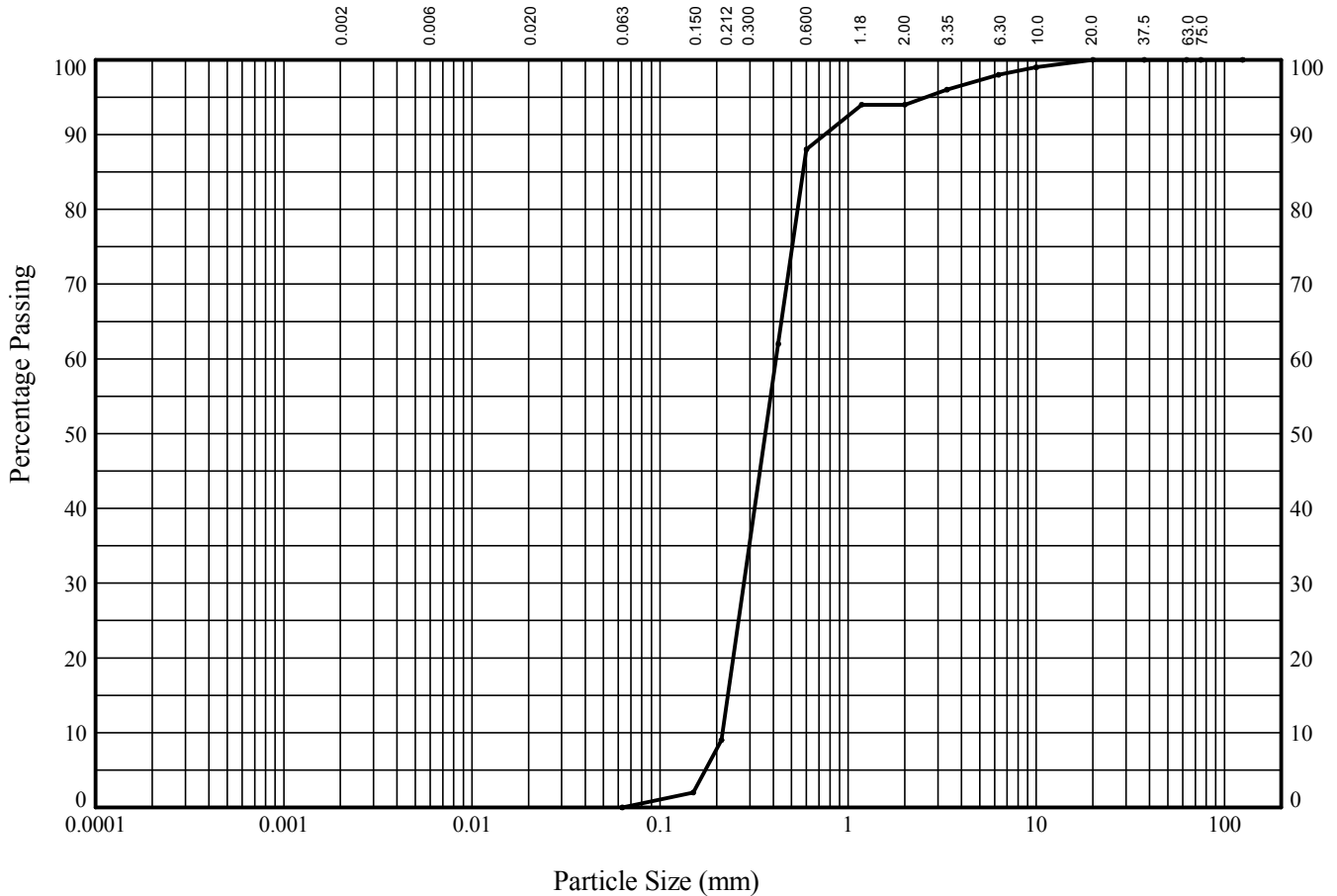
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Contract		Contract Ref:
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10** Sample Ref: **25** Sample Type: **B** Depth (m): **12.00**



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

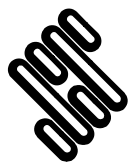
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	96
2.00	94
1.18	94
0.600	88
0.425	62
0.212	9
0.150	2
0.063	0

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	96
2.00	94
1.18	94
0.600	88
0.425	62
0.212	9
0.150	2
0.063	0

Soil Fraction	Sieve Percentage
GRAVEL	6
SAND	94
SILT/CLAY	0

Soil Description:
Orange brown gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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The Potteries
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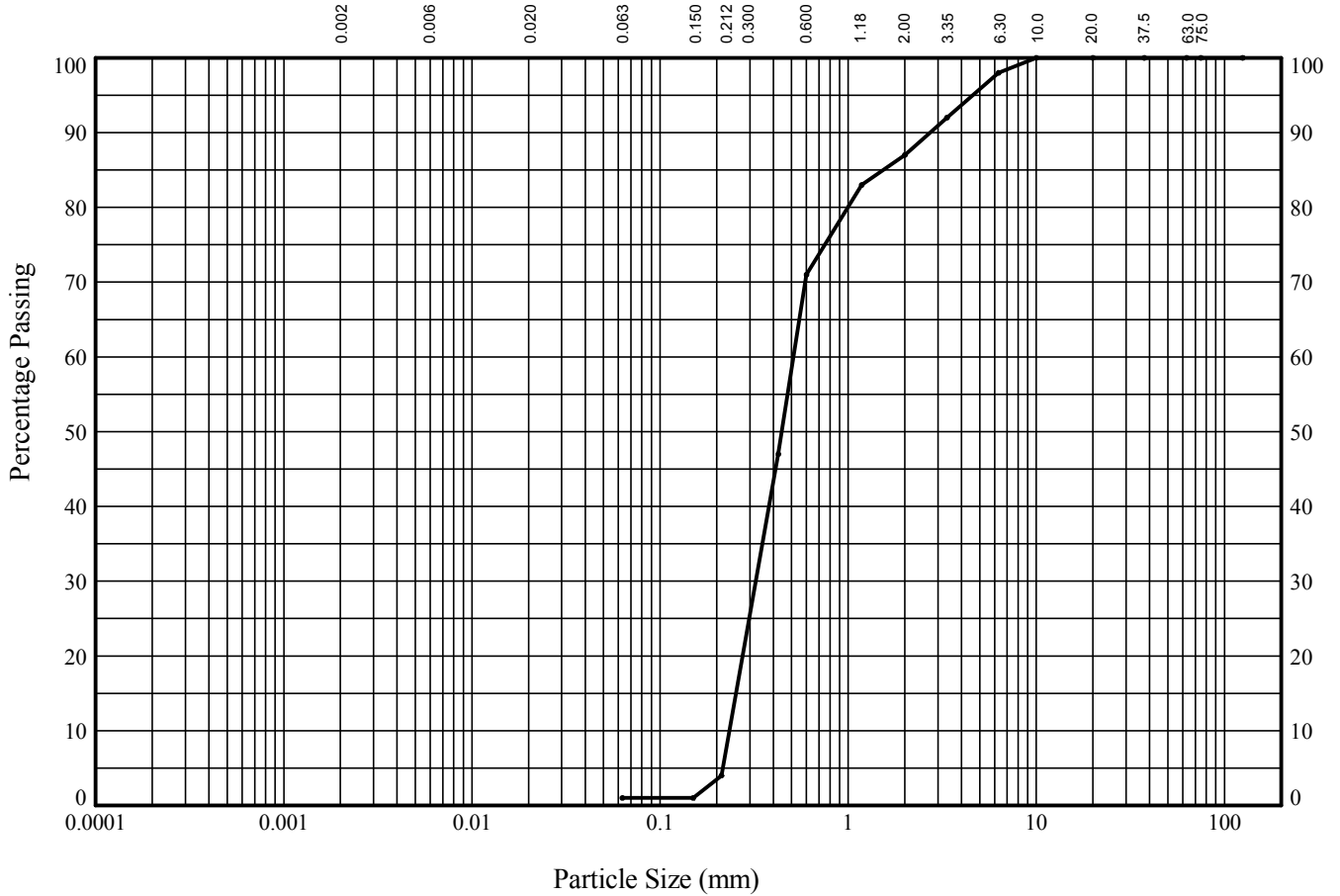
Compiled By		Date
		17/09/15
Contract	Contract Ref:	
SZC 2015 Onshore GI	763468	



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10** Sample Ref: **27** Sample Type: **B** Depth (m): **13.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	98
3.35	92
2.00	87
1.18	83
0.600	71
0.425	47
0.212	4
0.150	1
0.063	1

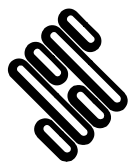
Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	98
3.35	92
2.00	87
1.18	83
0.600	71
0.425	47
0.212	4
0.150	1
0.063	1

Soil Fraction	Sieve Percentage
GRAVEL	13
SAND	86
SILT/CLAY	1

Soil Description:

Light brown orange slightly clayey gravelly SAND (with shell)

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



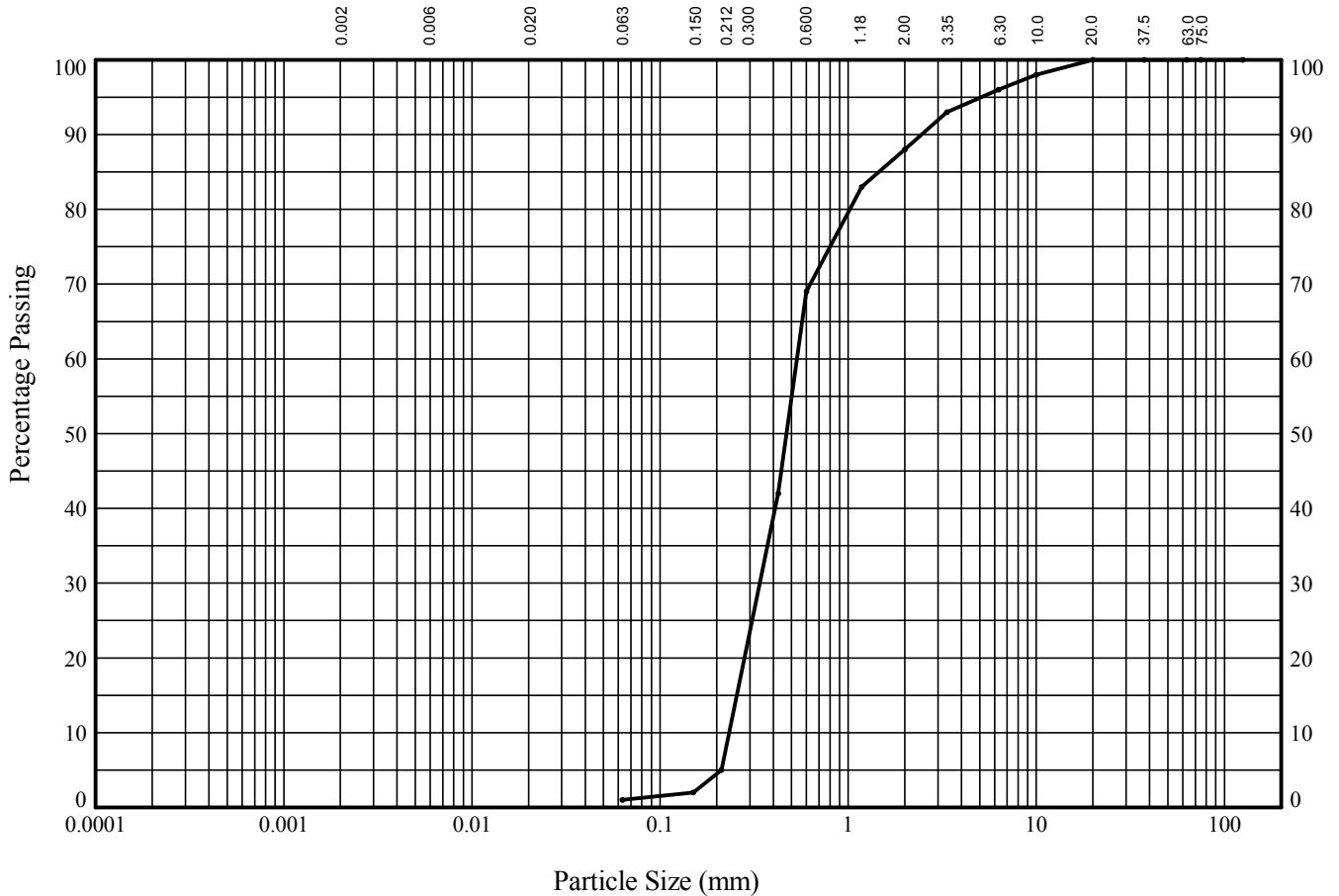
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Contract	Contract Ref:	
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10** Sample Ref: **29** Sample Type: **B** Depth (m): **14.00**



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

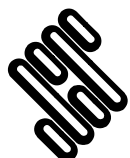
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	98
6.30	96
3.35	93
2.00	88
1.18	83
0.600	69
0.425	42
0.212	5
0.150	2
0.063	1

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	98
6.30	96
3.35	93
2.00	88
1.18	83
0.600	69
0.425	42
0.212	5
0.150	2
0.063	1

Soil Fraction	Sieve Percentage
GRAVEL	12
SAND	87
SILT/CLAY	1

Soil Description:
Orange brown slightly clayey gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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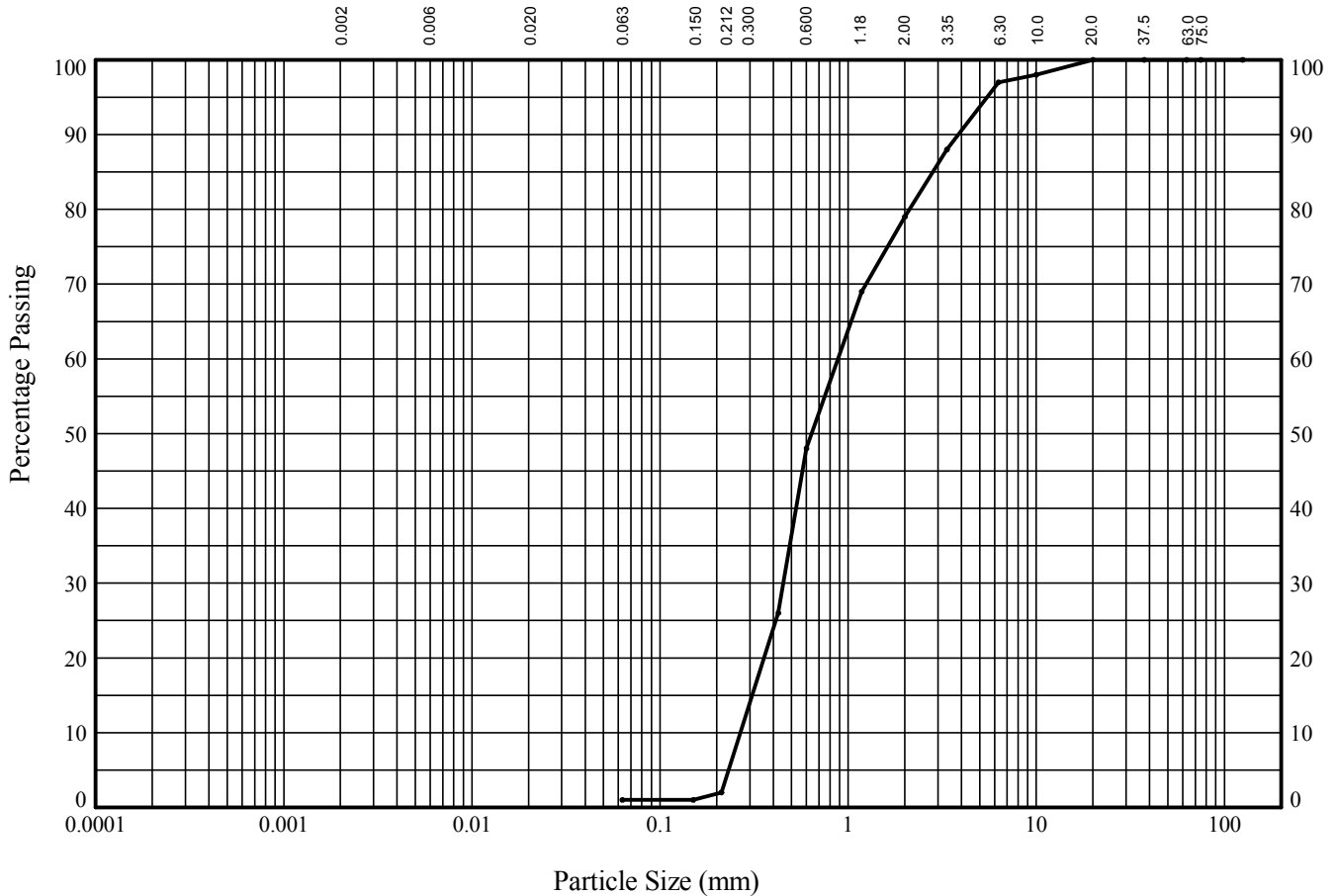
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		17/09/15
Contract		Contract Ref:
SZC 2015 Onshore GI		763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10** Sample Ref: **31** Sample Type: **B** Depth (m): **15.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	98
6.30	97
3.35	88
2.00	79
1.18	69
0.600	48
0.425	26
0.212	2
0.150	1
0.063	1

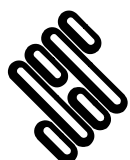
Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	98
6.30	97
3.35	88
2.00	79
1.18	69
0.600	48
0.425	26
0.212	2
0.150	1
0.063	1

Soil Fraction	Sieve Percentage
GRAVEL	21
SAND	78
SILT/CLAY	1

Soil Description:

Orange light brown slightly clayey very gravelly SAND (with shell fragments)

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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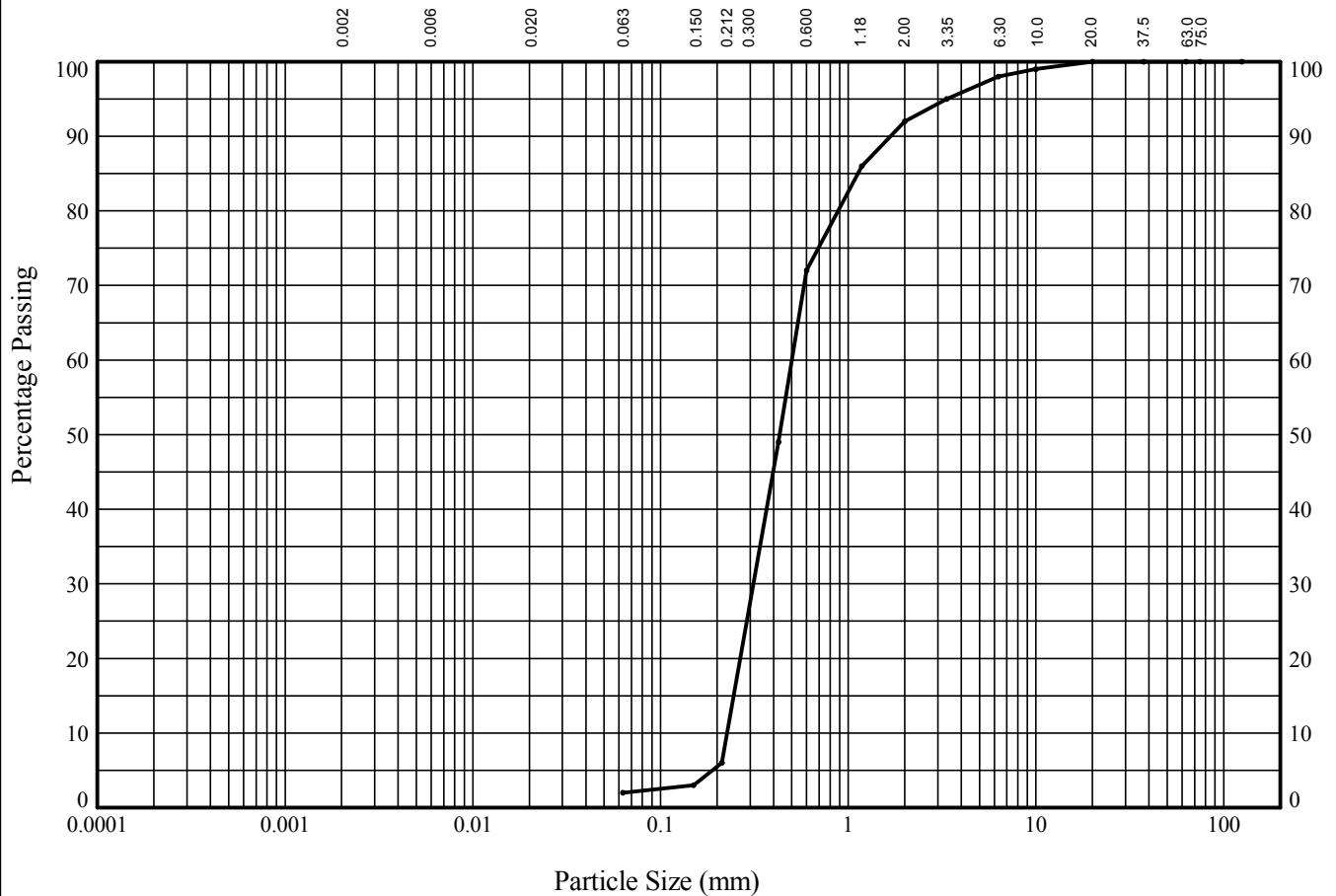
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10** Sample Ref: **33** Sample Type: **B** Depth (m): **16.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	95
2.00	92
1.18	86
0.600	72
0.425	49
0.212	6
0.150	3
0.063	2

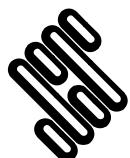
Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	8
SAND	90
SILT/CLAY	2

Soil Description:
Orange slightly clayey gravelly SAND (with shell fragments)

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

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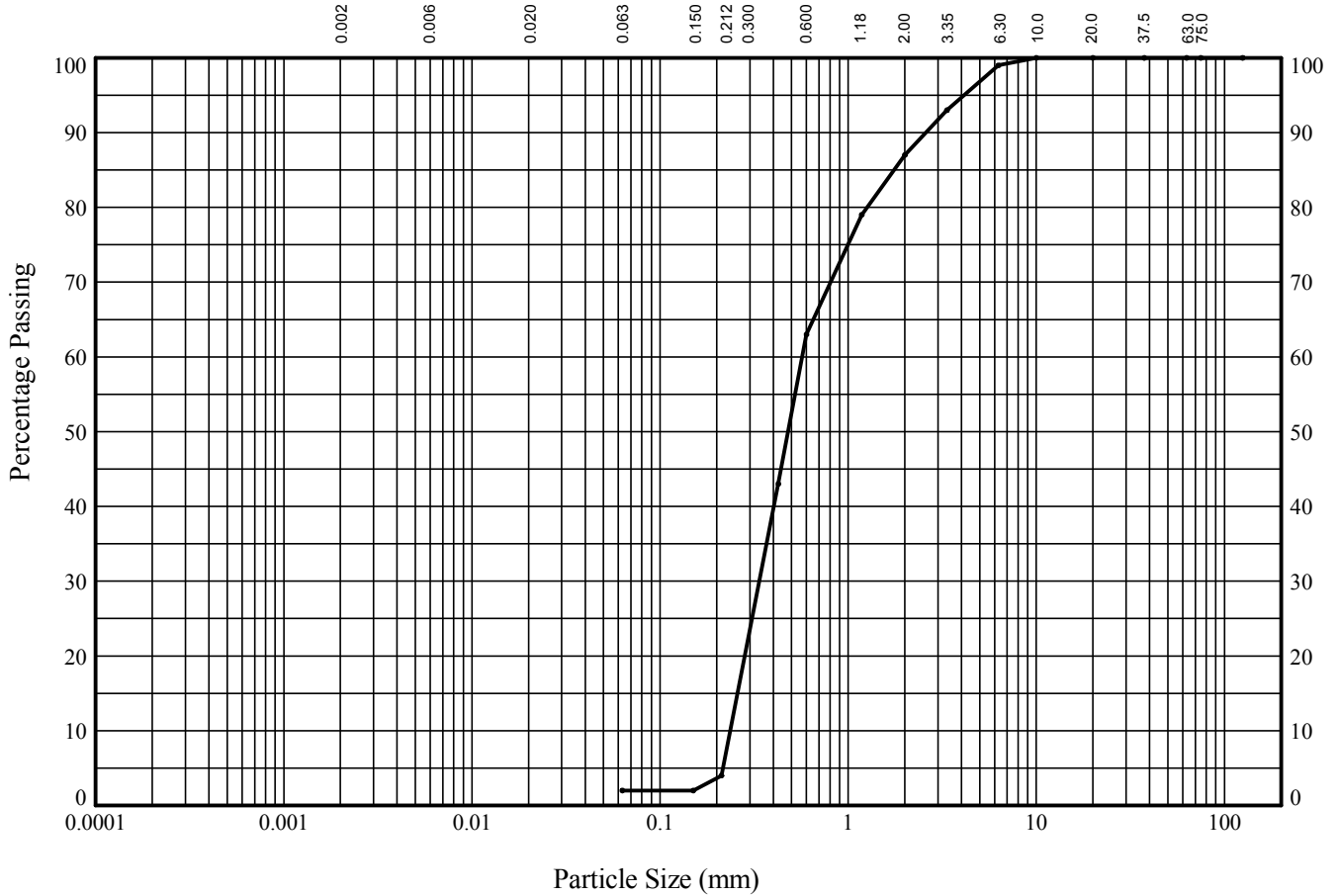
Compiled By		Date
		17/09/15
Contract	Contract Ref:	
SZC 2015 Onshore GI	763468	



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10** Sample Ref: **35** Sample Type: **B** Depth (m): **17.00**



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

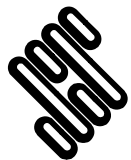
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	93
2.00	87
1.18	79
0.600	63
0.425	43
0.212	4
0.150	2
0.063	2

Particle Diameter	Percentage Passing
0.075	2
0.15	4
0.3	2
0.6	43
1.18	63
2.0	79
3.35	87
6.3	93
10.0	99
20.0	100

Soil Fraction	Sieve Percentage
GRAVEL	13
SAND	85
SILT/CLAY	2

Soil Description:
Orange slightly clayey gravelly SAND (with shell fragments)

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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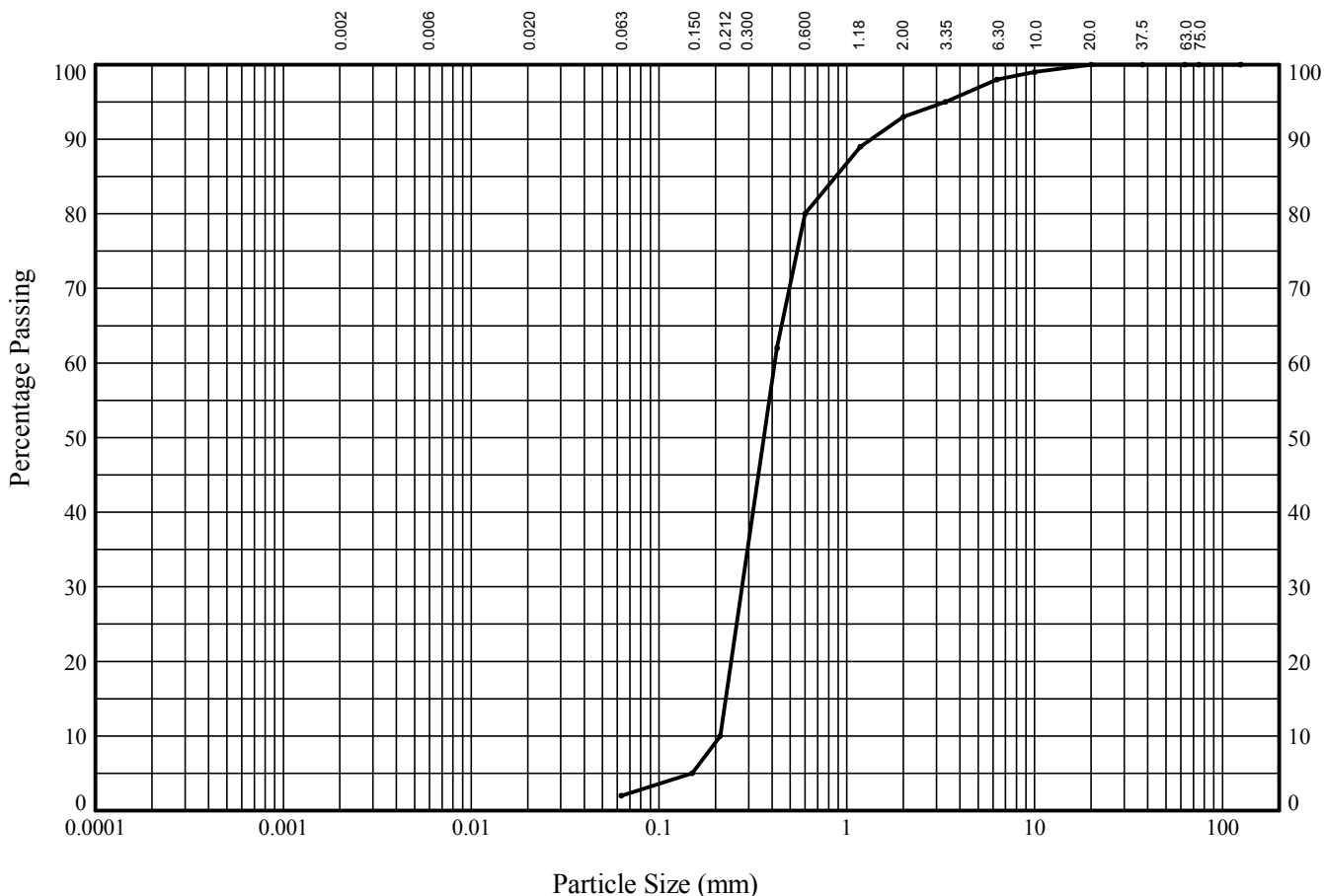
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10** Sample Ref: **37** Sample Type: **B** Depth (m): **18.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	95
2.00	93
1.18	89
0.600	80
0.425	62
0.212	10
0.150	5
0.063	2

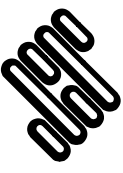

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	95
2.00	93
1.18	89
0.600	80
0.425	62
0.212	10
0.150	5
0.063	2

Soil Fraction	Sieve Percentage
GRAVEL	7
SAND	91
SILT/CLAY	2

Soil Description:
Light brown orange slightly clayey gravelly SAND (with shell fragments)

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

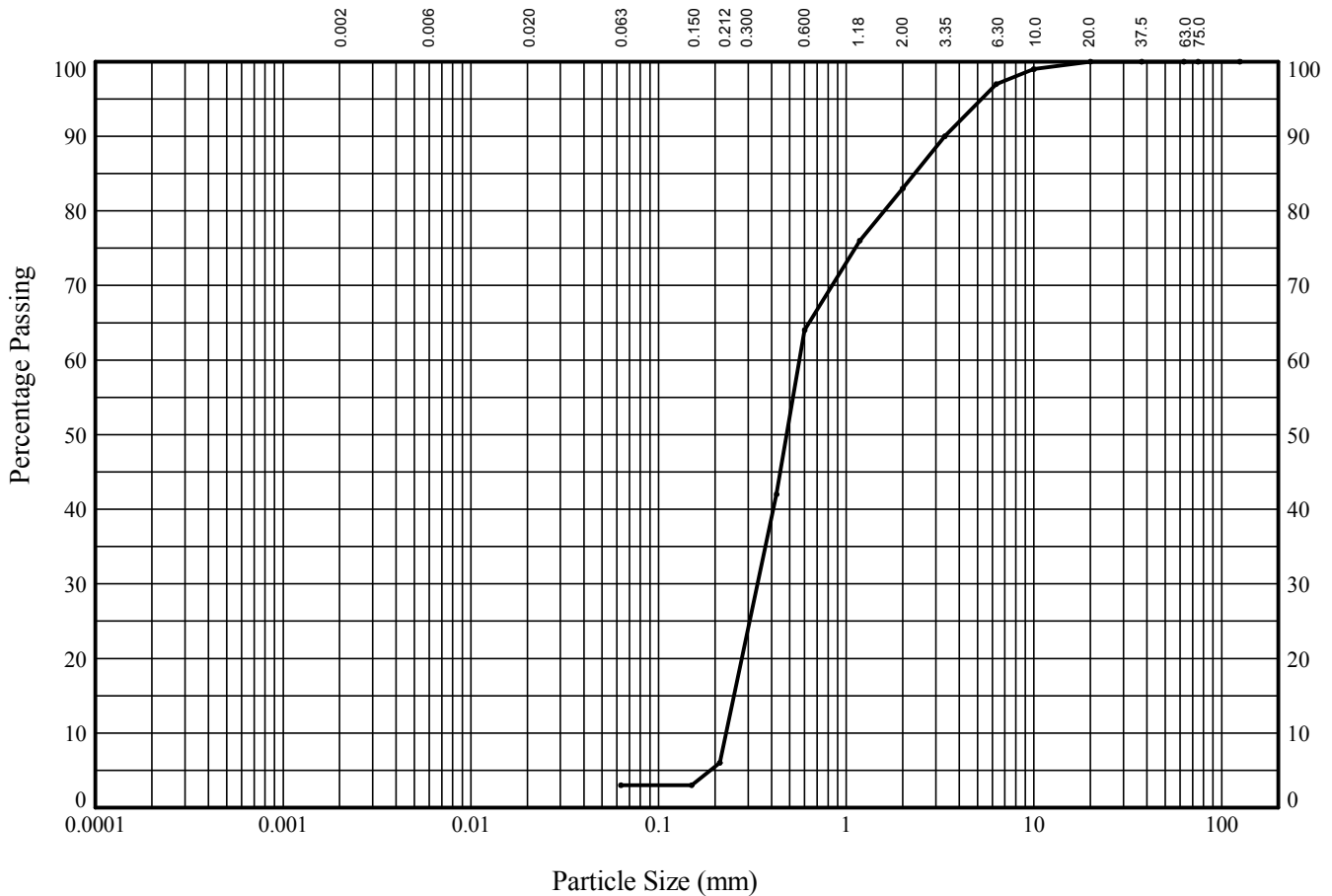
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	Contract	Contract Ref:	
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP10** Sample Ref: **39** Sample Type: **B** Depth (m): **19.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	97
3.35	90
2.00	83
1.18	76
0.600	64
0.425	42
0.212	6
0.150	3
0.063	3

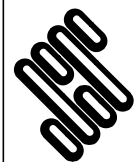
Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	97
3.35	90
2.00	83
1.18	76
0.600	64
0.425	42
0.212	6
0.150	3
0.063	3

Soil Fraction	Sieve Percentage
GRAVEL	17
SAND	80
SILT/CLAY	3

Soil Description:
Orange brown slightly clayey gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

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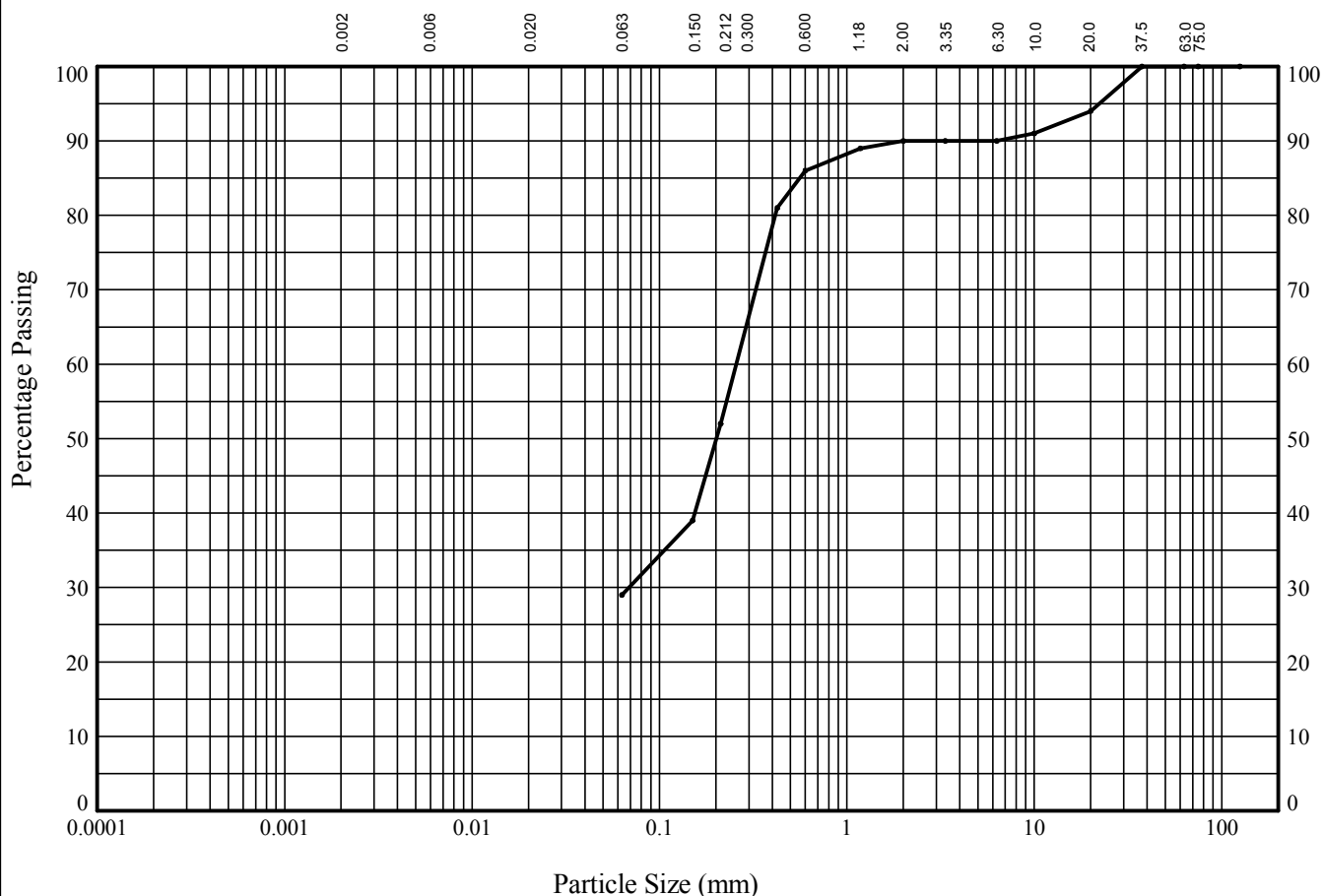
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11** Sample Ref: **4** Sample Type: **B** Depth (m): **1.50**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	94
10.0	91
6.30	90
3.35	90
2.00	90
1.18	89
0.600	86
0.425	81
0.212	52
0.150	39
0.063	29

Particle Diameter	Percentage Passing
0.063	29
0.150	39
0.300	52
0.600	86
1.18	89
2.00	90
3.35	90
6.30	90
10.0	91
20.0	94
37.5	99
63.0	100
75.0	100

Soil Fraction	Sieve Percentage
GRAVEL	10
SAND	61
SILT/CLAY	29

Soil Description:
Orange brown sandy slightly gravelly CLAY

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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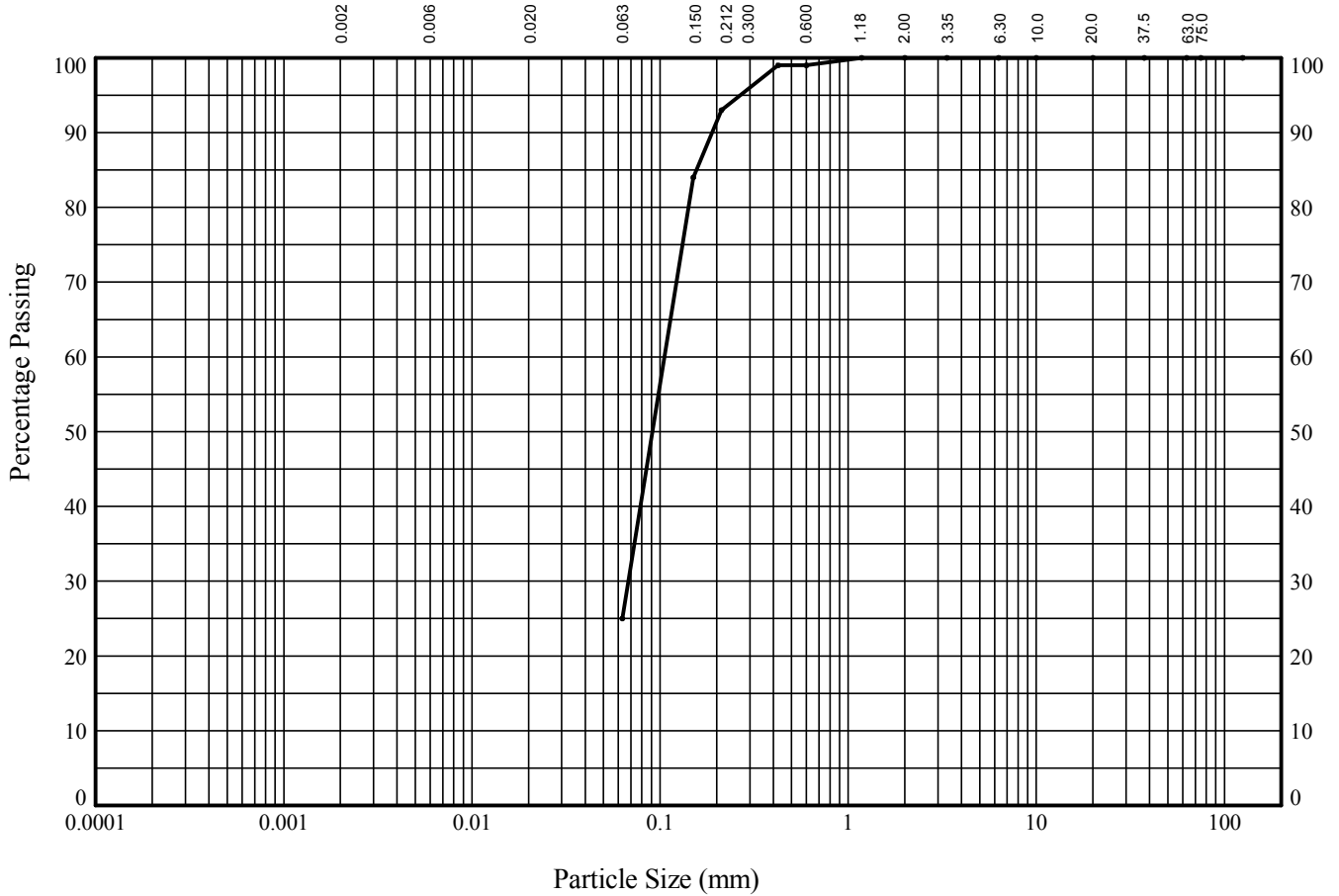
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11** Sample Ref: **6** Sample Type: **B** Depth (m): **2.70**



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

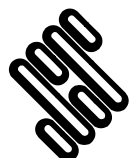
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	99
0.425	99
0.212	93
0.150	84
0.063	25

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	99
0.425	99
0.212	93
0.150	84
0.063	25

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	75
SILT/CLAY	25

Soil Description:
Brown very clayey SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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Date

17/09/15

Contract

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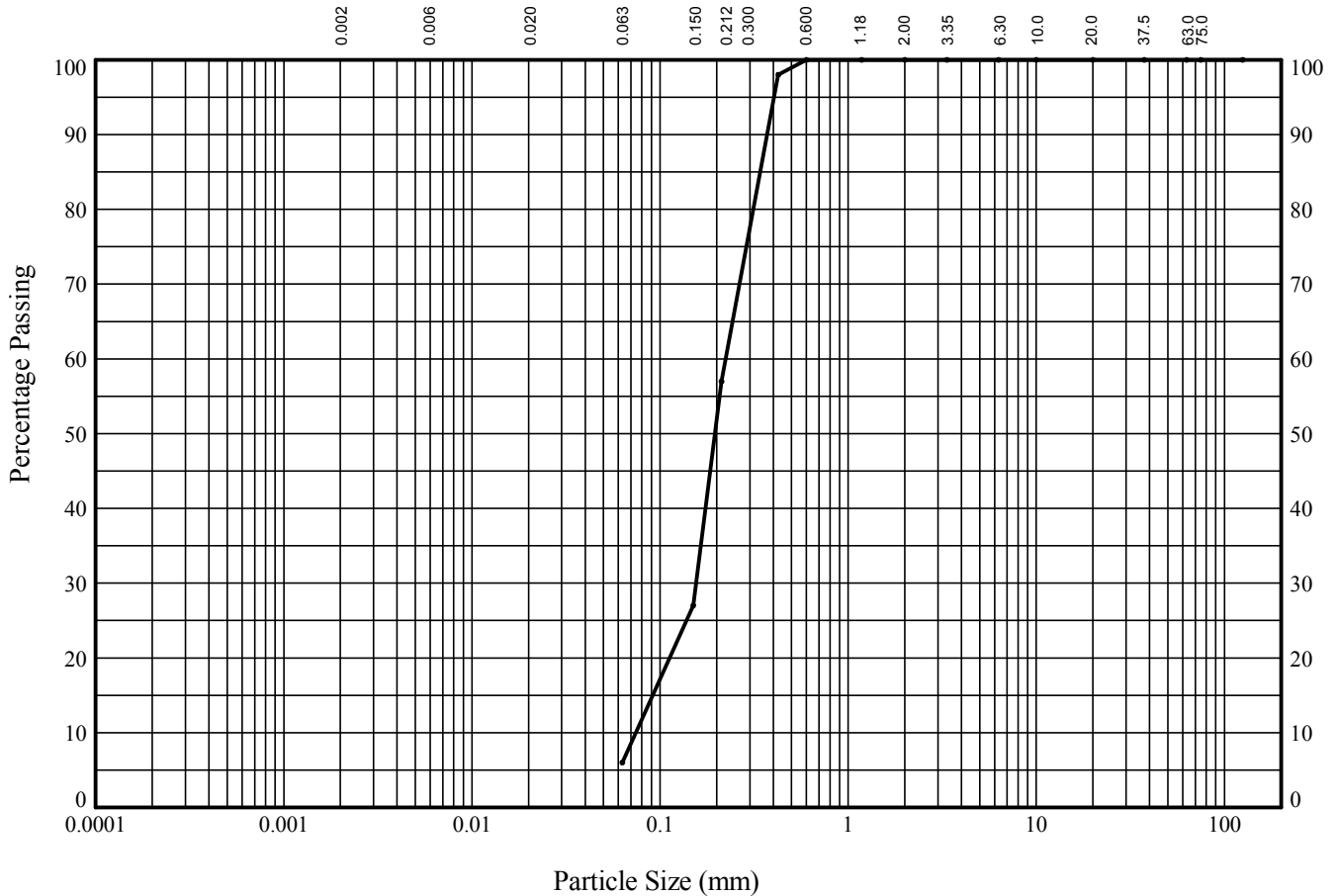
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11** Sample Ref: **9** Sample Type: **B** Depth (m): **4.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	100
0.425	98
0.212	57
0.150	27
0.063	6



Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	100
0.425	98
0.212	57
0.150	27
0.063	6

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	94
SILT/CLAY	6

Soil Description:
Light brown clayey SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

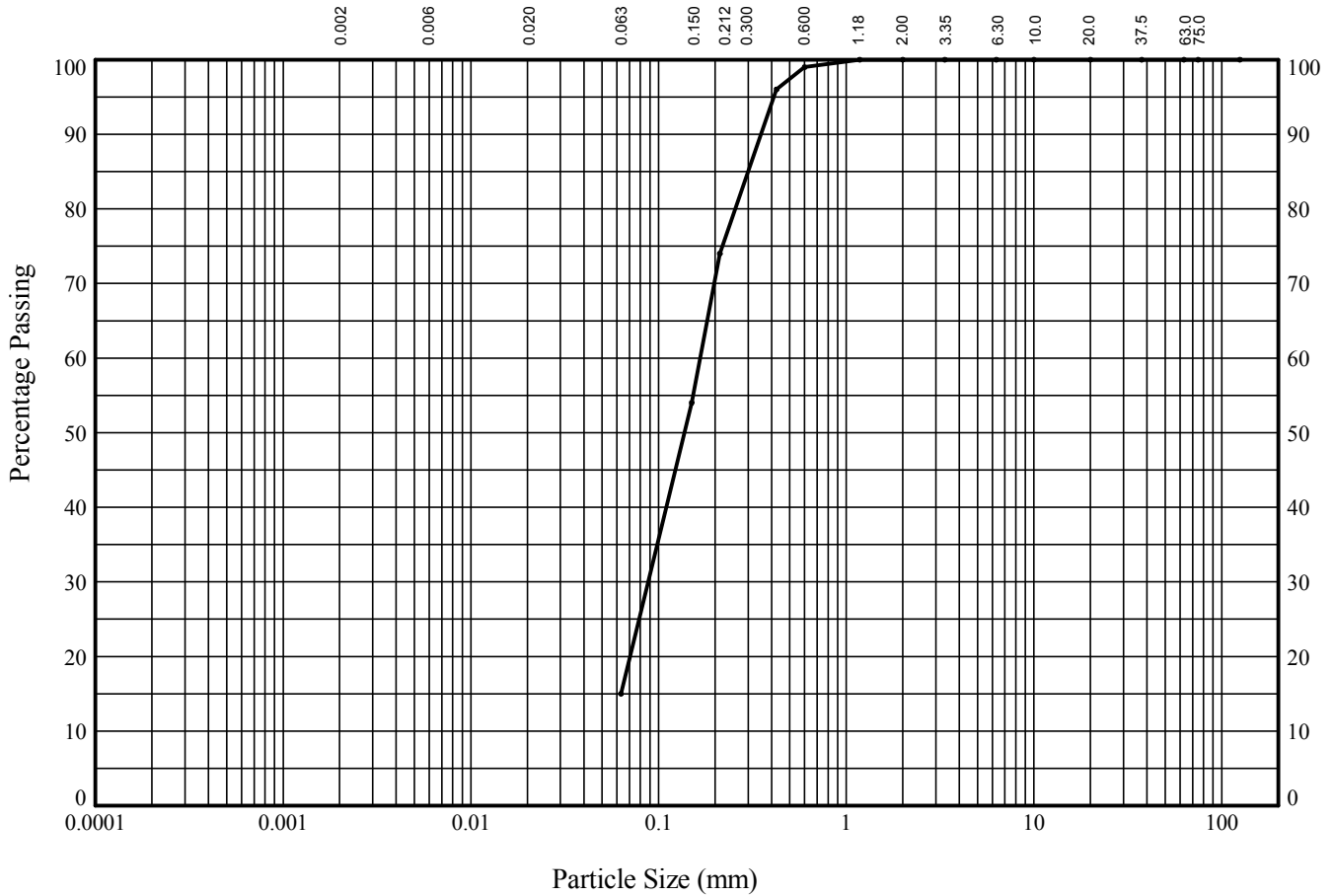
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11** Sample Ref: **11** Sample Type: **B** Depth (m): **5.00**



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

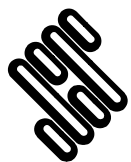
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	99
0.425	96
0.212	74
0.150	54
0.063	15

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	99
0.425	96
0.212	74
0.150	54
0.063	15

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	85
SILT/CLAY	15

Soil Description:
Light brown clayey SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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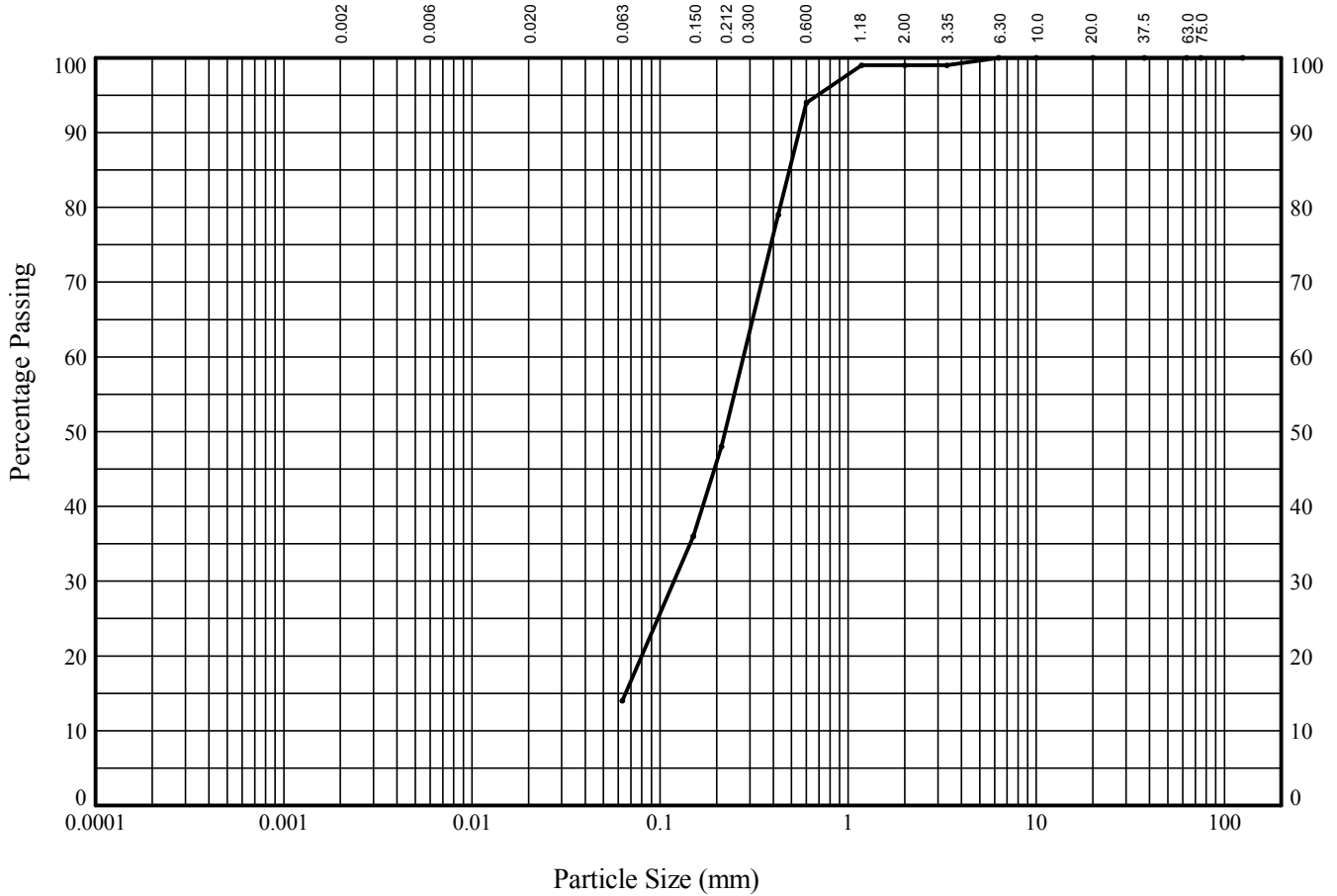
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Contract	Contract Ref:	
SZC 2015 Onshore GI	763468	



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11** Sample Ref: **13** Sample Type: **B** Depth (m): **6.00**



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

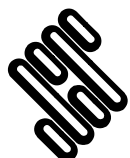
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	99
2.00	99
1.18	99
0.600	94
0.425	79
0.212	48
0.150	36
0.063	14

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	1
SAND	85
SILT/CLAY	14

Soil Description:
Light brown clayey slightly gravelly SAND

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 W. Yorkshire WF10 1NJ

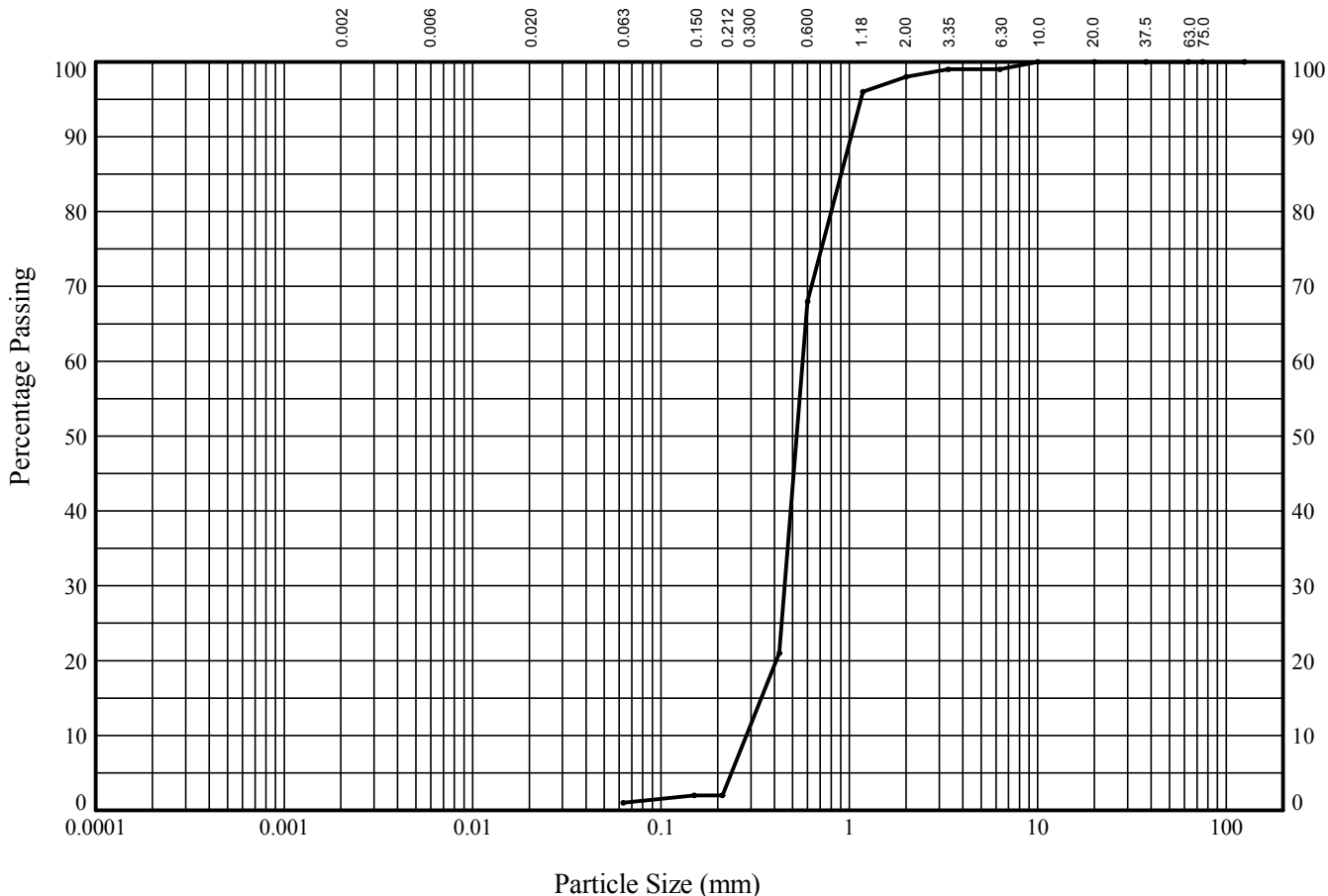
Compiled By	Date
	17/09/15
Contract	Contract Ref:
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11** Sample Ref: **15** Sample Type: **B** Depth (m): **7.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	99
2.00	98
1.18	96
0.600	68
0.425	21
0.212	2
0.150	2
0.063	1

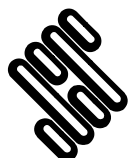
Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	99
2.00	98
1.18	96
0.600	68
0.425	21
0.212	2
0.150	2
0.063	1

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	97
SILT/CLAY	1

Soil Description:

Light brown slightly clayey slightly gravelly SAND

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W. Yorkshire WF10 1NJ

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Date

17/09/15

Contract

SZC 2015 Onshore GI

Contract Ref:

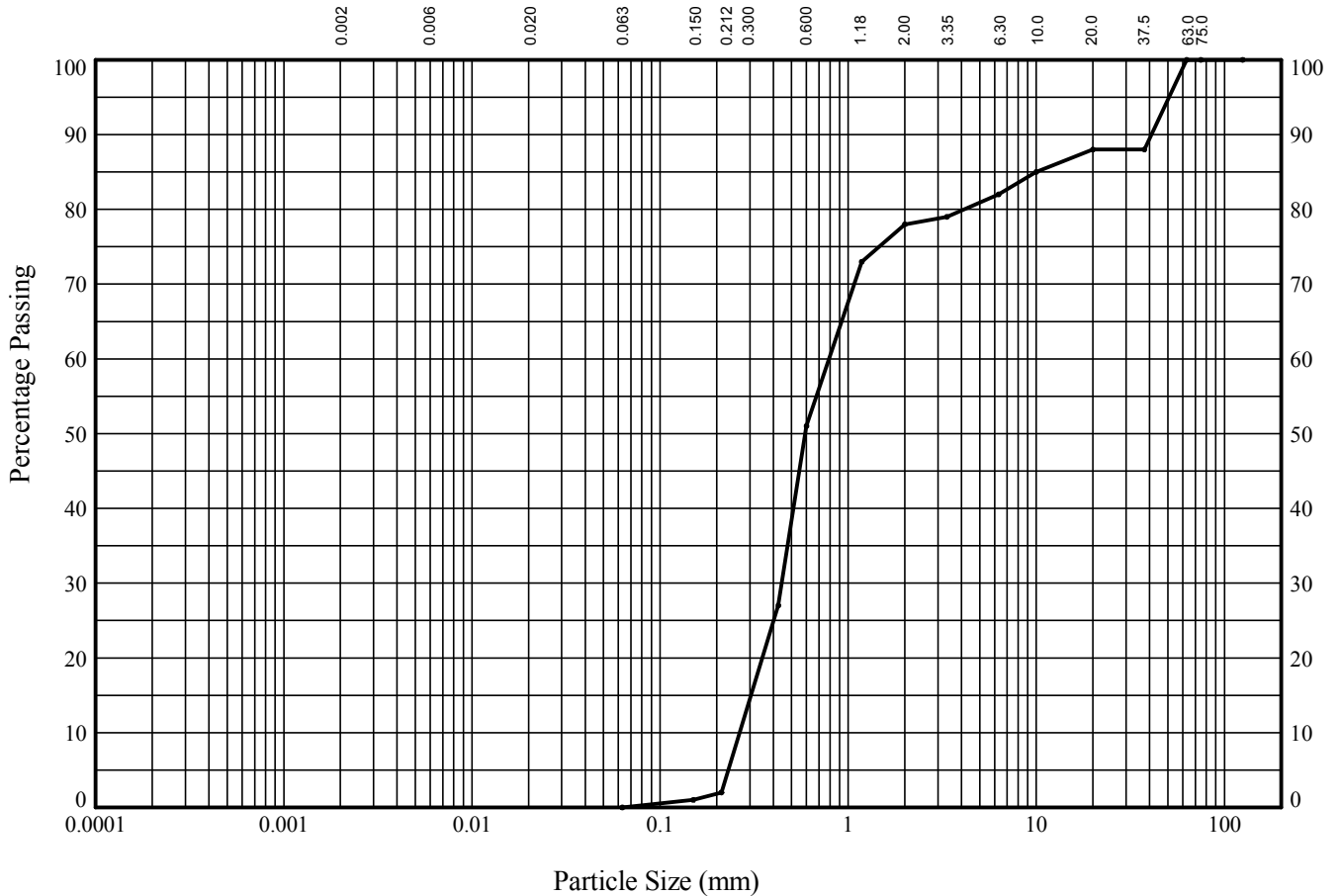
763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11** Sample Ref: **16** Sample Type: **B** Depth (m): **7.60**



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

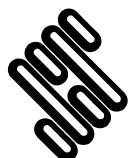
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	88
20.0	88
10.0	85
6.30	82
3.35	79
2.00	78
1.18	73
0.600	51
0.425	27
0.212	2
0.150	1
0.063	0

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	22
SAND	78
SILT/CLAY	0

Soil Description:
Light brown very gravelly SAND

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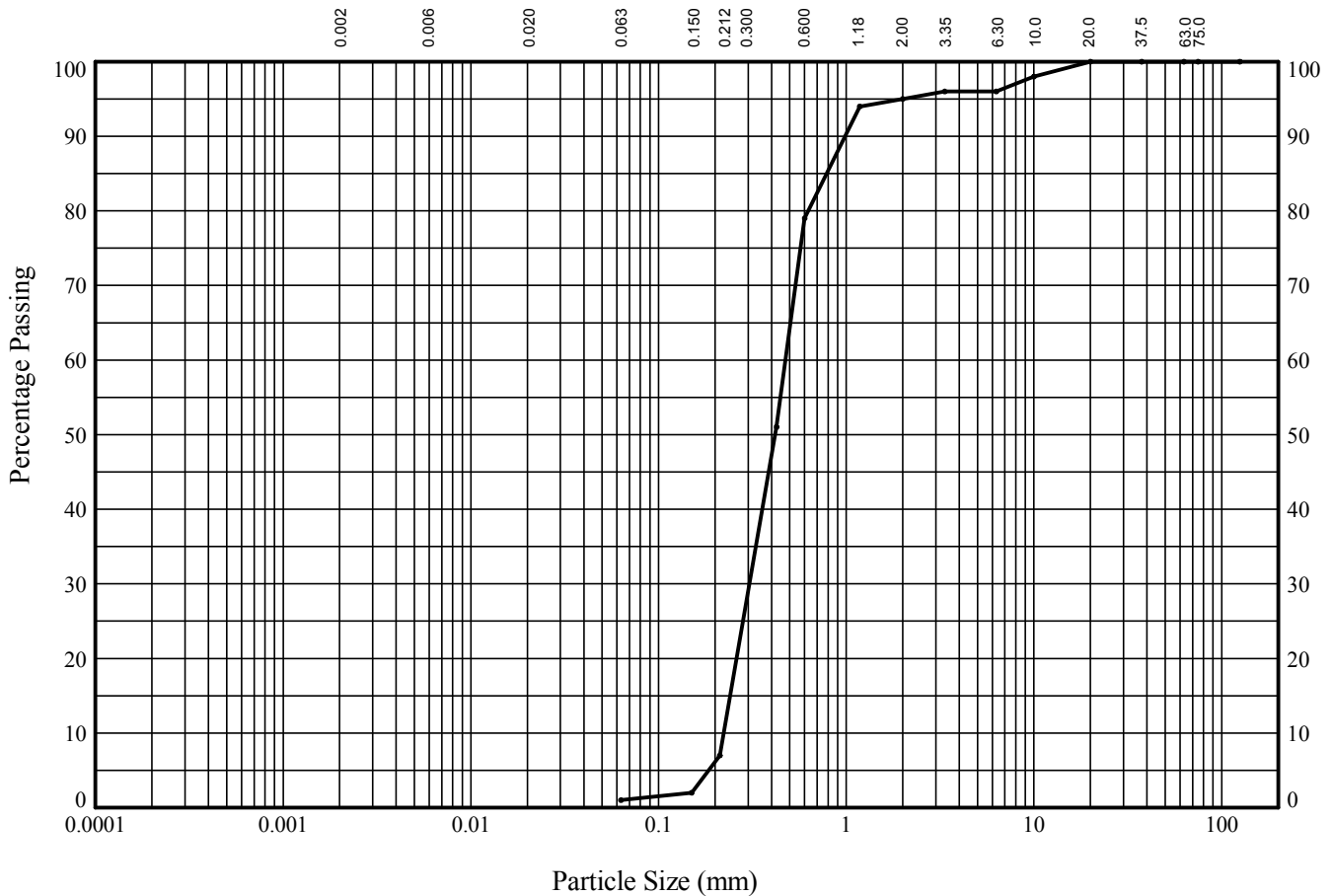
Compiled By		Date
		17/09/15
Contract SZC 2015 Onshore GI	Contract Ref: 763468	



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11** Sample Ref: **18** Sample Type: **B** Depth (m): **8.50**



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

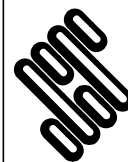
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	98
6.30	96
3.35	96
2.00	95
1.18	94
0.600	79
0.425	51
0.212	7
0.150	2
0.063	1

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	5
SAND	94
SILT/CLAY	1

Soil Description:
Light brown slightly clayey gravelly SAND

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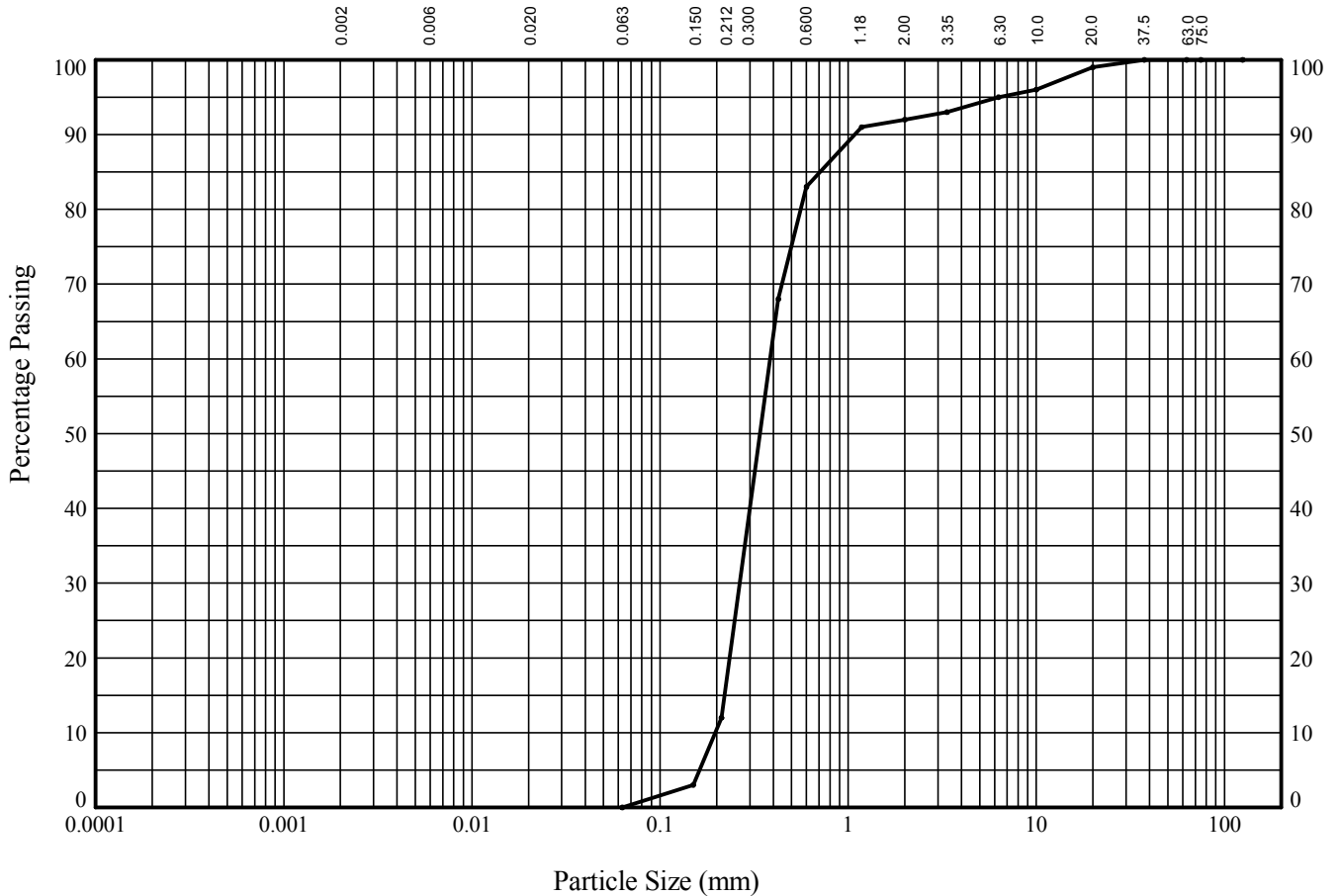
Compiled By	Date
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11** Sample Ref: **21** Sample Type: **B** Depth (m): **9.50**



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

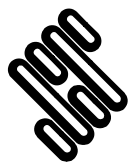
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	99
10.0	96
6.30	95
3.35	93
2.00	92
1.18	91
0.600	83
0.425	68
0.212	12
0.150	3
0.063	0

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	8
SAND	92
SILT/CLAY	0

Soil Description:
Light brown orange gravelly SAND

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PARTICLE SIZE DISTRIBUTION TEST

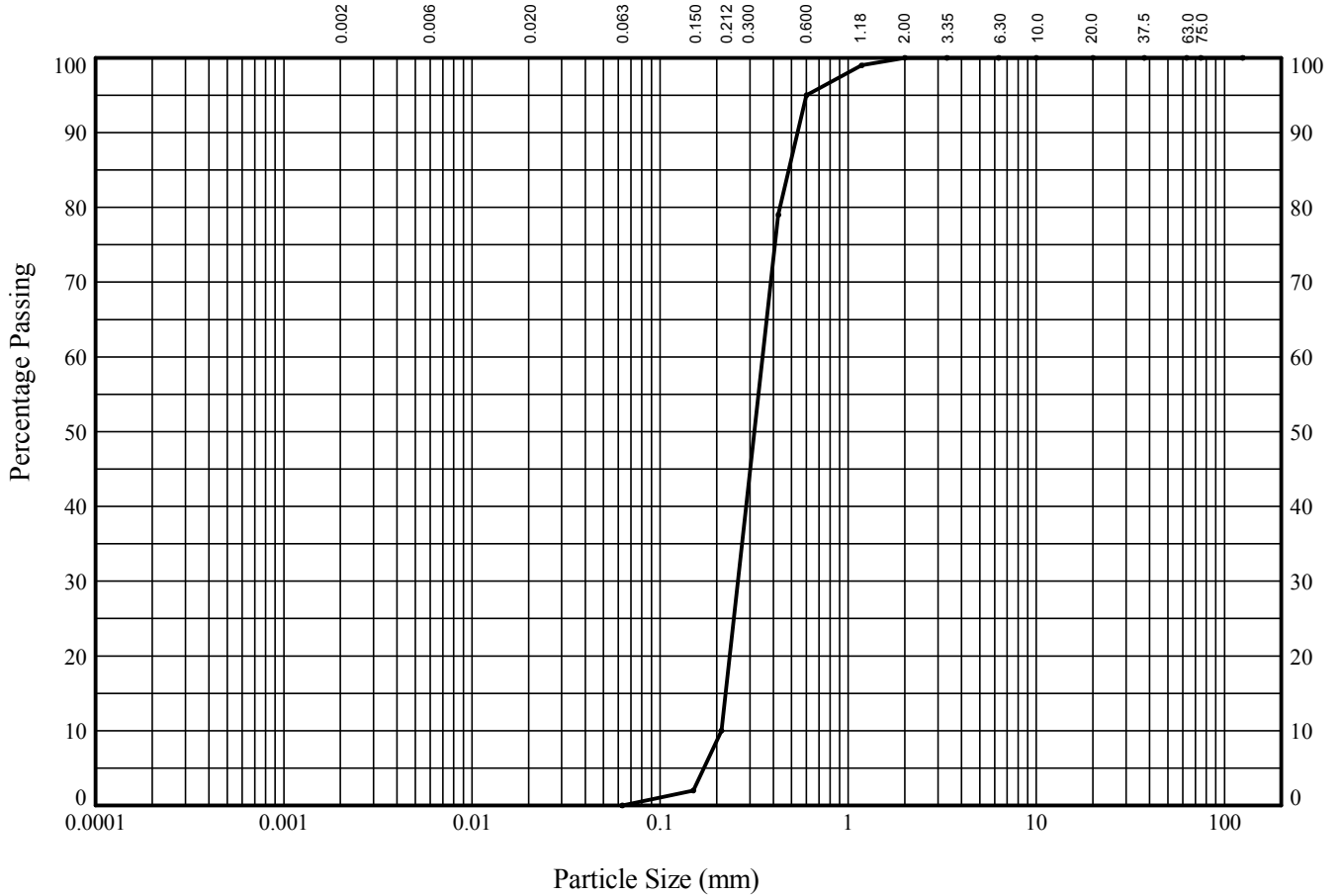
In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11**

Sample Ref: **22**

Sample Type: **B**

Depth (m): **10.20**



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

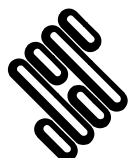
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	99
0.600	95
0.425	79
0.212	10
0.150	2
0.063	0

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	100
SILT/CLAY	0

Soil Description:
Orange SAND

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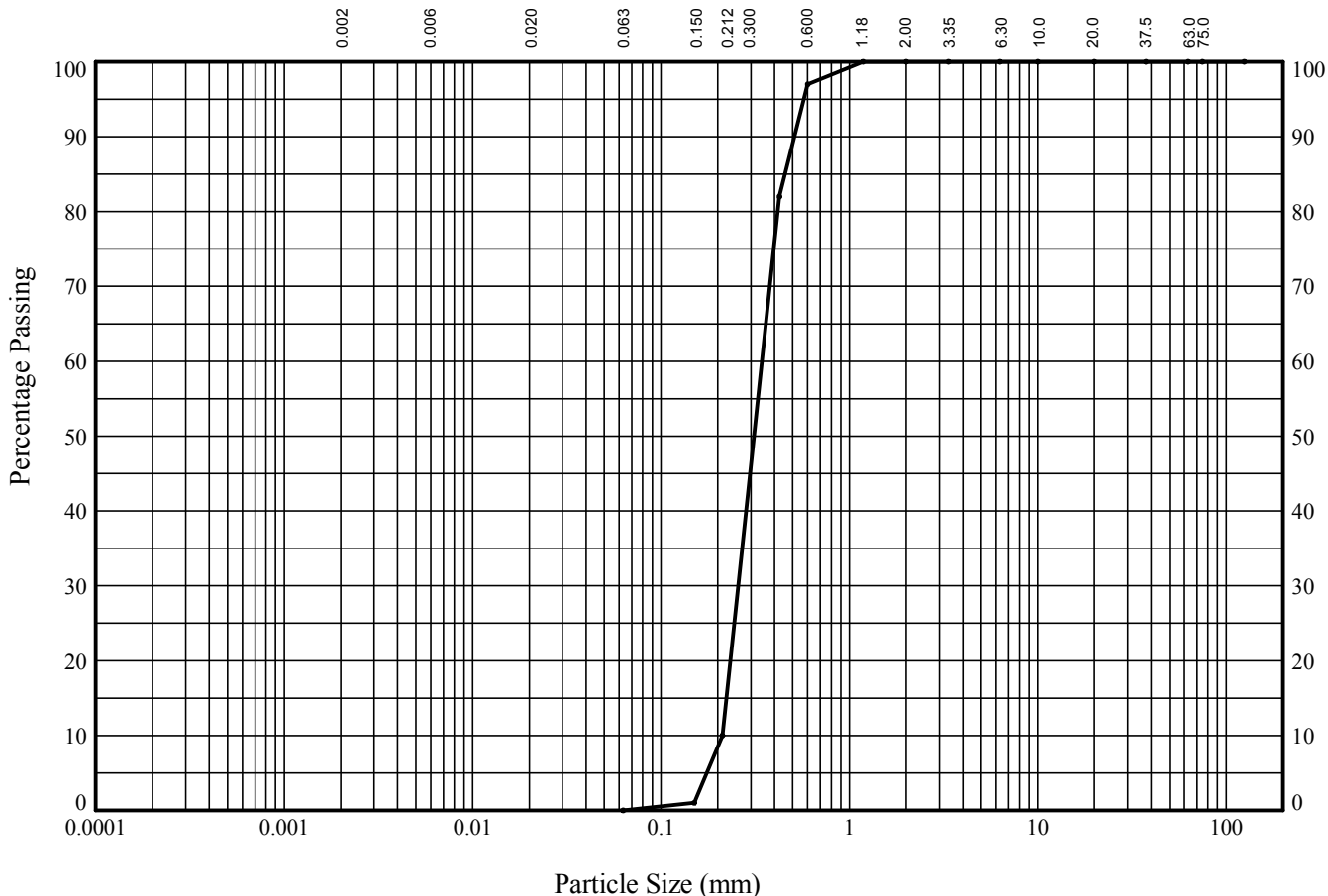
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11** Sample Ref: **23** Sample Type: **B** Depth (m): **11.00**



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

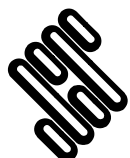
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	97
0.425	82
0.212	10
0.150	1
0.063	0

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	97
0.425	82
0.212	10
0.150	1
0.063	0

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	100
SILT/CLAY	0

Soil Description:
Orange SAND

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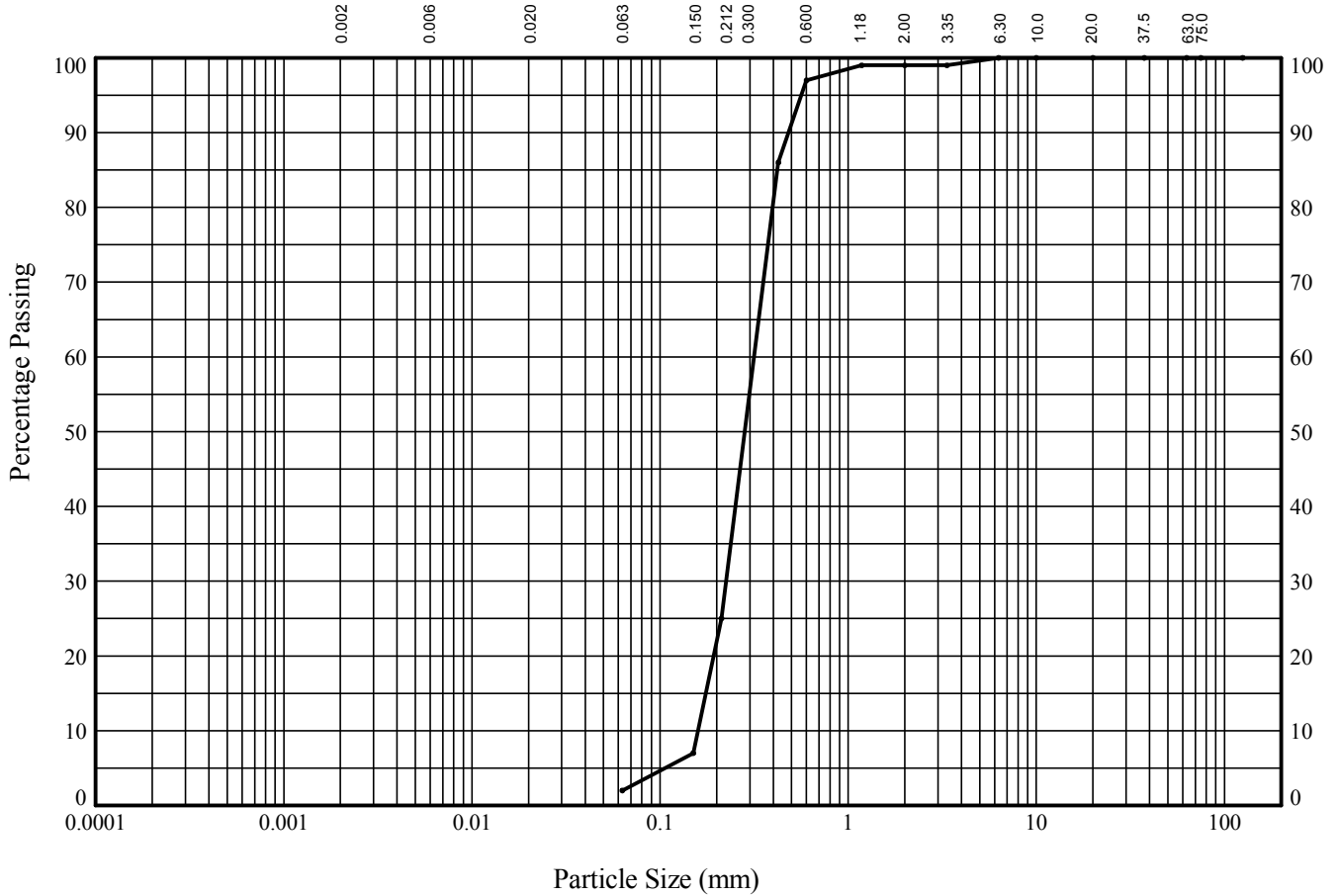
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11** Sample Ref: **25** Sample Type: **B** Depth (m): **12.00**



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

BS Test Sieve (mm)	Percentage 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	99
1.18	99
0.600	97
0.425	86
0.212	25
0.150	7
0.063	2

Particle Diameter	Percentage 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	99
1.18	99
0.600	97
0.425	86
0.212	25
0.150	7
0.063	2

Soil Fraction	Sieve Percentage
GRAVEL	1
SAND	97
SILT/CLAY	2

Soil Description:
Orange brown slightly clayey slightly gravelly SAND

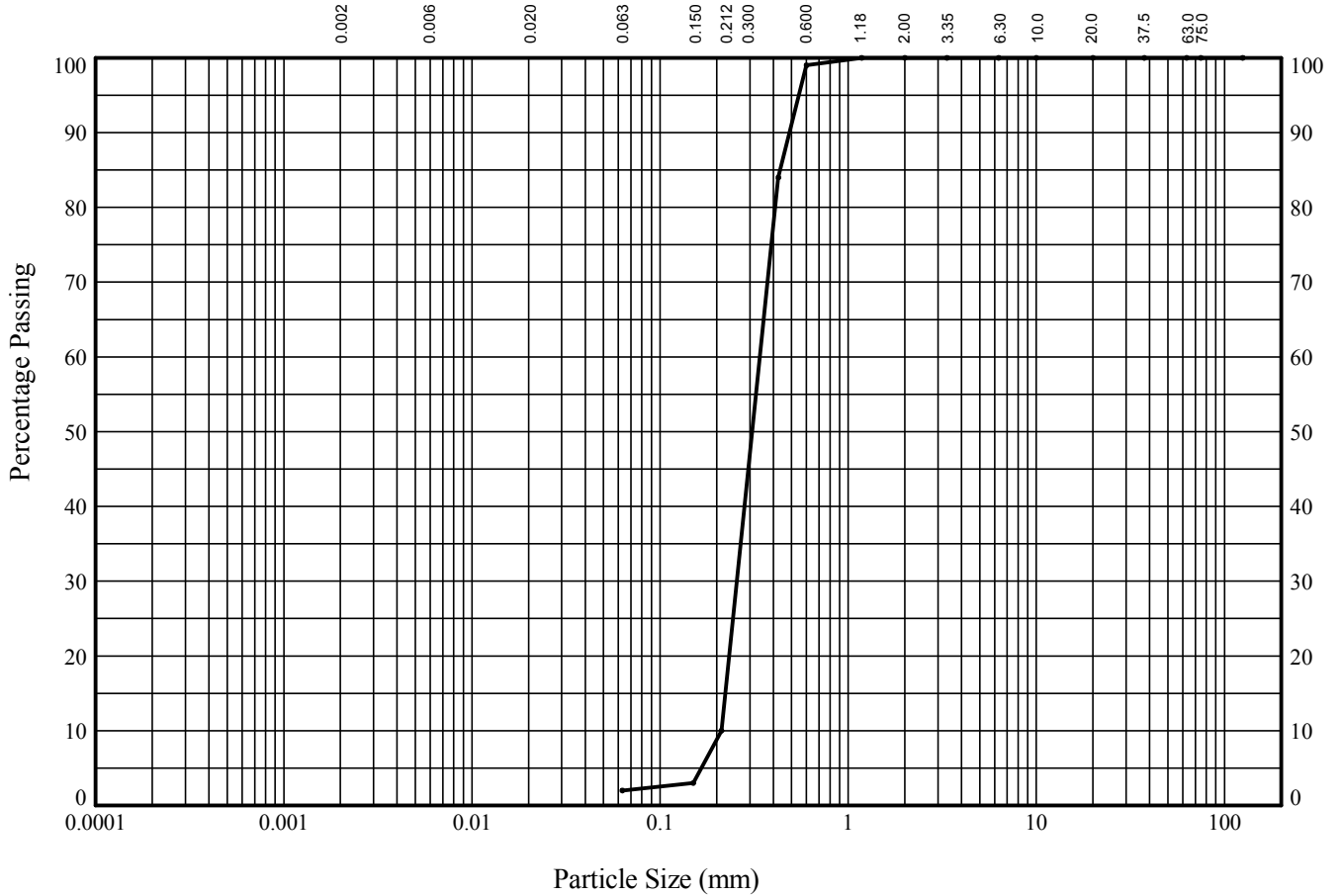
Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11** Sample Ref: **27** Sample Type: **B** Depth (m): **13.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	99
0.425	84
0.212	10
0.150	3
0.063	2

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	98
SILT/CLAY	2

Soil Description:
Orange slightly clayey SAND

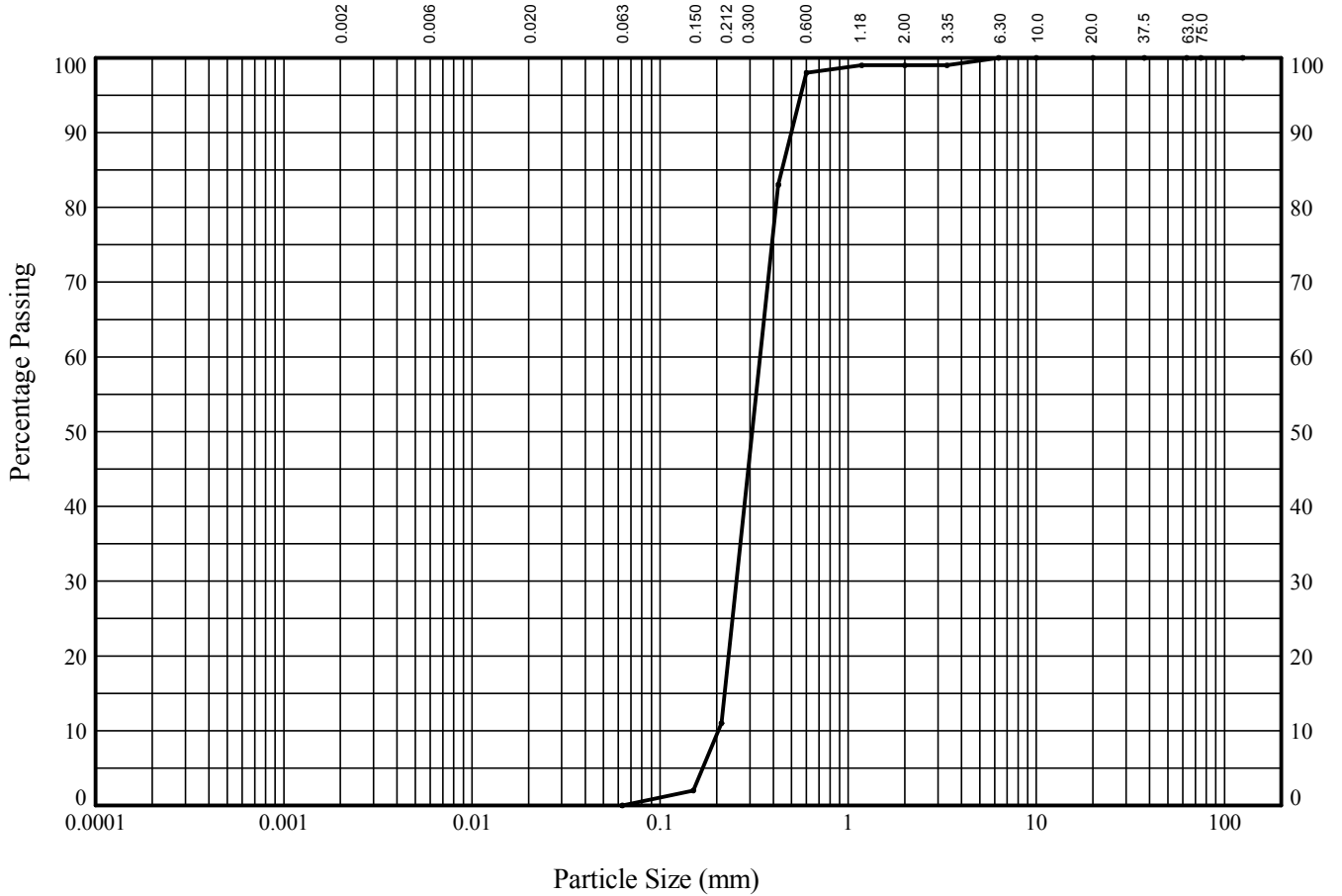
Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

STRUCTURAL SOILS The Potteries Pottery Street Castleford W. Yorkshire WF10 1NJ	Compiled By		Date
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11** Sample Ref: **29** Sample Type: **B** Depth (m): **14.00**



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

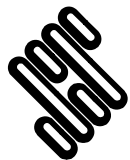
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	99
2.00	99
1.18	99
0.600	98
0.425	83
0.212	11
0.150	2
0.063	0

Particle Diameter	Percentage 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	99
1.18	99
0.600	98
0.425	83
0.212	11
0.150	2
0.063	0

Soil Fraction	Sieve Percentage
GRAVEL	1
SAND	99
SILT/CLAY	0

Soil Description:
Light brown orange slightly gravelly SAND

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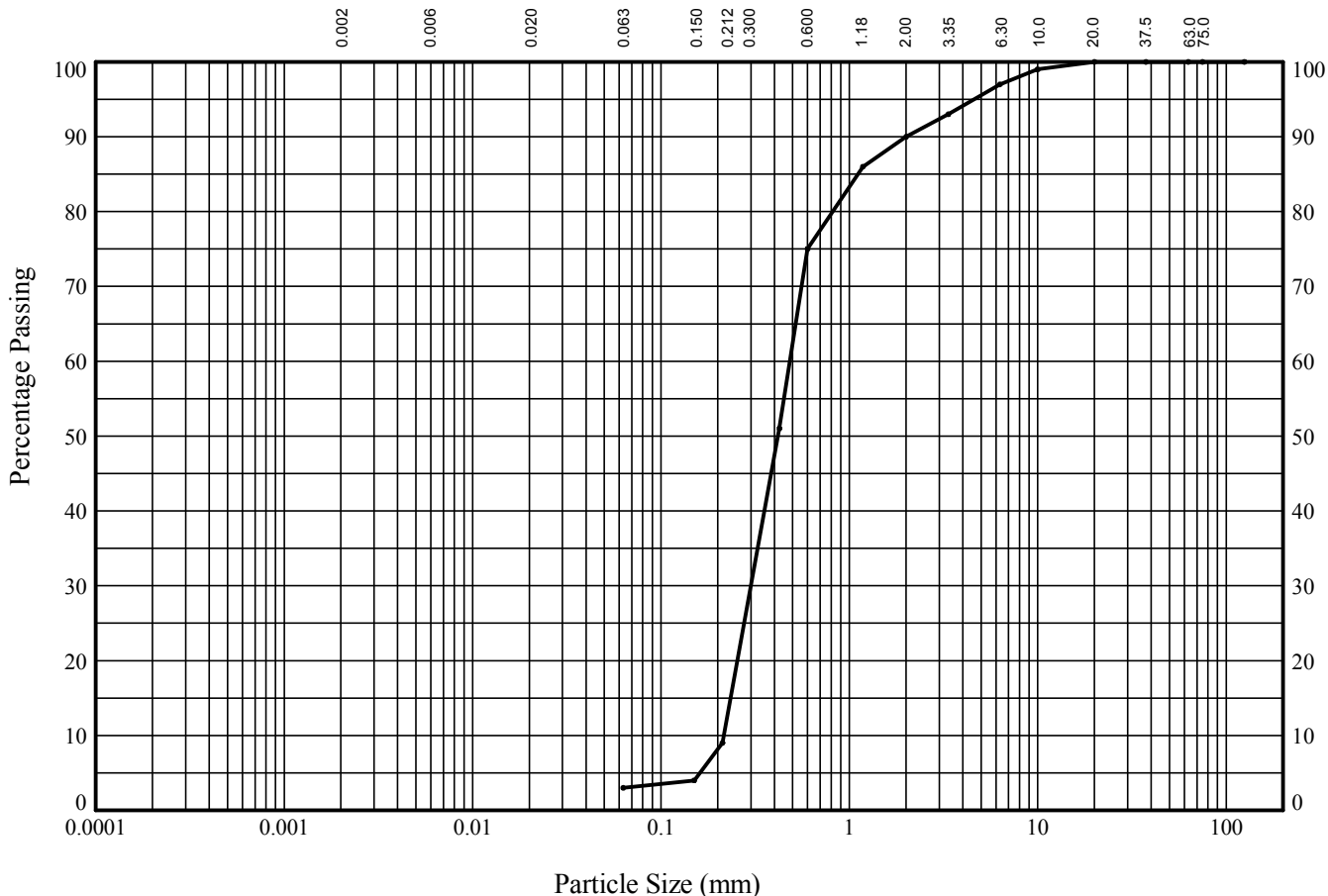
Compiled By		Date
		17/09/15
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SZC 2015 Onshore GI		763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11** Sample Ref: **31** Sample Type: **B** Depth (m): **15.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	97
3.35	93
2.00	90
1.18	86
0.600	75
0.425	51
0.212	9
0.150	4
0.063	3

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	10
SAND	87
SILT/CLAY	3

Soil Description:
Brown slightly clayey gravelly SAND (with shell fragments)

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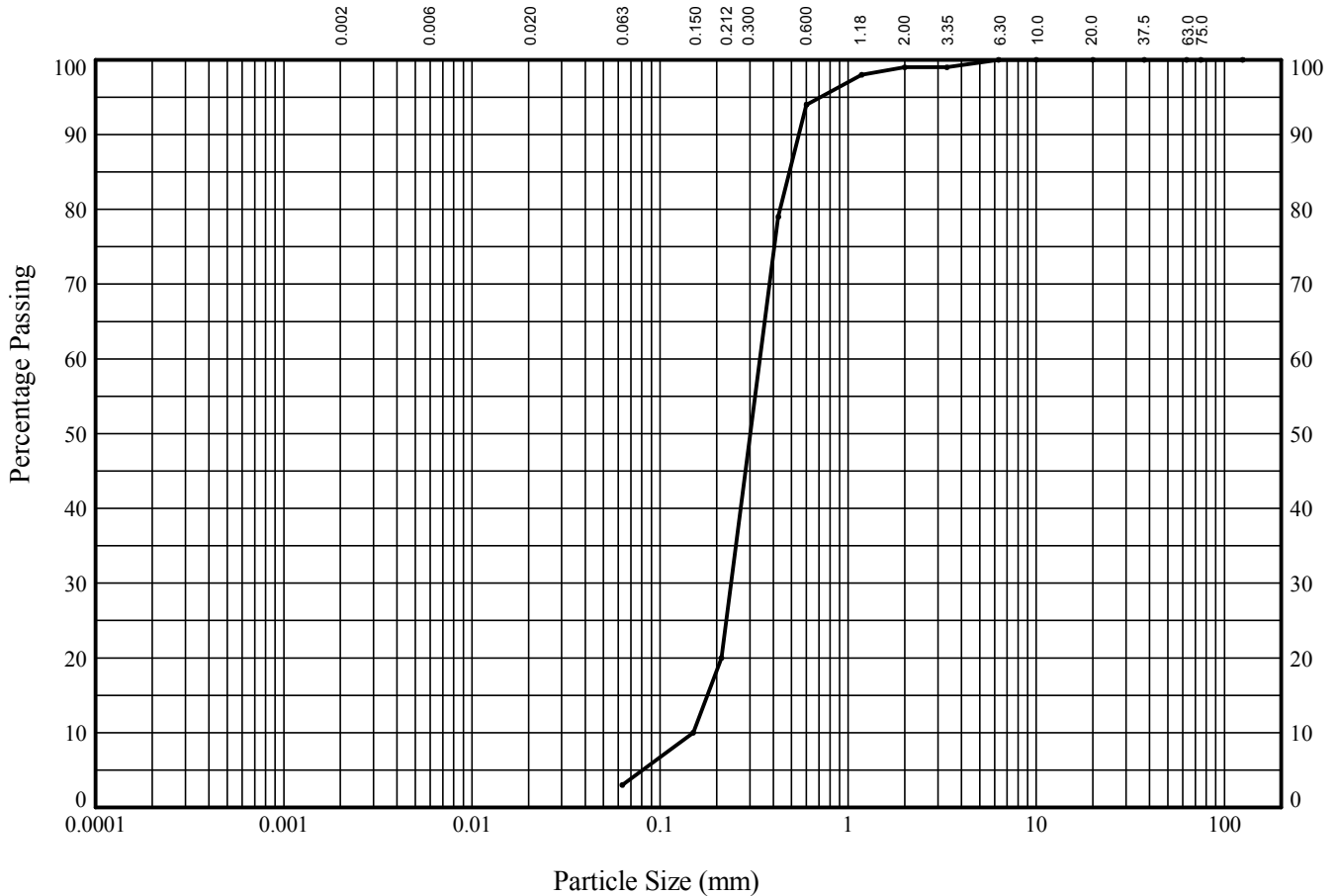
GINT_LIBRARY_V8_05_GLB LibVersion: v8_05 - Lib0004 ProjVersion: v8_05 - Core+Logs+Geotech Lab-Bristol - 0003 | Graph L - PSD - EC7 | 763468 - SZC 2015 ONSHORE GI.GPJ - v8_05 | 17/09/15 - 10:47 | SA. Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ, Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk

<p>STRUCTURAL SOILS The Potteries Pottery Street Castleford W. Yorkshire WF10 1NJ</p>	Compiled By		Date
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11** Sample Ref: **33** Sample Type: **B** Depth (m): **16.00**



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

BS Test Sieve (mm)	Percentage 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	99
1.18	98
0.600	94
0.425	79
0.212	20
0.150	10
0.063	3

Particle Diameter	Percentage 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	99
1.18	98
0.600	94
0.425	79
0.212	20
0.150	10
0.063	3

Soil Fraction	Sieve Percentage
GRAVEL	1
SAND	96
SILT/CLAY	3

Soil Description:
Orange brown slightly clayey slightly gravelly SAND

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SZC 2015 Onshore GI		763468



PARTICLE SIZE DISTRIBUTION TEST

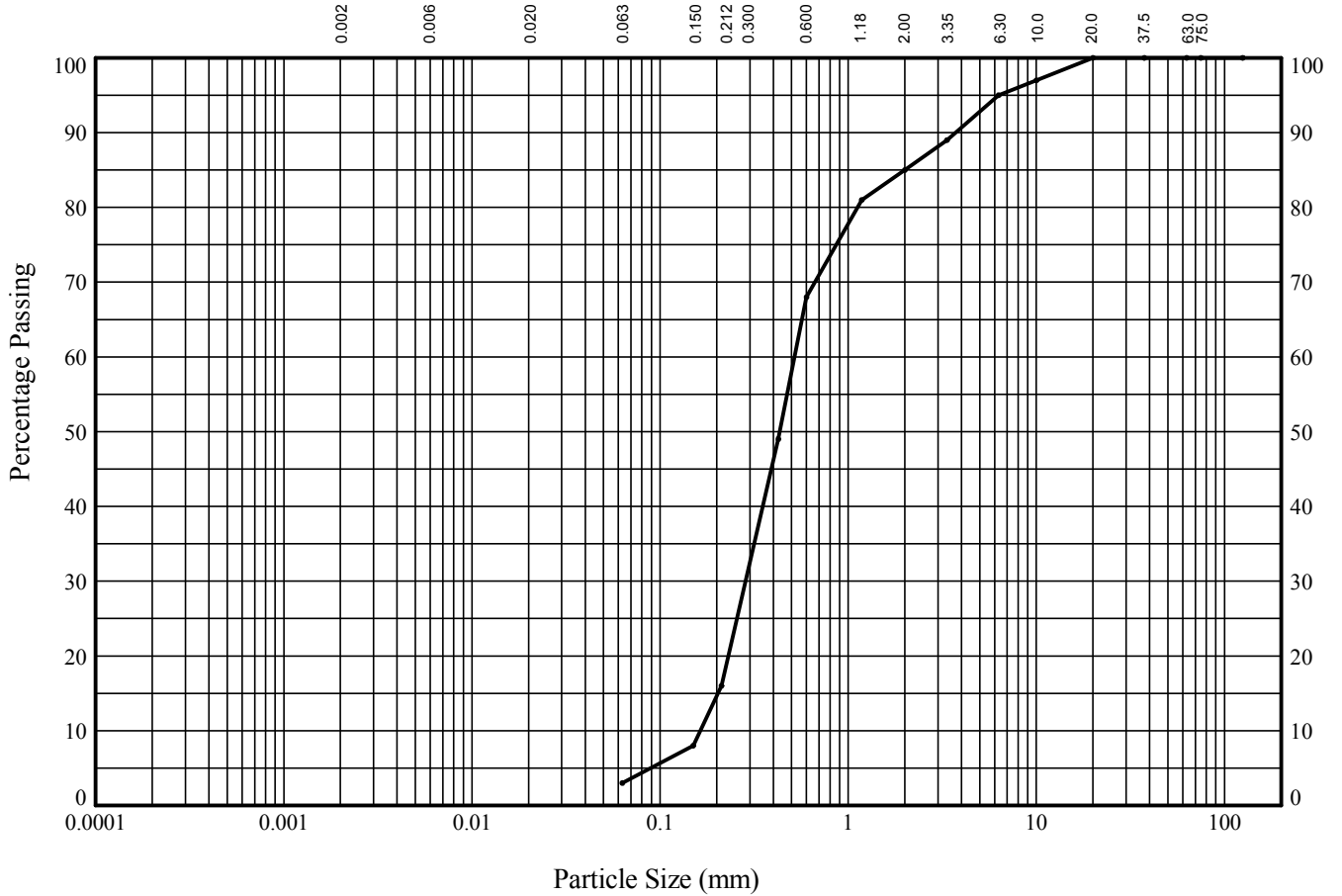
In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11**

Sample Ref: **35**

Sample Type: **B**

Depth (m): **17.00**



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



BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	97
6.30	95
3.35	89
2.00	85
1.18	81
0.600	68
0.425	49
0.212	16
0.150	8
0.063	3

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	97
6.30	95
3.35	89
2.00	85
1.18	81
0.600	68
0.425	49
0.212	16
0.150	8
0.063	3

Soil Fraction	Sieve Percentage
GRAVEL	15
SAND	82
SILT/CLAY	3

Soil Description:
Brown slightly clayey gravelly SAND

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	Contract		Contract Ref:
SZC 2015 Onshore GI		763468	
			

PARTICLE SIZE DISTRIBUTION TEST

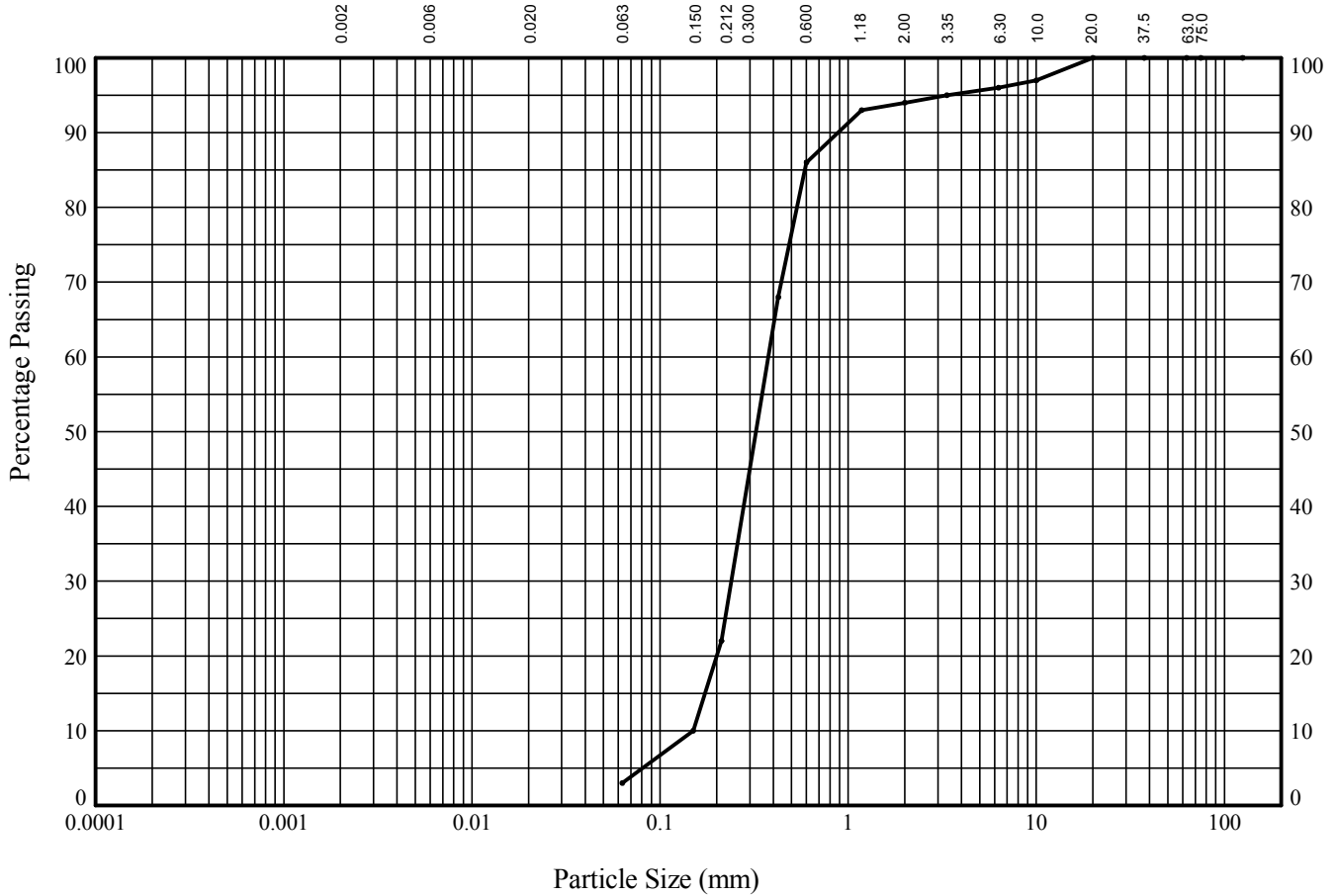
In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP11**

Sample Ref: **37**

Sample Type: **B**

Depth (m): **18.00**



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

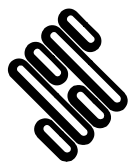
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	97
6.30	96
3.35	95
2.00	94
1.18	93
0.600	86
0.425	68
0.212	22
0.150	10
0.063	3

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	6
SAND	91
SILT/CLAY	3

Soil Description:
Brown slightly clayey gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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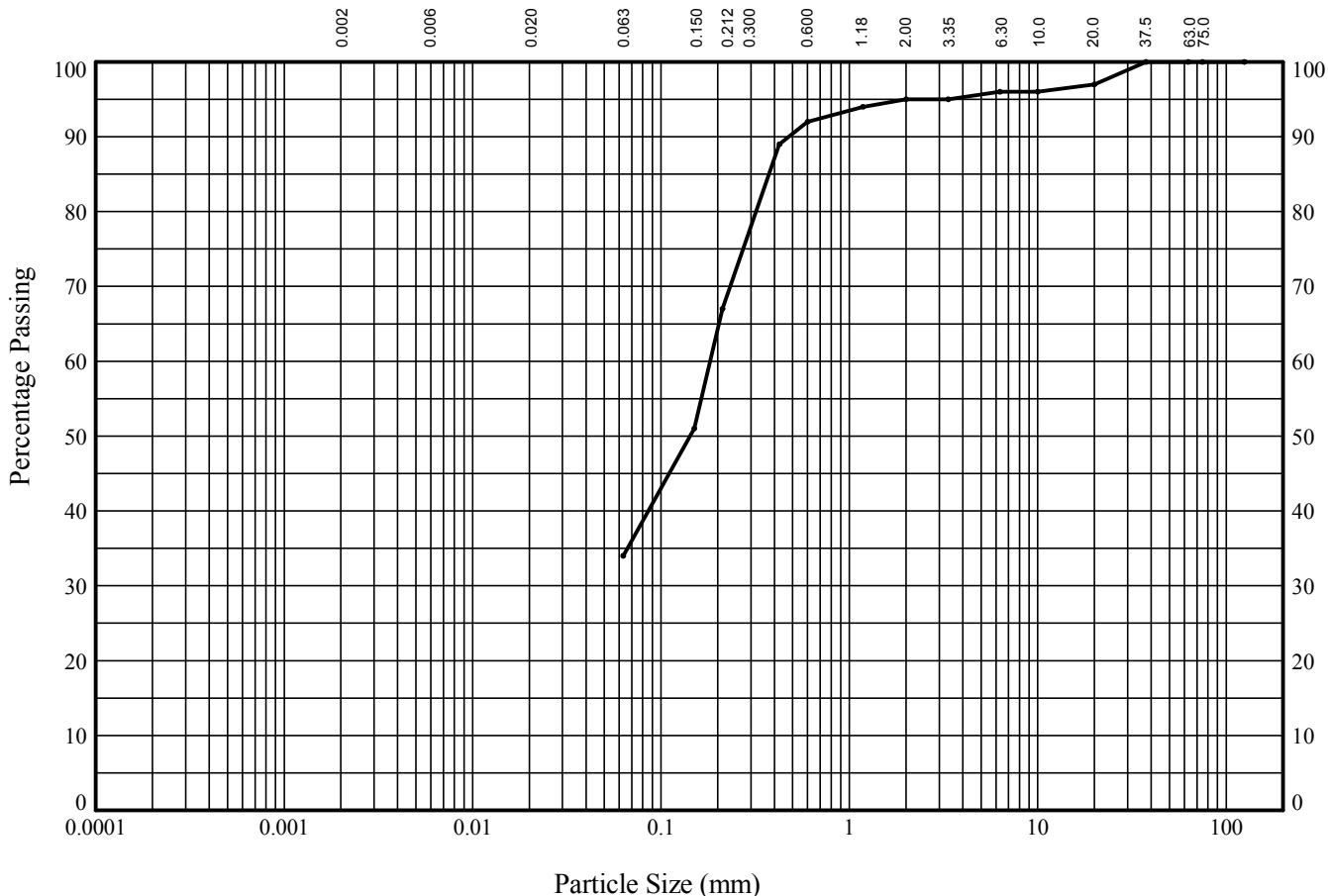
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **5** Sample Type: **B** Depth (m): **2.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	97
10.0	96
6.30	96
3.35	95
2.00	95
1.18	94
0.600	92
0.425	89
0.212	67
0.150	51
0.063	34

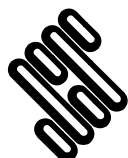
Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	5
SAND	61
SILT/CLAY	34

Soil Description:
Light brown very clayey gravelly SAND

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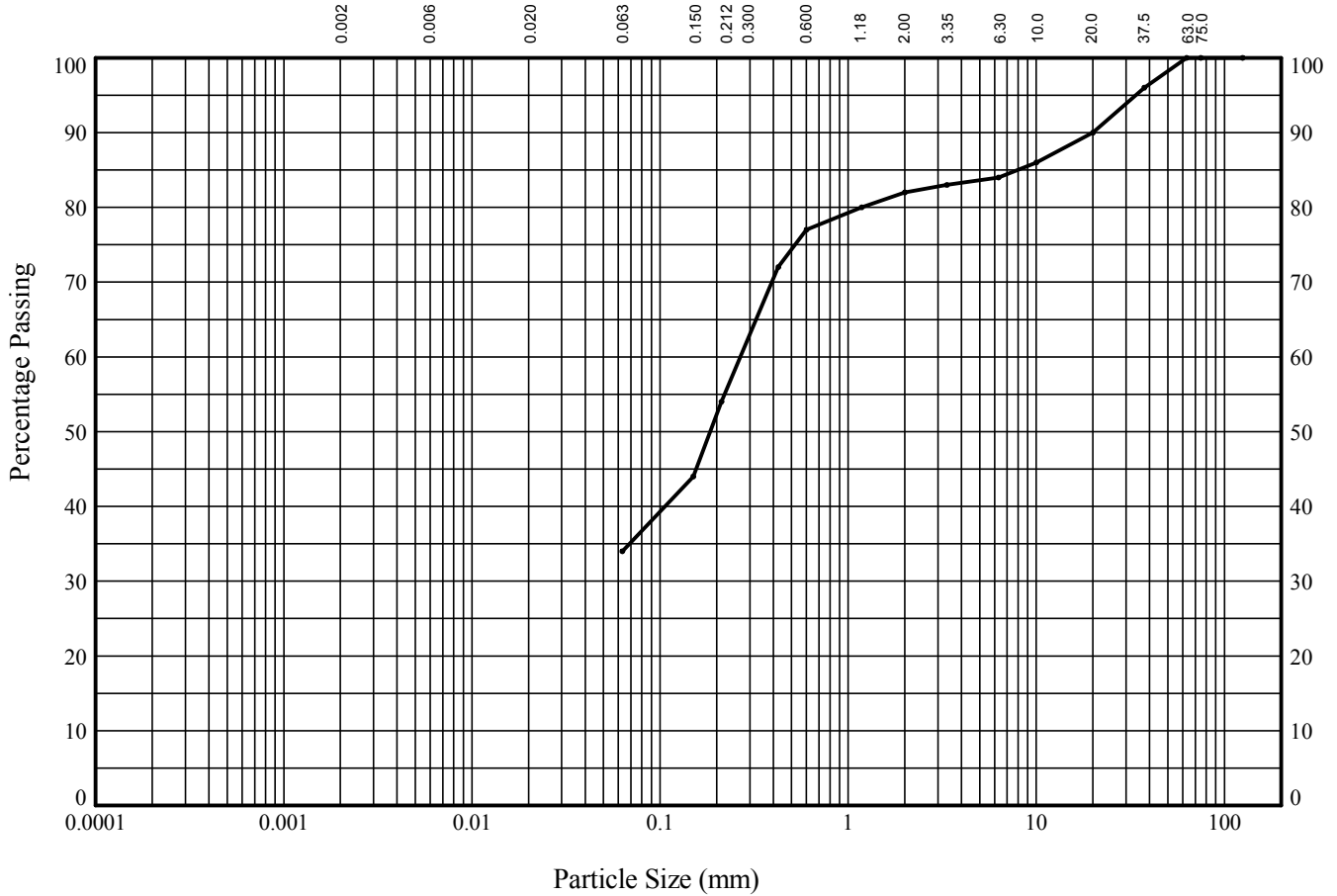
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Contract		Contract Ref:
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **7** Sample Type: **B** Depth (m): **3.00**



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

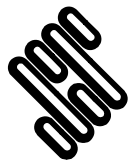
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	96
20.0	90
10.0	86
6.30	84
3.35	83
2.00	82
1.18	80
0.600	77
0.425	72
0.212	54
0.150	44
0.063	34

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	96
20.0	90
10.0	86
6.30	84
3.35	83
2.00	82
1.18	80
0.600	77
0.425	72
0.212	54
0.150	44
0.063	34

Soil Fraction	Sieve Percentage
GRAVEL	18
SAND	48
SILT/CLAY	34

Soil Description:
Brown sandy slightly gravelly CLAY

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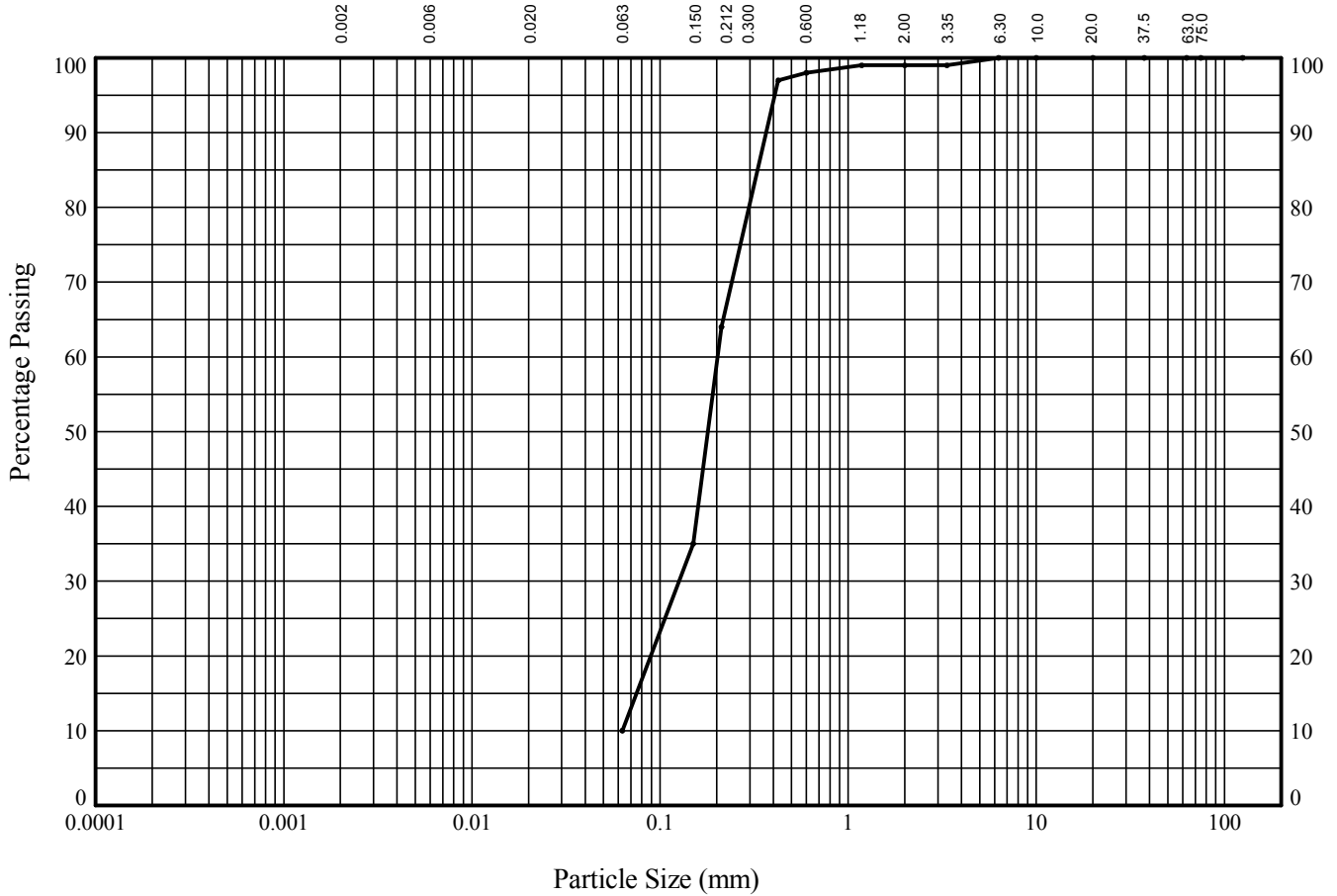
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **9** Sample Type: **B** Depth (m): **4.20**



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

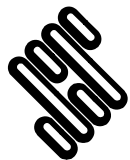
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	99
2.00	99
1.18	99
0.600	98
0.425	97
0.212	64
0.150	35
0.063	10

Particle Diameter	Percentage 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	99
1.18	99
0.600	98
0.425	97
0.212	64
0.150	35
0.063	10

Soil Fraction	Sieve Percentage
GRAVEL	1
SAND	89
SILT/CLAY	10

Soil Description:
Light brown clayey slightly gravelly SAND

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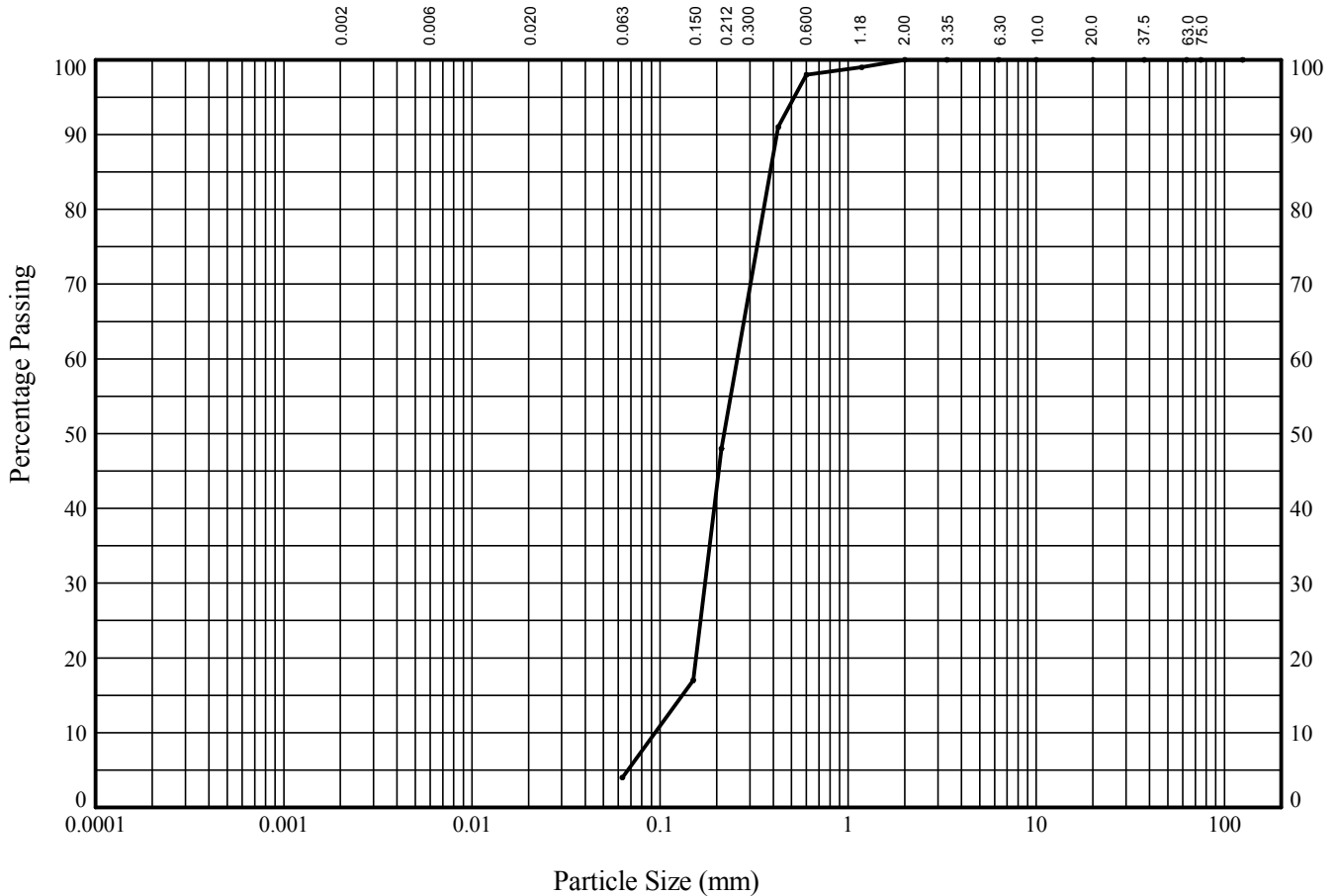
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **11** Sample Type: **B** Depth (m): **5.00**



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

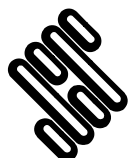
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	99
0.600	98
0.425	91
0.212	48
0.150	17
0.063	4

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	99
0.600	98
0.425	91
0.212	48
0.150	17
0.063	4

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	96
SILT/CLAY	4

Soil Description:
Light brown slightly clayey SAND

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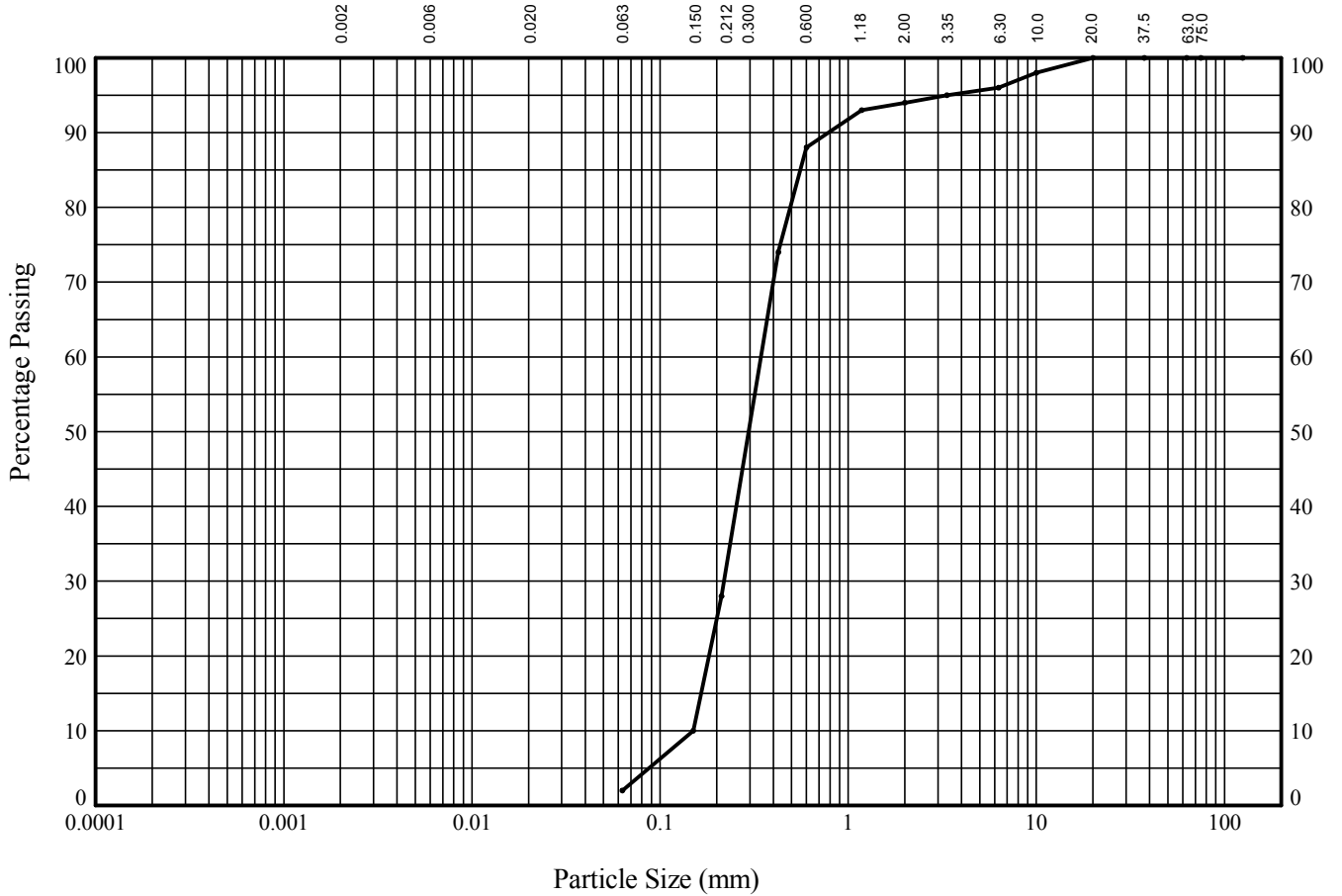
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **13** Sample Type: **B** Depth (m): **6.00**



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

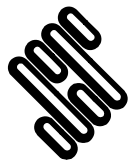
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	98
6.30	96
3.35	95
2.00	94
1.18	93
0.600	88
0.425	74
0.212	28
0.150	10
0.063	2

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	6
SAND	92
SILT/CLAY	2

Soil Description:
Light brown slightly clayey gravelly SAND

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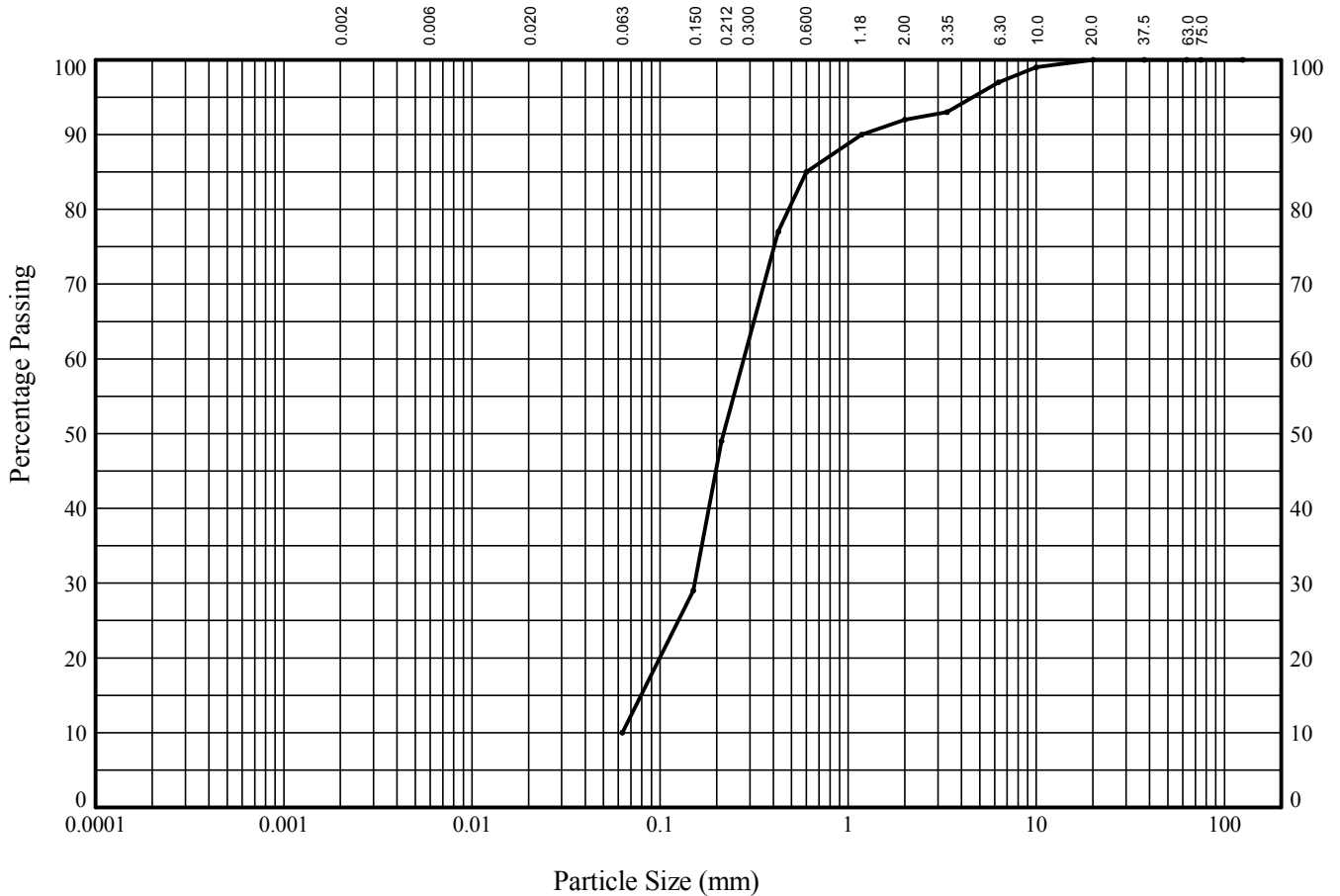
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **15** Sample Type: **B** Depth (m): **7.00**



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

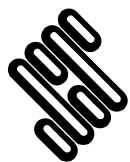
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	97
3.35	93
2.00	92
1.18	90
0.600	85
0.425	77
0.212	49
0.150	29
0.063	10

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	97
3.35	93
2.00	92
1.18	90
0.600	85
0.425	77
0.212	49
0.150	29
0.063	10

Soil Fraction	Sieve Percentage
GRAVEL	8
SAND	82
SILT/CLAY	10

Soil Description:
Light brown clayey gravelly SAND

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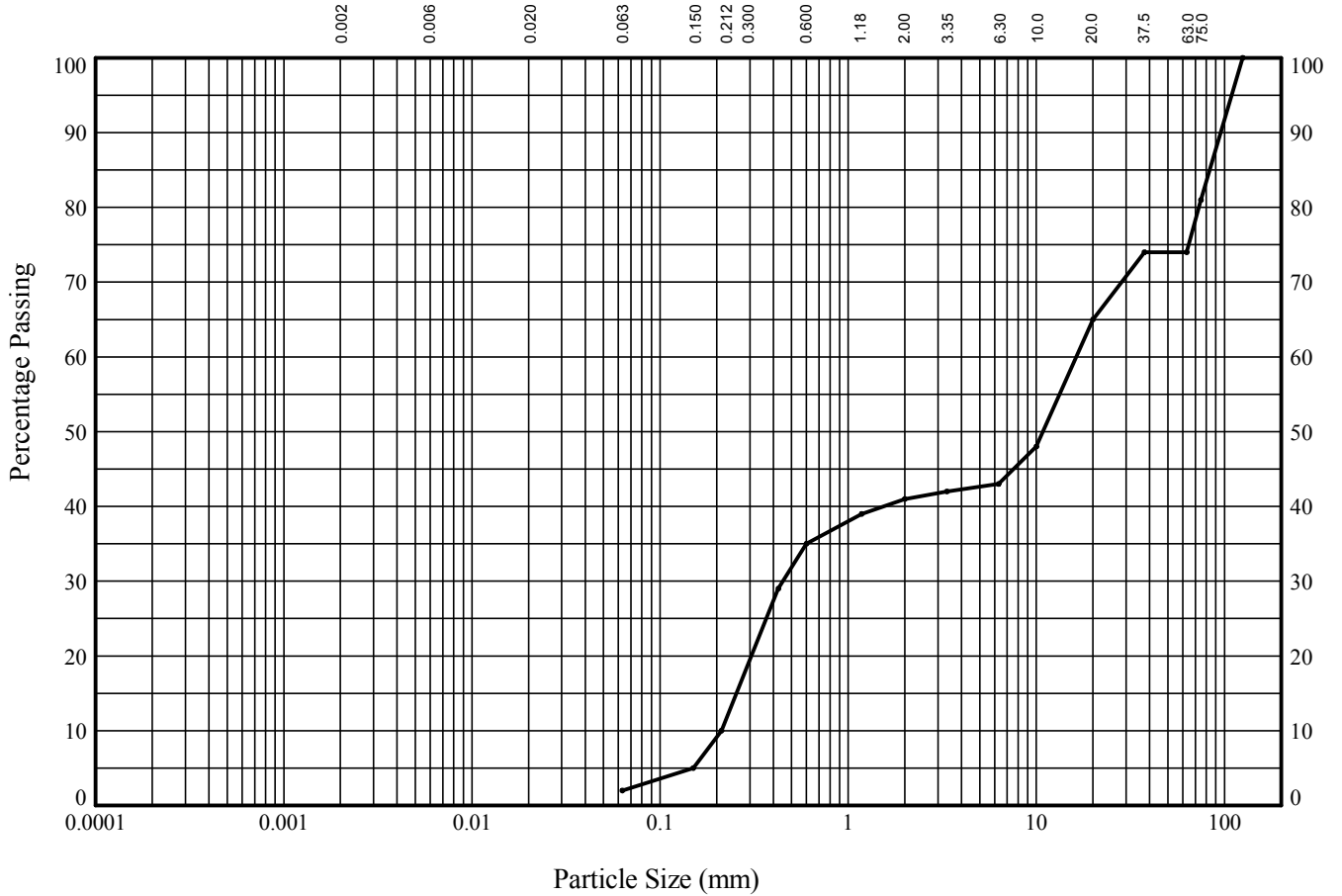
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **17** Sample Type: **B** Depth (m): **8.00**



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

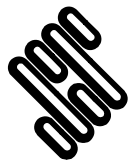
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	81
63.0	74
37.5	74
20.0	65
10.0	48
6.30	43
3.35	42
2.00	41
1.18	39
0.600	35
0.425	29
0.212	10
0.150	5
0.063	2

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
COBBLES	26
GRAVEL	33
SAND	39
SILT/CLAY	2

Soil Description:
Light brown slightly clayey SAND and GRAVEL with many cobbles

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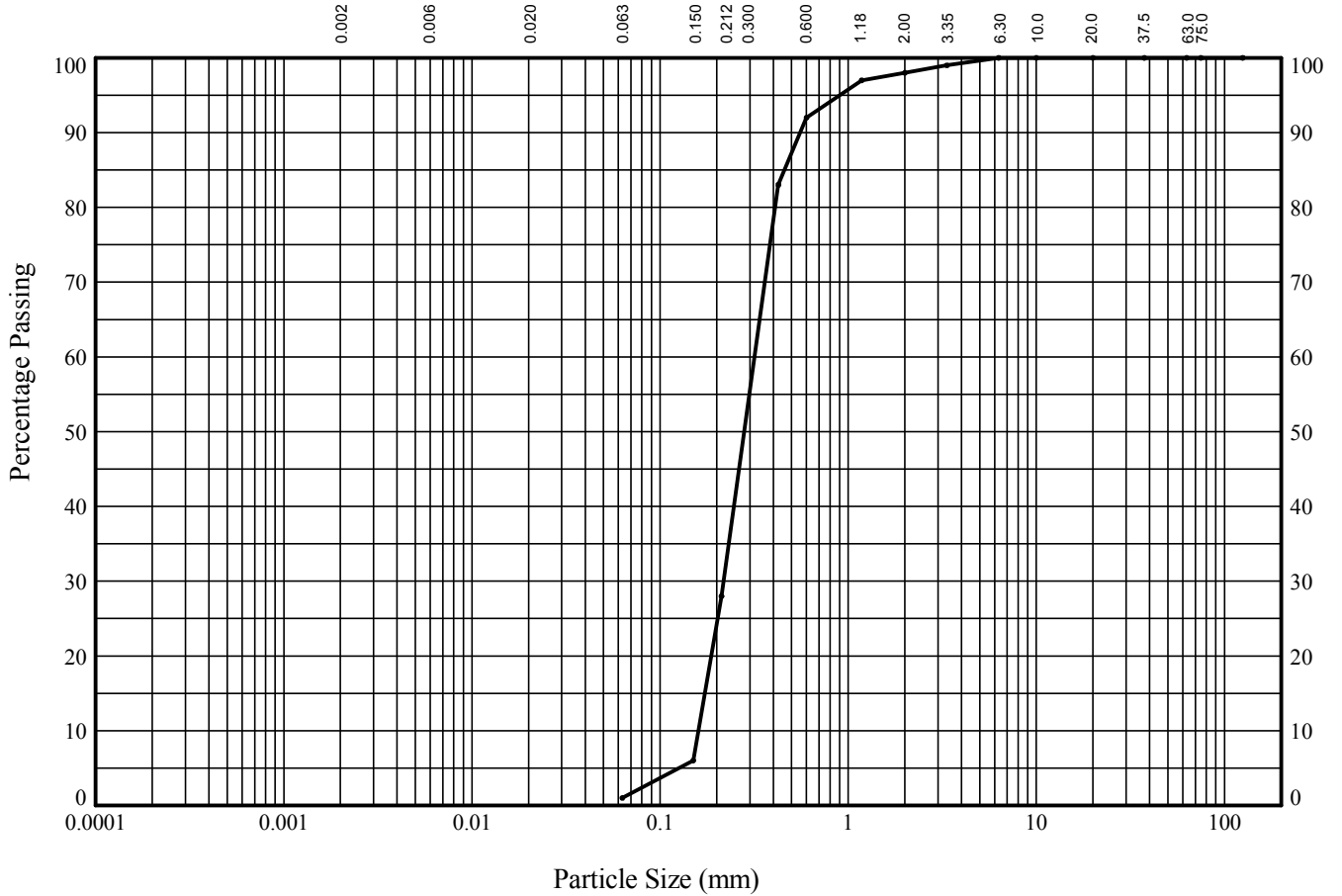
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **19** Sample Type: **B** Depth (m): **9.00**



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

BS Test Sieve (mm)	Percentage 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	97
0.600	92
0.425	83
0.212	28
0.150	6
0.063	1

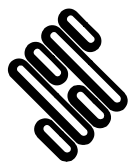
Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	99
2.00	98
1.18	97
0.600	92
0.425	83
0.212	28
0.150	6
0.063	1

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	97
SILT/CLAY	1

Soil Description:
Light brown slightly clayey slightly gravelly SAND

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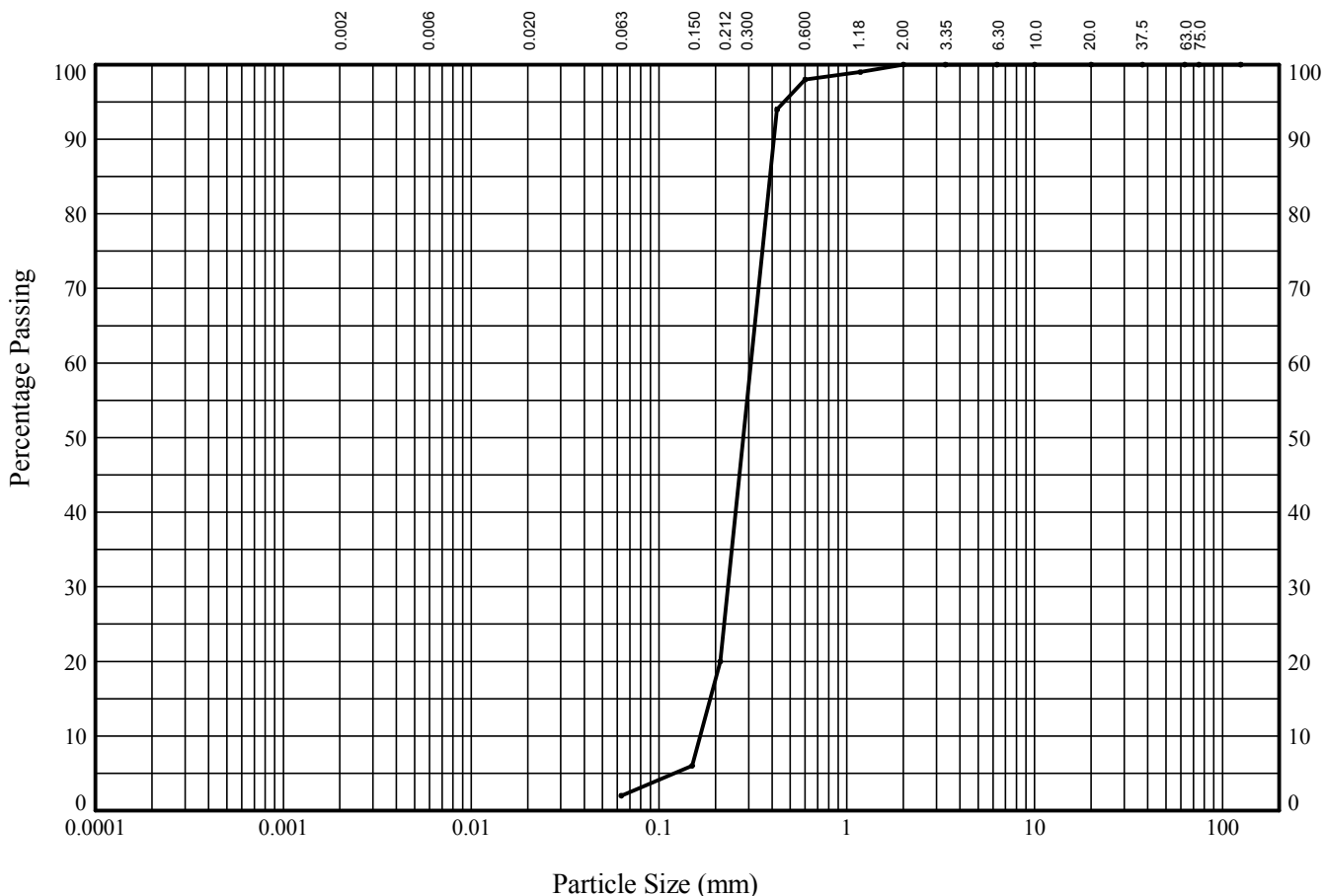
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **21** Sample Type: **B** Depth (m): **10.00**



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

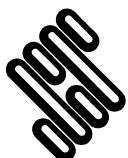
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	99
0.600	98
0.425	94
0.212	20
0.150	6
0.063	2

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	98
SILT/CLAY	2

Soil Description:
Light brown slightly clayey SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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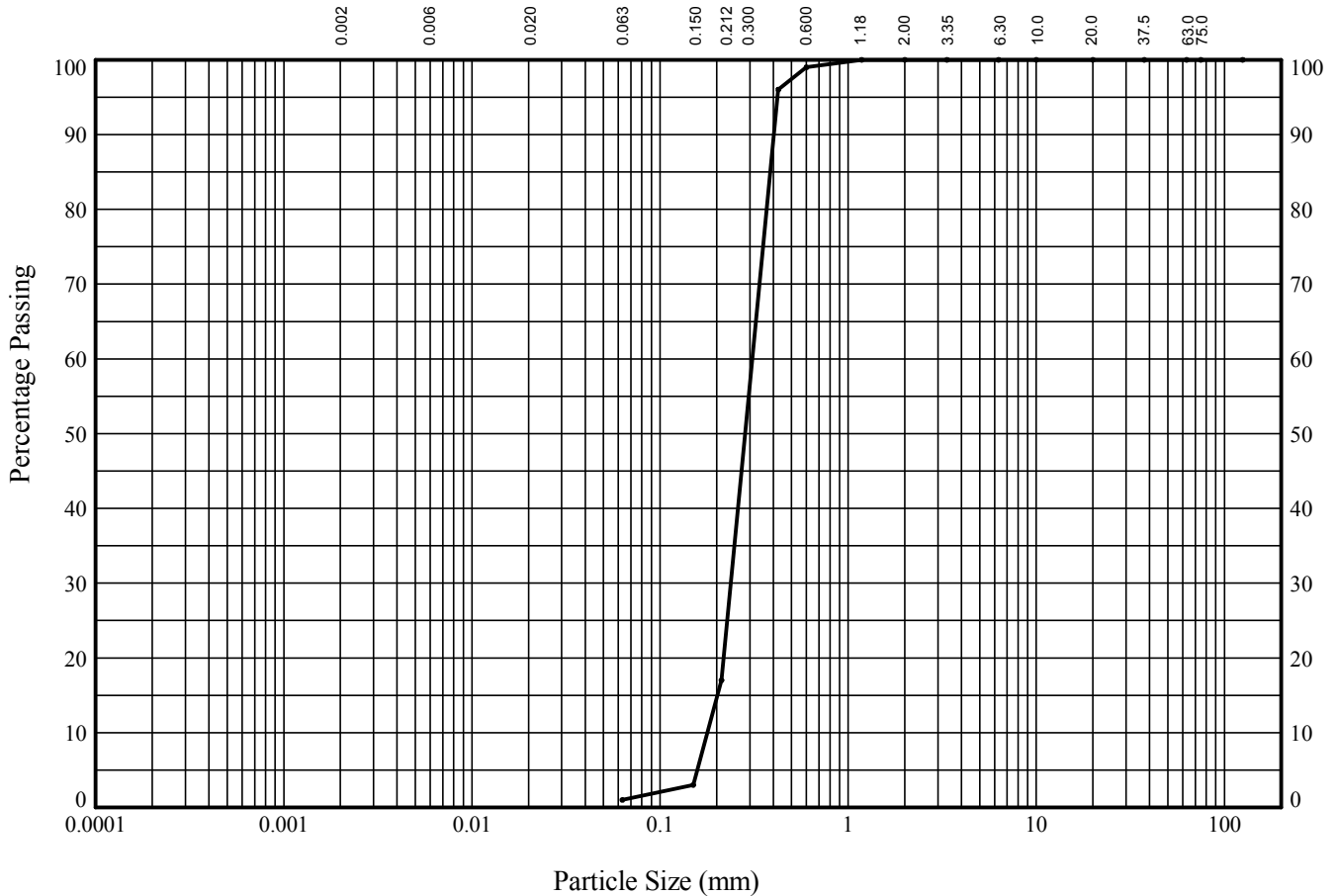
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **23** Sample Type: **B** Depth (m): **11.00**



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

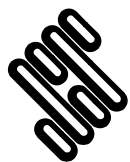
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	99
0.425	96
0.212	17
0.150	3
0.063	1

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	99
0.425	96
0.212	17
0.150	3
0.063	1

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	99
SILT/CLAY	1

Soil Description:
Light brown slightly clayey SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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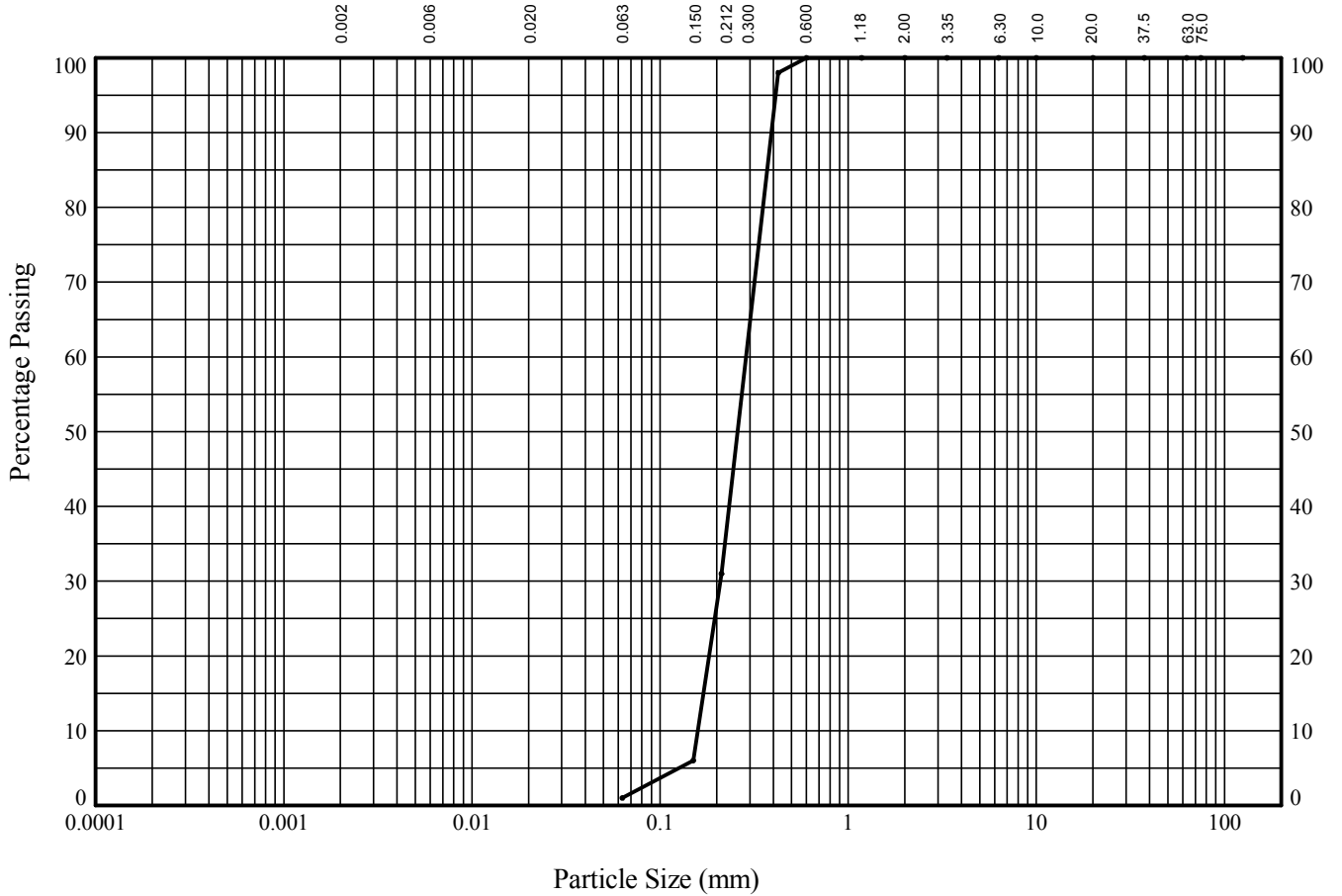
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **25** Sample Type: **B** Depth (m): **12.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	100
0.425	98
0.212	31
0.150	6
0.063	1

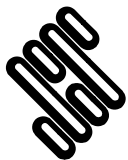
Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	100
0.425	98
0.212	31
0.150	6
0.063	1

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	99
SILT/CLAY	1

Soil Description:
Light brown slightly clayey SAND

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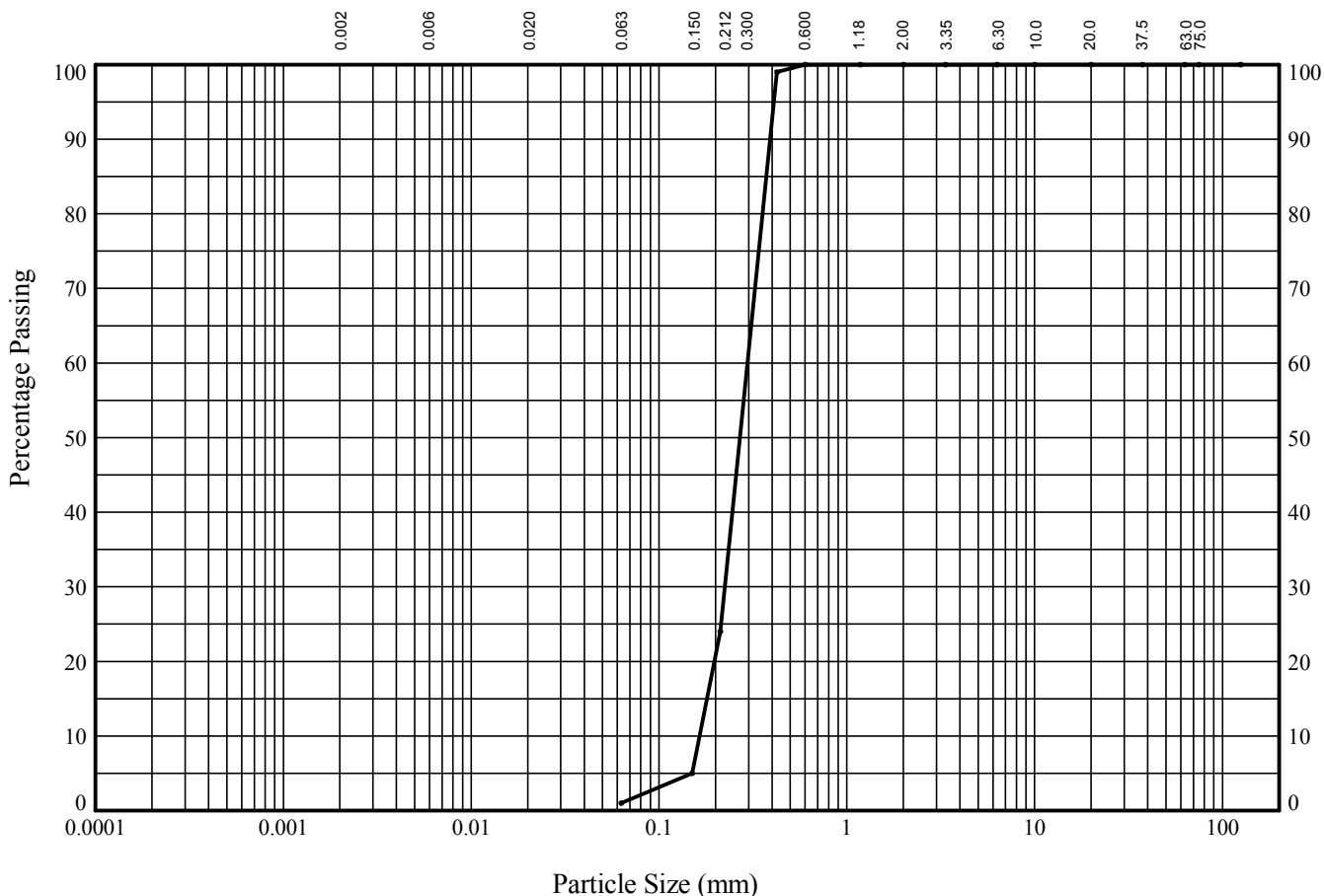
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **27** Sample Type: **B** Depth (m): **13.00**



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

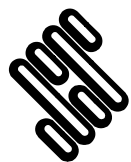
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	100
0.425	99
0.212	24
0.150	5
0.063	1

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	100
0.425	99
0.212	24
0.150	5
0.063	1

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	99
SILT/CLAY	1

Soil Description:
Light brown slightly clayey SAND

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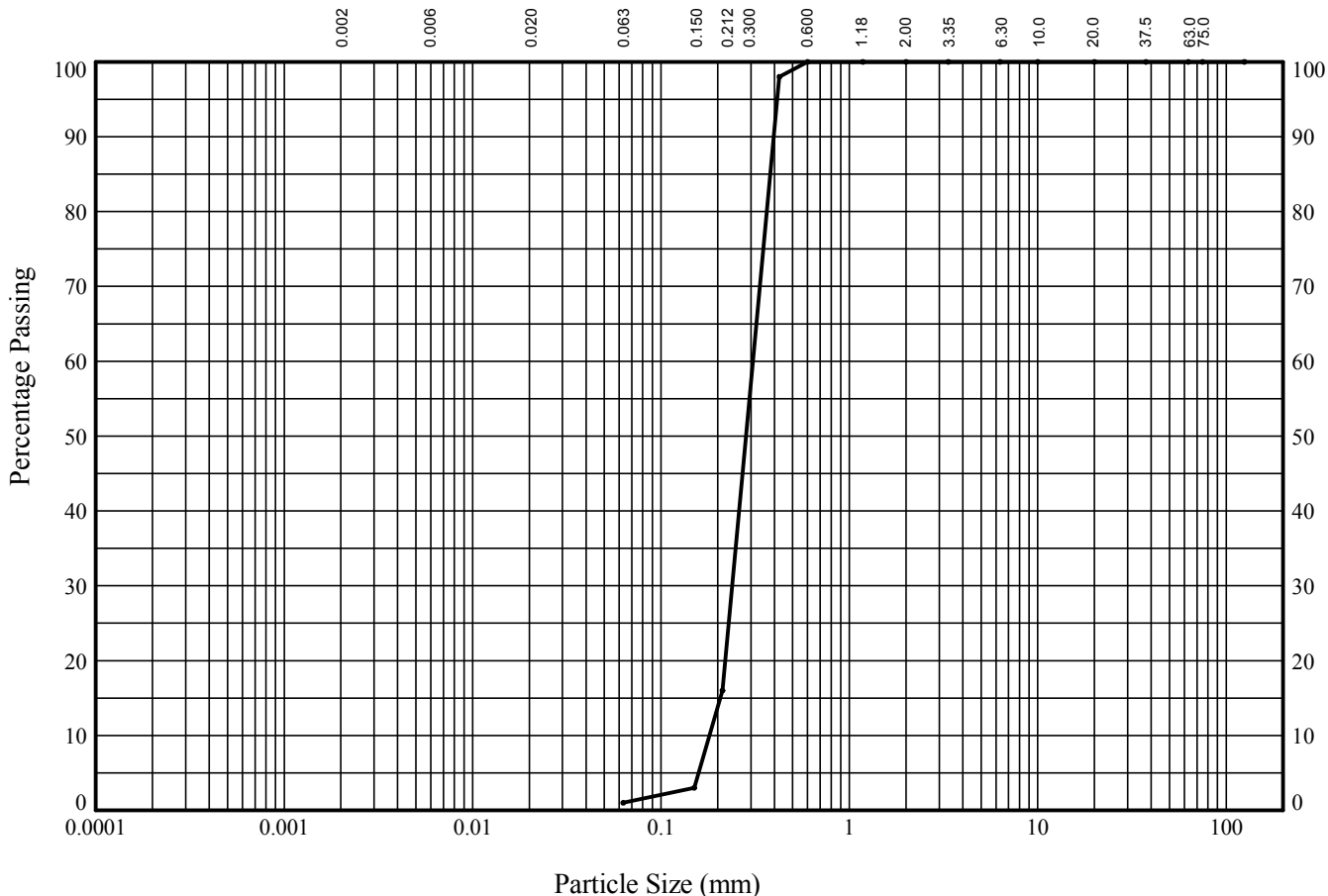
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **29** Sample Type: **B** Depth (m): **14.00**



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

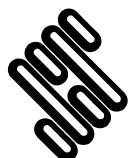
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	100
0.425	98
0.212	16
0.150	3
0.063	1

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	100
0.425	98
0.212	16
0.150	3
0.063	1

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	99
SILT/CLAY	1

Soil Description:
Light brown slightly clayey SAND

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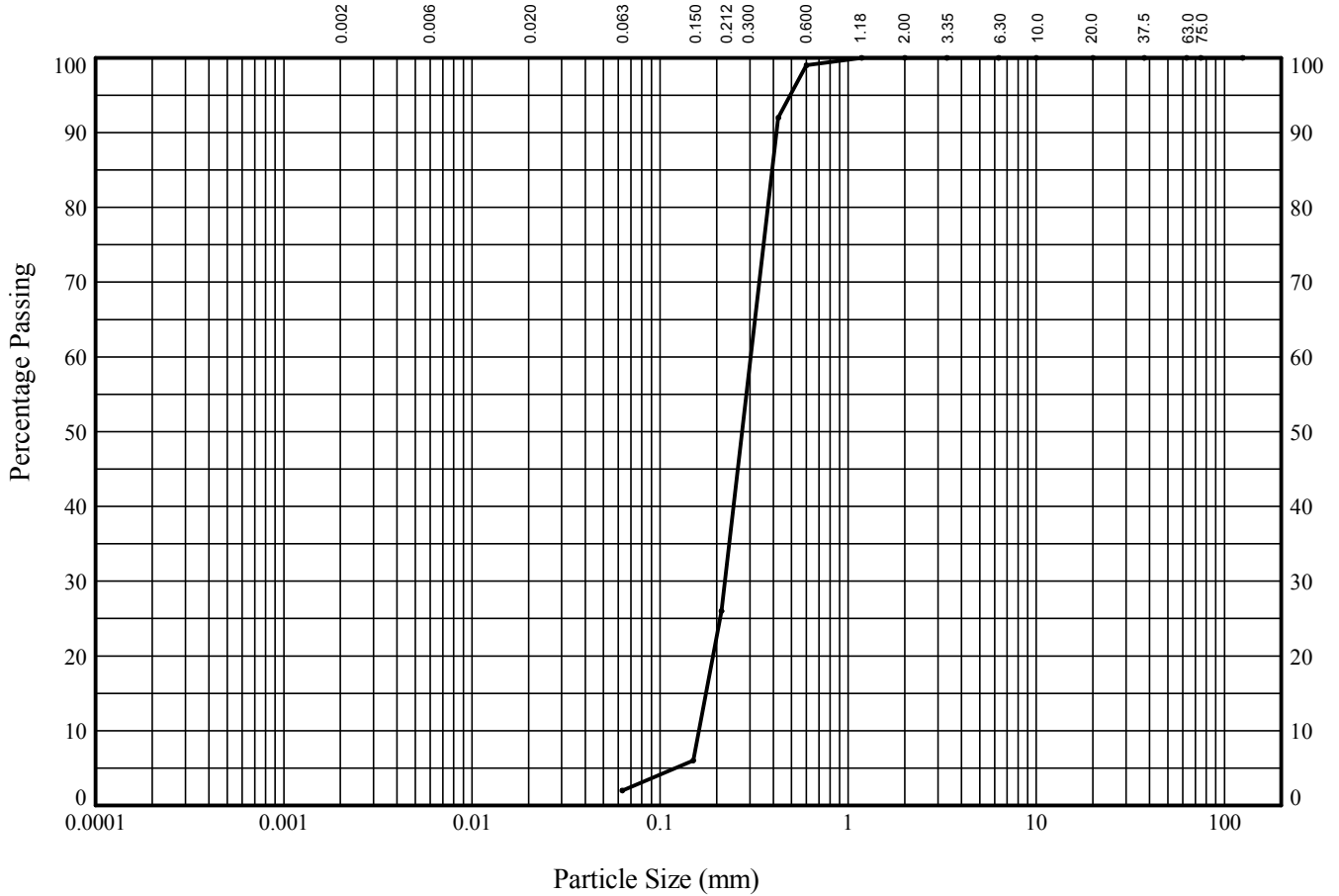
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **31** Sample Type: **B** Depth (m): **15.00**



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

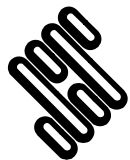
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	99
0.425	92
0.212	26
0.150	6
0.063	2

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	99
0.425	92
0.212	26
0.150	6
0.063	2

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	98
SILT/CLAY	2

Soil Description:
Light brown slightly clayey SAND

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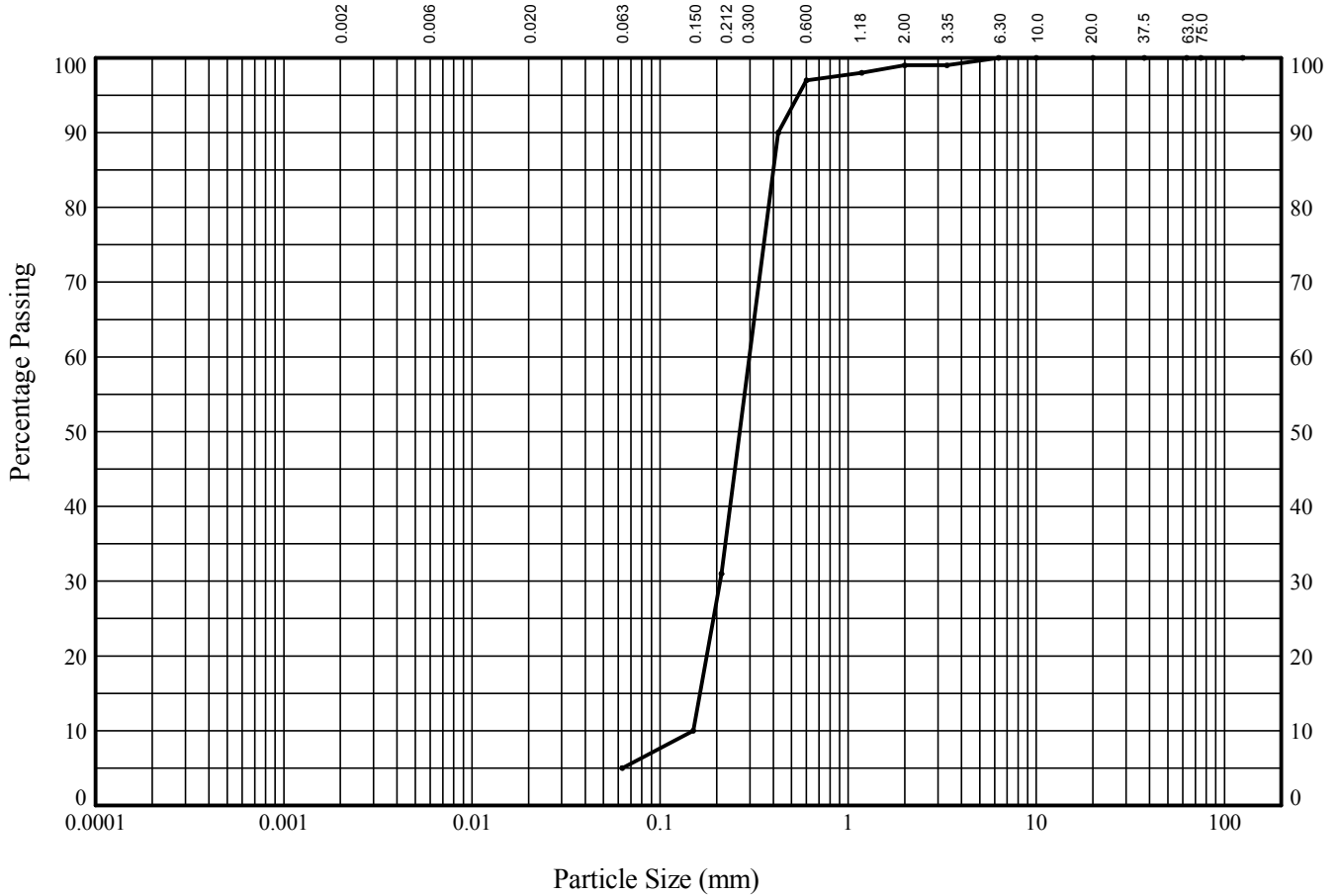
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **33** Sample Type: **B** Depth (m): **16.00**



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

BS Test Sieve (mm)	Percentage 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	99
1.18	98
0.600	97
0.425	90
0.212	31
0.150	10
0.063	5

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	1
SAND	94
SILT/CLAY	5

Soil Description:
Light brown clayey slightly gravelly SAND

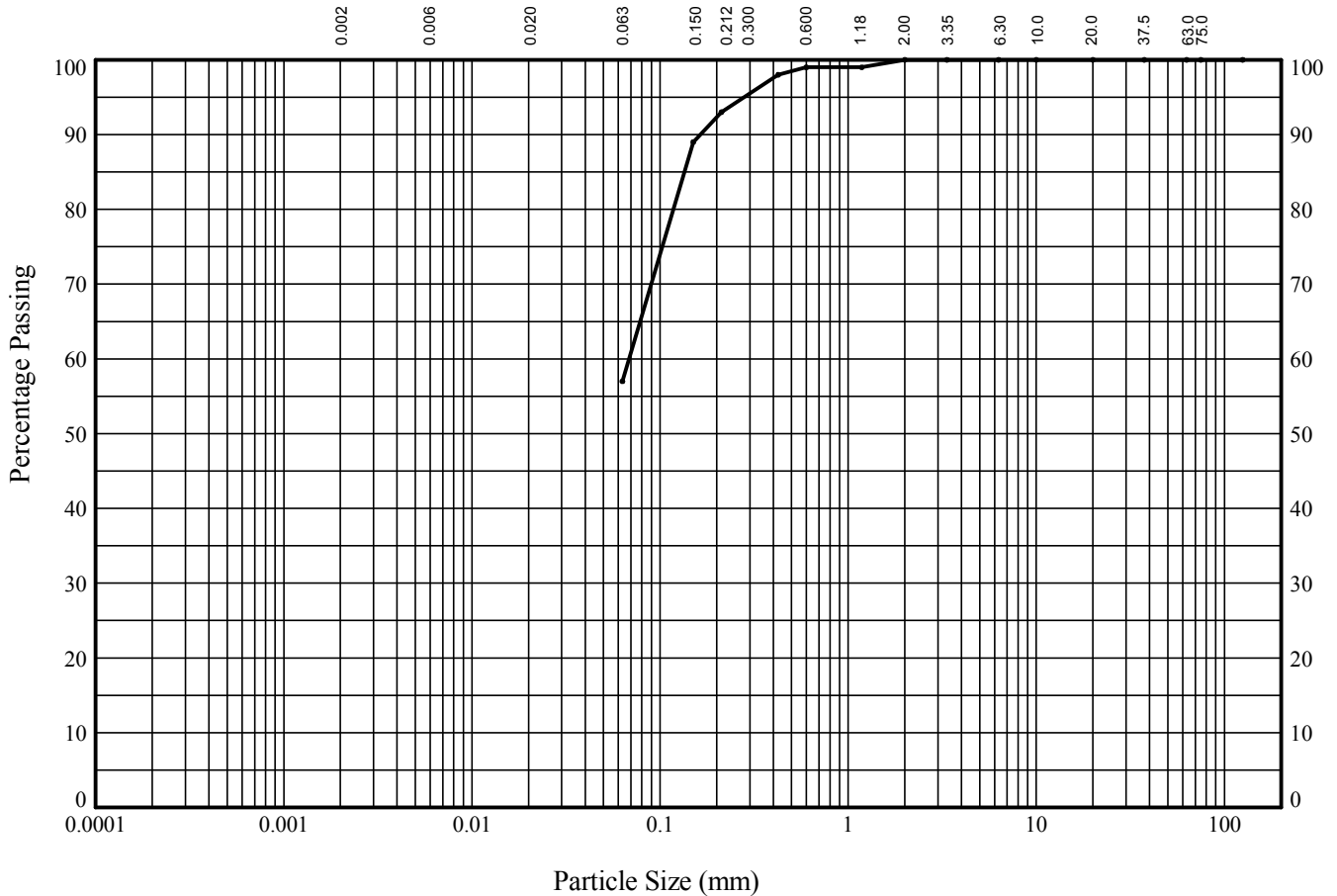
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **34** Sample Type: **B** Depth (m): **16.50**



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

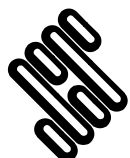
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	99
0.600	99
0.425	98
0.212	93
0.150	89
0.063	57

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	99
0.600	99
0.425	98
0.212	93
0.150	89
0.063	57

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	43
SILT/CLAY	57

Soil Description:
Brown sandy CLAY

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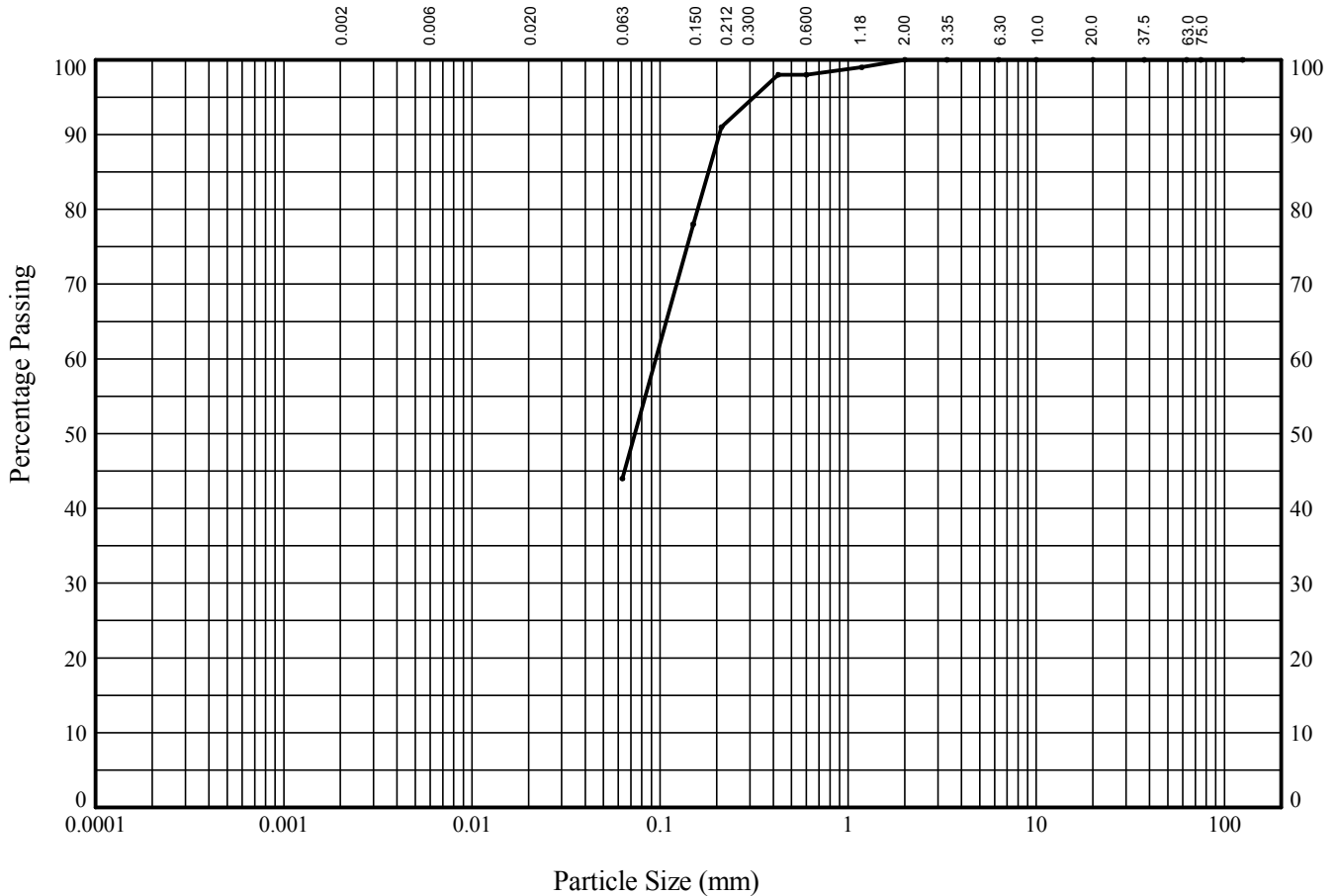
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12** Sample Ref: **36** Sample Type: **B** Depth (m): **17.50**



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

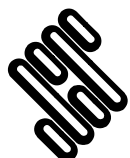
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	99
0.600	98
0.425	98
0.212	91
0.150	78
0.063	44

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	99
0.600	98
0.425	98
0.212	91
0.150	78
0.063	44

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	56
SILT/CLAY	44

Soil Description:
Light brown very sandy CLAY

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PARTICLE SIZE DISTRIBUTION TEST

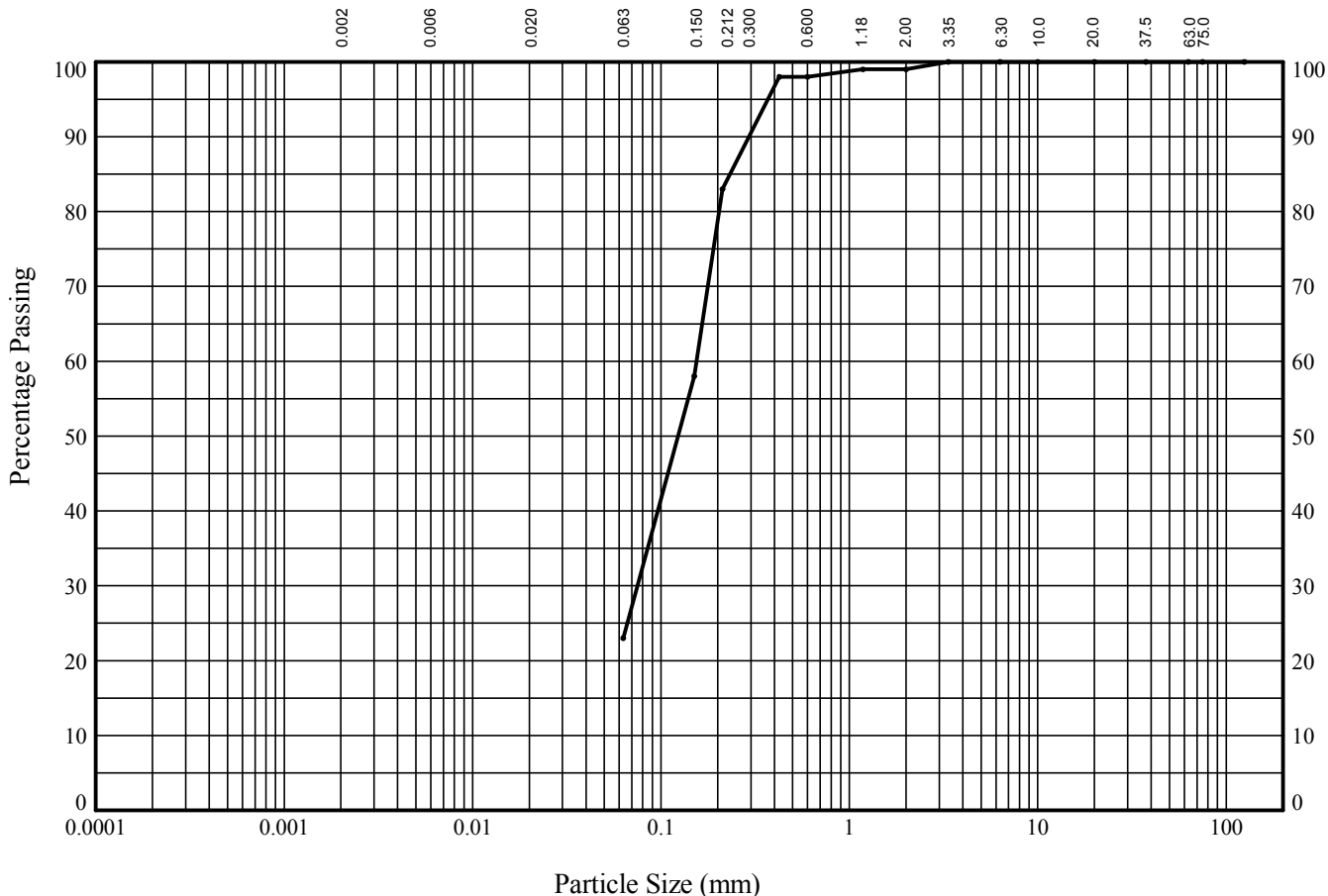
In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP12**

Sample Ref: **40**

Sample Type: **B**

Depth (m): **19.50**



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

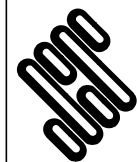
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	99
1.18	99
0.600	98
0.425	98
0.212	83
0.150	58
0.063	23

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	1
SAND	76
SILT/CLAY	23

Soil Description:
Brown clayey slightly gravelly SAND

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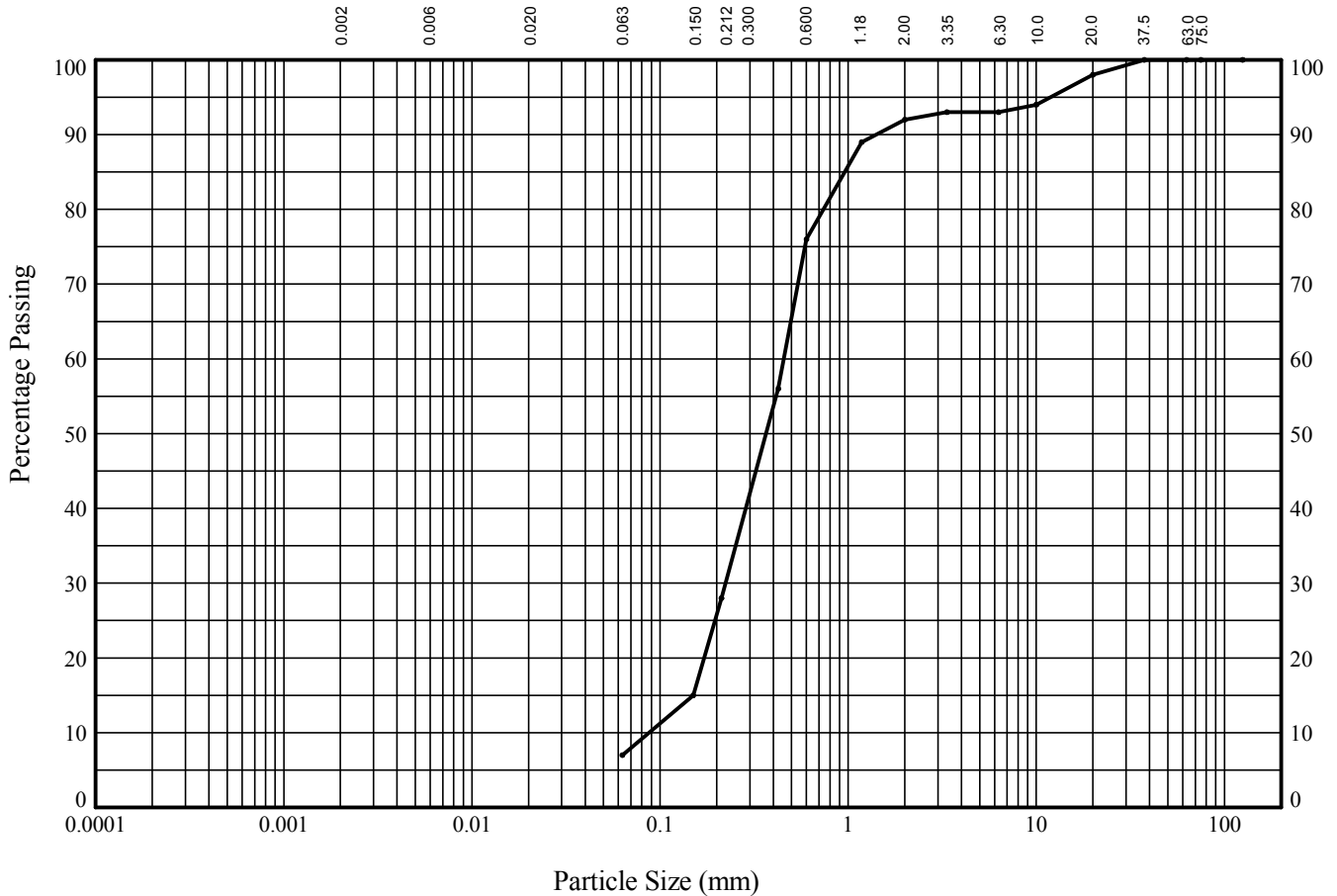
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **3** Sample Type: **B** Depth (m): **1.00**



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

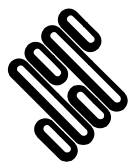
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	98
10.0	94
6.30	93
3.35	93
2.00	92
1.18	89
0.600	76
0.425	56
0.212	28
0.150	15
0.063	7

Particle Diameter	Percentage Passing
0.075	7
0.150	15
0.300	28
0.425	56
0.600	76
1.18	89
2.00	92
3.35	93
6.30	93
10.0	94
20.0	98
37.5	100
75.0	100

Soil Fraction	Sieve Percentage
GRAVEL	8
SAND	85
SILT/CLAY	7

Soil Description:
Dark brown clayey gravelly SAND

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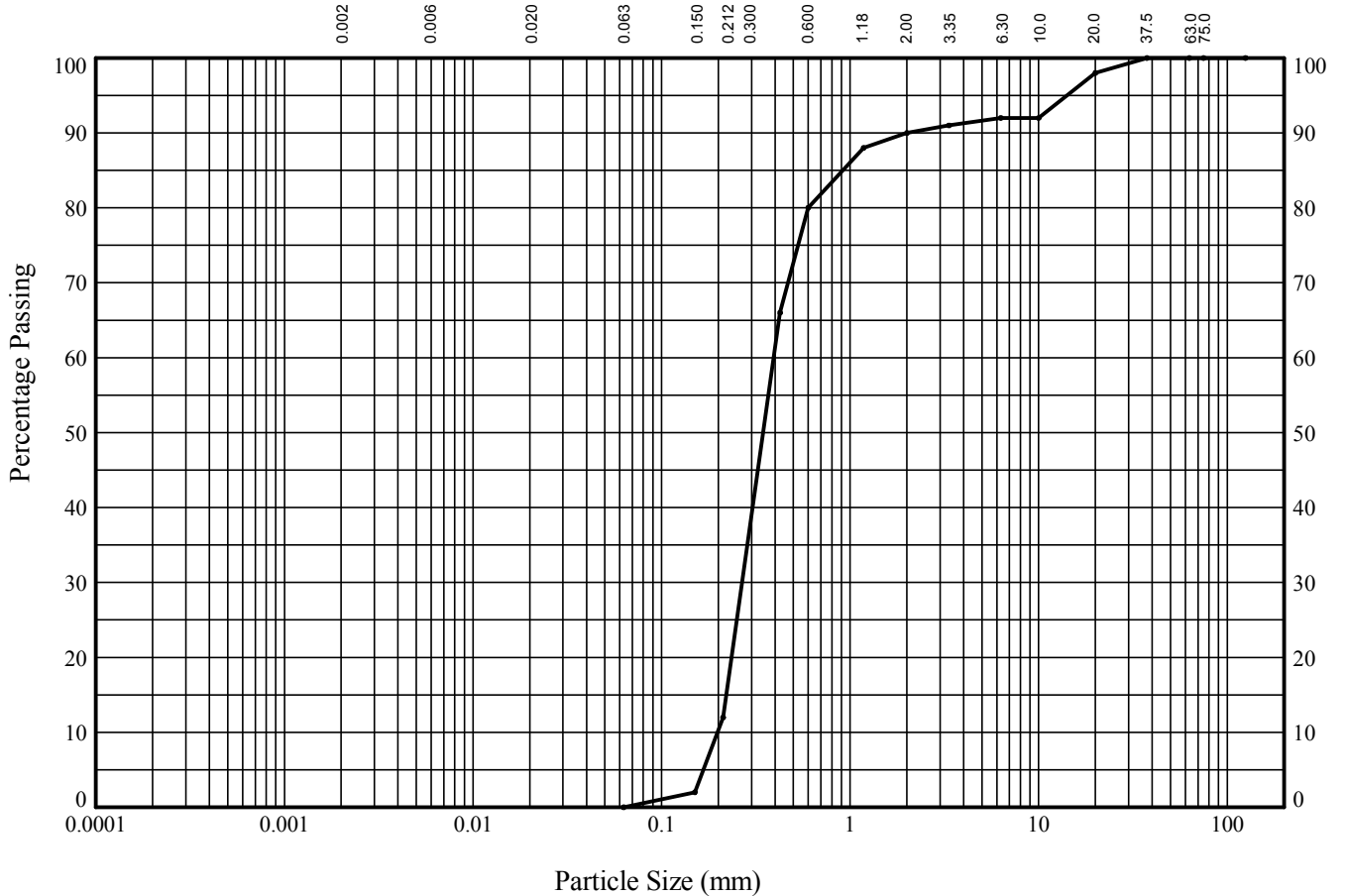
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Contract		Contract Ref:
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **5** Sample Type: **B** Depth (m): **2.00**



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

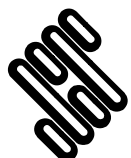
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	98
10.0	92
6.30	92
3.35	91
2.00	90
1.18	88
0.600	80
0.425	66
0.212	12
0.150	2
0.063	0

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	10
SAND	90
SILT/CLAY	0

Soil Description:
Orange brown gravelly SAND

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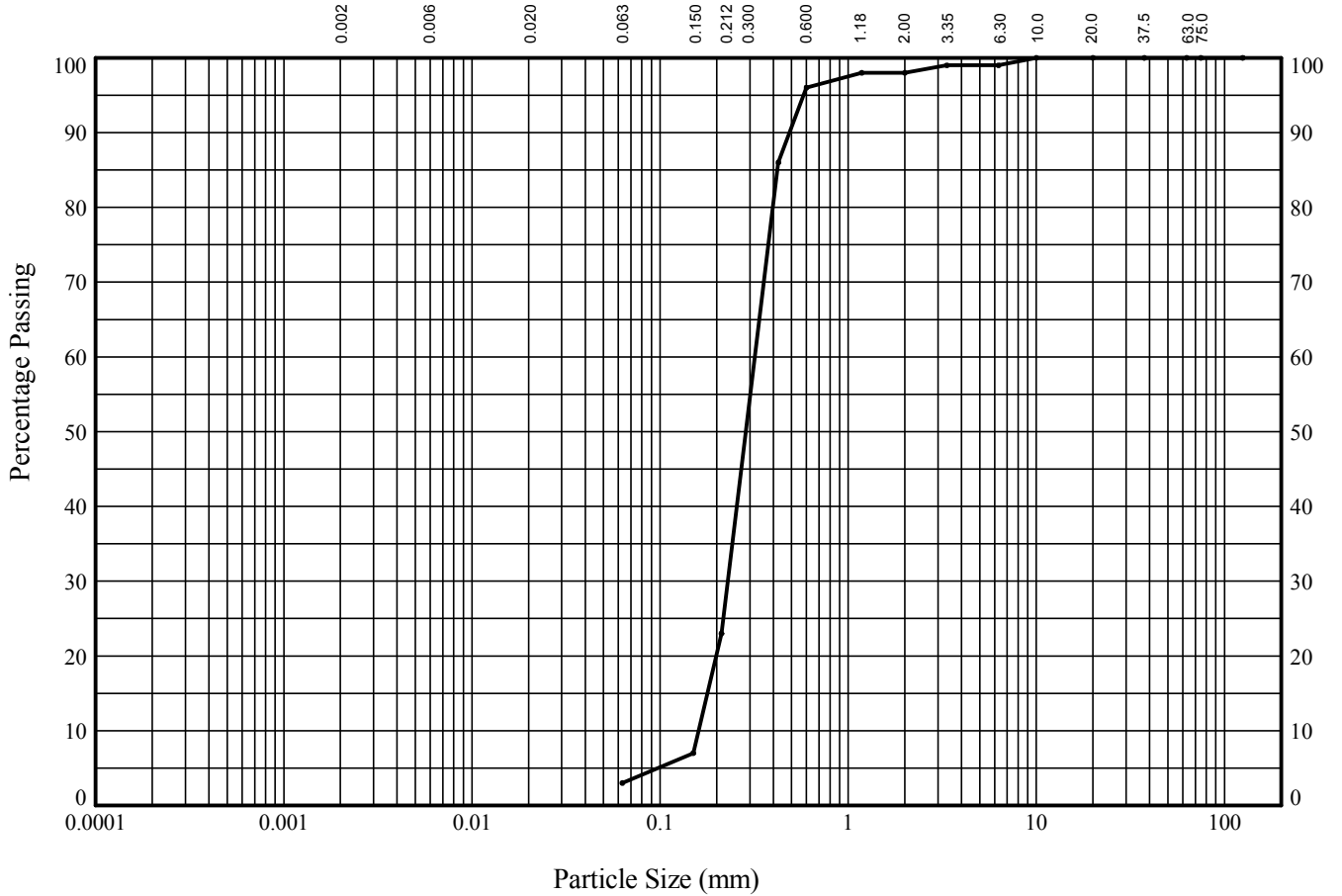
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **7** Sample Type: **B** Depth (m): **3.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	99
2.00	98
1.18	98
0.600	96
0.425	86
0.212	23
0.150	7
0.063	3

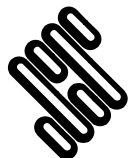
Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	95
SILT/CLAY	3

Soil Description:

Orange brown slightly clayey slightly gravelly SAND

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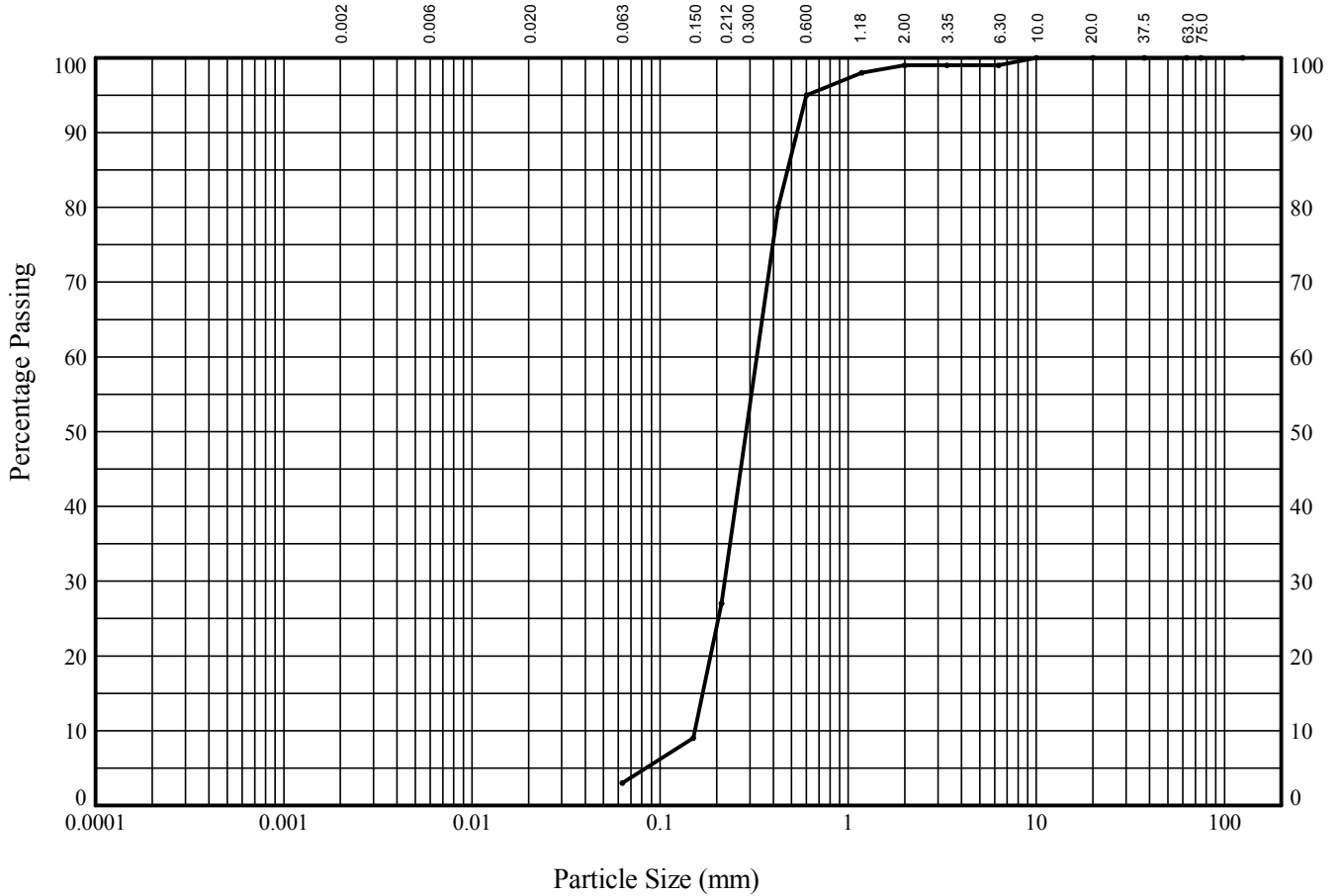
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **9** Sample Type: **B** Depth (m): **4.00**



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

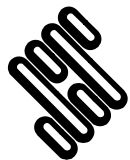
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	99
2.00	99
1.18	98
0.600	95
0.425	80
0.212	27
0.150	9
0.063	3

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	99
2.00	99
1.18	98
0.600	95
0.425	80
0.212	27
0.150	9
0.063	3

Soil Fraction	Sieve Percentage
GRAVEL	1
SAND	96
SILT/CLAY	3

Soil Description:
Orange brown slightly clayey slightly gravelly SAND

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PARTICLE SIZE DISTRIBUTION TEST

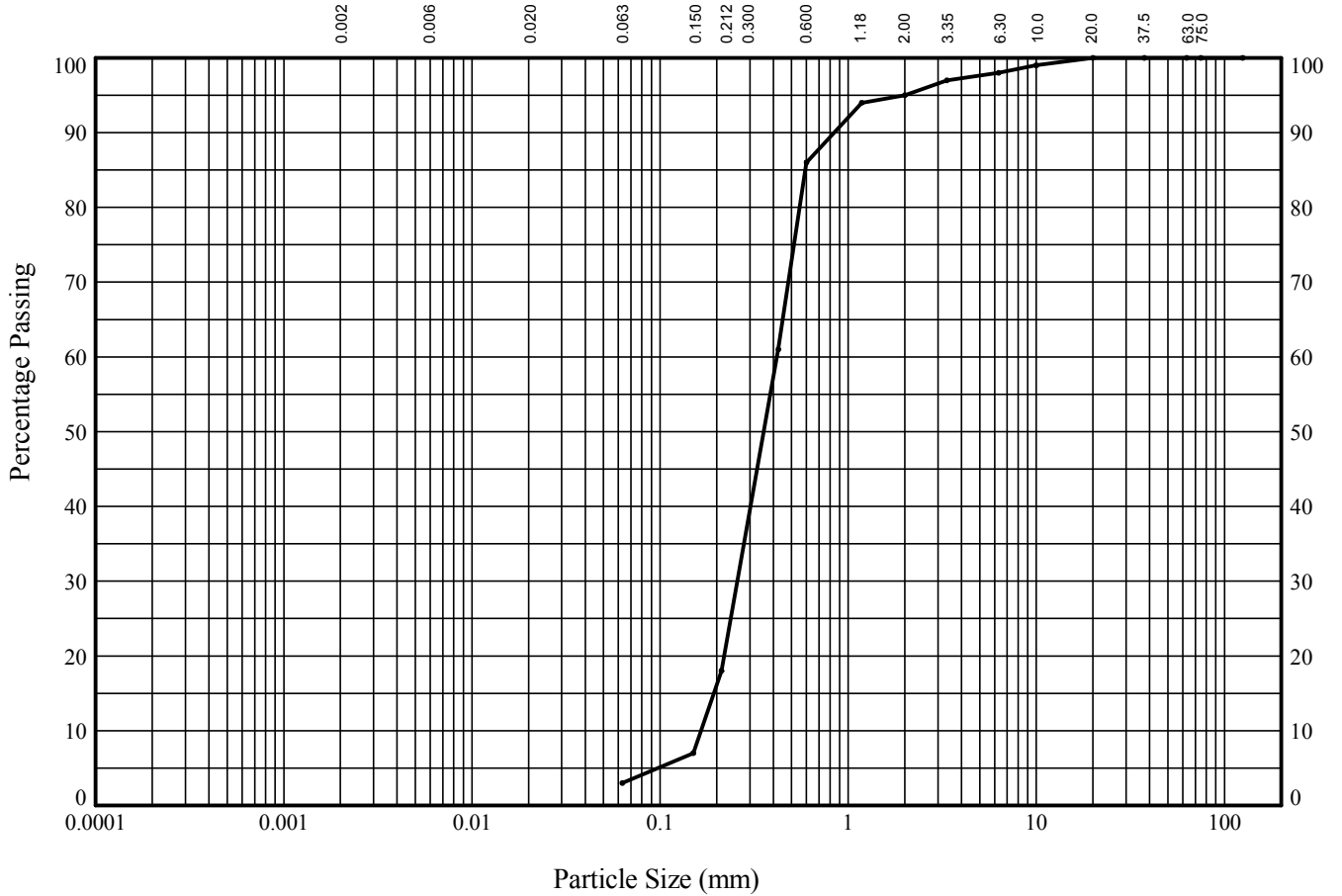
In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13**

Sample Ref: **11**

Sample Type: **B**

Depth (m): **5.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	97
2.00	95
1.18	94
0.600	86
0.425	61
0.212	18
0.150	7
0.063	3

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	5
SAND	92
SILT/CLAY	3

Soil Description:
Orange brown slightly clayey gravelly SAND

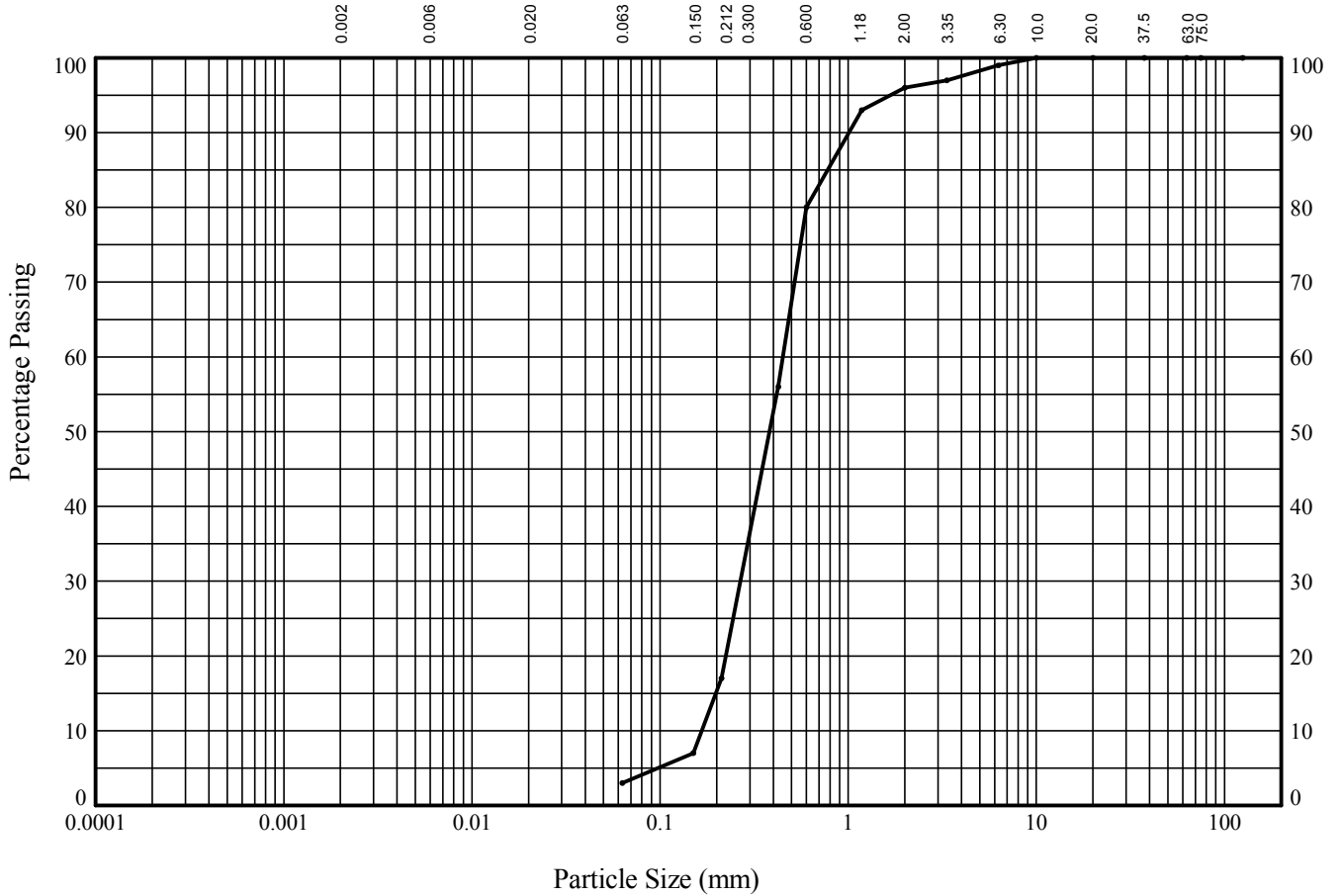
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **15** Sample Type: **B** Depth (m): **6.00**



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

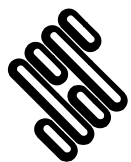
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	97
2.00	96
1.18	93
0.600	80
0.425	56
0.212	17
0.150	7
0.063	3

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	97
2.00	96
1.18	93
0.600	80
0.425	56
0.212	17
0.150	7
0.063	3

Soil Fraction	Sieve Percentage
GRAVEL	4
SAND	93
SILT/CLAY	3

Soil Description:
Orange brown slightly clayey slightly gravelly SAND

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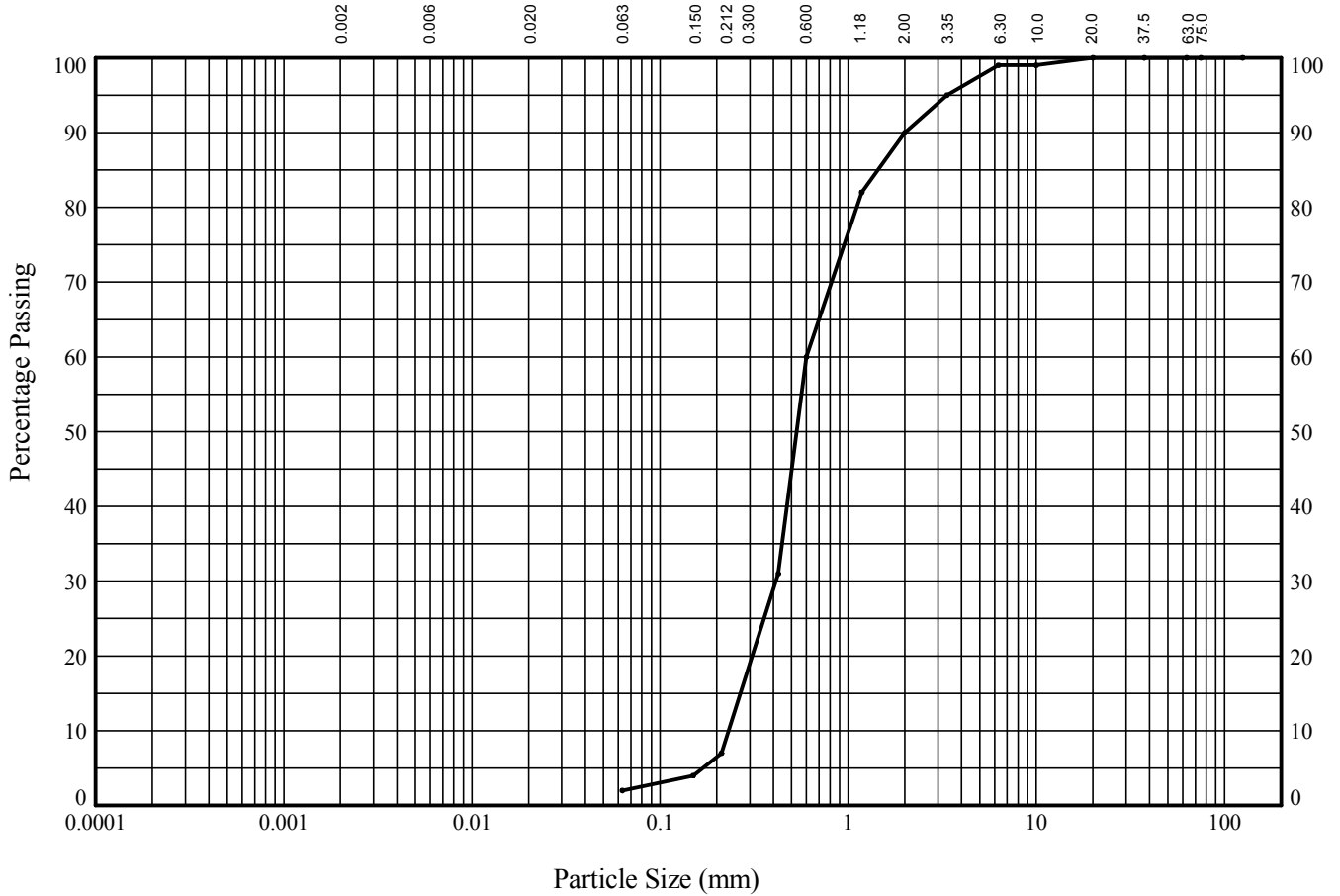
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **17** Sample Type: **B** Depth (m): **7.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	99
3.35	95
2.00	90
1.18	82
0.600	60
0.425	31
0.212	7
0.150	4
0.063	2

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	10
SAND	88
SILT/CLAY	2

Soil Description:
Dark orange brown slightly clayey gravelly SAND

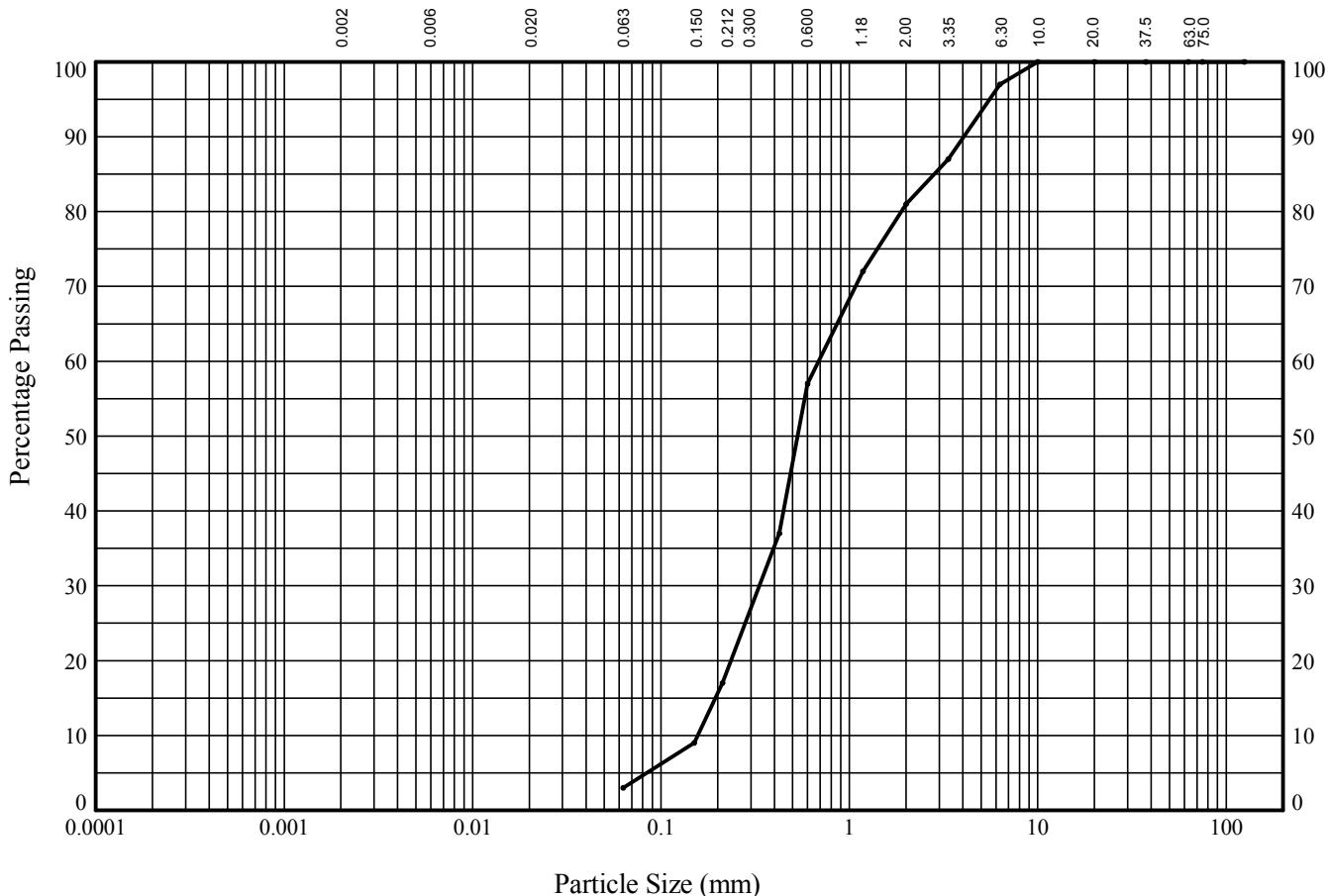
Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

 STRUCTURAL SOILS The Potteries Pottery Street Castleford W. Yorkshire WF10 1NJ	Compiled By		Date
			17/09/15
	Contract SZC 2015 Onshore GI		Contract Ref: 763468

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **19** Sample Type: **B** Depth (m): **8.00**



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

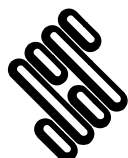
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	97
3.35	87
2.00	81
1.18	72
0.600	57
0.425	37
0.212	17
0.150	9
0.063	3

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	19
SAND	78
SILT/CLAY	3

Soil Description:
Brown slightly clayey gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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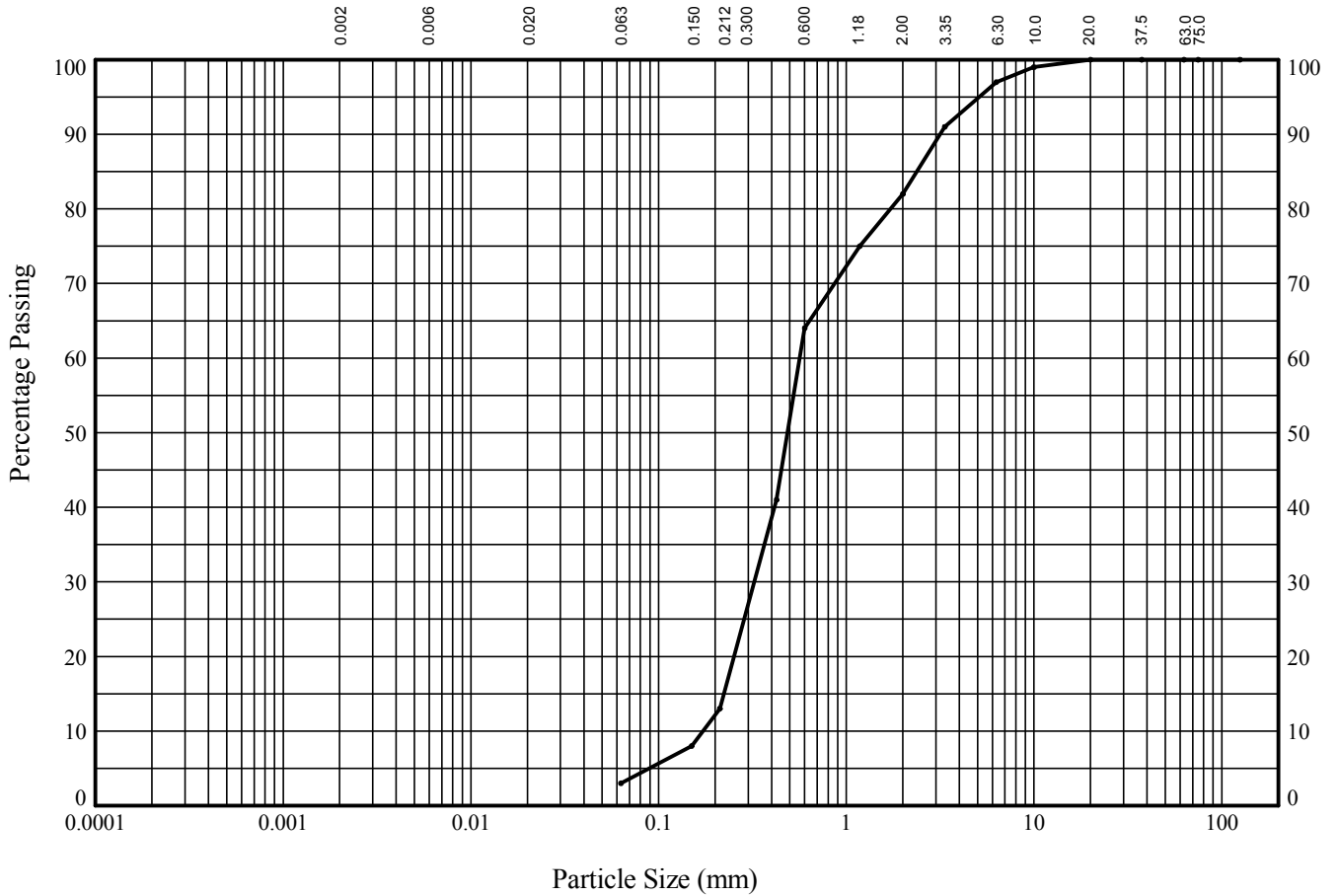
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		17/09/15
Contract		Contract Ref:
SZC 2015 Onshore GI		763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **21** Sample Type: **B** Depth (m): **9.00**



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

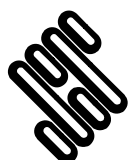
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	97
3.35	91
2.00	82
1.18	75
0.600	64
0.425	41
0.212	13
0.150	8
0.063	3

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	97
3.35	91
2.00	82
1.18	75
0.600	64
0.425	41
0.212	13
0.150	8
0.063	3

Soil Fraction	Sieve Percentage
GRAVEL	18
SAND	79
SILT/CLAY	3

Soil Description:
Brown slightly clayey gravelly SAND

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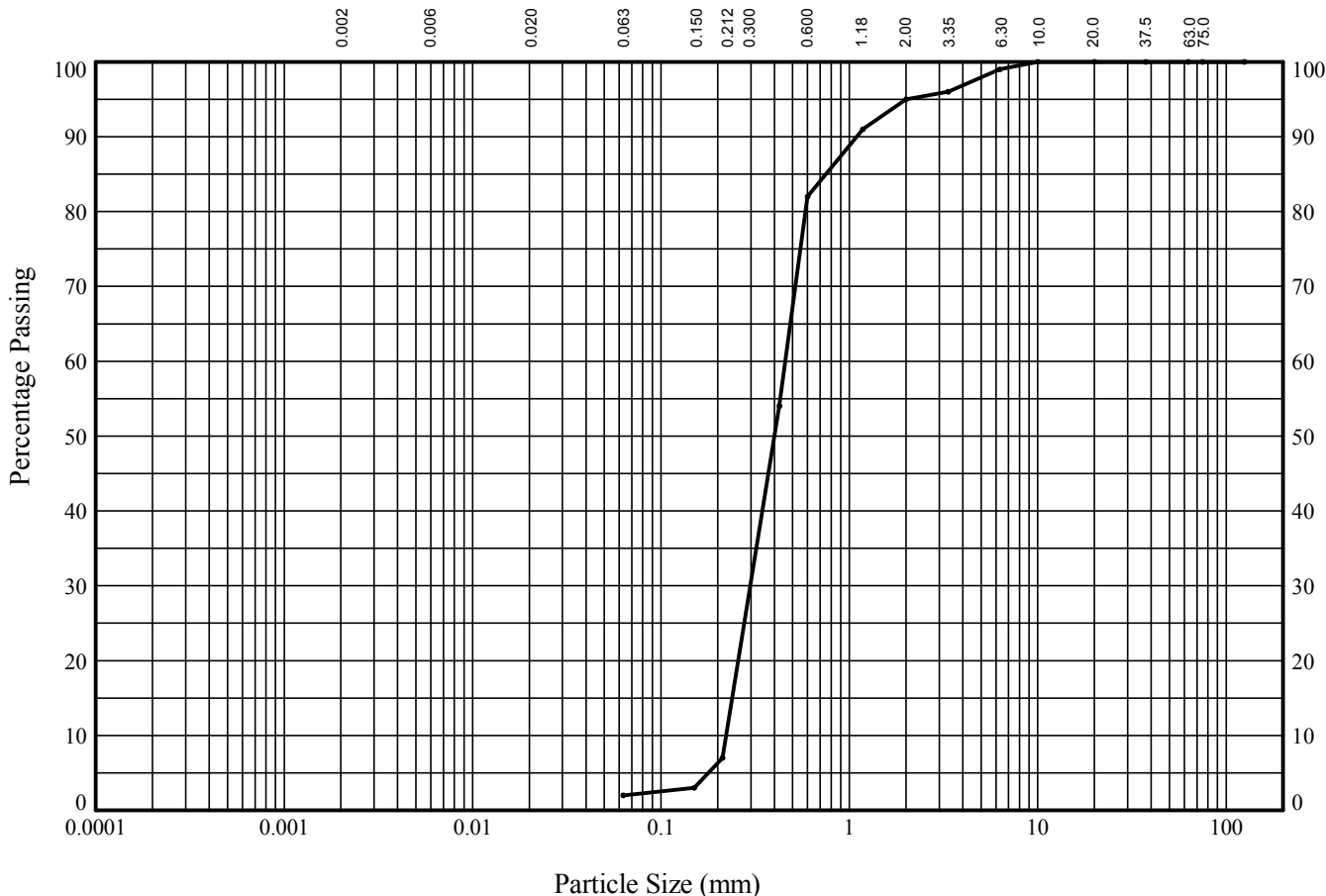
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		17/09/15
Contract		Contract Ref:
SZC 2015 Onshore GI		763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **23** Sample Type: **B** Depth (m): **10.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	96
2.00	95
1.18	91
0.600	82
0.425	54
0.212	7
0.150	3
0.063	2

Particle Diameter	Percentage Passing
0.075	2
0.150	3
0.425	54
0.600	82
1.18	91
1.75	95
2.50	96
3.35	96
4.75	99
6.30	99
8.50	100
12.5	100
20.0	100
30.0	100
42.5	100
60.0	100
75.0	100
106	100
150	100
212	100
300	100
425	100
600	100
850	100
1180	100
1600	100
2200	100
3000	100
4250	100
6000	100
8500	100
12000	100

Soil Fraction	Sieve Percentage
GRAVEL	5
SAND	93
SILT/CLAY	2

Soil Description:

Dark orange brown slightly clayey gravelly SAND

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Contract

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Contract Ref:

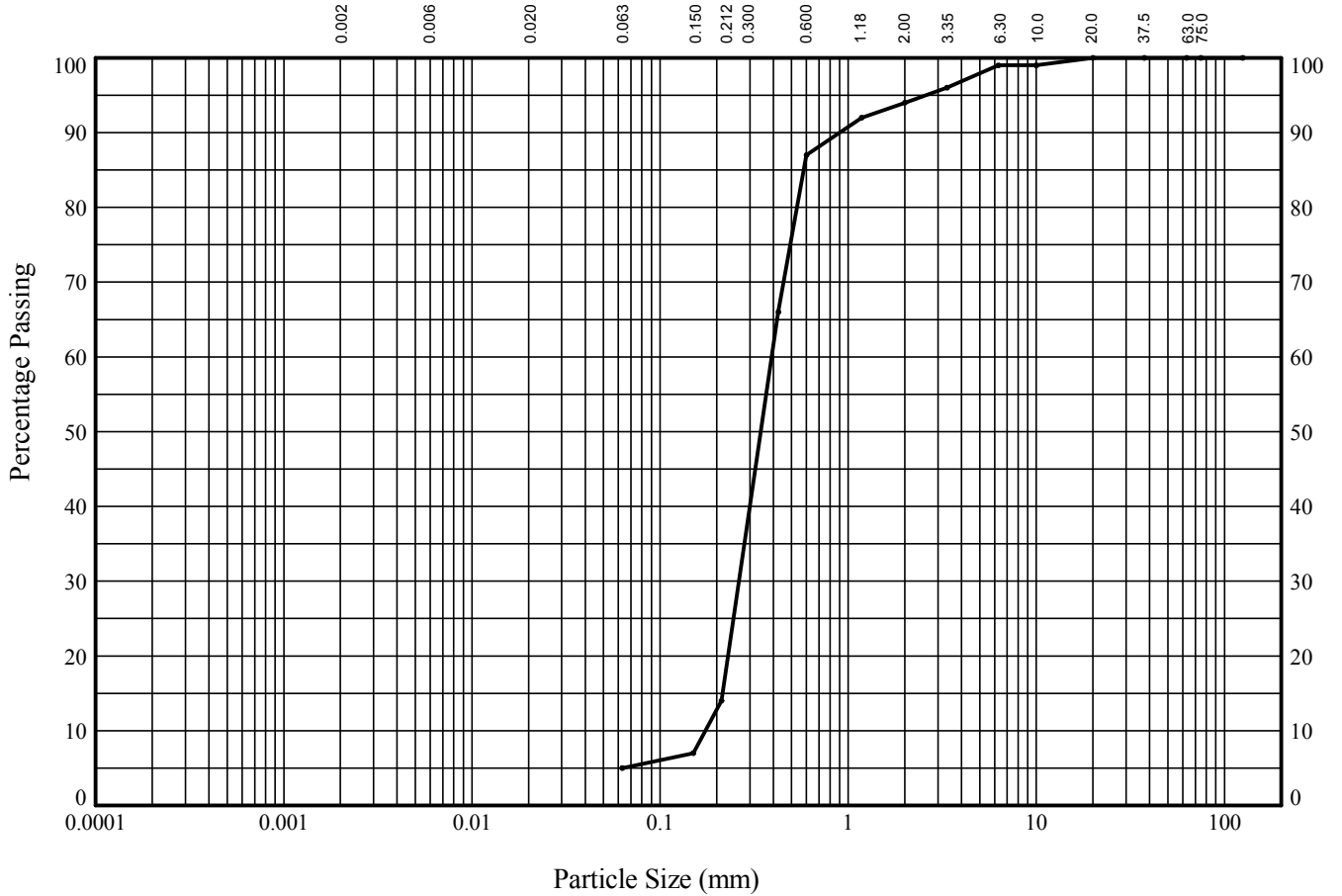
763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **25** Sample Type: **B** Depth (m): **11.00**



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



BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	99
3.35	96
2.00	94
1.18	92
0.600	87
0.425	66
0.212	14
0.150	7
0.063	5

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	99
3.35	96
2.00	94
1.18	92
0.600	87
0.425	66
0.212	14
0.150	7
0.063	5

Soil Fraction	Sieve Percentage
GRAVEL	6
SAND	89
SILT/CLAY	5

Soil Description:
Orange brown clayey gravelly SAND

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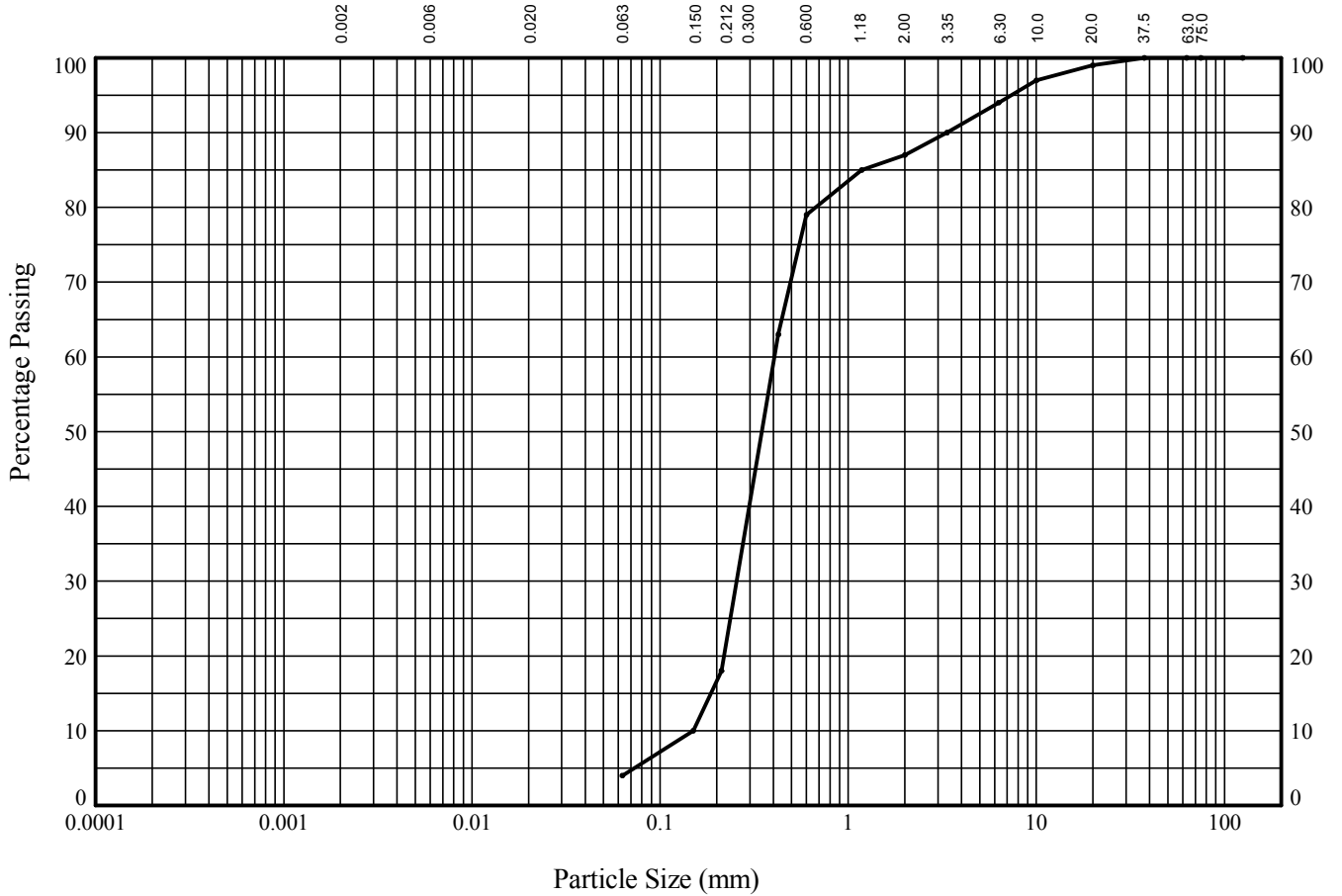
 <p>STRUCTURAL SOILS The Potteries Pottery Street Castleford W. Yorkshire WF10 1NJ</p>	Compiled By		Date
			17/09/15
Contract		Contract Ref:	
SZC 2015 Onshore GI		763468	
			

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 Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ, Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **27** Sample Type: **B** Depth (m): **12.00**



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

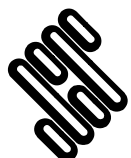
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	99
10.0	97
6.30	94
3.35	90
2.00	87
1.18	85
0.600	79
0.425	63
0.212	18
0.150	10
0.063	4

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	13
SAND	83
SILT/CLAY	4

Soil Description:
Dark brown slightly clayey gravelly SAND

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PARTICLE SIZE DISTRIBUTION TEST

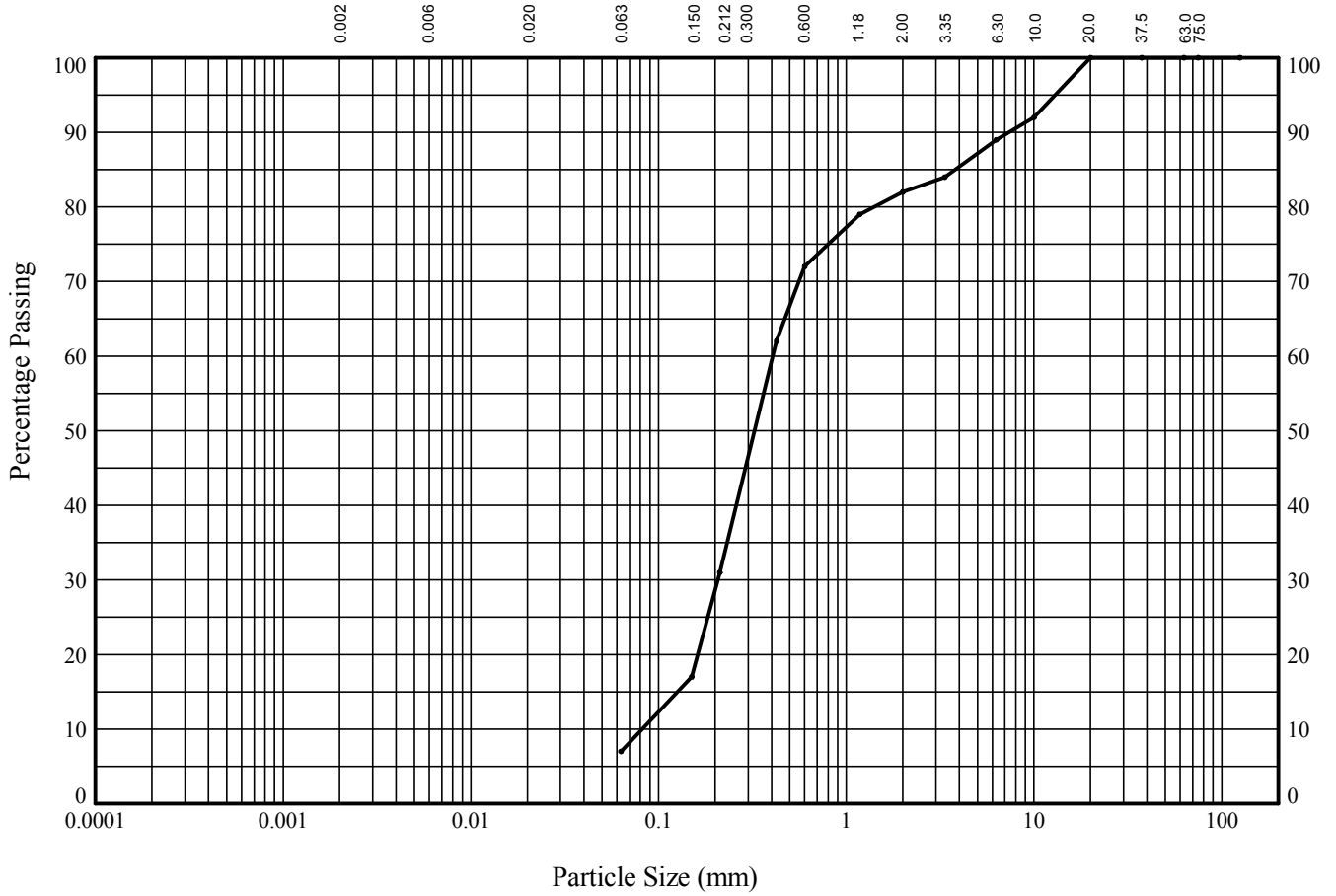
In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13**

Sample Ref: **29**

Sample Type: **B**

Depth (m): **13.00**



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

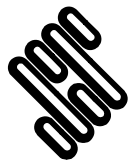
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	92
6.30	89
3.35	84
2.00	82
1.18	79
0.600	72
0.425	62
0.212	31
0.150	17
0.063	7

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	92
6.30	89
3.35	84
2.00	82
1.18	79
0.600	72
0.425	62
0.212	31
0.150	17
0.063	7

Soil Fraction	Sieve Percentage
GRAVEL	18
SAND	75
SILT/CLAY	7

Soil Description:
Dark orange brown clayey gravelly SAND

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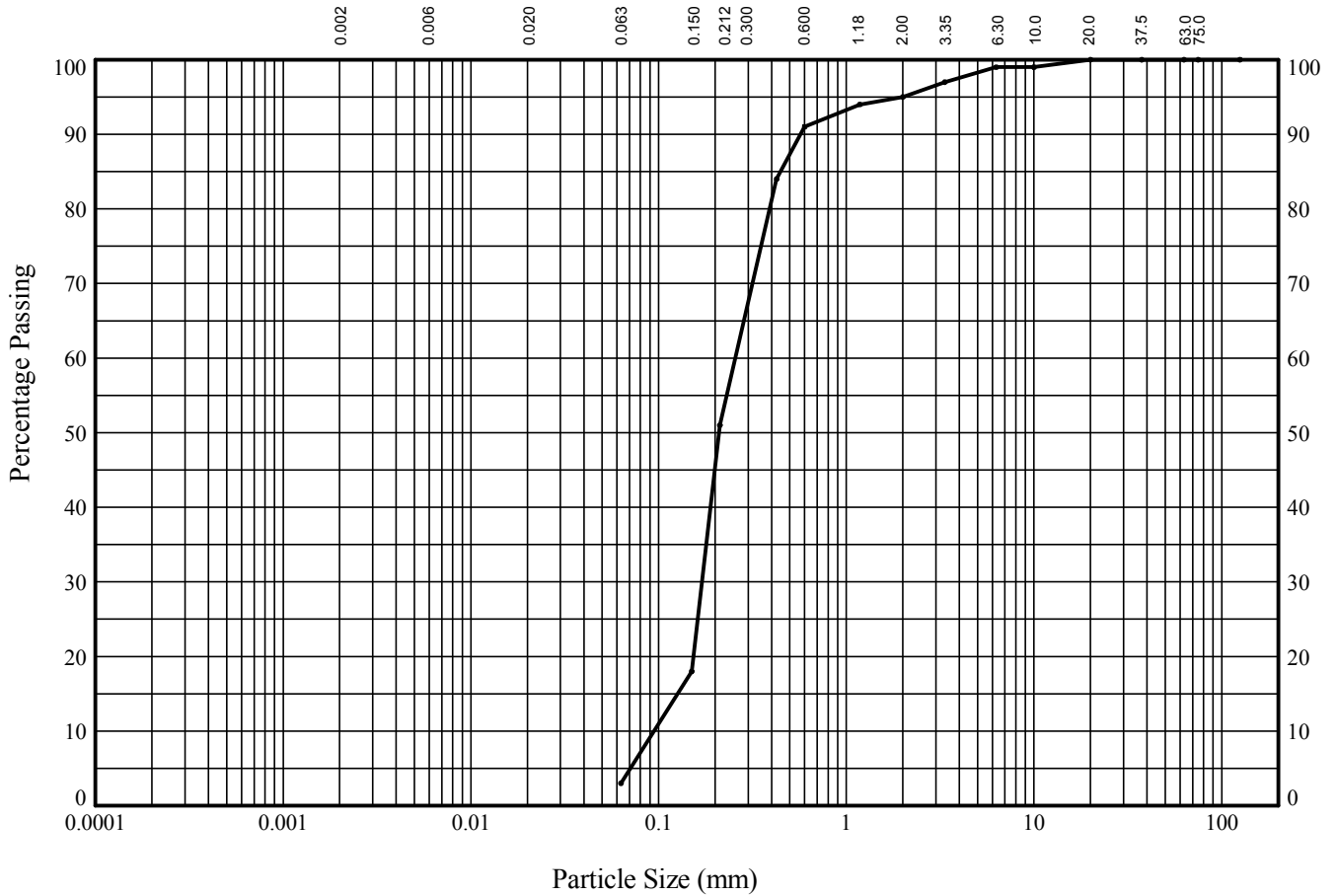
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W. Yorkshire WF10 1NJ

Compiled By		Date
		17/09/15
Contract	Contract Ref:	
SZC 2015 Onshore GI	763468	

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **31** Sample Type: **B** Depth (m): **14.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	99
3.35	97
2.00	95
1.18	94
0.600	91
0.425	84
0.212	51
0.150	18
0.063	3

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	5
SAND	92
SILT/CLAY	3

Soil Description:
Orange brown slightly clayey gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

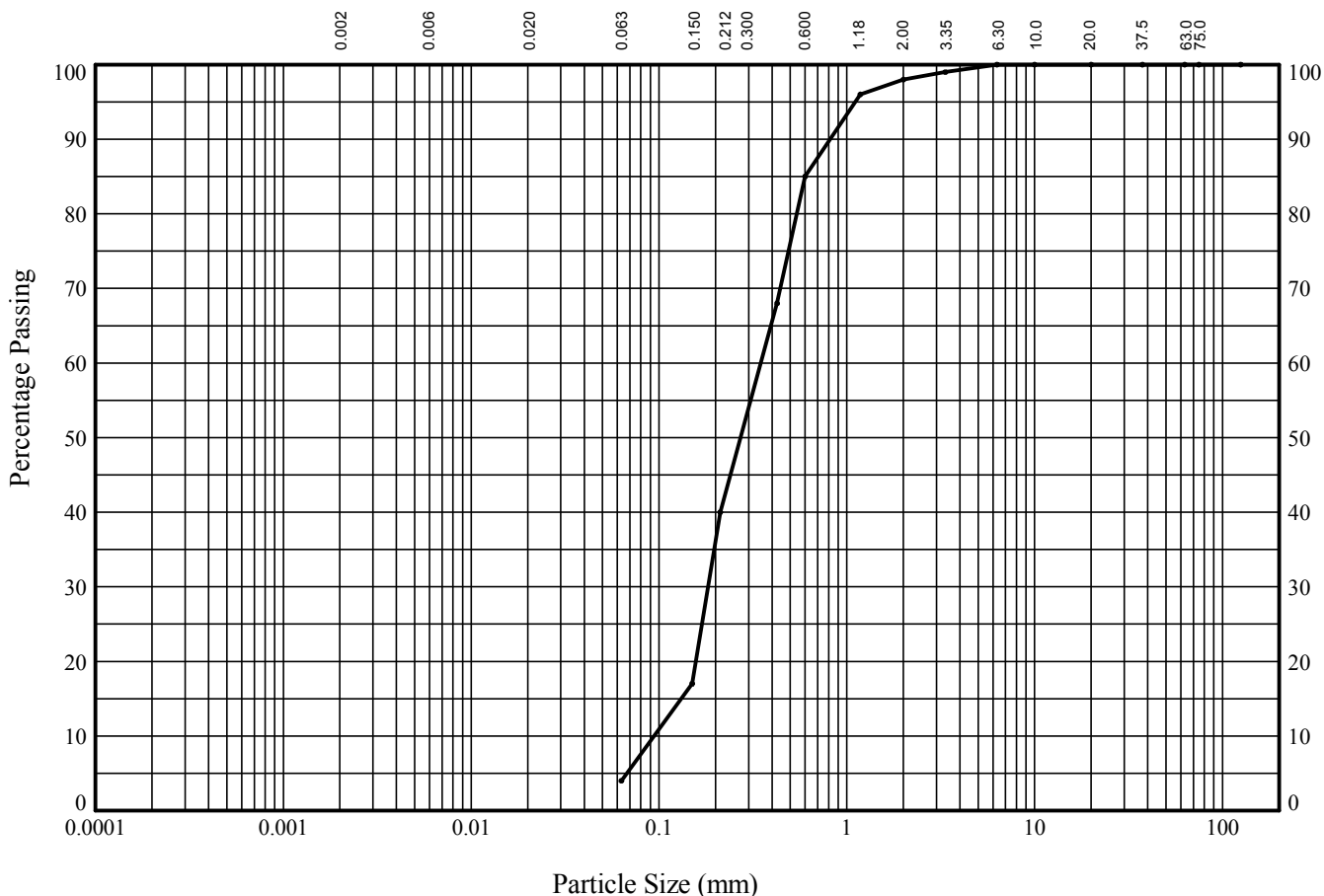
GINT_LIBRARY V8_05 GLB LibVersion: v8_05 - Lib0004 ProjVersion: v8_05 - Core+Logs+Geotech Lab-Bristol - 0003 | Graph L - PSD - EC7 | 763468 - SZC 2015 ONSHORE GI.GPJ - v8_05 | 17/09/15 - 10:48 | SA. Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ, Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **33** Sample Type: **B** Depth (m): **15.00**



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

BS Test Sieve (mm)	Percentage 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	96
0.600	85
0.425	68
0.212	40
0.150	17
0.063	4

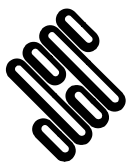
Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	94
SILT/CLAY	4

Soil Description:
Dark orange brown slightly clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

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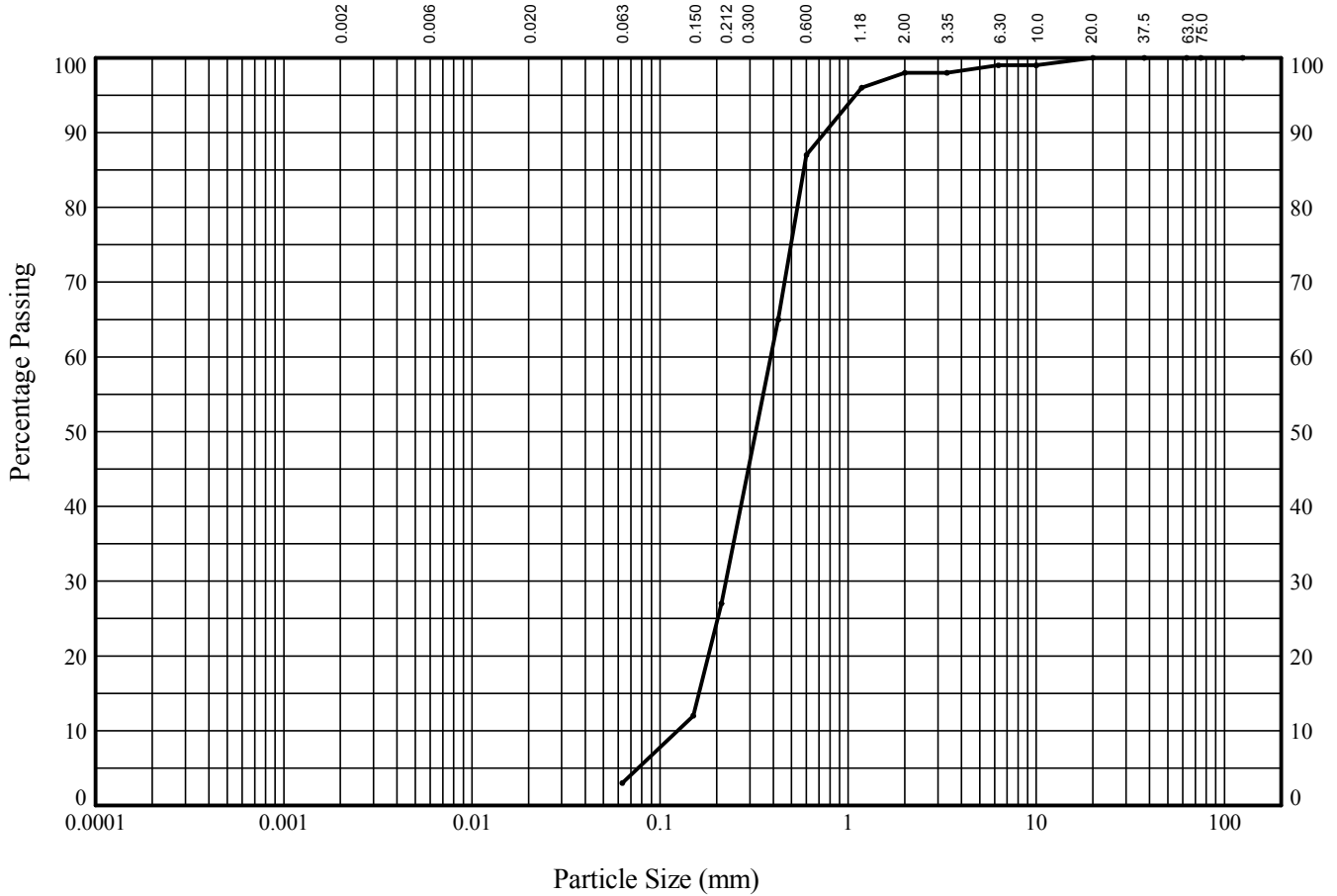
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 Pottery Street
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **35** Sample Type: **B** Depth (m): **16.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	99
3.35	98
2.00	98
1.18	96
0.600	87
0.425	65
0.212	27
0.150	12
0.063	3

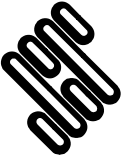
Particle Diameter	Percentage Passing
0.063	3
0.150	12
0.212	27
0.425	65
0.600	87
1.18	96
2.00	98
3.35	98
6.30	99
10.0	99
20.0	100
37.5	100
63.0	100
75.0	100
125.0	100

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	95
SILT/CLAY	3

Soil Description:
Orange brown slightly clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

GINT_LIBRARY_V8_05_GLB LibVersion: v8_05 - Lib0004 ProjVersion: v8_05 - Core+Logs+Geotech Lab-Bristol - 0003 | Graph L - PSD - EC7 | 763468 - SZC 2015 ONSHORE GI.GPJ - v8_05 | 17/09/15 - 10:48 | SA. Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ, Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk

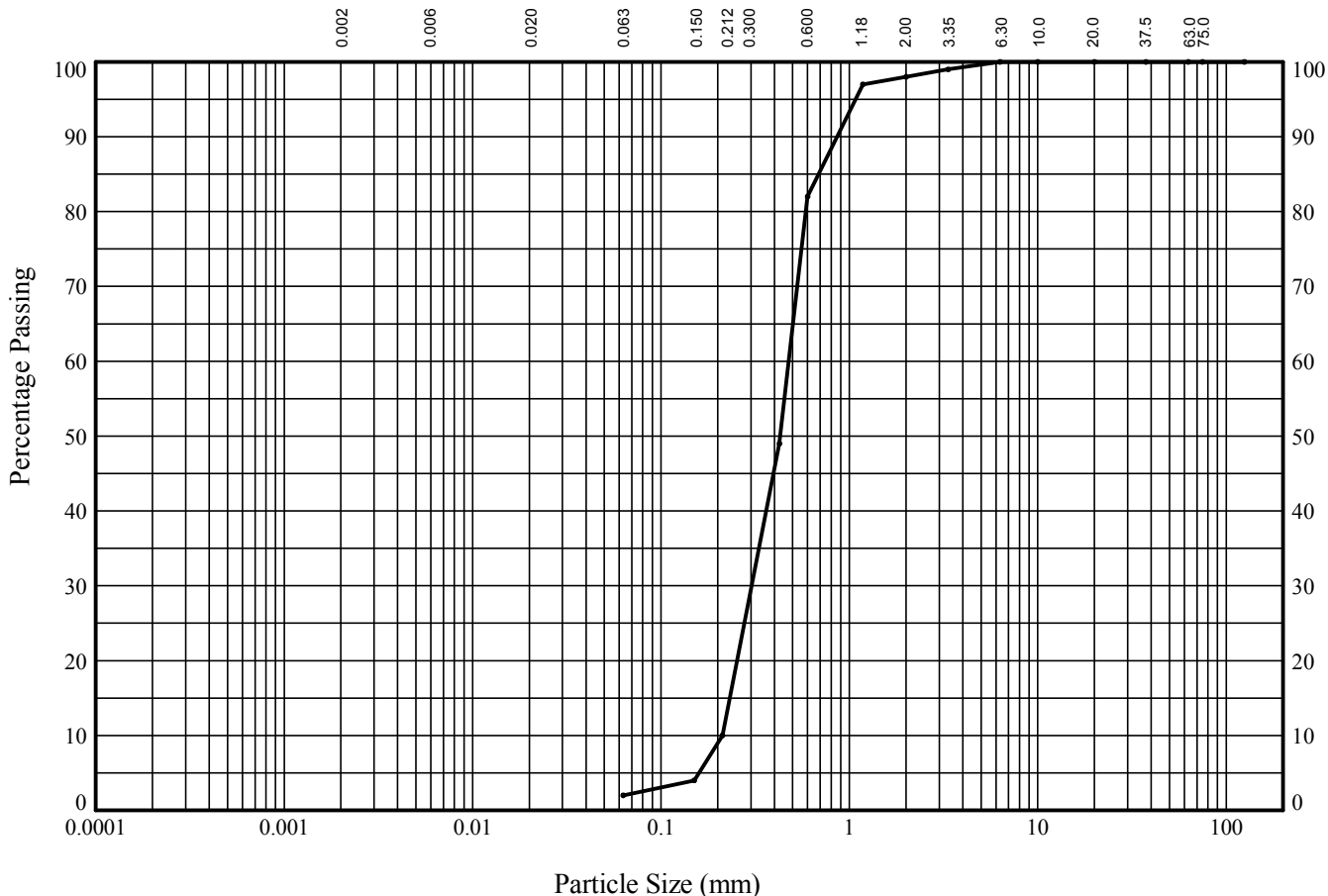
 STRUCTURAL SOILS The Potteries Pottery Street Castleford W. Yorkshire WF10 1NJ	Compiled By		Date
			17/09/15
	Contract SZC 2015 Onshore GI		Contract Ref: 763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **37** Sample Type: **B** Depth (m): **17.00**



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

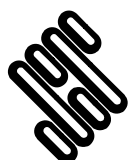
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	99
2.00	98
1.18	97
0.600	82
0.425	49
0.212	10
0.150	4
0.063	2

Particle Diameter	Percentage 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	97
0.600	82
0.425	49
0.212	10
0.150	4
0.063	2

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	96
SILT/CLAY	2

Soil Description:
Orange brown slightly clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



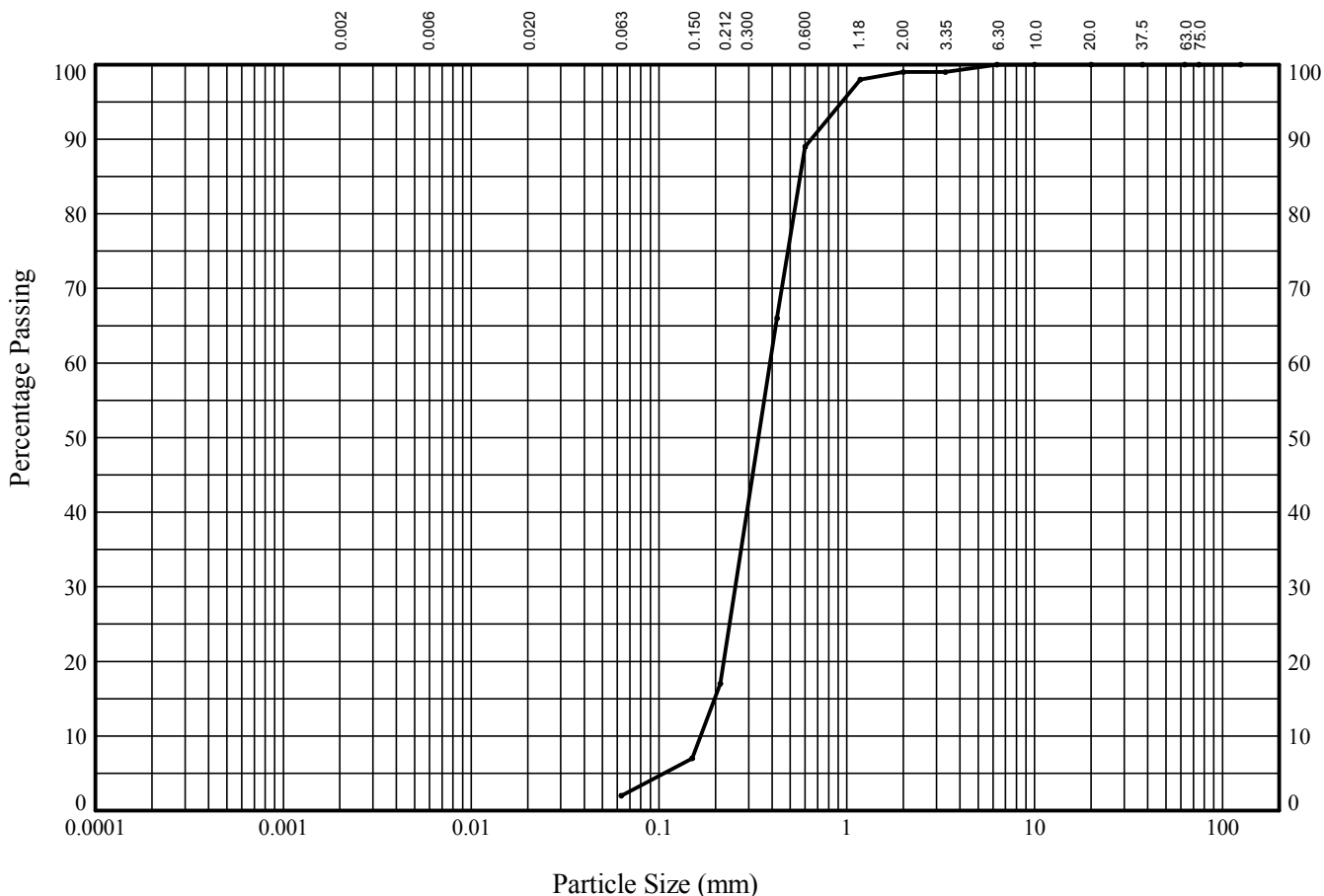
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Contract		Contract Ref:
SZC 2015 Onshore GI		763468

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **39** Sample Type: **B** Depth (m): **18.00**



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

BS Test Sieve (mm)	Percentage 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	99
1.18	98
0.600	89
0.425	66
0.212	17
0.150	7
0.063	2

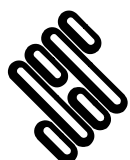
Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	1
SAND	97
SILT/CLAY	2

Soil Description:

Orange brown slightly clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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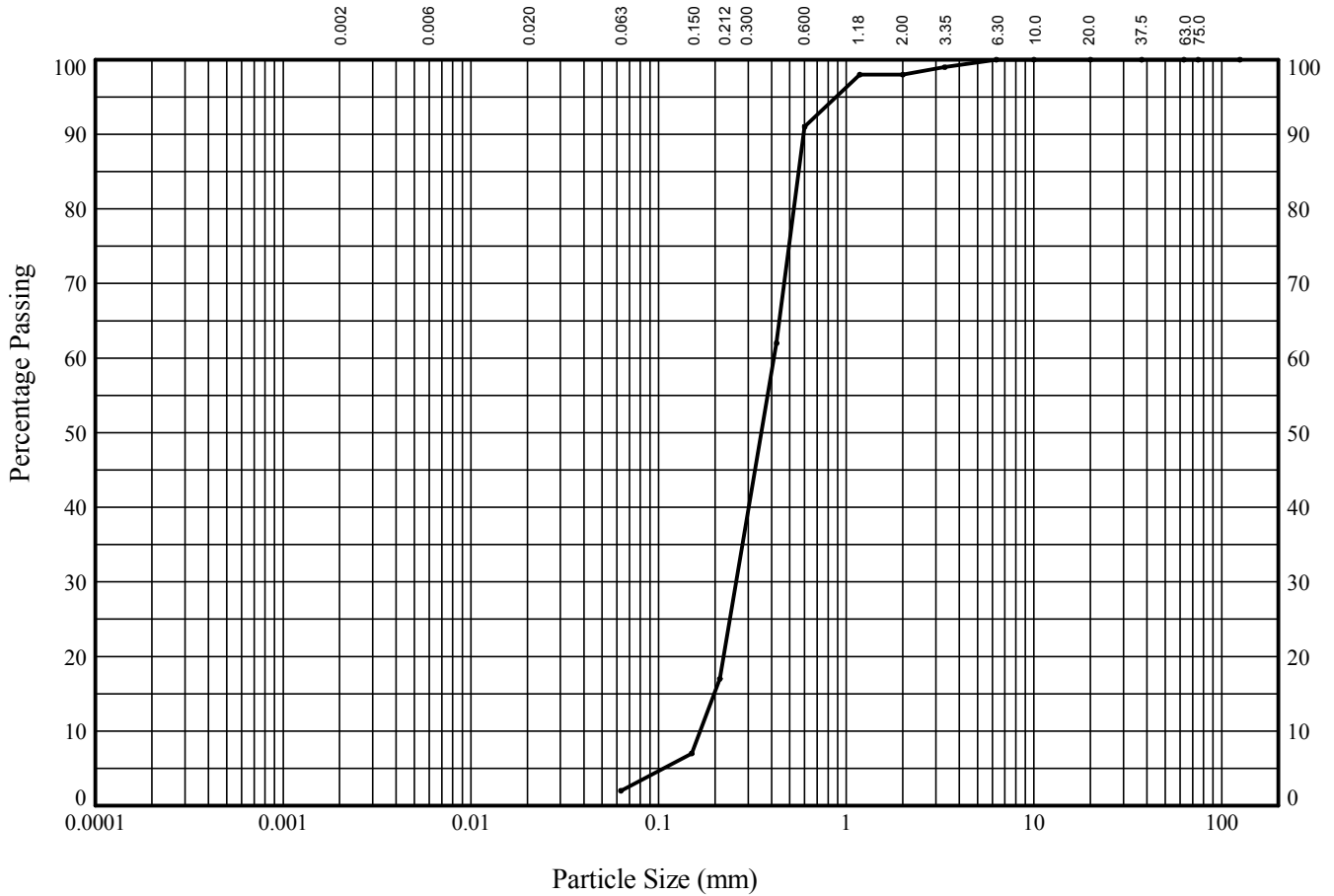
Compiled By		Date
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Contract		Contract Ref:
SZC 2015 Onshore GI		763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP13** Sample Ref: **41** Sample Type: **B** Depth (m): **19.00**



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

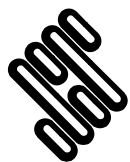
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	99
2.00	98
1.18	98
0.600	91
0.425	62
0.212	17
0.150	7
0.063	2

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	96
SILT/CLAY	2

Soil Description:
Dark orange brown slightly clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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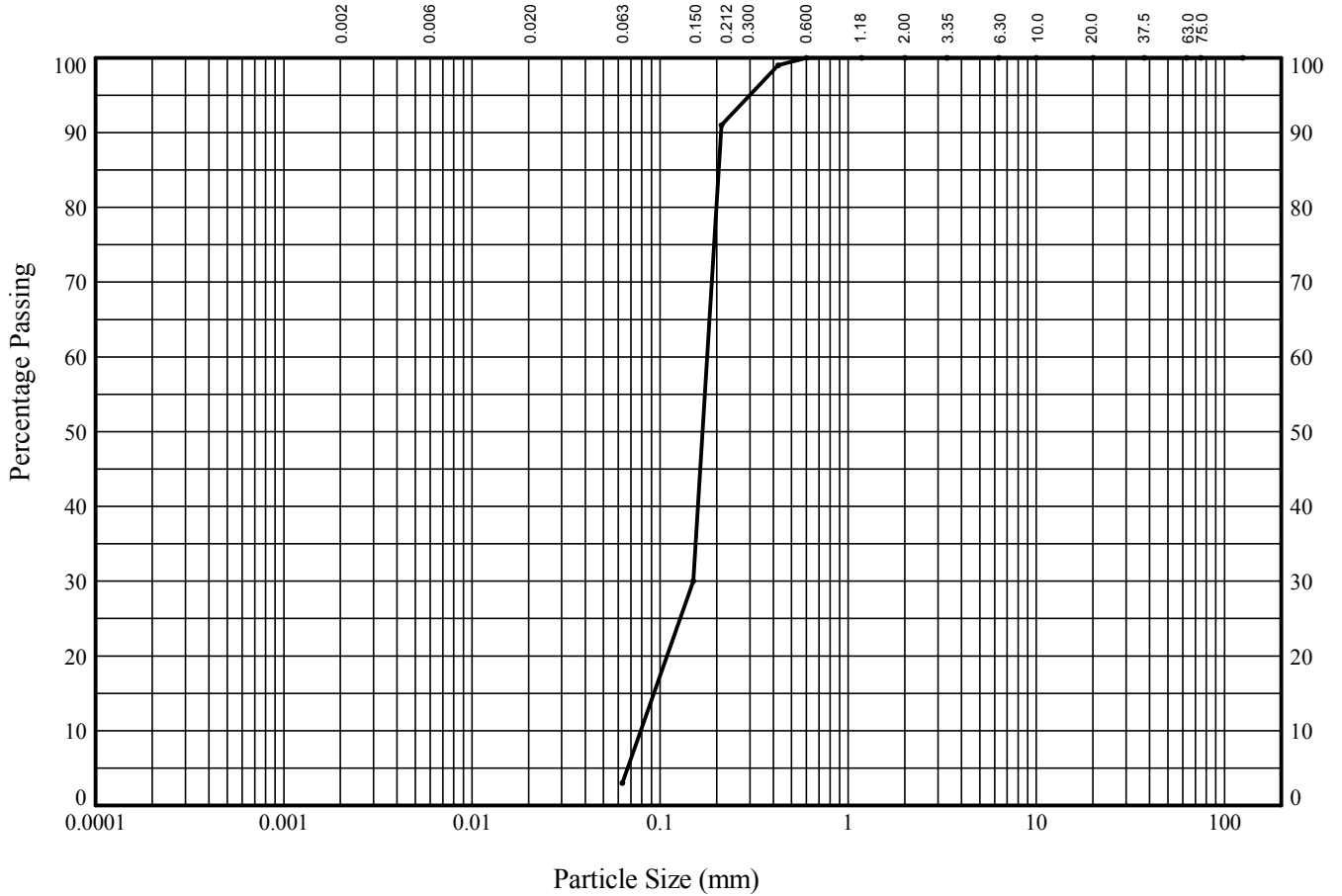
Compiled By		Date
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Contract	Contract Ref:	
SZC 2015 Onshore GI	763468	



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14** Sample Ref: **2** Sample Type: **B** Depth (m): **0.50**



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

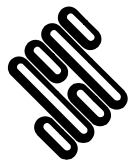
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	100
0.425	99
0.212	91
0.150	30
0.063	3

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	100
0.425	99
0.212	91
0.150	30
0.063	3

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	97
SILT/CLAY	3

Soil Description:
Orange brown slightly clayey SAND

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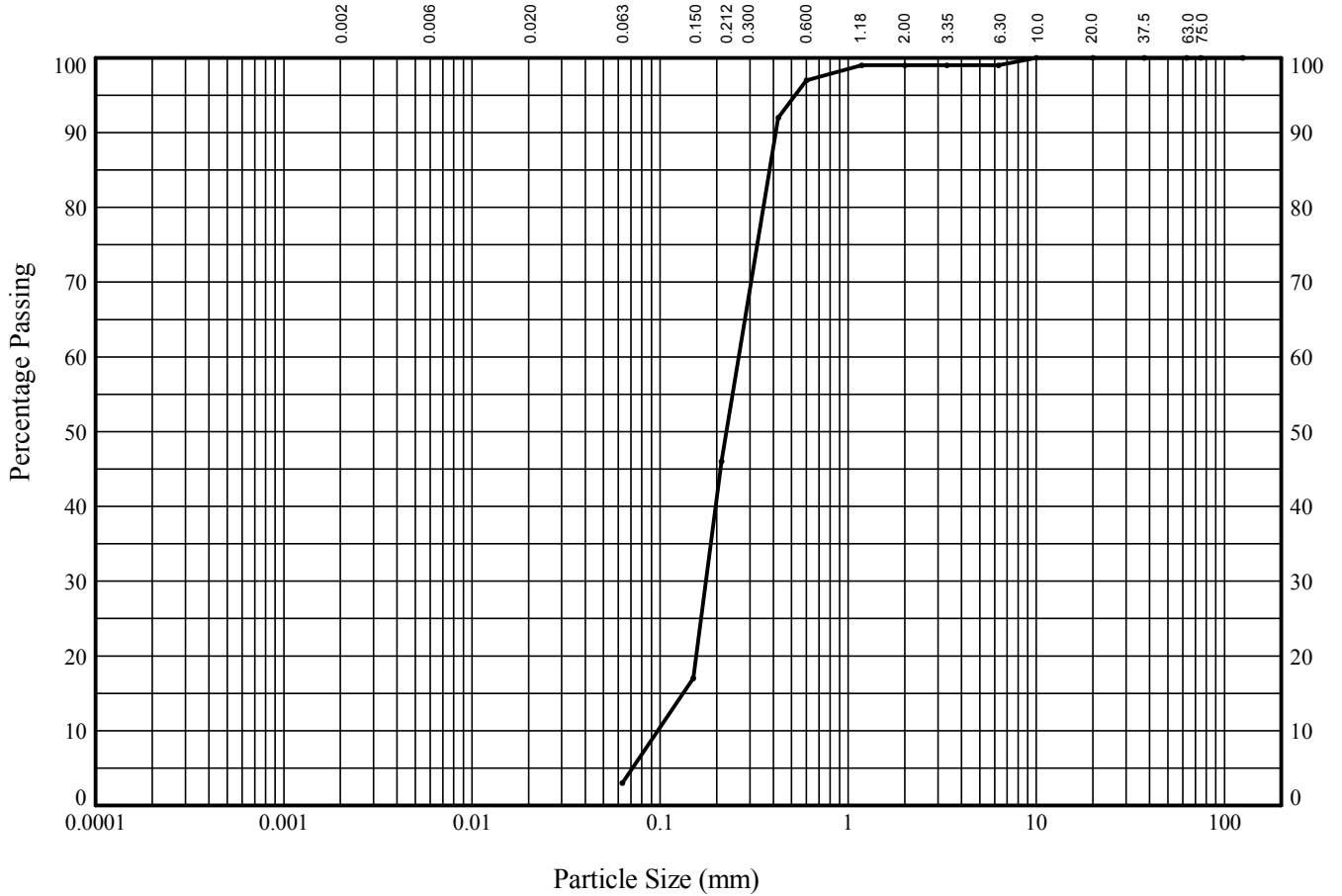
Compiled By		Date
		17/09/15
Contract		Contract Ref:
SZC 2015 Onshore GI		763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14** Sample Ref: **4** Sample Type: **B** Depth (m): **1.50**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	99
2.00	99
1.18	99
0.600	97
0.425	92
0.212	46
0.150	17
0.063	3

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	1
SAND	96
SILT/CLAY	3

Soil Description:
Orange brown slightly clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

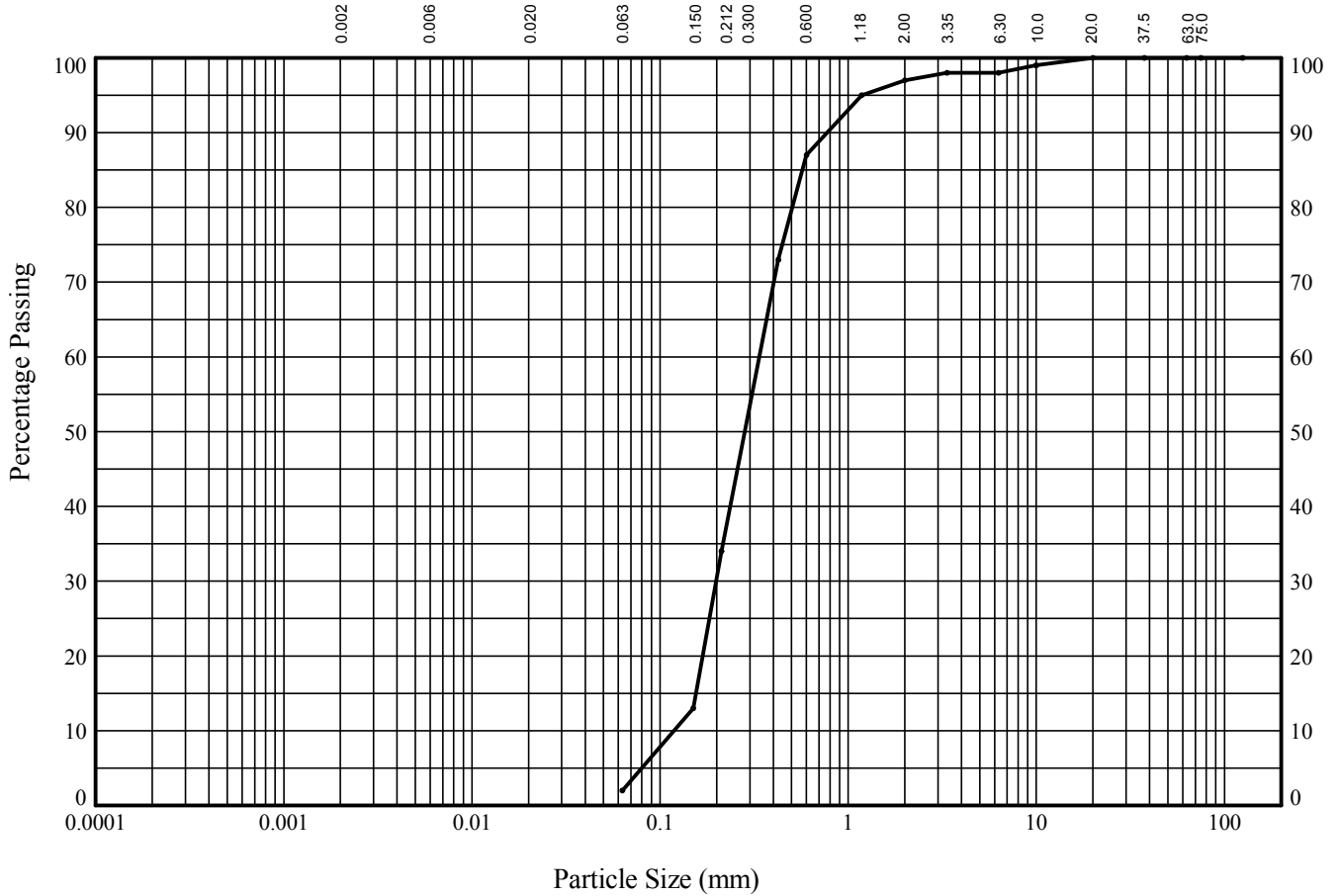
<p>STRUCTURAL SOILS The Potteries Pottery Street Castleford W. Yorkshire WF10 1NJ</p>	Compiled By		Date
			17/09/15
	Contract	SZC 2015 Onshore GI	Contract Ref:



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14** Sample Ref: **7** Sample Type: **B** Depth (m): **3.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	98
2.00	97
1.18	95
0.600	87
0.425	73
0.212	34
0.150	13
0.063	2


Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	98
2.00	97
1.18	95
0.600	87
0.425	73
0.212	34
0.150	13
0.063	2

Soil Fraction	Sieve Percentage
GRAVEL	3
SAND	95
SILT/CLAY	2

Soil Description:
Light brown slightly clayey slightly gravelly SAND

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GINT_LIBRARY_V8_05 GLB LibVersion: v8_05 - Lib0004 ProjVersion: v8_05 - Core+Logs+Geotech Lab-Bristol - 0003 | Graph L - PSD - EC7 | 763468 - SZC 2015 ONSHORE GI.GPJ - v8_05 | 17/09/15 - 10:48 | SA. Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ, Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk

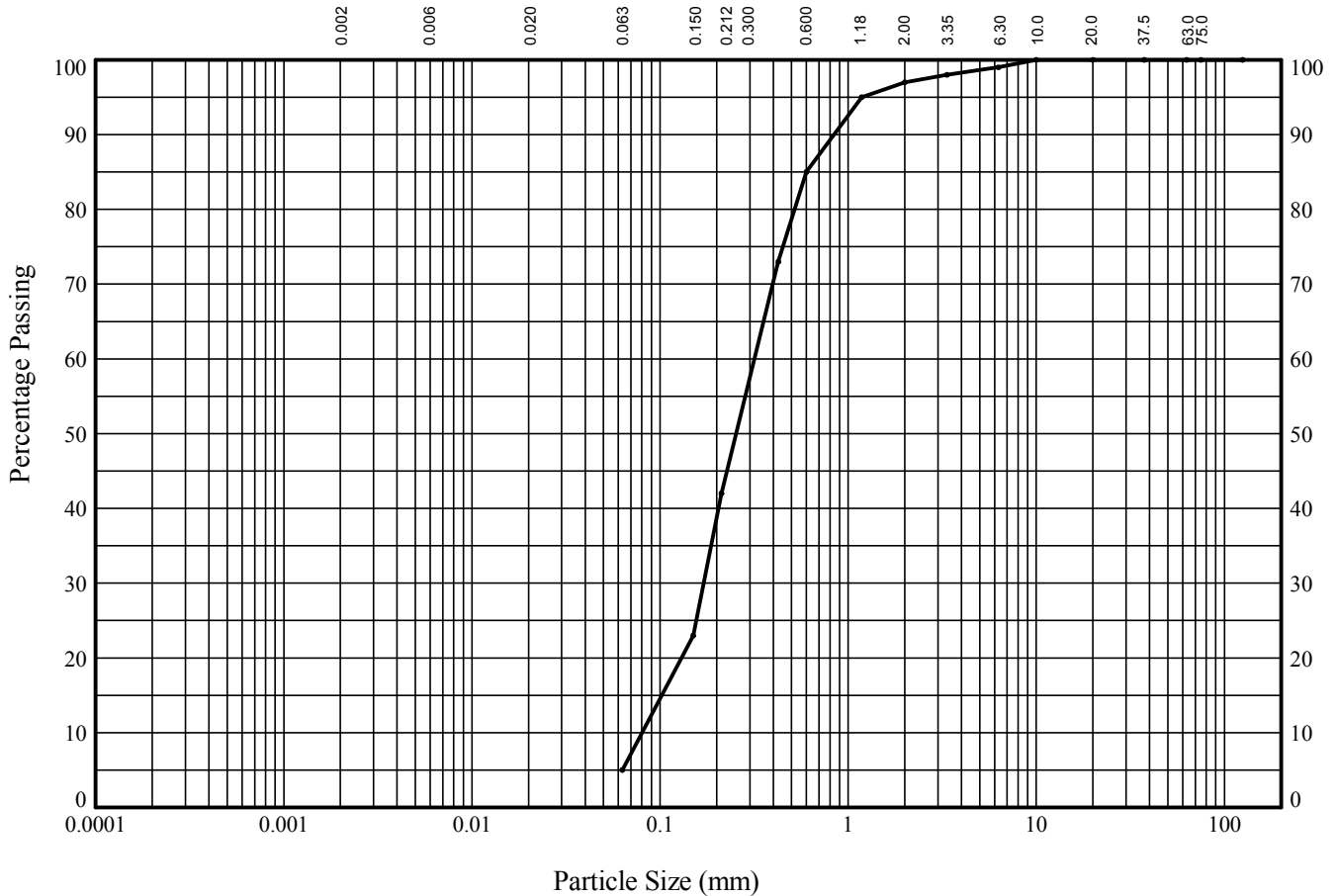
 <p>STRUCTURAL SOILS The Potteries Pottery Street Castleford W. Yorkshire WF10 1NJ</p>	Compiled By		Date
			17/09/15
	Contract SZC 2015 Onshore GI		Contract Ref: 763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14** Sample Ref: **9** Sample Type: **B** Depth (m): **4.00**



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

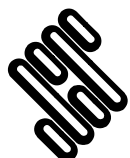
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	98
2.00	97
1.18	95
0.600	85
0.425	73
0.212	42
0.150	23
0.063	5

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	98
2.00	97
1.18	95
0.600	85
0.425	73
0.212	42
0.150	23
0.063	5

Soil Fraction	Sieve Percentage
GRAVEL	3
SAND	92
SILT/CLAY	5

Soil Description:
Orange brown clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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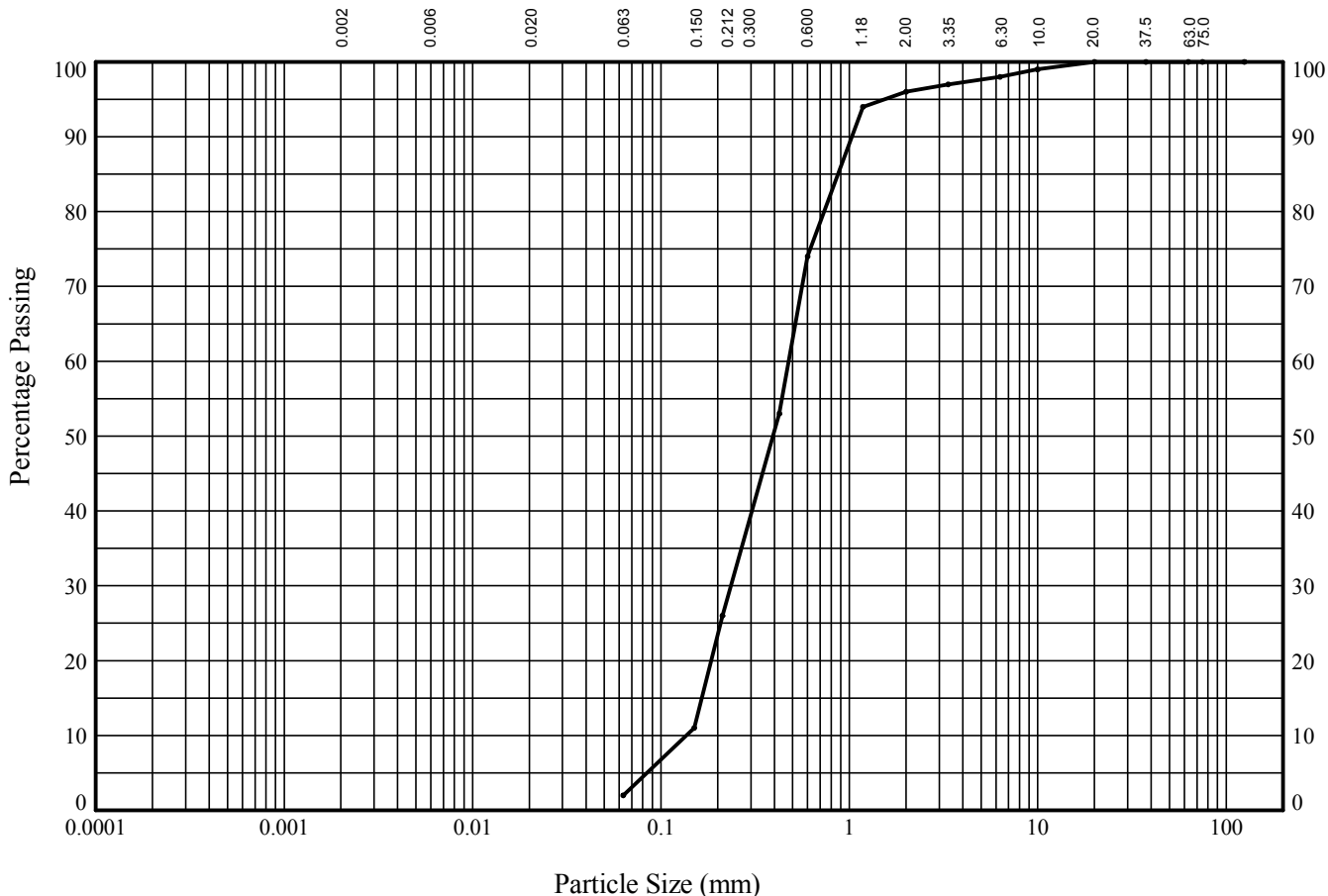
Compiled By		Date
		17/09/15
Contract		Contract Ref:
SZC 2015 Onshore GI		763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14** Sample Ref: **11** Sample Type: **B** Depth (m): **5.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	97
2.00	96
1.18	94
0.600	74
0.425	53
0.212	26
0.150	11
0.063	2

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	4
SAND	94
SILT/CLAY	2

Soil Description:
Light brown slightly clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

GINT_LIBRARY_V8_05_GLB LibVersion: v8_05 - Lib0004 ProjVersion: v8_05 - Core+Logs+Geotech Lab-Bristol - 0003 | Graph L - PSD - EC7 | 763468 - SZC 2015 ONSHORE GI.GPJ - v8_05 | 17/09/15 - 10:48 | SA. Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ, Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk

<p>STRUCTURAL SOILS The Potteries Pottery Street Castleford W. Yorkshire WF10 1NJ</p>	Compiled By		Date
	Contract		17/09/15
	SZC 2015 Onshore GI		Contract Ref: 763468

PARTICLE SIZE DISTRIBUTION TEST

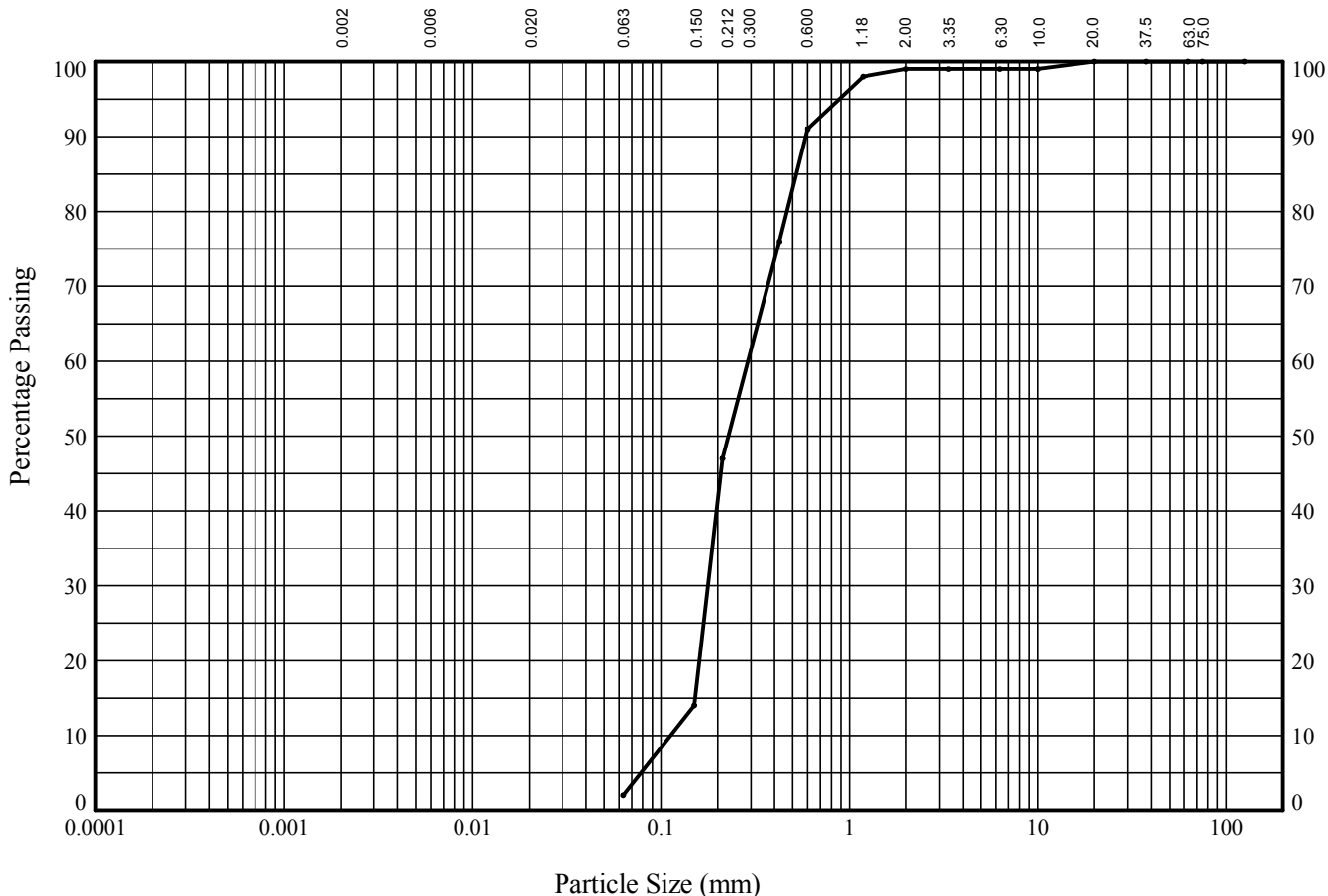
In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14**

Sample Ref: **13**

Sample Type: **B**

Depth (m): **6.00**



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

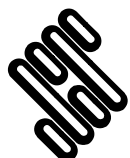
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	99
3.35	99
2.00	99
1.18	98
0.600	91
0.425	76
0.212	47
0.150	14
0.063	2

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	99
3.35	99
2.00	99
1.18	98
0.600	91
0.425	76
0.212	47
0.150	14
0.063	2

Soil Fraction	Sieve Percentage
GRAVEL	1
SAND	97
SILT/CLAY	2

Soil Description:
Orange brown slightly clayey slightly gravelly SAND

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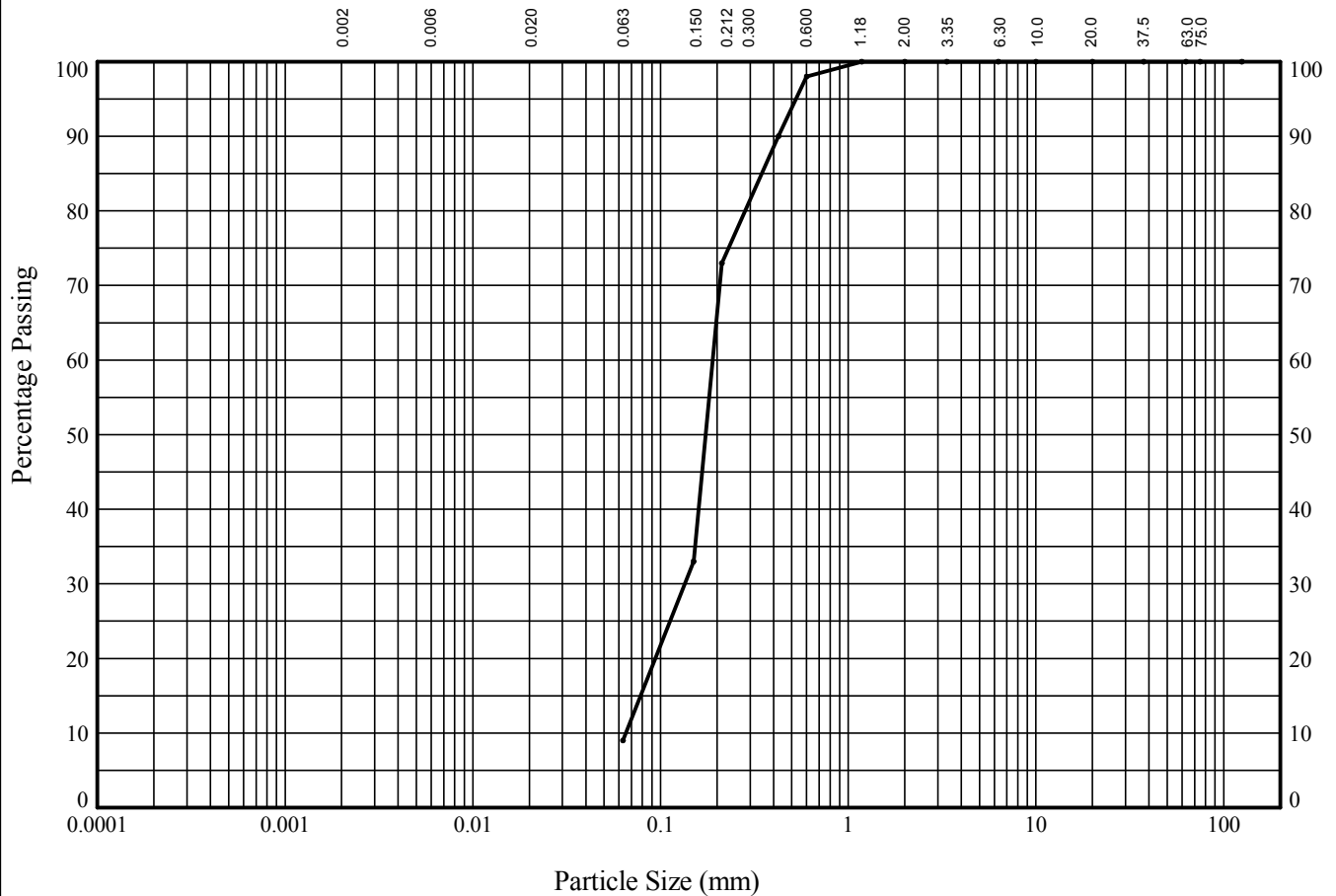
Compiled By		Date
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Contract		Contract Ref:
SZC 2015 Onshore GI		763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14** Sample Ref: **15** Sample Type: **B** Depth (m): **7.00**



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

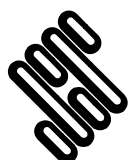
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	98
0.425	90
0.212	73
0.150	33
0.063	9

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	91
SILT/CLAY	9

Soil Description:
Orange brown clayey SAND

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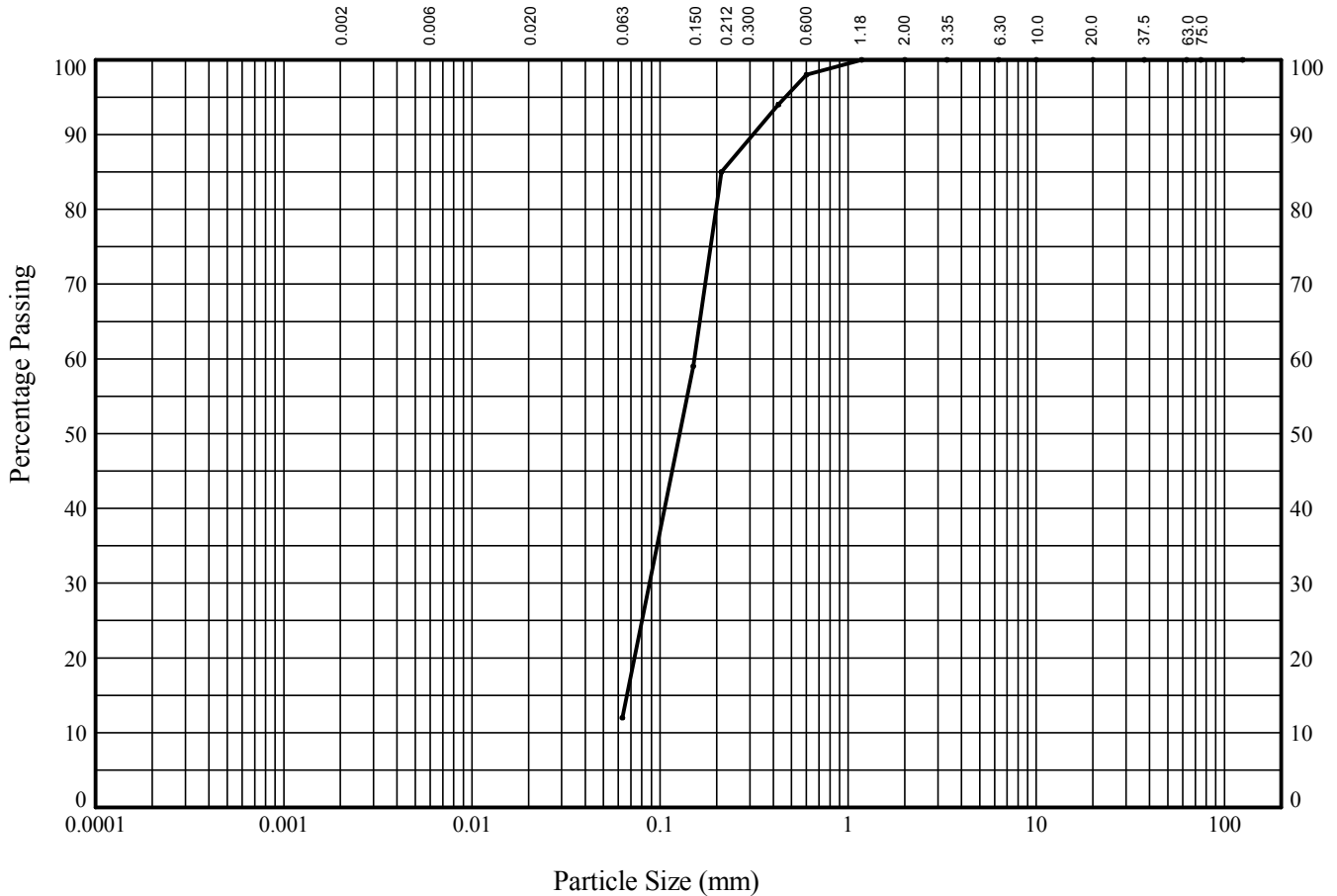
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W. Yorkshire WF10 1NJ

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		17/09/15
Contract		Contract Ref:
SZC 2015 Onshore GI		763468

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14** Sample Ref: **17** Sample Type: **B** Depth (m): **8.00**



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

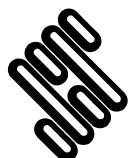
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	98
0.425	94
0.212	85
0.150	59
0.063	12

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	100
0.600	98
0.425	94
0.212	85
0.150	59
0.063	12

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	88
SILT/CLAY	12

Soil Description:
Orange brown clayey SAND

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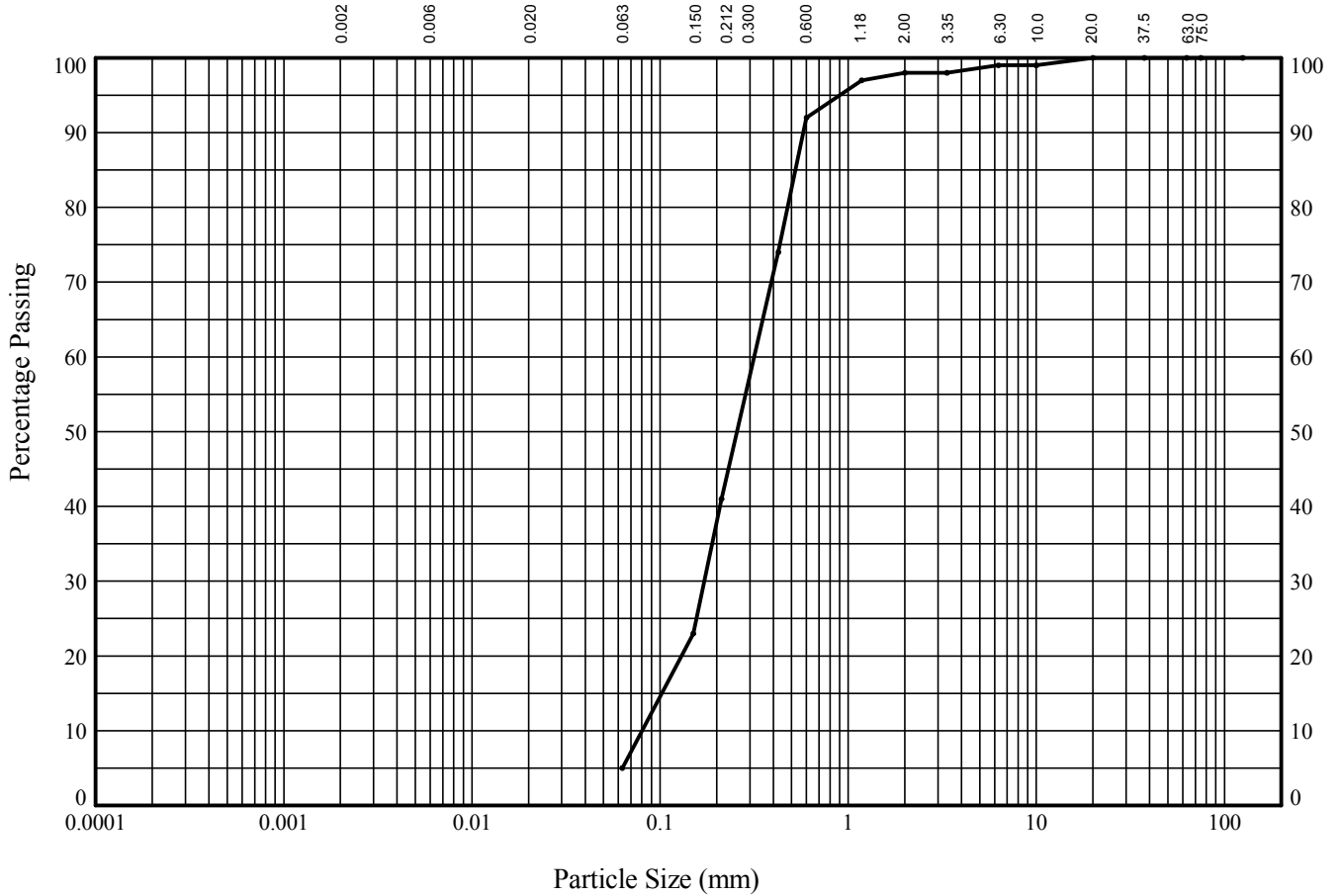
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Contract		Contract Ref:
SZC 2015 Onshore GI		763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14** Sample Ref: **19** Sample Type: **B** Depth (m): **9.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	99
3.35	98
2.00	98
1.18	97
0.600	92
0.425	74
0.212	41
0.150	23
0.063	5

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	93
SILT/CLAY	5

Soil Description:
Orange brown clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

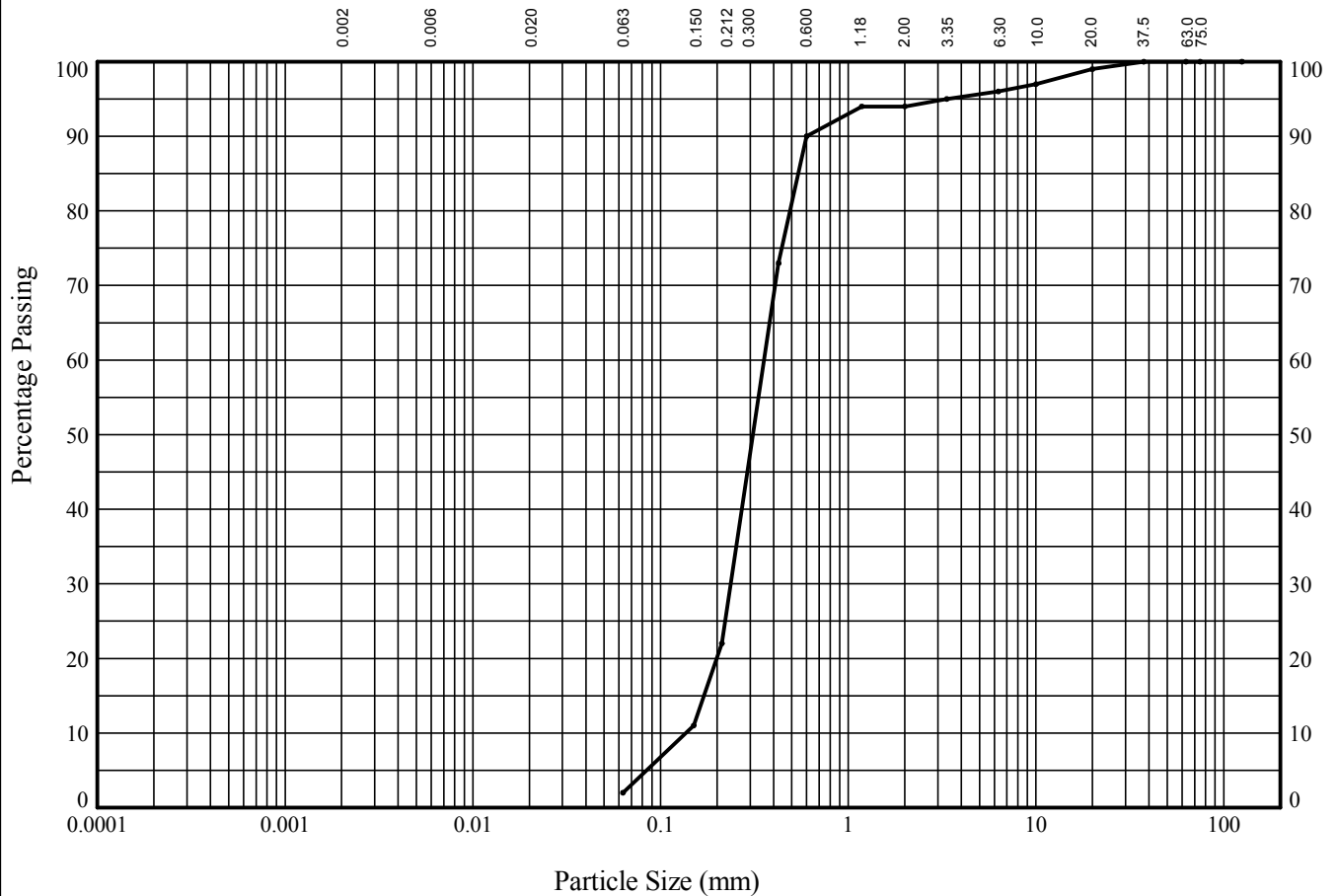
GINT_LIBRARY_V8_05_GLB LibVersion: v8_05 - Lib0004 ProjVersion: v8_05 - Core+Logs+Geotech Lab-Bristol - 0003 | Graph L - PSD - EC7 | 763468 - SZC 2015 ONSHORE GI.GPJ - v8_05 | 17/09/15 - 10:48 | SA. Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ, Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14** Sample Ref: **21** Sample Type: **B** Depth (m): **10.00**



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

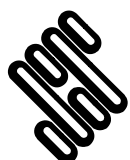
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	99
10.0	97
6.30	96
3.35	95
2.00	94
1.18	94
0.600	90
0.425	73
0.212	22
0.150	11
0.063	2

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	99
10.0	97
6.30	96
3.35	95
2.00	94
1.18	94
0.600	90
0.425	73
0.212	22
0.150	11
0.063	2

Soil Fraction	Sieve Percentage
GRAVEL	6
SAND	92
SILT/CLAY	2

Soil Description:
Orange brown slightly clayey gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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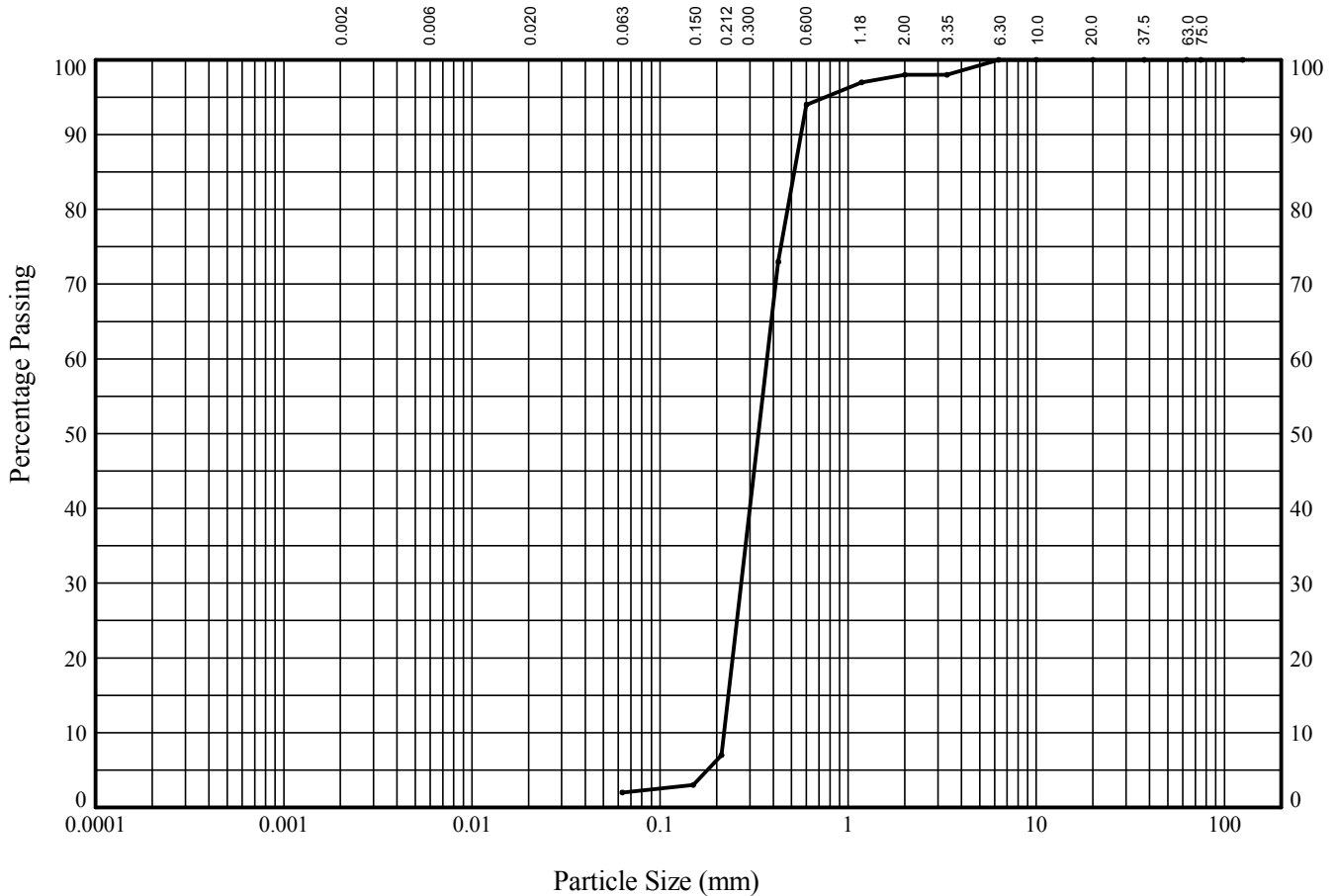
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Contract	Contract Ref:	
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14** Sample Ref: **23** Sample Type: **B** Depth (m): **11.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	98
2.00	98
1.18	97
0.600	94
0.425	73
0.212	7
0.150	3
0.063	2

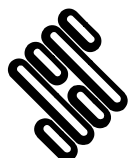
Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	98
2.00	98
1.18	97
0.600	94
0.425	73
0.212	7
0.150	3
0.063	2

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	96
SILT/CLAY	2

Soil Description:

Light orange brown slightly clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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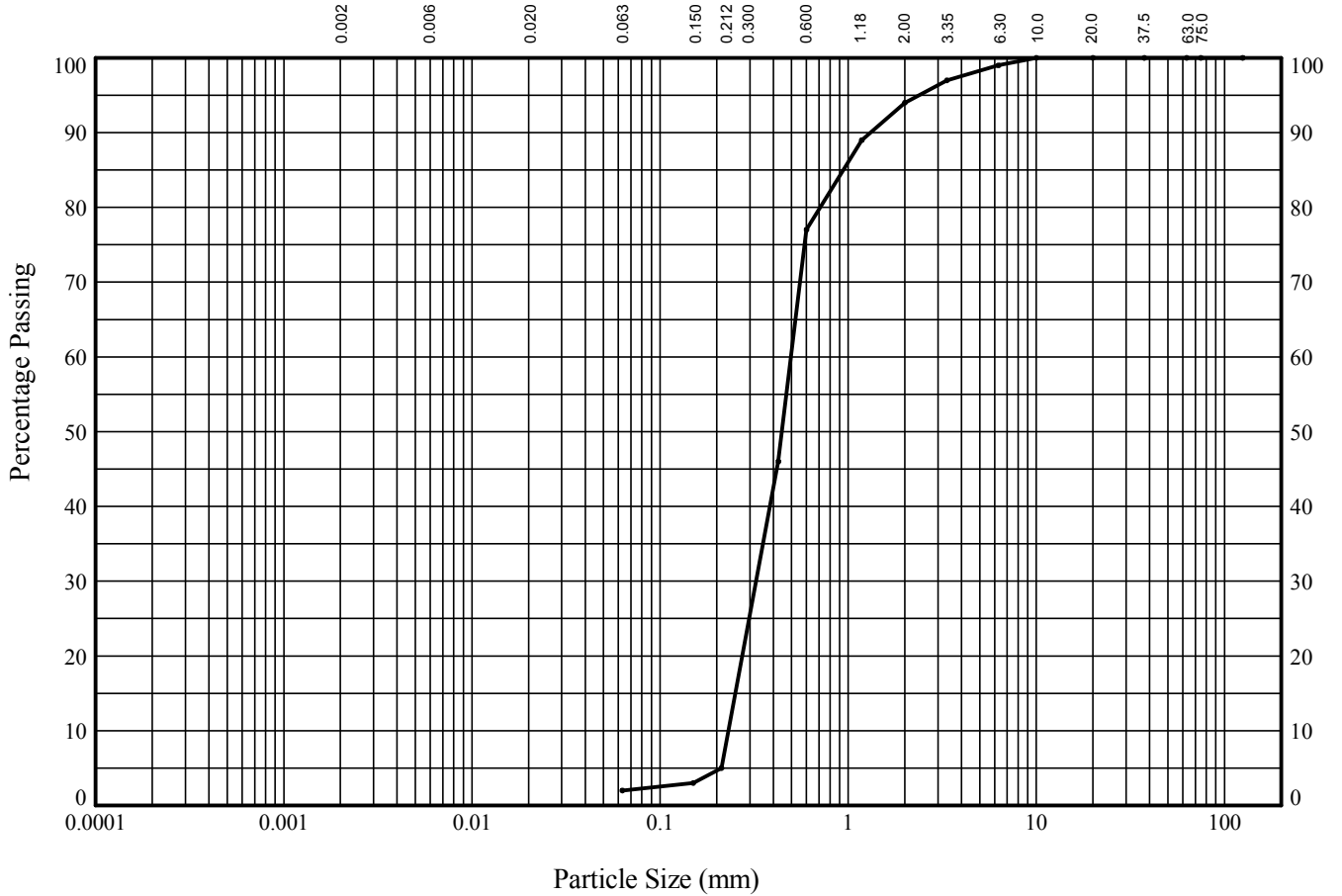
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14** Sample Ref: **25** Sample Type: **B** Depth (m): **12.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	97
2.00	94
1.18	89
0.600	77
0.425	46
0.212	5
0.150	3
0.063	2

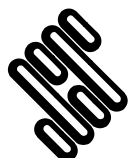
Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	97
2.00	94
1.18	89
0.600	77
0.425	46
0.212	5
0.150	3
0.063	2

Soil Fraction	Sieve Percentage
GRAVEL	6
SAND	92
SILT/CLAY	2

Soil Description:

Light orange brown slightly clayey gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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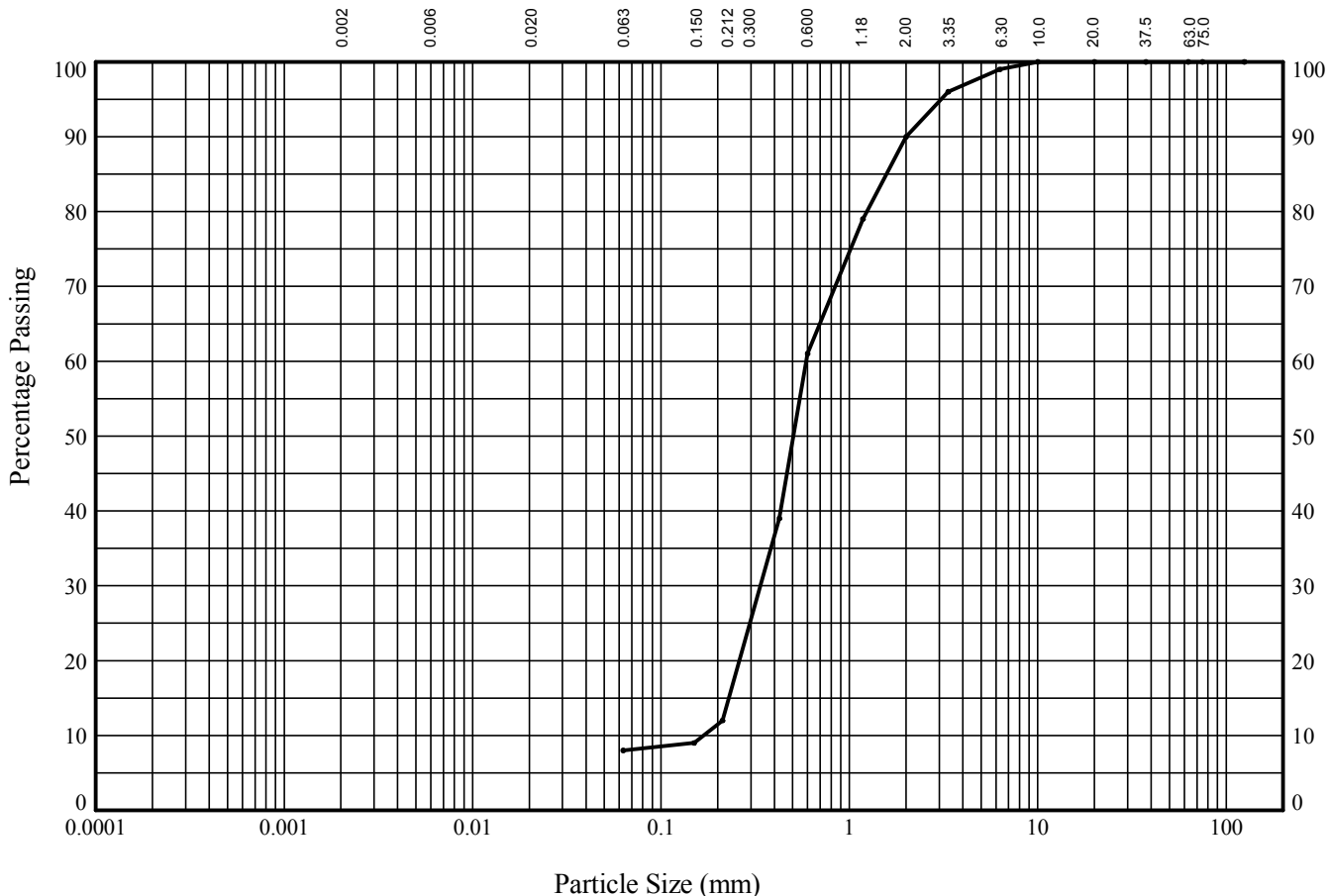
763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14** Sample Ref: **27** Sample Type: **B** Depth (m): **13.00**



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

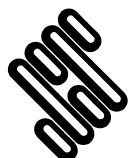
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	96
2.00	90
1.18	79
0.600	61
0.425	39
0.212	12
0.150	9
0.063	8

Particle Diameter	Percentage Passing
0.075	8
0.150	9
0.300	12
0.600	39
1.18	79
2.00	90
3.35	96
6.30	99
10.0	100
20.0	100
37.5	100
63.0	100
75.0	100

Soil Fraction	Sieve Percentage
GRAVEL	10
SAND	82
SILT/CLAY	8

Soil Description:
Light brown clayey gravelly SAND

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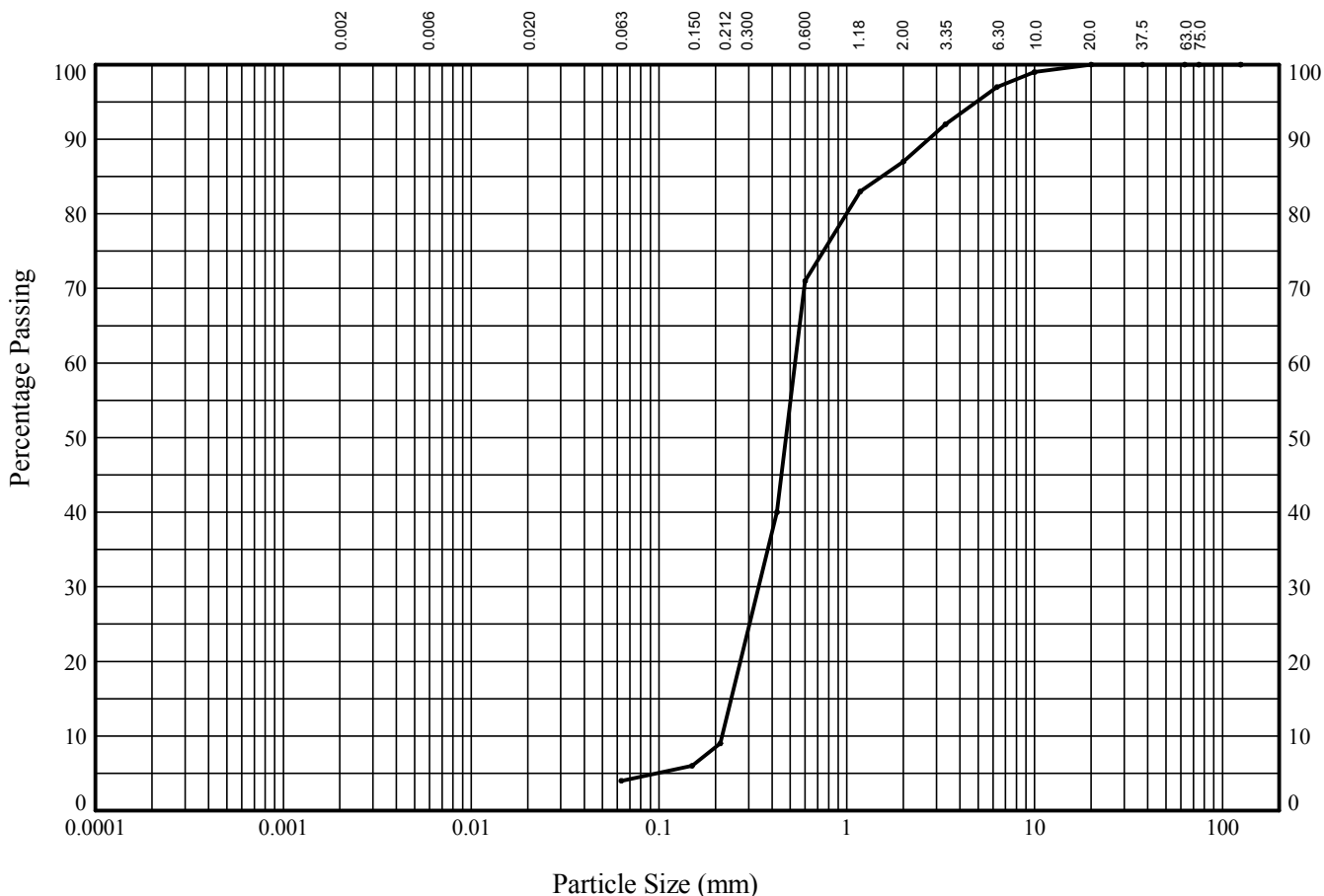
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14** Sample Ref: **29** Sample Type: **B** Depth (m): **14.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	97
3.35	92
2.00	87
1.18	83
0.600	71
0.425	40
0.212	9
0.150	6
0.063	4

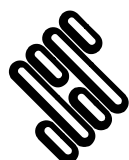
Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	13
SAND	83
SILT/CLAY	4

Soil Description:
Brown slightly clayey gravelly SAND

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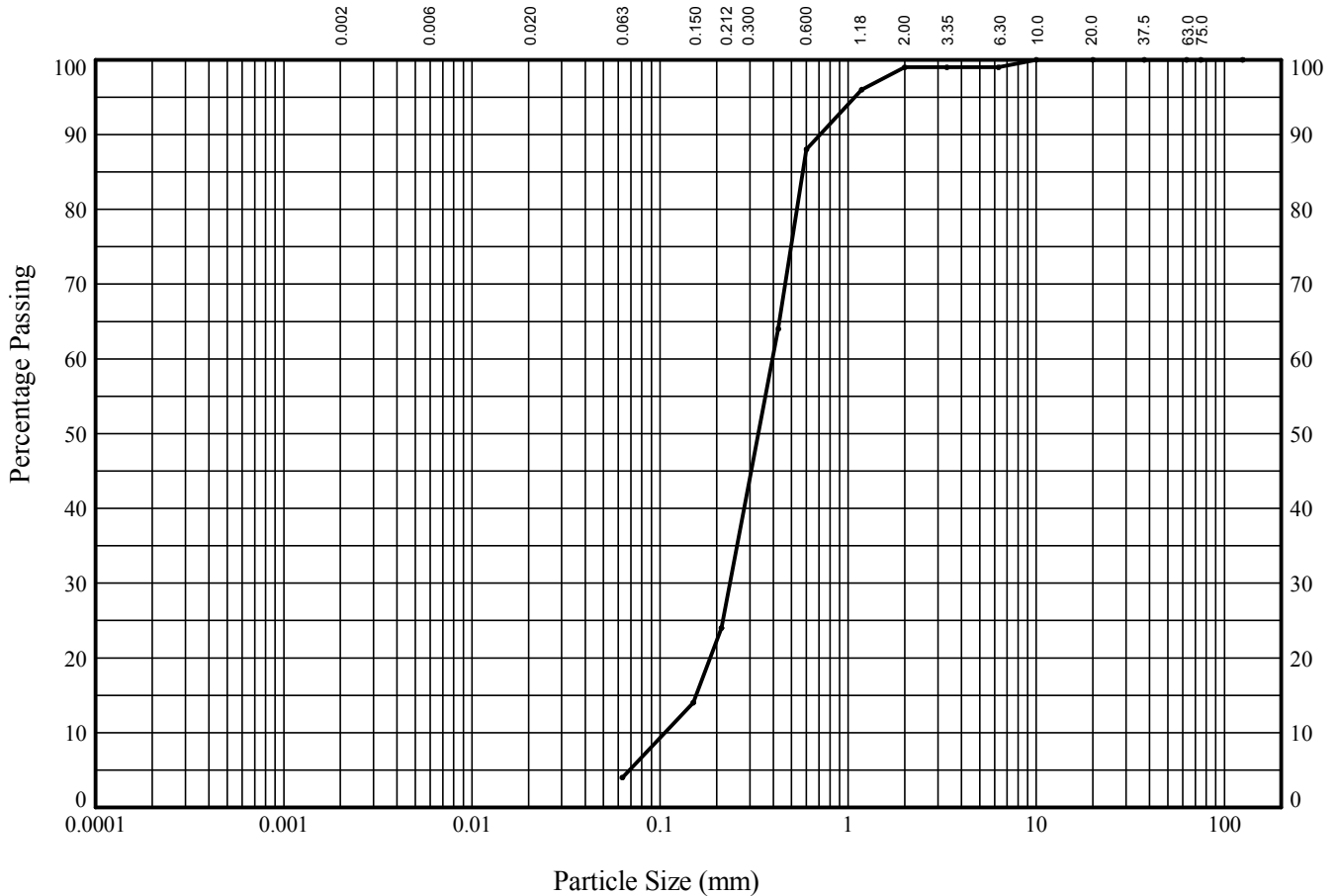
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		17/09/15
Contract	Contract Ref:	
SZC 2015 Onshore GI	763468	



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14** Sample Ref: **31** Sample Type: **B** Depth (m): **15.00**



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

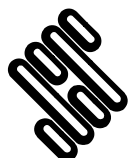
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	99
2.00	99
1.18	96
0.600	88
0.425	64
0.212	24
0.150	14
0.063	4

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	99
2.00	99
1.18	96
0.600	88
0.425	64
0.212	24
0.150	14
0.063	4

Soil Fraction	Sieve Percentage
GRAVEL	1
SAND	95
SILT/CLAY	4

Soil Description:
Orange brown slightly clayey slightly gravelly SAND

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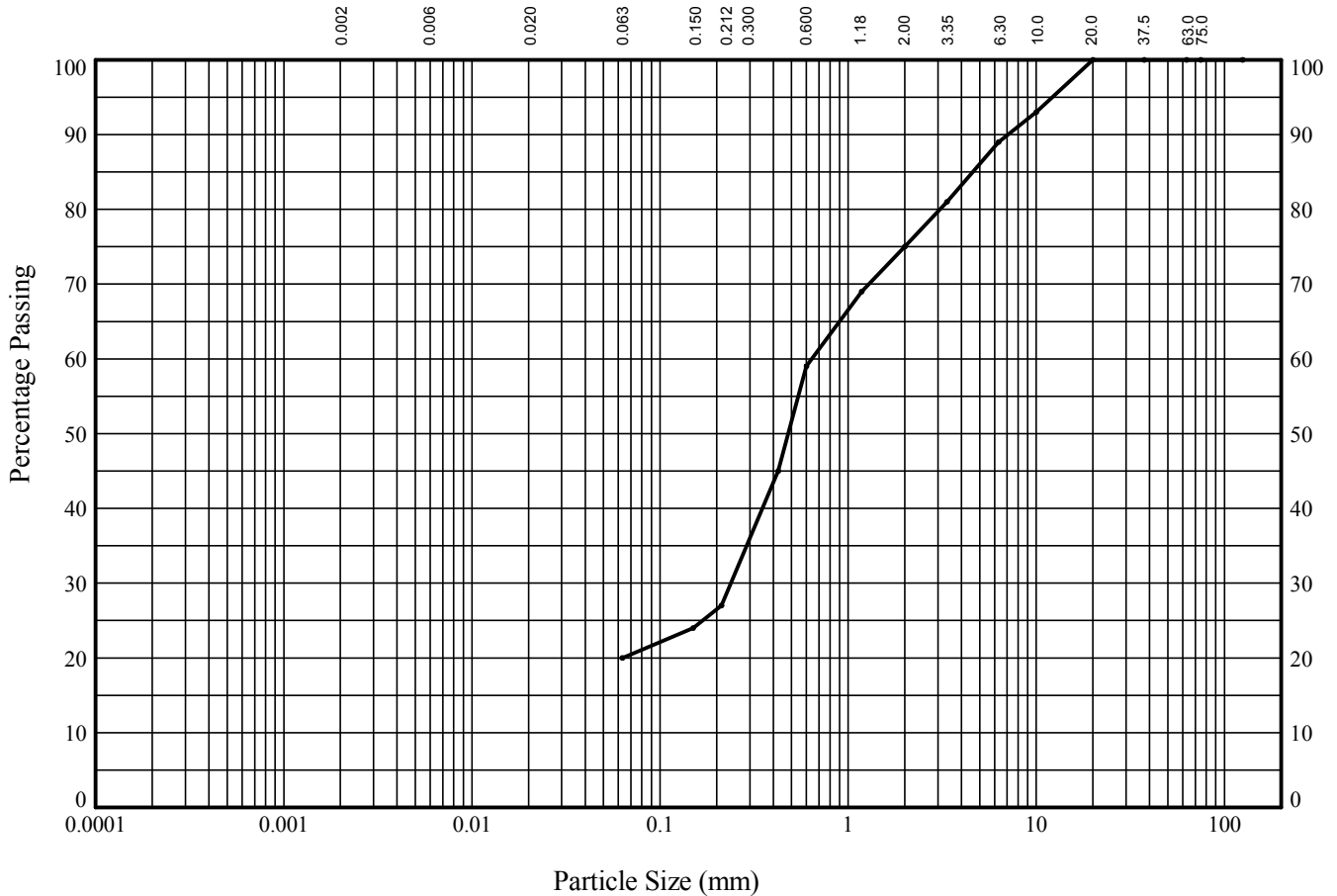
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14** Sample Ref: **33** Sample Type: **B** Depth (m): **16.00**



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

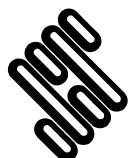
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	93
6.30	89
3.35	81
2.00	75
1.18	69
0.600	59
0.425	45
0.212	27
0.150	24
0.063	20

Particle Diameter	Percentage Passing
0.075	20
0.15	27
0.3	45
0.6	59
1.18	69
2.0	75
3.35	81
6.3	89
10	93
20	100

Soil Fraction	Sieve Percentage
GRAVEL	25
SAND	55
SILT/CLAY	20

Soil Description:
Dark orange brown very silty very gravelly SAND

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PARTICLE SIZE DISTRIBUTION TEST

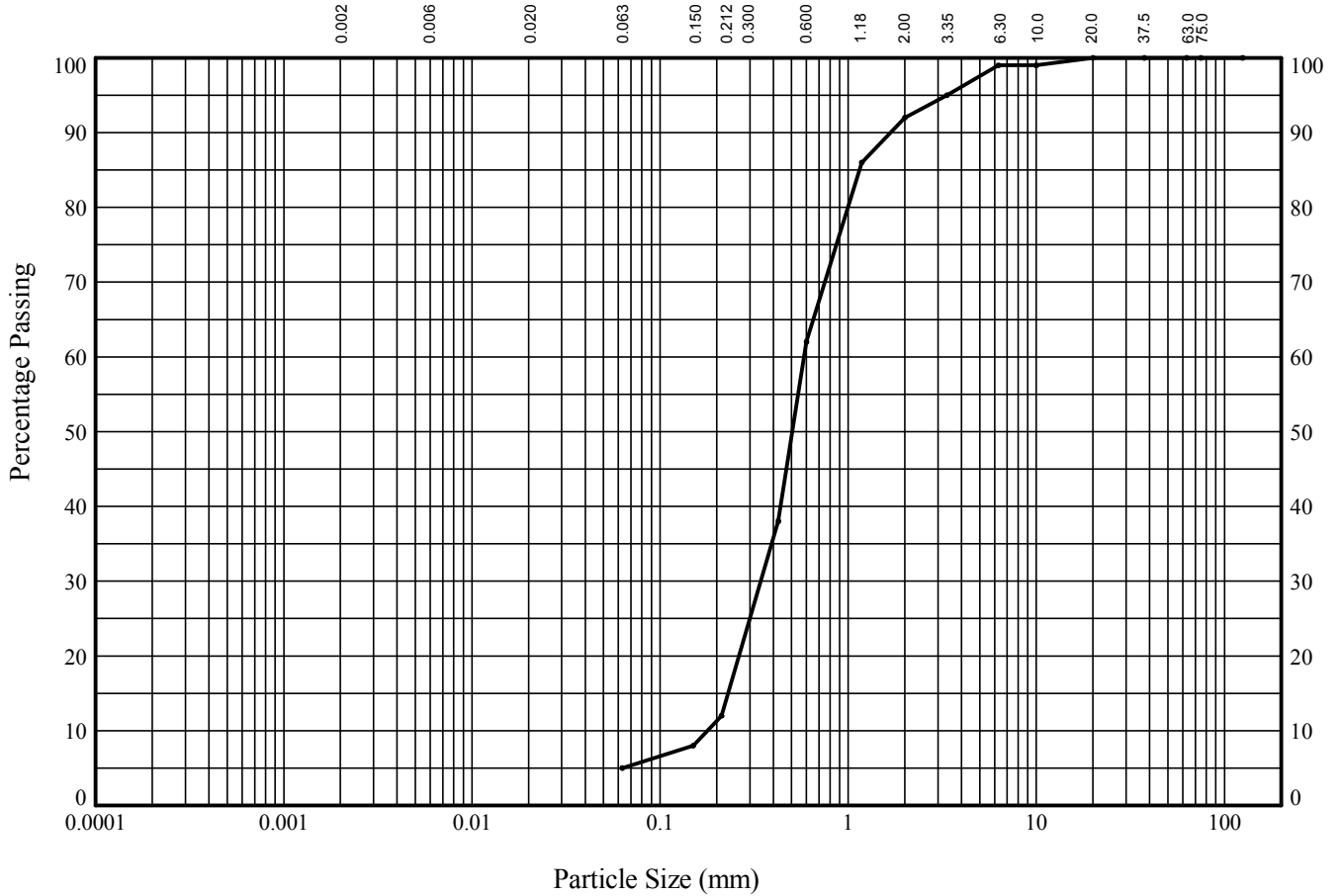
In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14**

Sample Ref: **35**

Sample Type: **B**

Depth (m): **17.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	99
3.35	95
2.00	92
1.18	86
0.600	62
0.425	38
0.212	12
0.150	8
0.063	5

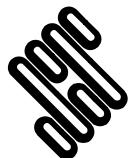
Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	8
SAND	87
SILT/CLAY	5

Soil Description:
Brown clayey gravelly SAND

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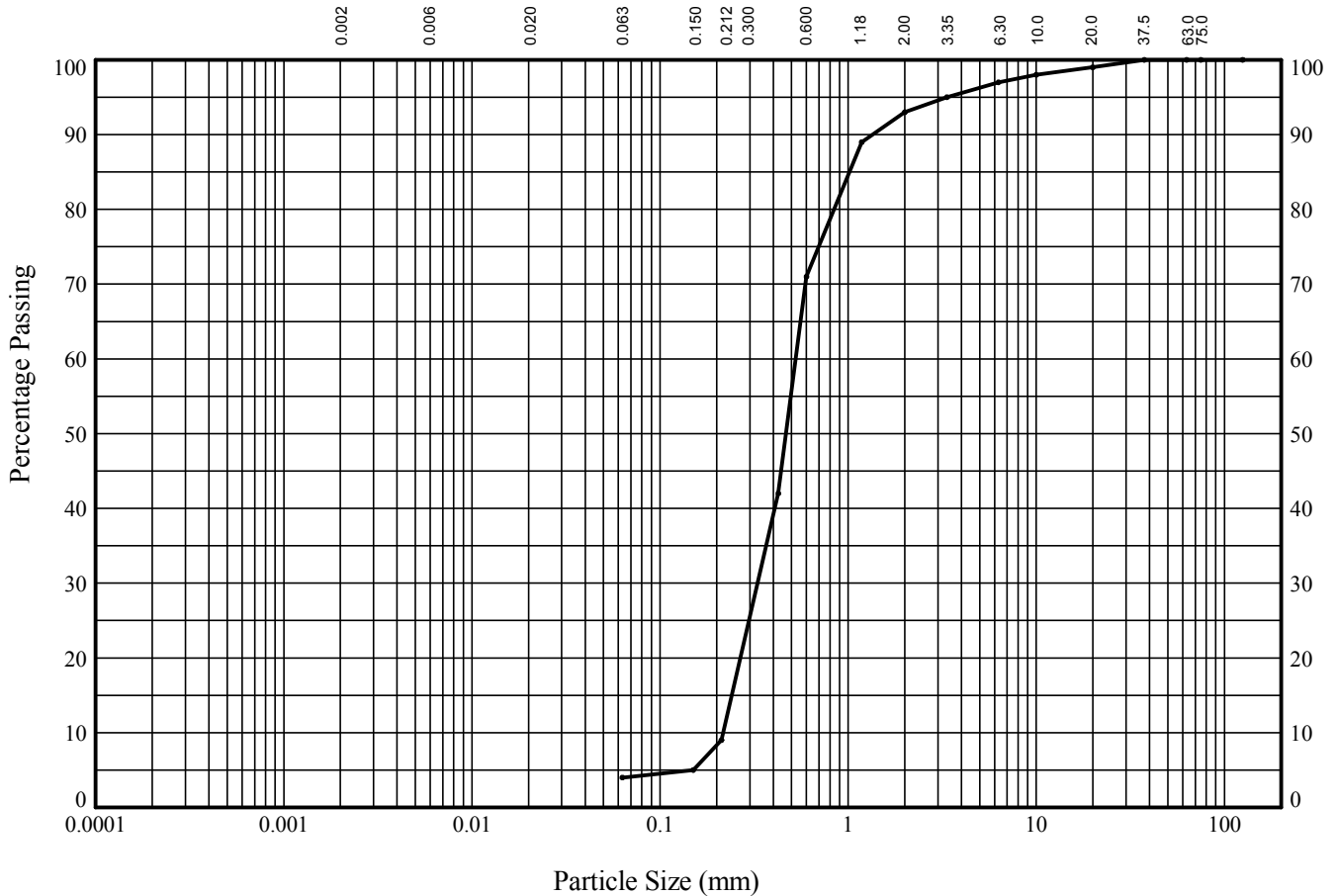
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SZC 2015 Onshore GI		Contract Ref: 763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14** Sample Ref: **37** Sample Type: **B** Depth (m): **18.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	99
10.0	98
6.30	97
3.35	95
2.00	93
1.18	89
0.600	71
0.425	42
0.212	9
0.150	5
0.063	4



Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	99
10.0	98
6.30	97
3.35	95
2.00	93
1.18	89
0.600	71
0.425	42
0.212	9
0.150	5
0.063	4

Soil Fraction	Sieve Percentage
GRAVEL	7
SAND	89
SILT/CLAY	4

Soil Description:
Dark orange brown clayey gravelly SAND

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GINT_LIBRARY_V8_05_GLB LibVersion: v8_05 - Lib0004 ProjVersion: v8_05 - Core+Logs+Geotech Lab-Bristol - 0003 | Graph L - PSD - EC7 | 763468 - SZC 2015 ONSHORE GI.GPJ - v8_05 | 17/09/15 - 10:48 | SA. Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ, Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk

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PARTICLE SIZE DISTRIBUTION TEST

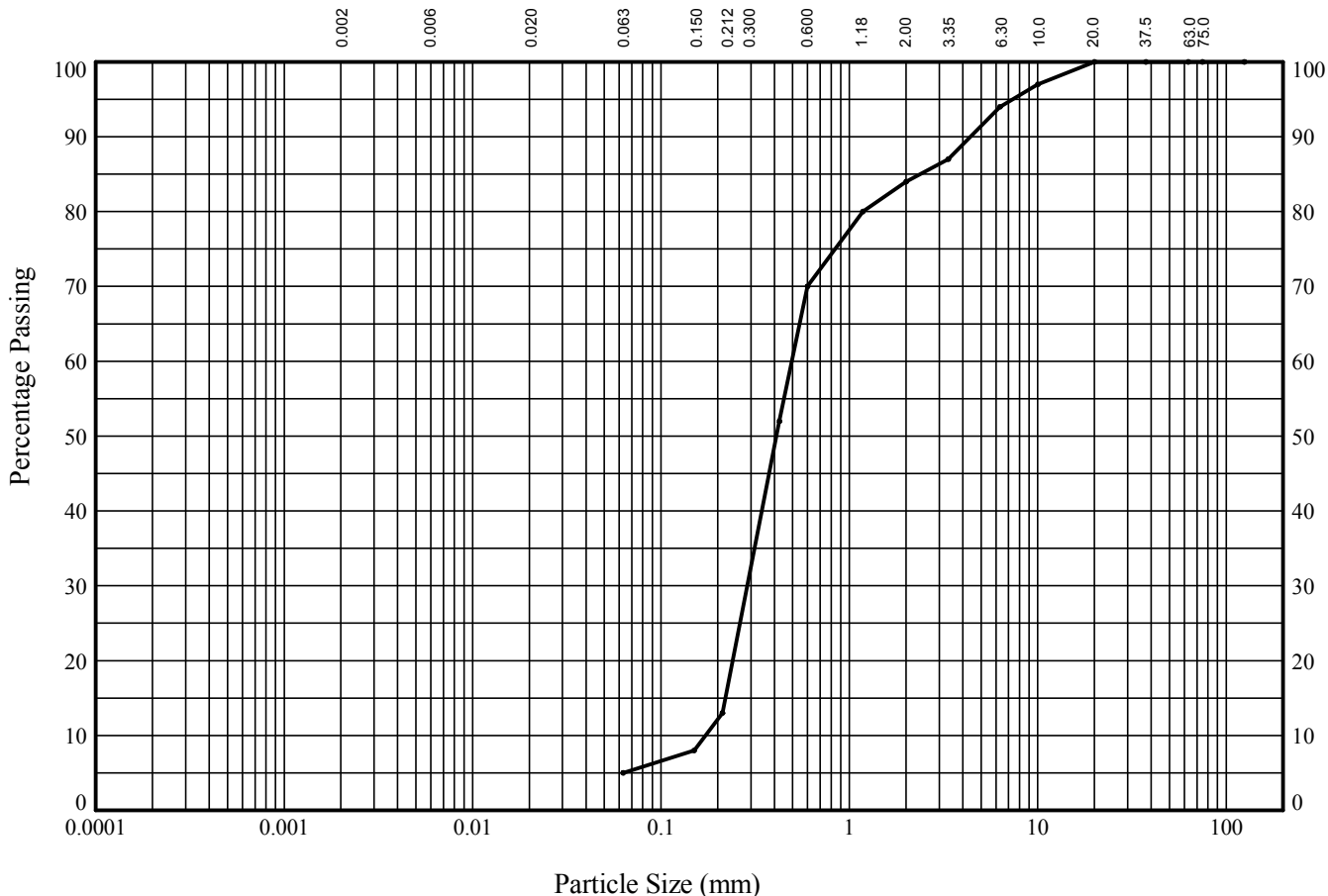
In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **CPB BP14**

Sample Ref: **39**

Sample Type: **B**

Depth (m): **19.00**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	97
6.30	94
3.35	87
2.00	84
1.18	80
0.600	70
0.425	52
0.212	13
0.150	8
0.063	5

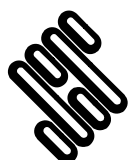
Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	97
6.30	94
3.35	87
2.00	84
1.18	80
0.600	70
0.425	52
0.212	13
0.150	8
0.063	5

Soil Fraction	Sieve Percentage
GRAVEL	16
SAND	79
SILT/CLAY	5

Soil Description:

Brown clayey gravelly SAND

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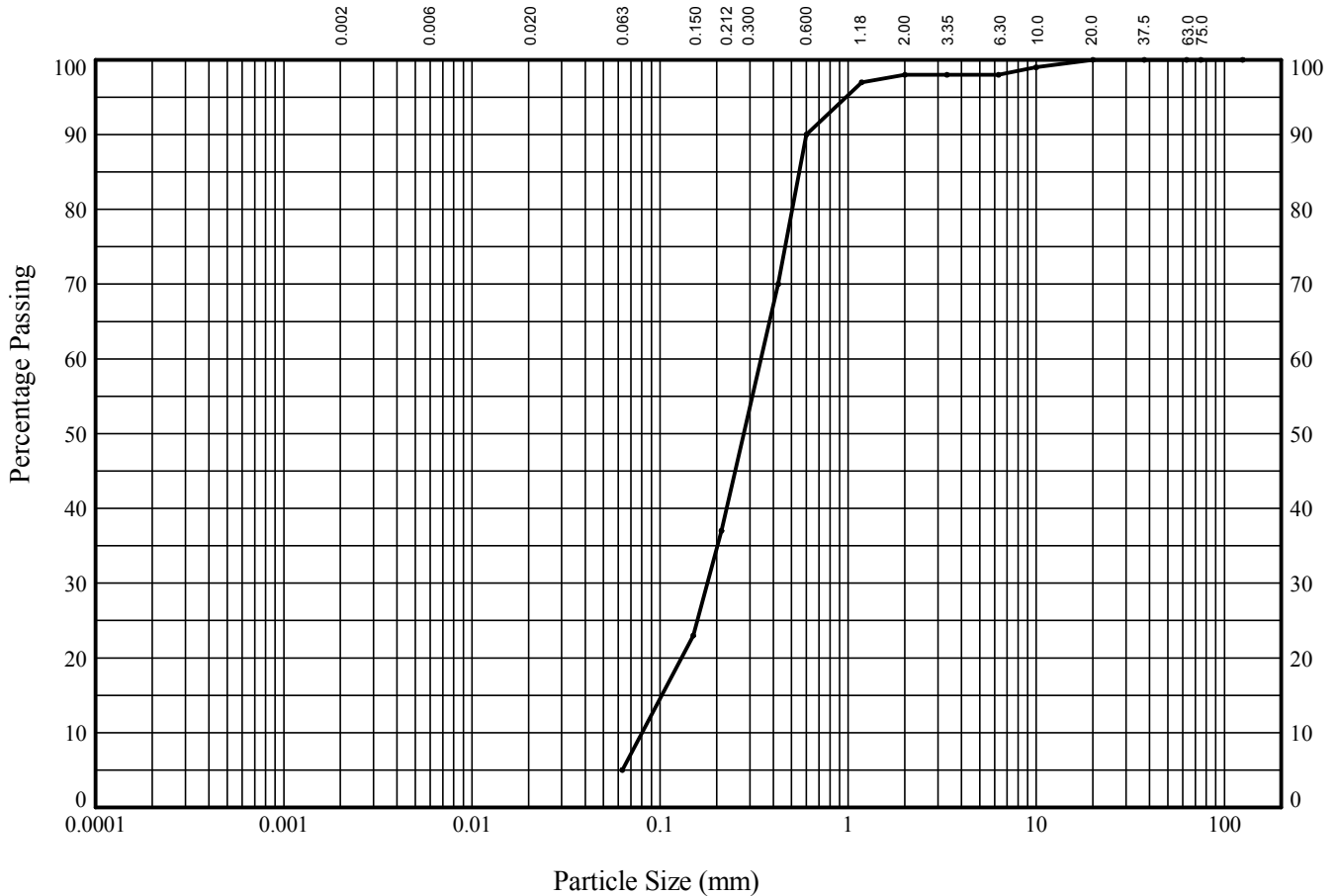


GINT_LIBRARY_V8_05_GLB_LibVersion: v8_05 - Lib0004 ProjVersion: v8_05 - Core+Logs+Geotech Lab-Bristol - 0003 | Graph L - PSD - EC7 | 763468 - SZC 2015 ONSHORE GI.GPJ - v8_05 | 17/09/15 - 10:48 | SA.
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **WMZ18** Sample Ref: **2** Sample Type: **B** Depth (m): **1.50**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	98
2.00	98
1.18	97
0.600	90
0.425	70
0.212	37
0.150	23
0.063	5

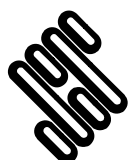
Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	98
2.00	98
1.18	97
0.600	90
0.425	70
0.212	37
0.150	23
0.063	5

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	93
SILT/CLAY	5

Soil Description:

Brown slightly gravelly clayey SAND

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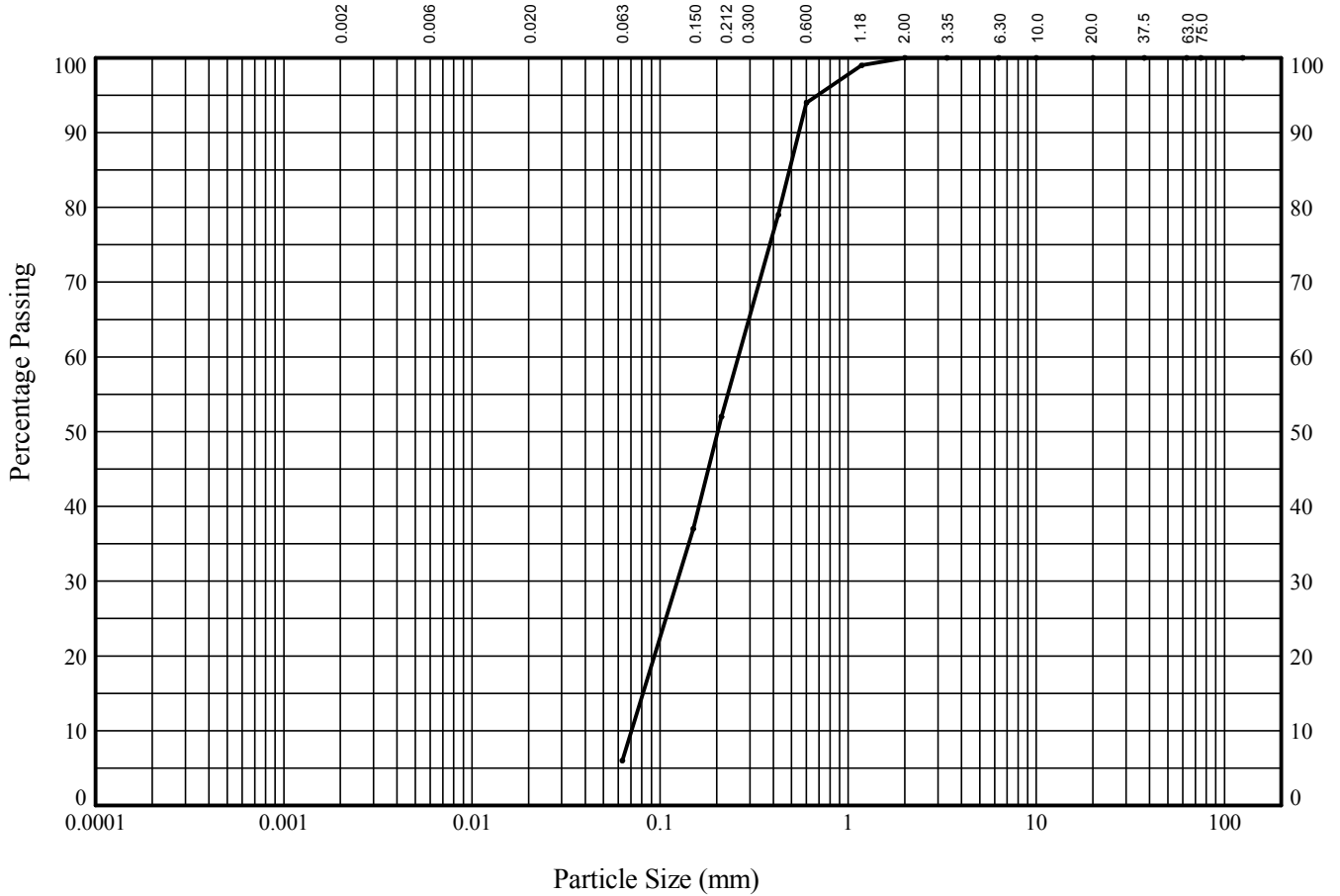
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **WMZ18** Sample Ref: **3** Sample Type: **B** Depth (m): **2.50**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	100
1.18	99
0.600	94
0.425	79
0.212	52
0.150	37
0.063	6

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	0
SAND	94
SILT/CLAY	6

Soil Description:
Orange brown slightly clayey SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

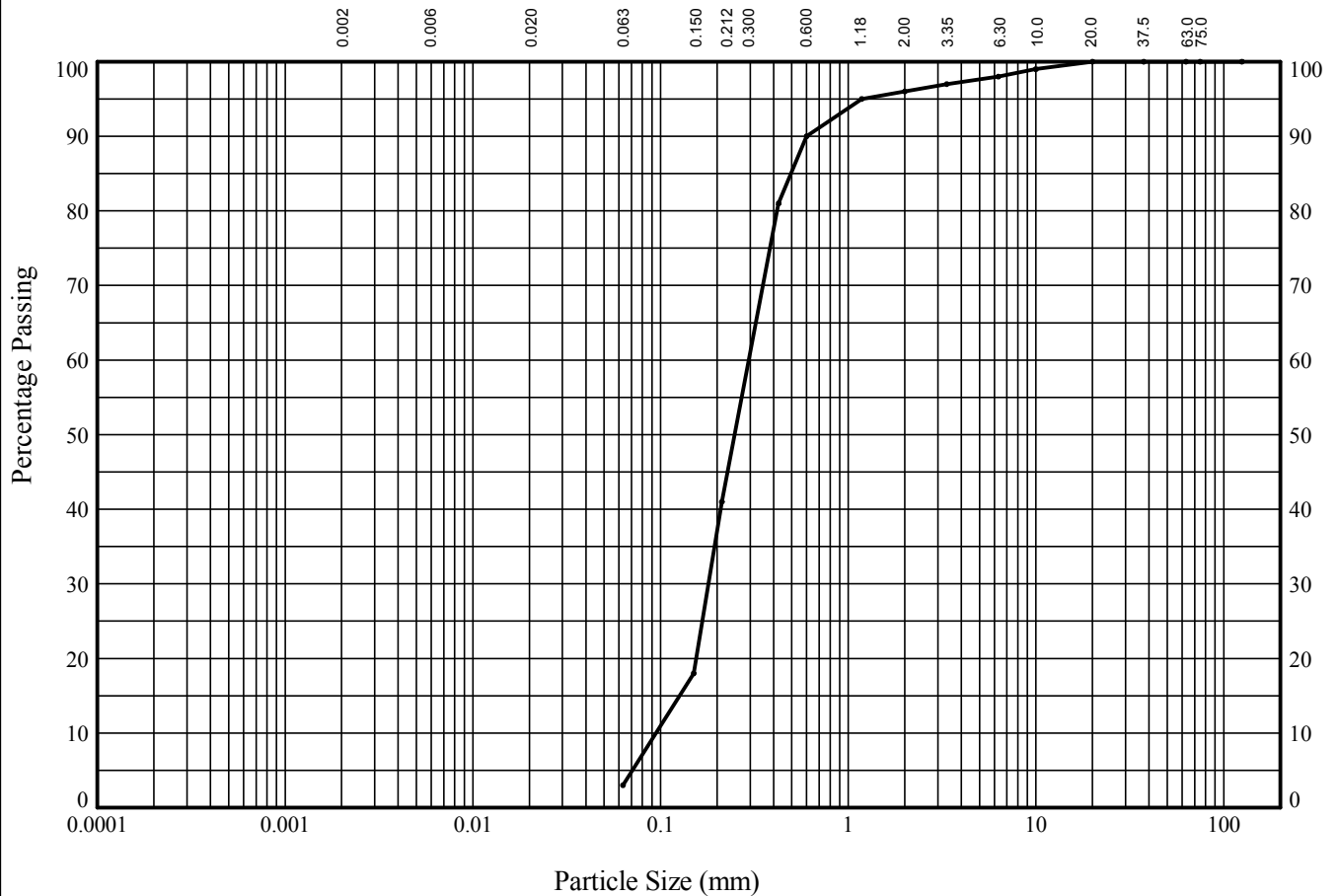
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			17/09/15
	Contract SZC 2015 Onshore GI		Contract Ref: 763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **WMZ18** Sample Ref: **4** Sample Type: **B** Depth (m): **3.00**



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

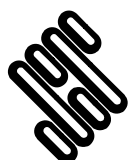
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	97
2.00	96
1.18	95
0.600	90
0.425	81
0.212	41
0.150	18
0.063	3

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	98
3.35	97
2.00	96
1.18	95
0.600	90
0.425	81
0.212	41
0.150	18
0.063	3

Soil Fraction	Sieve Percentage
GRAVEL	4
SAND	93
SILT/CLAY	3

Soil Description:
Light brown slightly clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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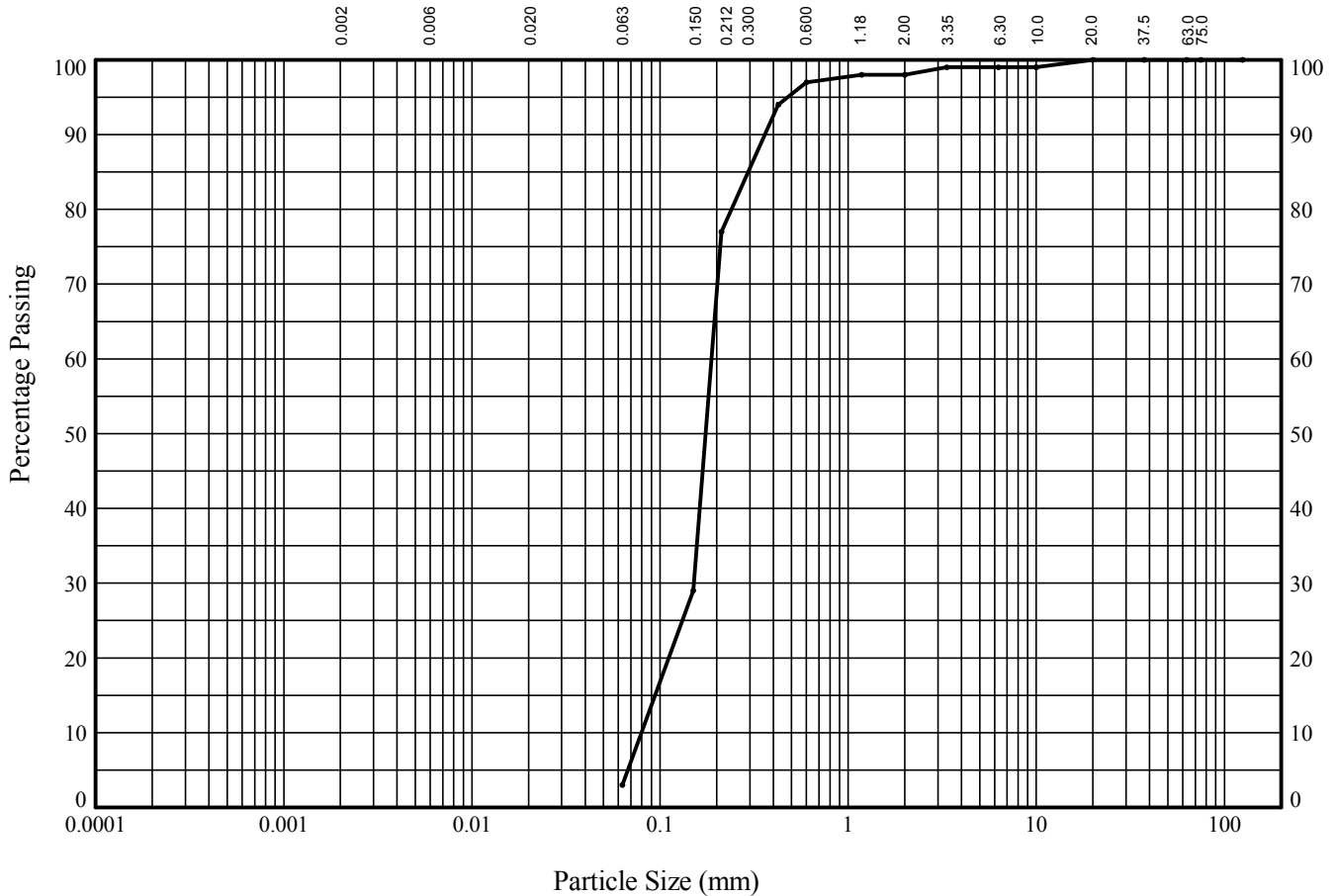
Compiled By		Date
		17/09/15
Contract	Contract Ref:	
SZC 2015 Onshore GI	763468	



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **WMZ19** Sample Ref: **1** Sample Type: **B** Depth (m): **0.70**



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

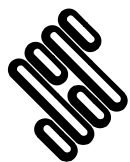
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	99
3.35	99
2.00	98
1.18	98
0.600	97
0.425	94
0.212	77
0.150	29
0.063	3

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.30	99
3.35	99
2.00	98
1.18	98
0.600	97
0.425	94
0.212	77
0.150	29
0.063	3

Soil Fraction	Sieve Percentage
GRAVEL	2
SAND	95
SILT/CLAY	3

Soil Description:
Light brown slightly clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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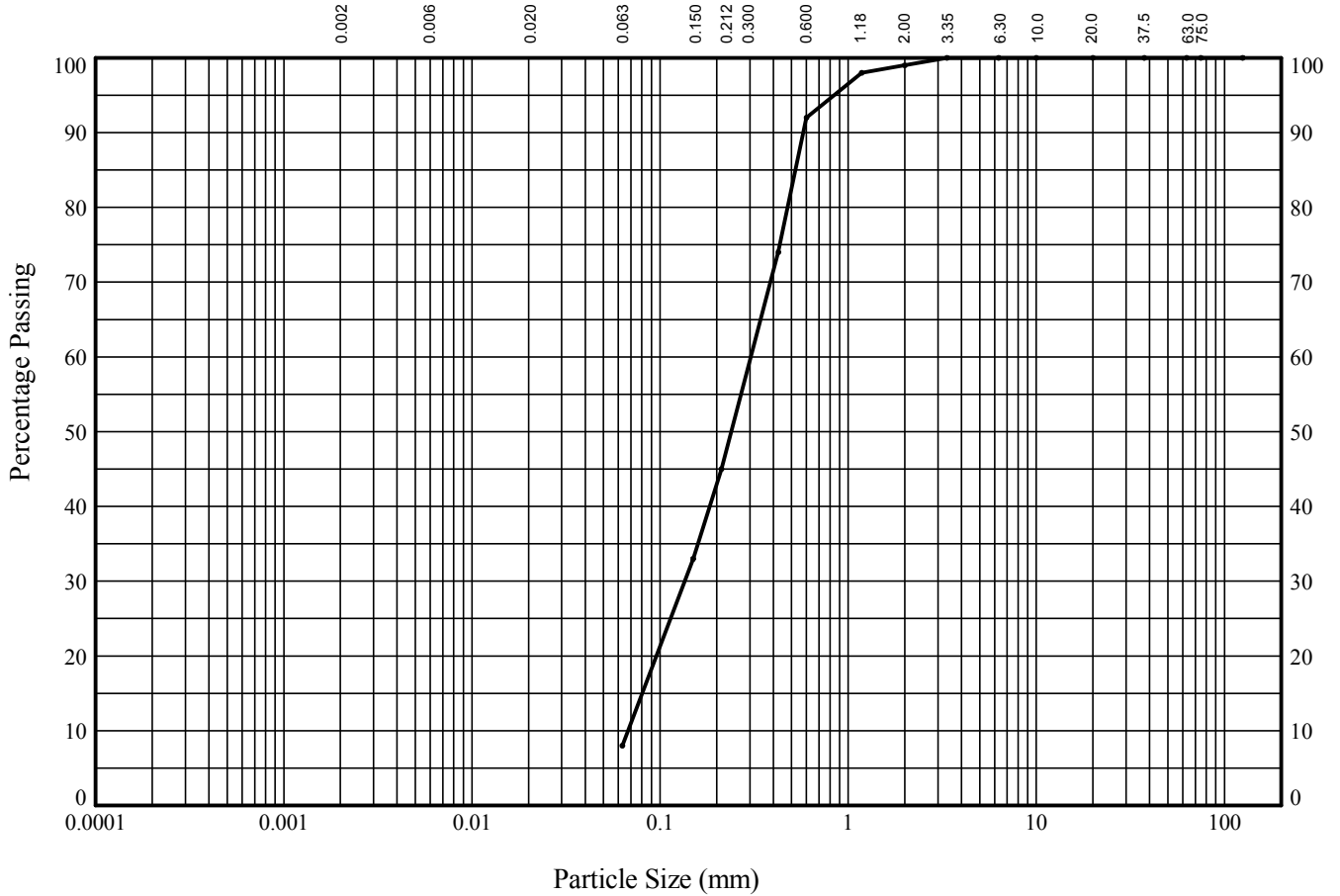
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **WMZ19** Sample Ref: **2** Sample Type: **B** Depth (m): **1.50**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	99
1.18	98
0.600	92
0.425	74
0.212	45
0.150	33
0.063	8

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	100
3.35	100
2.00	99
1.18	98
0.600	92
0.425	74
0.212	45
0.150	33
0.063	8

Soil Fraction	Sieve Percentage
GRAVEL	1
SAND	91
SILT/CLAY	8

Soil Description:
Orange brown clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



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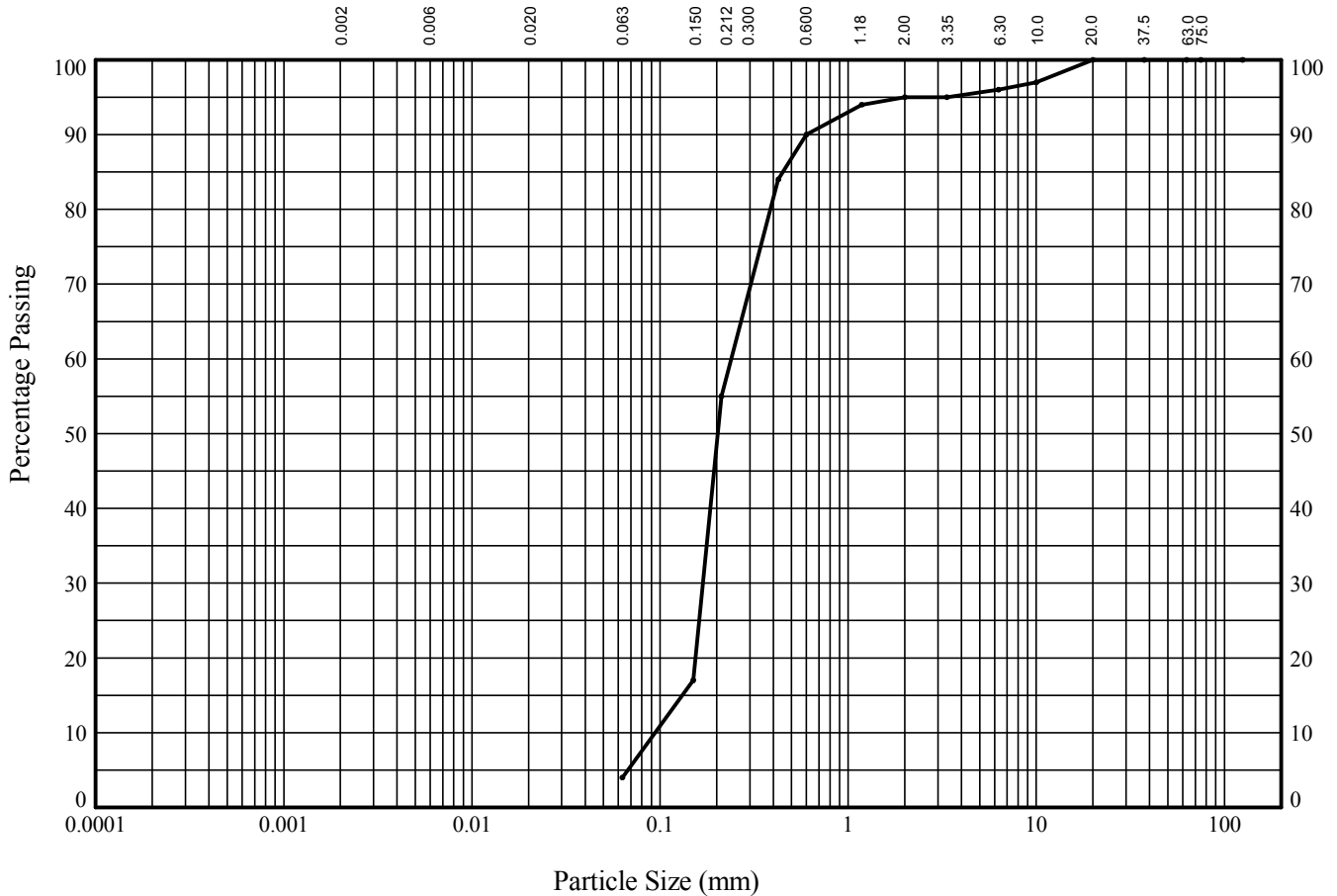
Compiled By		Date
		17/09/15
Contract	Contract Ref:	
SZC 2015 Onshore GI	763468	



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **WMZ19** Sample Ref: **4** Sample Type: **B** Depth (m): **2.50**



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

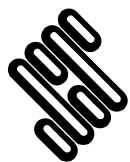
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	97
6.30	96
3.35	95
2.00	95
1.18	94
0.600	90
0.425	84
0.212	55
0.150	17
0.063	4

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	97
6.30	96
3.35	95
2.00	95
1.18	94
0.600	90
0.425	84
0.212	55
0.150	17
0.063	4

Soil Fraction	Sieve Percentage
GRAVEL	5
SAND	91
SILT/CLAY	4

Soil Description:
Light brown slightly clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



STRUCTURAL SOILS
 The Potteries
 Pottery Street
 Castleford
 W. Yorkshire WF10 1NJ

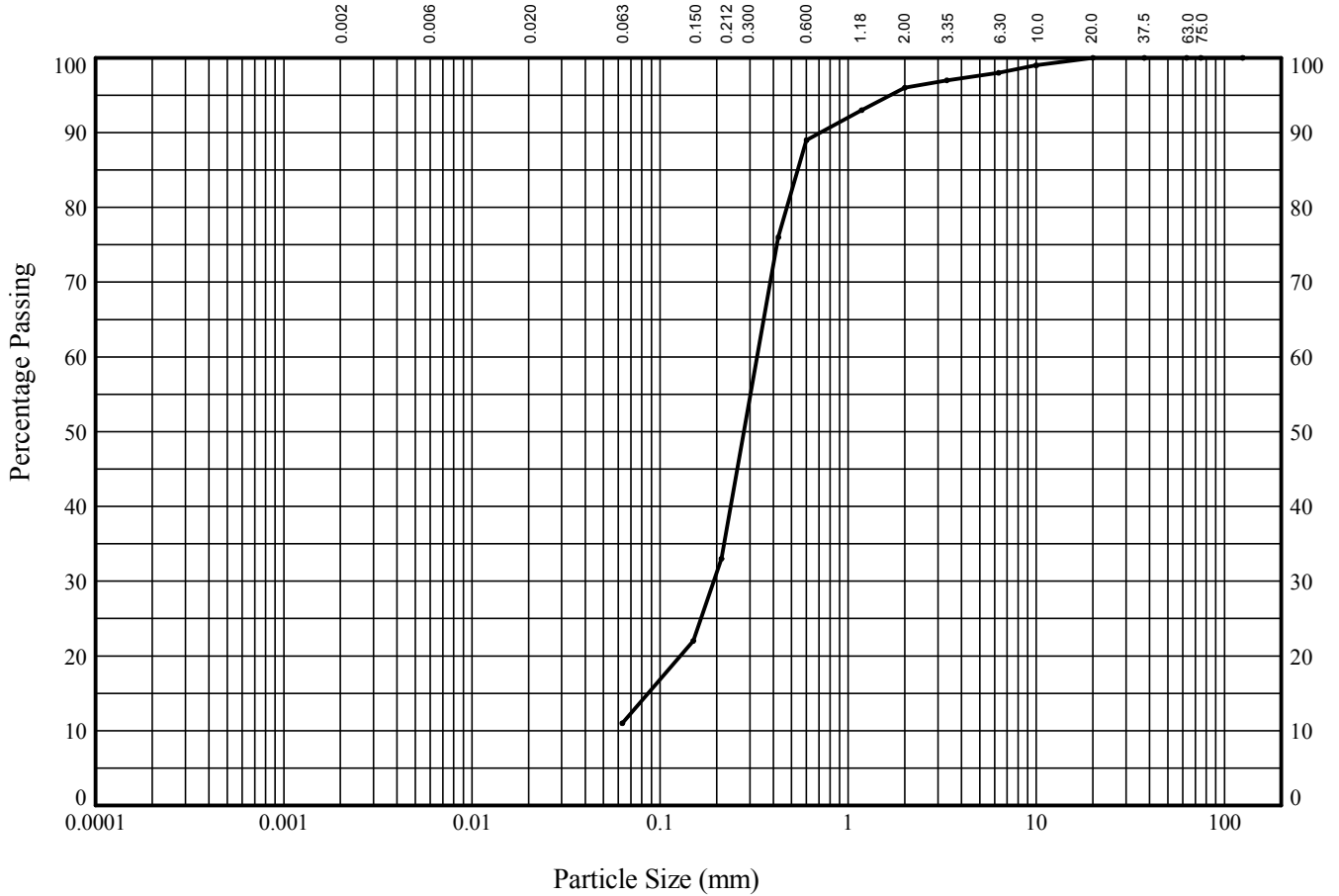
Compiled By		Date
		17/09/15
Contract		Contract Ref:
SZC 2015 Onshore GI		763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **WMZ20** Sample Ref: **1** Sample Type: **B** Depth (m): **0.70**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	99
6.3	98
3.35	97
2.0	96
1.18	93
0.600	89
0.425	76
0.212	33
0.150	22
0.063	11

Particle Diameter	Percentage Passing

Soil Fraction	Sieve Percentage
GRAVEL	4
SAND	85
SILT/CLAY	11

Soil Description:
Brown clayey slightly gravelly SAND

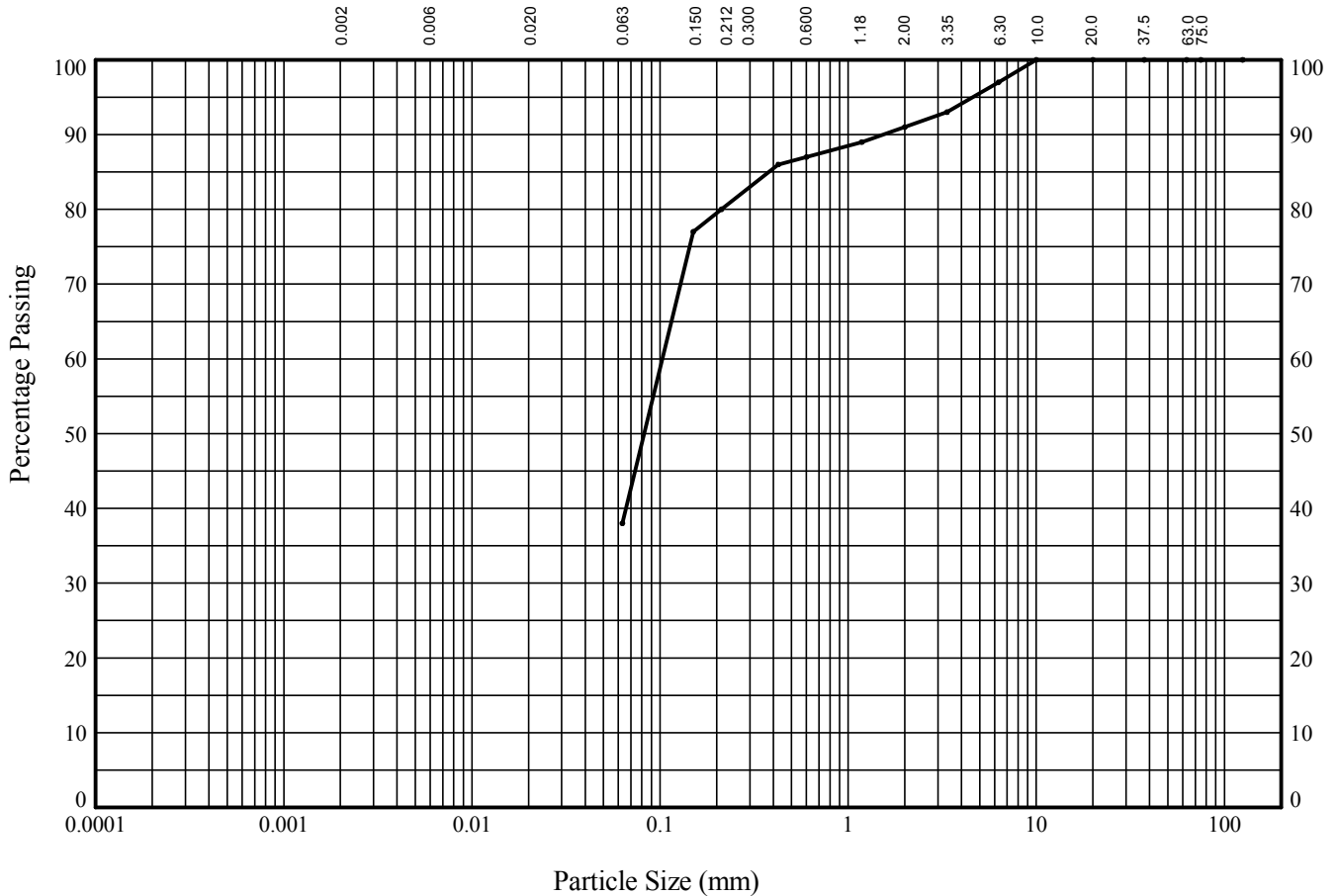
Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

<p>STRUCTURAL SOILS The Potteries Pottery Street Castleford W. Yorkshire WF10 1NJ</p>	Compiled By		Date
			17/09/15
	Contract SZC 2015 Onshore GI		Contract Ref: 763468

PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **WMZ20** Sample Ref: **2** Sample Type: **B** Depth (m): **1.20**



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

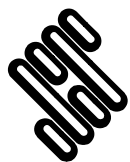
BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	97
3.35	93
2.00	91
1.18	89
0.600	87
0.425	86
0.212	80
0.150	77
0.063	38

Particle Diameter	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	97
3.35	93
2.00	91
1.18	89
0.600	87
0.425	86
0.212	80
0.150	77
0.063	38

Soil Fraction	Sieve Percentage
GRAVEL	9
SAND	53
SILT/CLAY	38

Soil Description:
Orange grey very sandy slightly gravelly CLAY

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES



STRUCTURAL SOILS
 The Potteries
 Pottery Street
 Castleford
 W. Yorkshire WF10 1NJ

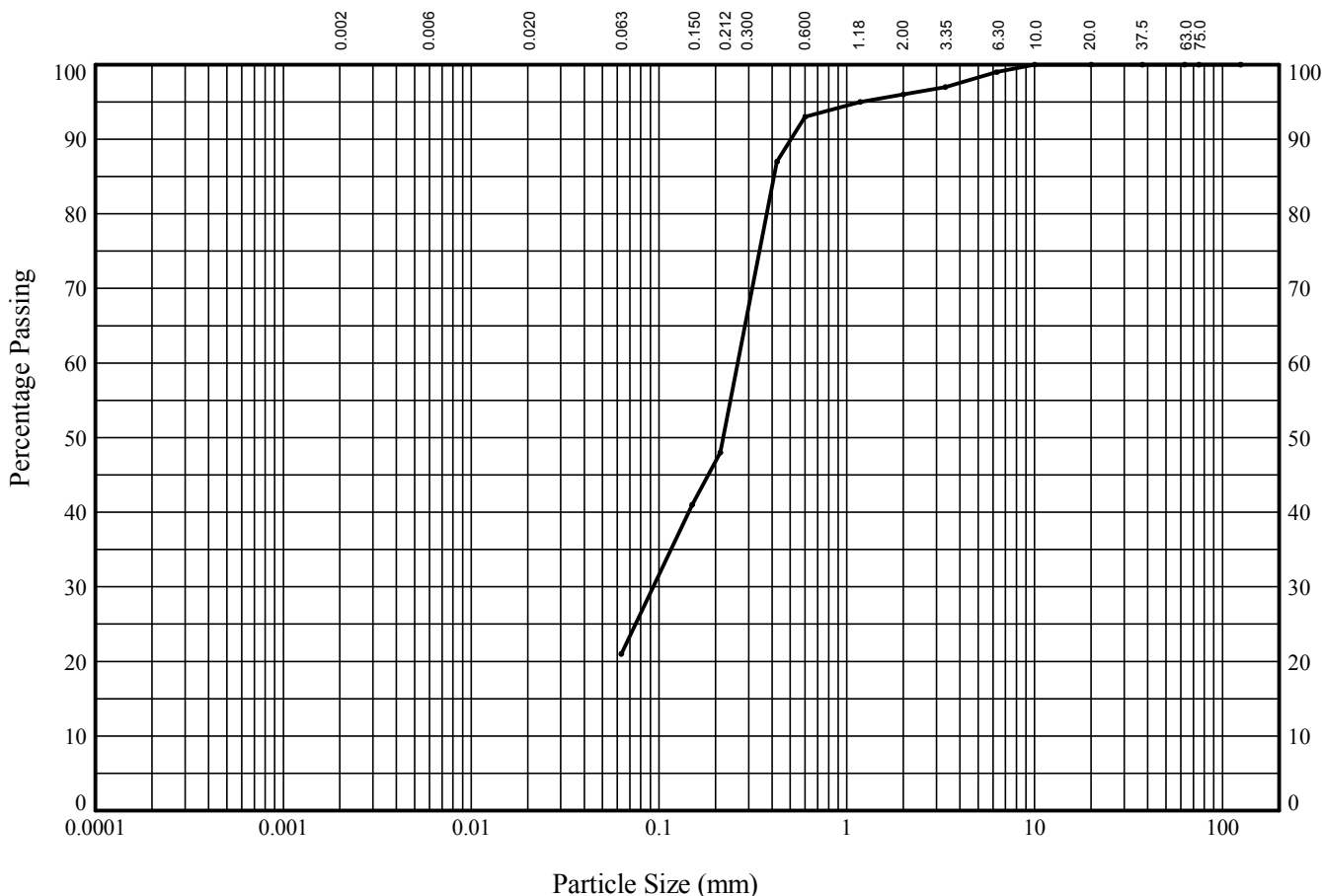
Compiled By		Date
		17/09/15
Contract		Contract Ref:
SZC 2015 Onshore GI		763468



PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2,9.5 of BS1377:Part 2:1990

Position ID: **WMZ20** Sample Ref: **3** Sample Type: **B** Depth (m): **2.10**



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

BS Test Sieve (mm)	Percentage Passing
125.0	100
75.0	100
63.0	100
37.5	100
20.0	100
10.0	100
6.30	99
3.35	97
2.00	96
1.18	95
0.600	93
0.425	87
0.212	48
0.150	41
0.063	21

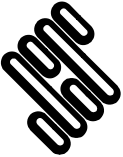
Particle Diameter	Percentage Passing


Soil Fraction	Sieve Percentage
GRAVEL	4
SAND	75
SILT/CLAY	21

Soil Description:
Brown very clayey slightly gravelly SAND

Approved Signatories: J.BARRETT M.MATHORNE A.FROST M.RANDERSON R.CLARKSON M.FISHER C.COLE M.STOKES

GINT LIBRARY V8.05 GLB LibVersion: v8.05 - Lib0004 ProjVersion: v8.05 - Core+Logs+Geotech Lab-Bristol - 0003 | Graph L - PSD - EC7 | 763468 - SZC 2015 ONSHORE GI.GPJ - v8.05 | 17/09/15 - 10:48 | SA. Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ, Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk

 <p>STRUCTURAL SOILS The Potteries Pottery Street Castleford W. Yorkshire WF10 1NJ</p>	Compiled By		Date
			17/09/15
	Contract SZC 2015 Onshore GI		Contract Ref: 763468



FINAL ANALYTICAL TEST REPORT

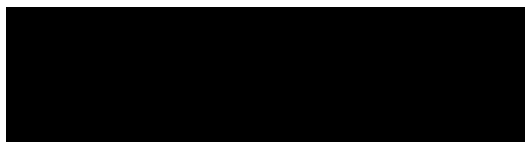
Envirolab Job Number: 15/05603
Issue Number: 1

Date: 03 September, 2015

Client: Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

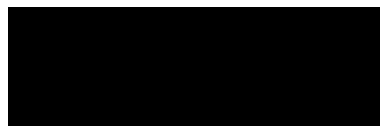
Project Manager: Mark Athorne
Project Name: SZC 2015 Onshore GI P1
Project Ref: 763468
Order No: N/A
Date Samples Received: 26/08/15
Date Instructions Received: 27/08/15
Date Analysis Completed: 02/09/15

Prepared by:



Kate Ellison
Administrative Assistant

Approved by:



John Gustafson
Director

Envirolab Job Number: 15/05603

Client Project Name: SZC 2015 Onshore GI P1

Client Project Ref: 763468

Lab Sample ID	15/05603/1	15/05603/2	15/05603/3	15/05603/4	15/05603/5	15/05603/6	15/05603/7	15/05603/8	Units	Method ref		
Client Sample No												
Client Sample ID	CPB BP 11	CPB BP 11	CPB BP 11	CPB BP 11	CPB BP 11	CPB BP 13	CPB BP 13	CPB BP 13				
Depth to Top	3.20	7.60	10.80	16.00	18.00	2.00	5.00	10.00				
Depth To Bottom	3.50	8.00		16.50	18.50	2.50	5.50	10.50				
Date Sampled												
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Sample Matrix Code	5	1A	1A	1A	1A	1A	1A	1A				
% Stones >10mm _A [#]	<0.1	3.5	10.6	<0.1	<0.1	7.0	2.8	<0.1	% w/w	A-T-044		
Alkalinity (total) Colorimetry _D	78	32	<15	91	98	33	<15	104	mg/kg CaCO ₃	A-T-038 (s)		

Envirolab Job Number: 15/05603

Client Project Name: SZC 2015 Onshore GI P1

Client Project Ref: 763468

Lab Sample ID	15/05603/9	15/05603/10	15/05603/11	15/05603/12	15/05603/13	15/05603/14	15/05603/15	15/05603/16	Units	Method ref		
Client Sample No												
Client Sample ID	CPB BP 13	CPB BP 13	CPB BP 14	CPB BP 14	CPB BP 14	CPB BP 14	CPB BP 14	CPB BP 14				
Depth to Top	15.00	19.00	1.50	5.00	9.00	11.00	15.00	19.00				
Depth To Bottom	15.50	19.50	2.00	5.50	9.50	11.50	15.50	19.50				
Date Sampled												
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Sample Matrix Code	1A	1A	1A	1A	1	1A	1A	1A				
% Stones >10mm _A [#]	<0.1	<0.1	<0.1	1.4	<0.1	<0.1	<0.1	<0.1	% w/w	A-T-044		
Alkalinity (total) Colorimetry _D	108	110	75	53	41	73	85	110	mg/kg CaCO ₃	A-T-038 (s)		

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.

Notes - General

This report shall not be reproduced, except in full, without written approval from Envirolab.

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 supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples 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 a 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.

FINAL ANALYTICAL TEST REPORT

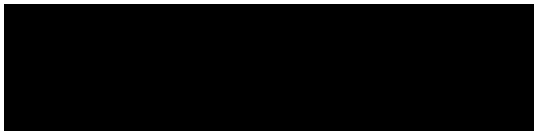
Envirolab Job Number: 15/05643
Issue Number: 1

Date: 02 September, 2015

Client: Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

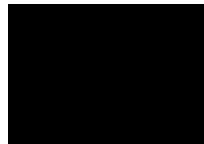
Project Manager: Mark Athorne
Project Name: Sizewell
Project Ref: 763468
Order No: N/A
Date Samples Received: 28/08/15
Date Instructions Received: 28/08/15
Date Analysis Completed: 02/09/15

Prepared by:



Danielle Brierley
Administrative Assistant

Approved by:



Lianne Bromiley
Senior Client Manager

Envirolab Job Number: 15/05643

Client Project Name: Sizewell

Client Project Ref: 763468

Lab Sample ID	15/05643/1	15/05643/2	15/05643/3	15/05643/4					Units	Method ref		
Client Sample No												
Client Sample ID	WMZ18	WMZ18	WMZ19	WMZ20								
Depth to Top	0.50	3.00	1.50	2.10								
Depth To Bottom												
Date Sampled												
Sample Type	Soil	Soil	Soil	Soil								
Sample Matrix Code	1A	1A	1A	5								
% Stones >10mm _A [#]	4.3	9.3	12.8	<0.1					% w/w	A-T-044		
pH BRE _D ^{M#}	6.32	5.51	8.33	6.41					pH	A-T-031s		
Sulphate BRE (water sol 2:1) _D ^{M#}	<10	37	13	55					mg/l	A-T-026s		

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.

Notes - General

This report shall not be reproduced, except in full, without written approval from Envirolab.

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 supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples 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 a 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.

APPENDIX E

- (i) Contamination Laboratory Test Results
- (ii) Laboratory UKAS Accreditation Certificate

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 15/05475
Issue Number: 1
Date: 04 September, 2015

Client: Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

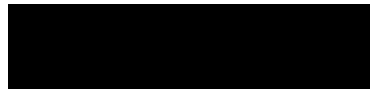
Project Manager: Chris Hustler
Project Name: Sizewell 2015 GI Campaign
Project Ref: 763468
Order No: N/A
Date Samples Received: 19/08/15
Date Instructions Received: 20/08/15
Date Analysis Completed: 04/09/15

Prepared by:



Melanie Marshall
Laboratory Coordinator

Approved by:



John Gustafson
Director

Envirolab Job Number: 15/05475

Client Project Name: Sizewell 2015 GI Campaign

Client Project Ref: 763468

Lab Sample ID	15/05475/1	15/05475/2	15/05475/3	15/05475/4	15/05475/5	15/05475/6	15/05475/7	15/05475/8	Units	Method ref
Client Sample No	9	15	19	21	27	9	15	21		
Client Sample ID	CP BP7	CP BP7	CP BP7	CP BP7	CP BP7	CP BP11	CP BP11	CP BP11		
Depth to Top	4.10	7.0	9.00	10.00	13.00	4.00	7.0	9.50		
Depth To Bottom	4.50	7.50	9.50	10.50	13.50	4.50	7.50	10.00		
Date Sampled										
Sample Type	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B		
Sample Matrix Code	1A	1	1A	1A	1	1	1A	1		
% Stones >10mm _A [#]	2.2	<0.1	<0.1	1.4	<0.1	<0.1	<0.1	<0.1		
Carbonate as CaCO _{3D}	-	-	<0.8	4.7	<0.8	-	-	<0.8	% w/w	CO3s
Fraction of organic carbon _D [#]	-	-	<0.0003	-	-	-	-	<0.0003	N/A	A-T-032 FOC
Leachate Prep BS EN 12457-2 (10:1) _A										A-T-046
pH (leachable) _A [#]	7.19	7.15	-	-	-	7.50	7.53	-	pH	A-T-031w
Chloride (leachable) _A [#]	<1.00	<1.00	-	-	-	1.61	<1.00	-	mg/l	A-T-026w
Sulphate (leachable) _A [#]	2.19	<1.00	-	-	-	1.84	<1.00	-	mg/l	A-T-026w
Arsenic (leachable) _A [#]	<1	2	-	-	-	1	3	-	µg/l	A-T-025w
Cadmium (leachable) _A [#]	<1	<1	-	-	-	<1	<1	-	µg/l	A-T-025w
Copper (leachable) _A [#]	<1	<1	-	-	-	<1	<1	-	µg/l	A-T-025w
Chromium (leachable) _A [#]	<1	<1	-	-	-	<1	<1	-	µg/l	A-T-025w
Lead (leachable) _A [#]	4	<1	-	-	-	<1	<1	-	µg/l	A-T-025w
Mercury (leachable) _A [#]	<0.1	<0.1	-	-	-	<0.1	<0.1	-	µg/l	A-T-025w
Nickel (leachable) _A [#]	<1	<1	-	-	-	<1	<1	-	µg/l	A-T-025w
Selenium (leachable) _A [#]	<1	<1	-	-	-	<1	<1	-	µg/l	A-T-025w
Zinc (leachable) _A [#]	3	4	-	-	-	3	2	-	µg/l	A-T-025w

Envirolab Job Number: 15/05475

Client Project Name: Sizewell 2015 GI Campaign

Client Project Ref: 763468

Lab Sample ID	15/05475/1	15/05475/2	15/05475/3	15/05475/4	15/05475/5	15/05475/6	15/05475/7	15/05475/8	Units	Method ref
Client Sample No	9	15	19	21	27	9	15	21		
Client Sample ID	CP BP7	CP BP7	CP BP7	CP BP7	CP BP7	CP BP11	CP BP11	CP BP11		
Depth to Top	4.10	7.0	9.00	10.00	13.00	4.00	7.0	9.50		
Depth To Bottom	4.50	7.50	9.50	10.50	13.50	4.50	7.50	10.00		
Date Sampled										
Sample Type	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B		
Sample Matrix Code	1A	1	1A	1A	1	1	1A	1		
PAH 16MS (leachable)										
Acenaphthene (leachable) _A	<0.02	0.06	-	-	-	0.08	0.08	-	µg/l	A-T-019w
Acenaphthylene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Anthracene (leachable) _A	<0.02	<0.02	-	-	-	0.02	<0.02	-	µg/l	A-T-019w
Benzo(a)anthracene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Benzo(a)pyrene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Benzo(b)fluoranthene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Benzo(ghi)perylene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Benzo(k)fluoranthene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Chrysene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Dibenzo(ah)anthracene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Fluoranthene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Fluorene (leachable) _A	<0.02	0.02	-	-	-	0.04	0.03	-	µg/l	A-T-019w
Indeno(123-cd)pyrene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Naphthalene (leachable) _A	<0.02	0.07	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Phenanthrene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Pyrene (leachable) _A	<0.02	<0.02	-	-	-	0.02	<0.02	-	µg/l	A-T-019w
PAH (total 16) (leachable) _A	<0.02	0.15	-	-	-	0.16	0.11	-	µg/l	A-T-019w

Envirolab Job Number: 15/05475

Client Project Name: Sizewell 2015 GI Campaign

Client Project Ref: 763468

Lab Sample ID	15/05475/9	15/05475/10							Units	Method ref
Client Sample No	23	27								
Client Sample ID	CP BP11	CP BP11								
Depth to Top	11.00	13.00								
Depth To Bottom	11.50	13.50								
Date Sampled										
Sample Type	Soil - B	Soil - B								
Sample Matrix Code	1	1								
% Stones >10mm _A [#]	<0.1	<0.1							% w/w	A-T-044
Carbonate as CaCO _{3D}	<0.8	<0.8							% w/w	CO3s

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.

Notes - General

This report shall not be reproduced, except in full, without written approval from Envirolab.

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 supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples 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 a 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.

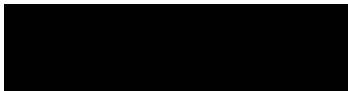
FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 15/05475
Issue Number: 1
Date: 04 September, 2015

Client: Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

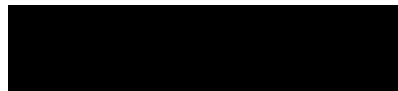
Project Manager: Chris Hustler
Project Name: Sizewell 2015 GI Campaign
Project Ref: 763468
Order No: N/A
Date Samples Received: 19/08/15
Date Instructions Received: 20/08/15
Date Analysis Completed: 04/09/15

Prepared by:



Melanie Marshall
Laboratory Coordinator

Approved by:



John Gustafson
Director

Envirolab Job Number: 15/05475

Client Project Name: Sizewell 2015 GI Campaign

Client Project Ref: 763468

Lab Sample ID	15/05475/1	15/05475/2	15/05475/3	15/05475/4	15/05475/5	15/05475/6	15/05475/7	15/05475/8	Units	Method ref		
Client Sample No	9	15	19	21	27	9	15	21				
Client Sample ID	CP BP7	CP BP7	CP BP7	CP BP7	CP BP7	CP BP11	CP BP11	CP BP11				
Depth to Top	4.10	7.0	9.00	10.00	13.00	4.00	7.0	9.50				
Depth To Bottom	4.50	7.50	9.50	10.50	13.50	4.50	7.50	10.00				
Date Sampled												
Sample Type	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B				
Sample Matrix Code	1A	1	1A	1A	1	1	1A	1				
% Stones >10mm _A [#]	2.2	<0.1	<0.1	1.4	<0.1	<0.1	<0.1	<0.1			% w/w	A-T-044
Carbonate as CaCO _{3D}	-	-	<0.8	4.7	<0.8	-	-	<0.8	% w/w	CO3s		
Fraction of organic carbon _D [#]	-	-	<0.0003	-	-	-	-	<0.0003	N/A	A-T-032 FOC		
Leachate Prep BS EN 12457-2 (10:1) _A										A-T-046		
pH (leachable) _A [#]	7.19	7.15	-	-	-	7.50	7.53	-	pH	A-T-031w		
Chloride (leachable) _A [#]	<1.00	<1.00	-	-	-	1.61	<1.00	-	mg/l	A-T-026w		
Sulphate (leachable) _A [#]	2.19	<1.00	-	-	-	1.84	<1.00	-	mg/l	A-T-026w		
Arsenic (leachable) _A [#]	<1	2	-	-	-	1	3	-	µg/l	A-T-025w		
Cadmium (leachable) _A [#]	<1	<1	-	-	-	<1	<1	-	µg/l	A-T-025w		
Copper (leachable) _A [#]	<1	<1	-	-	-	<1	<1	-	µg/l	A-T-025w		
Chromium (leachable) _A [#]	<1	<1	-	-	-	<1	<1	-	µg/l	A-T-025w		
Lead (leachable) _A [#]	4	<1	-	-	-	<1	<1	-	µg/l	A-T-025w		
Mercury (leachable) _A [#]	<0.1	<0.1	-	-	-	<0.1	<0.1	-	µg/l	A-T-025w		
Nickel (leachable) _A [#]	<1	<1	-	-	-	<1	<1	-	µg/l	A-T-025w		
Selenium (leachable) _A [#]	<1	<1	-	-	-	<1	<1	-	µg/l	A-T-025w		
Zinc (leachable) _A [#]	3	4	-	-	-	3	2	-	µg/l	A-T-025w		

Envirolab Job Number: 15/05475

Client Project Name: Sizewell 2015 GI Campaign

Client Project Ref: 763468

Lab Sample ID	15/05475/1	15/05475/2	15/05475/3	15/05475/4	15/05475/5	15/05475/6	15/05475/7	15/05475/8	Units	Method ref
Client Sample No	9	15	19	21	27	9	15	21		
Client Sample ID	CP BP7	CP BP7	CP BP7	CP BP7	CP BP7	CP BP11	CP BP11	CP BP11		
Depth to Top	4.10	7.0	9.00	10.00	13.00	4.00	7.0	9.50		
Depth To Bottom	4.50	7.50	9.50	10.50	13.50	4.50	7.50	10.00		
Date Sampled										
Sample Type	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B		
Sample Matrix Code	1A	1	1A	1A	1	1	1A	1		
PAH 16MS (leachable)										
Acenaphthene (leachable) _A	<0.02	0.06	-	-	-	0.08	0.08	-	µg/l	A-T-019w
Acenaphthylene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Anthracene (leachable) _A	<0.02	<0.02	-	-	-	0.02	<0.02	-	µg/l	A-T-019w
Benzo(a)anthracene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Benzo(a)pyrene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Benzo(b)fluoranthene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Benzo(ghi)perylene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Benzo(k)fluoranthene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Chrysene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Dibenzo(ah)anthracene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Fluoranthene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Fluorene (leachable) _A	<0.02	0.02	-	-	-	0.04	0.03	-	µg/l	A-T-019w
Indeno(123-cd)pyrene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Naphthalene (leachable) _A	<0.02	0.07	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Phenanthrene (leachable) _A	<0.02	<0.02	-	-	-	<0.02	<0.02	-	µg/l	A-T-019w
Pyrene (leachable) _A	<0.02	<0.02	-	-	-	0.02	<0.02	-	µg/l	A-T-019w
PAH (total 16) (leachable) _A	<0.02	0.15	-	-	-	0.16	0.11	-	µg/l	A-T-019w

Envirolab Job Number: 15/05475

Client Project Name: Sizewell 2015 GI Campaign

Client Project Ref: 763468

Lab Sample ID	15/05475/9	15/05475/10							Units	Method ref
Client Sample No	23	27								
Client Sample ID	CP BP11	CP BP11								
Depth to Top	11.00	13.00								
Depth To Bottom	11.50	13.50								
Date Sampled										
Sample Type	Soil - B	Soil - B								
Sample Matrix Code	1	1								
% Stones >10mm _A [#]	<0.1	<0.1							% w/w	A-T-044
Carbonate as CaCO _{3D}	<0.8	<0.8							% w/w	CO3s

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.

Notes - General

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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 supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples 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 a 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.

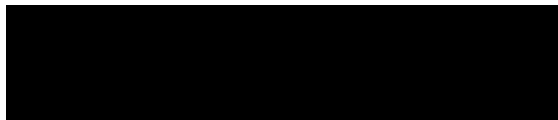
FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 15/05888
Issue Number: 1
Date: 15 September, 2015

Client: Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

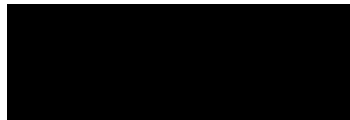
Project Manager: Chris Hustler/Mark Athorne
Project Name: Sizewell 2015 GI Campaign
Project Ref: 763468
Order No: N/A
Date Samples Received: 09/09/15
Date Instructions Received: 09/09/15
Date Analysis Completed: 15/09/15

Prepared by:



Danielle Brierley
Administrative Assistant

Approved by:



Gill Scott
Laboratory Manager

Envirolab Job Number: 15/05888

Client Project Name: Sizewell 2015 GI Campaign

Client Project Ref: 763468

Lab Sample ID	15/05888/1	15/05888/2	15/05888/3	15/05888/4	15/05888/5	15/05888/6	15/05888/7	15/05888/8	Units	Method ref
Client Sample No	7	13	19	29	7	15	21	25		
Client Sample ID	CPBBP9	CPBBP9	CPBBP9	CPBBP9	cpbBP13	cpbBP13	cpbBP13	cpbBP13		
Depth to Top	3.00	6.00	9.00	14.00	3.00	6.00	9.00	11.00		
Depth To Bottom	3.50	6.50	9.50	14.50	3.50	6.50	9.50	11.50		
Date Sampled										
Sample Type	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B		
Sample Matrix Code	1	1	1	1	1A	1A	1A	1A		
% Stones >10mm _A [#]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
Carbonate as CaCO _{3D}	-	-	<0.8	2.5	-	-	8.4	2.0	% w/w	CO3s
Fraction of organic carbon _D [#]	-	-	<0.0003	-	-	-	0.0006	-	N/A	A-T-032 FOC
Leachate Prep BS EN 12457-2 (10:1) _A	*	*	-	-	*	*	-	-		A-T-046
pH (leachable) _A [#]	7.17	7.83	-	-	6.74	6.25	-	-	pH	A-T-031w
Chloride (leachable) _A [#]	<1.00	<1.00	-	-	3.14	3.54	-	-	mg/l	A-T-026w
Sulphate (leachable) _A [#]	1.92	1.84	-	-	11.46	10.72	-	-	mg/l	A-T-026w
Arsenic (leachable) _A [#]	2	4	-	-	3	2	-	-	µg/l	A-T-025w
Cadmium (leachable) _A [#]	<1	<1	-	-	<1	<1	-	-	µg/l	A-T-025w
Copper (leachable) _A [#]	1	<1	-	-	1	<1	-	-	µg/l	A-T-025w
Chromium (leachable) _A [#]	1	<1	-	-	<1	<1	-	-	µg/l	A-T-025w
Lead (leachable) _A [#]	<1	<1	-	-	<1	<1	-	-	µg/l	A-T-025w
Mercury (leachable) _A [#]	<0.1	<0.1	-	-	<0.1	<0.1	-	-	µg/l	A-T-025w
Nickel (leachable) _A [#]	<1	<1	-	-	<1	<1	-	-	µg/l	A-T-025w
Selenium (leachable) _A [#]	<1	<1	-	-	<1	<1	-	-	µg/l	A-T-025w
Zinc (leachable) _A [#]	5	4	-	-	4	10	-	-	µg/l	A-T-025w

Envirolab Job Number: 15/05888

Client Project Name: Sizewell 2015 GI Campaign

Client Project Ref: 763468

Lab Sample ID	15/05888/1	15/05888/2	15/05888/3	15/05888/4	15/05888/5	15/05888/6	15/05888/7	15/05888/8	Units	Method ref
Client Sample No	7	13	19	29	7	15	21	25		
Client Sample ID	CPBBP9	CPBBP9	CPBBP9	CPBBP9	cpbBP13	cpbBP13	cpbBP13	cpbBP13		
Depth to Top	3.00	6.00	9.00	14.00	3.00	6.00	9.00	11.00		
Depth To Bottom	3.50	6.50	9.50	14.50	3.50	6.50	9.50	11.50		
Date Sampled										
Sample Type	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B	Soil - B		
Sample Matrix Code	1	1	1	1	1A	1A	1A	1A		
PAH 16MS (leachable)										
Acenaphthene (leachable) _A	0.02	0.03	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w
Acenaphthylene (leachable) _A	<0.02	<0.02	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w
Anthracene (leachable) _A	<0.02	<0.02	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w
Benzo(a)anthracene (leachable) _A	<0.02	<0.02	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w
Benzo(a)pyrene (leachable) _A	<0.02	<0.02	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w
Benzo(b)fluoranthene (leachable) _A	<0.02	<0.02	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w
Benzo(ghi)perylene (leachable) _A	0.02	<0.02	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w
Benzo(k)fluoranthene (leachable) _A	<0.02	<0.02	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w
Chrysene (leachable) _A	<0.02	<0.02	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w
Dibenzo(ah)anthracene (leachable) _A	<0.02	<0.02	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w
Fluoranthene (leachable) _A	<0.02	<0.02	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w
Fluorene (leachable) _A	<0.02	<0.02	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w
Indeno(123-cd)pyrene (leachable) _A	<0.02	<0.02	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w
Naphthalene (leachable) _A	<0.02	<0.02	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w
Phenanthrene (leachable) _A	<0.02	<0.02	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w
Pyrene (leachable) _A	<0.02	<0.02	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w
PAH (total 16) (leachable) _A	0.04	0.03	-	-	<0.02	<0.02	-	-	µg/l	A-T-019w

Envirolab Job Number: 15/05888

Client Project Name: Sizewell 2015 GI Campaign

Client Project Ref: 763468

Lab Sample ID	15/05888/9								Units	Method ref
Client Sample No	31									
Client Sample ID	cpbBP13									
Depth to Top	14.0									
Depth To Bottom	14.50									
Date Sampled										
Sample Type	Soil - B									
Sample Matrix Code	5A									
% Stones >10mm _A [#]	<0.1								% w/w	A-T-044
Carbonate as CaCO _{3D}	1.5								% w/w	CO3s

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.

Notes - General

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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 supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples 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.

NOT PROTECTIVELY MARKED

Appendix G – Geological Cross Sections

NOT PROTECTIVELY MARKED

100
0 10
Millimetres

DO NOT SCALE

SAFETY HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

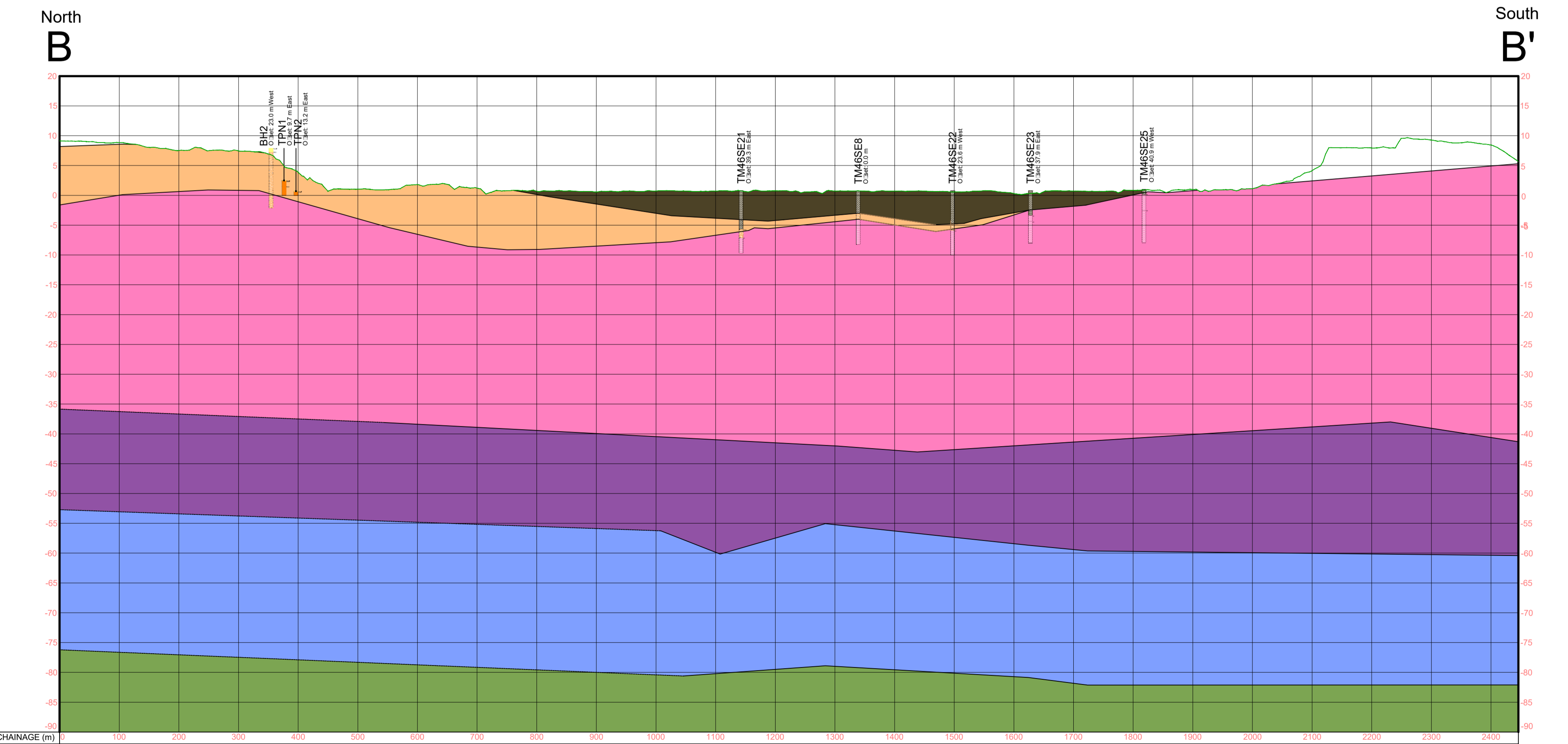
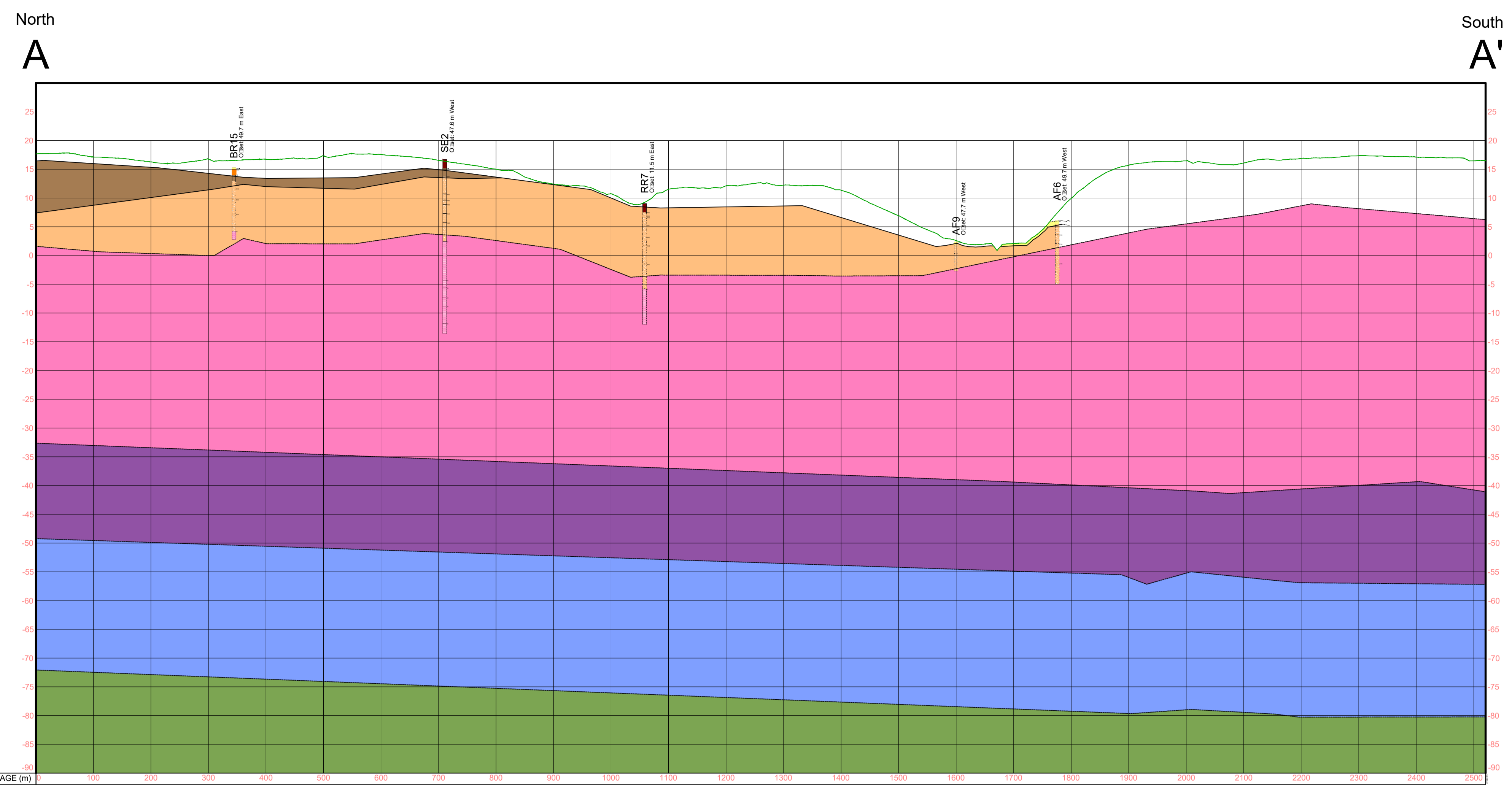
MAINTENANCE/CLEANING

DECOMMISSIONING/DEMOLITION

It is assumed that all works will be carried out by a competent contractor working where appropriate to an approved method statement

- Key:**
- Undefined Ground
 - Made Ground / Topsoil
 - Superficial loose sediments / Glacial Drifts
 - Alluvial Clay
 - Peat
 - Sand and Gravel
 - Crag Deposits
 - London Clay
 - Lower London Tertiary
 - Chalk

UK PROTECT - COMMERCIAL



Rev.	Date	Description	By	Chkd	App'd

Drawing Status: **FOR INFORMATION** Suitability: **SO**

ATKINS The Axis
10 Holliday Street
Birmingham
West Midlands
B1 1TF
Tel: +44 (0)121 483 0000
Fax: +44 (0)121 483 252
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Client

Project Title: **SIZEWELL SITE C**

Drawing Title: **GEOLOGICAL CROSS SECTIONS A-A' & B-B'**

Scale	Designed	Drawn	Checked	Authorised
Original Size	JK FORD	JK FORD	M LEE	--
A1	10/09/14	15/09/14	17/09/14	-

Drawing Number: 5129919/SZC/302	Revision: P01
--	----------------------

DRAFT

100
 0 10
 Millimetres

DO NOT SCALE

SAFETY HEALTH AND ENVIRONMENTAL
 INFORMATION

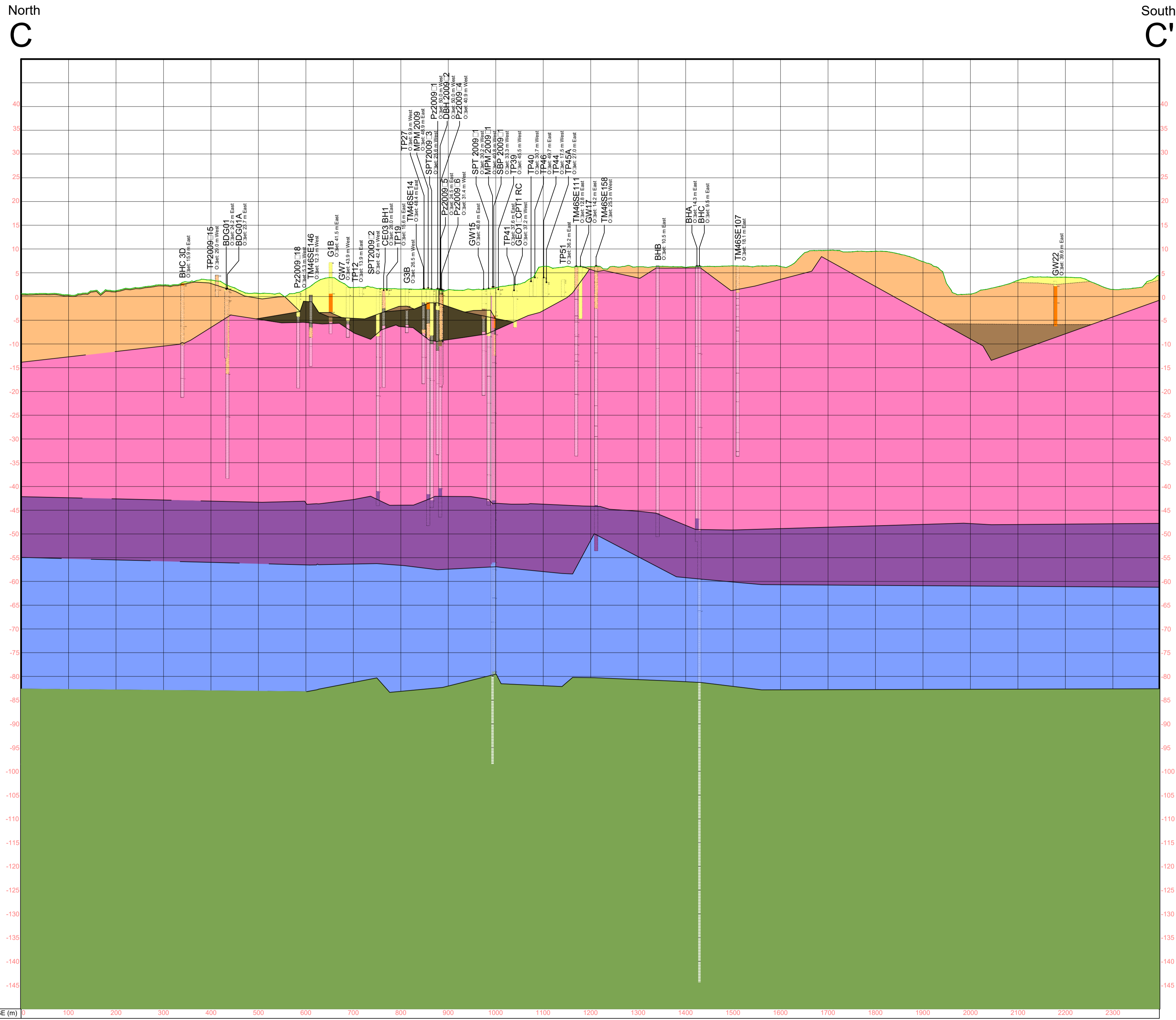
In addition to the hazards/risks normally associated with the type of work detailed on this drawing, note the following:

- CONSTRUCTION
- MAINTENANCE/CLEANING
- DECOMMISSIONING/DEMOLITION

It is assumed that all works will be carried out by a competent contractor working where appropriate to an approved method statement

- Key:**
- Undeined Ground
 - Made Ground / Topsoil
 - Superficial loose sediments / Glacial Drifts
 - Alluvial Clay
 - Peat
 - Sand and Gravel
 - Crag Deposits
 - London Clay
 - Lower London Tertiary
 - Chalk

UK PROTECT -
 COMMERCIAL



Rev.	Date	Description	By	Chk'd	App'd

FOR INFORMATION Suitability: **SO**

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Client

DRAFT

Project Title: **SIZEWELL SITE C**

Drawing Title: **GEOLOGICAL CROSS SECTION C-C'**

Scale	Designed	Drawn	Checked	Authorised
	JK FORD	JK FORD	M LEE	--
Original Size	Date	Date	Date	Date
A1	10/09/14	10/09/14	17/09/14	-
Drawing Number				Revision
5129919/SZC/303				P01

NOT PROTECTIVELY MARKED

Appendix H – Soil Screening Results

NOT PROTECTIVELY MARKED

Site Name	Sizewell
Location	Sizewell, Suffolk
Site ID	Sizewell C
Job Number	5166065
Date	6/8/2018
User Name	Joe.Rogers@atkinsglobal.com
Company Name	Atkins

Hole ID	Sample Depth	Hazardous Waste Y/N	HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8	HP9	HP10	HP11	HP12	HP13	HP14	HP15	HP16
TP72 ES3	1.5 - 1.6	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP73 ES2	0.5 - 0.6	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP74 ES1	0 - 0.2	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP74 ES3	1.5 - 1.6	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP76 ES2	0.5 - 0.6	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP76 ES4	2.5 - 2.6	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TPN1 ES2	0.5 - 0.6	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TPN2 ES2	0.5 - 0.6	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TPN3 ES2	0.5 - 0.6	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TPN4 ES3	1.5 - 1.6	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
BH1 ES1	0.1 - 0.3	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
BH1 ES3	1.3 - 1.5	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
BH4 ES2	0.6 - 0.8	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
BH6 ES8	6.5 - 6.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
BH7 ES6	4.5 - 4.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
BH7 ES13	11.5 - 11.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW1D ES2	0.7 - 0.8	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW1D ES3	1.7 - 1.8	Y	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	No
GW1D ES5	3.7 - 3.8	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW1D ES6	4.1 - 4.2	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW2 ES2	0.8 - 0.9	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW3 ES2	0.9 - 1.0	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW3 ES5	3.7 - 3.8	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW4 ES2	0.5 - 0.6	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW6D ES2	0.5 - 0.6	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW6D E	3.5 - 3.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW6D ES8	4.9 - 5.1	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW7 ES2	0.8 - 1.0	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW7 ES3	1.5 - 1.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW7 ES6	4.4 - 4.6	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW8 ES2	0.5 - 0.6	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW8 ES8	6.5 - 6.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW8 ES10	8.5 - 8.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW9D ES1	0 - 0.2	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW9D ES4	2.7 - 2.9	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW9D ES7	5.7 - 5.9	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW10 ES1	0.1 - 0.3	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW10 ES2	0.8 - 1.0	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW10 ES7	5.2 - 5.5	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW12 ES8	6.5 - 6.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW12 ES9	7.5 - 7.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW13 ES2	0.5 - 0.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW13 ES4	2.5 - 2.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW13 ES9	7.0 - 7.2	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW15 ES2	0.8 - 1.0	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW15 ES	2.1 - 2.3	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW15 ES5	3.3 - 3.5	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW16D ES2	0.80 - 1.0	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW16D ES3	1.80 - 2.0	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW16D ES5	3.80 - 4.0	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW17 ES2	0.5 - 0.6	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

Site Name	Sizewell
Location	Sizewell, Suffolk
Site ID	Sizewell C
Job Number	5166065
Date	6/8/2018
User Name	Joe.Rogers@atkinsglobal.com
Company Name	Atkins

Hole ID	Sample Depth	Hazardous Waste Y/N	HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8	HP9	HP10	HP11	HP12	HP13	HP14	HP15	HP16
GW17 ES6	4.5 - 4.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW18 ES2	0.80 - 0.90	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW19 ES4	2.5 - 2.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW20 ES1	GL - 0.2	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW21 ES1	0 - 0.2	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW22 ES1	0 - 0.2	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW23 ES1	GL - 0.2	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW23 ES2	0.9 - 1.0	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW24D ES1	0 - 0.2	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
GW24D ES3	1.5 - 1.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
G2 ES1	0.1 - 0.3	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
G2 ES3	1.4 - 1.6	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
G3 ES2	0.4 - 0.6	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
G3 ES4	1.7 - 1.9	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
G3 ES6	3.7 - 3.9	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
G4 ES2	0.70 - 0.90	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
G4 ES4	2.50 - 2.70	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
G4 ES8	6.50 - 6.70	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
G6 ES6	4.5 - 4.7	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

Assessment Criteria : Commercial - 1% SOM Sand																																															
Use MRL Values?																																															
Contaminant	MRL (µg/kg)	MRL (mg/kg)	Number of pipes	Minimum Value	Maximum Value	Number of Exceedances	Locations of Exceedances																																								
								TP34 ES3	TP34 ES4	TP36 ES3	TP37 ES2	TP37 ES4	TP38 ES2	TP38 ES3	TP38 ES4	TP39 ES2	TP40 ES2	TP40 ES4	TP41 ES2	TP41 ES3	TP42 ES2	TP42 ES3	TP42 ES4	TP43 ES1	TP43 ES2	TP44 ES2	TP44 ES3	TP44 ES4	TP45 ES2	TP45 ES4	TP46 ES2	TP46 ES3	TP47 ES2	TP47 ES3	TP47 ES4	TP48 ES4	TP50 ES1	TP51 ES1	TP51 ES3	TP52 ES2	TP52 ES3	TP53 ES2	TP53 ES3	TP54 ES3	TP55 ES2	TP56 ES2	TP56 ES3
2,3,5,6-Tetrachlorophenol	48	<10	0	-	-	-	-																																								
Diethylphthalate	48	<10	111.87	0	-	-	-																																								
Fluorene	66500	4	<10	<10	0	-	-																																								
Diphenylamine	48	<10	<10	0	-	-	-																																								
Azobenzene	48	<10	<10	0	-	-	-																																								
4-Bromophenyl phenyl ether	48	<10	<10	0	-	-	-																																								
Hexachlorobenzene	48	<10	<10	0	-	-	-																																								
Pentachlorophenol	48	<10	<10	0	-	-	-																																								
Phenanthrene	4	<10	<10	0	-	-	-																																								
Anthracene	335000	4	<10	<10	0	-	-																																								
Fluoranthene	7200	4	<10	<10	0	-	-																																								
Pyrene	54100	4	<10	<10	0	-	-																																								
Benzybutylphthalate	48	<10	<10	0	-	-	-																																								
Benzo(a)anthracene	48	<10	<10	0	-	-	-																																								
Benz(a)anthracene	4	<10	<10	0	-	-	-																																								
Chrysene	13600	4	<10	<10	0	-	-																																								
Bis(2-ethylhexyl)phthalate	48	<10	<10	0	-	-	-																																								
Benzobifluoranthene	4	<10	<10	0	-	-	-																																								
Benzo(k)fluoranthene	4	<10	<10	0	-	-	-																																								
Benzob(a)pyrene	76.3	4	<10	<10	0	-	-																																								
Indeno(1,2,3-cd)pyrene	4	<10	<10	0	-	-	-																																								
Dibenz(a,h)anthracene	4	<10	<10	0	-	-	-																																								
Benzofluoranthene	4	<10	<10	0	-	-	-																																								
PCB 28**	12	<10	<10	0	-	-	-																																								
PCB 52**	12	<10	<10	0	-	-	-																																								
PCB 101**	12	<10	<10	0	-	-	-																																								
PCB 118**	12	<10	<10	0	-	-	-																																								
PCB 138**	12	<10	<10	0	-	-	-																																								
PCB 153**	12	<10	<10	0	-	-	-																																								
PCB 180**	12	<10	<10	0	-	-	-																																								
OCs																																															
Alpha BHC**	5	<10	<10	0	-	-	-																																								
Beta BHC**	5	<10	<10	0	-	-	-																																								
Gamma BHC**	5	<10	<10	0	-	-	-																																								
Delta BHC**	5	<10	<10	0	-	-	-																																								
Heptachlor	5	<10	<10	0	-	-	-																																								
Aldrin	5	<10	<10	0	-	-	-																																								
Heptachlor epoxide	5	<10	<10	0	-	-	-																																								
Chlordane	5	<10	<10	0	-	-	-																																								
Endosulfan I	5	<10	<10	0	-	-	-																																								
cis-Chlordane	5	<10	<10	0	-	-	-																																								
pp DDE**	5	<10	<10	0	-	-	-																																								
Dieldrin	5	<10	<10	0	-	-	-																																								
Endrin	5	<10	<10	0	-	-	-																																								
pp-DDD**	5	<10	<10	0	-	-	-																																								
Endrin Aldethide	5	<10	<10	0	-	-	-																																								
Endosulfan II	5	<10	<10	0	-	-	-																																								
Endrin Ketone	5	<10	<10	0	-	-	-																																								
pp-Methoxychlor	5	<10	<10	0	-	-	-																																								
OPPs																																															
Methopos	1	<10	<10	0	-	-	-																																								
Dimethoate	1	<10	<10	0	-	-	-																																								
Propetamphos	1	<10	<10	0	-	-	-																																								
Chlorpyrifos-methyl	1	<10	<10	0	-	-	-																																								
Fenitrothion	1	<10	<10	0	-	-	-																																								
Malathion	1	<10	<10	0	-	-	-																																								
Parathion	1	<10	<10	0	-	-	-																																								
Trans-Chlorfenvinphos	1	<10	<10	0	-	-	-																																								
Bromophos	1	<10	<10	0	-	-	-																																								
Triazophos	1	<10	<10	0	-	-	-																																								
Phosalone	1	<10	<10	0	-	-	-																																								
Azinphos-methyl	1	<10	<10	0	-	-	-																																								
Azinphos-ethyl	1	<10	<10	0	-	-	-																																								

Assessment Criteria: Public Open Space (Parks) - 1% SOM Sand

Table with columns for Contaminant, MRL Values, and Locations of Exceedences (TP66 ES2 to GW90 ES7). Rows include various chemical classes like PAHs, PCBs, OCPs, and OPs.

Assessment Criteria : Public Open Space (Parks) - 1% SOM Sand

Table with 1000 columns (constituents and monitoring points) and 1000 rows (analysis results). The first row includes headers for 'Assessment Criteria', 'Use MRL Values?', and various monitoring points. The second row lists 'Constituent', 'Unit', 'Generic Assessment Criteria (mg/kg)', 'Number of Samples', 'Minimum Value', 'Maximum Value', 'Number of Exceedences', and 'Locations of Exceedences'. The table contains extensive numerical data for numerous chemical and physical constituents.

NOT PROTECTIVELY MARKED

Appendix I – Leachate Screening Results

NOT PROTECTIVELY MARKED

NOT PROTECTIVELY MARKED

Appendix J – Surface Water Screening Results

NOT PROTECTIVELY MARKED

SCHEDULE OF WORK		DATE		TIME		LOCATION		STATUS	
NO.	DESCRIPTION	START	END	START	END	START	END	START	END
1	Site Preparation	15/01/2024	31/01/2024	08:00	17:00	Site A	Site B	Completed	Completed
2	Foundation Work	01/02/2024	15/02/2024	08:00	17:00	Site A	Site B	In Progress	In Progress
3	Structural Framework	16/02/2024	31/02/2024	08:00	17:00	Site A	Site B	Not Started	Not Started
4	Roofing	01/03/2024	15/03/2024	08:00	17:00	Site A	Site B	Not Started	Not Started
5	Internal Fit-out	16/03/2024	31/03/2024	08:00	17:00	Site A	Site B	Not Started	Not Started
6	External Works	01/04/2024	15/04/2024	08:00	17:00	Site A	Site B	Not Started	Not Started
7	Final Inspection	16/04/2024	31/04/2024	08:00	17:00	Site A	Site B	Not Started	Not Started

NOT PROTECTIVELY MARKED

Appendix K – Groundwater Screening Results

NOT PROTECTIVELY MARKED

Assessment Criteria: Drinking Water Standard

Table with columns for Assessment Criteria (CaCO3, DOC, Catchment area), Unit, and various chemical parameters (Electrical Conductivity, Chloride, Ammonia Nitrogen, Nitrate, Phosphate, etc.) across multiple locations (69227 to 132766).

Assessment Criteria: Drinking Water Standard

Table with columns for Assessment Criteria (CaCO3, DOC, Catchment area, Freshwater not listed), Unit, and various chemical parameters (Electrical Conductivity, Ammonia Nitrogen, Nitrate, Phosphate, etc.) with corresponding values and locations of exceedances.

Assessment Criteria Drinking Water Standard

Table with columns for Assessment Criteria (CaCO3, DOC, etc.), Unit, Constituent Name, and various numerical values. Includes a list of locations for exceedances.

Assessment Criteria :		Drinking Water Standard																																									
CaCO ₃	0.00	DOC	0.00	DOC	0.00	Catchment area																																					
Calcium	0.00	DOC	0.00	DOC	0.00	Freshwater not listed																																					
Constituents	Unit	Generic Criteria (mg/l)	Number of Samples	Minimum Value	Maximum Value	Number of Exceedences	Locations of Exceedences	205959	205960	168447	168448	168449	168450	168451	168478	168479	168480	168481	168482	168483	168484	168485	168486	168487	168488	168489	168490	194409	194410	194411	194412	205953	205954	205955	205956	205957	205958	205959	205960	205961			
Electrical Conductivity	µS/cm	No WSV	104	1	24000	0																																					
Suspended Solids At 105C	mg/l	No WSV	104	<5	4300	0		10	590																																		
Biochemical Oxygen Demand Low Level	mg O ₂ /l	No WSV	104	1	72	0																																					
Chemical Oxygen Demand Low Level	mg O ₂ /l	No WSV	104	1	650	0																																					
PCB 180	mg/l	No WSV	104	0.00001	<0.00001	0																																					
Total PCBs (7 congeners)	mg/l	No WSV	104	0.00001	<0.00001	0																																					
Total Phenols	mg/l	No WSV	104	0.05	<0.05	0																																					

Assessment Criteria :				Coastal and Estuarine EQS																																																						
CaCO ₃ 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00		DOC 0.00																
Calcium		DOC		DOC		DOC		DOC		DOC		DOC		DOC		DOC		DOC		DOC		DOC		DOC		DOC		DOC		DOC		DOC		DOC		DOC		DOC		DOC		DOC		DOC														
Constituents	Unit	Generic Criteria (mg/l)	Number of Samples	Minimum Value	Maximum Value	Number of Exceedences	Locations of Exceedences																																																			
							132759	152238	152239	152240	152241	152242	152243	152748	152749	152750	152751	154534	154535	154536	154537	154538	155736	155737	155738	155739	155773	155774	155775	155776	165544	165545	165546	165547	165548	166049	166447	166448	166449	166450	168451	168478	169362	169383	169384	169669	169667	169668	194409	194410	194411	194412	205953	205954	205955	205956	205957	205958
Electrical Conductivity	µS/cm	No WSV	104	1	24000	0	860	1	960	270	660	1300	1100	1400	560	930	570	6900	800	810	3600	1600	170	18	660	4300	620	760	850	750	810	620	1100	780	750	1500	530	780	590	2700	570	720	840	620	750	1300	560	860	570	750	720	610	1100	540	830	1000	780	710
Suspended Solids At 105C	mg/l	No WSV	104	<5	4300	0	23	<5	15	<5	48	90	21	54	830	<5	830	95	540	330	240	160	11	220	23	27	93	<5	28	93	49	340	<5	38	19	26	15	<5	350	800	10	390	290	9	8	<5	82	160	30	24	36	98	<5	10	<5	17	<5	
Biochemical Oxygen Demand Low Level	mg O2/l	No WSV	104	1	72	0	1.1	5.5	14	8.6	<1	<1	12	<1	<1	2.8	2	2	1	4	<1	2.3	<1	4.6	<1	<1	<1	<1	4	1	<1	1	<1	<1	<1	<1	1.1	<1	1.1	<1	1.1	<1	7	3	9													
Chemical Oxygen Demand Low Level	mg O2/l	No WSV	104	1	650	0	2	16	31	30	9	11	47	2	4	11	22	23	11	32	28	<1	70	<1	14	<1	<1	17	<1	8.3	5.4	1.8	6	7.3	32	<1	3.1	2.8	8.3	38	6.2	18	1.7	1	13	8.8	34											
Total PCBs (7 congeners)	mg/l	No WSV	104	0.00001	<0.00001	0	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001				
Total Phenols	mg/l	No WSV	104	0.03	<0.03	0	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		

Assessment Criteria:		Coastal and Estuarine EQS																														
	CaCO ₃	0.00		DOC	0.00	DOC	0.00																									
	Calcium	0.00		DOC	0.00	DOC	0.00	Catchment area																								
								Freshwater not listed																								
Constituents	Unit	Generic Criteria (mg/l)	Number of Samples	Minimum Value	Maximum Value	Number of Exceedences	Locations of Exceedences	205959	205960	168447	168448	168449	168450	168451	168478	168479	168480	168481	168482	168483	168484	168485	168486									
								205959	205960	168447	168448	168449	168450	168451	168478	168479	168480	168481	168482	168483	168484	168485	168486	168487	168488	168489	168490	194409	194410	194411	194412	205953
Electrical Conductivity	µS/cm	No WSV	104	1	24000	0																										
Suspended Solids At 105C	mg/l	No WSV	104	45	4300	0																										
Biochemical Oxygen Demand Low Level	mg O2/l	No WSV	104	1	72	0																										
Chemical Oxygen Demand Low Level	mg O2/l	No WSV	104	1	650	0																										
Total PCBs (7 congeners)	mg/l	No WSV	104	0.00001	<0.00001	0																										
Total Phenols	mg/l	No WSV	104	0.03	<0.03	0																										

Assessment Criteria Drinking Water Standard

Table with columns for Assessment Criteria (CaCO3, DOC, Catchment area), Constituent (pH, Redox Potential, Salinity, etc.), Unit, and various Campaign locations (GW1, GW2, GW3, PZ_20, etc.).

Assessment Criteria Drinking Water Standard

Table with columns for Assessment Criteria (CaCO3, DOC, Catchment area), Constituent (pH, Redox Potential, Iron, Boron, Arsenic, Chromium, Lead, Nickel, Copper), Unit, and various Campaigns (GW1, GW2, GW3, PZ_20, etc.).

Assessment Criteria: CaCO3 0.08, DOC 0.00, Drinking Water Standard, 0.00, 0.00, Catchment area, Freshwater not listed

Table with columns for Constituent, Unit, GW1 Campaign 1-6, GW2 Campaign 1-6, GW3 Campaign 1-6, PZ 20 Campaign 1-6, PZ 19 Campaign 1-6, PZ 18 Campaign 1-6, DNE Campaign 1-6, and GW7 Campaign 1-3. Rows include various chemical species like pH Value, Redox Potential, Cadmium, Mercury, Total Phenols, and numerous hydrocarbons and pesticides.

Assessment Criteria Drinking Water Standard

Table with columns for Assessment Criteria (CaCO3, DOC, Catchment area), Constituent (pH, Iron, Boron, Arsenic, Chromium, Lead, Nickel, Copper), Unit, and various Campaigns (GW7 to GW15, PZ, Dup, etc.).

Assessment Criteria Drinking Water Standard

Table with columns for Assessment Criteria (CaCO3, DOC, Catchment area), Constituent (pH, Redox Potential, Salinity, etc.), Unit, and various sampling campaigns (GW12 to GW21, PZ, etc.). Includes a 'Locations of Exceedences' column with detailed campaign references.

Assessment Criteria: Drinking Water Standard

Table with columns for Assessment Criteria (CaCO3, DOC, Catchment area), Constituent (pH, Iron, Boron, Arsenic, Chromium, Lead, Nickel, Copper), Unit, and various Campaign/Location codes (GW12 to GW21, PZ 18 to PZ 21, Dup Campaign 1 to Dup Campaign 6). Values are numerical or '<10', '<5', '<1', '<0.1'.

Assessment Criteria: CaCO3 0.00, DOC 0.00, Drinking Water Standard, Catchment area, Freshwater not listed

Table with columns for Constituent, Unit, CaCO3, DOC, and 35 numbered Campaigns (GW1 to GW21, Dup Campaigns, PZ Campaigns). Rows include various chemical species like pH Value, Ammonia, Nitrate, Zinc, Cadmium, Mercury, and numerous polycyclic aromatic hydrocarbons (PAHs).

Assessment Criteria Drinking Water Standard

Table with columns for Assessment Criteria (CaCO3, DOC, Catchment area), Constituent Name, Unit, and various monitoring campaigns (GW21 to GW25, Dup, PZ_6 to PZ_16). Rows include parameters like pH Value, Redox Potential, Salinity, Electrical Conductivity, Suspended Solids, Calcium, Magnesium, Sodium, Potassium, Chloride, Sulphate, Alkalinity, Nitrate, and Ammonia as NH4.

Assessment Criteria : Coastal and Estuarine EQS

Table with columns for Assessment Criteria (CaCO3, CaCO3, DOC, DOC), Constituent (pH, Redox Potential, DO, Salinity, Electrical Conductivity, Suspended Solids, Calcium, Magnesium, Sodium, Potassium, Chloride, Sulphate, Alkalinity, Nitrate, Ammonium as NH4, COD, BOD, Iron, Boron, Arsenic, Chromium, Lead, Nickel), Unit, Generic Assessment Criteria, Number of Samples, Minimum Value, Maximum Value, Number of Exceedences, and various Campaigns (GW1, GW2, GW3, PZ, Dup, etc.).

Assessment Criteria : CaCO₃ 0.00 DOC 0.00 DOC 0.00 Catchment area Freshwater not listed

Table with columns for Constituent, Unit, Generic Assessment Criteria (mg/l), Number of Samples, Minimum Value, Maximum Value, Number of Exceedences, and various Campaigns (GW1 to GW8, PZ_20, Dup). Rows include pH Value (Lab), pH Value (Field), Redox Potential (ORP), DO, Copper, Zinc, Cadmium, Mercury, Total Phenols, Total Petroleum Hydrocarbons, Free Cyanide, Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benz[a]anthracene, Chrysene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[a]pyrene, Indeno[1,2,3-cd]perylene, Benzo[ghi]perylene, Dibenz[a,h]anthracene, Total PAH, Benzene, Toluene, Ethylbenzene, m,p-Xylene, o-Xylene, Styrene, Propylbenzene, Methylstybenzene, sec-Butylbenzene, 1,3,5-Trimethylbenzene, tert-Butylbenzene, 1-methylpropylbenzene, Vinyl Chloride, cis-1,2-Dichloroethene, 1,1-Dichloroethane, Chloroform, Carbon tetrachloride, 1,1,1-Trichloroethane, Trichloroethylene, Tetrachloroethylene, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, Chlorobenzene, 1,1-Dichloro-1-Propane, 1,2-Dichloroethane, 2,2-Dichloropropane, trans-1,2-Dichloroethene, Dibromomethane, 1,2-Dichloropropane, cis-1,2-Dichloro-1-Propane, trans-1,3-Dichloro-1-Propane, 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,2-Dichloropropane, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,4-Dichlorobenzene.

Assessment Criteria : Coastal and Estuarine EQS

Table with 4 columns: CaCO3, Calcium, DOC, DOC. Values range from 0.00 to 0.00.

Main data table with 30 columns for constituents (pH, Redox Potential, DO, Salinity, Electrical Conductivity, Suspended Solids, Calcium, Magnesium, Sodium, Potassium, Chloride, Sulphate, Alkalinity, Nitrate, Ammonium, COD, BOD, Iron, Boron, Arsenic, Chromium, Lead, Nickel) and 30 columns for campaigns (GW3 to GW15S). Includes 'Locations of Exceedences' column.

Assessment Criteria : Coastal and Estuarine EQS

Table with columns for Assessment Criteria (CaCO3, Calcium, DOC), Unit, Generic Assessment Criteria, Number of Samples, Minimum Value, Maximum Value, Number of Exceedences, Locations of Exceedences, and 35 numbered columns for various campaigns (GW11S, GW12, GW13, GW15, GW16, Dup, GW17).

Assessment Criteria : Coastal and Estuarine EQS

Table with columns for Assessment Criteria (CaCO3, Calcium, DOC), Catchment area, Freshwater not listed, and various sampling campaigns (GW11S Campaign 3 to GW17 Campaign 5). Rows include pH Value (Lab/Field), Redox Potential (ORP), DO, Copper, Zinc, Cadmium, Mercury, Total Phenols, Total Petroleum Hydrocarbons, Free Cyanide, Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benz[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Indeno[1,2,3-cd]perylene, Benzo[ghi]perylene, Dibenz[a,h]anthracene, Total PAH, Benzene, Toluene, Ethylbenzene, m,p-Xylene, o-Xylene, Styrene, Propylbenzene, Methylstybenzene, sec-Butylbenzene, 1,3,5-Trimethylbenzene, tert-Butylbenzene, 1-methylpropylbenzene, Vinyl Chloride, cis 1,2-Dichloroethane, 1,1-Dichloroethane, Chloroform, Carbon tetrachloride, 1,1,1-Trichloroethane, Trichloroethylene, Tetrachloroethylene, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, Chlorobenzene, 1,1-Dichloro-1-Propane, 1,1-Dichloro-2-Propane, 2,2-Dichloropropane, trans 1,2-Dichloroethane, Dibromomethane, 1,2-Dichloropropane, cis 1,2-Dichloro-1-Propane, trans 1,3-Dichloro-1-Propane, 1,2,3-Trichloropropane, 1,3-Dichloropropane, 2-Chlorotoluene, 1,2,4-Trimethylbenzene, and 1-Chlorotoluene.

Assessment Criteria :		Coastal and Estuarine EQS																																																												
CaCO ₃ Calcium		0.00	0.00	0.00	DOC																																																									
		0.00	0.00	0.00	Catchment area										Freshwater not listed																																															
Constituents	Unit	Generic Assessment Criteria (mg/l)	Number of Samples	Minimum Value	Maximum Value	Number of Exceedences	Locations of Exceedences	GW11S Campaign 3	GW11S Campaign 4	GW11S Campaign 5	GW11S Campaign 6	GW11S Campaign 1	GW11S Campaign 2	GW11S Campaign 3	GW11S Campaign 4	GW11S Campaign 5	GW11S Campaign 6	GW11S Campaign 1	GW12 Campaign 1	GW12 Campaign 2	GW12 Campaign 3	GW12 Campaign 4	GW12 Campaign 5	GW12 Campaign 6	GW13 Campaign 1	GW13 Campaign 2	GW13 Campaign 3	GW13 Campaign 4	GW13 Campaign 5	GW13 Campaign 6	GW15 Campaign 1	GW15 Campaign 2	GW15 Campaign 3	GW15 Campaign 4	GW15 Campaign 5	GW15 Campaign 6	GW16 Campaign 1	GW16 Campaign 2	GW16 Campaign 3	GW16 Campaign 4	GW16 Campaign 5	GW16 Campaign 6	Dup Campaign 2	Dup Campaign 3	Dup Campaign 4	Dup Campaign 5	Dup Campaign 6	GW17 Campaign 1	GW17 Campaign 2	GW17 Campaign 3	GW17 Campaign 4	GW17 Campaign 5										
								7.6	7.5	7.1	6.9	7	6.9	7.4	7.6	8	7.1	6.7	6.7	6.9	7.2	7	6.7	7.7	7.5	7.6	7.8	7.5	7.4	6.4	6.4	6.8	7	6.8	6.9	7.3	7.6	7.7	7.9	7.4	7.6	7.6	7.7	7.9	7.4	7.6	7.6	7.7	7.9	7.5	7.6	-	-	7.3	8	6.9						
pH Value (Lab)	pH Units	No WSV	197	5.7	12.6	0																																																								
pH Value (Field)	pH Units	No WSV	155	5.6	12.6	0																																																								
Redox Potential (ORP)	mV	No WSV	155	-363	145	0																																																								
DO	%	No WSV	155	1	102	0																																																								
o-Cymene	µg/l	No WSV	197	<0.01	<1	0																																																								
1,4-Dichlorobenzene	µg/l	No WSV	197	<0.01	<1	0																																																								
1,2-Dibromo-3-chloropropane	µg/l	N/A	197	<0.01	<1	0																																																								
Hexachlorobutadiene	µg/l	0.0006	197	<0.01	1	1	GW11S1 Campaign 6																																																							
1,2,3-Trichlorobenzene	µg/l	No WSV	197	<0.01	<1	0																																																								
1,2,4-Trichlorobenzene	µg/l	No WSV	197	<0.01	<1	0																																																								
1,3-Dichlorobenzene	µg/l	No WSV	197	<0.01	<1	0																																																								
1,2-Dichlorodibenzene	µg/l	No WSV	197	<0.01	<1	0																																																								
Bromochloromethane	µg/l	No WSV	197	<0.01	1	0																																																								
Dibromomethane	µg/l	No WSV	197	<0.01	1	0																																																								
Bromobenzene	µg/l	No WSV	197	<0.01	<1	0																																																								
Bromochloromethane	µg/l	N/A	197	<0.01	<1	0																																																								
Dibromochloromethane	µg/l	N/A	197	<0.01	<1	0																																																								
PCB28	µg/l	No WSV	197	0.01	<0.01	0																																																								
PCB52	µg/l	No WSV	197	<0.01	0.17	0																																																								
PCB101	µg/l	No WSV	197	0.01	<0.01	0																																																								
PCB118	µg/l	No WSV	197	0.01	<0.01	0																																																								
PCB138	µg/l	No WSV	197	0.01	<0.01	0																																																								
PCB153	µg/l	No WSV	197	0.01	<0.01	0																																																								
PCB180	µg/l	No WSV	197	0.01	<0.01	0																																																								
Total PCB	µg/l	No WSV	197	<0.01	0.17	0																																																								

Assessment Criteria : Coastal and Estuarine EQS

Table with columns for Constituent, Unit, Generic Assessment Criteria, Number of Samples, Minimum Value, Maximum Value, Number of Exceedences, and a grid of 30 data points per constituent. Includes rows for pH Value, Redox Potential, DO, Salinity, Electrical Conductivity, Suspended Solids, Calcium, Magnesium, Sodium, Potassium, Chloride, Sulphate, Alkalinity, Nitrate, Ammonium as NH4, COD, BOD, Iron, Boron, Arsenic, Chromium, Lead, and Nickel.

Assessment Criteria : Coastal and Estuarine EQS

Table with columns for Assessment Criteria (CaCo, Calcium, DOC), Unit, Generic Assessment Criteria, Number of Samples, Minimum Value, Maximum Value, Number of Exceedences, and various Campaigns (GW17 to GW24D).

Assessment Criteria : Coastal and Estuarine EQS

Table with columns: CaCO3, DOC, CaCO3, DOC, CaCO3, DOC. Values: 0.00, 0.00, 0.00, 0.00, 0.00, 0.00.

Main data table with columns: Constituents, Unit, Generic Assessment Criteria (mg/l), Number of Samples, Minimum Value, Maximum Value, Number of Exceedences, and 35 numbered Campaigns (GW24D to PZ_16). Rows include parameters like pH Value, Redox Potential, DO, Salinity, Electrical Conductivity, Suspended Solids, Calcium, Magnesium, Sodium, Potassium, Chloride, Sulphate, Alkalinity, Nitrate, Ammonium as NH4, COD, BOD, Iron, Boron, Arsenic, Chromium, Lead, and Nickel.

Assessment Criteria : Coastal and Estuarine EQS

Table with columns for Assessment Criteria (CaCO3, Calcium, DOC), Unit, Generic Assessment Criteria, Number of Samples, Minimum Value, Maximum Value, Number of Exceedences, and various Campaign locations (GW24D, GW24S, PZ_6, etc.).

Assessment Criteria :							Coastal and Estuarine EQS																												
Constituents	Unit	Generic Assessment Criteria (mg/l)	Number of Samples	Minimum Value	Maximum Value	Number of Exceedences	CaCO ₃ 0.00						DOC 0.00						DOC 0.00						Catchment area					Freshwater not listed					
							CaCO ₃	DOC	DOC	DOC	DOC	DOC	DOC	DOC	DOC	DOC	DOC	DOC	DOC	DOC	DOC	DOC	DOC	DOC	DOC	DOC	DOC	DOC	DOC						
pH Value (Lab)	pH Units	No WSV	197	5.7	12.6	0	6.7	7.3	7	6.7	7.2	8.2	7.2	7.5	7.5	7.2	7	7.1	7.1	7.2	6.9	6.9	7.4	7.9	7.7	7.5	7.5	7.5	7.8	7.1	6.9	7	6.5	6.6	6.5
pH Value (Field)	pH Units	No WSV	155	5.6	12.6	0	6.9	6.7	7.5	6.9	-	7.4	7.1	6.9	7.1	7.5	-	7.2	7.3	6.9	7.1	-	-	7.7	7.4	7.6	7.7	6.9	-	7	6.7	6.5	6.5	6.8	-
Redox Potential (ORP)	mV	No WSV	155	-363	145	0	-135	-165	-228	-135	-	-138	-164	-189	-198	-231	-	-143	-198	-184	-194	-	-	20	-104	-3	28	57	-	-109	-91	-152	-151	-152	-
DO	%	No WSV	155	1	102	0	66	2	1	66	-	2	4	2	4	1	-	4	4	17	3	-	-	43	48	34	25	58	-	5	2	7	3	2	-
o-Cymene	µg/l	No WSV	197	<0.01	<1	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	µg/l	No WSV	197	<0.01	<1	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	µg/l	N/A	197	<0.01	<1	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	µg/l	0.0006	197	<0.01	1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	µg/l	No WSV	197	<0.01	<1	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	µg/l	No WSV	197	<0.01	<1	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	µg/l	No WSV	197	<0.01	<1	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	µg/l	No WSV	197	<0.01	<1	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	µg/l	No WSV	197	<0.01	1	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	µg/l	No WSV	197	<0.01	1	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromobenzene	µg/l	No WSV	197	<0.01	<1	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	µg/l	N/A	197	<0.01	<1	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	µg/l	N/A	197	<0.01	<1	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PCB28	µg/l	No WSV	197	0.01	<0.01	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB52	µg/l	No WSV	197	<0.01	0.17	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.17	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB101	µg/l	No WSV	197	<0.01	<0.01	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB118	µg/l	No WSV	197	0.01	<0.01	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB138	µg/l	No WSV	197	0.01	<0.01	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB153	µg/l	No WSV	197	0.01	<0.01	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PCB180	µg/l	No WSV	197	0.01	<0.01	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total PCB	µg/l	No WSV	197	<0.01	0.17	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.17	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	

Table with columns for Assessment Criteria (CaCO3, Ca, pH, DOC), Drinking Water Standard, and various chemical constituents (Asenic, Cadmium, Chromium, etc.) with values for different locations (GW10, GW21, GW22, etc.).

Assessment Criteria			Coastal and Estuarine EQS																																													
CaD0 (mg/l)		0.00	pH			0.00																																										
Calcium (mg/l)		0.00	DOC (mg/l)			0.00																																										
Constituents	Unit	CaD0	pH	DOC	Catchment areas				Freshwater not listed																																							
					PZ_21	PZ_16	GW00	PZ_14	PZ_20	PZ_19	PZ_6	GW20	GW21	GW22	GW23	PZ_15	PZ_16	GW19	PZ_10a	PZ_14	GW5_PZ_18	GW5_PZ_18a	GW6	PZ_7	PZ_11	PZ_3	PZ_5	PZ_10	PZ_12	PZ_16	GW4	GW5	GW20	GW21	GW22	GW23	GW23 Dup	GW7	GW8	GW10	GW19	PZ_14	PZ_16	PZ_19	GW12	GW55	GW56	PZ_6
Arsenic	mg/l	0	0.026	134	0.077	3	GW4_4061, Campaign 5; GW55_4061a; GW4_4062, Campaign 1; GW5_4062a; GW4_4063, Campaign 1; GW5_4063a; GW4_4064, Campaign 1; GW5_4064a; GW4_4065, Campaign 1; GW5_4065a																																									
Cadmium	mg/l	0	0.0020	134	-0.001	0.020	3	GW4_4061, Campaign 5; GW55_4061a; GW4_4062, Campaign 1; GW5_4062a; GW4_4063, Campaign 1; GW5_4063a; GW4_4064, Campaign 1; GW5_4064a; GW4_4065, Campaign 1; GW5_4065a																																								
Chromium	mg/l	0	0.0050	134	-0.005	0.005	3	GW4_4061, Campaign 5; GW55_4061a; GW4_4062, Campaign 1; GW5_4062a; GW4_4063, Campaign 1; GW5_4063a; GW4_4064, Campaign 1; GW5_4064a; GW4_4065, Campaign 1; GW5_4065a																																								
Copper	mg/l	0	0.0086	134	0.001	0.011	4	GW2_4062, Campaign 1; GW5_PZ_19_DUP; GW4_4062a; GW5_PZ_19_DUP; GW4_4062b; GW5_PZ_19_DUP; GW4_4062c; GW5_PZ_19_DUP																																								
Zinc	mg/l	0	0.0068	134	-0.005	0.143	70	GW2_4062, Campaign 1; GW5_PZ_19_DUP; GW4_4062a; GW5_PZ_19_DUP; GW4_4062b; GW5_PZ_19_DUP; GW4_4062c; GW5_PZ_19_DUP																																								
Mercury	mg/l	0	0.00007	134	0.0001	-0.001	5	GW4_4061, Campaign 5; GW55_4061a; GW4_4062, Campaign 1; GW5_4062a; GW4_4063, Campaign 1; GW5_4063a; GW4_4064, Campaign 1; GW5_4064a; GW4_4065, Campaign 1; GW5_4065a																																								
Iron	mg/l	0	1	134	-0.01	54.37	12	GW4_4061, Campaign 5; GW55_4061a; GW4_4062, Campaign 1; GW5_4062a; GW4_4063, Campaign 1; GW5_4063a; GW4_4064, Campaign 1; GW5_4064a; GW4_4065, Campaign 1; GW5_4065a																																								
Boron	mg/l	0	7	134	-0.005	0.007	0	GW4_4061, Campaign 5; GW55_4061a; GW4_4062, Campaign 1; GW5_4062a; GW4_4063, Campaign 1; GW5_4063a; GW4_4064, Campaign 1; GW5_4064a; GW4_4065, Campaign 1; GW5_4065a																																								
Barium	mg/l	0	N/A	134	2.4	1077	0	GW4_4061, Campaign 5; GW55_4061a; GW4_4062, Campaign 1; GW5_4062a; GW4_4063, Campaign 1; GW5_4063a; GW4_4064, Campaign 1; GW5_4064a; GW4_4065, Campaign 1; GW5_4065a																																								
Magnesium	mg/l	0	N/A	134	2.3	1077	0	GW4_4061, Campaign 5; GW55_4061a; GW4_4062, Campaign 1; GW5_4062a; GW4_4063, Campaign 1; GW5_4063a; GW4_4064, Campaign 1; GW5_4064a; GW4_4065, Campaign 1; GW5_4065a																																								
Calcium	mg/l	0	N/A	134	2.4	1077	0	GW4_4061, Campaign 5; GW55_4061a; GW4_4062, Campaign 1; GW5_4062a; GW4_4063, Campaign 1; GW5_4063a; GW4_4064, Campaign 1; GW5_4064a; GW4_4065, Campaign 1; GW5_4065a																																								
Sulfate	mg/l	0	N/A	134	15.4	6632	0	GW4_4061, Campaign 5; GW55_4061a; GW4_4062, Campaign 1; GW5_4062a; GW4_4063, Campaign 1; GW5_4063a; GW4_4064, Campaign 1; GW5_4064a; GW4_4065, Campaign 1; GW5_4065a																																								
Electrical Conductivity	µS/cm	0	N/A	134	269	26100	0	GW4_4061, Campaign 5; GW55_4061a; GW4_4062, Campaign 1; GW5_4062a; GW4_4063, Campaign 1; GW5_4063a; GW4_4064, Campaign 1; GW5_4064a; GW4_4065, Campaign 1; GW5_4065a																																								
Fluoride	mg/l	0	0.001	134	0.005	0.01	4	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Total Phosphorus	mg/l	0	N/A	134	-0.0008	-0.005	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Ammonium as NH4	mg/l	0	N/A	134	-0.01	0.04	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
BOD	mg/l	0	N/A	134	-2	32	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
COD	mg/l	0	N/A	134	-2	120	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Alkalinity	mg/l	0	N/A	134	-2	70	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzoic Acids	mg/l	0	N/A	134	0.0001	0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(a)anthracene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(a)fluoranthene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(b)fluoranthene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(k)fluoranthene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(a)pyrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(b)pyrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(e)pyrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(g)pyrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(i)pyrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(j)pyrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(l)pyrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(m)pyrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(n)pyrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(o)pyrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(p)pyrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(ghi)perylene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(a)phenanthrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(b)phenanthrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(k)phenanthrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(e)phenanthrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(f)phenanthrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(h)phenanthrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(i)phenanthrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(j)phenanthrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(k)phenanthrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(l)phenanthrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(m)phenanthrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(n)phenanthrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(o)phenanthrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(p)phenanthrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(ghi)perylene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								
Benzo(a)pyrene	mg/l	0	N/A	134	-0.0001	-0.0001	0	GW20_4074, Campaign 2; GW20_4074a; GW21_4074a; GW22_4074a; GW23_4074a																																								

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Appendix L – EDF, May 2014. EPR UK, Sizewell C – Pre-existing Geotechnical Data Synthesis and Interpretative Report

This report contains confidential information. Therefore this document is only available on request to those who have a legitimate need to view the information

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Appendix M – EOD Contracts Limited, March 2010, Explosive Ordnance Desk Top Study for Sizewell Power Station

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EXPLOSIVE ORDNANCE DESK TOP STUDY

Sizewell Power Station

Fugro France

15th March 2010



EXPLOSIVE ORDNANCE DESK TOP STUDY

For

Sizewell Power Station

Conducted by

EOD Contracts Limited

On behalf of

Fugro France S.A.S

PREFACE

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Records

Sizewell, Suffolk

The target location falls in Region 4 HQ Cambridge and is situated on the coast in the so called Minsmere Haven.

The following records have been searched:

HO 192/249 22 October 1942 Orford
HO 192/271 15/16 May 1942 Southwold

HO 198/202 1942-1944 Special Reports
HO 198/78 Feb 1943 to Feb 1944 Southwold

HO 198/10 Forms BC2/4 Piloted Aircraft
HO 198/11 Forms BC2/4 Piloted Aircraft
HO 198/12 Forms BC2/4 Piloted Aircraft
HO 198/13 Forms BC2/4 Piloted Aircraft
HO 198/14 Forms BC2/4 Piloted Aircraft
HO 198/15 Forms BC2/4 Piloted Aircraft
HO 198/16 Forms BC2/4 Piloted Aircraft
HO 198/17 Forms BC2/4 Piloted Aircraft
HO 198/184 April 1940 to Nov 1940 Raid Summaries
HO 198/185 Dec 1940 to Apr 1942 Raid Summaries
HO 198/77 Forms BC2/4 Flying Bombs
HO 198/78 Forms BC2/4 Flying Bombs

Suffolk Records / Archive

Records Office

Acc 1608/1 1941, 1942, 1943, 1944, 1945
Acc 1608/2
Acc 1608/3
Acc 1608/4
Acc 1608/5

Internet	www.finest-hour.net – Wartime research
Resources	www.bbc.co.uk – Wartime history & witness accounts.
	www.uxoinfo.com – EOD Reports, Alerts & Updates.
	www.worldwar-2.net – German Attack Strategy & Tactics.
	www.pilotfriend.com – German Bomber Specifications.

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LIST OF ABBREVIATIONS USED IN THIS DOCUMENT

Abandoned Unexploded Bomb	A/UXB
Anti-Aircraft Ammunition	AAA
Anti-Personnel Bomb	APB
Below Ground Level	Bgl
Bomb Disposal Officer or Operator	BDO
Bomb Length to Diameter Ratio	L/D
Charge Weight Ratio	CWR
Construction Design & Management Regulations	CDM
EOD Contracts Ltd	ECL
Explosive Ordnance Disposal	EOD
German A-4 Rocket	V2
German Fi-103 Flying Bomb	V1
German General Purpose Bomb	SC
County Council	CC
High Explosive	HE
Incendiary Bomb	IB
International Standards Organisation	ISO
Kilo Newton Force	kN
Land Service Ammunition	LSA
Ministry Of Defence	MOD
Net Explosive Quantity	NEQ
Decoy Site using light, fire and smoke	QF
Remote Operated Vehicle (submersible)	ROV
Small Arms Ammunition	SAA
Special Operations Executive	SOE
Unexploded Bomb	UXB
Unexploded Ordnance	UXO
United Nations - International Mine Action Standards	UN-IMAS

CHAPTER 1 – EXECUTIVE SUMMARY

1. **Introduction.** Fugro France S.A.S instructed EOD Contracts Ltd (EOD) to conduct an Unexploded Ordnance (UXO) Desk Top Study for the onshore and offshore investigation areas at Sizewell, Suffolk. The study includes all of the area specified within the blue and red boundary lines (Appendix 1) and the survey footprints are hereafter referred to as; “The Area”. Site map attached at Appendix 1. The scope of the study is to assess the likelihood and consequences of an encounter with UXO contamination within the project area. The study has identified a credible UXO risk and made recommendations on the most effective way ahead with mitigation measures to mitigate the risks to a level that is as low as it is reasonably practical to achieve.
2. **The Site.** The site comprises two components, onshore and offshore. The onshore component is located 40km North East of Ipswich, England, near to the town of Leiston. The study area is within the boundaries of OSGB E647000 and N263750, E647500 and N264500. For the most part; the site comprises a car park, buildings and open grass land with beach frontage located to the east of the site. The site has been subjected to limited construction since WW2. The offshore component is located within the coastal waters to the immediate east of the on-shore component E252000 N268000 and covers an area of approximately 9km².
3. **Risk Level.** Having identified sufficient records and given full consideration to the nature of the site, it is considered that sufficient information is available to permit an accurate risk level to be determined for the on-shore component. Information pertaining to the offshore component is considered to be of limited value due to the tidal influence acting on potential items of UXO contamination resulting in migration. It was found that the most appropriate method to employ in the execution of the study was a “holistic” approach with due consideration given to the relevant factors. Account has been taken of the anticipated scope and methodology of the project works including maritime survey. The study has found that the possibility of an encounter with UXO is unlikely on land with a greater likelihood offshore. All of the known or anticipated prevailing factors were given due consideration when applied to likelihood verses consequence scenario. It is acknowledged that the possible consequence of such an encounter could be catastrophic. As a consequence the study has identified a Low UXO risk for the onshore area and Low to Medium for the offshore area, as applied to the following operations:
 - a. Surface vessel transiting through the area using an active depth meter. The risk to this operation is LOW.
 - b. Surface vessel with a geophysical survey line at least 1.0 metre above the sea bed at all times. The risk to this operation is LOW.
 - c. Surface vessel with a geophysical survey line in contact with the sea bed or operating the Air gun. The risk to this operation is MEDIUM.
4. **Risk Mitigation.** Given the levels of risk of an encounter with UXO which could result in an explosion or detonation. EOD Contracts Ltd considers that the risk mitigation is warranted to further reduce the level of risk to personnel from UXO.
5. **Post Mitigation Risk Levels.** It is statistically impossible to reduce a risk to zero, the implementation of the recommended UXO risk mitigation measures covered in the

previous paragraph would reduce the risk of a catastrophic encounter with UXO to a level that is as low as is reasonably practical to achieve.

6. **Recommendations.** It is recommended that the following risk mitigation strategy is executed for the onshore and offshore areas are considered to be:

Onshore and Offshore Mitigation:

- a. **Essential:** Communicating the risks; all stakeholders should be made aware of the UXO situation on the site and the possible impact it may have on the project works.
- b. **Essential:** Further Planning; the risks posed by UXO should be brought to the attention of the Project CDM Coordinator and other individuals with a responsibility for project safety and operations. The matter of UXO should be considered critical to project safety and one requiring high priority action.
- c. **Essential:** Safety Training; UXO safety awareness training should be given at all levels of site personnel and selected individuals on the project staff with relevant responsibilities. The training should be provided by a UK Home Office Authorised EOD/UXO Disposal Contractor using a qualified Explosive Ordnance Disposal Engineer to deliver a workshop for senior personnel and as a UXO component to the project safety induction course for contractors. It should be reinforced with specific safety briefings and tool box talks to individuals involved in conducting work at risk from UXO. The training should cover the following topics to a level commensurate with the audience's responsibilities and duties:
 - i. Project overview and the responsibilities of those working on site with regard to duty of care and public safety.
 - ii. UXO recognition and safety procedures to be followed on discovery of a suspicious object or the alarm being sounded.
 - iii. Emergency procedures to be followed in the event of an explosion.
 - iv. Evacuation routes, muster stations and accounting for personnel.
 - v. Work permits, works methodology and risk assessment.
 - vi. Specific UXO risk mitigation methods.
 - vii. Post incident inspections and returning to normal works.

Onshore Component Mitigation:

- d. **Prudent:** Given the proximity of the on-shore component to a high value asset such as the Power Station, a Non-intrusive UXO survey and investigation of the area to be developed to locate and risk assess any ferrous objects located within the footprint.

Offshore Component mitigation:

- e. Essential: The first phase of the mitigation is to conduct a UXO Safety Survey. We recommend that any object detected during the UXO survey that provides a signature of 20kg/lit mass/volume should be considered a potentially lethal item of UXO. The UXO survey should be carried out using two complimentary technologies used simultaneously in a single pass:
 - i. Passive Magnetometers from a surface vessel to identify possible ferrous items of UXO within the survey footprint. It is noted that this technology will not detect non ferrous items of UXO.
 - ii. We recommend that the UXO survey is conducted over the whole survey area footprint. But if this is not possible, the minimum requirement is to conduct the UXO survey in the following areas:
 - iii. All areas within the footprint where any part of the passive survey equipment, (including geophysical lines) will be in contact with the sea bed including a 5.0 metre safety zone either side of the geophysical line centreline.
 - iv. All lanes or areas in which the Air gun will be fired including a suitable safety zone.
 - f. Essential: The second phase of mitigation is to use a risk avoidance technique. Using the information gathered during the UXO survey and Side Scanning Sonar to identify non ferrous objects on the sea bed; safe areas / lanes will be identified in which to conduct the geophysical survey which will use side scan sonar (in areas not scanned as part of the UXO survey), swath bathymetry and boomer seismic survey prior to an air gun and cable seismic refraction survey. All of the geophysical survey processes should be carried out avoiding all suspect UXO targets by as much distance as possible to ensure no part of the survey equipment comes into contact with a suspect object. It is critical that the airgun is only fired in areas well away from any suspect item. The safety distance requirements for any suspect item should be determined by a qualified EOD Engineer.
 - g. If it is impossible to avoid all of the suspect items of UXO, the objects should be investigated and risk assessed before any aspect of the geophysical survey is conducted. Our preferred method of underwater investigation is to employ a Remote Operated Vehicle (ROV) operated by a qualified ROV/EOD Clearance Engineer. Alternatively, as a least preferred method; manned investigations can be undertaken by a suitable qualified and experienced underwater Clearance Diving Team.
7. **Conclusion.** EOD Contracts Ltd concludes that the risk of encountering UXO is greater off-shore than onshore and that such an encounter could result in catastrophic consequences. The risks can be effectively mitigated by employing recognised risk mitigation measures as contained within this study's recommendations.

CHAPTER 2 – INTRODUCTION

8. **Terms of Reference & Scope.** Fugro France S.A.S instructed EOD Contracts Ltd to conduct a UXO Desk Top Study for the area associated with Sizewell, Suffolk. The study will make recommendations on the most effective way ahead to mitigate the risks should UXO be encountered during the onshore and offshore works.
9. **Aim of Study.** The aim of the UXO Study is to identify all possible sources of UXO contamination and assess an overall level of risk that UXO may pose to the project area(s), enabling the planned works to be completed in the safest possible manner.
10. **Study Approach Onshore.** An evidential approach for the onshore area has been used in compiling this study. This, when approached from a holistic standpoint, has included due consideration of the following factors:
 - a. The anticipated scope and common construction methodologies of the works were considered. The following assumptions have been made:
 - i. Intrusive geotechnical and archaeological investigations including boreholes, trial pits and window sampling.
 - ii. Relatively shallow strip foundations, service trenching and ground works.
 - iii. Foundation construction which may include piling and or other construction methodologies.
 - b. Available maps, records, reports and papers relating to the site history and potential sources of UXO contamination were searched. The design of Allied and German explosive ordnance was considered and the threat it poses established; including the potential mechanisms by which an unintended detonation could occur. Account was taken of the age, design and types of UXO and the associated explosive or energetic chemicals used in their construction.
 - c. Results. Assumptions have been made, conclusions have been drawn, findings reported and appropriate recommendations made.
11. **Study Approach Offshore.** An evidential approach was found to be of limited value due to the lack of specific information relating to the location of UXO within the footprint and the influence of tide and current may have in UXO Migration. It was found that the most appropriate method to employ in the execution of the study was again an “holistic” approach with due consideration given to the following factors:
 - a. The scope and methodologies to be used during the survey were considered.
 - b. The action of the tides, currents and results of sustained exposure to such conditions on the most credible sources of UXO contamination were considered.
 - c. The designs of German and British weapons used in maritime operations were considered and the threat posed established. Including the potential mechanisms by which a detonation could occur. Account was taken of the age, design and types of UXO and the associated explosive or energetic chemicals used in their construction. The likelihood of detonation was reviewed and scenarios considered for weapon detonation.

- d. The technical design of UXO and the behaviour of an explosion occurring in water has been given due consideration and the most likely consequences of such an explosion have been identified.
 - e. Results. Assumptions have been made, conclusions have been drawn, findings reported and appropriate recommendations made.
 - f. The reported prevailing conditions have been considered to be extant within the area. Specifically strong tidal streams, shifting sandbanks and rock hazards. Soft silt and mud on the sea bed with the water column of two (2) to six (6) metres in depth.
12. **Sources of Information.** Historical research for the UXO Study was conducted by EOD Contracts Ltd; Public and Official sources were requested to provide information they may have in their possession that may have bearing on the UXO situation within the site. Some of these sources are yet to provide a response which will be assessed on its release and the findings issued as an addendum to this study, if considered pertinent. MOD records are supplied under an indemnity protecting the Secretary of State, his servants or agents directly or through any third party from any claim whatsoever arising from its release. Acknowledgement of sources has been made as appropriate. Military records and archived material held in the public domain were consulted. Information sources include: National Archive Bombing Records. Records and information held in the public domain within the National Archives (Kew) and Suffolk Records Office. Mine Warfare Data Centre (MWDC), Maritime Environment Information Centre (MEIC), UK Hydrographic Office (UKHO). In-house information, Published and unpublished material, research papers, media articles and internet-based material.
13. **Commitment to Safety.** British Health & Safety at Work legislation provides for the safest working environment for all employees. The legislation extends to third parties; including members of the general public who come into contact with industrial activities. The processes of UXO mitigation and methodologies available to specialist explosive ordnance disposal companies are more effective than at any time in the past. This, coupled with British Industry's proactive approach to UXO mitigation has significantly reduced the risk of unexpected encounters with UXO. However, whilst the risk of an uncontrolled encounter is significantly reduced by effective mitigation, the potential consequences of any such encounter resulting in a detonation remain catastrophic. This assessment has been conducted in accordance with the United Nations International Mine Action Standards (UN-IMAS): This standard sets out how all matters relating to UXO are to be conducted safely, and directly equates to ISO: 9001:2008. The Construction Design & Management regulations (CDM) and Health & Safety at Work legislation placed an obligation on those responsible for intrusive works, to ensure that comprehensive threat assessments are carried out and effective mitigation measures put in place to deal with all underground hazards that may be present. A guideline document CIRIA C681 in 2009 titled 'Unexploded Ordnance (UXO)' – A guide for the construction industry is now available. EOD Contracts Ltd is a UK Home Office authorised EOD/UXO Contractor and has compiled this study in accordance with the Construction Industry Research and Information Association CIRIA C681 guidelines for use by the construction industry in dealing with UXO.
14. **Recent Significant Events.** Recent significant events to this assessment's publication date have been given due consideration and "Lessons Learnt" applied where applicable, in the production of this document:

- a. Serious Incident 10th September 2009: WW2 bomb detonated when struck during piling operations at a railway station in Ulm Germany. The bomb exploded at an estimated depth of 6-7 metres injuring two workers. Source: WWW.thelocal.de 29th Sept 2009.
- b. 23rd September 500kg mine exposed on Worthing Beach, Royal Navy EOD dealt with the weapon that had been exposed by the tide. Source Argus 23rd September 2008.
- c. 11th April 2008; 700kg German mine found on beach on the island of Stert. The RN destroyed the weapon at sea. Source BurhamonSea.com 15th July 2008
- d. Significant Incident 29th May 2009: UXB found in a garden in Gillingham Kent was dealt with by Army Engineers. Source; Kent News 29th May 2009.
- e. Significant Incident 29th April 2009: 50kg UXB found on a construction site in Bexhill, Army Engineers destroyed the weapon in a controlled explosion. Source: BBC News 29th May 2009.
- f. 19th September 2008; 250kg bomb detonated when an excavator drove over it on a construction site in Hattingen (Germany). By an unbelievable stroke of luck only 17 people were injured and no one was killed. Source: Local German News 17th Sept 2008.
- g. 3rd June 2008; Bomb found during development of a site in the Lea Valley London. A large 1000kg bomb was found during excavation work. The site and local area was evacuated for four days while EOD Engineers made the weapon safe. Source BBC News 7th June 2008.
- h. 19th April 2008; Bomb found during development of a school in Braintree, Essex. EOD Engineers took 3 hours to safely deal with the small device. Source Essex Chronicle; 19th April 2008.
- i. Fatal Incident 15th March 2008; Major explosion occurred while weapons and ammunition were being destroyed in a storage facility in Gerdec near Tirana (Albania). The explosion was considered to be the largest conventional explosion to have occurred on land. A nearby hamlet was totally destroyed and buildings were damaged five miles from the epicentre of the explosion in which at least twenty four people were killed and over 300 injured.
- j. 3rd January 2008; The M62 was closed near Goole after a 500kg wartime bomb was found "deeply buried" in a nearby field. The controlled detonation of the Second World War bomb resulted in the closure of the M62 between junctions 37 and 38, the B1230 south of Skelton Common, and roads around Gate Farm. Source Howden Courier 4th January 2008.
- k. 250kg High Explosive bomb found on a construction site on the 15th May 2007 in Bethnal Green at Suttons Wharf, and the remains of a V1 rocket recovered on the 25th July 2007 from Canary Wharf. Source BBC news 15th May 2007.
- l. The detonation of an item of UXO on 23rd October 2006. A highway construction worker was killed when the machine he was operating detonated a bomb

beneath an autobahn near Frankfurt. The explosion destroyed the machine and damaged passing cars; four other workers and a motorist were hurt in the blast. Source New York Post 24th October 2006.

- m. Two French bomb disposal workers were killed in an explosion while handling explosive ordnance. The accident occurred on 19th April 2007 at a non military site south of Metz. A third worker was injured in the blast. The depot processes quantities of WW1 and WW2 ordnance unearthed during construction work in northeast France. Source Safety News website 2008.

15. **Significant Local Events.** The following local incidents were recorded at the National Archive in Kew and documents compiled from Air raid incident reports held at the Suffolk County Archives. Records obtained show limited detail particularly in terms of accurate recording of locations at Sizewell. The majority of locations are reported simply as Sizewell Common, Sizewell estate and Leiston Heath land, although pin pointing the exact locations is not possible.

- a. 10th Oct 1941:
 - i. 1 x 250kg Waterloo Road, Leiston. Senior School.
 - ii. 1 x 50kg Waterloo Road, Leiston. Senior School.
 - iii. 1 x 250kg Fell within ¼ Acre of Waterloo Road.
 - iv. 1 x 250kg Fell within ¼ Acre of Waterloo Road.
 - v. 1 x 250kg Fell within ¼ Acre of Waterloo Road.
- b. 1 June 1942: Leiston, Halway Cottages
 - i. 2 x High Explosive 3 Houses damaged and 1 hut destroyed
- c. 24th April 1943: Sizewell Estate, Leiston/Sizewell Common
 - i. 1 x Incendiary Bomb type F ABB-500 Container containing 120 1kg Incendiary Bombs
 - ii. 1 x Container found south of Rose Cottage, Sizewell (Grid 923806).
- d. 6th September 1943:
 - i. 1 x 50kg Leiston, on heath land, 400 yards SE of Sizewell Road Railway Crossing. Dropped by enemy plane flying South East. Possible second bomb heard. (Nothing found).
- e. 3rd October 1943:
 - i. 65 x Anti Personnel Bombs Leiston, Heath land and various surrounding fields.
 - ii. 1 x UXB Anti Personnel Bomb found on railway line.
 - iii. 3 x Anti Personnel Bombs found on Sizewell common and several craters.
 - iv. 2 x Anti Personnel Bombs Sizewell Road.
 - v. 2 x Anti Personnel Bomb Containers found at Sizewell.

- f. 5th November 1944:
 - i. 1 x Flying Bomb King Legend, Leiston Road. Did not detonate, the warhead became detached when hit by Anti Aircraft Artillery gun fire.
- 16. Other reports which may have resulted in UXO Contamination included:
 - i. Anti Aircraft Position at Aldeburgh 3.7 HAA Gun.
 - ii. Possible HAA position at Sudbourne.
- 17. Total munitions recorded with in Leiston parish incorporating Sizewell in April 1945 was 167 x High Explosive Bombs and 1228 Incendiaries Bombs.
- 18. MoD reports indicate that a number of UXO clearances have been undertaken over the years, some as part of the UXO mitigation during the construction of the power station. Four minefields were removed after the war two were within the tidal plane and indicated that possibly two mines were unaccounted for. A further one mine from the inland minefields was unaccounted for. However a total of 22 incident reports were reported, with UXO recovered on each occasion. Some reports concerned mines which may have been the eventual recovery of the three unaccounted for mines. (See appendix 3 Extract MoD Report)
- 19. **Conclusions.** UXO has been encountered on construction sites and beaches during construction/maritime activities within the United Kingdom. British and European UXO events serve to validate the view that the potential for encountering UXO should be fully considered and; if necessary the mitigation of any risks comprehensively planned and executed by a UK Home Office authorised EOD/UXO Disposal Contractor. The methodology or processes used by the contractor to mitigate the risk of UXO should reflect the current UN standards and best practices to ensure that such processes are conducted in a safe manner.

CHAPTER 3 – SITE HISTORY

20. **Site History.** The onshore area is located within the Parish of Leiston which used to encompass the village of Sizewell, the majority of which has been reclaimed by the sea and remains today a small fishing village approximately 1km due South of the site. The study area is centred at 52°13'13.10"N and 1°37'10.99"E. For the most part; the site comprises a large grassed area interspersed with woodlands to the East and arable land leading to a beach frontage to the East. A car park is situated to the South West of the area which is part of the Sizewell nuclear power station. The site has had limited construction since the Second World War; notable the car park and new buildings on the southern peripheral. The layout of the roads has changed substantially since the Second World War due to the construction of the Power Station.
21. Sizewell was not a priority target for enemy aircraft in both World Wars, however, RAF Leiston, one mile north-west of Leiston was originally intended as a fighter base by Fighter Command but was allocated to the U.S. Eighth Air Force on September 22nd 1942 and designated Station 373. The station was occupied by the 357th US Fight Group for the duration of WW2. There are no records showing Leiston RAF base having been bombed during the war despite documented Luftwaffe ariel target reconnaissance photography. The airfield may not have been bombed due to anti aircraft artillery defences around the airfield and surrounding area.
22. The offshore area has been a maritime channel for hundreds of years and has incorporated naval operations and engagements during both World Wars. During the course of both conflicts both sides laid extensive minefields, these were positioned by surface vessels of the Royal Navy and to a lesser extent by the German Navy using aircraft and submarines. The area was also covered by anti-aircraft batteries to the North of Sizewell at Lowestoft and South at Aldeburgh.
23. **Historic UXO Contamination Sources.** Table 3.1 provides a summary of the most common UXO contamination sources that are found around the coastline and in the coastal waters of the United Kingdom. All of the sources have been given provisional consideration as possible vectors for contamination to have occurred on site. Based on the information available; the majority were unsubstantiated and have subsequently been discredited. Those sources that are considered to present a credible mechanism by which UXO may have found its way on site have been highlighted.
24. **Credible UXO Contamination Sources.** Having given due consideration to the possible sources of contamination and with no other information having come to light regarding additional sources of UXO contamination; it is considered that the only reasonably likely sources of UXO contamination include but are not limited to:
25. Land Service Ammunition from Anti Aircraft Batteries positioned close by, however, the possibility of encountering an air dropped weapon cannot be ruled out.
 - a. Air delivered anti-shipping weapons, specifically; Depth Bombs, Rockets, Depth Charges and Mines.
 - b. Surface and Submarine vessel mounted offensive and defensive Weapons, specifically; Shells, Projectiles, Torpedoes and Mortars.
 - c. Surface and Submarine vessel deployed Mines.

CHAPTER 4 – BOMBING HISTORY

26. **Bombing Attacks on the United Kingdom.** The 19th January 1915 saw the first air raid on the British Mainland by the German Air Force when they attacked coastal towns. The launch platforms of the day; Zeppelin dirigibles, Staaken & Gotha light bombers, conducted a series of attacks on the United Kingdom, 1500 people died as a result of the WW1 bombing campaign. It is a matter of record that many areas were targeted during this period, and the possibility of items of UXO remaining cannot be ruled out. During WW2 the German Air Force recommenced air attacks on Great Britain. Strategic locations and facilities were selected as priority targets and singled out for specific attack. Over a protracted period of 1940-1944; the Axis powers waged an intense air campaign against Great Britain and its citizens. The German Air Force (Luftwaffe) bombing campaign was to cripple the British war effort by destroying military and commercial targets, inflict mass casualties to the population and remove the country's infrastructure. In short, to sap the British resolve to resist and bring about its timely surrender. By October 1942, the German Air Force had been reduced to a level where it was no longer capable of large scale attacks on the British Isles, but they continued to mount smaller raids up to 1944. In total, they carried out over 70 major air raids and countless (100's), smaller, air attacks using single bomber squadrons and lone raiders. The death toll of British lives stood at over 28,000 as a direct result of bombing, a further 52,000 people had been maimed or injured. The German Air Force had dropped an estimated 190,000 bombs of all sizes, equivalent to an estimated 18,000 tons. As the manned bombing raids came to an end, the air attacks on the south east of England took on a new dimension. In 1943, the first attacks from the German 'V' weapons began. These were unmanned low level rockets and high level missiles. The weapons were launched from Nazi occupied Europe and continued until very close to the end of the war. The first of the weapons was the V-1 known as the flying bomb or 'Doodlebug'. The V-1 was the cruise missile of its time; simply put it was a jet powered flying bomb. The second, more advanced, V-2 was a high level, long range rocket, a forerunner of the Atlas ICBM.
27. **Bombing History and Tactical Significance of the Local Area.** Whilst Sizewell was subjected to very limited attacks during WW2; reports have indicated that the majority was restricted to the immediate West of the area towards the town of Leiston and beyond.
28. During WW2 airfields were singled out for aerial attack due to their strategically important locations and considered high priority targets by the German High Command and crucial to Germany's victory over Great Britain. Statistics of Enemy Action in Leiston Parish are as follows:
- a. HE Bombs - 167
 - b. Incendiary Bombs – 1,228
 - c. V1s/V2s – 1
29. **Other Reasons for Enemy Bombing.** For their part, the Royal Navy and Air Force conducted anti-submarine air patrols and air intercept operations during WWI & WWII. This resulted in further bombing and strafing over coastal areas whenever an enemy 'U' boat was located or an enemy aircraft encountered. The enemy aircraft would often ditch their bomb and mine loads in an effort to escape the attack. For the most part weapon strikes at sea are recorded as approximate positions. The accuracy of

such reports made some years ago, are also called into question due to migration of the weapon by the action of tides and currents.

30. **National Archive Bombing Records.** National Archive Records; HO192, 193, 196, 198, 199 and other related documents, maps and map traces contain information relating to bombing raids and bomb strikes in the United Kingdom. Very few records held at Kew relate to Sizewell, with available records held for the most part at Suffolk County Archives. Overall the number and detail of the records specifically relating to the area is considered to be poor with very little detail in terms of accurate plotting of incident locations. This is a consequence of the wartime need for secrecy and in keeping with the nature of the strategic targets located within the Parish. The records on their own are not considered to provide a reasonably accurate picture on which to determine the likelihood of encountering UXO. Other records were searched for relevance including references; HO 192/951 & 955 – Air Raid Damage Files Bomb. HO 198/109 - Long Range Rockets.
31. **Bombing Record Keeping.** In general, the quality and accuracy of bombing records prior to 1939 varied greatly from one region to another. Records relating to the limited air attacks on the United Kingdom are considered to be sufficiently accurate in urban areas to provide a reasonable level of confidence in determining the likelihood that an area was or was not bombed during this period. Wartime records, maps etc held within the civil archives are considerably more comprehensive than those still in existence within the MOD, where it is acknowledged that large numbers of records have been disposed of since 1945. Records from some areas, particularly rural districts or near large bodies of water should still be regarded as an incomplete picture of the extent and effect of the bombing campaign.
32. **Bombing Record Accuracy.** While an Air Raid was in progress it was inevitable that mistakes would be made in the transcription of rushed verbal reports into the written records. Discrepancies do occur between the total of bombs dropped against detonations witnessed. In some cases records were made several hours after the event and mistakes were inevitable. Some reports were drafted before the full extent of the raid had been determined; this has led to significant omissions in the records. Reports of raids on rural areas were often witnessed and submitted by untrained individuals and passed through third parties before being recorded. Suspect UXB's occasionally went unreported by local farmers and freeholders who saw the event as insignificant; or were reluctant to report their findings for fear of valuable land or crops being destroyed by the authorities in their attempts to find the UXB. It should also be noted that bomb strikes in water were notoriously difficult to spot, particularly if the bomb had failed to detonate. As a result bomb record accuracy in and around coastal areas are considered to be questionable.
33. **Errors and Omissions.** The accuracy of bombing records has been shown to vary greatly; this may have been a result of the individual record keeper's expertise. Additionally, in some cases, errors occurred as a result of poor or incomplete transcription and copying. Some "errors and omissions" were intentional, designed to serve as dis-information to confuse German intelligence. So long after the event, official verification of such incidents has often proven to be impossible to obtain. At present, UXB's are found on construction sites and other locations where there had been no documentary evidence to suggest their presence. These events, although infrequent, do serve as confirmation that records cannot be considered definitive.

34. **Conclusion Drawn from the Records.** Sufficient evidence was found to confirm that enemy air attacks occurred in the immediate area of Sizewell. These attacks were responded to by defensive fire from the ground anti-aircraft artillery batteries. It is reasonable to assume that in areas that suffered direct weapon impacts the possibility exists that explosive ordnance may have been fired, dropped or ditched that failed to detonate as intended and has resulted in UXO contamination.

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CHAPTER 5 – OTHER UXO CONTAMINATION SOURCES

35. **British Anti-Aircraft Shells & Projectiles.** With exception of warship guns which were plentiful, British Heavy Anti-Aircraft resources were limited at the outbreak of WW2, with only 540 guns available with a calibre greater than 50mm. This number increased to 1,140 by 1941. The air defence efforts from the Anti-Aircraft Gun and Rocket Batteries placed strategically around the high priority targets have resulted in an additional source of UXO contamination. The Anti-Aircraft defence positions were often placed on vacant land, parks and greens within built up areas. A small percentage of this contamination was the result of discarded/lost ammunition in and around the positions, but the majority was spread over a far wider area as a result of Anti-Aircraft shells and rockets failing to function or missing their target and eventually falling to earth. For example the 40mm Bofors gun had an effective ceiling range of around 8,000 metres (26,000 ft) and a horizontal range of 11,400 metres. These ranges provide a potential to spread UXO contamination over approximately 200 km². Significant building damage and loss of life, initially attributed to enemy bombing, was later found to have been the result of British air defence operations, in what would have been referred to today as incidents of “Friendly Fire”. Given the geographical location of the site the possibility of an item of this type of UXO being present on the site is unlikely but possible.
36. **Gun Types.** Warships were armed with a wide range of gun sizes with the larger gun mountings up to 21-inch calibre occupying the centreline of the ship, while smaller guns were mounted port and starboard of the centreline. These came in a range of sizes, from light 0.3-inch, 0.5-inch and 40mm Bofors gun. Coastal defence guns also came in a range of calibres often matching those on large principle warships. Larger artillery pieces were referred to as heavy guns; 3.7-inch, 4.5-inch and 5.25-inch calibre guns with an effective ceiling of around 18,000 metres (60,000 ft) and a horizontal range of 8,000 metres. These ranges provide a potential to spread UXO contamination in excess of 400 km².
37. **Naval Mine.** Mines were laid by both sides in the waters of the coast. Many were removed during mine sweeping operations after the war, but some were missed and have subsequently washed ashore over the years. The mines that have been recovered have been found to be in good condition and were capable of detonation.
38. **Depth Charge.** These were also dropped or fired by both sides. Some of these items have also been recovered or washed ashore in good condition up to the present day.
39. **Torpedo.** Used by both sides, they were launched from surface vessels, ‘U’ boats and Aircraft. Set to detonate once in close proximity of the target or on impact with the target or after a predetermined timed journey. The Torpedo, Depth Charge and the Mine contain a large amount of explosive and represent a significant danger to any vessel encountering them.
40. **Minfield.** Four minefields were laid in the area to prevent enemy invasion, two were laid within the tidal plane on the beach and two further inland. Records indicated that these were cleared in 1945 however mines laid within the tidal plane were sometimes washed into the sea. (see Paragraph 41)
41. **Migration of Contamination.** UXO contamination subjected to tide and currents will move to a lesser or greater extent depending on the nature and strength of the tide or currents. This process; commonly referred to as migration, has been given due consideration in the production of this study. Contamination may have occurred as a result of the following activities or events:

- a. Sea dumping of ammunition.
 - b. Naval engagements and activities.
 - c. Shipwrecks and aeroplane crashes.
42. **Anti-Aircraft Gun Positions.** Anti-Aircraft Artillery came in a range of sizes, from light 0.3-inch, 0.5-inch and 40mm Bofors gun. Larger artillery pieces were referred to as heavy guns; 3.7-inch, 4.5-inch and 5.25-inch calibre guns with an effective ceiling of around 18,000 metres (60,000 ft) and a horizontal range of 8,000 metres. These ranges provide a potential to spread UXO contamination in excess of 400 km².
43. **Local Positions.** A number of Anti Aircraft Units were positioned to defend coastal areas together with mobile units deployed to temporary sites on an ad-hoc basis. In addition to the number of land based Anti-Aircraft batteries together with specialist Anti-Aircraft ships of various types; it is considered that any one of these batteries would have had the potential to contaminate the site.
44. **Land Service Ammunition.** Land Service Ammunition is the term given to include the types of explosive ordnance issued to soldiers as part of their battlefield arsenal. This includes a range of small arms ammunition typically from 0.303-inch (7.7 mm) to .50" (12.7mm) in calibre. Rarely does this type of ammunition contain high explosive but more commonly they are fitted with a pyrotechnic tracer charge. However, this category of ammunition include; Shells, Mortar Bombs, Grenades and Rockets, all of which may contain a significant quantity of high explosive and possibly White Phosphorus. While the presence of such items cannot be ruled out it is considered an unlikely source of contamination.
45. **Contamination.** UXO contamination has been known to have been imported onto a previously uncontaminated site. This process can occur as a result of a number of scenarios. These and other migration scenarios have been given due consideration in the production of this study. As a general rule, all in-fill or deposited material should be considered to be a potential source of contamination until its provenance can be confirmed and it is shown to be free from UXO. Where the in-fill may have come from multiple sources, it is necessary to assess each source individually. Once contaminated material is identified it is important to place it in quarantine. This will limit the possibility of the material being removed from site in error or spreading the contaminated material over a larger area of the project footprint. The most common scenarios for the migration of UXO contamination are considered to be:
- a. Building and other rubble from bomb damaged buildings remains a significant percentage of the material used as in-fill on post war development sites. This is most common within cities that had sustained the heaviest damage due to the wartime bombing. In-fill of this type was rarely, if ever certified free from UXO contamination. Source: Virtual Tourist Website 2008.
 - b. Quarries and other construction raw material source locations that were used by the military at some time in their past as bombing and firing ranges, troop training areas, or were shelled by the enemy at some time in their past, have also produced UXO concealed within the exported material.
 - c. Sea dredged aggregates from UXO offshore dumping grounds used as in-fill without being certified free from UXO contamination.

CHAPTER 6 – UXO TECHNICAL ASSESSMENT

46. **German Air Delivered Ordnance.** Technical information on the nature and characteristics of the ordnance used by the German Air Force during both World Wars has been available for a number of years. Assessment that began during the 1930's has continued to the present day. Research has been conducted in many countries by experts as part of national research programmes and as individual research projects. Consequently a well informed assessment of the threat posed by unexploded ordnance, and the hazards that they represent, can be made with a high degree of confidence.
47. **Terminology.** It should be noted that two terms used in bomb records can lead to some confusion as to their meaning and therefore significance. The term Unexploded Bomb (UXB) refers to a bomb that has fallen, failed to function and has been subsequently dealt with and removed. The term Abandoned Bomb (A/UXB) refers to a UXB that could not be found or recovered and remains in place to the present day. It should also be noted the word 'bomb' can be used to describe an airdropped bomb or a shell as in some cases no differentiation was made and the term was interchangeable.
48. **Abandoned Bombs.** The records of known abandoned unexploded bomb locations in the London area were released in response to a written Parliamentary Question from Simon Hughes. (Hansard: Volume; 282. Dated 15th October 1996). The information was provided by the Ministry of Defence (MOD) and supplied under an indemnity. The information only related to London and was reprinted by the Evening Standard 20th November 1996. Other records relating to elsewhere in the country are held by the MOD and at local Council or Borough archive facilities, these records should not be considered complete, and are consequently of little significant help in determining the likelihood of an (A/UXB) being present.
49. **Explosive Ordnance Failure Rates.** Over the course of both World Wars a considerable quantity of ordnance dropped on UK targets failed to function as designed and subsequently penetrated the ground without exploding. Information gathered during the war by the MOD and its research partners provide typical failure rates for different types of ordnance. Figures significant to this study are:
- a. 10% of all German airdropped weapons failed to function as intended.
 - b. 30% of all Anti-aircraft munitions failed to function as intended.
50. **Deductions & Considerations.** The following points were considered as part of the assessment and have been given due consideration:
- a. While the information on failure rates does not extend to all types of munitions, the figures provided for bombs and shells do serve as a guide to the expected failure rates of UXO as a whole.
 - b. Some Mines and Torpedoes were designed to function when a suitable influence was exerted upon or detected by them, the lack of which could result in a functional weapon never encountering the required influence and therefore never detonating. While the components of the weapon may have degraded to some degree, such degradation would not necessarily have resulted in the weapon no longer having the ability to function as designed.

- c. During heavy bombing raids that resulted in multiple bombs falling in a small area or striking the same target, one or more bombs that failed to function may have gone unnoticed.
 - d. Unless the strike is witnessed and plotted by a reliable individual; bombs striking on water, within a tidal plane, beach, on wet fen or marshland are virtually impossible to locate a short time (hours) after the event. Where the strike resulted in a UXB it is very unlikely that it would have been spotted and subsequently reported.
 - e. Weapon strikes, particularly UXBs, were less likely to be accurately reported in rural areas where less witnesses and Air Raid Precaution (ARP) bomb/fire watchers were deployed.
 - f. In all likelihood, the local anti-aircraft battery would have fired a far higher number of shells than the bombers dropped HE bombs. Contamination by anti aircraft shells cannot be ignored.
 - g. Shells (Projectiles) being generally smaller than bombs, would have left less evidence of striking the ground having failed to function.
 - h. Shells would not penetrate the ground to as greater a depth as HE bombs.
51. **Generic German Bomb Types.** The majority of German bombs dropped were 50kg in weight, accounting for approximately 16% of the total bombs dropped. The range of common bombs increased in weight to a maximum of 2500kg (SC General Purpose "MAX"). Regardless of size, German bombs were fitted with one or more Electrical Condenser Resistance (ECR) fuzes many of which included a mechanical component. The fuzes were mounted transversely in the bomb body with the booster directly below, and in contact with, the fuze. The booster; sometimes referred to as; the Gaine, is composed of a sensitive explosive material (Picric Acid). Picric Acid is known to deteriorate over time becoming increasingly unstable. The internal layout of two common German bombs and a German fuze is shown in Figures 6.1 & 6.2.

FIGURE 6.1 Generic German Bomb Design.

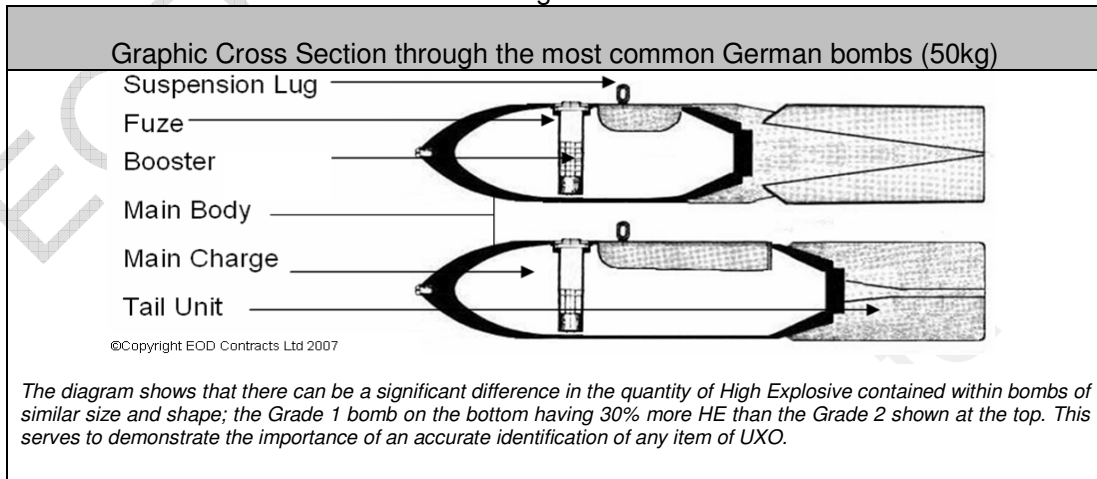
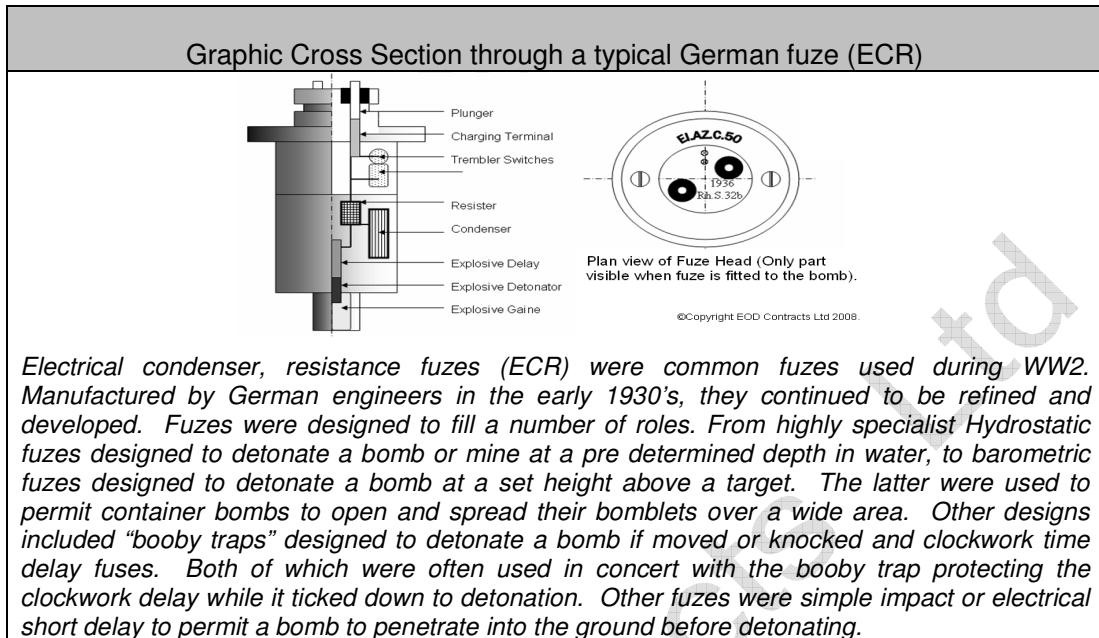
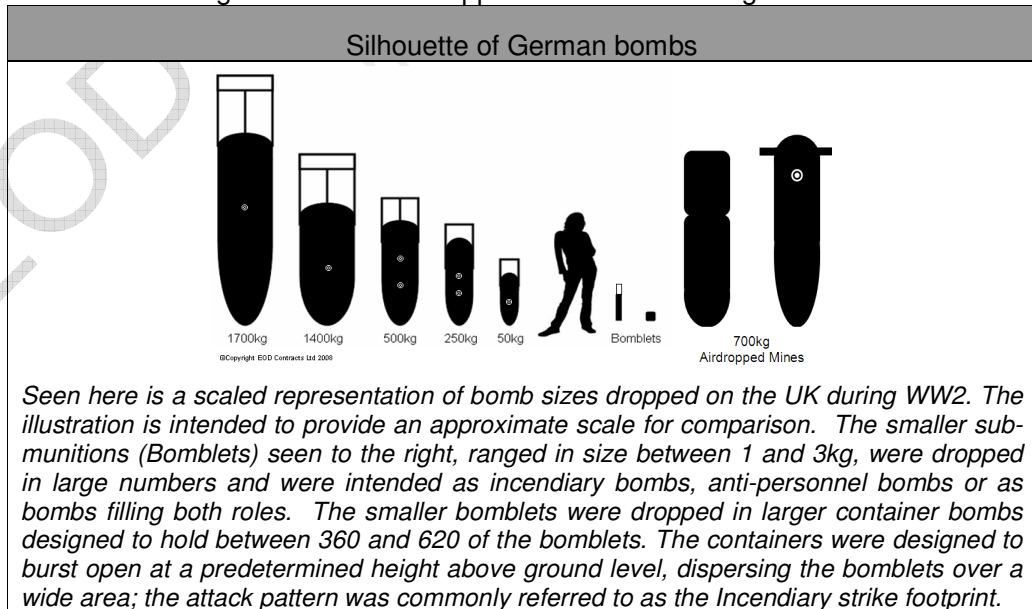


FIGURE 6.2 Generic German Bomb Design.



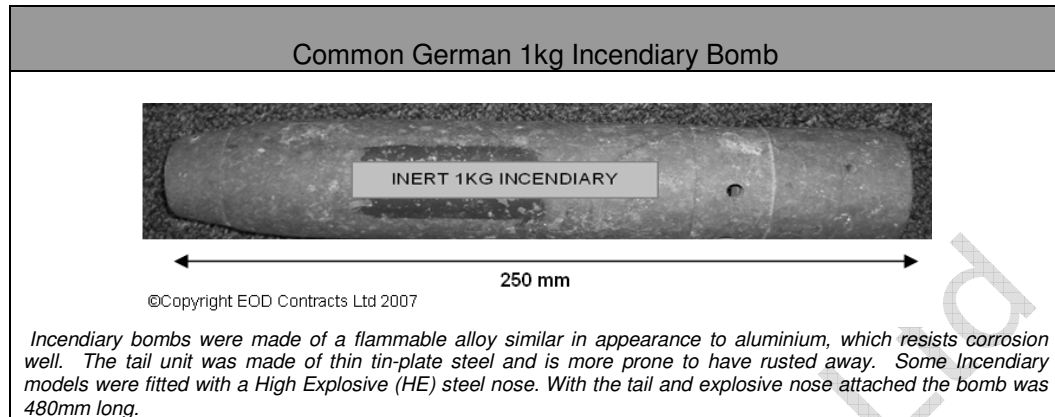
- a. **High Explosive (HE) Bomb.** The most common design of ordnance to be dropped on the United Kingdom, HE bombs are the most likely type to be encountered. Relatively thick cased, they are still recovered in remarkably good condition. Ranging in size from 50 to 2500 kg, their design and typical release height allowed them to penetrate deep into the ground if they failed to detonate on impact. Towards the end of the bombing campaign, as steel became scarce the German Engineers produced a range of bombs that used steel reinforced concrete as the bomb body. Figure 6.3 shows the range of steel HE bombs dropped on the UK.

FIGURE 6.3 Range of HE bombs dropped on the United Kingdom.



- b. **Depth Bombs & Depth Charges.** These types of weapons were designed to meet a specific mission requirement. Typically, the modifications would include the type of explosive filling and special fusing to enable the bomb to penetrate to a significant depth into the ground or water before detonating. Depth bombs intended for maritime attack and sub-marine targets would be fitted with one or more fuzes, one of which would be a hydrostatic fuze designed to detonate the bomb at a predetermined depth. The bomb would be fitted with an anti skip ring to reduce the deflection of the bomb as it entered the water. Similar in many ways to Depth Bombs, Depth Charges were exclusively designed to detonate at a predetermined depth. This was achieved by fitting the Charge with time delay or hydrostatic fuze.
- c. **Blast Bomb / Parachute Mine.** These relatively thin cased munitions were designed not to penetrate into the ground. In the case of the Mine, as the name implies, it was fitted with a parachute to slow the weapons decent and ultimately, its impact speed. It was common to find that, having failed to detonate, they had shattered on impact. There have been rare occasions when these items have been found as an UXB, but this only occurred when the weapon had landed in water or extremely wet marshland. For this reason blast bombs and parachute mines are normally considered to pose little threat to work on land based projects, but the risk increases significantly on projects over water or in marshland.
- d. **Non Steel Cased Bombs.** Towards the end of the bombing campaign the German Engineers produced a small number of blast bombs that had a concrete body. In an effort to reduce the amount of steel required in their construction, the design utilised a steel framework onto which concrete was cast. The explosive filling was also contained within a thin steel container within the bomb body. Very few "concrete" bombs were dropped on the UK. In common with standard steel cased weapons, this type of bomb can be detected using standard magnetometer detection techniques. This type of bomb represents a very small percentage of the total number of bombs dropped on the UK and are not considered a significant threat, when viewed from an overall bomb threat in the UK.
- e. **Incendiary Bomb.** The larger incendiary bombs, containing bottles of white phosphorus and an incendiary mixture contained within a thin steel case were designed to burst on contact with the ground. The smaller type of bomb or 'Bomblet' was delivered to the target area in container bombs or by a fixed dispenser on the aircraft; both types of container would open dispersing the smaller Incendiary bombs. Relatively small and light (See Figure 6.4) they were unlikely to penetrate the ground to any significant depth. However, once concealed in bomb damage rubble or below water they were easily missed and are still unearthed today from in-fill and drained land. Later versions of the incendiary bomb contained an additional explosive charge used as a short delay "Booby Trap" device that contained a significant amount of high explosive. The Booby Trap component was designed to kill or injure fire fighters and hinder the damage control. These weapons retain a potential to function today.

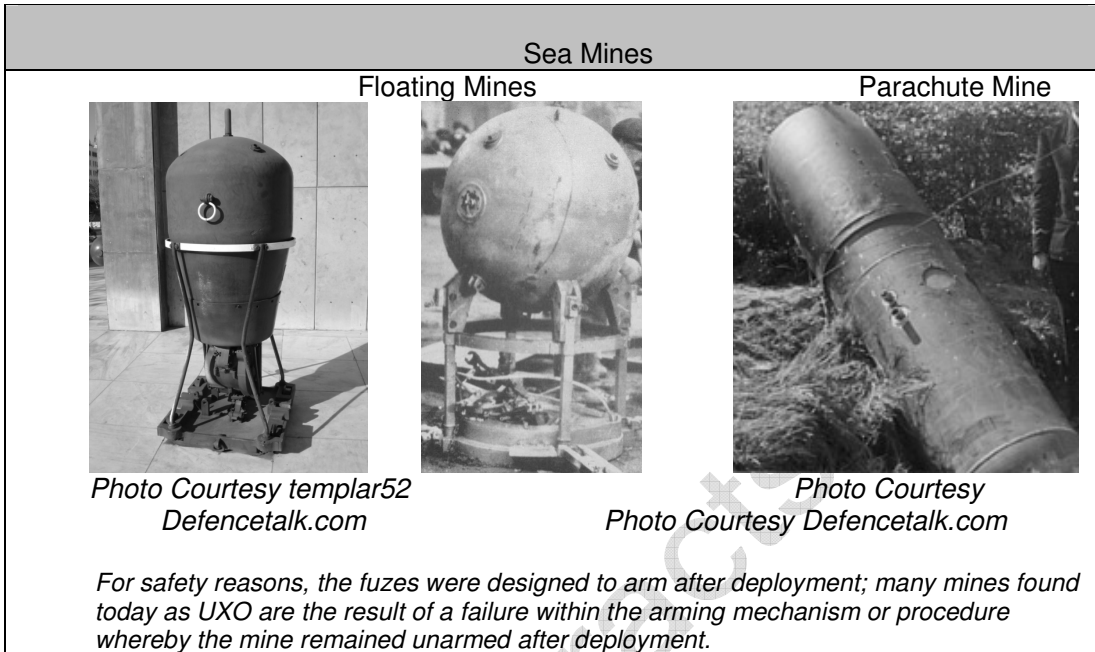
FIGURE 6.4 Incendiary Bombs.



- f. **Anti-Personnel Bomb.** Generally these were small weapons of 1-3 kilograms in weight and are often referred to as 'Bomblets' and possessing similar ground penetration ability as the Incendiary Bomblets. They were often located during the post-raid searches. This type of bomb has been recovered within the bomb rubble being cleared or used as in-fill on construction projects and poses the same potential to function as the Incendiary bomb with a greater potential to cause localised casualties.
52. **Sea Mines.** Mines were deployed from aircraft, surface vessels and 'U' Boats. During 1940 the Germans deployed over 1,000 mines in British waters. There were several types of mine in use; some were the floating contact mines moored to the seabed by a steel wire or allowed to drift with the current. This type of mine needed the vessel to strike the mine for it to detonate. The firing switch employed either a lead horn known as a Hertz Horn, which contained acid in a glass vial; on contact with the target the horn deformed breaking the glass and releasing the acid which then fuelled a battery providing the electrical detonator with current to explode. Other designs used a sensitive explosive compound to cause a flash which fired the detonator. Another type of horn was steel and pivoted at the point where it met the mine body. This type of horn needed to be broken or deflected from its resting position to allow an electrical contact to be made and the detonator to explode. As the technology evolved a second, more advanced design concept was used, these were the Influence mines. Once again they could float and were moored to the seabed or permitted to drift. Others with negative buoyancy lay on the seabed. This type of mine was designed to use the overpressure effect of an explosion in water to break the back of a target vessel, effectively using the targets own weight to sink it. Influence mines were designed to detect the acoustic, electrical or magnetic field generated by a passing ship, and detonated when the vessel was close enough to sustain damage. While British mines were made of steel, some German mine cases were of aluminium. Mines were often fitted with a booby trap known as 'Prevention of Stripping Equipment' (PSE) to prevent tampering with the mine. Buoyant mines could also incorporate a sterilisation system which would sink the mine after a period of time (80 days) and could provide a mechanism whereby mines are now located on or in the seabed. It is impossible to provide a definitive answer to the question of the likelihood of such a mine detecting a vessel today and functioning as designed; but most relied on a battery to power the electrical components including the firing circuit, it is improbable that such batteries would retain sufficient current to run all of the systems today. It must therefore be

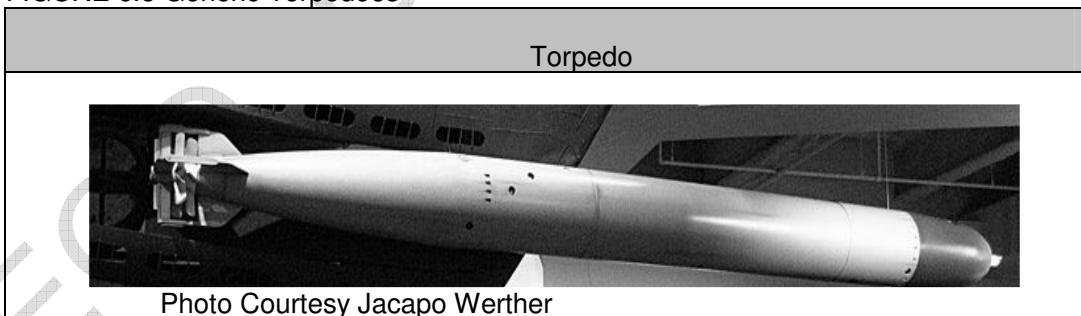
assumed that some mines retain the risk of functioning today. Effective detection of the aluminium cased German mines using a magnetometer alone cannot be assured.

FIGURE 6.4 Generic Sea Mine.



53. **Torpedoes.** These are self-propelled weapons that can be launched from platforms located on land, the air, from the surface of the sea or underwater. They were designed to explode on contact with a target or in proximity to a target. Some were designed to home in on a target using acoustic sensors. These weapons are considered to pose a similar risk as airdropped depth bombs.

FIGURE 6.5 Generic Torpedoes

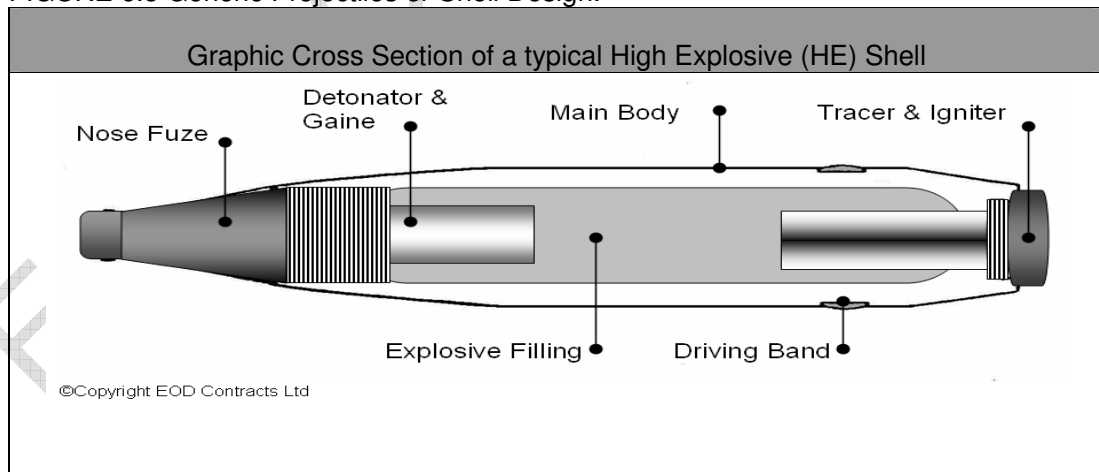


54. **High Explosive Shells & Projectiles.** As mentioned previously, one of the most common sources of UXO contamination encountered in the United Kingdom is High Explosive Shells and Projectiles. This is most commonly found to be as the result of firing practice ranges and Anti-Aircraft Batteries, the latter often positioned to defend major cities and strategic installations from German bombing. Shells and projectiles are generally smaller than the airdropped bombs and as a consequence were more easily missed amongst the bomb rubble. The generic layout of a projectile can be found at Figure 6.5. It should be noted that the fatal incident on the German autobahn

in 2006 was thought to be the result of a shell or projectile detonating, not an airdropped bomb as first reported.

55. **Unmanned Rocket Bombs & Missiles.** The most famous in this category of weapons were the V1 (Fi103 flying bomb) commonly known as the Doodlebug and the Larger V2 (A4 missile). Both V1 & V2 with high explosive warheads containing 850kg & 1000kg (respectively) are some of the largest weapons to land in the United Kingdom. Both types were built in a similar manner to an aircraft and would generally disintegrate on impact even if the warhead failed to detonate. The impact would spread debris over a wide area which was difficult to miss and any resulting unexploded 'V' weapons were comprehensively dealt with at the time. For this reason they are rarely encountered on land. However, where a 'V' weapon landed in water the opportunity for the event to have been missed and/or follow-up action abandoned was greater and they continue to pose a significant risk. Other less well known rocket bombs were also produced by the Luftwaffe to attack maritime targets. Some were equipped with TV/Radio guidance from the parent bomber. Two of the most common were the Fritz X which consisted of an adapted SD1400kg bomb and the Henschel Hs293 which was based on a smaller 500kg bomb. No record of one having been recovered on land as a UXB can be found but these large HE bombs are considered to pose a significant risk, particularly to maritime projects.
56. The Fuzes used in Anti-Aircraft Ammunition were designed to ensure the projectile would detonate in contact with the target, or at a pre-set altitude, or in close proximity to the target. The fuzes employed different means to achieve this, including; direct impact, or indirect impact, Barometric, Delay and Electro-magnetic influence. Some were fitted with more than one fuze, which served to reduce the chance of the projectile falling to earth and detonating. Artillery fuzes are activated during the firing process, using the projectile's acceleration or spin within the gun barrel to switch off the safety mechanisms. For this reason; fired projectiles are considered more dangerous than unfired ones.

FIGURE 6.5 Generic Projectiles or Shell Design.



57. **Other Types of Ordnance.** The following additional sources of ordnance types have been considered, and inherent risks taken account of:

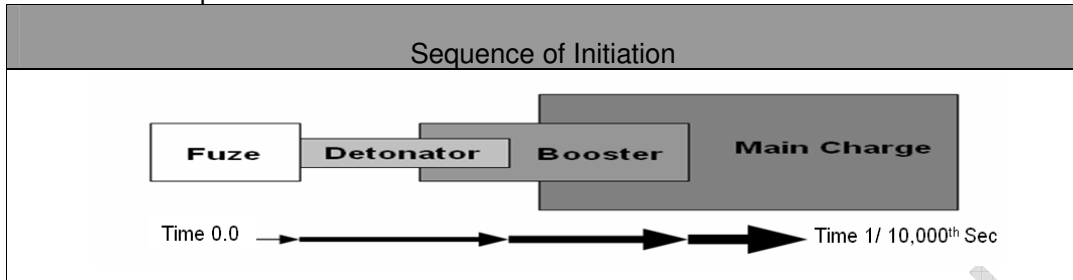
- a. **Flares and Pyrotechnics.** Flares and pyrotechnics were used for a variety of reasons throughout the war and continue to be found today in the most unlikely places. However, due to the thin casings of these weapons a high level of corrosion is likely to have occurred since manufacture. Depending on the specific nature of the weapon, this effectively renders them inert with the exception of any white phosphorous content or explosive gaine.
- b. **Land Service Ammunition.** This type of ammunition includes some shells and projectiles such as those covered previously. Other natures of LSA range from Small Arms Ammunition (SAA), having little or no high explosive content to Grenades, Mortars and Rockets which pose a significant risk of detonation due to their explosive content and the design of their fuzes. Ammunition of this latter type were often fitted with an impact type fuze which; if subjected to sufficient shock or friction may result in the weapon functioning. Figure 6.6 shows a selection of the most common items found in this category.

Figure 6.6 Common Categories of Land Service Ammunition



- 58. **Initiation of Unexploded Ordnance.** Explosive Ordnance is highly unlikely to spontaneously explode. The energetic chemical compounds, (Explosives) used in weapon manufacture are chosen to be as stable as possible and they all require a significant application of additional energy to create the right conditions for detonation to occur. If stored correctly, most explosive materials are designed to remain stable for the duration of their expected lifespan (typically 20 years). During this time, the correct functioning of the weapon is achieved by means of the 'Initiation Train' (See Figure 6.7).

FIGURE 6.7 Explosive Ordnance Initiation Train.



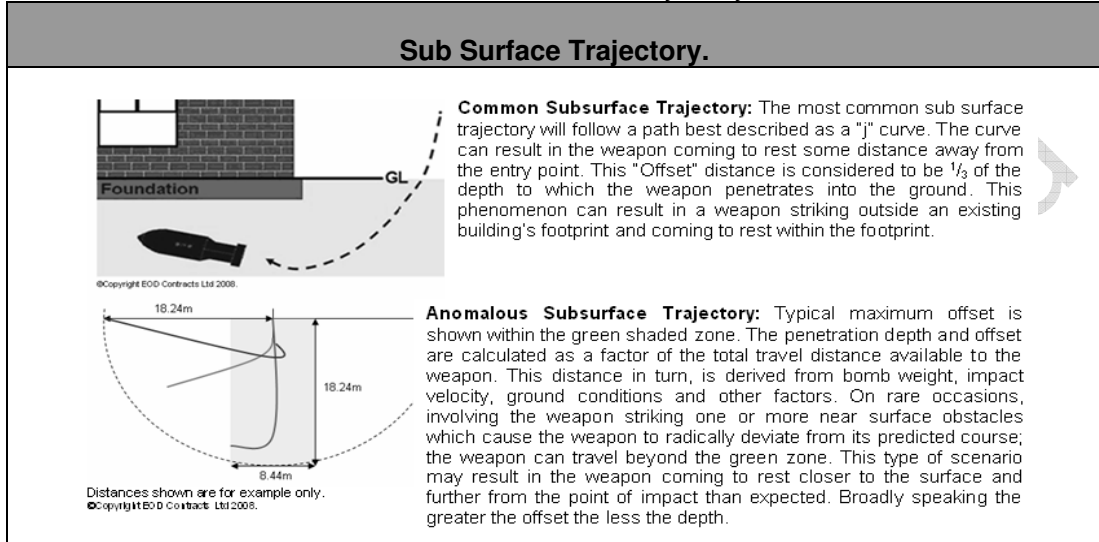
59. **Initiation Train.** This is a means by which, once the safety features have been switched off or removed, a chain reaction occurs through the weapon. Starting within the fusing system as a small ignition or spark, causing a detonator to explode, which in turn causes the booster charge to detonate with a greater energy and ending in the full detonation of the main explosive filling. Each part of the process has in-built safety features to prevent an unintended detonation. A failure in any of the components within the Initiation Train can result in a UXO. In the case of a UXB; the chain reaction has broken down and the Initiation Train is brought to a halt, albeit, a temporary one. There are a number of ways that sufficient energy could be introduced to the otherwise stable UXB / UXO that may allow the Initiation Train to set off once more, overcoming the initial reason for failure. In addition to subjecting the weapon to excessive heat, such as a fire, the most common methods to bring about an explosive detonation in such items are considered to be:
- a. Direct impact onto the main body of the bomb by mechanical excavation or pile driving: Such an occurrence can cause the bomb to detonate, should the point of impact be on the bomb fuse; less force would be required to bring about a full or partial explosive detonation.
 - b. Re-starting the clock timer in the bomb fuse. Only a small percentage of bombs were fitted with clockwork fuses. It is likely that corrosion has taken place within the fuse that may prevent the clockwork mechanism from functioning. However, the restarting of the clock is by no means a scenario that can be completely ruled out. This is considered to be one of the two most credible mechanisms by which sufficient energy could be introduced to the bomb and result in a detonation.
 - c. Induction of a static charge or exposure to an external power source (Electrical Services), causing a current in an electrical fuse. The majority of German bombs employed an electrical component within the fuzes, it is likely that corrosion would have taken place within the fuze mechanism and that it would no longer contain, or conduct sufficient electrical charge to initiate the bomb.
 - d. Friction initiating the sensitive fuse or booster charge explosive. Some chemical constituents may have deteriorated, due to oxidisation. Components designed with a high degree of stability at the time of manufacture may no longer be as safe. **This is considered to be the most likely mechanism by which sufficient energy could be introduced to the bomb and result in a detonation.**
60. **Weapon Sub-surface Penetration.** Weapons penetrate a significant depth into the ground for two main reasons: The first of these was covered in the previous

paragraphs; some bombs and other types of ammunition are designed to permit the weapon time to penetrate deeply into the target before detonating a short time after coming to rest or a considerable number of hours afterwards. The second reason is where the weapon has failed to function as designed becoming a UXB. A number of studies have been carried out into weapon penetration and it is an inevitable consequence of a number of variable factors acting on the bombs trajectory that figures can and do differ significantly. Careful consideration must be given to the weapon's velocity, trajectory and shape. Also surface conditions and subsurface geology. The largest of the common German bombs, that being a 500kg can penetrate to significant depths given favourable conditions for penetration. In the case of projectiles and shells, the potential for deep penetration is significantly less.

61. **Penetration Assumptions.** A number of assumptions were used in determining the maximum threat depth within the project footprint, which were:
 - a. Bomb Size and Design. This was taken to be a German SC 500kg airdropped bomb with no retarding mechanism.
 - b. Angle and Speed of Impact. This was taken to be a vertical 90° impact at a speed of 327m/sec (Typical impact speed for high level bomb release).
 - c. Site Geology. Within the site footprint the geological foundation comprises low grade Norwich Crag topsoil above stiff London Clay. The crag predominantly consists of medium dense and dense sands with thin layers of clay and silt. This extends to a depth of 200 feet (60m) below ground level.
 - d. Data input of the simulated bomb penetration can be seen in 'Bomb Penetration Assessment' Appendix 2, Table 3 The input parameters are derived from the typical German bombing tactics and largest common bomb dimensions and configuration with an impact angle of 80°.
62. **UXO Penetration Figures.** Having reviewed the studies into penetration depth of Land Service Ammunition and performed a baseline computer simulation. (See Appendix 2 Tables 2 & 3) the penetration depth is considered to be 12.0m.
63. **Common Sub-Surface UXB Trajectory.** A bomb rarely follows a straight sub-surface trajectory. Bombs often follow a curved path (known as a 'j' curve see Figure 6.8) eventually coming to rest some distance from the entry point. The horizontal distance of a UXB from the point of entry is known as the "offset". The 'j' curve phenomenon is of particular relevance where the bombs fell in heavily urbanised areas; the bomb could easily enter the ground outside a building but come to rest well within the building's footprint due to the offset distance. Figure 6.8 shows a typical sub-surface weapon trajectory. It was common for the bomb's tail unit to break off during the sub-surface travel and be found at a shallower depth than the main body, serving to indicate the likely presence of a UXO nearby.
64. **Anomalous Sub Surface Trajectory.** On rare occasions a bomb will be deflected up to four times the distance of its eventual depth. This occurs most commonly as a result of low level, shallow attack angle bombing. No record has been found of this tactic having been employed by German Bombers during the Blitz. Alternatively, the bomb may, on extremely rare occasions, be deflected in this manner as a result of striking an obstruction on, or near the surface. This will increase the offset distance possibly up to 1.3 times ($\frac{4}{3}$) the depth. This does however greatly reduce the

penetration depth. It is therefore considered unlikely that this type of event would result in a significant increase in the offset distance. To negate the risk from this type of hazard; a "Safety Buffer Zone" may be applied to any building where this type of event may have occurred.

FIGURE 6.8 Common & Anomalous Sub-Surface Trajectory.



EOD Contracts

CHAPTER 7 – UXO RISK ASSESSMENT

65. **Risk Assessment.** The overall risk for the onshore and offshore areas from unexploded ordnance has been derived by assessing both the likelihood of occurrence and the consequences of the encounter. Shown at Appendix 2. Review of the site's history and geographic location can provide an overall likelihood of encounter factor which is used in the subsequent determination of a risk level when a figure can be determined for the consequence. (See Figure 7.1)

66. **Likelihood of Encounter.** Given the results of the research and other criteria it is considered that there is a Low risk of encountering UXO during project works onshore and a Low -Medium risk for that of offshore. This is based on assessment of all of the available information and taking account of the following factors:

Onshore: Intrusive works

- a. It is a matter of historic record that the area was not directly subjected to enemy attacks. For the most part, the records provide relatively inaccurate locations for single bomb impacts mainly towards the town of Leiston and Sizewell Village some 1000m south of the study site.
- b. Areas around the site have been subjected to extensive post war re-development from the Sizewell Nuclear Power Station. During construction of the power station no records of items of UXO or ordnance related material have been identified. However, this does not negate the possibility of such items being discovered during intrusive site works.

Offshore: Survey works

- c. Surface vessel transiting through the area using an active depth meter.
- d. Surface vessel with a geophysical survey line at least 1.0 metre above the sea bed at all times.
- e. Surface vessel with a geophysical survey line in contact with the sea bed or operating the air gun.

67. **Encounter Factors.** This likelihood of encounter is based on assessment of all of the available information and taking account of the following factors:

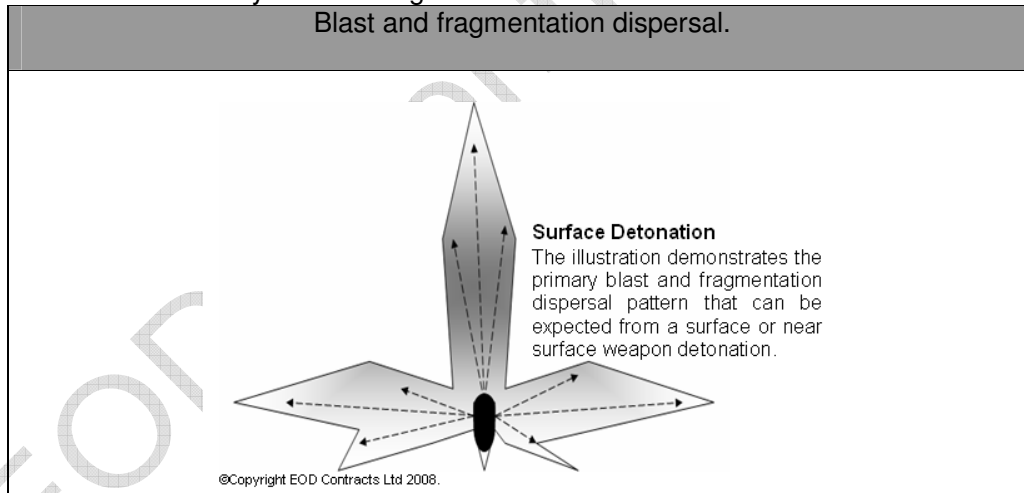
- a. Weapon strikes within the area will have gone unrecorded.
- b. Tidal and other currents will have dispersed or to have migrated items of UXO.
- c. Multiple UXO contamination mechanisms are credible.

68. **Consequence of Encounter.** The consequence (See Appendix 2 Table 14) of an uncontrolled encounter with UXO, given its lethal design and its unpredictable nature could be catastrophic and warrants a severity factor of five (5). With regards to the consequences, the following factors were considered for both onshore and offshore:

- a. The survey methodology will not involve physical contact with the sea bed.

- b. The survey methodology will not make use of high energy emissions
- c. Items of UXO will have been subjected to current and tidal forces over a number of years, imparting some degree of external force to the items.
- d. The project works may make use of a number of common construction techniques in its methodology during the project. Any intrusive groundwork has the potential to encounter UXO.
- e. Intrusive earthwork, and particularly construction piling and dynamic ground compaction are by nature, aggressive, significant force (kN) is often required to achieve the desired results. As a precaution it is prudent to assume that any external stimulus, no matter how slight, may result in an unstable weapon detonating.
- f. It is considered that during the post war development of the site, greater disruption would have occurred to the near surface material than the deeper sub-strata. This situation is considered to have afforded a greater likelihood that near surface items of UXO would have been encountered especially during the car park construction. The effects of a detonation at depth will be more localised and less destructive than one occurring on or near the surface. Figure 7.1 shows an illustration of the primary blast and fragmentation dispersal from explosive ordnance when it detonates on the surface. As a guide Appendix 2 Table 13 gives an indication of the likely blast radius for common types of UXO.

FIGURE 7.1 Primary Blast & Fragmentation



- g. The size and effects of a blast will be determined by the weapon's design, and other key factors such as the ratio of explosive charge weight to total weapon weight (CWR) and the Net Explosive Quantity (NEQ). The effects will also be enhanced or reduced by a number of factors including, the presence of other energetic materials in close proximity to the blast or if the weapon is buried or exposed on the surface.
- h. In addition to the dangers of explosion, many common chemicals used in the manufacture of explosive ordnance fillings are; in sufficient quantity, and level of exposure, toxic or poisonous. Although it is unlikely that such chemicals would

be encountered in significant quantity to represent a significant risk to site personnel. The possibility of UXO breaking up on impact; thereby contaminating the ground in its immediate vicinity is extremely unlikely. It is emphasised that any suspicious material found on site should be accurately identified, effectively risk assessed and dealt with in an appropriate manner. A list of contaminants can be found at Appendix 2 Table 15. It should not be taken to imply that all or any of the chemicals listed are confirmed to be present on site.

69. **Risk Level.** Having identified sufficient records and given full consideration to the nature of the site; it is considered that sufficient information is available to permit an accurate risk level to be determined for the on-shore component. Information pertaining to the offshore component is considered to be of limited value due to the tidal influence acting on potential items of UXO contamination resulting in migration. It was found that the most appropriate method to employ in the execution of the study was a “holistic” approach with due consideration given to the relevant factors. Account has been taken of the anticipated scope and methodology of the project works including maritime survey. The study has found that the possibility of an encounter with UXO is unlikely on land with a greater likelihood offshore. All of the known or anticipated prevailing factors were given due consideration when applied to likelihood verses consequence scenario. It is acknowledged that the possible consequence of such an encounter could be catastrophic. As a consequence the study has identified a Low UXO risk for the onshore area and Low to Medium for the offshore area, as applied to the following operations:
- a. Surface vessel transiting through the area using an active depth meter. The risk to this operation is LOW.
 - b. Surface vessel with a geophysical survey line at least 1.0 metre above the sea bed at all times. The risk to this operation is LOW.
 - c. Surface vessel with a geophysical survey line in contact with the sea bed or operating the Air gun. The risk to this operation is MEDIUM.
70. **Risk Mitigation.** Given the levels of risk of an encounter with UXO which could result in an explosion or detonation. EOD Contracts Ltd considers that the risk mitigation is warranted to further reduce the level of risk to personnel from UXO.
71. **Post Mitigation Risk Levels.** It is statistically impossible to reduce a risk to zero, the implementation of the recommended UXO risk mitigation measures covered in the previous paragraph would reduce the risk of a catastrophic encounter with UXO to a level that is as low as is reasonably practical to achieve.
72. **Recommendations.** It is recommended that the following risk mitigation strategy is executed for the onshore and offshore areas are considered to be:

Onshore and Offshore Mitigation:

- a. Essential: Communicating the risks; all stakeholders should be made aware of the UXO situation on the site and the possible impact it may have on the project works.
- b. Essential: Further Planning; the risks posed by UXO should be brought to the attention of the Project CDM Coordinator and other individuals with a

responsibility for project safety and operations. The matter of UXO should be considered critical to project safety and one requiring high priority action.

- c. **Essential:** Safety Training; UXO safety awareness training should be given at all levels of site personnel and selected individuals on the project staff with relevant responsibilities. The training should be provided by a UK Home Office Authorised EOD/UXO Disposal Contractor using a qualified Explosive Ordnance Disposal Engineer to deliver a workshop for senior personnel and as a UXO component to the project safety induction course for contractors. It should be reinforced with specific safety briefings and tool box talks to individuals involved in conducting work at risk from UXO. The training should cover the following topics to a level commensurate with the audience's responsibilities and duties:
- i. Project overview and the responsibilities of those working on site with regard to duty of care and public safety.
 - ii. UXO recognition and safety procedures to be followed on discovery of a suspicious object or the alarm being sounded.
 - iii. Emergency procedures to be followed in the event of an explosion.
 - iv. Evacuation routes, muster stations and accounting for personnel.
 - v. Work permits, works methodology and risk assessment.
 - vi. Specific UXO risk mitigation methods.
 - vii. Post incident inspections and returning to normal works.

Onshore Component Mitigation:

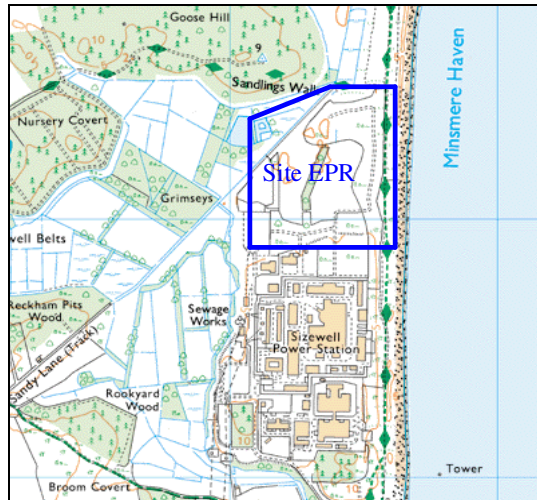
- d. **Prudent:** Given the proximity of the on-shore component to a high value asset such as the Power Station, a Non-intrusive UXO survey and investigation of the area to be developed to locate and risk assess any ferrous objects located within the footprint.

Offshore Component mitigation:

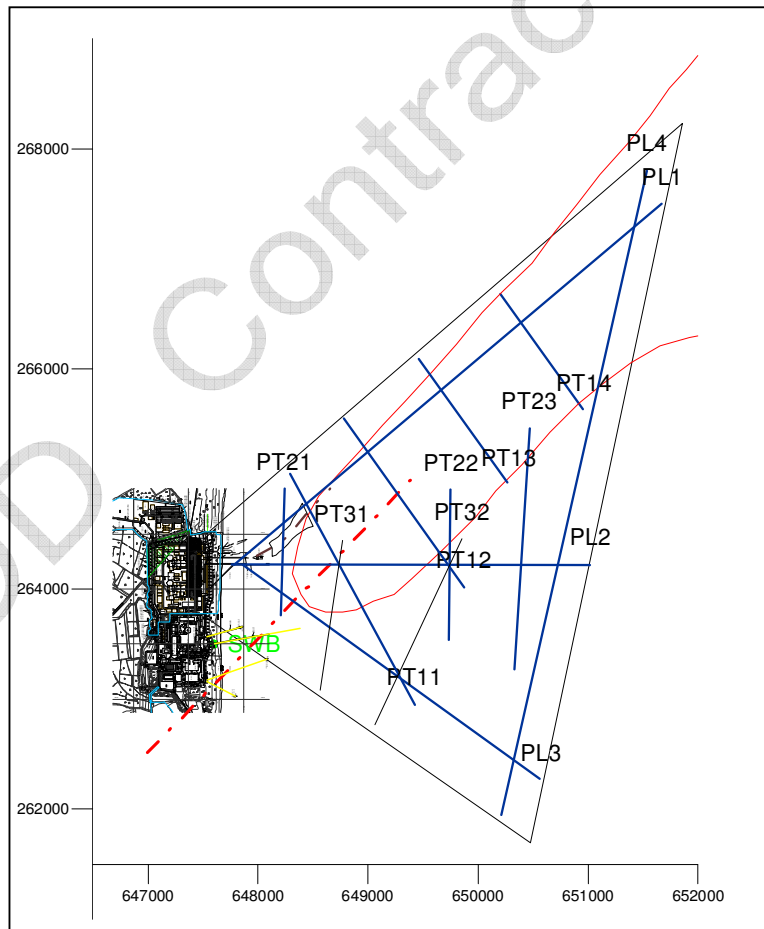
- e. **Essential:** The first phase of the mitigation is to conduct a UXO Safety Survey. We recommend that any object detected during the UXO survey that provides a signature of 20kg/l mass/volume should be considered a potentially lethal item of UXO. The UXO survey should be carried out using two complimentary technologies used simultaneously in a single pass:
- i. Passive Magnetometers from a surface vessel to identify possible ferrous items of UXO within the survey footprint. It is noted that this technology will not detect non ferrous items of UXO.
 - ii. We recommend that the UXO survey is conducted over the whole survey area footprint. But if this is not possible, the minimum requirement is to conduct the UXO survey in the following areas:

- iii. All areas within the footprint where any part of the passive survey equipment, (including geophysical lines) will be in contact with the sea bed including a 5.0 metre safety zone either side of the geophysical line centreline.
 - iv. All lanes or areas in which the Air gun will be fired including a suitable safety zone.
 - f. **Essential!** The second phase of mitigation is to use a risk avoidance technique. Using the information gathered during the UXO survey and Side Scanning Sonar to identify non ferrous objects on the sea bed; safe areas / lanes will be identified in which to conduct the geophysical survey which will use side scan sonar (in areas not scanned as part of the UXO survey), swath bathymetry and boomer seismic survey prior to an air gun and cable seismic refraction survey. All of the geophysical survey processes should be carried out avoiding all suspect UXO targets by as much distance as possible to ensure no part of the survey equipment comes into contact with a suspect object. It is critical that the airgun is only fired in areas well away from any suspect item. The safety distance requirements for any suspect item should be determined by a qualified EOD Engineer.
 - g. If it is impossible to avoid all of the suspect items of UXO, the objects should be investigated and risk assessed before any aspect of the geophysical survey is conducted. Our preferred method of underwater investigation is to employ a Remote Operated Vehicle (ROV) operated by a qualified ROV/EOD Clearance Engineer. Alternatively, as a least preferred method; manned investigations can be undertaken by a suitable qualified and experienced underwater Clearance Diving Team.
73. **Closing Remarks.** EOD Contracts Ltd concludes that the risk of encountering UXO is greater off-shore than onshore and that such an encounter could result in catastrophic consequences. The risks can be effectively mitigated by employing recognised risk mitigation measures as contained within this study's recommendations.

Onshore Component



Offshore Component

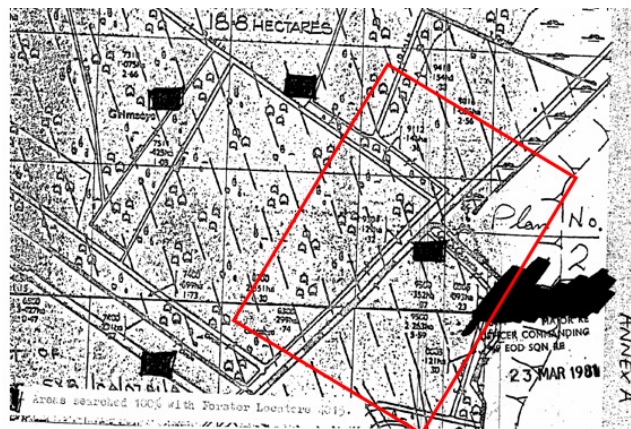


MoD Minefield Clearance Map

CLEARANCE NOTES.	MINEFIELDS		MAP REFERENCE	1" TO 1 MILE SHEET (B7) ANNEX B	11
	MINES	REF NO.			
EAR (17-5-45) April 45	1033 A	54/50		N.I.L. EC 624 EC 506 EC 644 709 710 711 712 713 E.C. No 714	
AR (17-5-45) April 45	Not known?	54/51			
AR (17-5-45) April 45	Not known?	54/52			
AR (5-7-45) Mar/May 45	Not known?	54/53			
AR (17-5-45) April 45	Not known?	54/54			
AR (6-2-45) 6 Jan 45	Not known?	54/55			
AR (19-1-45)	Not known?	54/56			
AR (5-2-45) Jan 45	Not known?	54/57			
AR (20-6-45) (IND) Feb 45	851 A	54/58			
AR (12-6-46)					
AR (14-4-45) Feb 45	75 B	54/59			
AR (19-1-45) Jan 45	153 A	54/60			
AR (19-1-45) Jan 45	148 A	54/61			
AR (13-1-45) Feb 45	334 B	54/62			
AR 20-8-46 June 46	270 B	54/63			
AR 20-8-46 March 45	32 B	54/64			
AR 20-8-46 March 45	28 B	54/65			
AR 20-8-46 June 46	15 B	54/66			
AR 20-8-46 June 46	142 B	54/67			
AR 20-8-46 Nov-Dec 44	56 B	54/68			
AR 20-8-46 Aug 46	59 B	54/69			

Reference: B7 Annex B

Notes indicate that two minefields on the beach at Sizewell were cleared in February 1945 and that the two inland minefields were cleared the month previously in the same year.



Reference composite Plan 2 Annex A dated 23 March 1981

Position of on-land component shown in red, black squares indicate previous UXO clearance conducted in 1981.

Risk Assessment Tables

Table 1 Summary of Potential Contamination Sources.

Summary of Potential Contamination Sources		
Source	Applicable	Not Applicable
Enemy Attack & Counter Measures		
Bombing WW1	<input checked="" type="checkbox"/>	
Bombing WW2		<input checked="" type="checkbox"/>
V1 & V2 Rockets	<input checked="" type="checkbox"/>	
Shelling or Bombardment	<input checked="" type="checkbox"/>	
Anti-Shipping Mines & Depth Charges	<input checked="" type="checkbox"/>	
Anti-Aircraft Shells & Rockets		<input checked="" type="checkbox"/>
Beach Mines & Coastal Defences.	<input checked="" type="checkbox"/>	
Airfield/Key Point Defensive Mines/Charges	<input checked="" type="checkbox"/>	
Abandoned Unexploded Bomb (A/UXB)		<input checked="" type="checkbox"/>
Migration of UXO		
UXO Migration in Rubble & Infill	<input checked="" type="checkbox"/>	
UXO Migration by Tide & River Current	<input checked="" type="checkbox"/>	
UXO Migration by Marine Dredging	<input checked="" type="checkbox"/>	
Ship Wrecks	<input checked="" type="checkbox"/>	
Dispersal by Explosion, Fire & Accident.		<input checked="" type="checkbox"/>
Aeroplane Crash		<input checked="" type="checkbox"/>
Private Collections		<input checked="" type="checkbox"/>
MOD Facilities		
Bombing Range		<input checked="" type="checkbox"/>
Artillery, Mortar & Tank Range		<input checked="" type="checkbox"/>
Grenade Range		<input checked="" type="checkbox"/>
Small Arms Firing Range		<input checked="" type="checkbox"/>
Weapon Research & Development Facilities.		<input checked="" type="checkbox"/>
Ammunition Burial Grounds		<input checked="" type="checkbox"/>
Offshore Ammunition Dumping Grounds		<input checked="" type="checkbox"/>
Ammunition Storage & Manufacture Sites		<input checked="" type="checkbox"/>
Airfields & Air Stations		<input checked="" type="checkbox"/>
Bombing Decoy Site		<input checked="" type="checkbox"/>
Army Barracks & Camps		<input checked="" type="checkbox"/>
MOD Training / Concentration Areas		<input checked="" type="checkbox"/>
Home Guard & SOE Weapon Caches		<input checked="" type="checkbox"/>

Table 2 Baseline Bomb Penetration Assessment

Bomb Weight	Average Depth (m)	Maximum Depth (m)	Average Offset (m)
50 kg	3.7	9.0	1.2
250 kg	6.0	15.7	1.5
500 kg	9.1	19.6	6.5
1000 kg	10.7	24.8	3.7

Figures derived from London County Council census information gathered during bomb recovery operations.

Table 3 Site Specific Bomb Penetration Assessment

Input Figures			
Weight / Calibre	Release Height	Velocity on Impact	Angle of Strike
Bomb Shell 500 kg 105mm	5000 m	340 m.s ⁻¹	10° to vertical
Geology	Low grade Norwich Crag topsoil above stiff London Clay		
Output Figures			
Maximum Penetration Depth		Maximum Offset	
11.47 m		3.36m	
The maximum threat depth from airdropped weapons is considered to be:		Bombs	12.0m
The maximum threat depth for smaller shells is considered to be:		AA Shells	4.0m
Input figures based on the most common bombing methods and largest common bomb type Figures derived from computer simulation. All depths based on 1940 levels.			

Table 4 Airdropped Weapon Strike Indicators (UK)

Item	Increasing Potential level ⇨			
Site Location	Rural	Small Town	Brown Field Large Towns	Cities
Site Description and Use	Greenfield or Agricultural Land	Near Strategic Target	Adjacent to Strategic Target	Strategic Target
Site History	No history of Attack	Near area of Attack	Immediate Area Attacked	Direct Attack
Strategic Target: Military Installation, Industrial or Munitions Manufacturer, Power Station, Gas or Water Works, Port, Dock, Railway Yard, Decoy Site.				

Table 5 Weapon Strike Records (UK)

Source	Availability			
National Archive	None	Non specific	Specific	Extensive
Local Archive	None	Non specific	Specific	Extensive
MOD	None	Non specific	Specific	Extensive
In-house	None	Non specific	Specific	Extensive
Anecdotal	None	Non specific	Specific	

Table 6 Anti-Aircraft Weapon Strike Indicators (UK)

Item	Increasing Potential level ⇨			
Site Location	Rural	Town	City	Military Site
Fixed Battery Location	None	General Area	Nearby	Onsite
Mobile Battery	Rural	Town	City	Military Site

Military Site: Airfield, Port, Radar, Barracks, Depots, Arsenal or Similar.

Table 7 Abandoned Bomb Records (UK)

Item	Increasing Potential level ⇨			
MOD	None	Yes	On-site	
In-house	None	Yes	On-site	Suffolk Archive
Other	None	Yes	On-site	

Table 8 Potential UXB Density Assessment

Item	Strikes Within 100ht	Size of Site (ht)	Estimated Failure Rate	*Potential UXO Present
	(a)	(b)	(c)	(d)
Bombs & Mines	Indeterminate due to unknown number of bombs and incendiary bomb strikes on the site area			

Table 9 Opportunity to have detected Bomb or Shell Strikes (UK)

	Increasing Potential level ⇨
Nature of post contamination development	100% excavations of the entire site to below contamination depth. No bomb damage Good ARP cover Significant development No significant ground cover
	Light bomb damage Moderate ARP cover Moderate development Frequent public access Little ground cover
	Moderate bomb damage Poor ARP cover Minimal development limited to shallow excavations Infrequent public access Moderate ground cover.
	Heavy bomb damage No ARP cover Development limited to site clearance Controlled private access Heavy ground cover, vegetation, ploughing or body of water.

Table 10 Bombardment Weapon Strike Indicators (UK)

Item	Increasing Potential level ⇨			
Site Location	Inland	Rural Coast	Coastal Port	Coastal Military Facility
Site History	No Attack	General Area	Nearby	Onsite
Level of Damage	Nil	Limited	Extensive	Near Total

Military Site: Airfield, Port, Radar, Barracks, Depots, Arsenal or Similar.

Table 11 Post Contamination Development Indicators (UK)

	Increasing Potential level ⇨
Nature of post contamination development	100% excavations of the entire site to below contamination depth.
	Significant development
	Moderate development
	Minimal development
	No development

Table 12 Construction Activities Encounter Indicators

	Increasing Potential level ⇨
Activities	Borehole Drilling
	Dynamic Sampling
	Marine Survey non contact
	Shallow Trial Pit
	Services Trenching
	Bored (CFA) Piling
	Sheet Piling
	Marine Survey bottom contact
	Shallow Excavations over extended area
	Deep Excavations over a limited area
High Density Piles	
Deep Excavations over extended area	
Bulk Excavations	

Table 13 Blast Effects on Land.

Blast Effect Distances.			
	Ordnance Types	Estimated Blast Radius (m)	
		Surface	Buried
Air Dropped Weapons (ADW) & Anti-Aircraft Shells	2000 kg HE Bomb	1800	500
	1000 kg HE Bomb	1400	300
	500 kg HE Bomb	1300	200
	250 kg HE Bomb	1100	185
	50 kg HE Bomb	900	100
	2 kg HE Bomblet	200	40
	Incendiary Bombs	200	40
	Anti Aircraft Projectiles	200	20

Table 14 Consequences of an Encounter.

Description	Code	Definition
Fatality Vessel Lost	5	Immediate or subsequent death due to injuries sustained or through drowning. Vessel sunk due to catastrophic failure of the hull integrity.
Severe Injury Extensive Damage	4	Fracture of major bone or skull. Amputation of Limb. Loss of eye and / or sight. Unconsciousness requiring resuscitation. Any illness or injury requiring medical treatment and/or 12 months work absence. Extensive damage to the vessel including in the loss of all essential systems and hull integrity resulting in abandonment.
Major Injury Major Damage	3	Fracture of joint. Unconsciousness. Extensive or deep burn. Amputation of hand or foot. Any illness or injury requiring medical treatment and/or 1-12 months work absence. Major damage to the vessel on-board systems and hull integrity requiring emergency assistance. Loss of all towed equipment.
Serious Injury Serious Damage	2	Severe cuts, scratches abrasions and lacerations. Severe bruising, sprains and strains. Minor burns Dislocation or fracture of digits. Minor head injury including temporary loss of hearing or sight. Any illness or injury requiring medical treatment and/or 3 days to 1 month work absence. Damage sustained to the ships on-board systems requiring vessel to return to port for urgent repairs. Loss or serious damage to towed equipment.
Minor Injury Minor Damage	1	Minor muscle or eye strain. Prolonged discomfort or minor ill health. Any illness or injury resulting in up to 3 days work absence. Minor damage to the vessel requiring non-urgent repairs. Damage sustained to towed equipment.

Table 15 Chemicals associated with Explosive Ordnance. Part 1 of 2

Contaminants arising from Explosive Ordnance (Not Exhaustive)	
Acetylides of heavy metals.	Hexolites.
Aluminum containing polymeric propellant.	HMX [cyclo-1,3,5,7-tetramethylene-2,4,6,8-tetranitramine; Octogen].
Aluminum ophorite.	Hydrazinium nitrate/hydrazine/aluminum explosive system.
Amatex.	Hydrazoic acid.
Amatol.	KDNBF [potassium dinitrobenzo-furoxane].
Ammonal.	Lead azide.
Ammonium nitrate	Lead mannite.
Aromatic nitro-compound	Lead mononitroresorcinate.
Ammonium perchlorate	Lead picrate.
Ammonium picrate	Lead salts, explosive.
Ammonium salt lattice with inorganic salts.	Lead styphnate [styphnate of lead, lead trinitroresorcinate].
Baratol.	Liquid nitrated polyol and trimethylolmethane.
Baronol.	Magnesium ophorite explosives.
BEAF 2, 2-difluoro-2-nitroacetoxyethane)	Mannitol hexanitrate.
Black Powder Nitro-carbo-nitrates	MDNP [methyl 4,4-dinitropentanoate].
BTNEC [bis (trinitroethyl) carbonate].	MEAN [monoethanolamine nitrate].
BTNEN [bis (trinitroethyl) nitramine].	Mercuric fulminate.
BTTN [1,2,4 butanetriol trinitrate].	Mercury oxalate.
Butyl tetryl.	Mercury tartrate.
Calcium nitrate	Metriol trinitrate.
Cellulose hexanitrate	Minol-2 [40% TNT, 40% ammonium nitrate, 20% aluminum].
Chlorate	MMAN [monoethylamine nitrate]; methylamine nitrate.
Copper acetylide.	Mononitrotoluene-nitroglycerin mixture.
Cyanuric triazide.	Monopropellants
Cyclotrimethylenetrinitramine [RDX].	NIBTN [nitroisobutametrial trinitrate].
Cyclotetramethylenetetranitramine [HMX].	Nitrate sensitized with gelled nitroparaffin.
DATB [diaminotrinitrobenzene].	Nitrated carbohydrate explosive.
DDNP [diazodinitrophenol].	Nitrated glucoside explosive.
DEGDN [diethyleneglycol dinitrate].	Nitrated polyhydric alcohol explosives.
Dimethylol dimethyl methane dinitrate composition.	Nitrates of soda explosive mixtures.
Dinitroethyleneurea.	Nitric acid and a nitro aromatic compound explosive.
Dinitroglycerine [glycerol dinitrate].	Nitric acid and carboxylic fuel explosive.
Dinitrophenol.	Nitric acid explosive mixtures.
Dinitrophenolates.	Nitro aromatic explosive mixtures.
Dinitrophenyl hydrazine.	Nitro compounds of furane explosive mixtures.
Dinitroresorcinol.	Nitrocellulose explosive.
Dinitrotoluene-sodium nitrate	Nitroderivative of urea explosive mixture.
Dipicryl sulfone.	Nitrogelatin explosive.
Dipicrylamine.	Nitrogen trichloride.
DNBP [dinitropentano nitrile].	Nitrogen tri-iodide.
DNPA [2,2-dinitropropyl acrylate].	Nitroglycerine [NG, RNG, nitro, glyceryl trinitrate, trinitroglycerine].
EDDN [ethylene diamine dinitrate].	Nitroglycide.
EDNP [ethyl 4,4-dinitropentanoate].	Nitroglycol (ethylene glycol dinitrate, EGDN)
Erythritol tetranitrate explosives.	Nitroguanidine explosives.
Esters of nitro-substituted alcohols.	Nitroparaffins Explosive Grade and ammonium nitrate mixtures.
EGDN [ethylene glycol dinitrate].	Nitronium perchlorate propellant mixtures.
Ethyl-tetryl.	Nitrostarch.
Explosive conitrates.	Nitro-substituted carboxylic acids.
Oxygen releasing inorganic salts and hydrocarbons.	Nitrourea.
Oxygen releasing inorganic salts and nitro bodies.	Octogen [HMX].
Oxygen releasing inorganic salts and water insoluble fuels.	Octol [75 percent HMX, 25 percent TNT].
Oxygen releasing inorganic salts and water soluble fuels.	Organic amine nitrates.
Explosive mixtures containing sensitized nitromethane.	Organic nitramines.
Explosive mixtures containing tetranitromethane (nitroform).	Penthrinite composition.
Explosive nitro compounds of aromatic hydrocarbons.	Pentolite.
Explosive organic nitrate mixtures.	Perchlorate explosive mixtures.
Fulminate of mercury.	Peroxide based explosive mixtures.
Fulminate of silver.	PETN [nitropentaerythrite, pentaerythrite tetranitrate, pentaerythritol tetranitrate].
Fulminating gold.	Picramic acid and its salts.
Fulminating mercury.	Picramide.
Fulminating platinum.	Picrate of potassium explosive mixtures.
Fulminating silver.	Picratol.
Gelatinized nitrocellulose.	Picric acid (manufactured as an explosive).
Gem-dinitro aliphatic explosive mixtures.	Picryl chloride.
Guanyl nitrosamino guanyl tetrazene.	Picryl fluoride.
Guanyl nitrosamino guanylidene hydrazine.	PLX [95% nitromethane, 5% ethylenediamine].
Heavy metal azides.	
Hexanite.	
Hexanitrodiphenylamine.	
Hexanitrostilbene.	

Table 15 Chemicals associated with Explosive Ordnance. Part 2 of 2

Contaminants arising from Explosive Ordnance (Not Exhaustive)	
Continued from Part 1 Conventional Weapon Contaminants	Chemical Weapon Contaminants
PLX [95% nitromethane, 5% ethylenediamine].	Acrolein.
Polynitro aliphatic compounds.	Allylisothiocyanate.
Polyolpolynitrate-nitrocellulose explosive gels.	Arsenic trichloride.
Potassium chlorate and lead sulfocyanate explosive.	Arsine.
Potassium nitrate explosive mixtures.	Bromacetone
Potassium nitroaminotetrazole.	Bromacetic ether. Bromethylmethylketone.
PYX (2,6-bis(picrylamino)-3,5-dinitropyridine	Bromide of benzyl or xyly
RDX [cyclonite, hexogen, T4, cyclo-1,3,5,-trimethylene-2,4,6,-	Bromine
trinitramine; hexahydro-1,3,5-trinitro-S-triazine].	Carbonyl chloride (phosgene).
Salts of organic amino sulfonic acid explosive mixture.	Chloracetone
Silver acetylde.	Chlorine
Silver azide.	Chloropicrin.
Silver fulminate.	Cyanogen.
Silver oxalate.	Cyanogen chloride.
Silver styphnate.	cyclohexyl methylphosphonofluoridate
Silver tartrate	Dichlorethylsulphide (mustard gas)
Silver tetrazene.	Dichlormethylether
Sodatol.	Dimethylsulphate.
Sodium amatol.	Diphenylchlorarsine
Sodium azide explosive mixture.	Diphenylfluorarsine.
Sodium dinitro-ortho-cresolate.	Ethylidichlorarsine.
Sodium nitrate-potassium nitrate explosive mixture.	Formaldehyde.
Sodium picramate.	Hydrocyanic acid.
Styphnic acid	Hydrosulphuric acid.
Tacot [tetranitro-2,3,5,6-dibenzo-1,3a,4,6atetrazapentalene].	Hydrogen cyanide
TATB [triaminotrinitrobenzene].	Iodacetic ether.
TEGDN [triethylene glycol dinitrate].	Iodacetone.
Tetrazene [tetracene, tetrazine, l(5-tetrazolyl)-4-guanyl	Methyldichloroarsine
tetrazene hydrate].	Methylchlorsulphonic acid.
Tetranitrocarbazole.	Monochlormethylchloroformate (palite).
Tetryl [2,4,6 tetranitro-N-methylaniline].	Nitrogen peroxide.
TMETN (trimethyloethane trinitrate).	O-Pinacolyl methylphosphonofluoridate
TNEF [trinitroethyl formal].	Phenyldichloroarsine
TNEOC [trinitroethyl orthocarbonate].	Phenylcarbylamine chloride.
TNEOF [trinitroethyl orthoformate].	Phosphine.
TNT [trinitrotoluene, trotyl, trilit, triton]	Phosphorus trichloride.
Trimethylol ethyl methane trinitrate composition.	Sarin or GB
Trimethylolthane trinitrate-nitrocellulose.	Sulphur dioxide.
Trimonite.	Sulphur trioxides.
Trinitroanisole.	Tabun or GA
Trinitrobenzene	Trichlormethylchloroformate (diphosgene or superpalite).
Trinitrobenzoic acid	Biological Weapon Contaminants
Trinitrocresol	Bacillus globigii
Trinitro-meta-cresol	Botulinus toxin
Trinitronaphthalene	Sclerotium rolfsii
Trinitrophenetol	Helminthosporium oryzae
Trinitrophenol	Microcystins
Trinitrophenol	Vibrio cholerae
Trinitroresorcinol	Pyricularia oryzae
Tritonal	Burkholderia mallei
Urea nitrate	Yersinia pestis
Xanthomonas hydrophilic colloid	Phytophthora infestans
	Bacillus anthracis
	Coccidiodes immitis
	Newcastle disease virus
	Coxiella burnetii
	Staphylococcal enterotoxin B
	Rickettsiae
	Chlamydia psittaci
	Serratia marcescens
	Saxitoxin
	Tetrodotoxin
	Francisella tularensis
	Brucella melitensis
	Anatoxin-A
	Ricin
	Botulinus toxin Shigella dysenteriae Rickettsia prowazecki

Ministry of Defence Report Extract

HISTORICAL BACKGROUND BRIEF

EOC Task No. --
 Archive File No. --
 Location: Sizewell, Leiston, Suffolk



Excepting London, searches are usually undertaken without access to street mapping (1:50,000 OS maps only available; no Internet access). To ensure coverage of the site of interest, the search might, therefore, cover the whole of the town in which the site is located.

History & Location:

1:50,000 OS Landranger Series Sheet No. 156 GR: between 47000/47500 – 63750/64500

Explosive Ordnance Clearance (EOC) Tasks:

File 72/Suffolk/1 Dunwich forest (Sizewell Belts) Nr Leiston, Suffolk.

Clearance certificate: Name of place cleared: Kenton & Goose Hills, Leiston, Suffolk. Location: 1 ½ miles N.E of Leiston Village. Approximate area: 23 acres. Date work completed: 12.02.59 (work commenced 17.12.58) Nature of UXBs Destroyed: 5x 3" Mor HE, 2x 2" Mor Smoke, 1x 2" Mor HE, 1x 2" Flare.

Clearance certificate: Name of place cleared: Dunwich Forest. Location: 1 ½ miles N.E of Leiston Village. Approximate area: 22 acres. Date work completed: 12.02.59 (work commenced 17.12.58) Nature of UXBs Destroyed: 5x 3" Mor HE, 2x 2" Mor Smoke, 1x 2" Mor HE, 1x 2" Flare. Drainage ditches and all areas permanently under water have not been searched. They should not necessarily be considered clear of unexploded missiles. Date: 20.03.59.

Completion report: Location: Sizewell Belts, Leiston. Map: 156. GR: 465640. Date commenced: 11.03.81. Date completed: 11.03.81. Result of work: 100% search Forster Locators 4015. No finds.

Certificate of clearance: Location: Contractors working area 'B', Sizewell belts, Nr Leiston. Map 156. GR: 465640. Date of search: 11.03.81. 1) The site in respect of which this certificate is shown coloured: RED on the plan attached hereto. 3) It is known that explosives have been used /or stored on the areas marked RED. 3a) An instrument search has been carried out. 5) No explosives or other dangerous substances have been recovered. 6d) There is no known hazard within the cartilage of the site, which would constitute a danger to life or limb. Other comments: As shown on the attached plan eight areas each 20m by 20m were searched with Forster Locators 4015 to enable the electricity board drill test boreholes. Dated: 23.03.81. (see attached map annex A)

Completion report: Location: Sizewell 'B' Belts, Nr Leiston, Suffolk. Map: 156 GR: 471643. Date commenced: 03.02.82. Date completed: 04.03.82. Summary of work: 2 & 3 Sections of 1 troop, 49 EOD Sqn, carried out scrub clearance and area clearance to 100% Forster Locator 4015 standard barring the pond central of area 2 (see trace of task), also drainage dykes. Finds as detailed in Daily Diary sheets for the task include Ordnance such as:

C:\Documents and Settings\ADMIN\Mv Documents\Sarah C Documents\Sizewell Leiston.doc

FOR SHOCK OR (LIVE) AT.

Result of work: 14 Hectares cleared to 100%. 4015 standard as detailed above.

Clearance certificate: Location: Proposed access road and related areas - Sizewell 'B' Power Station, Nr Leiston. Map ref: 156 GR: 471645. Date of search: 03.02.82 – 4.03.82. The site in respect of which this certificate is shown coloured RED on the plan attached hereto. 3) It is known explosives have been used /or stored on the site /areas marked RED. 3a) An instrument search has been carried out. 5) The following explosives or other dangerous substances have been recovered. They have been removed /or destroyed in accordance with current regulations. (See annex C attached). 6d) There is no known hazard within the cartilage of the site, which would constitute a danger to life or limb. Dated: 16.03.82. (See attached map annex D).

Abandoned Bombs:

There are no records of abandoned bombs at this location.

Bomb Disposal Officer (BDO) Tasks:

There are no records of significant tasks at, or near, this location

Civil Defence Records of Unexploded Bombs (UXBs) dealt with in London 1940-45:

(It is known that these records are incomplete, some having been destroyed by enemy action during WWII.)

N/a.

WWII anti-invasion defences: Minefields

Alphabetical List Clearance Certificates.

Cert Issue date: 05.01.46 Serial No: 54/55 Folio: 279 Type No: 1 Location: Sizewell

Cert Issue date: 25.06.46 Serial No: 54/58 Folio: 17 Type No: 2a Location: Sizewell

Minefield Index.

District: Suffolk Gen No: 122 Area Covered: Leiston Cum Sizewell

District: Suffolk Gen No: 123 Area Covered: Leiston Cum Sizewell

District: Suffolk Gen No: 124 Area Covered: Sizewell Cliff

Coastal Minefields Register – See enclosed document (annex B)

Nearby:

Register of miscellaneous missiles

Date: 14.05.59 Location: Dunwich Map ref: 137/463648 Type: 2" Mortar bomb Action: One 2" Mortar Bomb destroyed. Date: 13.05.59.

Land & mine Disposal Incident Case file Sweeps
Date Recd: 28.03.63 Location: The Old Abbey, Leiston Work carried out: Area of Dyke cleared Date complete: 02.09.63.

Leiston
1 AT Mk iv Mine 18.08.56
2 AT Mk iv Mine 24.08.56
1 ATK MK iv 22.06.67

WWII anti-invasion defences: Pipelines

There are no records of Pipemines at this location.

WWII anti-invasion defences: Airfield Pipemines

Not listed as mined or considered for mining.

WWII anti-invasion defences: Demolition & Depth Charges

Location: Eastbridge. Map Ref: 156 GR 471658. Type: Depth charge. Comment: Records for which either Suffolk CC hold Clearance certs, or are shown as clear on HQ BD Unit (UK) RE records. Suffolk DC Sites report dated 04.09.62.

Location: Crown farm, Leiston. Map Ref: 156 GR 459628. Type: Depth charge. Comment: Records for which either Suffolk CC hold Clearance certs, or are shown as clear on HQ BD Unit (UK) RE records. Suffolk DC Sites report dated 04.09.62.

Location: Halfway Cottages, Leiston. Map Ref: 156 GR 462623. Type: Depth charge. Comment: Records for which either Suffolk CC hold Clearance certs, or are shown as clear on HQ BD Unit (UK) RE records. Suffolk DC Sites report dated 04.09.62.

Location: Sizewell, Leiston. Map Ref: 156 GR 472621. Type: Depth charge. Comment: Records for which either Suffolk CC hold Clearance certs, or are shown as clear on HQ BD Unit (UK) RE records. Suffolk DC Sites report dated 04.09.62.

Location: Sizewell, Leiston. Map Ref: 156 GR 471625. Type: Depth charge. Comment: Records for which either Suffolk CC hold Clearance certs, or are shown as clear on HQ BD Unit (UK) RE records. Suffolk DC Sites report dated 04.09.62.

Location: Sizewell, Leiston. Map Ref: 156 GR 470628. Type: Depth charge. Comment: Records for which either Suffolk CC hold Clearance certs, or are shown as clear on HQ BD Unit (UK) RE records. Suffolk DC Sites report dated 04.09.62.

Location: Sizewell, Leiston. Map Ref: 156 GR 474627. Type: Depth charge. Comment: Records for which either Suffolk CC hold Clearance certs, or are shown as clear on HQ BD Unit (UK) RE records. Suffolk DC Sites report dated 04.09.62.

Location: Summer Ho, Leiston. Map Ref: 156 GR 473647. Type: Depth charge. Comment: Records for which either Suffolk CC hold Clearance certs, or are shown as clear on HQ BD Unit (UK) RE records. Suffolk DC Sites report dated 04.09.62.

Location: Goose Hill, Leiston. Map Ref: 156 GR 474657. Type: Depth charge. Comment: Records for

Location: Goose Hill, Leiston. Map Ref: 156 GR 471653. Type: Depth charge. Comment: Records for which either Suffolk CC hold Clearance certs, or are shown as clear on HQ BD Unit (UK) RE records. Suffolk DC Sites report dated 04.09.62.

Location: Goose Hill, Leiston. Map Ref: 156 GR 475651. Type: Depth charge. Comment: Records for which either Suffolk CC hold Clearance certs, or are shown as clear on HQ BD Unit (UK) RE records. Suffolk DC Sites report dated 04.09.62.

Location: Summer Ho, Leiston. Map Ref: 156 GR 475644. Type: Depth charge. Comment: Records for which either Suffolk CC hold Clearance certs, or are shown as clear on HQ BD Unit (UK) RE records. Suffolk DC Sites report dated 04.09.62.

Location: Halfway Cottages, Leiston. Map Ref: 156 GR 465623. Type: Depth charge. Comment: Records for which either Suffolk CC hold Clearance certs, or are shown as clear on HQ BD Unit (UK) RE records. Suffolk DC Sites report dated 04.09.62.

Location: Summer Ho, Leiston. Map Ref: 156 GR 474645. Type: Depth charge. Comment: Records for which either Suffolk CC hold Clearance certs, or are shown as clear on HQ BD Unit (UK) RE records. Suffolk DC Sites report dated 04.09.62.

Location: Sizewell, Leiston. Map Ref: 156 GR 472622. Type: Depth charge. Comment: Records for which either Suffolk CC hold Clearance certs, or are shown as clear on HQ BD Unit (UK) RE records. Suffolk DC Sites report dated 04.09.62.

11 March 2010

ArchMan, 33 Engineer Regiment (Explosive Ordnance Disposal)

The Information provided by the Secretary of State for Defence is limited in its accuracy by the limitations of the techniques applied and the equipment then available to undertake the work upon which the Information is based. Therefore, the Information does not provide an absolute assurance that the area in question is either munition free or that all munitions have been identified.

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Appendix N – AMEC, July 2010, Radiological Survey Report for Sizewell C

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Date: 07th June 2010

Our Ref: 15930/TR/00018

Your Ref:

EDF

Direct tel +44(0)1352 751 761

Direct fax +44(0)1352 751 451

Email: giles.bishop@amec.com

For the attention of Charlotte Virally

Dear Charlotte

Subject: CIDEN 003 Deliverables

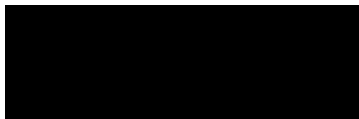
We are pleased to provide this Technical Report, 15930/TR/00018 BPE (Issue 02), in which we present the data acquired during the non-intrusive radiological survey at Sizewell.

In this report we assessed the existing radiation levels present and compared the calculated radiation dose uptake with existing Environment Agency guidelines for potential site workers.

The document has been uploaded to EDF Groupnet in PDF format to the zip file named '15930TR00018 Radiological survey report for Sizewell C BPE 070710' to the following location:

'Folders/WDE-UKE (UK EPR)/07b- SITE DEVELOPMENT SIZEWELL/7.4 Deliverables - Outputs/20- EIA & ES/01- Radiological Health'

Yours sincerely,



Giles Bishop

Responsible Engineer

cc:

EDF – Sophie Champel, Giral Delphine, Isabelle Ducher-Peron, Emmanuelle Chardon, Claire Maury, Sylvie Reimeringer, Elodie Jehl

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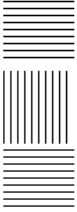

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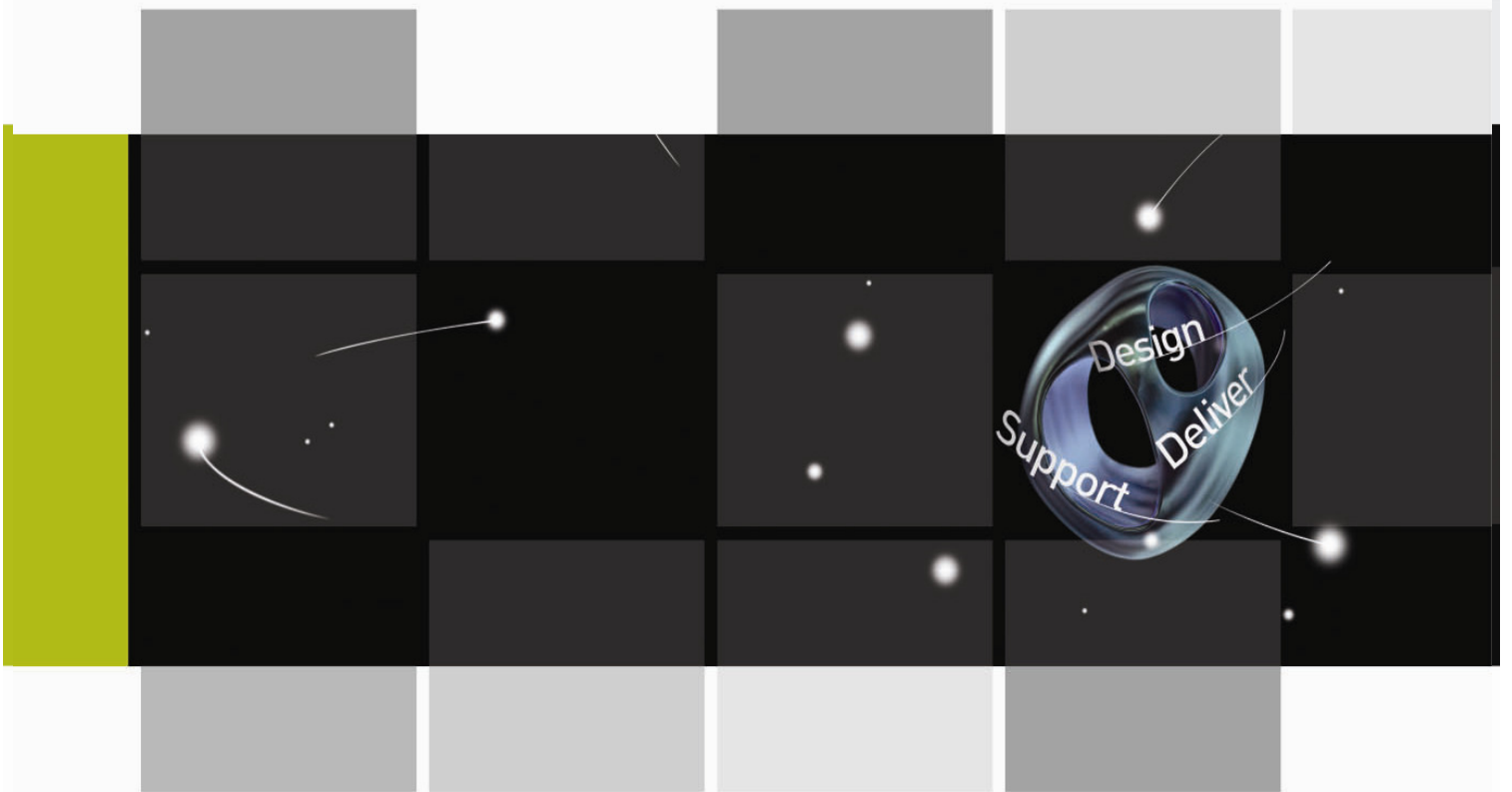
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INVESTOR IN PEOPLE

B	05.07.10	G John	J Cobb	BPE	Final issue incorporating EDF comments	G Bishop
A	26.03.10	G John	I Beadle	PREL	Issue 01 for EDF comment	J Baker
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15930/TR/00018					SUPPLIER WBS CODE N/A	
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CONTRACT KR1008 CIDEN-003			ITEM NUMBER --		ELEMENTARY SYSTEM --	BUILDING --
SCALE N/A	NUCL/REP/EPR/UKEPR/				<input checked="" type="checkbox"/> IPS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
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Radiological Survey Report for Sizewell C

DOCUMENT ISSUE RECORD

(engineering documents)



Document Title :	Radiological survey report for Sizewell C
Project Reference:	15930/TR/00018

Purpose of Issue : Final issue

Security Class : EDF access

Issue	Description of Amendment	Originator/ Author	Checker	Approver	Date
01 – PREL	Issue 01 for EDF comment	G John	I Beadle	J Baker	26/03/10
		[REDACTED]			
02 – BPE	Final issue incorporating EDF comments	G John	J Cobb	G Bishop	07/07/10
		[REDACTED]			

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EXECUTIVE SUMMARY

AMEC is contracted to EDF Energy to support them in carrying out a baseline radiological survey at Sizewell in Suffolk. This radiological survey forms part of a wider feasibility study into the possible use of the site for the construction and operation of a new nuclear power station.

Combined operation of the Sizewell A and B nuclear power stations may have led to radiological contamination on the sites of interest. Both the A and B sites continue to hold Authorisations under the Environmental Permitting (England and Wales) Regulations 2010 to discharge gaseous and aqueous wastes.

The area requiring a radiological survey was divided into three separate sites; Zone North, Zone Central and Zone South.

AMEC proposed a methodology which measures the existing radiation levels, and compare the calculated dose uptake with existing Environment Agency guidelines for potential site workers. A gridded radiological walkover survey was also performed although no sub-surface monitoring took place.

Environmental gamma dose rate readings across most of the three sites were equivalent to measured background levels. The excess dose based on annual commercial occupancy of the single most elevated location is 0.078 mSv/a based on external radiation only. This constitutes 7.8% of the annual dose limit for members of the public (1 mSv/a), and is 25.9% of the dose constraint adopted by the Environment Agency in their contaminated land guidance (0.3 mSv/a).

The majority of radiological walkover survey measurements were equivalent to background levels. The only data falling outside a 99% confidence limit of the mean were those values recorded in and around the Sizewell B site. These elevated readings are likely to be a combination of radiation 'shine' from a waste storage building on site, and natural radioactivity from granite chippings and building materials. The presence of ground surface contamination in this area may be masked and cannot be discounted, but any surface activity present would be significantly below values of regulatory concern.

1.0 INTRODUCTION

A radiological survey was carried out on the proposed development site at Sizewell. The area to the south of the proposed development site, comprising a sewage works and nuclear power station complex, presents the potential for contamination of near surface site soils from atmospheric deposition of radionuclides and contamination of site groundwaters through groundwater migration.

A site team comprising a Site Supervisor and a Radiological Consultant was deployed to the site for a period of twelve consecutive working days.

The area requiring a radiological survey was divided into three parcels of land; a small area to the south of the existing Sizewell B power station (Zone South), a larger area that covers land to the north of Sizewell B (Zone Central) and a thinner strip of land (the proposed route of access road) to the north west of Sizewell B (Zone North). A map of the site is shown in Appendix A.

Results are presented for the measurements taken. Conclusions and recommendations are provided as to the nature of the potential residual radiological risk and the implications for continuation of any future site works.

The report is structured as follows:

- Section 2: Methodology
- Section 3: Ground Surface Radiological Survey Results
- Section 4: Conclusions
- Section 5: Limitations
- Section 6: Recommendations

1.1 General site description

Zone South comprises an area of 8 hectares of land. This is currently agricultural land with topography rising from south to north to a high point, approximately 5 m AOD (Above Ordnance Datum), in the centre of the area before then falling again to the north.

Zone Central is broadly rectangular in shape, comprising 60 hectares of generally level ground (0 – 2 m AOD). In the south western corner of Zone Central, there exists a small sewage treatment works, an area of outage contractors' offices, and a storage compound (mainly comprising scaffolding and storage containers). The remainder of Zone Central is covered by young woodland and rough grassland. The northern and eastern boundaries comprise a significant artificial embankment feature (5 – 10 m above surrounding ground level) whereas the north western corner

comprises an area of low lying marshland that forms part of the Sizewell Marshes Site of Special Scientific Interest (SSSI).

Zone North is a long, thin, broadly rectangular area of land of 47 hectares comprising mature coniferous woodland. An area in the northwest comprises arable farmland. The topography of the area ranges from 2 - 10 m AOD and falls south towards the Sizewell Belts.

2.0 METHODOLOGY

2.1 Preparatory work

Prior to conducting the site work a detailed Method Statement and associated Risk Assessments were produced¹. These were submitted to, and approved by, EDF.

The Method Statement detailed the following:

- Client and internal contact details;
- Roles and responsibilities;
- Equipment requirements;
- Dosimetry requirements;
- Detailed approach to conducting the site work;
- Welfare arrangements; and
- Accident and emergency arrangements.

The Method Statement was supported with the following Risk Assessments:

- Safety, Health and Environmental Risk Assessment;
- Ionising Radiation Risk Assessment; and
- EDF Site Specific Risk Assessment.

2.2 Site work

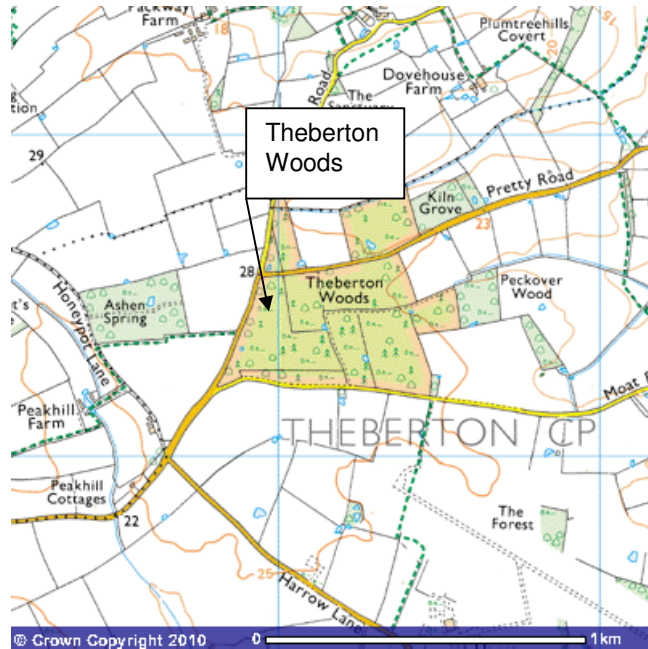
Site work was conducted from 22nd February to 5th March 2010. The weather was cold (approximately 3 - 12 °C) with occasional cloud and rain.

To complete this non-intrusive survey, two pieces of specialist radiological equipment were used:

- Mini Instruments 6-80 ratemeter and MC71 Geiger probe; and
- Thermo G2 probe and Electra ratemeter.

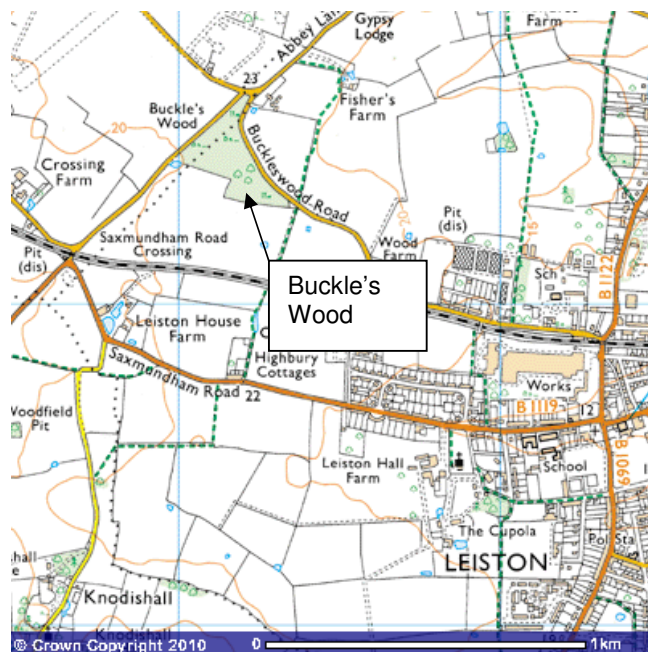
Background readings using both the G2 / Electra and the Mini 6-80 / MC71 instruments were taken at Theberton Woods (National Grid reference TM419654) and close to Buckle's Wood (National Grid reference TM432635). Buckle's Wood is an area of private land and therefore access to a suitable location away from the main road was not possible. Readings were taken on the public footpath on the easterly edge of Buckle's Wood.

Figure 1: Location of Theberton Woods



Reproduced from Ordnance Survey Map data by Permission of Ordnance Survey, 100046777.

Figure 2: Location of Buckle's Wood



Reproduced from Ordnance Survey Map data by Permission of Ordnance Survey, 100046777.

2.2.1 GPS surveying equipment

The site survey was conducted using a mobile Geographic Information System (GIS) with ESRI ArcPAD V8.1 that allows the surveyor to use electronic base maps (e.g. Ordnance Survey 1:10K topographic maps) and GPS (Global Positioning System) data to accurately survey the sampling locations.

The surveying equipment consisted of three core components:

- TDS Nomad™ rugged PDA with a high-resolution colour display;
- Trimble PRO XT differential GPS receiver; and
- Mobile GIS software ArcPAD.

ArcPAD is capable of processing the GPS data and the differential signal from one of the three EGNOS (European Geostationary Navigation Overlay Service) satellites in order to improve the accuracy of the GPS position readings.

The PDA and GPS receiver were mounted on a range pole to provide a stable platform for the averaging of 60 position readings per sampling site (i.e. Zone North, Zone South and Zone Central).

The accuracy of GPS surveys is limited by a number of factors, such as the number of satellites available and their constellation, signal reflections on topographic features, and atmospheric conditions. The constellation of the satellites usually has the highest impact on the accuracy of the GPS readings. The Precision Dilution of Precision (PDOP) is used as a quality indicator for the satellite constellation and has been logged together with the point locations. PDOP values < 6 indicate good conditions under which reliable GPS locations can be recorded. The site was surveyed at PDOPs < 3.5 at 96% of the survey locations, which indicates ideal conditions for GPS surveys with a horizontal accuracy of < 0.5 m during the survey period. At 15 locations the PDOP was between 6.1 and 8.3 indicating a horizontal accuracy of ± 1 m. At five sampling locations the satellite signal was insufficient for a reliable GPS survey and the locations on the site plan are only of indicative quality (G239, G110, G127, G183 and G45).

AMEC developed customised data entry forms for the mobile GIS. Besides the readings of the radiological probes, the data forms automatically log a wide range of GPS attributes, like signal quality indicators and the geographic position. The data from the radiological survey was directly linked to the location of the sampling site in the mobile GIS and stored in AXF layers. The data was later imported into a personal geo-database (compatible with ESRI ArcView 9.3) for further analysis and production of thematic maps.

2.2.2 Environmental gamma dose rate measurements

Measurements were taken using a tripod mounted Mini 6-80 / MC71 instrument. This is a low-background Geiger-Muller detector designed for environmental gamma dose rate measurement using the methods outlined in the Environment Agency Guidance TGNM5 – Monitoring². An integration period of 600 seconds was used for each measurement.

Measurements were used to determine the excess radiation dose from the presence of any gamma emitting radionuclides in the ground that would be received by a person who was occupying the site. The measurements permitted the evaluation of the external radiation hazard to humans on the site in its current state.

Survey locations were randomly selected to afford good coverage of each site. A total of 32 measurements were taken, with 6 in Zone North, 22 in Zone Central and 4 in Zone South.

2.2.3 Radiological walkover survey

To complement the gamma dose rate measurements, a gridded walkover survey was also completed on a 50 m grid, with measurements taken at the intersections of the grid points.

The instrument used for this walkover survey was a Thermo G2 probe and an Electra ratemeter, which is a sodium iodide scintillation detector designed for the detection of gamma radiation. This was set up to detect gamma photons of energy 60 keV to approximately 1.5 MeV (this is the full range of operating parameters for the equipment).

This instrument is capable of detecting low levels of activity in the shallow ground to a maximum depth of ~0.4 m below ground level (bgl). Below this depth and dependent on the ground surface type, gamma activity will be detected if sources emitting greater levels of activity or at higher energy are present.

3.0 GROUND SURFACE RADIOLOGICAL SURVEY RESULTS

3.1 Background readings

Background readings at Theberton Woods and close to Buckle's Wood were selected to provide areas of undisturbed ground. The background activity readings of the surveying equipment are displayed in Table 1.

Table 1: Background activity readings

Location	Thermo G2 / Electra (kcpm)	Mini 6-80 / MC71 (counts / 600s)
Theberton Woods (TM419654)	3.5	870
Buckle's Wood (TM432635)	5.9	1012

The Thermo G2 / Electra background activity results at these locations are significantly different. The reading taken at Theberton Woods is comparable with the mean value obtained during the survey (2.93 kcpm). However, the reading collected at Buckle's Wood is outside the upper 99% confidence limit of the mean value for the survey (5.83 kcpm), see Appendix E.

Access into Buckle's Wood was not possible as this is an area of private land. Readings taken at the eastern edge of Buckle's Wood were collected on an area of made ground next to a road. This area does not provide a suitable comparison for the measurements taken on the proposed Sizewell C site.

The data collected in Theberton Woods is much more representative of the measurements taken on the proposed Sizewell C site. Readings were collected in an area of dense woodland on undisturbed ground.

3.2 Environmental gamma dose rate measurements

Environmental gamma dose rate measurements were taken at 32 random locations across the site using a tripod-mounted Mini 6-80 / MC71 instrument. An annotated site map is presented in Appendix A, while the survey locations and instrument readings are tabulated in Appendix B.

In order to evaluate the external radiation hazard associated with the site, the background value is subtracted from recorded measurements. This provides an excess absorbed dose rate with respect to the chosen background area.

Using a conversion factor of 0.86 Sv Gy^{-1} , which is appropriate for a geometry that is isotropic in the horizontal plane³, the excess dose in Grays

(Gy) can be converted into an excess dose in Sieverts (Sv). The excess effective dose rates calculated for each location are shown in Tables 2, 3 and 4, with examples of the full calculations of these dose rates available in Appendix C.

Table 2: Gamma dose rates and calculated annual dose for Zone North

Survey location	Easting	Northing	Excess dose rate ($\mu\text{Sv/hr}$)	Excess annual dose (mSv/a)
M1	645201	263778	0.000	0.000
M2	645256	263842	0.000	0.000
M3	645665	264140	0.000	0.000
M4	645999	264348	0.000	0.000
M5	646523	264624	0.000	0.000
M6	647167	264501	0.000	0.000

Table 3: Gamma dose rates and calculated annual dose for Zone Central

Survey location	Easting	Northing	Excess dose rate ($\mu\text{Sv/hr}$)	Excess annual dose (mSv/a)
M7	647302	264451	0.000	0.000
M8	647601	264455	0.000	0.000
M9	647113	264254	0.000	0.000
M10	647237	264286	0.007	0.014
M11	647325	264324	0.000	0.000
M12	647467	264362	0.000	0.000
M13	647193	264199	0.004	0.009
M14	647257	264186	0.003	0.005
M15	647425	264236	0.003	0.007
M16	647401	264184	0.000	0.000
M17	647530	264219	0.000	0.000
M18	647146	264093	0.012	0.025
M19	647507	264091	0.001	0.003
M20	647594	264072	0.000	0.000
M21	647318	263995	0.000	0.000
M22	647415	263991	0.000	0.000
M23	647542	263991	0.000	0.000
M24	647282	263797	0.039	0.078
M25	647442	263800	0.000	0.000
M26	647544	263829	0.000	0.000
M27	647121	263717	0.005	0.010
M28	647041	263748	0.000	0.000

Table 4: Gamma dose rates and calculated annual dose for Zone South

Survey location	Easting	Northing	Excess dose rate ($\mu\text{Sv/hr}$)	Excess annual dose (mSv/a)
M29	647085	262955	0.000	0.000
M30	647051	262794	0.000	0.000
M31	647264	262805	0.000	0.000
M32	647125	262621	0.001	0.002

The annual excess external radiation exposure is calculated by applying an appropriate occupancy factor. This is based on the site being developed for commercial use, with an annual occupancy for each worker of 2000 hours (8 hours per day, 5 days per week, 50 weeks per year).

Taking the external radiation hazards associated with the site in its present state, and assuming the site is developed for commercial use, occupancy of the most elevated area (point M24) would result in an excess radiation exposure of 0.078 mSv/a. This is significantly below the annual dose limit for members of the public (1 mSv/a)⁴ and does not exceed the dose constraint adopted by the Environment Agency in their contaminated land guidance (0.3 mSv/a)⁵. It should be noted that the reading obtained at point M24 was collected in close proximity (5 m) to a Radiation Controlled Area (R2) which is currently used as a storage building on the Sizewell B site, see Figure 3.

Figure 3: Storage building on Sizewell B site



The highest reading taken at a point away from the Sizewell B site boundary (M10) would lead to an excess radiation exposure of 0.014 mSv/a; a value that is also well within regulatory limits^{4,5}.

3.3 Radiological walkover survey

The radiological walkover survey was conducted using a Thermo G2 / Electra instrument. A total of 454 measurements of gamma radiation flux were made at intersections of a survey grid across the site. An additional 28 locations on the survey grid were inaccessible due to the presence of

water hazards, dense marshland, sewage works, buildings or very dense vegetation, see Figure 4.

Figure 4: Example of inaccessible location – waterlogged ground



The site mainly consisted of woodland, but did contain open fields and areas of made ground such as those inside and around the Sizewell B licensed site boundary.

The gamma flux distribution across the site is shown in Appendix A, and the complete set of measurements is tabulated in Appendix D.

A statistical analysis of the dataset revealed that the only data falling outside a 99% confidence limit (for a one-tail distribution) were those measurements recorded at locations close to the Sizewell B site, see Appendix E.

There are a number of reasons for the elevation in readings in and around the Sizewell B site boundary:

- The storage building marked on the plot is a radiation controlled (R2) area, and contains items with a high enough dose rate to affect nearby monitoring locations (points G328, G356, G357, G360);
- The Sizewell B site was built on an elevated platform, topped in many locations with granite chippings. Granite is naturally radioactive and these chippings are clearly visible in the compound surrounding the

storage shed and in the woodland immediately north of the Sizewell B site (points G334, G353, G354, G355, G443) (see Figure 5); and

- Measurements taken in close proximity to buildings are commonly elevated due to natural radioactivity (K-40, Th-232 and Ra-226) in brickwork and concrete paving (points G303, G313, G364).

These elevated readings are colour coded orange and red on the gamma radiation flux plot in Appendix A.

Figure 5: Granite chippings on made ground near Sizewell B site boundary



4.0 CONCLUSIONS

A radiological walkover survey and environmental gamma dose rate survey were carried out across the Zone North, Zone Central and Zone South areas of the proposed Sizewell C site.

Environmental gamma dose rate readings were generally equivalent to measured background levels. The excess dose based on annual commercial occupancy of the single most elevated location would be 0.078 mSv/a based on external radiation only. This constitutes 7.8% of the annual dose limit for members of the public (1 mSv/a)⁴, and is 25.9% of the dose constraint adopted by the Environment Agency in their contaminated land guidance (0.3 mSv/a)⁵.

Radiological walkover survey measurements were taken at 454 locations across the site and were generally consistent with background levels. The only data falling outside a 99% confidence limit of the mean were those recorded in close proximity to the Sizewell B site. At these 12 locations, the source of the elevated readings is likely to be a combination of radiation 'shine' from a waste storage shed on Sizewell B site, and natural radioactivity from granite chippings and building materials. The presence of ground surface contamination in this area may be masked and cannot be discounted, but any surface activity present is significantly below values of regulatory concern.

5.0 LIMITATIONS ON INTERPRETATION OF RESULTS

The results of the non-intrusive survey only provide information on the presence of radioactive material at a surface or near-to-surface level (to an approximate depth of 30-40 cm).

It should also be noted that the sensitivity of the Thermo G2 / electra gamma survey is reduced in areas which are covered by hardstanding as this material will attenuate any gamma radiation passing through it.

6.0 RECOMMENDATIONS

For intrusive site investigation work the use of suitable radiation monitoring equipment is recommended. This will ensure the radiological safety of any workers on site and provide the appropriate radiological controls and monitoring.

A comprehensive sampling programme followed by radiochemical analysis would allow any potential ground surface contamination to be distinguished from other sources potentially present on the Sizewell B site.

7.0 REFERENCES

- ¹ Method Statement and Health and Safety plan for preliminary radiological survey at Sizewell C, AMEC, 2010.
- ² Routine measurement of gamma ray air kerma rate in the environment, Technical Guidance Note (Monitoring) M5, Her Majesty's Inspectorate of Pollution, 1995.
- ³ A Guide to the Measurement of Environmental Gamma Radiation, British Committee on Radiation Units and Measurements, 1993.
- ⁴ Ionising Radiation Regulations, 1999.
- ⁵ Guidance on the Characterisation of Radioactively Contaminated Land, Environment Agency, 2002.

APPENDIX A
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**PLOTS OF RADIOLOGICAL SURVEY DATA ON PROPOSED
SIZEWELL C SITE**

Figure A1 : Plot of radiological survey data for western area of Zone North, Sizewell C site

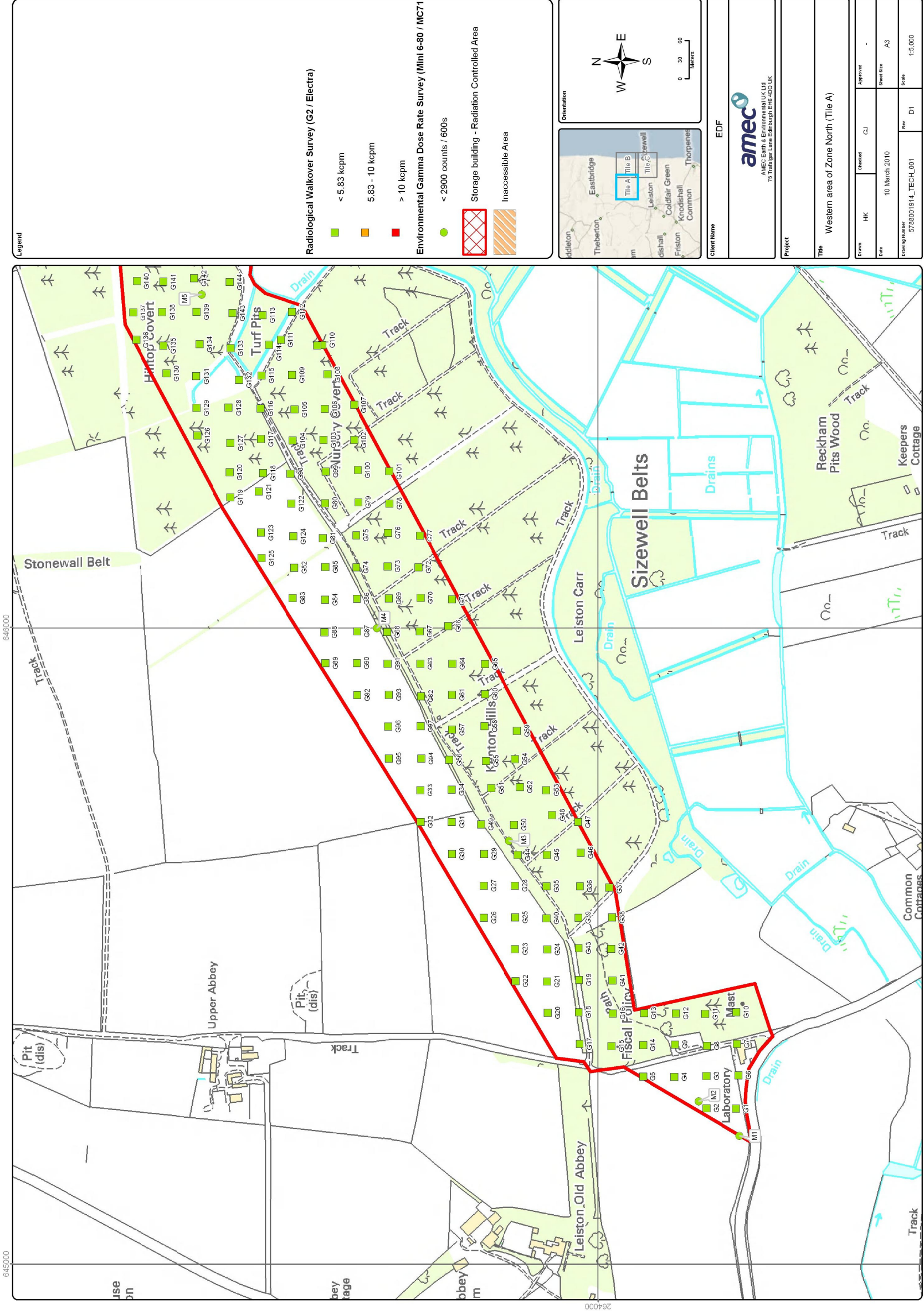


Figure A2 : Plot of radiological survey data for Zone Central and eastern area of Zone North, Sizewell C site

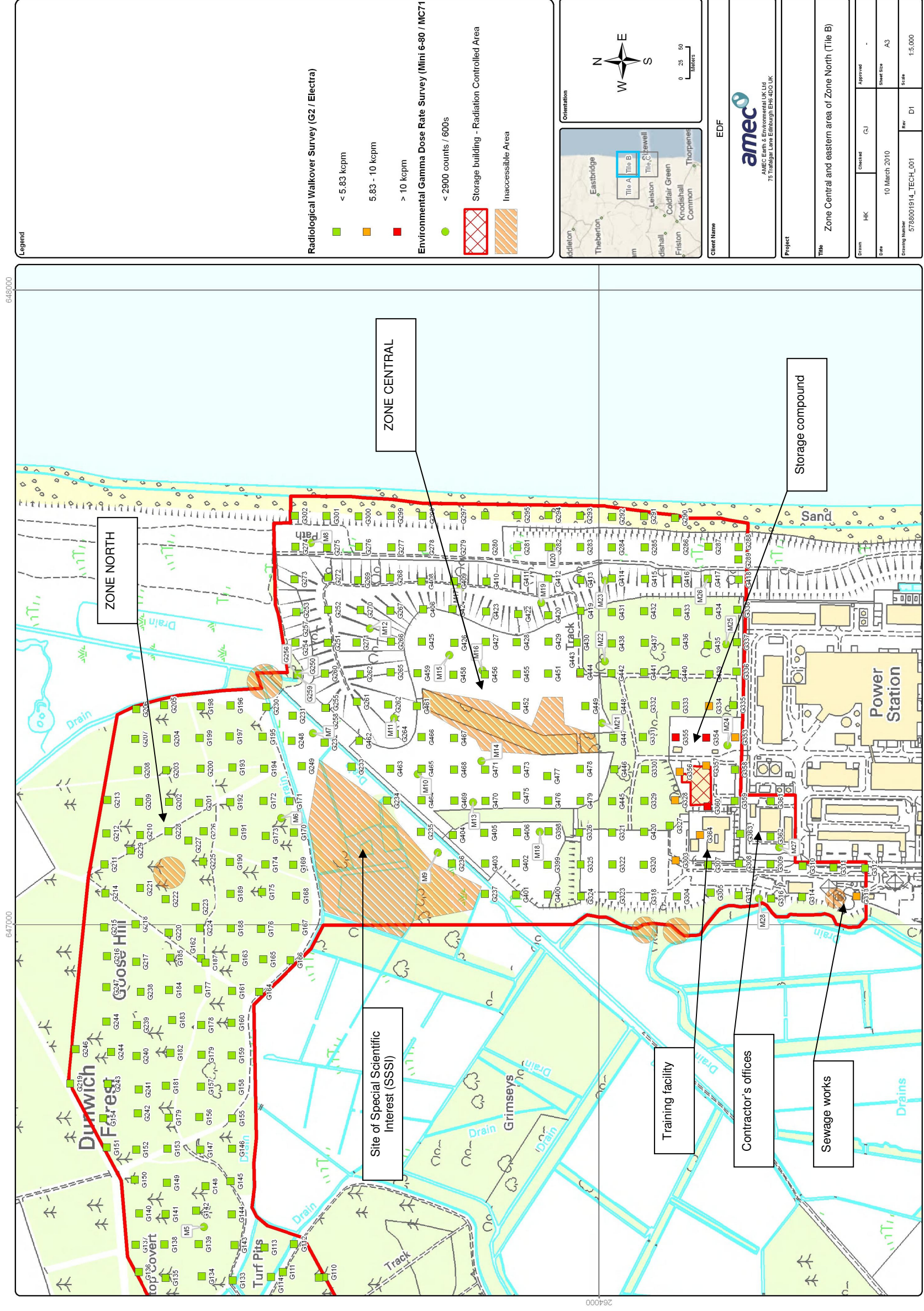
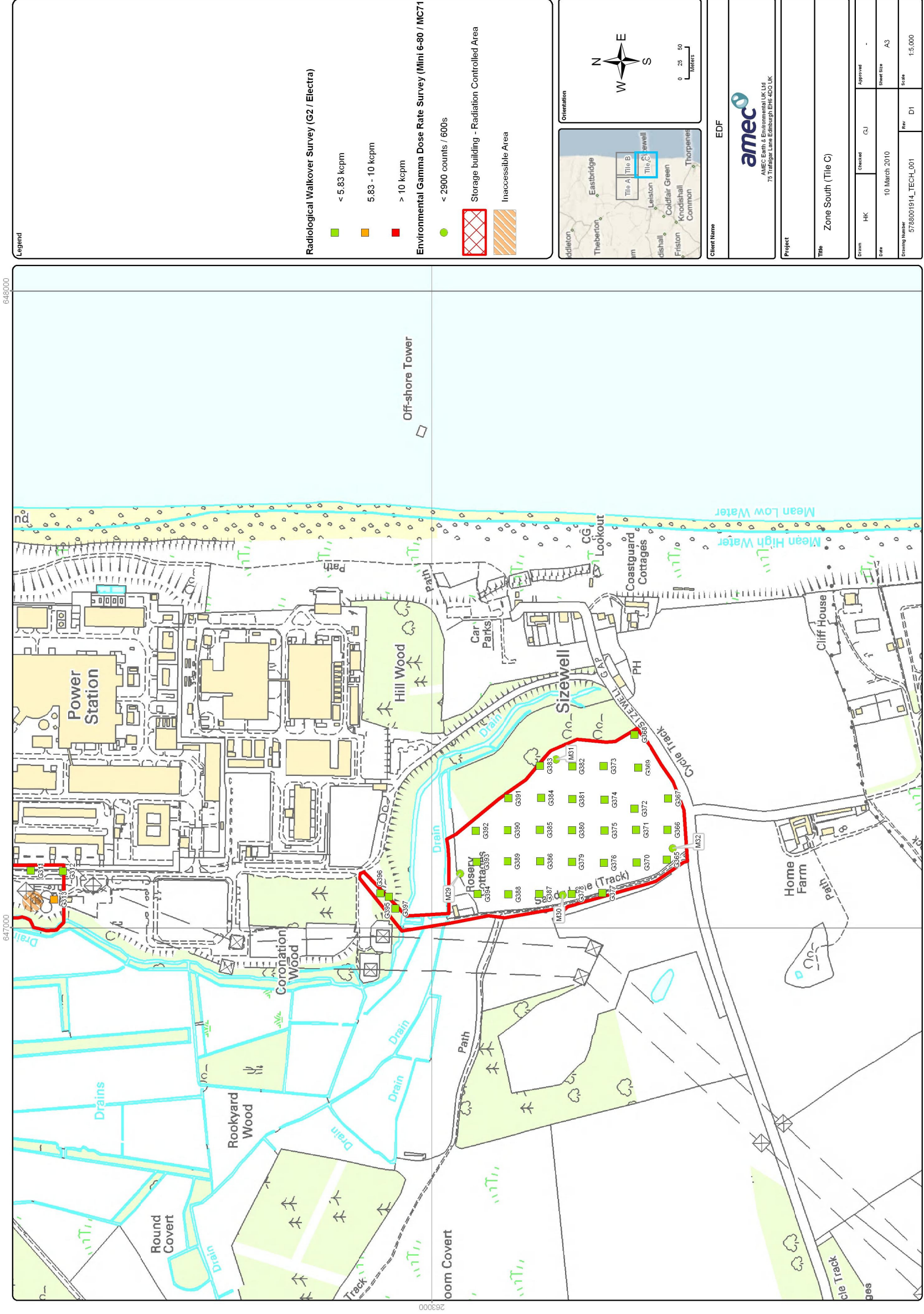


Figure A3 : Plot of radiological survey data for Zone South, Sizewell C site



APPENDIX B
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ENVIRONMENTAL GAMMA DOSE RATE READINGS

Table B1 : Mini 6-80 / MC71 readings taken from proposed Sizewell C site

Survey location	Easting	Northing	Counts (600s)	Surface Type
M1	645201	263778	852	Soil
M2	645256	263842	823	Soil
M3	645665	264140	745	Vegetation
M4	645999	264348	783	Vegetation
M5	646523	264624	852	Vegetation
M6	647167	264501	793	Vegetation
M7	647302	264451	784	Vegetation
M8	647601	264455	768	Vegetation
M9	647113	264254	809	Vegetation
M10	647237	264286	967	Vegetation
M11	647325	264324	803	Vegetation
M12	647467	264362	786	Vegetation
M13	647193	264199	930	Vegetation
M14	647257	264186	906	Vegetation
M15	647425	264236	916	Vegetation
M16	647401	264184	857	Soil
M17	647530	264219	784	Vegetation
M18	647146	264093	1038	Vegetation
M19	647507	264091	890	Vegetation
M20	647594	264072	776	Soil
M21	647318	263995	850	Soil
M22	647415	263991	866	Vegetation
M23	647542	263991	781	Vegetation
M24	647282	263797	1394	Gravel
M25	647442	263800	871	Vegetation
M26	647544	263829	798	Vegetation
M27	647121	263717	939	Gravel
M28	647041	263748	745	Vegetation
M29	647085	262955	836	Soil
M30	647051	262794	750	Soil
M31	647264	262805	783	Soil
M32	647125	262621	882	Soil

APPENDIX C
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ENVIRONMENTAL GAMMA DOSE RATE CALCULATIONS



Figure C1 : Example worksheet showing environmental gamma dose rate calculations

Sizewell		Dose Rate Conversions		G. John		15/3/2010	
Mini 680 Environmental Dose Rate Measurement							
Probe S/N	Counter S/N			dose per annum based on BKGD activity			
	Annual Dose Rate mSv/a	2000	hours	mSv per annum		0.040	
Easting	Northing	Counts (600s)	Count Rate (s-1)	K	Air Kerma (microGy/hr)	uSv/h	7%
Background	641950	265546	870	1.45	0.023316	0.020052	
M24	647282	263797	1394	2.3233333	0.068566		5%
Excess	uGy/h	0.045250				dose rate uSv/hr	
	uSv/h	0.039				0.058967	
						0.020052	25.9%
							% of 0.3 mSv/a
Excess Dose (mSv/a)	Excess Dose Rates	2000	Hours			DIFF	% of 1 mSv/a
		0.078				0.038915	7.8%
M25	647442	263800	871	1.45166667	0.023402		7%
Excess	uGy/h	0.000086				dose rate uSv/hr	
	uSv/h	0.000				0.020126	
						0.020052	0.0%
							% of 0.3 mSv/a
Excess Dose (mSv/a)	Excess Dose Rates	2000	Hours			DIFF	% of 1 mSv/a
		0.000				0.000074	0.0%

APPENDIX D
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RADIOLOGICAL WALKOVER SURVEY READINGS

Table D1 : G2 / Electra radiological walkover survey results

Survey location	Easting	Northing	Counts (kcpm)	Surface Type
G1	645245	263783	3.38	Soil
G2	645245	263830	3.20	Soil
G3	645296	263830	3.33	Soil
G4	645294	263880	3.04	Soil
G5	645295	263930	3.13	Soil
G6	645297	263779	2.88	Vegetation
G7	645346	263782	4.97	Gravel
G8	645343	263830	2.58	Vegetation
G9	645345	263880	2.65	Sand
G10	645396	263783	2.86	Vegetation
G11	645393	263832	2.82	Vegetation
G12	645394	263878	2.79	Vegetation
G13	645394	263929	2.94	Vegetation
G14	645344	263930	2.79	Vegetation
G15	645343	263979	3.11	Vegetation
G16	645394	263977	3.15	Vegetation
G17	645346	264029	3.38	Vegetation
G18	645396	264031	2.92	Gravel
G19	645447	264030	3.19	Vegetation
G20	645395	264079	3.07	Soil
G21	645444	264080	3.38	Soil
G22	645445	264130	3.07	Soil
G23	645495	264130	2.79	Soil
G24	645495	264080	3.05	Soil
G25	645545	264130	3.02	Soil
G26	645544	264180	3.04	Soil
G27	645595	264180	3.35	Soil
G28	645595	264130	3.49	Soil
G29	645645	264179	3.04	Soil
G30	645645	264230	3.34	Soil
G31	645695	264230	3.21	Soil
G32	645695	264280	3.20	Soil
G33	645745	264280	3.16	Soil
G34	645745	264230	2.92	Soil
G35	645594	264081	3.05	Vegetation
G36	645593	264029	2.74	Vegetation
G37	645592	263983	2.75	Vegetation
G38	645545	263978	2.75	Vegetation
G39	645544	264031	2.94	Vegetation
G40	645544	264081	3.02	Vegetation
G41	645446	263978	3.08	Vegetation
G42	645495	263980	3.14	Vegetation
G43	645497	264031	3.22	Vegetation
G44	645643	264126	2.45	Vegetation
G45	645643	264081	2.14	Vegetation
G46	645646	264027	2.08	Vegetation
G47	645695	264032	2.11	Vegetation
G48	645705	264072	2.21	Vegetation

Survey location	Easting	Northing	Counts (kcpm)	Surface Type
G49	645691	264184	2.22	Vegetation
G50	645690	264132	2.70	Vegetation
G51	645748	264168	2.78	Vegetation
G52	645749	264123	2.50	Vegetation
G53	645745	264082	2.29	Vegetation
G54	645793	264131	2.39	Vegetation
G55	645790	264177	2.66	Vegetation
G56	645792	264234	3.15	Gravel
G57	645840	264230	2.58	Vegetation
G58	645845	264179	2.38	Vegetation
G59	645838	264127	2.14	Vegetation
G60	645896	264178	2.52	Vegetation
G61	645895	264230	2.49	Vegetation
G62	645892	264279	2.75	Vegetation
G63	645944	264280	2.60	Vegetation
G64	645943	264229	2.60	Vegetation
G65	645943	264178	2.62	Vegetation
G66	646003	264236	2.74	Vegetation
G67	645994	264281	2.55	Vegetation
G68	645993	264332	2.65	Vegetation
G69	646046	264329	2.67	Vegetation
G70	646047	264280	2.57	Vegetation
G71	646045	264230	2.63	Vegetation
G72	646095	264283	2.51	Vegetation
G73	646096	264331	2.61	Vegetation
G74	646095	264381	2.32	Vegetation
G75	646145	264381	2.43	Vegetation
G76	646149	264331	2.68	Vegetation
G77	646145	264281	2.48	Vegetation
G78	646195	264329	2.30	Vegetation
G79	646197	264377	2.24	Vegetation
G80	646195	264429	2.32	Vegetation
G81	646141	264433	2.88	Vegetation
G82	646094	264477	2.42	Vegetation
G83	646046	264480	2.76	Soil
G84	646044	264430	2.57	Soil
G85	646095	264429	2.76	Soil
G86	646046	264380	2.38	Vegetation
G87	645994	264379	2.78	Soil
G88	645993	264430	2.61	Soil
G89	645945	264429	2.71	Soil
G90	645945	264380	2.84	Soil
G91	645944	264331	2.88	Soil
G92	645894	264379	3.02	Soil
G93	645895	264329	3.55	Soil
G94	645794	264279	3.25	Soil
G95	645794	264329	3.28	Soil
G96	645845	264331	3.11	Soil
G97	645845	264280	3.12	Soil
G98	646242	264483	3.22	Sand
G99	646245	264428	2.26	Vegetation

Survey location	Easting	Northing	Counts (kcpm)	Surface Type
G100	646248	264378	2.38	Vegetation
G101	646246	264329	2.33	Vegetation
G102	646295	264384	2.27	Vegetation
G103	646295	264432	2.44	Vegetation
G104	646294	264480	3.11	Vegetation
G105	646343	264477	2.93	Vegetation
G106	646344	264430	2.53	Vegetation
G107	646350	264384	2.89	Vegetation
G108	646398	264426	2.96	Vegetation
G109	646397	264481	2.87	Vegetation
G110	646444	264434	2.82	Vegetation
G111	646453	264499	2.87	Vegetation
G112	646497	264481	2.34	Gravel
G113	646491	264528	1.41	Vegetation
G114	646445	264518	2.46	Vegetation
G115	646396	264529	2.76	Vegetation
G116	646345	264531	2.96	Vegetation
G117	646297	264530	3.09	Vegetation
G118	646243	264527	3.40	Vegetation
G119	646205	264578	2.69	Soil
G120	646244	264579	2.27	Vegetation
G121	646214	264533	2.82	Soil
G122	646195	264482	2.89	Soil
G123	646150	264530	2.91	Soil
G124	646144	264479	2.83	Soil
G125	646109	264529	2.71	Soil
G126	646302	264630	2.75	Vegetation
G127	646290	264578	2.99	Vegetation
G128	646346	264581	2.72	Vegetation
G129	646345	264632	2.76	Vegetation
G130	646400	264679	2.45	Vegetation
G131	646395	264632	2.82	Vegetation
G132	646389	264564	2.15	Vegetation
G133	646439	264577	2.54	Vegetation
G134	646445	264627	3.09	Vegetation
G135	646443	264684	2.43	Vegetation
G136	646452	264727	2.33	Vegetation
G137	646495	264731	2.34	Vegetation
G138	646496	264685	2.23	Vegetation
G139	646496	264632	2.32	Vegetation
G140	646545	264725	2.46	Vegetation
G141	646544	264684	2.66	Vegetation
G142	646549	264636	3.16	Vegetation
G143	646495	264575	3.19	Sand
G144	646543	264579	2.80	Vegetation
G145	646596	264581	2.63	Vegetation
G146	646647	264579	2.53	Vegetation
G147	646645	264629	2.75	Soil
G148	646588	264621	3.07	Vegetation

Survey location	Easting	Northing	Counts (kcpm)	Surface Type
G149	646593	264681	3.15	Vegetation
G150	646598	264733	3.17	Vegetation
G151	646649	264777	2.97	Vegetation
G152	646645	264730	3.28	Vegetation
G153	646647	264680	3.64	Sand
G154	646695	264782	2.82	Vegetation
G155	646695	264579	2.49	Vegetation
G156	646697	264631	2.75	Vegetation
G157	646745	264628	2.37	Vegetation
G158	646744	264580	2.67	Vegetation
G159	646794	264579	2.51	Vegetation
G160	646845	264579	2.28	Vegetation
G161	646895	264579	2.80	Sand
G162	646947	264628	4.26	Sand
G163	646947	264574	2.37	Vegetation
G164	646894	264536	2.60	Vegetation
G165	646945	264530	2.47	Vegetation
G166	646944	264487	2.69	Vegetation
G167	646996	264479	2.58	Vegetation
G168	647046	264478	2.50	Vegetation
G169	647094	264482	2.27	Vegetation
G170	647145	264481	2.98	Vegetation
G171	647194	264488	2.83	Vegetation
G172	647195	264529	2.81	Vegetation
G173	647140	264526	2.39	Vegetation
G174	647095	264526	2.35	Vegetation
G175	647051	264532	2.21	Vegetation
G176	646993	264533	2.15	Vegetation
G177	646898	264633	2.17	Vegetation
G178	646842	264628	2.05	Vegetation
G179	646795	264627	2.00	Vegetation
G180	646696	264679	2.93	Sand
G181	646746	264683	2.43	Vegetation
G182	646798	264676	2.32	Vegetation
G183	646849	264673	2.14	Vegetation
G184	646897	264678	2.10	Vegetation
G185	646948	264676	2.30	Vegetation
G186	646940	264637	N/A	Sand
G187	646940	264621	2.46	Vegetation
G188	646994	264581	2.20	Vegetation
G189	647048	264581	2.12	Vegetation
G190	647099	264582	2.23	Vegetation
G191	647146	264576	2.19	Vegetation
G192	647193	264581	2.47	Vegetation
G193	647248	264578	2.21	Vegetation
G194	647246	264528	2.48	Vegetation
G195	647296	264530	2.79	Vegetation
G196	647346	264581	2.95	Vegetation
G197	647297	264582	2.50	Vegetation
G198	647344	264628	2.29	Vegetation
G199	647294	264630	2.21	Vegetation

Survey location	Easting	Northing	Counts (kcpm)	Surface Type
G200	647246	264629	2.31	Vegetation
G201	647192	264631	2.24	Vegetation
G202	647193	264678	2.41	Vegetation
G203	647243	264683	2.43	Vegetation
G204	647293	264682	2.32	Vegetation
G205	647346	264686	2.42	Vegetation
G206	647340	264731	2.65	Vegetation
G207	647293	264732	2.56	Vegetation
G208	647243	264728	2.65	Vegetation
G209	647193	264726	2.57	Vegetation
G210	647141	264724	2.36	Vegetation
G211	647095	264780	2.54	Vegetation
G212	647144	264777	2.20	Vegetation
G213	647196	264776	2.42	Vegetation
G214	647050	264779	2.29	Vegetation
G215	646996	264781	2.09	Vegetation
G216	646950	264776	2.00	Vegetation
G217	646941	264731	2.04	Vegetation
G218	647000	264731	2.20	Vegetation
G219	646749	264834	2.17	Vegetation
G220	646987	264679	2.08	Vegetation
G221	647058	264724	2.17	Vegetation
G222	647040	264684	2.28	Vegetation
G223	647028	264637	2.24	Vegetation
G224	646994	264630	2.27	Soil
G225	647099	264625	2.30	Vegetation
G226	647147	264624	2.08	Vegetation
G227	647132	264648	2.60	Vegetation
G228	647147	264679	2.39	Vegetation
G229	647117	264739	2.36	Vegetation
G230	647343	264525	3.31	Vegetation
G231	647329	264483	3.24	Vegetation
G232	647287	264433	2.49	Vegetation
G233	647248	264391	2.97	Vegetation
G234	647195	264335	3.34	Vegetation
G235	647146	264282	3.02	Vegetation
G236	647096	264232	2.47	Vegetation
G237	647048	264181	2.62	Vegetation
G238	646894	264723	2.26	Vegetation
G239	646842	264729	2.10	Vegetation
G240	646793	264730	2.08	Vegetation
G241	646740	264726	2.56	Vegetation
G242	646702	264728	2.85	Vegetation
G243	646749	264775	2.14	Vegetation
G244	646799	264770	2.63	Vegetation
G245	646847	264778	1.96	Vegetation
G246	646804	264826	2.17	Vegetation
G247	646901	264777	2.10	Vegetation
G248	647290	264485	2.92	Vegetation

Survey location	Easting	Northing	Counts (kcpm)	Surface Type
G249	647250	264469	2.20	Vegetation
G250	647396	264475	3.21	Sand
G251	647444	264428	2.94	Vegetation
G252	647496	264428	2.97	Vegetation
G253	647493	264477	3.22	Vegetation
G254	647444	264478	3.47	Vegetation
G255	647342	264431	4.66	Vegetation
G256	647393	264476	4.81	Sand
G257	647445	264479	4.92	Vegetation
G258	647342	264432	3.04	Vegetation
G259	647394	264475	3.45	Sand
G260	647396	264432	2.70	Vegetation
G261	647351	264382	3.11	Vegetation
G262	647395	264377	2.99	Vegetation
G263	647347	264333	2.92	Vegetation
G264	647300	264322	3.04	Vegetation
G265	647398	264329	3.03	Vegetation
G266	647446	264329	2.91	Vegetation
G267	647495	264330	2.89	Vegetation
G268	647547	264330	2.92	Vegetation
G269	647543	264381	2.96	Vegetation
G270	647496	264377	2.87	Vegetation
G271	647444	264383	3.21	Vegetation
G272	647547	264428	2.75	Vegetation
G273	647544	264480	2.96	Vegetation
G274	647595	264479	1.63	Vegetation
G275	647594	264429	1.67	Vegetation
G276	647595	264379	1.58	Vegetation
G277	647595	264328	1.55	Vegetation
G278	647594	264280	1.51	Vegetation
G279	647594	264230	1.52	Vegetation
G280	647595	264180	1.34	Vegetation
G281	647595	264129	1.43	Vegetation
G282	647595	264080	1.50	Vegetation
G283	647595	264029	1.47	Vegetation
G284	647594	263980	2.29	Vegetation
G285	647595	263929	2.21	Vegetation
G286	647595	263879	2.28	Vegetation
G287	647596	263828	2.29	Vegetation
G288	647595	263780	4.08	Soil
G289	647576	263780	4.71	Soil
G290	647641	263881	1.20	Sand
G291	647644	263930	1.18	Sand
G292	647642	263980	1.13	Sand
G293	647644	264030	1.08	Sand
G294	647646	264080	1.13	Sand
G295	647645	264129	1.10	Sand
G296	647645	264180	1.12	Sand
G297	647644	264229	1.07	Sand
G298	647644	264279	1.17	Sand
G299	647644	264329	1.12	Sand

Survey location	Easting	Northing	Counts (kcpm)	Surface Type
G300	647643	264380	1.11	Sand
G301	647644	264430	1.12	Sand
G302	647644	264479	1.12	Sand
G303	647101	263879	6.36	Concrete
G304	647044	263877	3.56	Vegetation
G305	647050	263825	2.99	Vegetation
G306	646990	263879	N/A	Inaccessible
G307	647094	263829	3.90	Concrete
G308	647096	263780	3.23	Sand
G309	647095	263730	3.45	Sand
G310	647092	263679	3.75	Sand
G311	647090	263630	3.62	Sand
G312	647089	263581	3.76	Sand
G313	647044	263594	6.10	Concrete
G314	647044	263680	3.60	Vegetation
G315	647043	263628	N/A	Inaccessible
G316	647041	263729	2.92	Vegetation
G317	647046	263780	3.20	Vegetation
G318	647044	263929	3.32	Vegetation
G319	646991	263930	N/A	Inaccessible
G320	647094	263930	4.82	Gravel
G321	647145	263980	4.82	Gravel
G322	647095	263979	4.81	Gravel
G323	647046	263979	3.06	Vegetation
G324	647045	264028	3.03	Vegetation
G325	647095	264029	5.12	Gravel
G326	647145	264031	5.26	Gravel
G327	647156	263889	5.27	Vegetation
G328	647196	263881	7.59	Vegetation
G329	647195	263929	5.14	Vegetation
G330	647245	263929	4.83	Vegetation
G331	647296	263932	4.35	Vegetation
G332	647346	263930	3.27	Vegetation
G333	647345	263880	3.47	Vegetation
G334	647345	263827	5.85	Vegetation
G335	647346	263789	3.47	Gravel
G336	647399	263783	3.34	Gravel
G337	647445	263783	3.36	Gravel
G338	647496	263782	3.04	Gravel
G339	647234	264427	N/A	Inaccessible
G340	647185	264426	N/A	Inaccessible
G341	647135	264426	N/A	Inaccessible
G342	647092	264429	N/A	Inaccessible
G343	647039	264425	N/A	Inaccessible
G344	647037	264378	N/A	Inaccessible
G345	647093	264377	N/A	Inaccessible
G346	647137	264378	N/A	Inaccessible
G347	647187	264376	N/A	Inaccessible
G348	647133	264328	N/A	Inaccessible

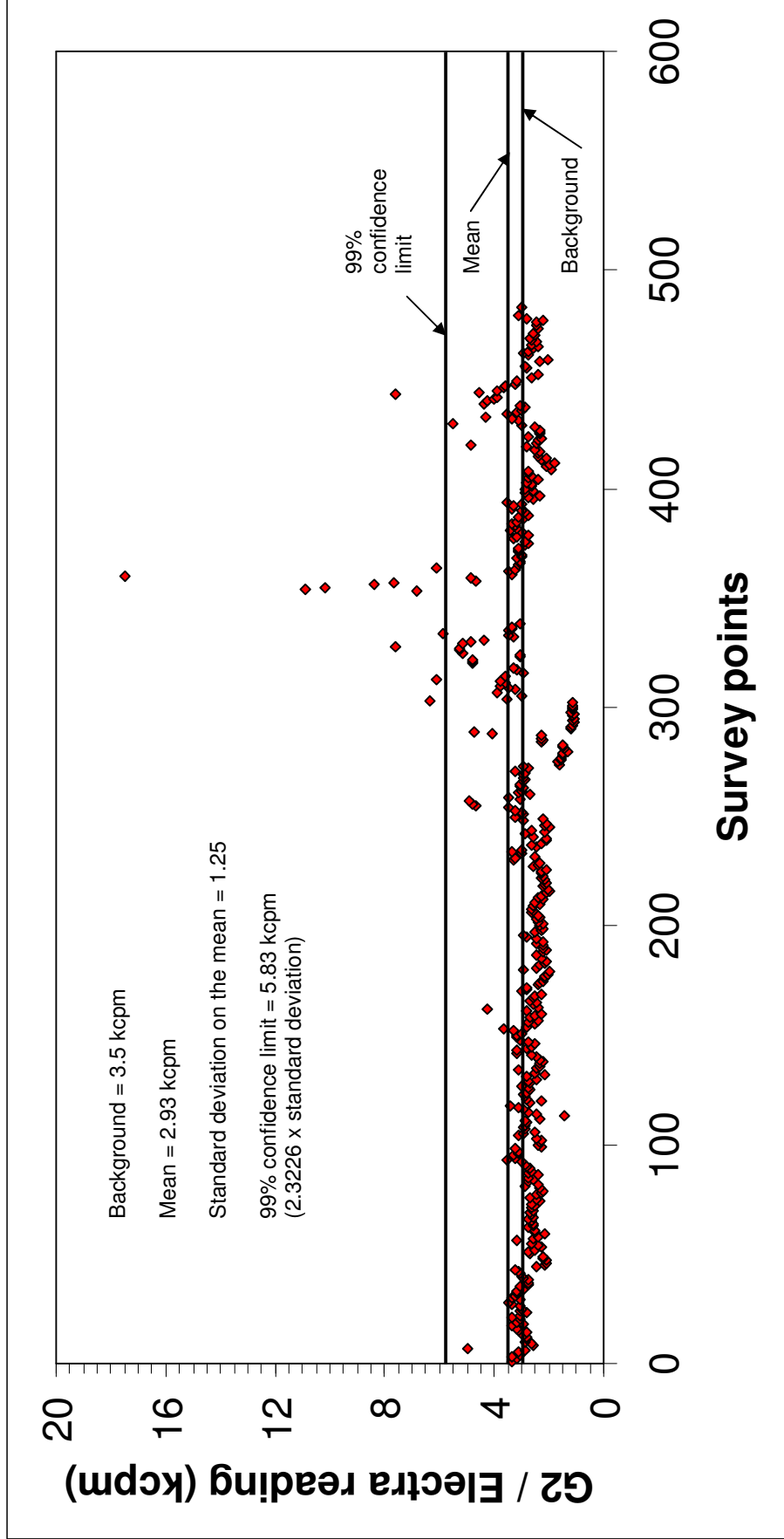
Survey location	Easting	Northing	Counts (kcpm)	Surface Type
G349	647093	264331	N/A	Inaccessible
G350	647035	264331	N/A	Inaccessible
G351	647045	264282	N/A	Inaccessible
G352	647039	264232	N/A	Inaccessible
G353	647295	263785	6.81	Gravel
G354	647295	263832	10.90	Gravel
G355	647295	263880	10.20	Gravel
G356	647241	263873	8.36	Gravel
G357	647251	263832	7.65	Gravel
G358	647244	263786	4.70	Gravel
G359	647195	263786	4.84	Gravel
G360	647186	263830	17.50	Gravel
G361	647194	263729	3.35	Gravel
G362	647139	263730	3.46	Concrete
G363	647143	263777	3.22	Gravel
G364	647141	263841	6.13	Gravel
G365	647107	262631	3.09	Soil
G366	647154	262630	3.06	Soil
G367	647203	262629	3.04	Soil
G368	647304	262682	3.18	Soil
G369	647251	262676	2.98	Soil
G370	647103	262678	3.00	Soil
G371	647154	262679	3.14	Soil
G372	647187	262682	3.09	Soil
G373	647254	262730	3.09	Soil
G374	647201	262728	2.90	Soil
G375	647153	262728	2.74	Soil
G376	647102	262729	2.87	Soil
G377	647055	262732	3.29	Gravel
G378	647054	262780	3.20	Soil
G379	647104	262779	2.73	Soil
G380	647154	262779	3.00	Soil
G381	647202	262779	3.40	Soil
G382	647254	262779	3.20	Soil
G383	647254	262830	3.25	Soil
G384	647204	262828	3.38	Soil
G385	647154	262830	3.18	Soil
G386	647104	262829	2.94	Soil
G387	647053	262831	3.12	Soil
G388	647053	262879	2.74	Soil
G389	647105	262881	2.88	Soil
G390	647154	262881	3.00	Soil
G391	647204	262879	3.37	Soil
G392	647152	262931	3.29	Soil
G393	647103	262930	2.97	Soil
G394	647053	262928	3.54	Soil
G395	647049	263067	2.58	Vegetation
G396	647054	263081	2.73	Vegetation
G397	647030	263057	2.31	Vegetation
G398	647147	264080	2.86	Vegetation
G399	647094	264081	2.59	Vegetation

Survey location	Easting	Northing	Counts (kcpm)	Surface Type
G400	647048	264081	2.85	Vegetation
G401	647048	264130	2.62	Vegetation
G402	647097	264131	2.66	Vegetation
G403	647096	264180	2.82	Vegetation
G404	647141	264231	2.41	Vegetation
G405	647144	264181	2.76	Vegetation
G406	647146	264129	2.66	Vegetation
G407	647497	264278	2.75	Vegetation
G408	647541	264281	2.74	Vegetation
G409	647542	264229	1.90	Vegetation
G410	647541	264178	2.12	Vegetation
G411	647545	264130	1.95	Vegetation
G412	647545	264080	1.79	Vegetation
G413	647543	264029	2.30	Vegetation
G414	647546	263980	2.09	Vegetation
G415	647545	263928	2.42	Vegetation
G416	647544	263877	2.40	Vegetation
G417	647545	263829	2.36	Vegetation
G418	647544	263780	2.52	Vegetation
G419	647494	264029	2.80	Vegetation
G420	647146	263930	4.83	Gravel
G421	647488	264080	2.46	Vegetation
G422	647489	264127	2.38	Vegetation
G423	647494	264179	2.30	Vegetation
G424	647497	264231	2.75	Vegetation
G425	647446	264280	2.34	Vegetation
G426	647444	264228	2.32	Soil
G427	647445	264179	2.36	Soil
G428	647445	264130	2.54	Sand
G429	647446	264080	2.98	Sand
G430	647444	264035	5.49	Gravel
G431	647493	263980	3.14	Vegetation
G432	647494	263930	3.34	Vegetation
G433	647493	263877	4.32	Vegetation
G434	647494	263828	3.54	Vegetation
G435	647440	263829	3.19	Vegetation
G436	647446	263880	2.97	Vegetation
G437	647444	263929	2.87	Vegetation
G438	647443	263980	3.05	Vegetation
G439	647395	263827	4.40	Vegetation
G440	647395	263881	4.27	Vegetation
G441	647398	263930	4.01	Vegetation
G442	647396	263980	3.89	Vegetation
G443	647396	264030	7.59	Gravel
G444	647398	264030	4.56	Vegetation
G445	647195	263980	3.89	Vegetation
G446	647245	263976	3.68	Vegetation
G447	647294	263977	3.57	Vegetation
G448	647344	263977	3.24	Vegetation

Survey location	Easting	Northing	Counts (kcpm)	Surface Type
G449	647344	264021	3.15	Gravel
G450	647288	264029	N/A	Inaccessible
G451	647396	264080	2.65	Soil
G452	647345	264130	2.39	Soil
G453	647339	264078	N/A	Inaccessible
G454	647290	264078	N/A	Inaccessible
G455	647395	264130	2.80	Soil
G456	647394	264180	2.86	Soil
G457	647341	264179	N/A	Inaccessible
G458	647394	264230	2.36	Vegetation
G459	647396	264287	2.05	Vegetation
G460	647340	264228	N/A	Inaccessible
G461	647345	264288	2.77	Vegetation
G462	647290	264379	2.96	Vegetation
G463	647246	264330	2.75	Vegetation
G464	647196	264281	2.58	Vegetation
G465	647246	264281	2.39	Vegetation
G466	647295	264280	2.61	Vegetation
G467	647294	264229	2.45	Vegetation
G468	647244	264229	2.62	Vegetation
G469	647195	264228	2.70	Vegetation
G470	647195	264179	2.50	Vegetation
G471	647244	264180	2.60	Vegetation
G472	647289	264178	N/A	Inaccessible
G473	647244	264130	2.37	Vegetation
G474	647290	264128	N/A	Inaccessible
G475	647203	264130	2.46	Vegetation
G476	647196	264080	2.48	Vegetation
G477	647234	264082	2.22	Vegetation
G478	647245	264030	2.81	Vegetation
G479	647195	264030	3.12	Vegetation
G480	647091	264280	N/A	Inaccessible
G481	647389	264529	N/A	Inaccessible
G482	647082	264680	N/A	Inaccessible

APPENDIX E
-
**STATISTICAL ANALYSIS OF RADIOLOGICAL WALKOVER SURVEY
RESULTS**

Table E1 : Statistical analysis of radiological walkover survey results



APPENDIX F
-
EDF COMMENTS TABLE



Modification number	Comment made by	Comments made	Page of the comment	Taken in account (Yes/No and why?) - Comments
0	CIDEN-EJ	There is a minor incoherence between background activity readings retained and the values which are viewed as "high" in p 10 and 11 (more than 6.10 kcpm). The Buckle's Wood background activity readings shouldn't be rejected and shouldn't be considered like "significantly different" but you should take into account both values as a range for background values.	p7, p10, p11	No. The readings obtained near Buckle's Wood were recorded on an area of made ground, with a tarmac road very close by. This location was not representative of the majority of area surveyed on site. The background reading taken at Theberton Woods (3.5 kcpm) is significantly different from the reading taken at Buckle's Wood (5.9 kcpm). An upper 99% confidence limit on the mean value (3.5 kcpm) is 5.83 kcpm. Any values above this are statistically different to the mean. There are explanations for any values that exceed this 99% confidence limit on p 10 and 11. The text in section 3.1 has been updated to clarify this point.
1	CIDEN-EJ	you should add a \$1,1 "general" for example (or you should delete the \$1,1 Site description)	p 1	Yes. The title for §1.1 has been updated to "General site description".

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