



Laboratory Report



Contract Number: 73625

Client Ref: **5774**
Client PO: **24319**

Date Received: **05-07-2024**
Date Completed: **25-07-2024**
Report Date: **25-07-2024**

Client: **PJA Civil Engineering Limited**

This report has been checked and approved by:

Contract Title: **Swansea Bay University**
For the attention of: **Liam Clark**

Brendan Evans
Office Administrator

Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	29
Particle Density (Gas Jar) BS 1377:1990 - Part 2 : 8.2 - * UKAS	29
Particle Size Distribution BS EN ISO 17892-4 : 5.1 - * UKAS	29
Dry Den/MC (2.5kg Rammer Method 1 litre mould/CBR Mould) BS 1377-2:2022 Clause 11.3 & 11.4 - * UKAS	29
Disposal of samples for job	1

Notes: Observations and Interpretations are outside the UKAS Accreditation

* - denotes test included in laboratory scope of accreditation

- denotes test carried out by approved contractor

@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This test report/certificate shall not be reproduced except in full, without the approval of GEO Site & Testing Services Ltd. Any opinions or interpretations stated - within this report/certificate are excluded from the laboratories UKAS accreditation.

Approved Signatories:

Brendan Evans (Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)
Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)
Wayne Honey (HR & HSE Manager)

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 1**

Project Name **Swansea Bay University**

Sample No. **1**

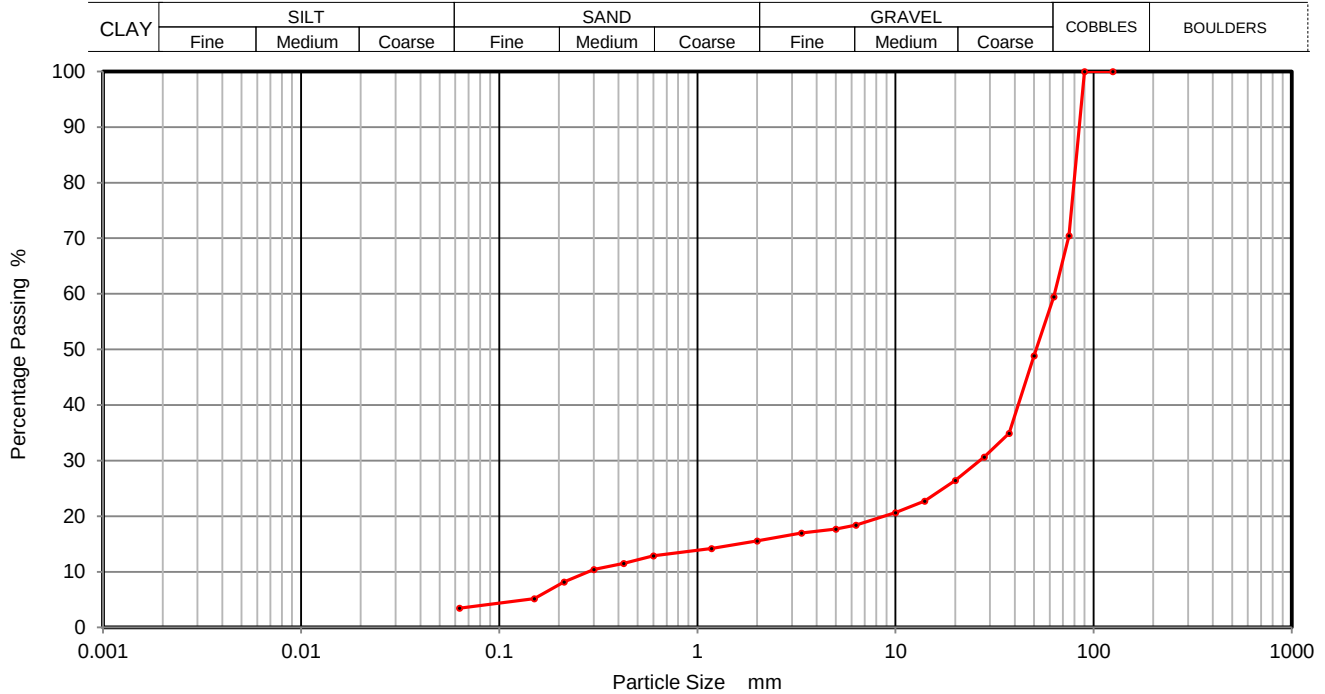
Sample Description **Brown slightly clayey/silty fine to coarse sandy fine to coarse GRAVEL (with cobbles)**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	70		
63	59		
50	49		
37.5	35		
28	31		
20	26		
14	23		
10	21		
6.3	18		
5	18		
3.35	17		
2	16		
1.18	14		
0.63	13		
0.425	12		
0.30	10		
0.20	8		
0.15	5		
0.063	3		

Sample Proportions	% dry mass
Cobbles	41
Gravel	43
Sand	13
Silt and Clay	3

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 2**

Project Name **Swansea Bay University**

Sample No. **2**

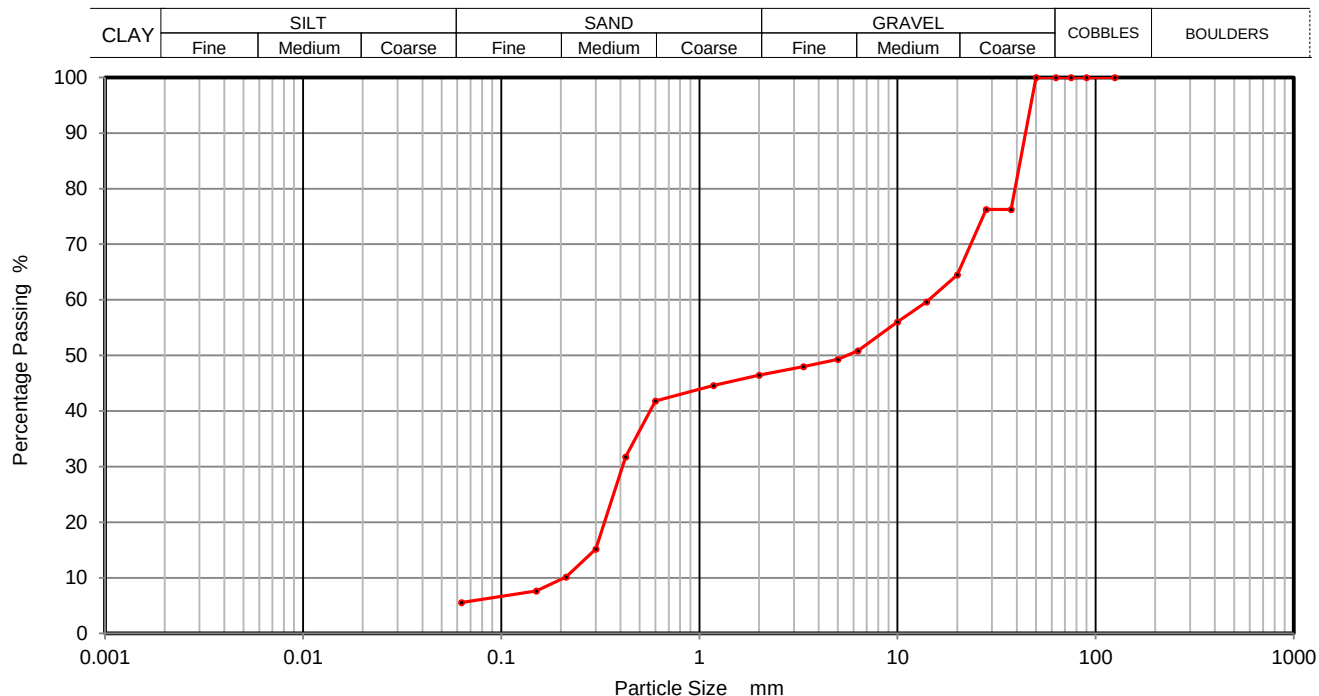
Sample Description **Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	76		
28	76		
20	64		
14	60		
10	56		
6.3	51		
5	49		
3.35	48		
2	46		
1.18	45		
0.63	42		
0.425	32		
0.30	15		
0.20	10		
0.15	8		
0.063	6		

Sample Proportions	% dry mass
Cobbles	0
Gravel	54
Sand	40
Silt and Clay	6

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

**PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2**

Contract Number **73625**

Borehole/Pit No. **S. 3**

Project Name **Swansea Bay University**

Sample No. **3**

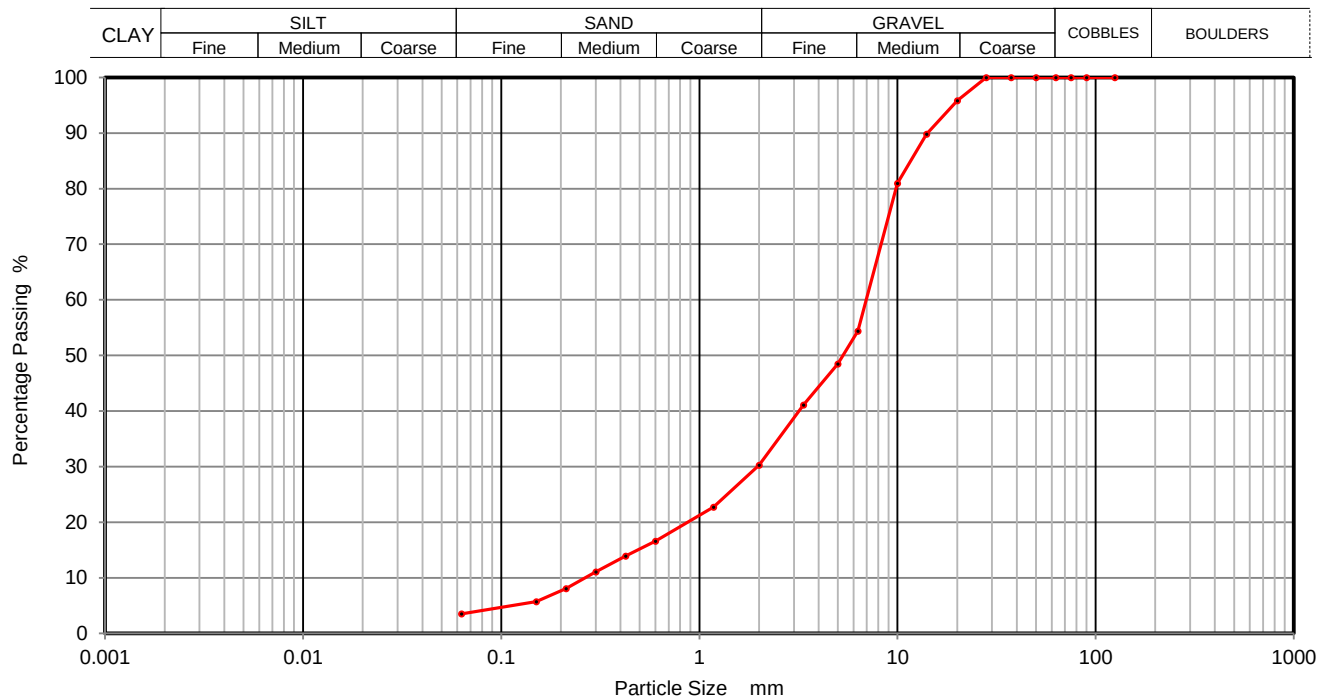
Sample Description **Brown slightly clayey/silty fine to coarse sandy fine to coarse GRAVEL**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	90		
10	81		
6.3	54		
5	48		
3.35	41		
2	30		
1.18	23		
0.63	17		
0.425	14		
0.30	11		
0.20	8		
0.15	6		
0.063	4		

Sample Proportions	% dry mass
Cobbles	0
Gravel	70
Sand	26
Silt and Clay	4

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 4i**

Project Name **Swansea Bay University**

Sample No. **4**

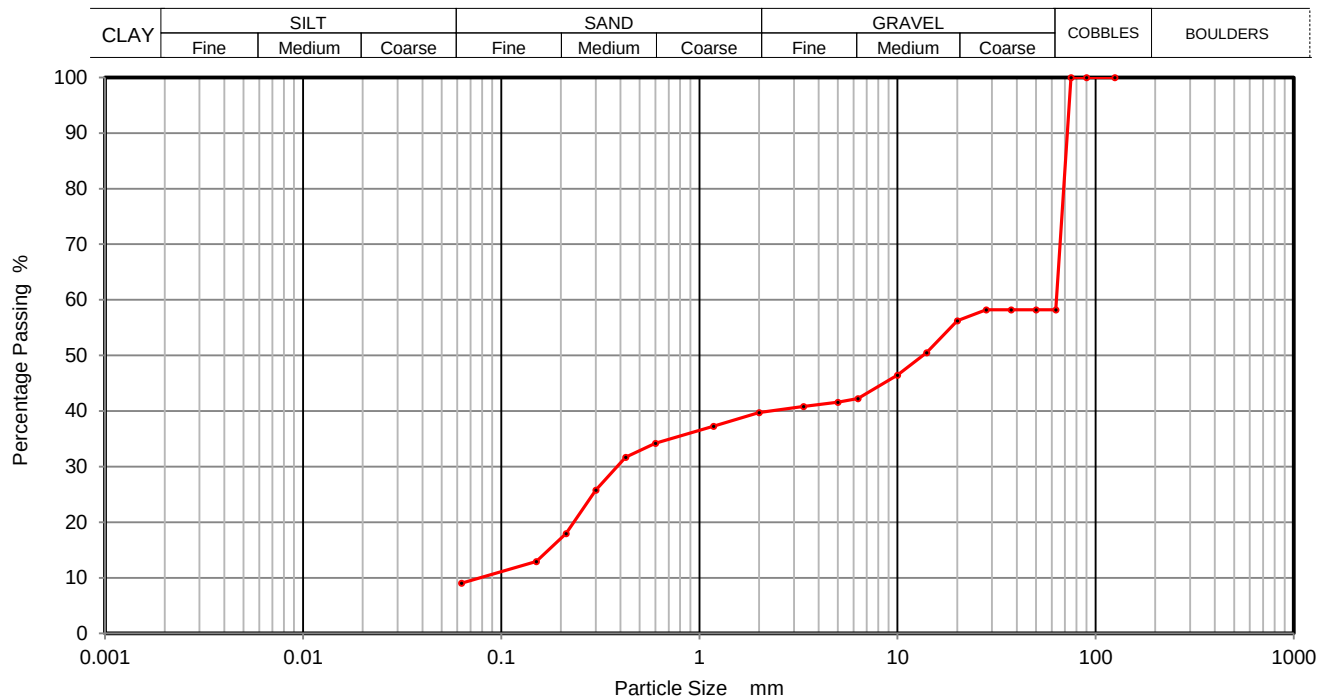
Sample Description **Brown silty/clayey fine to coarse gravelly fine to coarse SAND (with cobbles)**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	58		
50	58		
37.5	58		
28	58		
20	56		
14	50		
10	46		
6.3	42		
5	42		
3.35	41		
2	40		
1.18	37		
0.63	34		
0.425	32		
0.30	26		
0.20	18		
0.15	13		
0.063	9		

Sample Proportions	% dry mass
Cobbles	42
Gravel	18
Sand	31
Silt and Clay	9

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

**PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2**

Contract Number **73625**

Borehole/Pit No. **S. 4ii**

Project Name **Swansea Bay University**

Sample No. **5**

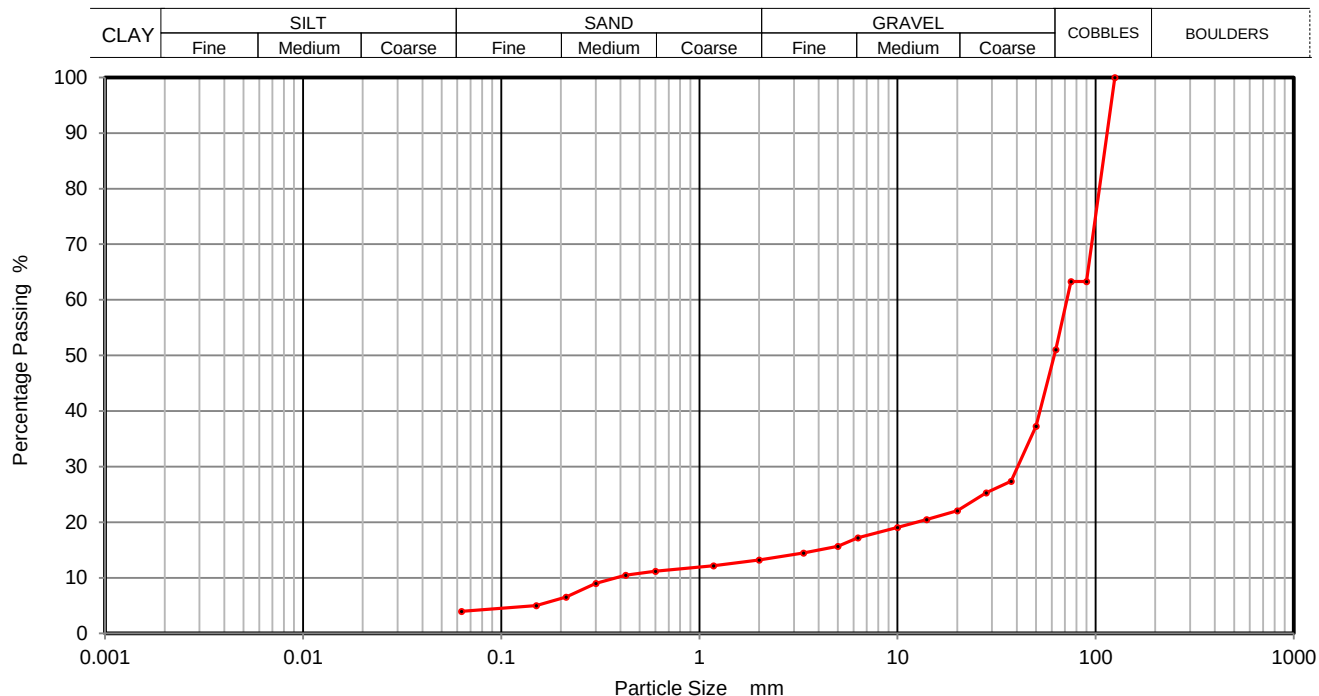
Sample Description **Brown slightly silty/clayey fine to coarse sandy fine to coarse GRAVEL
(with cobbles)**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	63		
75	63		
63	51		
50	37		
37.5	27		
28	25		
20	22		
14	20		
10	19		
6.3	17		
5	16		
3.35	14		
2	13		
1.18	12		
0.63	11		
0.425	10		
0.30	9		
0.20	7		
0.15	5		
0.063	4		

Sample Proportions	% dry mass
Cobbles	49
Gravel	38
Sand	9
Silt and Clay	4

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 5**

Project Name **Swansea Bay University**

Sample No. **6**

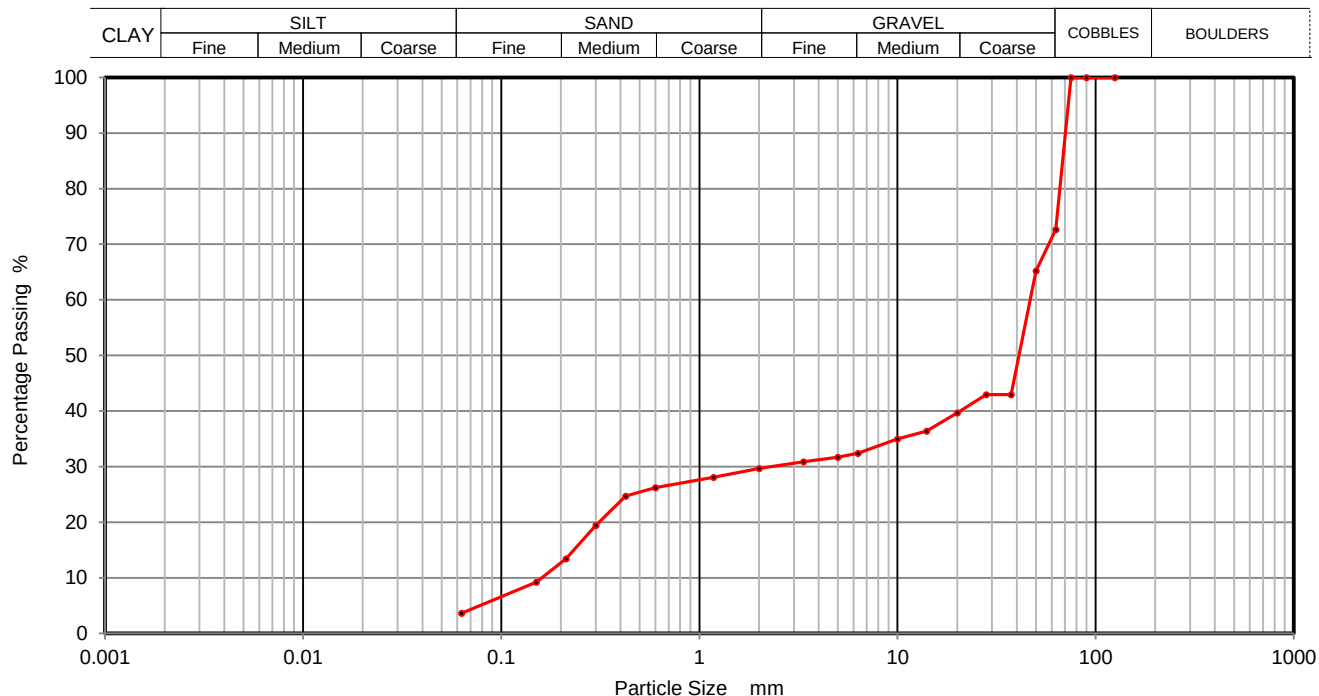
Sample Description **Brown slightly silty/clayey fine to coarse sandy fine to coarse GRAVEL (with cobbles)**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	73		
50	65		
37.5	43		
28	43		
20	40		
14	36		
10	35		
6.3	32		
5	32		
3.35	31		
2	30		
1.18	28		
0.63	26		
0.425	25		
0.30	19		
0.20	13		
0.15	9		
0.063	4		

Sample Proportions	% dry mass
Cobbles	27
Gravel	43
Sand	26
Silt and Clay	4

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

**PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2**

Contract Number **73625**

Borehole/Pit No. **S. 6**

Project Name **Swansea Bay University**

Sample No. **7**

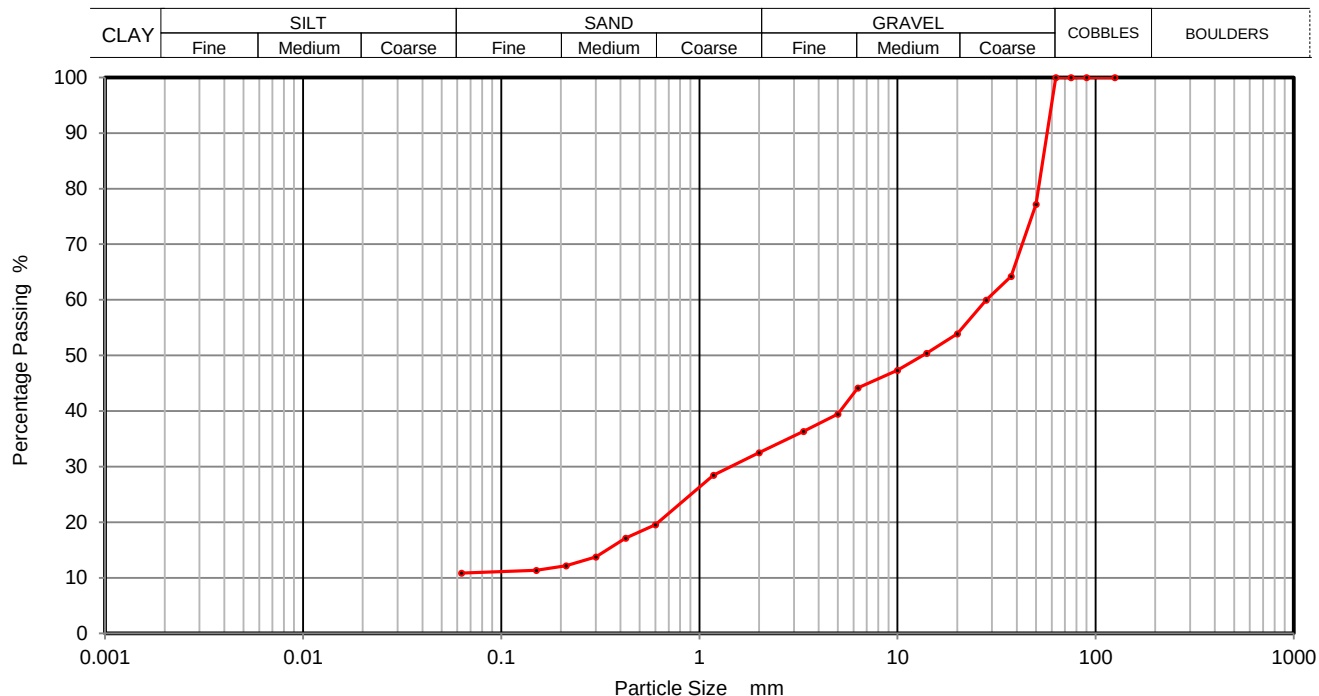
Sample Description **Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	77		
37.5	64		
28	60		
20	54		
14	50		
10	47		
6.3	44		
5	39		
3.35	36		
2	33		
1.18	28		
0.63	20		
0.425	17		
0.30	14		
0.20	12		
0.15	11		
0.063	11		

Sample Proportions	% dry mass
Cobbles	0
Gravel	67
Sand	22
Silt and Clay	11

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number

73625

Borehole/Pit No.

S. 9i

Project Name

Swansea Bay University

Sample No.

8

Sample Description

Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL

Depth Top

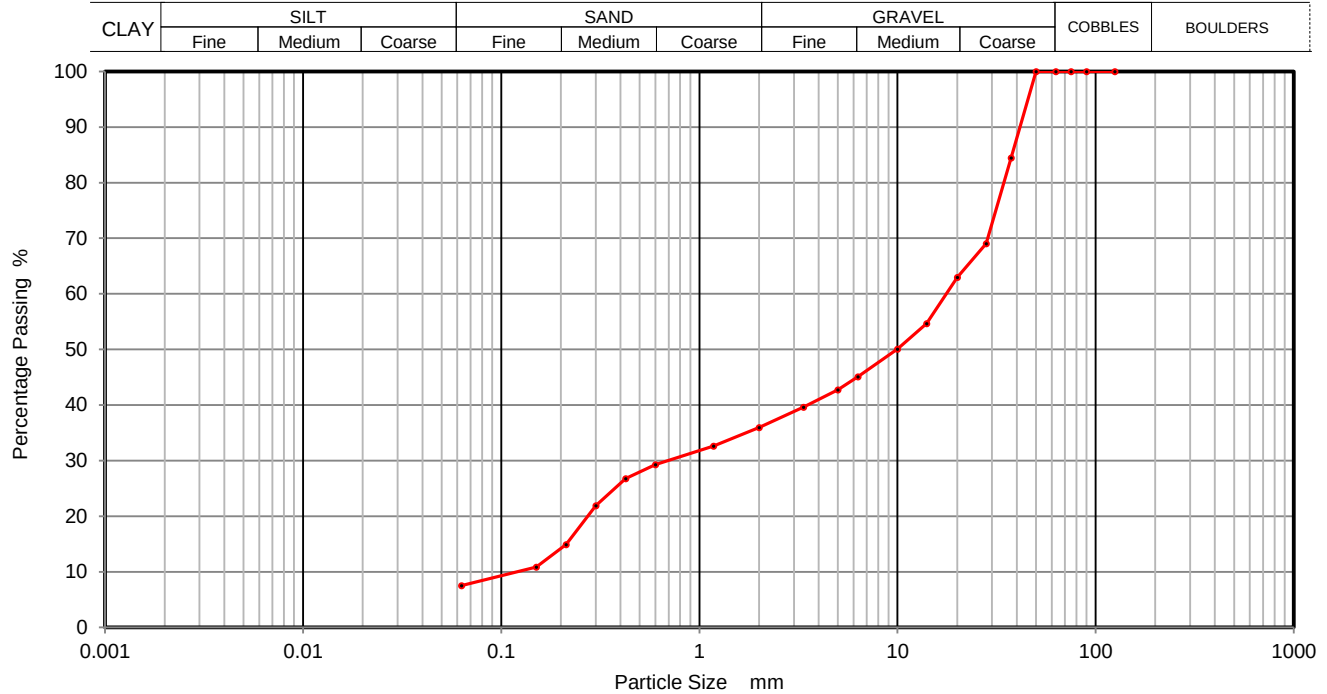
Depth Base

Date Tested

19/07/2024

Sample Type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	84		
28	69		
20	63		
14	55		
10	50		
6.3	45		
5	43		
3.35	40		
2	36		
1.18	33		
0.63	29		
0.425	27		
0.30	22		
0.20	15		
0.15	11		
0.063	8		

Sample Proportions	% dry mass
Cobbles	0
Gravel	64
Sand	28
Silt and Clay	8

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 9ii**

Project Name **Swansea Bay University**

Sample No. **9**

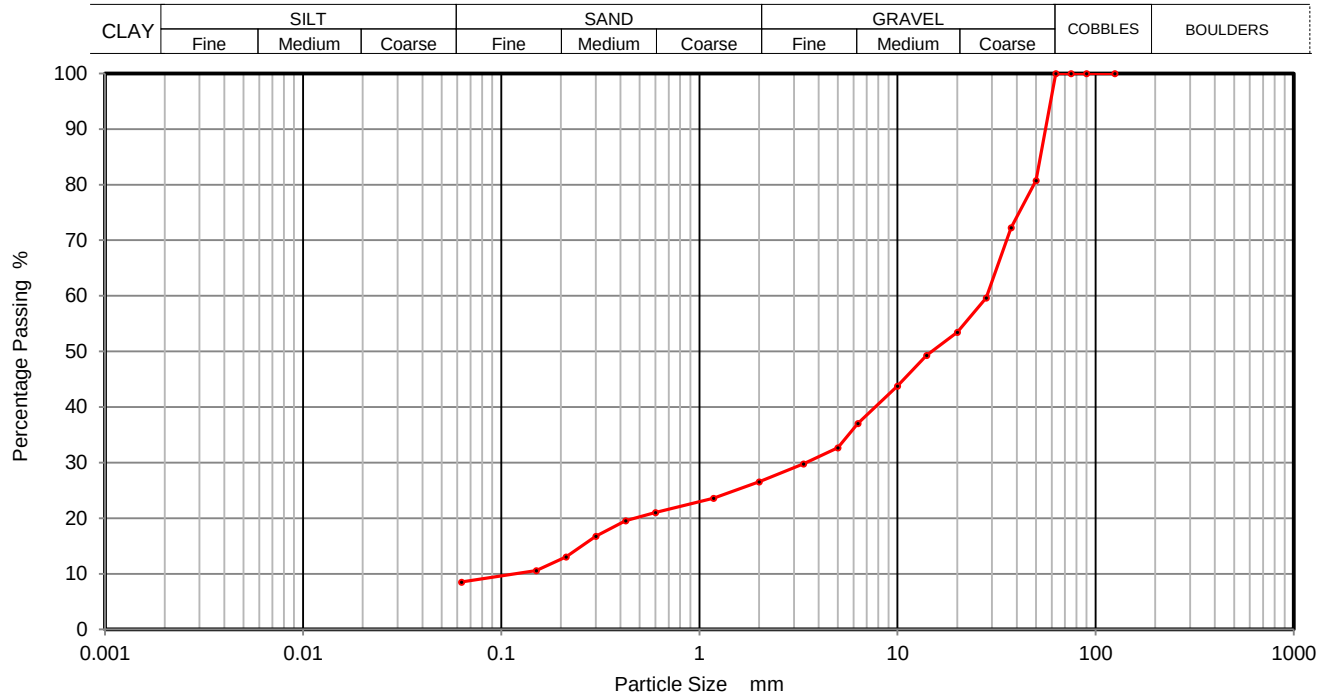
Sample Description **Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	81		
37.5	72		
28	60		
20	53		
14	49		
10	44		
6.3	37		
5	33		
3.35	30		
2	27		
1.18	24		
0.63	21		
0.425	20		
0.30	17		
0.20	13		
0.15	11		
0.063	9		

Sample Proportions	% dry mass
Cobbles	0
Gravel	73
Sand	18
Silt and Clay	9

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

**PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2**

Contract Number **73625**

Borehole/Pit No. **S. 9iii**

Project Name **Swansea Bay University**

Sample No. **10**

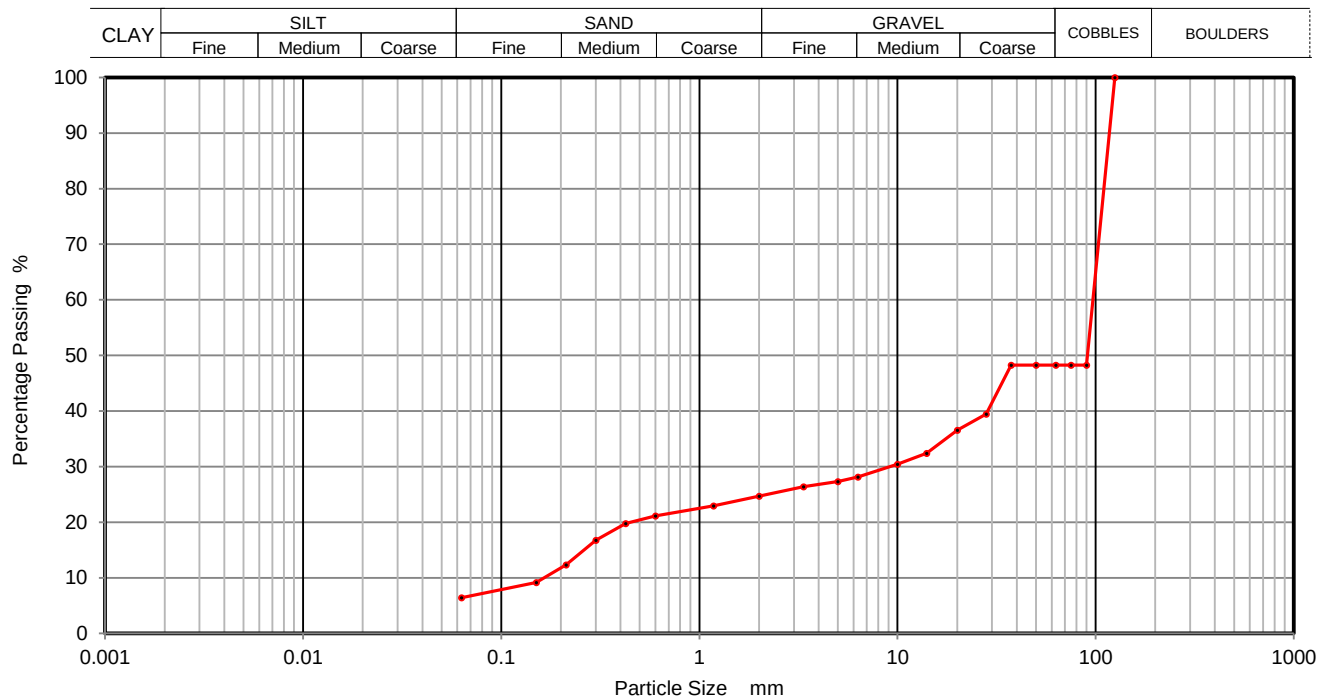
Sample Description **Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL (with cobbles)**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	48		
75	48		
63	48		
50	48		
37.5	48		
28	39		
20	37		
14	32		
10	30		
6.3	28		
5	27		
3.35	26		
2	25		
1.18	23		
0.63	21		
0.425	20		
0.30	17		
0.20	12		
0.15	9		
0.063	6		

Sample Proportions	% dry mass
Cobbles	52
Gravel	23
Sand	19
Silt and Clay	6

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 9iv**

Project Name **Swansea Bay University**

Sample No. **11**

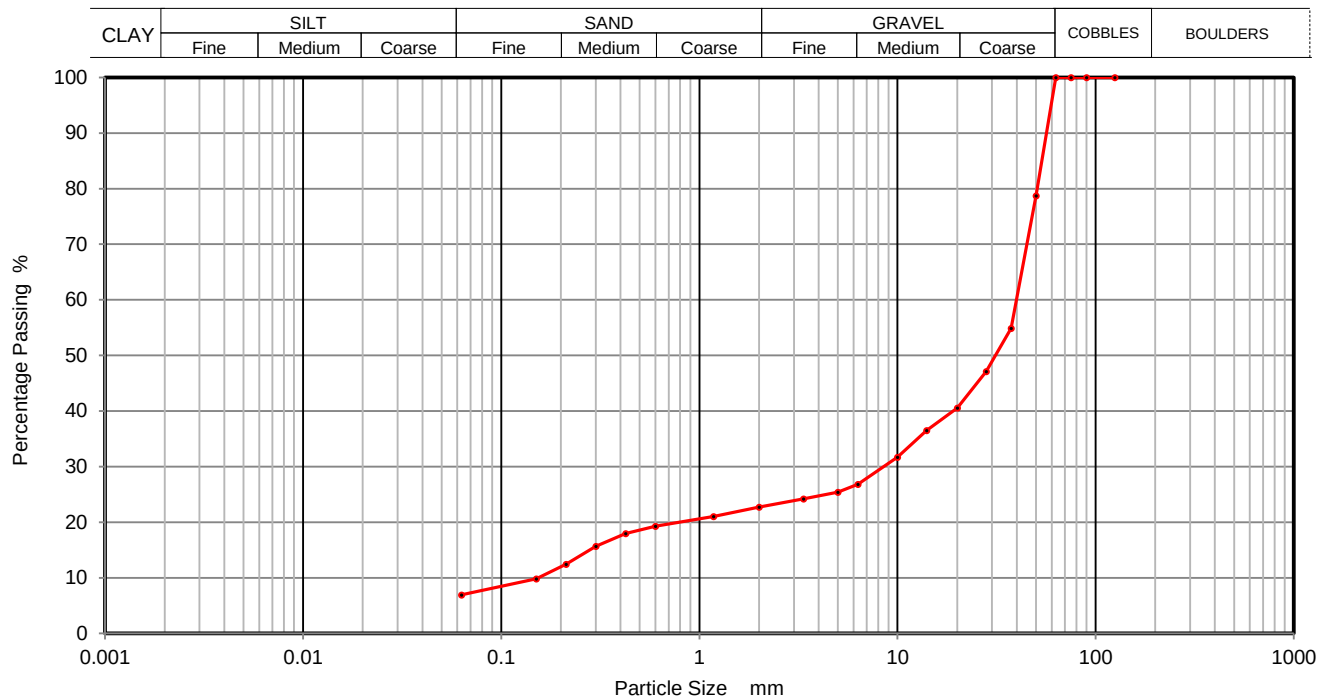
Sample Description **Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	79		
37.5	55		
28	47		
20	41		
14	37		
10	32		
6.3	27		
5	25		
3.35	24		
2	23		
1.18	21		
0.63	19		
0.425	18		
0.30	16		
0.20	12		
0.15	10		
0.063	7		

Sample Proportions	% dry mass
Cobbles	0
Gravel	77
Sand	16
Silt and Clay	7

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 9v**

Project Name **Swansea Bay University**

Sample No. **12**

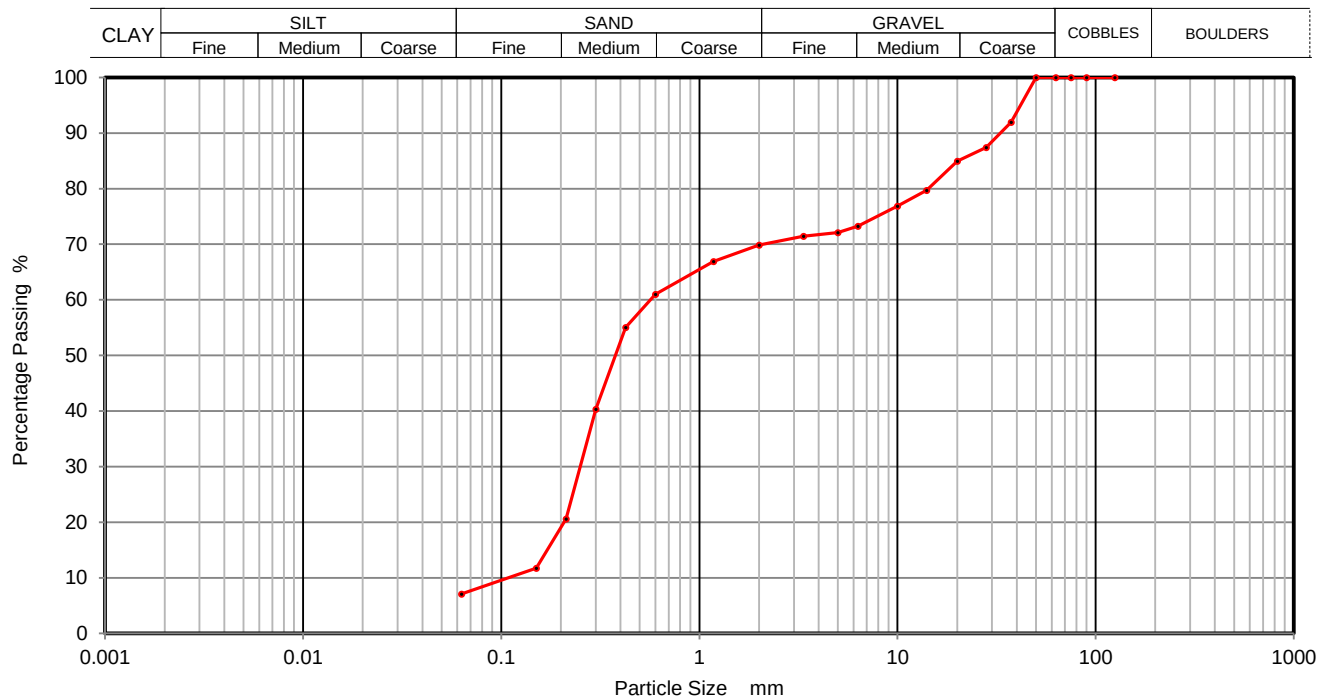
Sample Description **Brown silty/clayey fine to coarse gravelly fine to coarse SAND**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	92		
28	87		
20	85		
14	80		
10	77		
6.3	73		
5	72		
3.35	71		
2	70		
1.18	67		
0.63	61		
0.425	55		
0.30	40		
0.20	21		
0.15	12		
0.063	7		

Sample Proportions	% dry mass
Cobbles	0
Gravel	30
Sand	63
Silt and Clay	7

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 9vi**

Project Name **Swansea Bay University**

Sample No. **13**

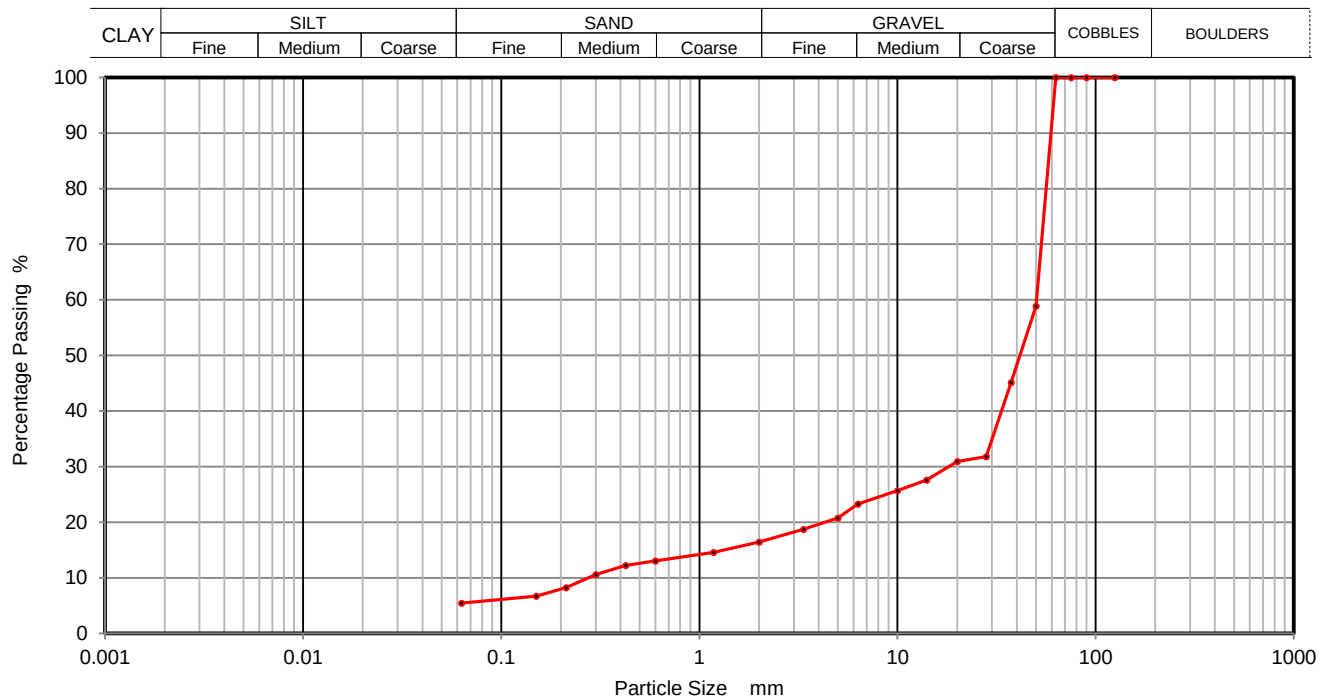
Sample Description **Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	59		
37.5	45		
28	32		
20	31		
14	28		
10	26		
6.3	23		
5	21		
3.35	19		
2	16		
1.18	15		
0.63	13		
0.425	12		
0.30	11		
0.20	8		
0.15	7		
0.063	5		

Sample Proportions	% dry mass
Cobbles	0
Gravel	84
Sand	11
Silt and Clay	5

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

**PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2**

Contract Number **73625**

Borehole/Pit No. **S. 9vii**

Project Name **Swansea Bay University**

Sample No. **14**

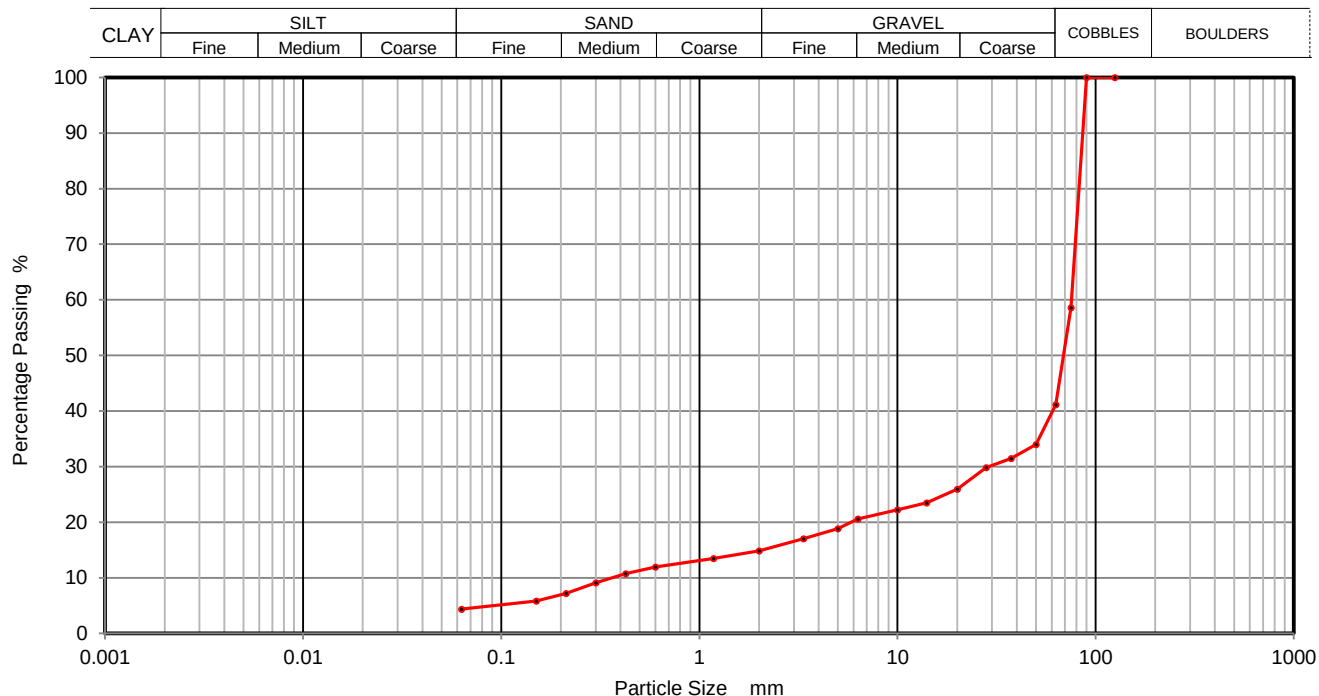
Sample Description **Brown slightly silty/clayey fine to coarse sandy fine to coarse GRAVEL
(with cobbles)**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	59		
63	41		
50	34		
37.5	31		
28	30		
20	26		
14	23		
10	22		
6.3	21		
5	19		
3.35	17		
2	15		
1.18	13		
0.63	12		
0.425	11		
0.30	9		
0.20	7		
0.15	6		
0.063	4		

Sample Proportions	% dry mass
Cobbles	59
Gravel	26
Sand	11
Silt and Clay	4

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 11**

Project Name **Swansea Bay University**

Sample No. **15**

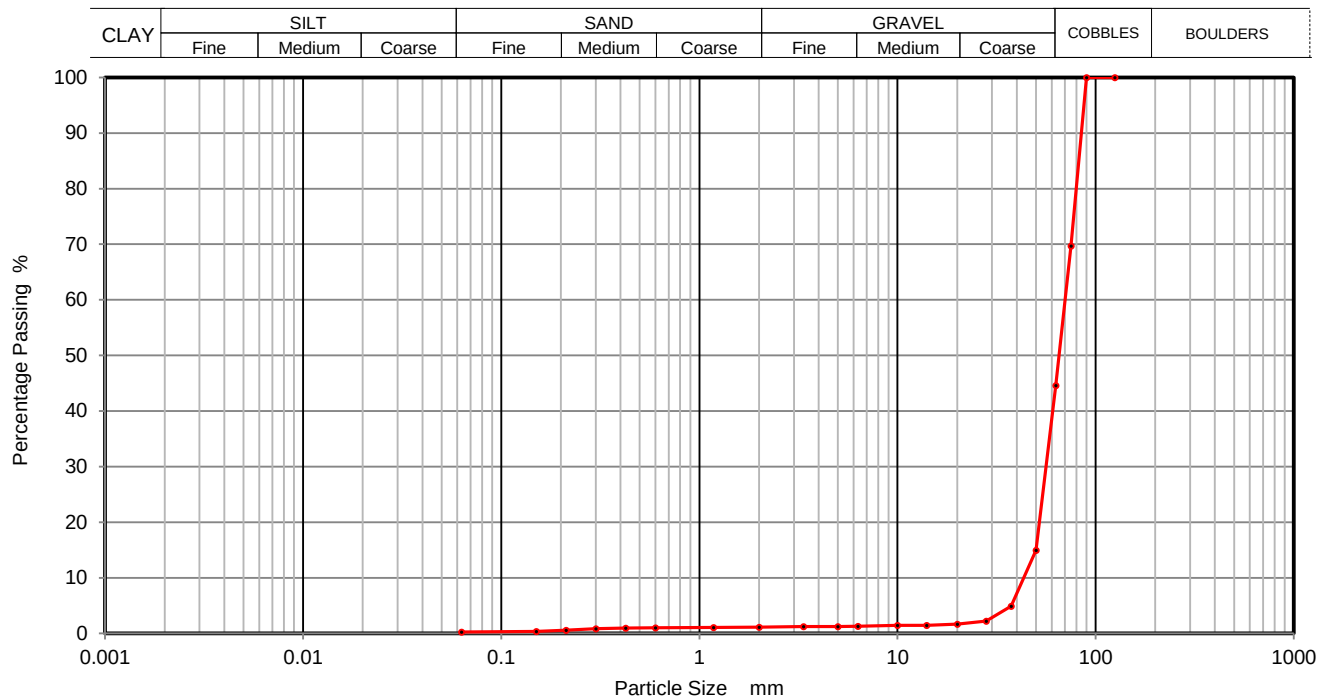
Sample Description **Brown slightly sandy fine to coarse GRAVEL (with cobbles)**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	70		
63	45		
50	15		
37.5	5		
28	2		
20	2		
14	1		
10	1		
6.3	1		
5	1		
3.35	1		
2	1		
1.18	1		
0.63	1		
0.425	1		
0.30	1		
0.20	1		
0.15	0		
0.063	0		

Sample Proportions	% dry mass
Cobbles	55
Gravel	44
Sand	1
Silt and Clay	0

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 12**

Project Name **Swansea Bay University**

Sample No. **16**

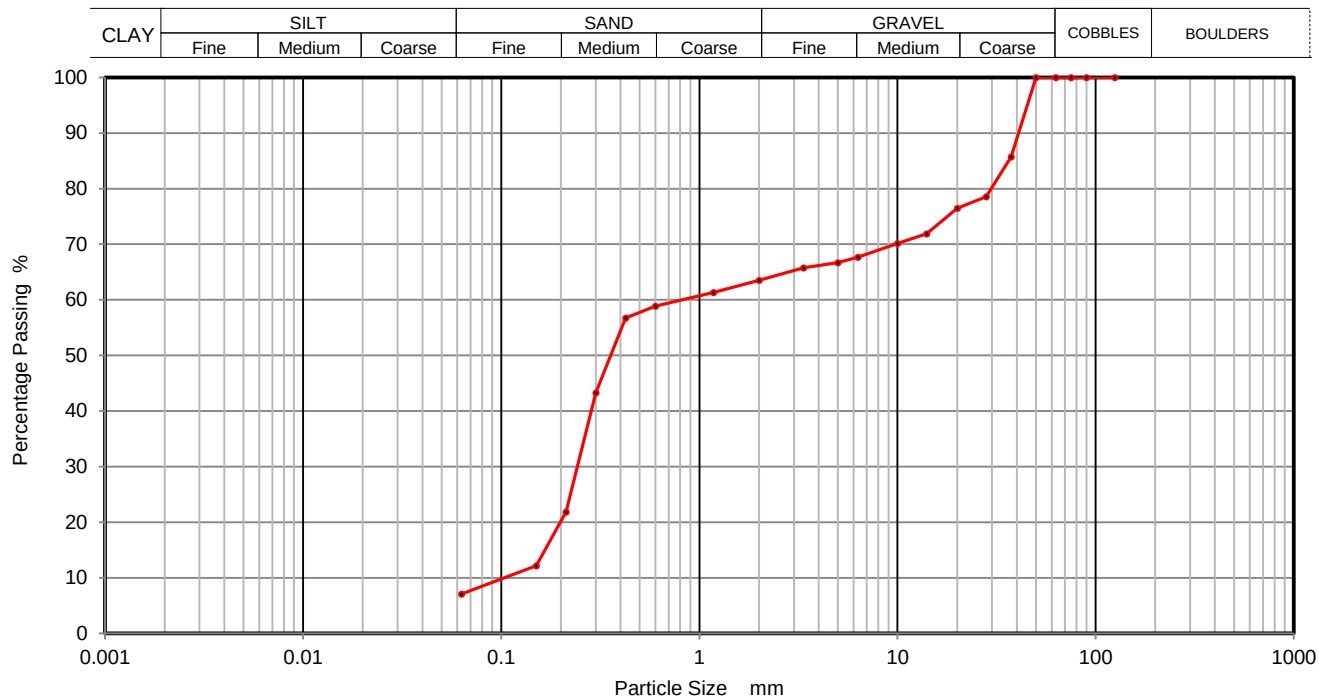
Sample Description **Brown silty/clayey fine to coarse gravelly fine to coarse SAND**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	86		
28	79		
20	76		
14	72		
10	70		
6.3	68		
5	67		
3.35	66		
2	63		
1.18	61		
0.63	59		
0.425	57		
0.30	43		
0.20	22		
0.15	12		
0.063	7		

Sample Proportions	% dry mass
Cobbles	0
Gravel	37
Sand	56
Silt and Clay	7

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
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Contract Number **73625**

Borehole/Pit No. **S. 13**

Project Name **Swansea Bay University**

Sample No. **17**

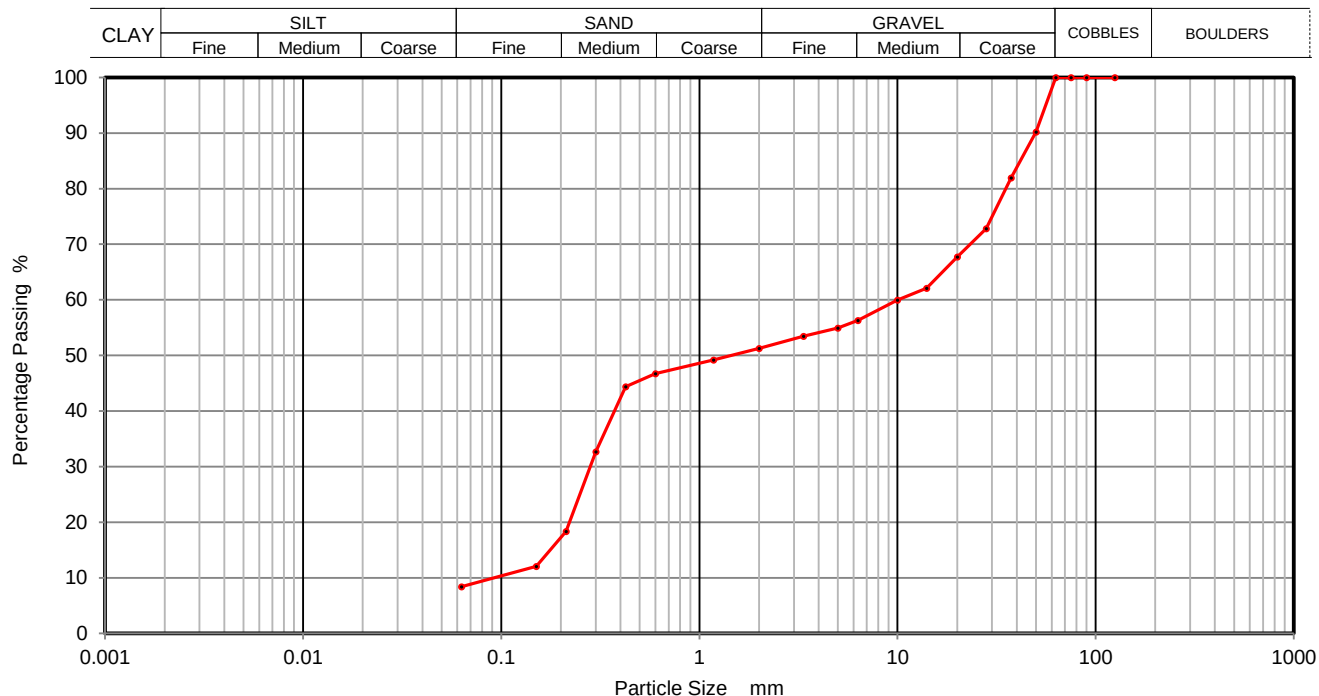
Sample Description **Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	90		
37.5	82		
28	73		
20	68		
14	62		
10	60		
6.3	56		
5	55		
3.35	53		
2	51		
1.18	49		
0.63	47		
0.425	44		
0.30	33		
0.20	18		
0.15	12		
0.063	8		

Sample Proportions	% dry mass
Cobbles	0
Gravel	49
Sand	43
Silt and Clay	8

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 14i**

Project Name **Swansea Bay University**

Sample No. **18**

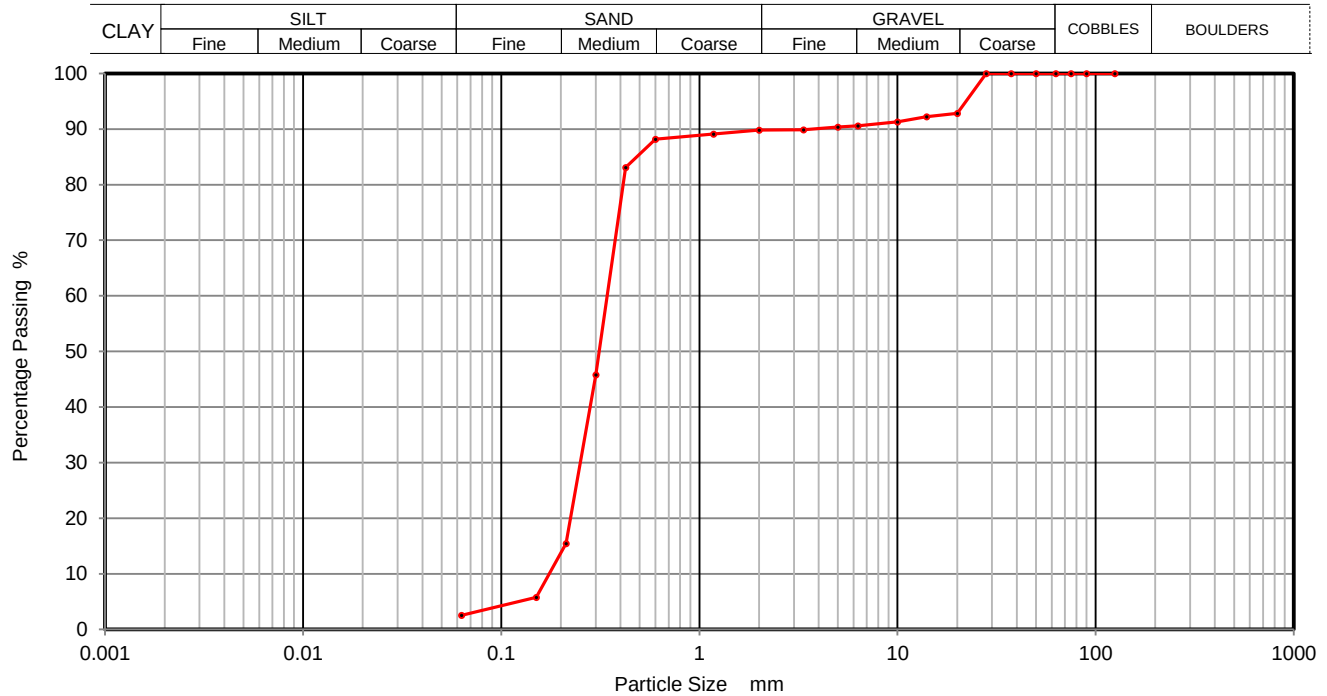
Sample Description **Brown slightly clayey/silty fine to coarse gravelly fine to coarse SAND**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	93		
14	92		
10	91		
6.3	91		
5	90		
3.35	90		
2	90		
1.18	89		
0.63	88		
0.425	83		
0.30	46		
0.20	15		
0.15	6		
0.063	3		

Sample Proportions	% dry mass
Cobbles	0
Gravel	10
Sand	87
Silt and Clay	3

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 14ii**

Project Name **Swansea Bay University**

Sample No. **19**

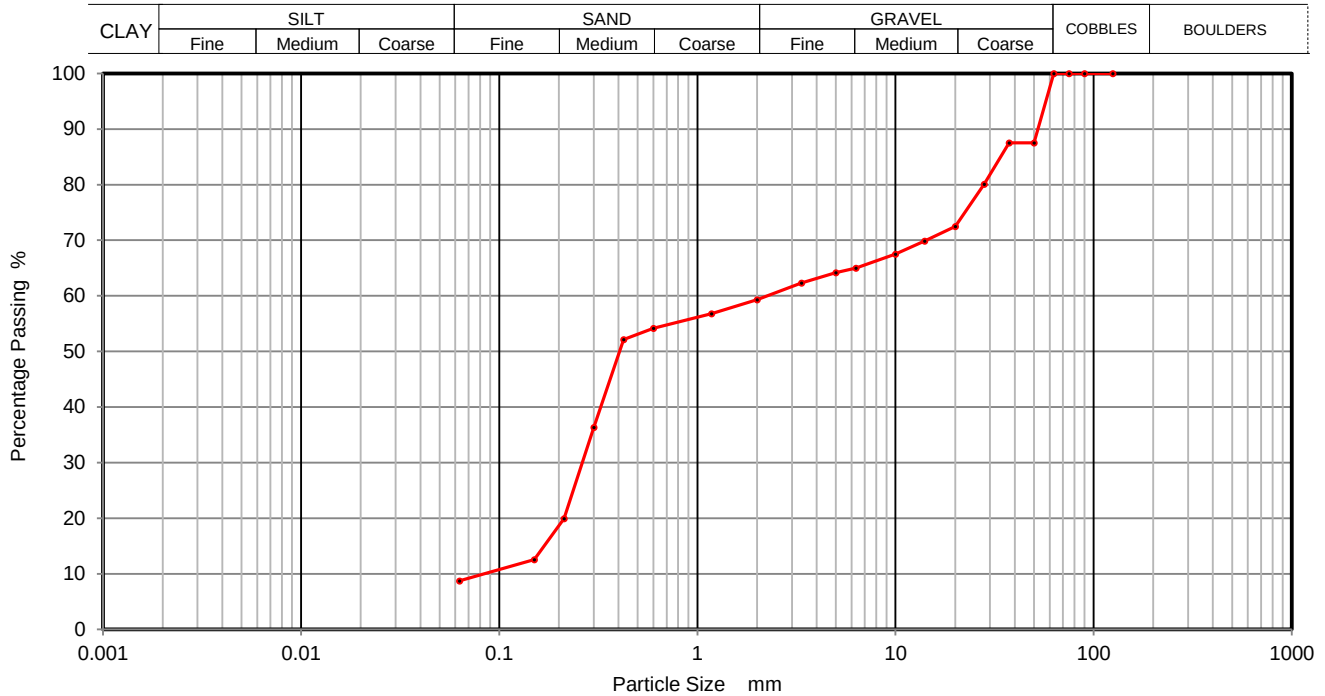
Sample Description **Brown silty/clayey fine to coarse gravelly fine to coarse SAND**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	88		
37.5	88		
28	80		
20	72		
14	70		
10	68		
6.3	65		
5	64		
3.35	62		
2	59		
1.18	57		
0.63	54		
0.425	52		
0.30	36		
0.20	20		
0.15	13		
0.063	9		

Sample Proportions	% dry mass
Cobbles	0
Gravel	41
Sand	50
Silt and Clay	9

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 14iii**

Project Name **Swansea Bay University**

Sample No. **20**

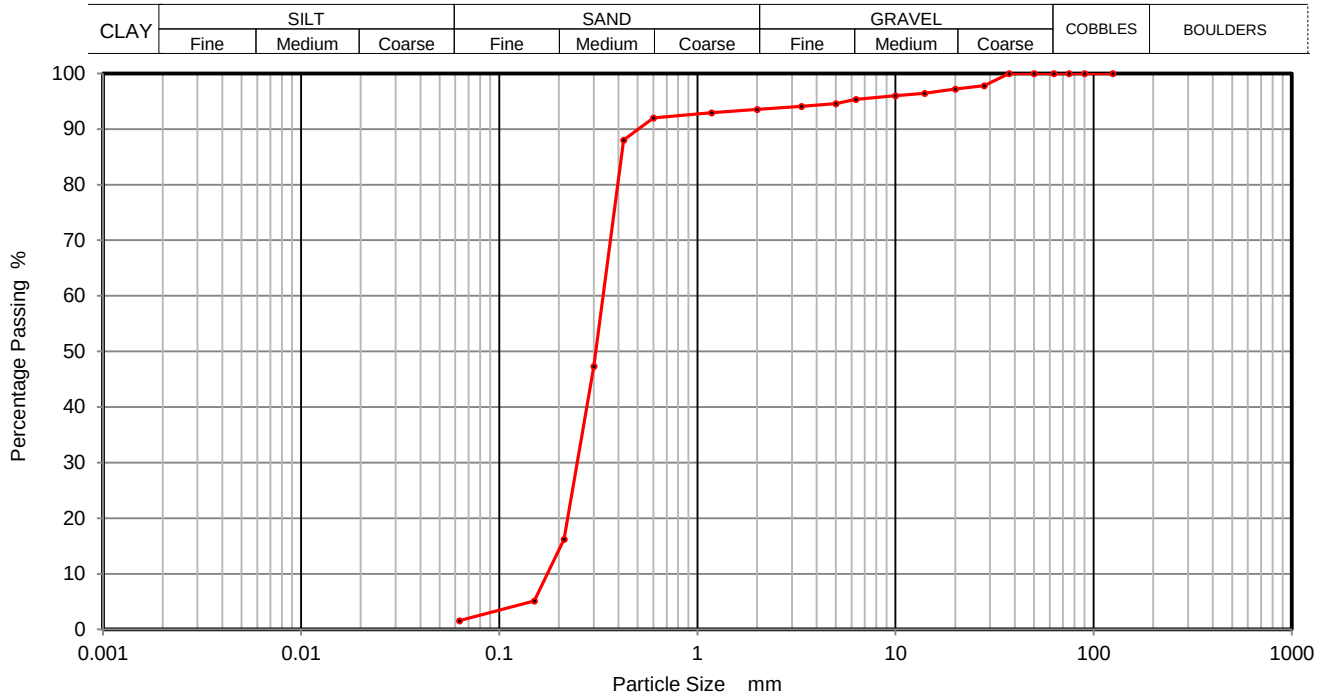
Sample Description **Brown slightly silty/clayey fine to coarse gravelly fine to coarse SAND**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	98		
20	97		
14	96		
10	96		
6.3	95		
5	95		
3.35	94		
2	94		
1.18	93		
0.63	92		
0.425	88		
0.30	47		
0.20	16		
0.15	5		
0.063	2		

Sample Proportions	% dry mass
Cobbles	0
Gravel	6
Sand	92
Silt and Clay	2

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

**PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2**

Contract Number **73625**

Borehole/Pit No. **S. 15**

Project Name **Swansea Bay University**

Sample No. **21**

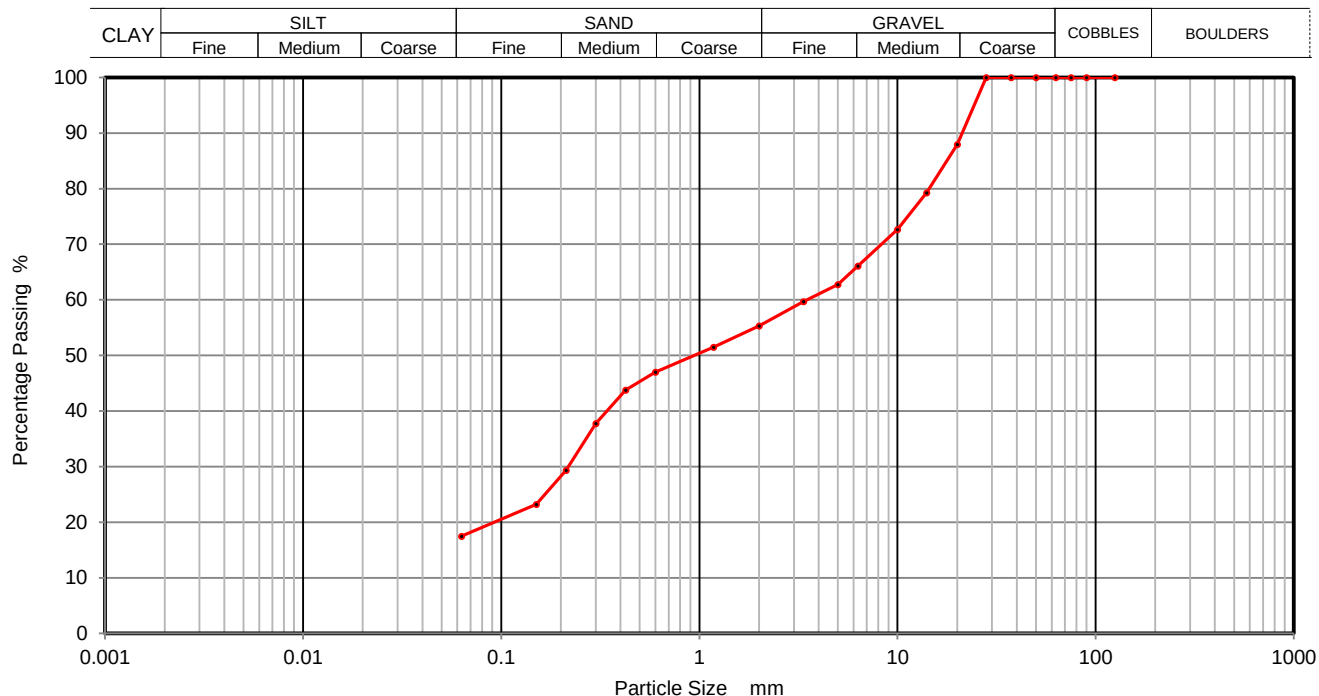
Sample Description **Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	88		
14	79		
10	73		
6.3	66		
5	63		
3.35	60		
2	55		
1.18	51		
0.63	47		
0.425	44		
0.30	38		
0.20	29		
0.15	23		
0.063	17		

Sample Proportions	% dry mass
Cobbles	0
Gravel	45
Sand	38
Silt and Clay	17

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

**PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2**

Contract Number **73625**

Borehole/Pit No. **S. 16**

Project Name **Swansea Bay University**

Sample No. **22**

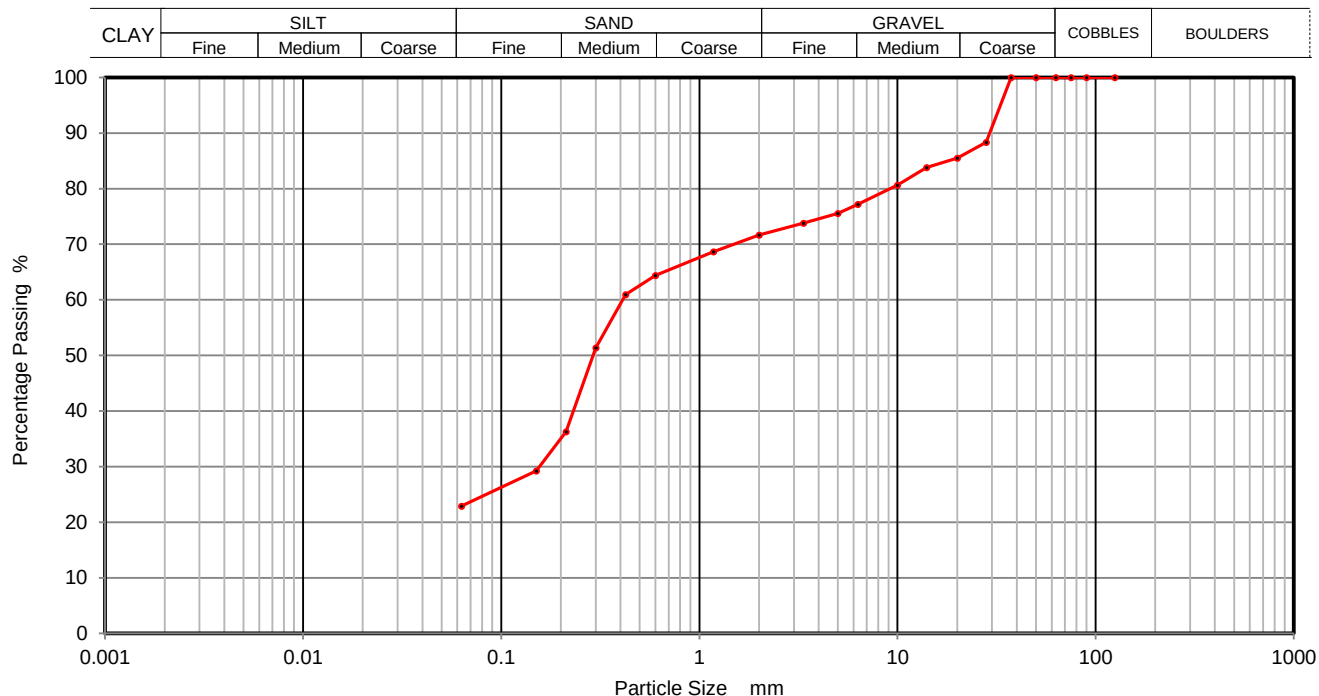
Sample Description **Brown silty/clayey fine to coarse gravelly fine to coarse SAND**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	88		
20	86		
14	84		
10	81		
6.3	77		
5	76		
3.35	74		
2	72		
1.18	69		
0.63	64		
0.425	61		
0.30	51		
0.20	36		
0.15	29		
0.063	23		

Sample Proportions	% dry mass
Cobbles	0
Gravel	28
Sand	49
Silt and Clay	23

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 17**

Project Name **Swansea Bay University**

Sample No. **23**

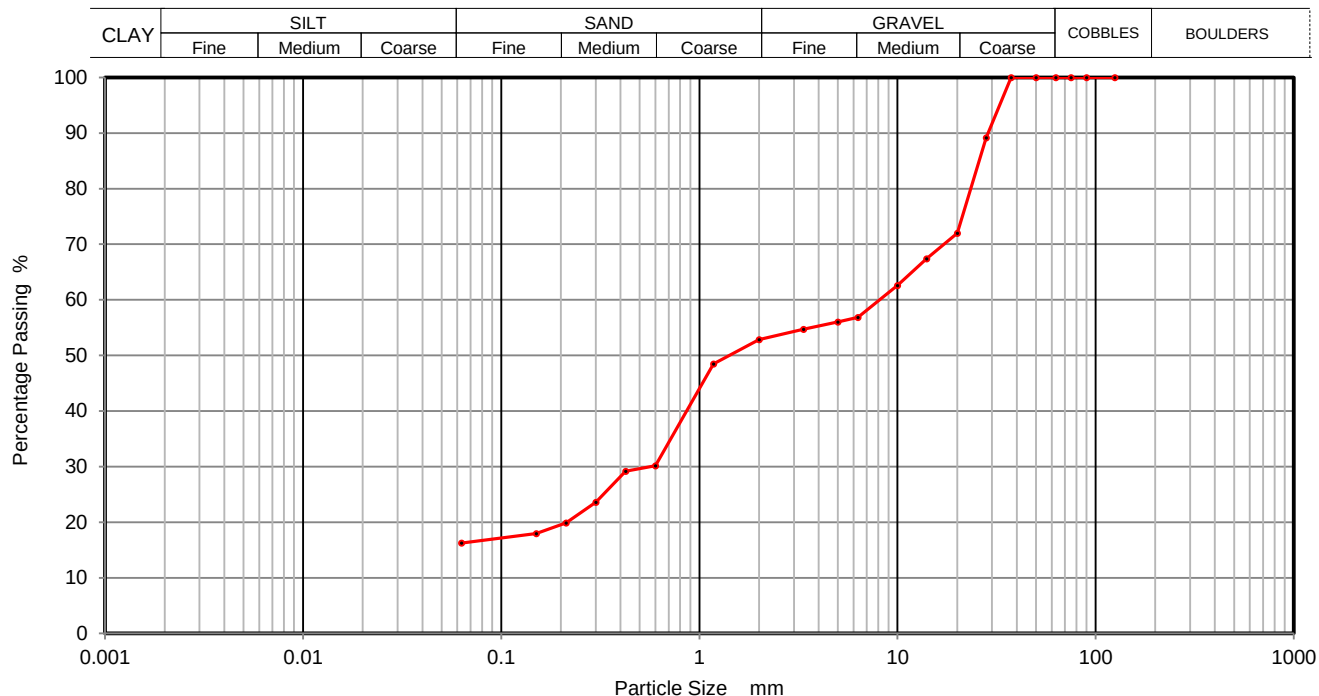
Sample Description **Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	89		
20	72		
14	67		
10	63		
6.3	57		
5	56		
3.35	55		
2	53		
1.18	48		
0.63	30		
0.425	29		
0.30	24		
0.20	20		
0.15	18		
0.063	16		

Sample Proportions	% dry mass
Cobbles	0
Gravel	47
Sand	37
Silt and Clay	16

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 18**

Project Name **Swansea Bay University**

Sample No. **24**

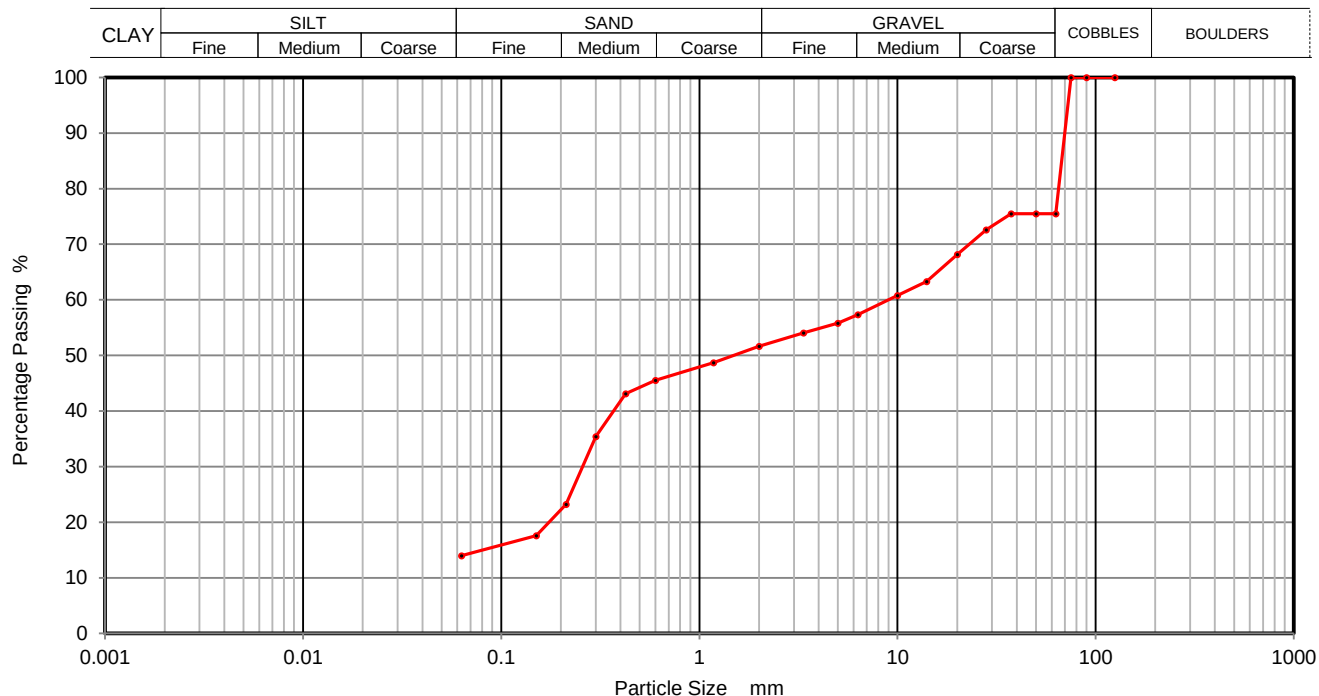
Sample Description **Grey silty/clayey fine to coarse gravelly fine to coarse SAND (with cobbles)**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	75		
50	75		
37.5	75		
28	73		
20	68		
14	63		
10	61		
6.3	57		
5	56		
3.35	54		
2	52		
1.18	49		
0.63	46		
0.425	43		
0.30	35		
0.20	23		
0.15	18		
0.063	14		

Sample Proportions	% dry mass
Cobbles	25
Gravel	23
Sand	38
Silt and Clay	14

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

**PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2**

Contract Number **73625**

Borehole/Pit No. **S. 19**

Project Name **Swansea Bay University**

Sample No. **25**

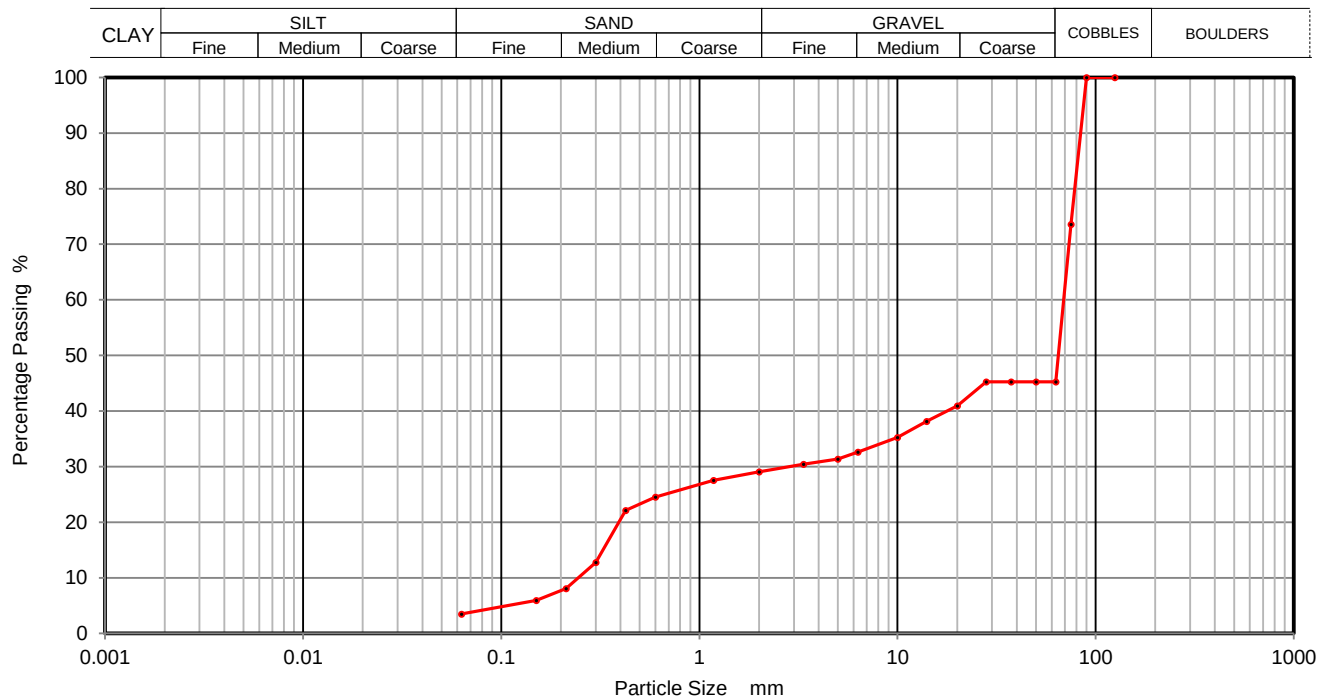
Sample Description **Brown slightly silty/clayey fine to coarse gravelly fine to coarse SAND
(with cobbles)**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	74		
63	45		
50	45		
37.5	45		
28	45		
20	41		
14	38		
10	35		
6.3	33		
5	31		
3.35	30		
2	29		
1.18	28		
0.63	25		
0.425	22		
0.30	13		
0.20	8		
0.15	6		
0.063	3		

Sample Proportions	% dry mass
Cobbles	55
Gravel	16
Sand	26
Silt and Clay	3

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 20**

Project Name **Swansea Bay University**

Sample No. **26**

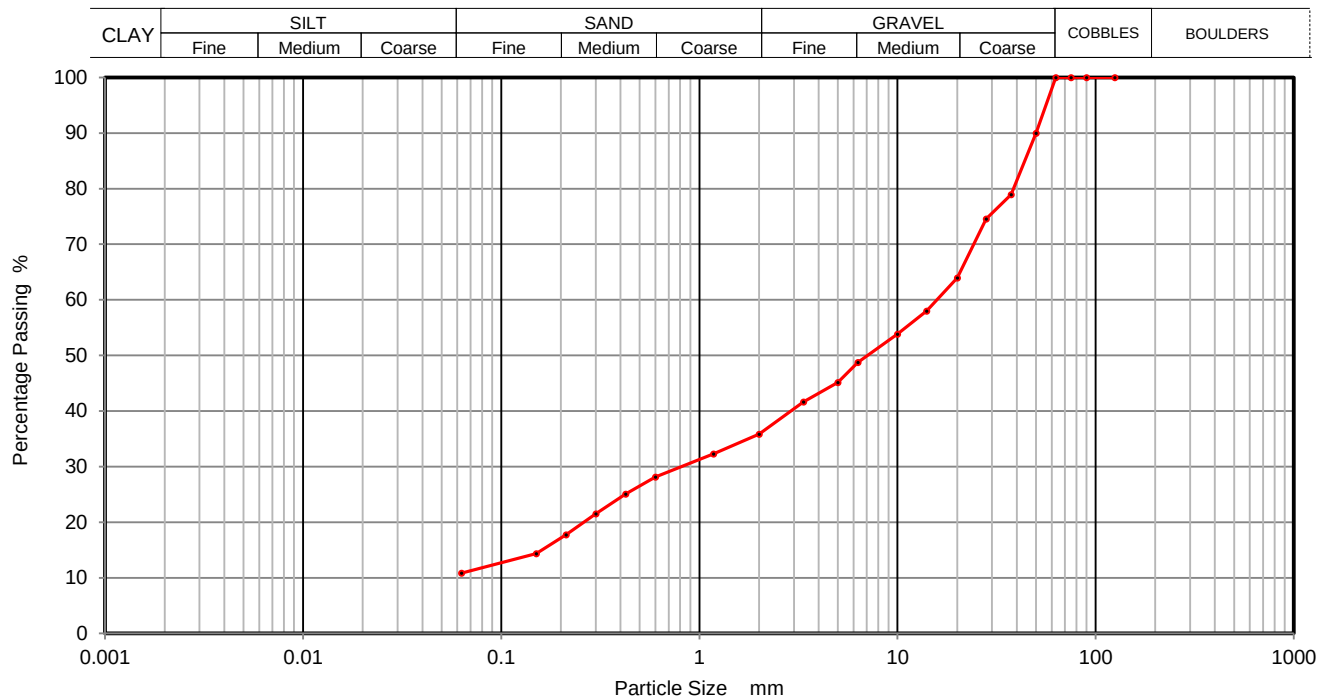
Sample Description **Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	90		
37.5	79		
28	75		
20	64		
14	58		
10	54		
6.3	49		
5	45		
3.35	42		
2	36		
1.18	32		
0.63	28		
0.425	25		
0.30	21		
0.20	18		
0.15	14		
0.063	11		

Sample Proportions	% dry mass
Cobbles	0
Gravel	64
Sand	25
Silt and Clay	11

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

**PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2**

Contract Number **73625**

Borehole/Pit No. **S. 21**

Project Name **Swansea Bay University**

Sample No. **27**

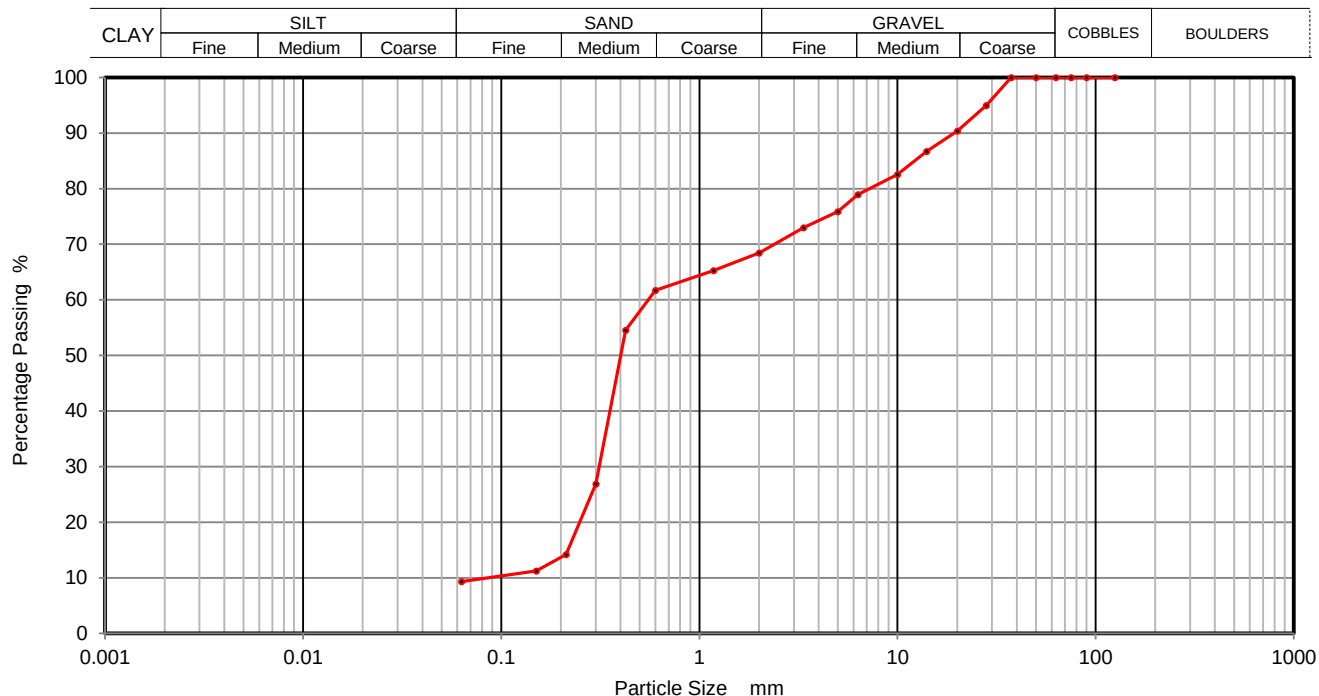
Sample Description **Brown silty/clayey fine to coarse gravelly fine to coarse SAND**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	95		
20	90		
14	87		
10	83		
6.3	79		
5	76		
3.35	73		
2	68		
1.18	65		
0.63	62		
0.425	55		
0.30	27		
0.20	14		
0.15	11		
0.063	9		

Sample Proportions	% dry mass
Cobbles	0
Gravel	32
Sand	59
Silt and Clay	9

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 24**

Project Name **Swansea Bay University**

Sample No. **28**

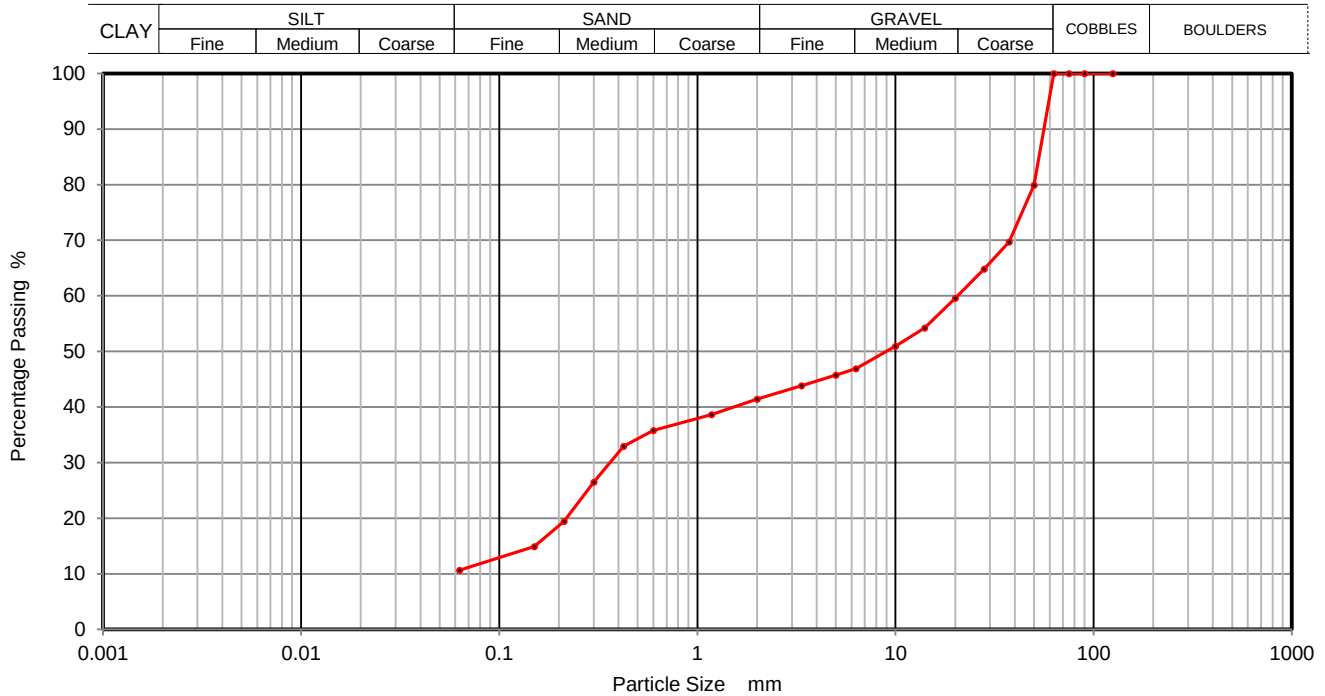
Sample Description **Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	80		
37.5	70		
28	65		
20	60		
14	54		
10	51		
6.3	47		
5	46		
3.35	44		
2	41		
1.18	39		
0.63	36		
0.425	33		
0.30	27		
0.20	19		
0.15	15		
0.063	11		

Sample Proportions	% dry mass
Cobbles	0
Gravel	59
Sand	30
Silt and Clay	11

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **73625**

Borehole/Pit No. **S. 25**

Project Name **Swansea Bay University**

Sample No. **29**

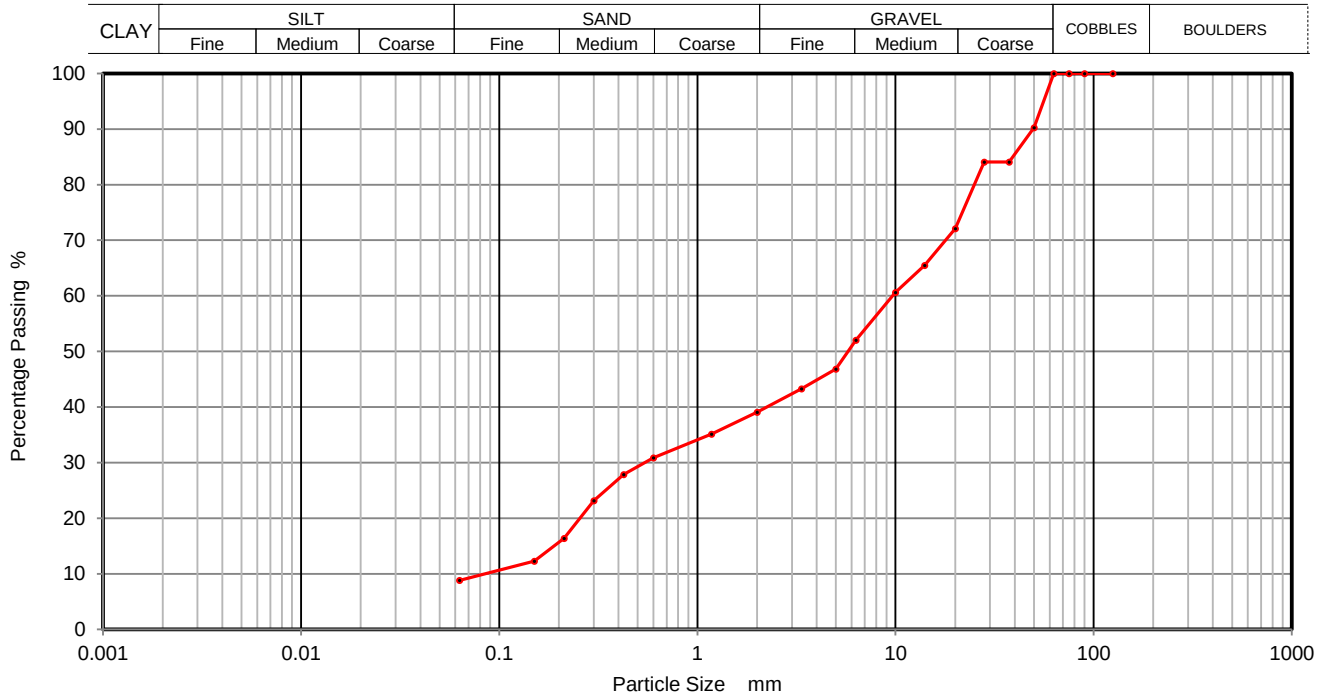
Sample Description **Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL**

Depth Top

Depth Base

Date Tested **19/07/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	90		
37.5	84		
28	84		
20	72		
14	66		
10	61		
6.3	52		
5	47		
3.35	43		
2	39		
1.18	35		
0.63	31		
0.425	28		
0.30	23		
0.20	16		
0.15	12		
0.063	9		

Sample Proportions	% dry mass
Cobbles	0
Gravel	61
Sand	30
Silt and Clay	9

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron Thomas

**Determination of The Dry Density / Water Content Relationship
BS 1377-2:2022**

Contract Number 73625

Borehole / Pit No S. 1

Project Name Swansea Bay University

Sample No 1

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

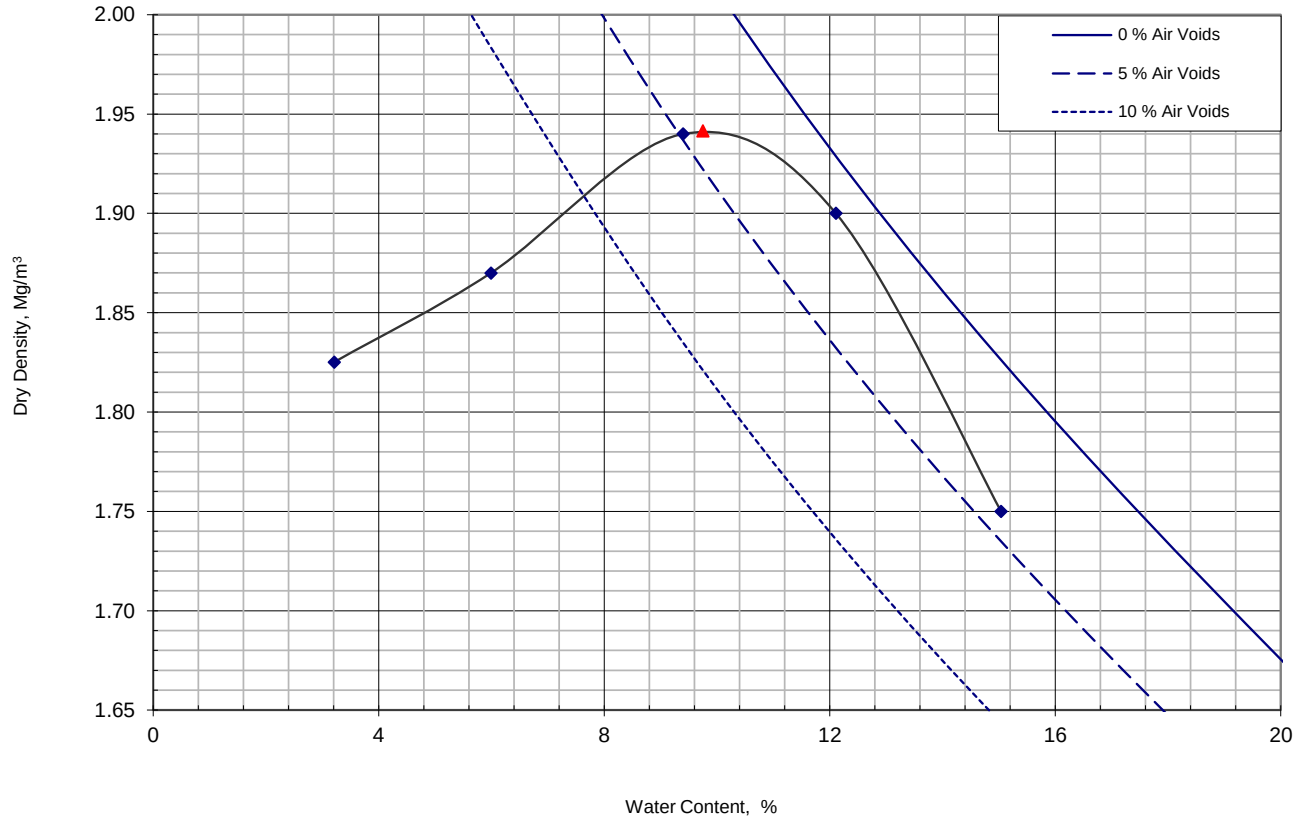
Compaction Clause BS1377-2:2022, Clause 11.4

Sample Type B

Sample Description Brown slightly clayey/silty fine to coarse sandy fine to coarse GRAVEL(with cobbles)

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	3.2	6.0	9.4	12.1	15.0							
Bulk Density	1.88	1.98	2.12	2.13	2.01							
Dry Density	1.83	1.87	1.94	1.90	1.75							

Initial Water Content	6.0	%
Maximum Dry Density	1.94	Mg/m ³
Optimum Water Content	9.8	%
Particle Density	2.52 Measured	Mg/m ³
Material Retained 37.5mm	65	%
Material Retained 20mm	9	%

Operator

Conal

**Determination of The Dry Density / Water Content Relationship
BS 1377-2:2022**

Contract Number 73625

Borehole / Pit No S. 2

Project Name Swansea Bay University

Sample No 2

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

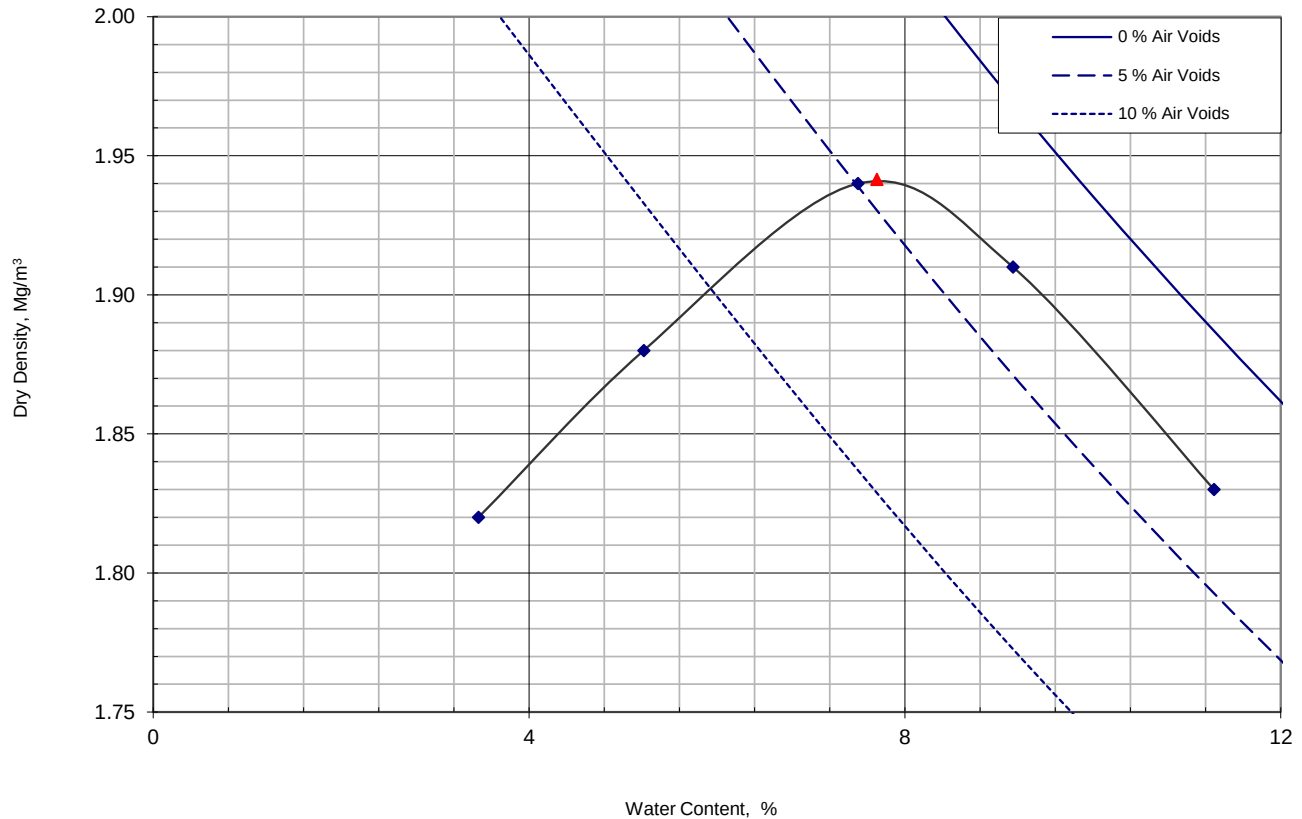
Compaction Clause BS1377-2:2022, Clause 11.4

Sample Type B

Sample Description Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	3.5	5.2	7.5	9.2	11.3							
Bulk Density	1.88	1.98	2.09	2.08	2.04							
Dry Density	1.82	1.88	1.94	1.91	1.83							

Initial Water Content	7.5	%
Maximum Dry Density	1.94	Mg/m3
Optimum Water Content	7.7	%
Particle Density	2.4 Measured	Mg/m3
Material Retained 37.5mm	24	%
Material Retained 20mm	12	%

Operator

Conal

**Determination of The Dry Density / Water Content Relationship
BS 1377-2:2022**

Contract Number 73625

Borehole / Pit No S. 3

Project Name Swansea Bay University

Sample No 3

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

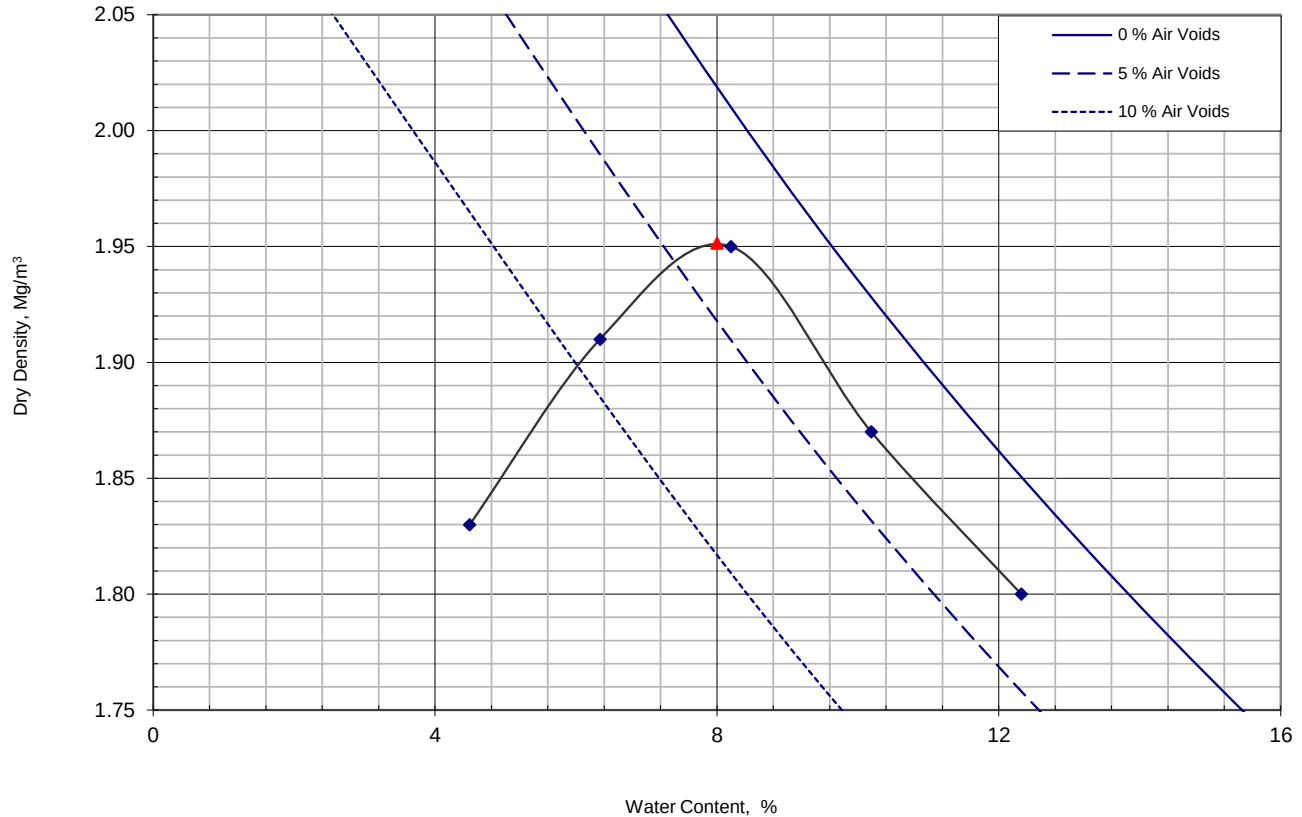
Compaction Clause BS1377-2:2022, Clause 11.3

Sample Type B

Sample Description Brown slightly clayey/silty fine to coarse sandy fine to coarse GRAVEL

Single or Separate Sample Used Single

Grading Zone Grading Zone 2 - Not Susceptible to Crushing



Compaction Point	1	2	3	4	5							
Water Content	4.5	6.3	8.2	10.2	12.3							
Bulk Density	1.91	2.03	2.11	2.06	2.02							
Dry Density	1.83	1.91	1.95	1.87	1.80							

Initial Water Content	6.3	%
Maximum Dry Density	1.95	Mg/m3
Optimum Water Content	8.0	%
Particle Density	2.4 Measured	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	4	%

Operator

Conal

Determination of The Dry Density / Water Content Relationship BS 1377-2:2022

Contract Number 73625

Borehole / Pit No S. 4i

Project Name Swansea Bay University

Sample No 4

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

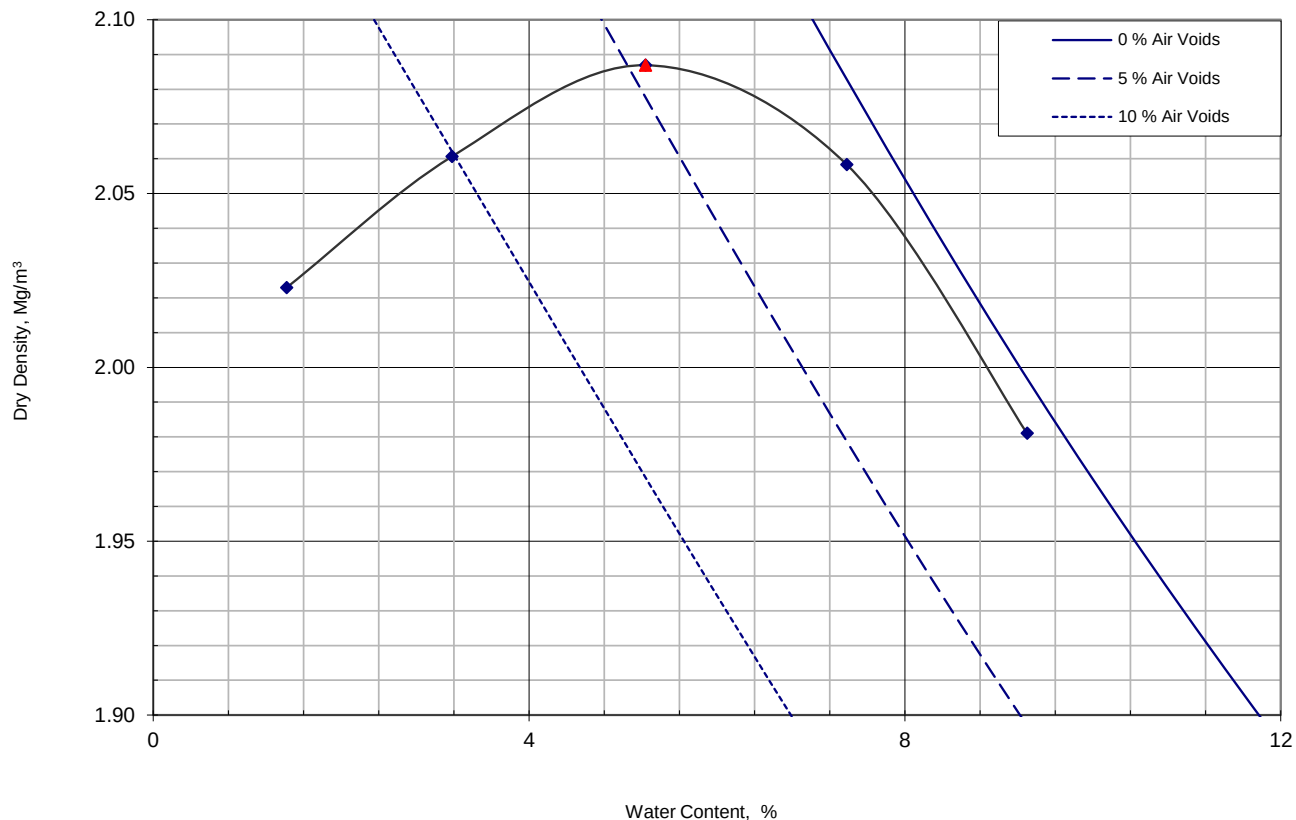
Compaction Clause BS1377-2:2022, Clause 11.4

Sample Type B

Sample Description Brown silty/clayey fine to coarse gravelly fine to coarse SAND (withcobbles)

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	1.4	3.2	5.2	7.4	9.3							
Bulk Density	2.05	2.13	2.20	2.21	2.17							
Dry Density	2.02	2.06	2.09	2.06	1.98							

Initial Water Content	3.2	%
Maximum Dry Density	2.09	Mg/m3
Optimum Water Content	5.2	%
Particle Density	2.45 Measured	Mg/m3
Material Retained 37.5mm	42	%
Material Retained 20mm	2	%

Operator

Conal

**Determination of The Dry Density / Water Content Relationship
BS 1377-2:2022**

Contract Number 73625

Borehole / Pit No S. 4ii

Project Name Swansea Bay University

Sample No 5

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

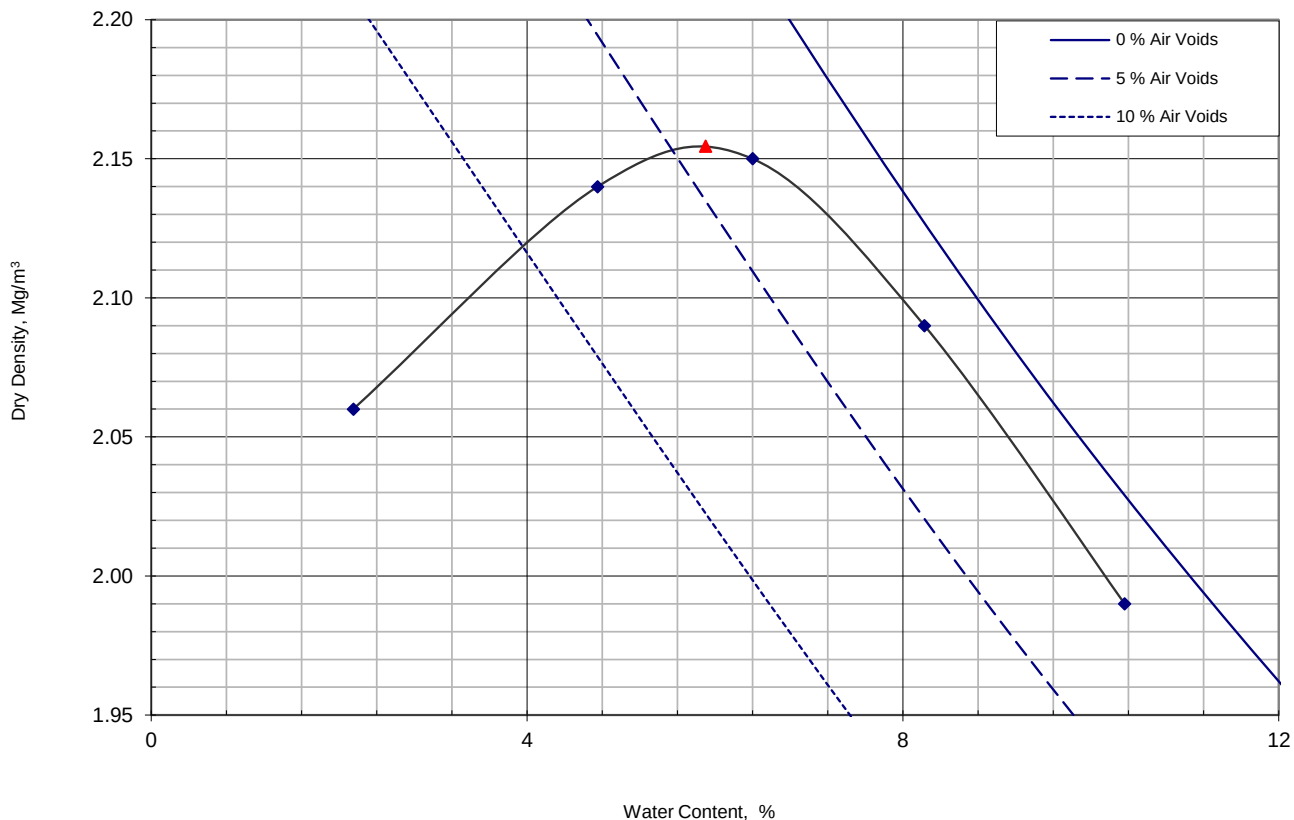
Compaction Clause BS1377-2:2022, Clause 11.3

Sample Type B

Sample Description Brown slightly clayey/silty fine to coarse sandy fine to coarse GRAVEL

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	2.2	4.8	6.4	8.2	10.4							
Bulk Density	2.10	2.24	2.29	2.26	2.20							
Dry Density	2.06	2.14	2.15	2.09	1.99							

Initial Water Content	4.8	%
Maximum Dry Density	2.15	Mg/m ³
Optimum Water Content	5.9	%
Particle Density	2.57 Measured	Mg/m ³
Material Retained 37.5mm	73	%
Material Retained 20mm	5	%

Operator

Conal

**Determination of The Dry Density / Water Content Relationship
BS 1377-2:2022**

Contract Number 73625

Borehole / Pit No S. 5

Project Name Swansea Bay University

Sample No 6

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

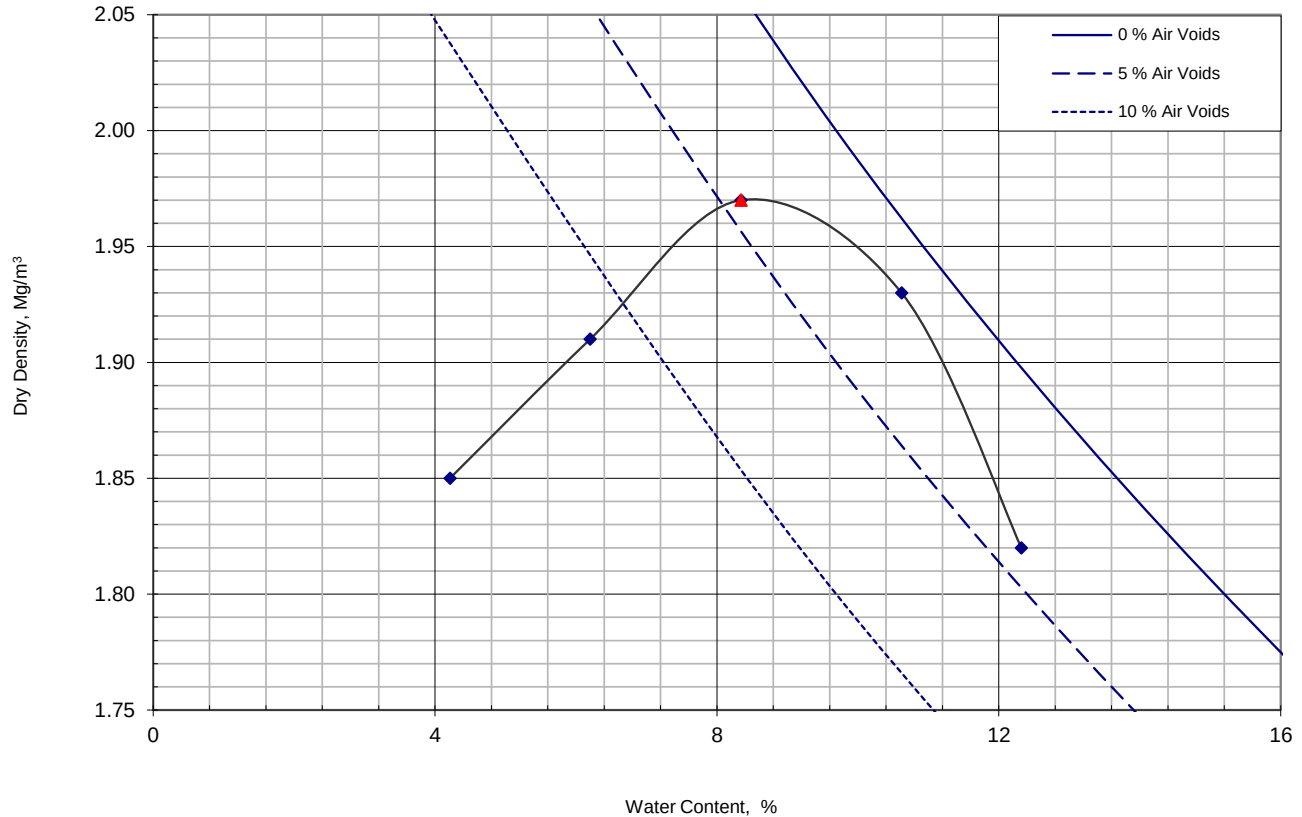
Compaction Clause BS1377-2:2022, Clause 11.4

Sample Type B

Sample Description Brown slightly silty/clayey fine to coarse sandy fine to coarse GRAVEL(with cobbles)

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	4.2	6.2	8.3	10.6	12.3							
Bulk Density	1.93	2.03	2.13	2.13	2.04							
Dry Density	1.85	1.91	1.97	1.93	1.82							

Initial Water Content	10.6	%
Maximum Dry Density	1.97	Mg/m3
Optimum Water Content	8.3	%
Particle Density	2.48 Measured	Mg/m3
Material Retained 37.5mm	57	%
Material Retained 20mm	3	%

Operator

Conal

**Determination of The Dry Density / Water Content Relationship
BS 1377-2:2022**

Contract Number 73625

Borehole / Pit No S. 6

Project Name Swansea Bay University

Sample No 7

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

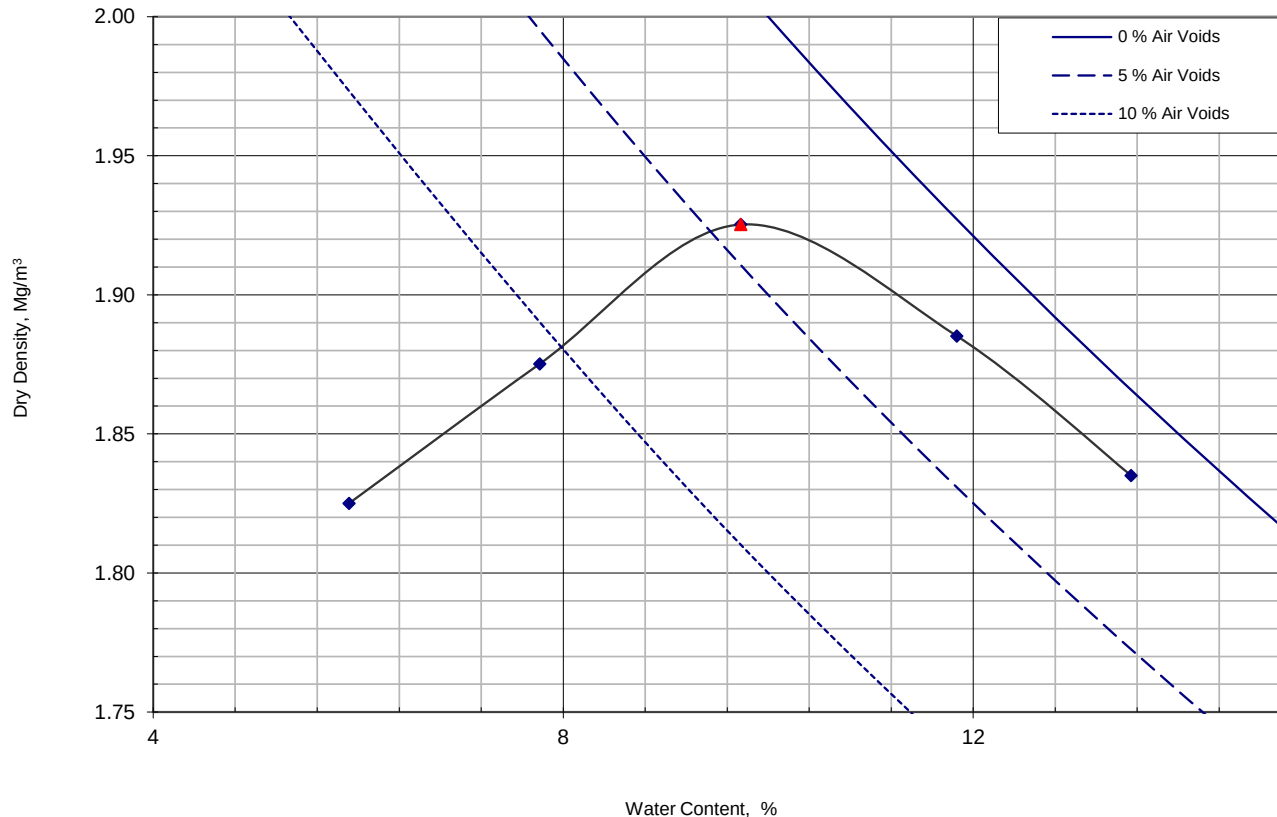
Compaction Clause BS1377-2:2022, Clause 11.3

Sample Type B

Sample Description Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	5.9	7.8	9.7	11.8	13.5							
Bulk Density	1.93	2.02	2.11	2.11	2.08							
Dry Density	1.83	1.88	1.93	1.89	1.84							

Initial Water Content	13.5	%
Maximum Dry Density	1.93	Mg/m ³
Optimum Water Content	9.7	%
Particle Density	2.5 Measured	Mg/m ³
Material Retained 37.5mm	36	%
Material Retained 20mm	10	%

Operator

Conal

Determination of The Dry Density / Water Content Relationship BS 1377-2:2022

Contract Number 73625

Borehole / Pit No S. 9i

Project Name Swansea Bay University

Sample No 8

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

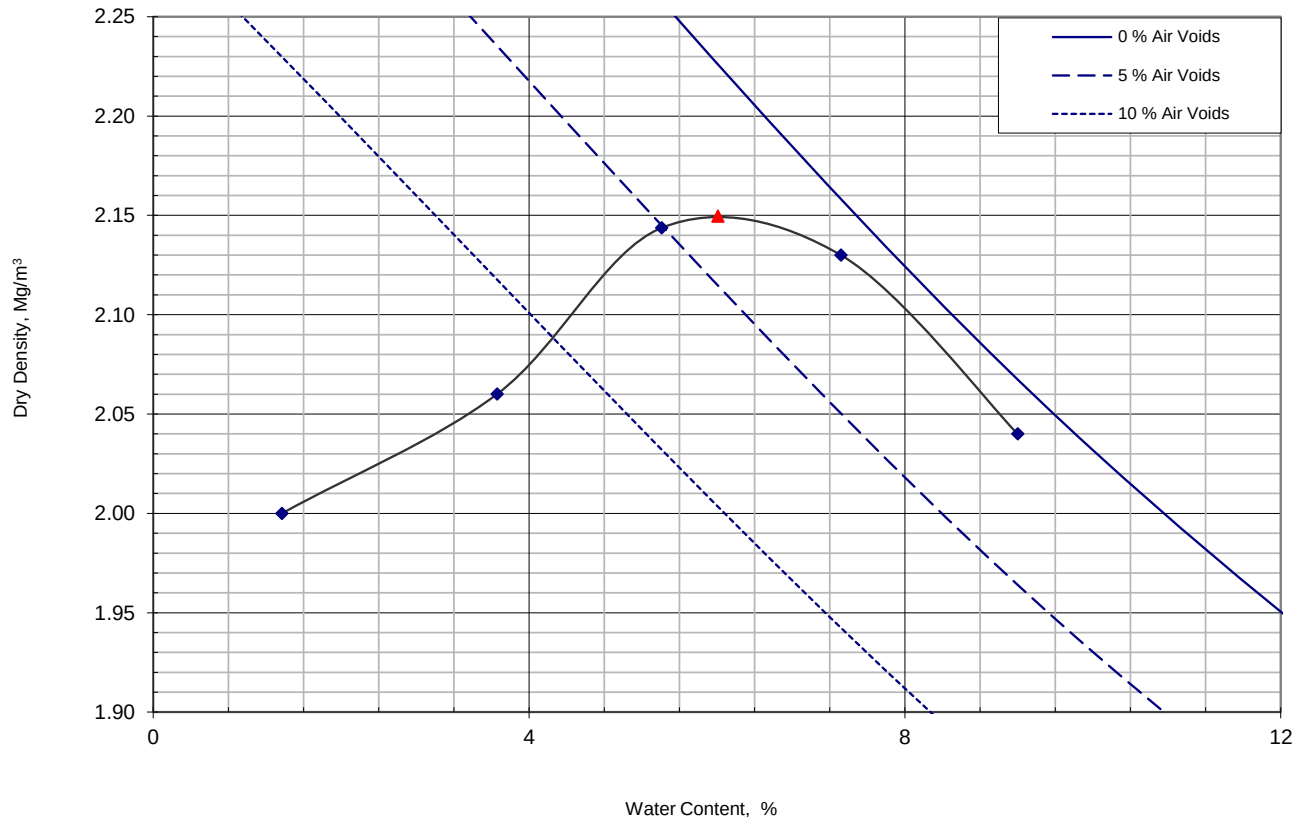
Compaction Clause BS1377-2:2022, Clause 11.4

Sample Type B

Sample Description Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL

Single or Separate
Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	1.4	3.7	5.4	7.3	9.2							
Bulk Density	2.03	2.14	2.26	2.29	2.23							
Dry Density	2.00	2.06	2.14	2.13	2.04							

Initial Water Content	3.7	%
Maximum Dry Density	2.15	Mg/m3
Optimum Water Content	6.0	%
Particle Density	2.55 Measured	Mg/m3
Material Retained 37.5mm	16	%
Material Retained 20mm	21	%

Operator

Conal

**Determination of The Dry Density / Water Content Relationship
BS 1377-2:2022**

Contract Number 73625

Borehole / Pit No S. 9ii

Project Name Swansea Bay University

Sample No 9

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

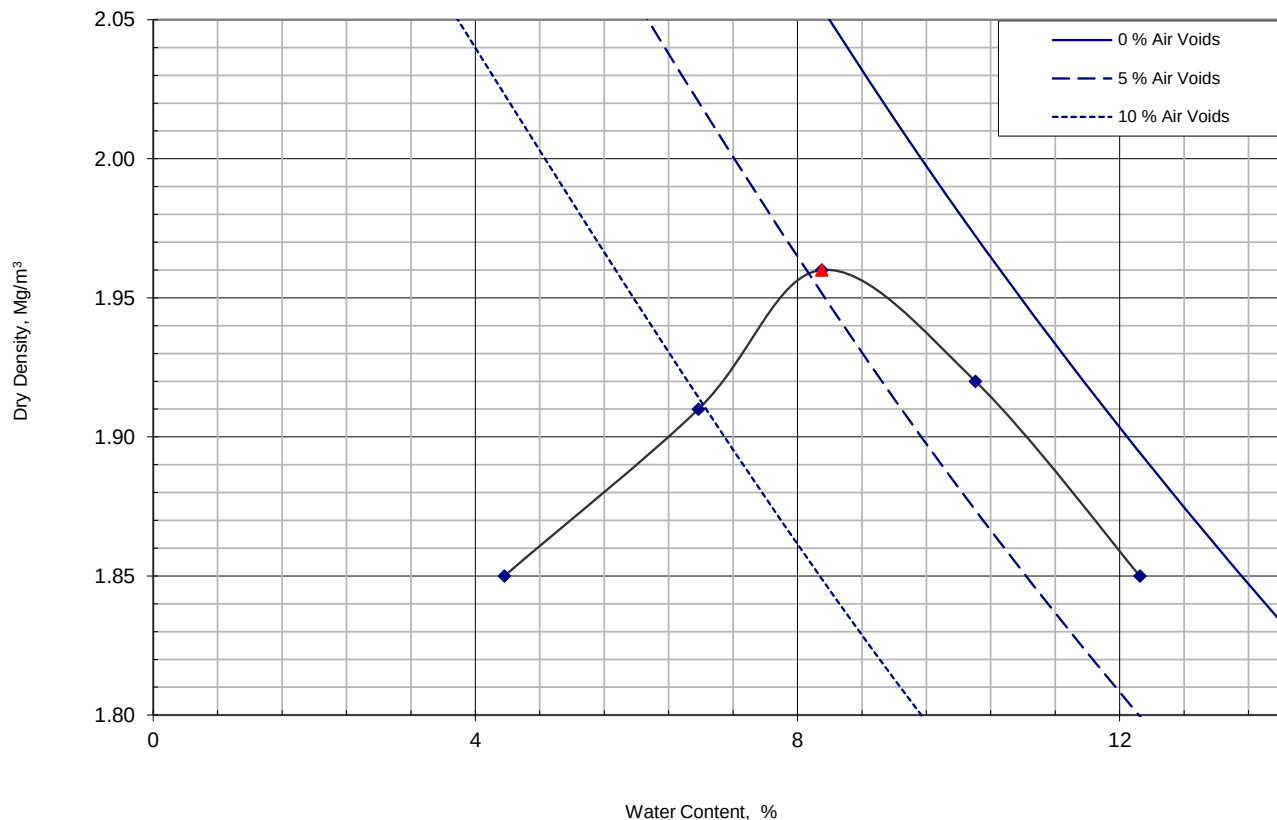
Compaction Clause BS1377-2:2022, Clause 11.3

Sample Type B

Sample Description Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	4.4	6.8	8.3	10.2	12.3							
Bulk Density	1.93	2.04	2.12	2.12	2.08							
Dry Density	1.85	1.91	1.96	1.92	1.85							

Initial Water Content	6.8	%
Maximum Dry Density	1.96	Mg/m3
Optimum Water Content	8.3	%
Particle Density	2.47 Measured	Mg/m3
Material Retained 37.5mm	28	%
Material Retained 20mm	19	%

Operator

Conal

**Determination of The Dry Density / Water Content Relationship
BS 1377-2:2022**

Contract Number 73625

Borehole / Pit No S. 9iii

Project Name Swansea Bay University

Sample No 10

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

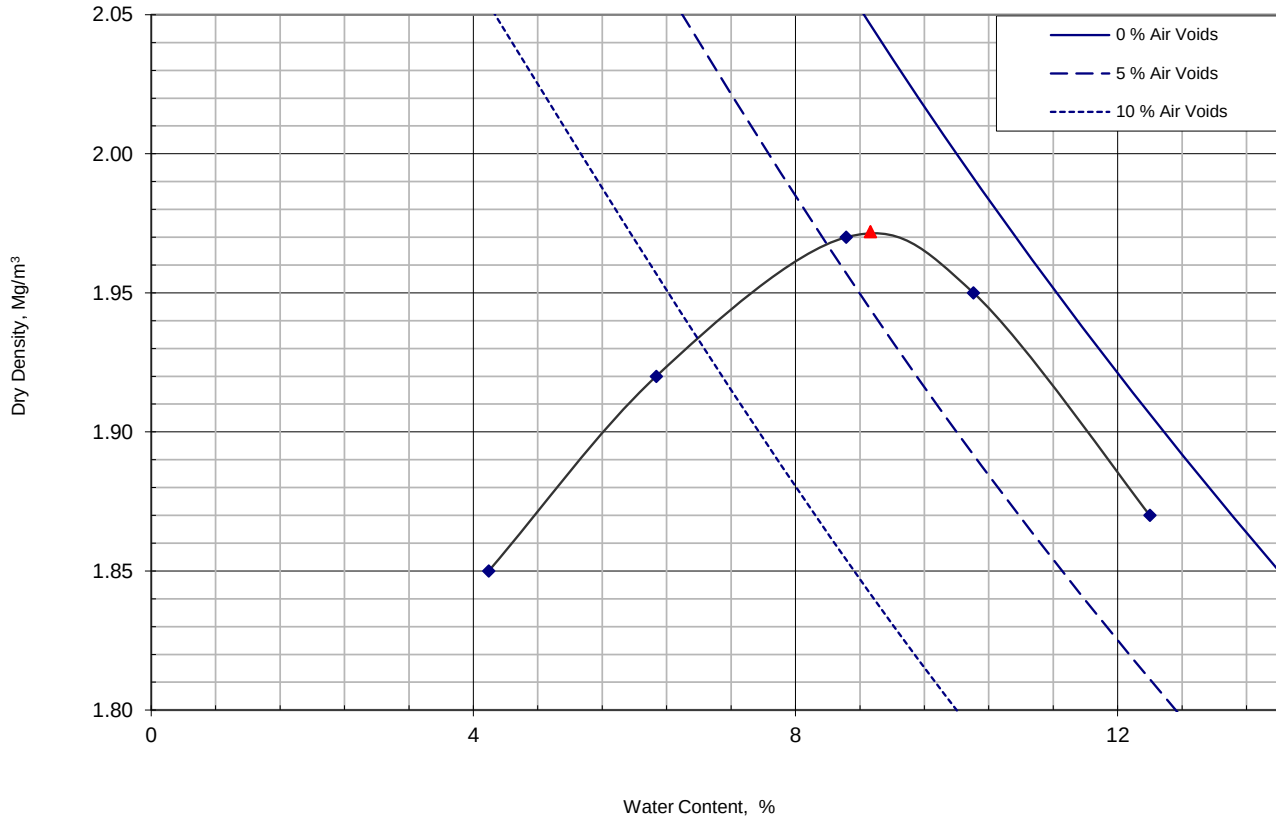
Compaction Clause BS1377-2:2022, Clause 11.3

Sample Type B

Sample Description Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL (with cobbles)

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	4.2	6.3	8.6	10.2	12.4							
Bulk Density	1.93	2.04	2.14	2.15	2.10							
Dry Density	1.85	1.92	1.97	1.95	1.87							

Initial Water Content	8.6	%
Maximum Dry Density	1.97	Mg/m3
Optimum Water Content	8.9	%
Particle Density	2.5 Measured	Mg/m3
Material Retained 37.5mm	52	%
Material Retained 20mm	11	%

Operator

Conal

**Determination of The Dry Density / Water Content Relationship
BS 1377-2:2022**

Contract Number 73625

Borehole / Pit No S. 9iv

Project Name Swansea Bay University

Sample No 11

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

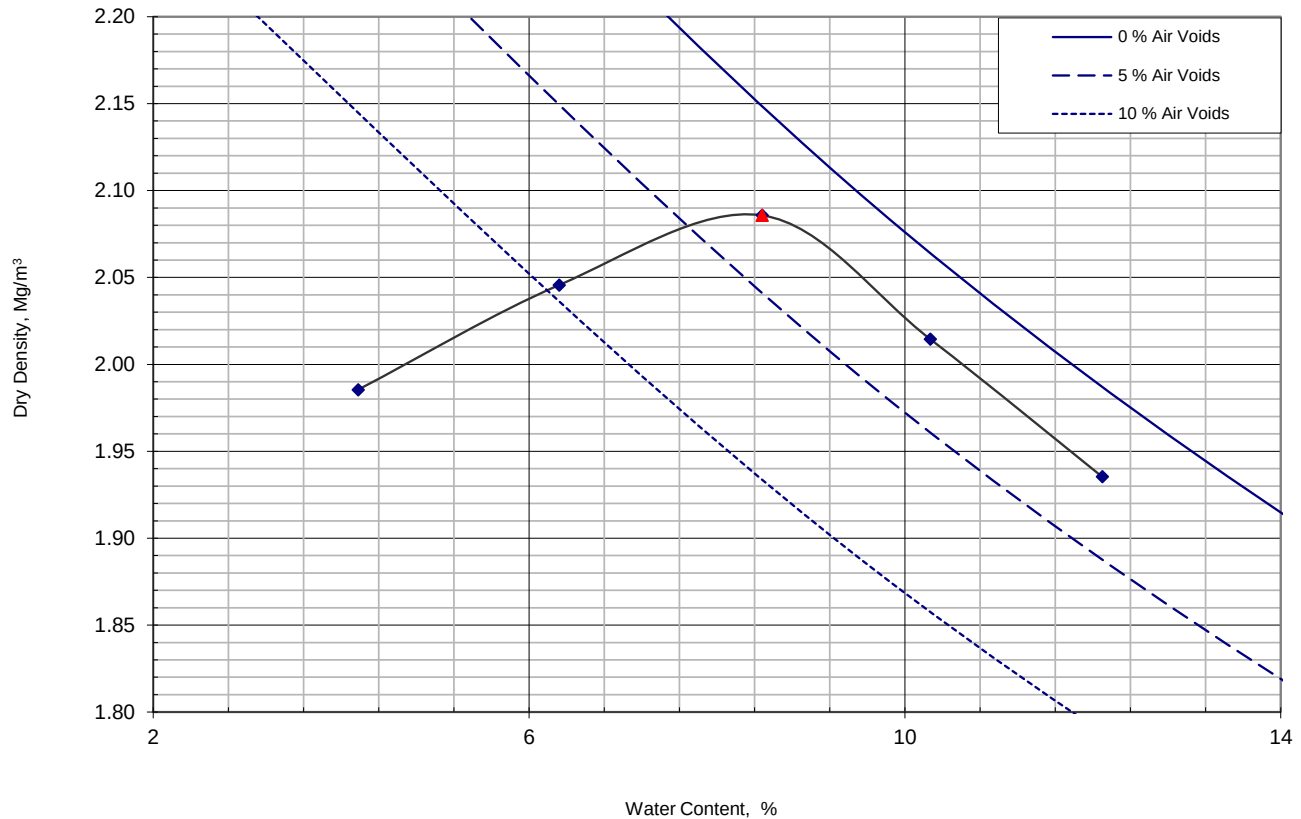
Compaction Clause BS1377-2:2022, Clause 11.4

Sample Type B

Sample Description Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	4.2	6.3	8.5	10.3	12.1							
Bulk Density	2.07	2.17	2.26	2.22	2.17							
Dry Density	1.99	2.05	2.09	2.01	1.94							

Initial Water Content	10.3	%
Maximum Dry Density	2.09	Mg/m3
Optimum Water Content	8.5	%
Particle Density	2.62 Measured	Mg/m3
Material Retained 37.5mm	45	%
Material Retained 20mm	14	%

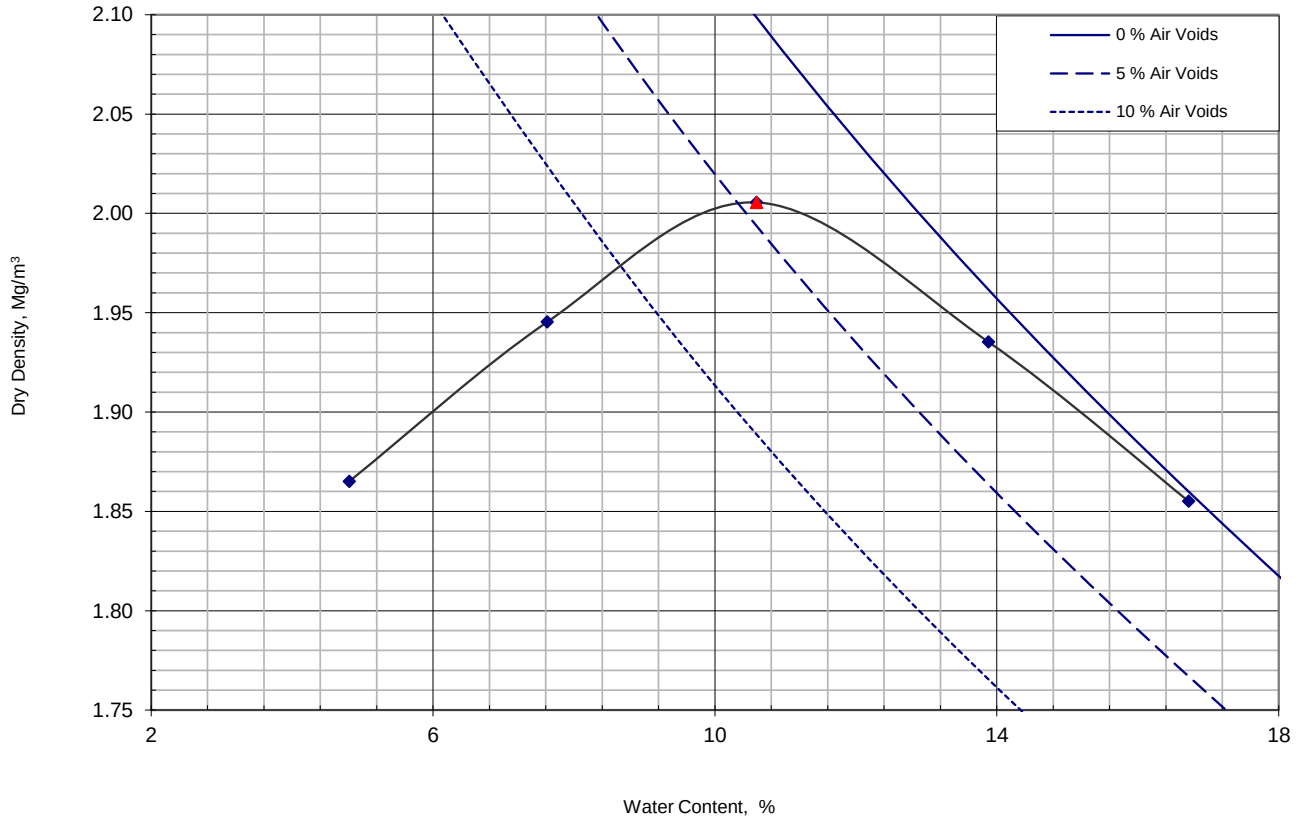
Operator

Conal

Determination of The Dry Density / Water Content Relationship BS 1377-2:2022

Contract Number	73625
Borehole / Pit No	S. 9v
Sample No	12
Depth Top	
Depth Base	
Sample Type	B
Single or Separate Sample Used	Single

Project Name	Swansea Bay University
Date Tested	19/07/2024
Compaction Method	2.5 Kg Rammer
Compaction Clause	BS1377-2:2022, Clause 11.4
Sample Description	Brown silty/clayey fine to coarse gravelly fine to coarse SAND
Grading Zone	Grading Zone 5 - Not Susceptible to Crushing



Compaction Point	1	2	3	4	5							
Water Content	4.8	7.6	10.6	13.9	16.7							
Bulk Density	1.95	2.09	2.22	2.20	2.17							
Dry Density	1.87	1.95	2.01	1.94	1.86							

Initial Water Content	10.6	%
Maximum Dry Density	2.01	Mg/m ³
Optimum Water Content	11	%
Particle Density	2.7 Measured	Mg/m ³
Material Retained 37.5mm	8	%
Material Retained 20mm	7	%

Operator	
Conal	

Determination of The Dry Density / Water Content Relationship BS 1377-2:2022

Contract Number 73625

Borehole / Pit No S. 9vi

Project Name Swansea Bay University

Sample No 13

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

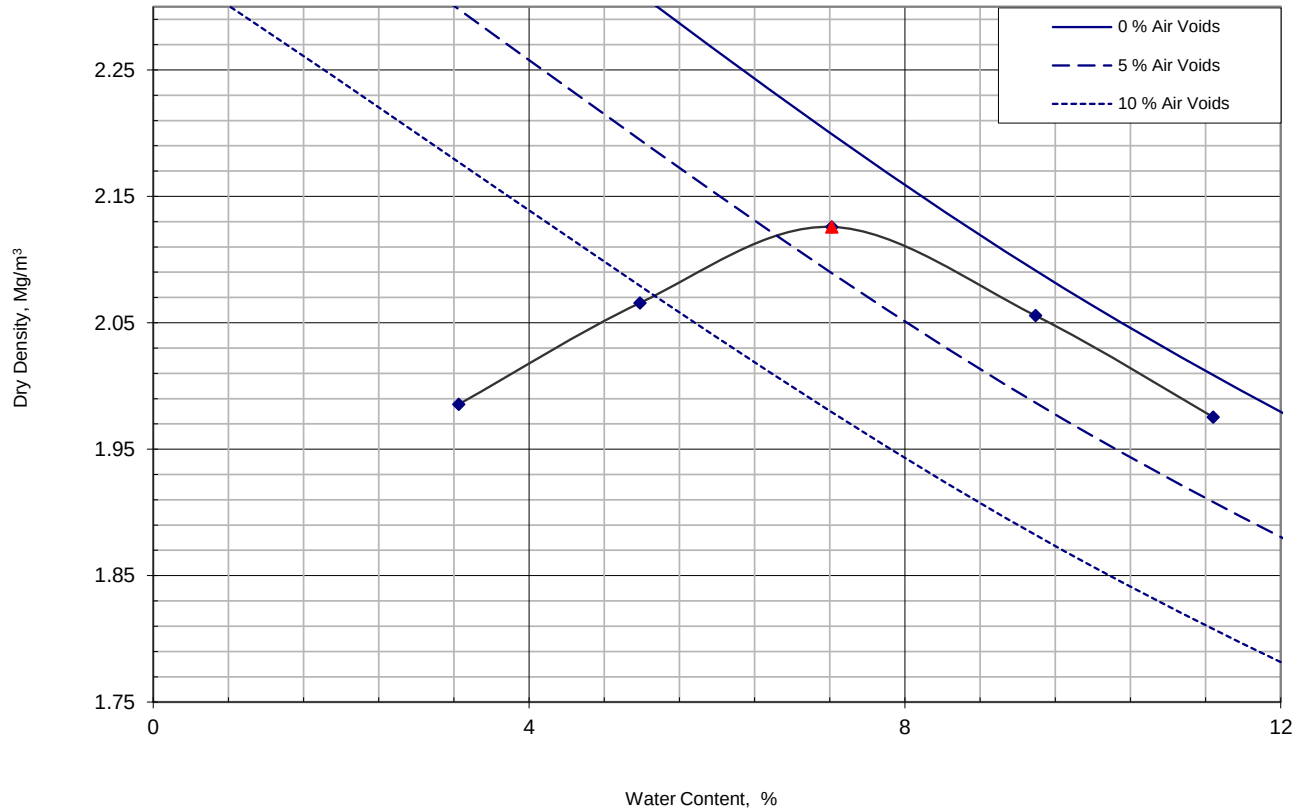
Compaction Clause BS1377-2:2022, Clause 11.4

Sample Type B

Sample Description Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	3.3	5.2	7.2	9.4	11.3							
Bulk Density	2.05	2.17	2.28	2.25	2.20							
Dry Density	1.99	2.07	2.13	2.06	1.98							

Initial Water Content	5.2	%
Maximum Dry Density	2.13	Mg/m3
Optimum Water Content	7.2	%
Particle Density	2.6 Measured	Mg/m3
Material Retained 37.5mm	55	%
Material Retained 20mm	14	%

Operator

Conal

Determination of The Dry Density / Water Content Relationship BS 1377-2:2022

Contract Number 73625

Borehole / Pit No S. 9vii

Project Name Swansea Bay University

Sample No 14

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

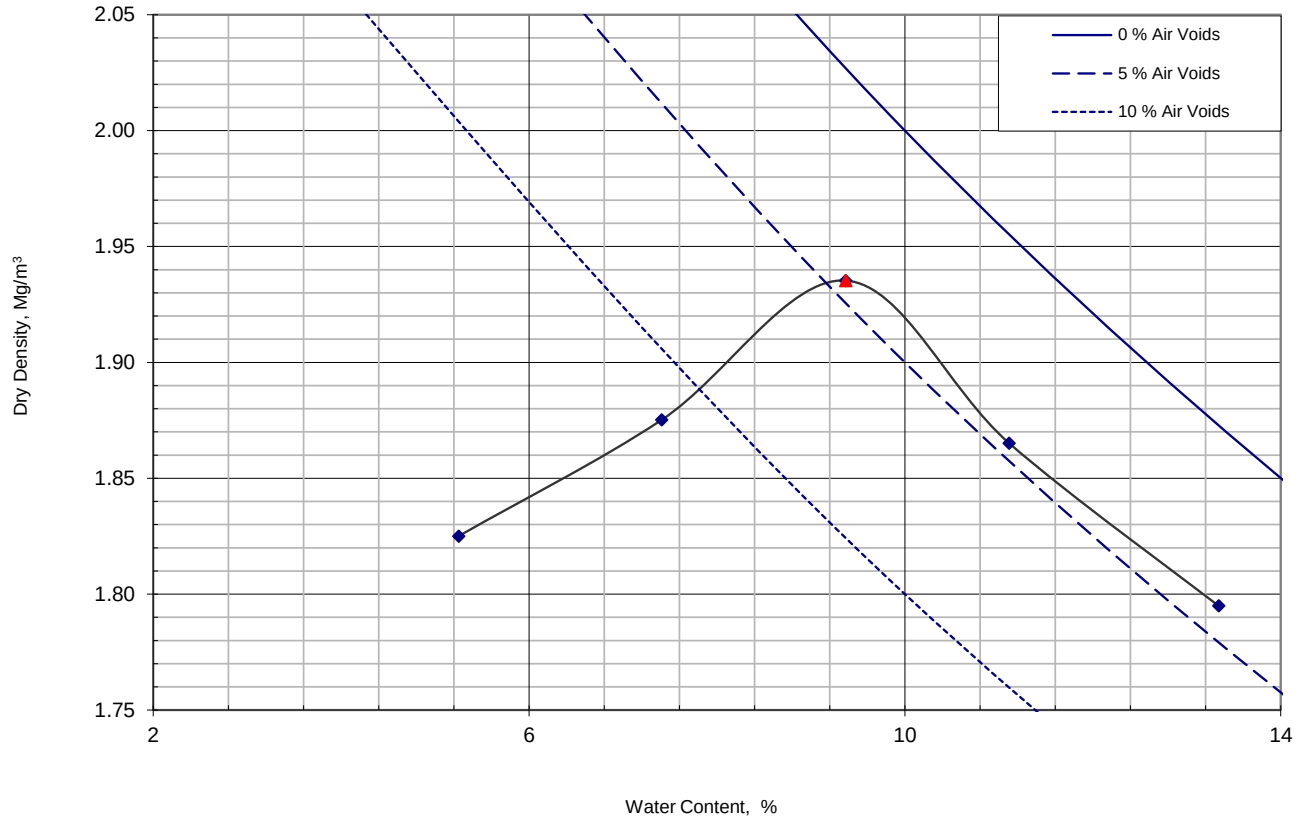
Compaction Clause BS1377-2:2022, Clause 11.4

Sample Type B

Sample Description Brown slightly silty/clayey fine to coarse sandy fine to coarse GRAVEL (with cobbles)

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	5.3	7.4	9.4	11.1	13.3							
Bulk Density	1.92	2.01	2.12	2.07	2.03							
Dry Density	1.83	1.88	1.94	1.87	1.79							

Initial Water Content	9.4	%
Maximum Dry Density	1.94	Mg/m3
Optimum Water Content	9.4	%
Particle Density	2.5 Measured	Mg/m3
Material Retained 37.5mm	69	%
Material Retained 20mm	5	%

Operator

Conal

**Determination of The Dry Density / Water Content Relationship
BS 1377-2:2022**

Contract Number 73625

Borehole / Pit No S. 11

Project Name Swansea Bay University

Sample No 15

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

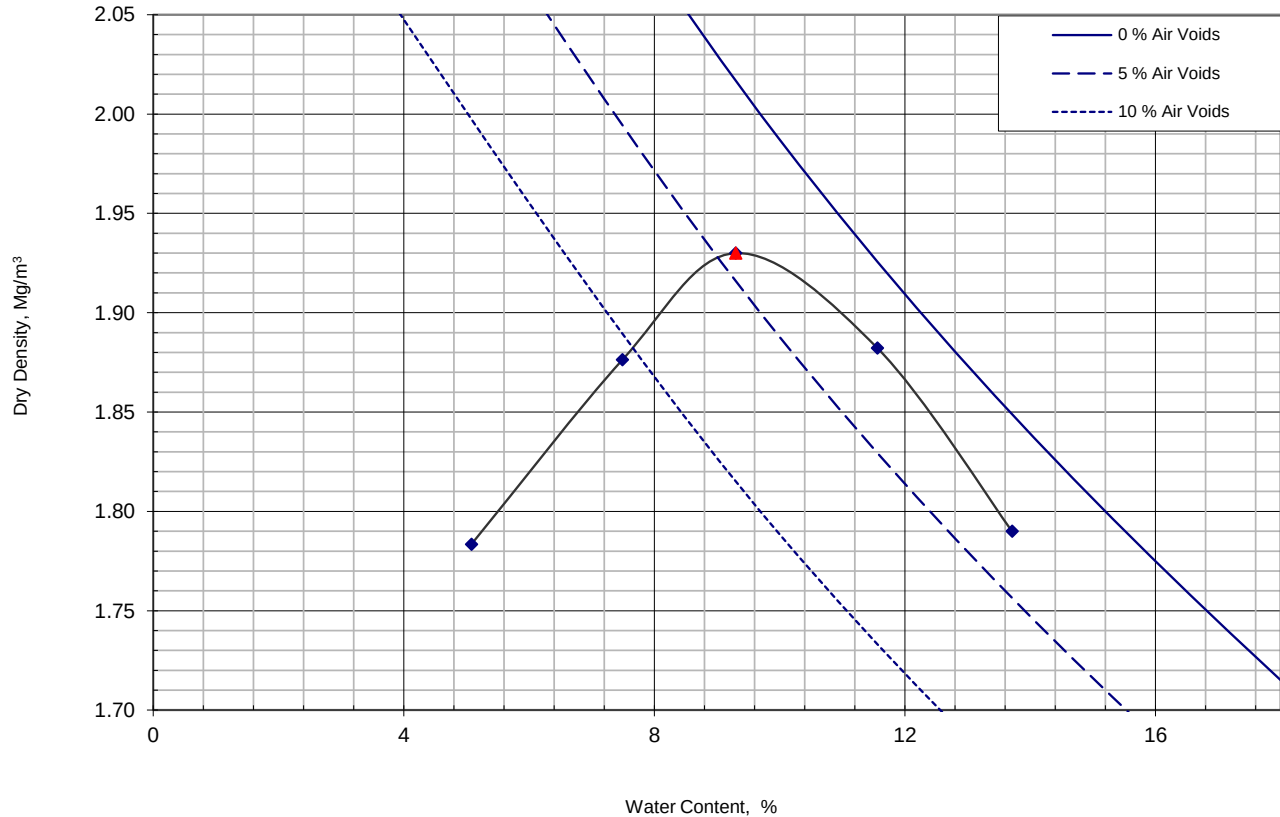
Compaction Clause BS1377-2:2022, Clause 11.3

Sample Type B

Sample Description Brown slightly sandy fine to coarse GRAVEL (with cobbles)

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	5.1	7.5	9.3	11.6	13.7							
Bulk Density	1.87	2.02	2.11	2.10	2.04							
Dry Density	1.78	1.88	1.93	1.88	1.79							

Initial Water Content	5.1	%
Maximum Dry Density	1.93	Mg/m3
Optimum Water Content	9.3	%
Particle Density	2.48 Measured	Mg/m3
Material Retained 37.5mm	95	%
Material Retained 20mm	3	%

Operator

Conal

Determination of The Dry Density / Water Content Relationship BS 1377-2:2022

Contract Number 73625

Borehole / Pit No S. 12

Project Name Swansea Bay University

Sample No 16

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

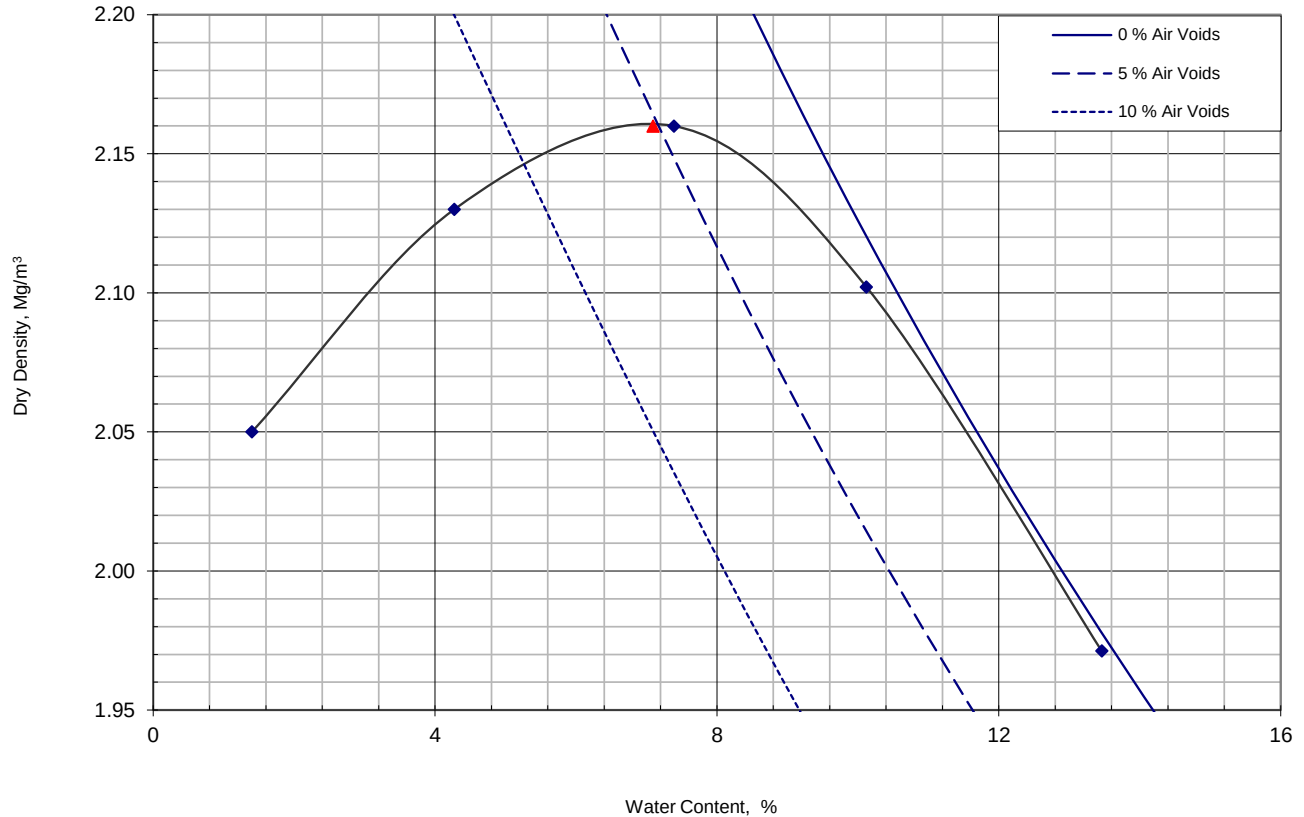
Compaction Clause BS1377-2:2022, Clause 11.3

Sample Type B

Sample Description Brown silty/clayey fine to coarse gravelly fine to coarse SAND

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	1.4	4.3	7.4	10.1	13.5							
Bulk Density	2.08	2.22	2.32	2.31	2.24							
Dry Density	2.05	2.13	2.16	2.10	1.97							

Initial Water Content	10.1	%
Maximum Dry Density	2.16	Mg/m ³
Optimum Water Content	7.1	%
Particle Density	2.7 Measured	Mg/m ³
Material Retained 37.5mm	14	%
Material Retained 20mm	10	%

Operator

Conal

Determination of The Dry Density / Water Content Relationship BS 1377-2:2022

Contract Number 73625

Borehole / Pit No S. 13

Project Name Swansea Bay University

Sample No 17

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

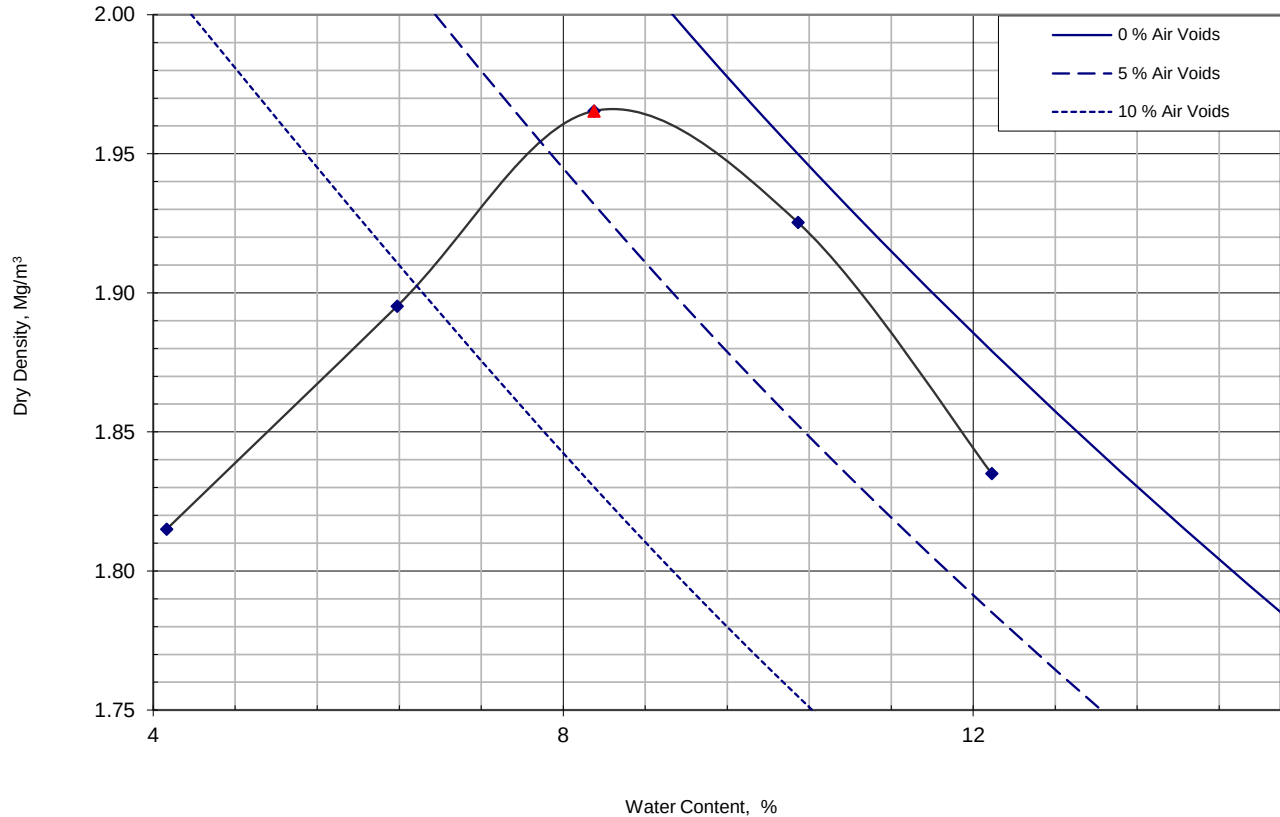
Compaction Clause BS1377-2:2022, Clause 11.3

Sample Type B

Sample Description Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	4.1	6.4	8.3	10.3	12.2							
Bulk Density	1.89	2.02	2.13	2.12	2.06							
Dry Density	1.82	1.90	1.97	1.93	1.84							

Initial Water Content	4.1	%
Maximum Dry Density	1.97	Mg/m ³
Optimum Water Content	8.3	%
Particle Density	2.44 Measured	Mg/m ³
Material Retained 37.5mm	18	%
Material Retained 20mm	14	%

Operator

Conal

**Determination of The Dry Density / Water Content Relationship
BS 1377-2:2022**

Contract Number 73625

Borehole / Pit No S. 14i

Project Name Swansea Bay University

Sample No 18

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

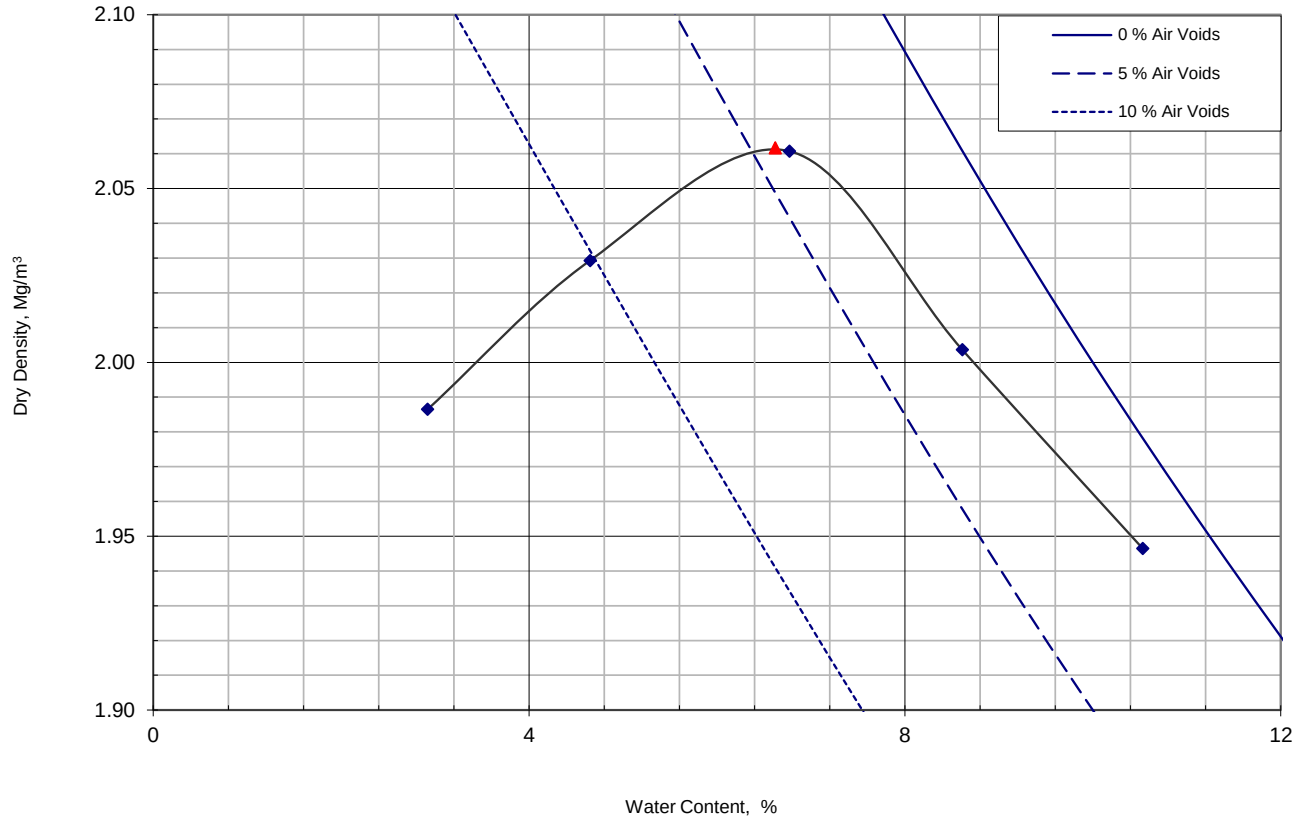
Compaction Clause BS1377-2:2022, Clause 11.4

Sample Type B

Sample Description Brown slightly clayey/silty fine to coarse gravelly fine to coarse SAND

Single or Separate Sample Used Single

Grading Zone Grading Zone 3 - Not Susceptible to Crushing



Compaction Point	1	2	3	4	5							
Water Content	2.9	4.7	6.8	8.6	10.5							
Bulk Density	2.04	2.12	2.20	2.18	2.15							
Dry Density	1.99	2.03	2.06	2.00	1.95							

Initial Water Content	2.9	%
Maximum Dry Density	2.06	Mg/m3
Optimum Water Content	6.6	%
Particle Density	2.5 Measured	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	7	%

Operator

Conal

Determination of The Dry Density / Water Content Relationship BS 1377-2:2022

Contract Number 73625

Borehole / Pit No S. 14ii

Project Name Swansea Bay University

Sample No 19

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

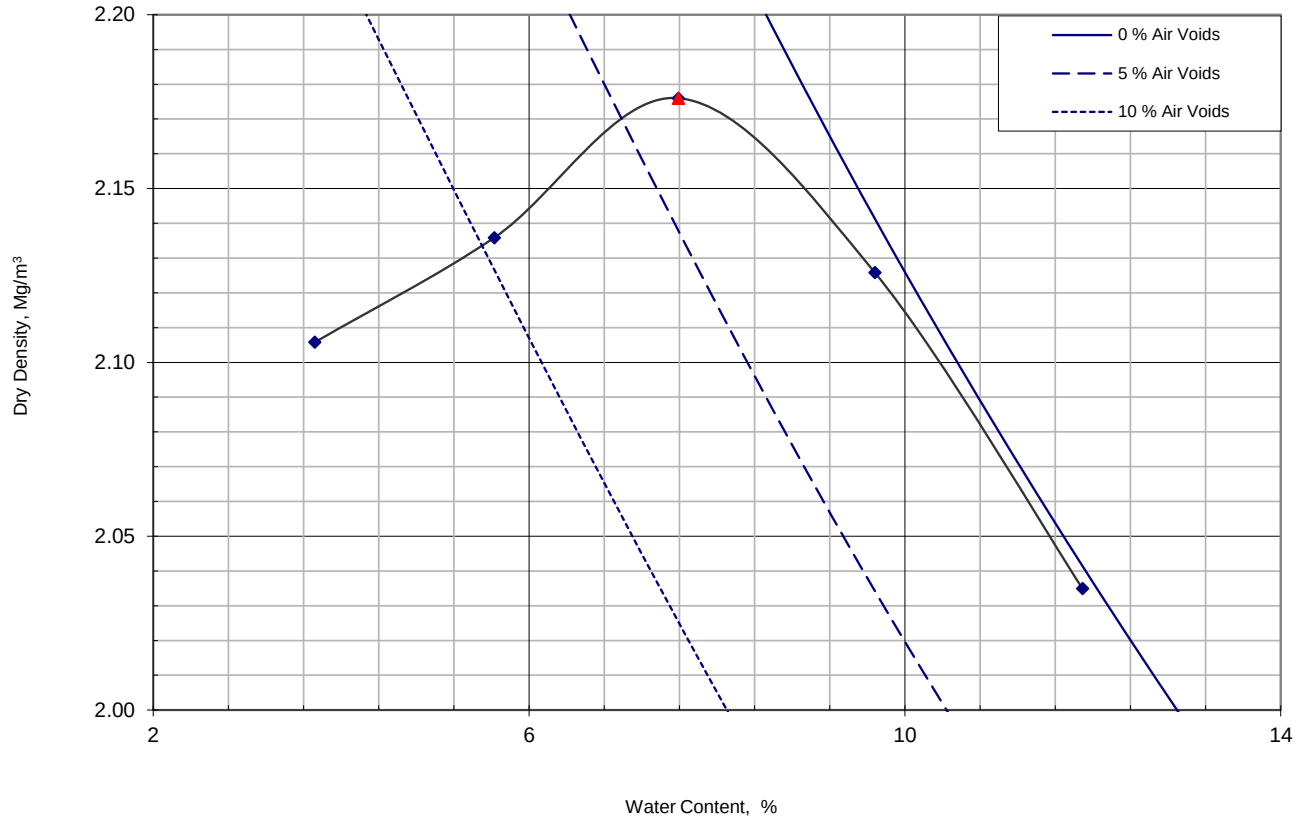
Compaction Clause BS1377-2:2022, Clause 11.4

Sample Type B

Sample Description Brown silty/clayey fine to coarse gravelly fine to coarse SAND

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	3.7	5.6	7.6	9.7	11.9							
Bulk Density	2.18	2.26	2.34	2.33	2.28							
Dry Density	2.11	2.14	2.18	2.13	2.03							

Initial Water Content	11.9	%
Maximum Dry Density	2.18	Mg/m3
Optimum Water Content	7.6	%
Particle Density	2.7 Measured	Mg/m3
Material Retained 37.5mm	12	%
Material Retained 20mm	16	%

Operator

Conal

Determination of The Dry Density / Water Content Relationship BS 1377-2:2022

Contract Number 73625

Borehole / Pit No S. 14iii

Project Name Swansea Bay University

Sample No 19

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

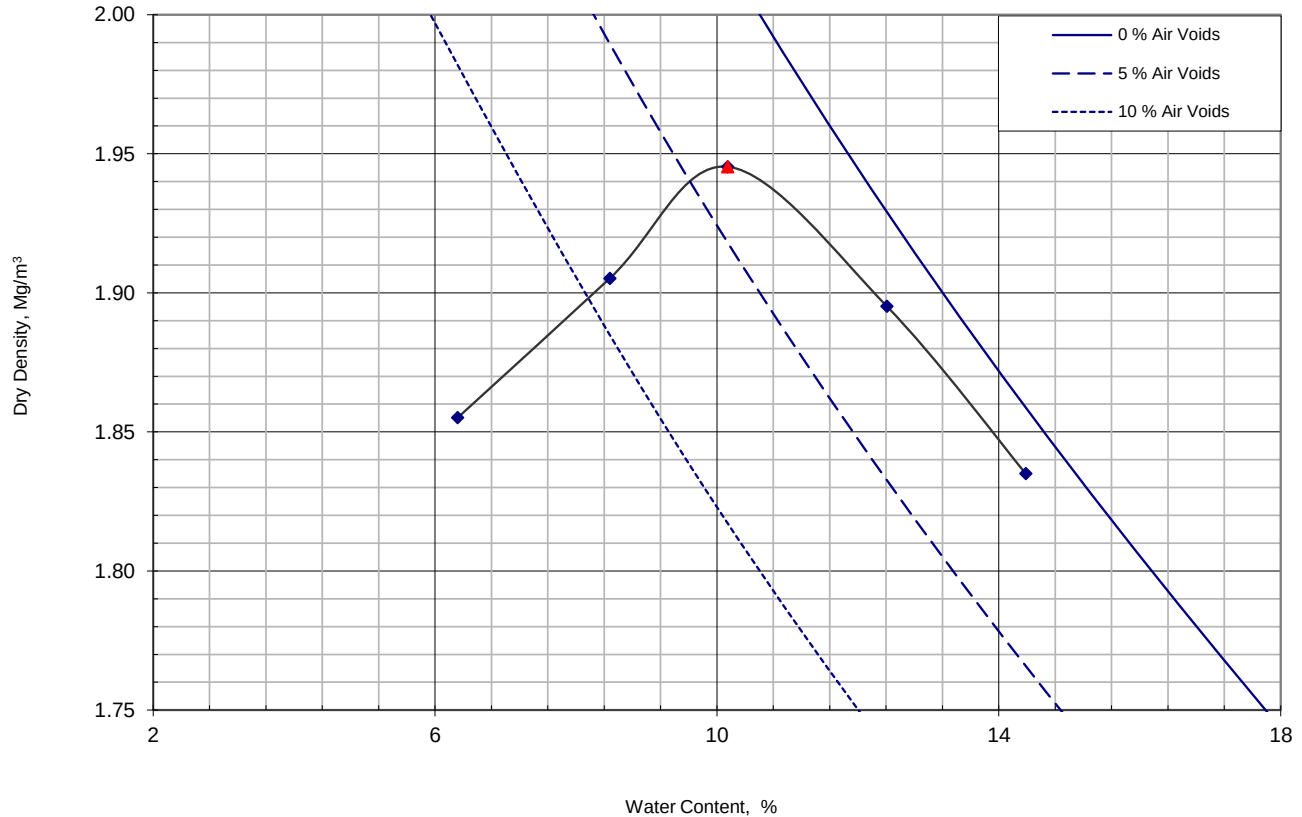
Compaction Clause BS1377-2:2022, Clause 11.3

Sample Type B

Sample Description Brown slightly silty/clayey fine to coarse gravelly fine to coarse SAND

Single or Separate Sample Used Single

Grading Zone Grading Zone 2 - Not Susceptible to Crushing



Compaction Point	1	2	3	4	5							
Water Content	6.3	8.5	10.2	12.4	14.4							
Bulk Density	1.97	2.07	2.14	2.13	2.10							
Dry Density	1.86	1.91	1.95	1.90	1.84							

Initial Water Content	8.5	%
Maximum Dry Density	1.95	Mg/m3
Optimum Water Content	10	%
Particle Density	2.54 Measured	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	3	%

Operator

Conal

Determination of The Dry Density / Water Content Relationship BS 1377-2:2022

Contract Number 73625

Borehole / Pit No S. 15

Project Name Swansea Bay University

Sample No 21

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

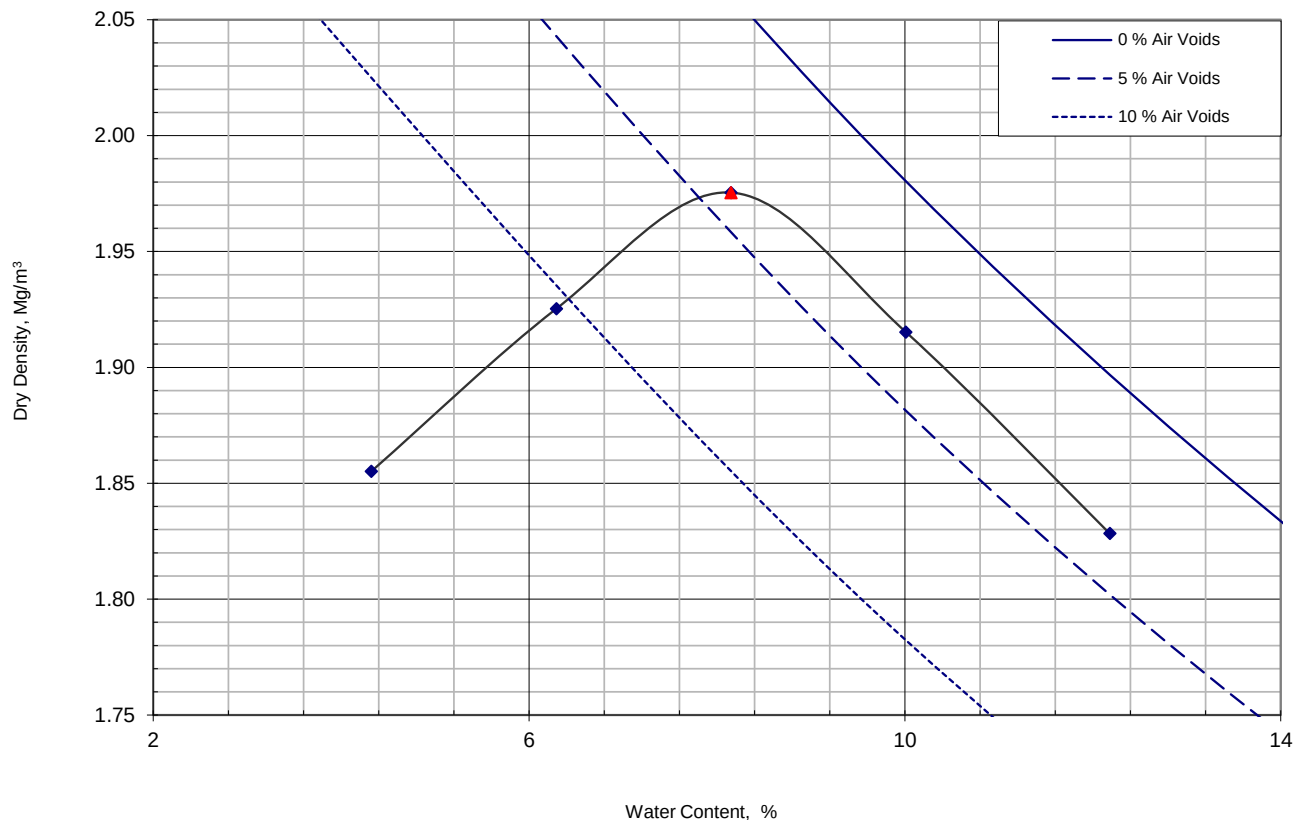
Compaction Clause BS1377-2:2022, Clause 11.4

Sample Type B

Sample Description Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL

Single or Separate Sample Used Single

Grading Zone Grading Zone 3 - Not Susceptible to Crushing



Compaction Point	1	2	3	4	5							
Water Content	4.3	6.3	8.2	10.0	12.2							
Bulk Density	1.94	2.05	2.14	2.11	2.05							
Dry Density	1.86	1.93	1.98	1.92	1.83							

Initial Water Content	6.3	%
Maximum Dry Density	1.98	Mg/m3
Optimum Water Content	8.2	%
Particle Density	2.47 Measured	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	12	%

Operator

Conal

Determination of The Dry Density / Water Content Relationship BS 1377-2:2022

Contract Number 73625

Borehole / Pit No S. 16

Project Name Swansea Bay University

Sample No 22

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

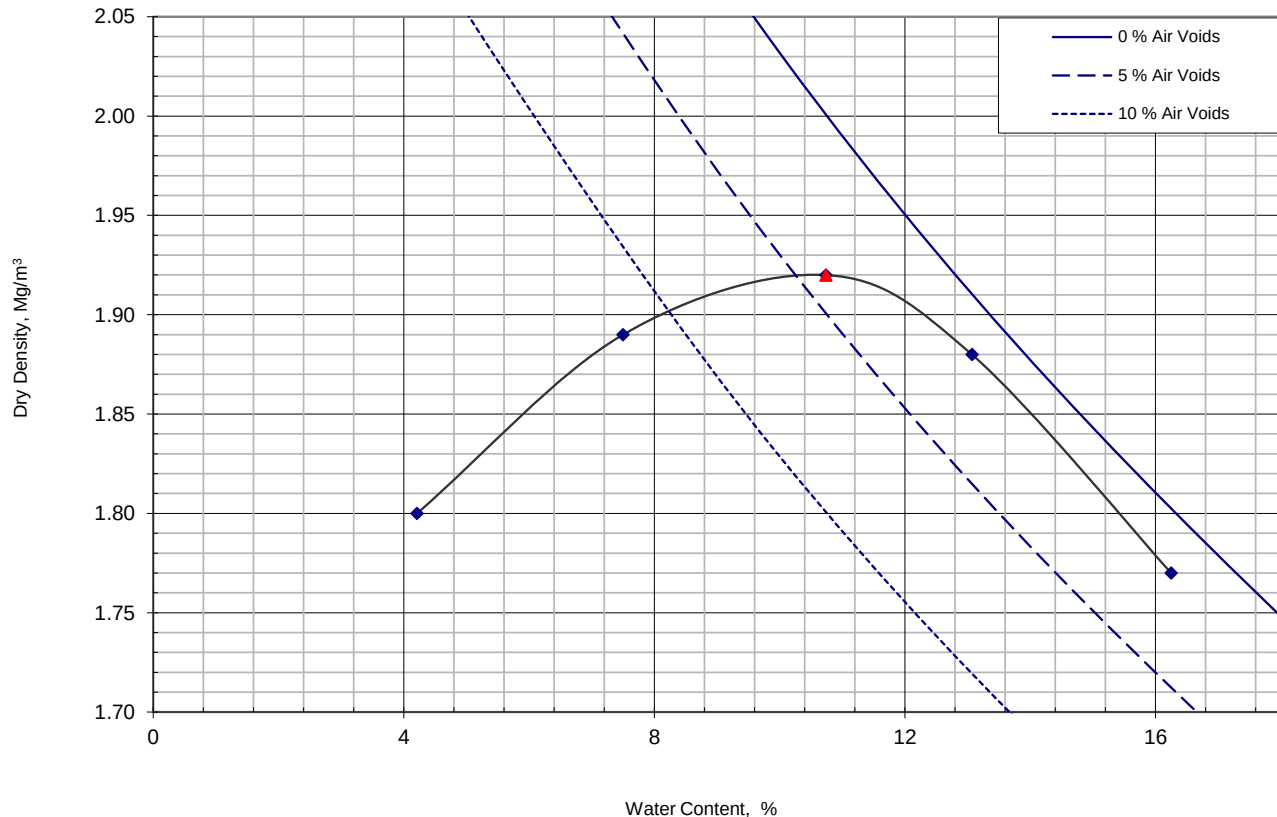
Compaction Clause BS1377-2:2022, Clause 11.4

Sample Type B

Sample Description Brown silty/clayey fine to coarse gravelly fine to coarse SAND

Single or Separate Sample Used Single

Grading Zone Grading Zone 3 - Not Susceptible to Crushing



Compaction Point	1	2	3	4	5							
Water Content	4.2	7.5	10.7	13.1	16.3							
Bulk Density	1.88	2.03	2.13	2.13	2.06							
Dry Density	1.80	1.89	1.92	1.88	1.77							

Initial Water Content	13.1	%
Maximum Dry Density	1.92	Mg/m3
Optimum Water Content	11	%
Particle Density	2.55 Measured	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	14	%

Operator

Conal

**Determination of The Dry Density / Water Content Relationship
BS 1377-2:2022**

Contract Number 73625

Borehole / Pit No S. 17

Project Name Swansea Bay University

Sample No 23

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

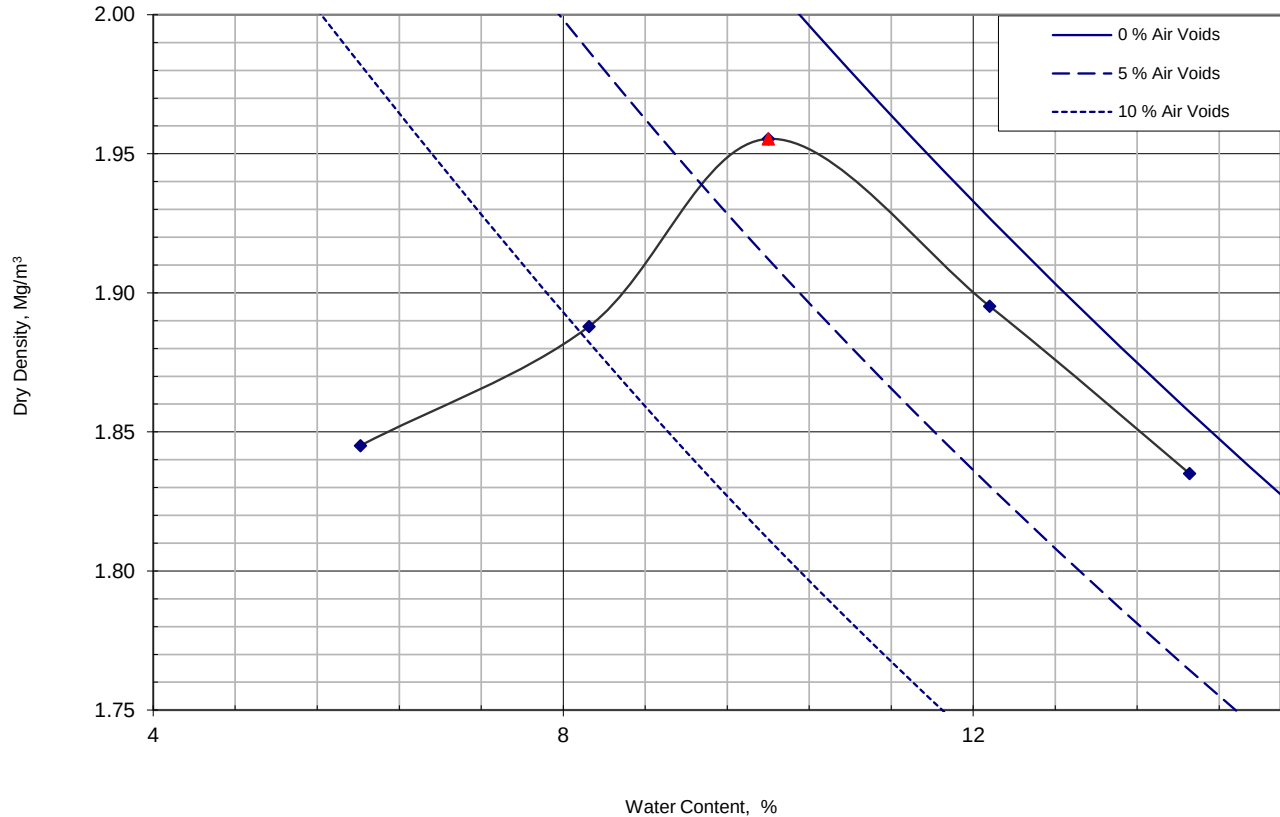
Compaction Clause BS1377-2:2022, Clause 11.4

Sample Type B

Sample Description Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL

Single or Separate Sample Used Single

Grading Zone Grading Zone 3 - Not Susceptible to Crushing



Compaction Point	1	2	3	4	5							
Water Content	6.0	8.3	10.0	12.2	14.1							
Bulk Density	1.96	2.04	2.15	2.13	2.09							
Dry Density	1.85	1.89	1.96	1.90	1.84							

Initial Water Content	10.0	%
Maximum Dry Density	1.96	Mg/m3
Optimum Water Content	10	%
Particle Density	2.52 Measured	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	28	%

Operator

Conal

Determination of The Dry Density / Water Content Relationship BS 1377-2:2022

Contract Number 73625

Borehole / Pit No S. 18

Project Name Swansea Bay University

Sample No 24

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

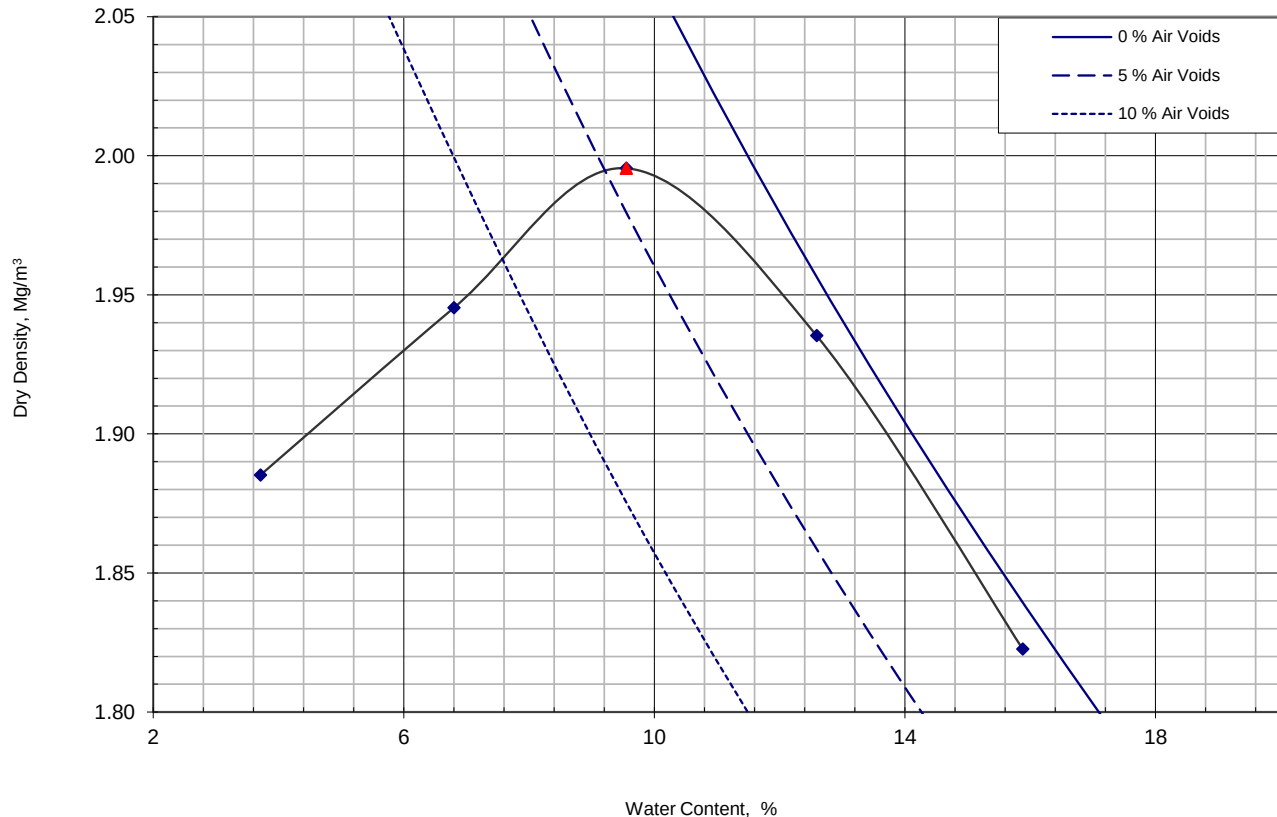
Compaction Clause BS1377-2:2022, Clause 11.4

Sample Type B

Sample Description Grey silty/clayey fine to coarse gravelly fine to coarse SAND (withcobbles)

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	3.7	6.8	9.6	12.6	15.9							
Bulk Density	1.96	2.08	2.19	2.18	2.11							
Dry Density	1.89	1.95	2.00	1.94	1.82							

Initial Water Content	6.8	%
Maximum Dry Density	2.00	Mg/m ³
Optimum Water Content	9.6	%
Particle Density	2.6 Measured	Mg/m ³
Material Retained 37.5mm	25	%
Material Retained 20mm	7	%

Operator

Conal

Determination of The Dry Density / Water Content Relationship BS 1377-2:2022

Contract Number 73625

Borehole / Pit No S. 19

Project Name Swansea Bay University

Sample No 25

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

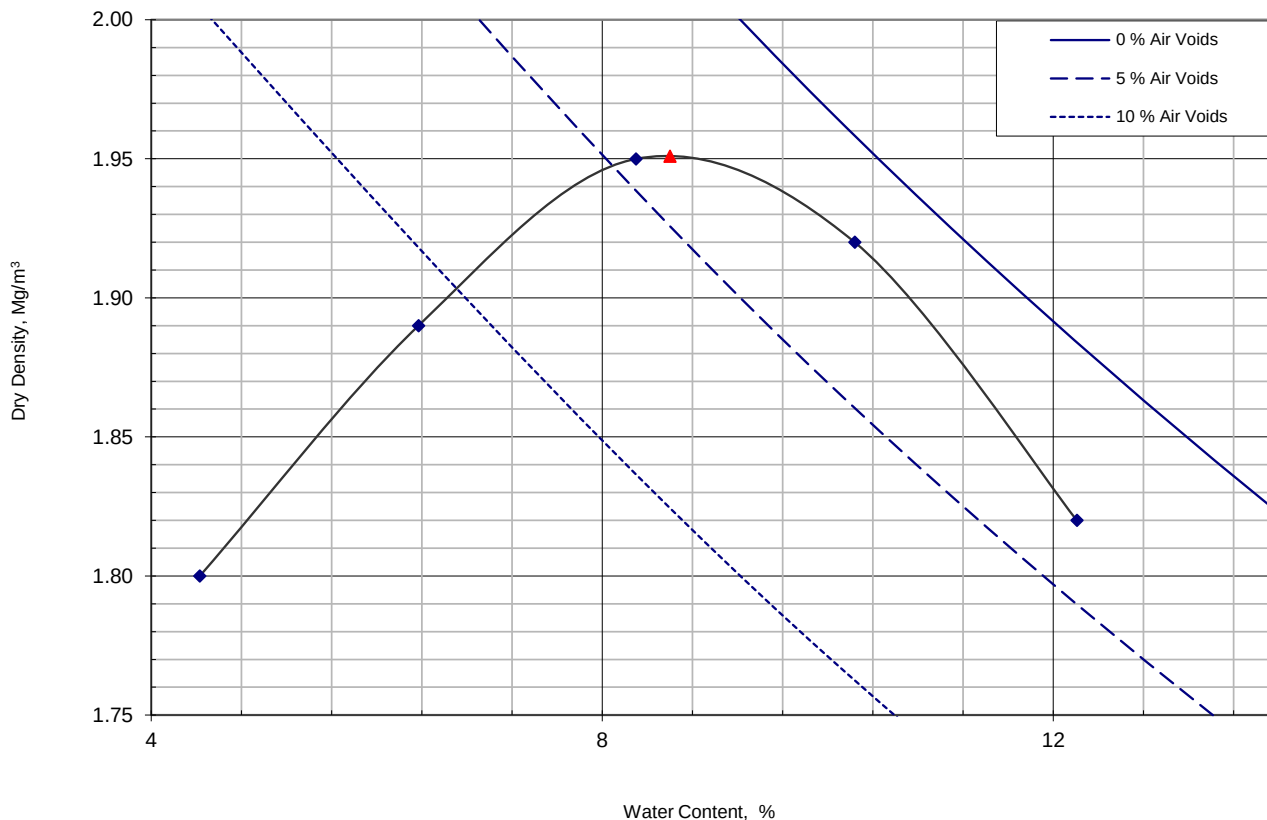
Compaction Clause BS1377-2:2022, Clause 11.3

Sample Type B

Sample Description Brown slightly silty/clayey fine to coarse gravelly fine to coarse SAND(with cobbles)

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	4.4	6.4	8.3	10.2	12.2							
Bulk Density	1.88	2.01	2.11	2.12	2.04							
Dry Density	1.80	1.89	1.95	1.92	1.82							

Initial Water Content	4.4	%
Maximum Dry Density	1.95	Mg/m3
Optimum Water Content	8.6	%
Particle Density	2.45 Measured	Mg/m3
Material Retained 37.5mm	55	%
Material Retained 20mm	4	%

Operator

Conal

Determination of The Dry Density / Water Content Relationship BS 1377-2:2022

Contract Number 73625

Borehole / Pit No S. 20

Project Name Swansea Bay University

Sample No 26

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

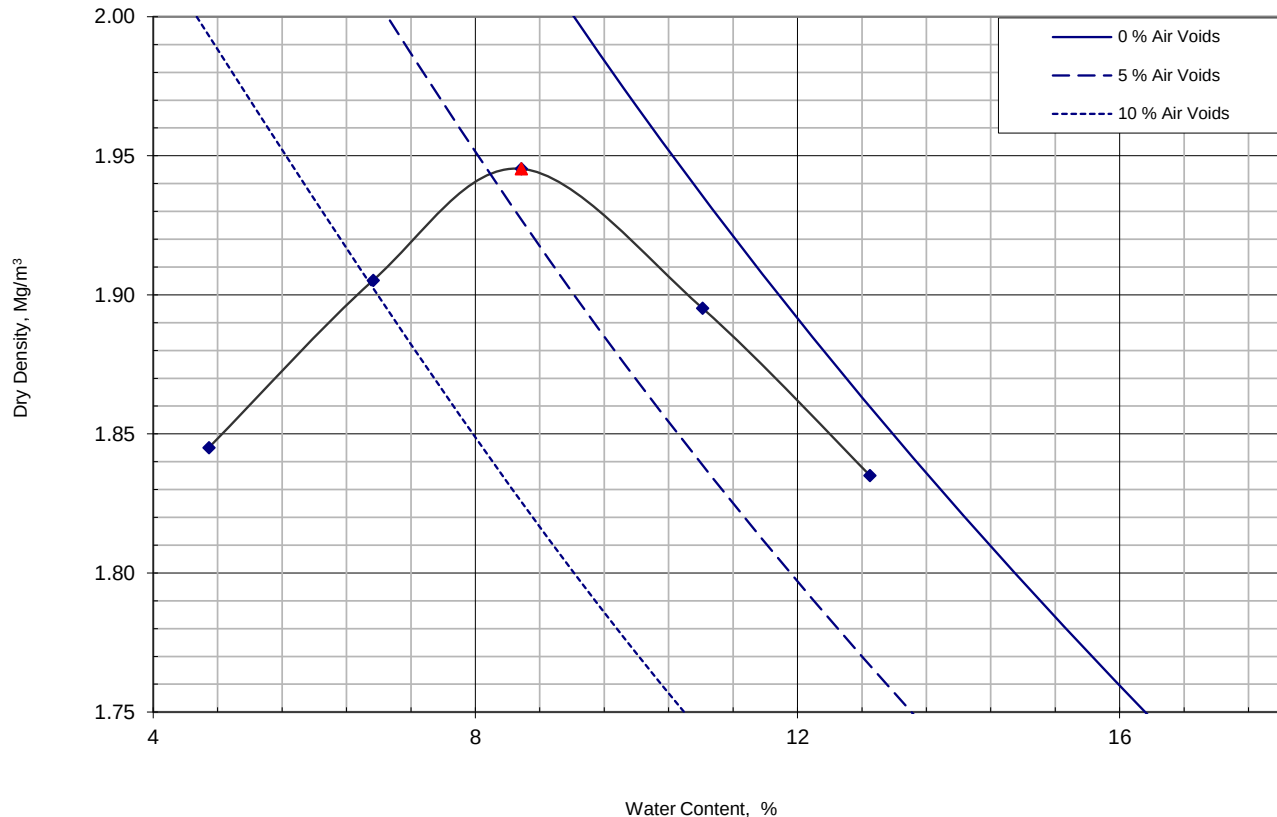
Compaction Clause BS1377-2:2022, Clause 11.3

Sample Type B

Sample Description Grey silty/clayey fine to coarse sandy fine to coarse GRAVEL

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	4.7	6.7	8.6	10.8	12.9							
Bulk Density	1.93	2.03	2.11	2.10	2.07							
Dry Density	1.85	1.91	1.95	1.90	1.84							

Initial Water Content	8.6	%
Maximum Dry Density	1.95	Mg/m3
Optimum Water Content	8.6	%
Particle Density	2.45 Measured	Mg/m3
Material Retained 37.5mm	21	%
Material Retained 20mm	15	%

Operator

Conal

**Determination of The Dry Density / Water Content Relationship
BS 1377-2:2022**

Contract Number 73625

Borehole / Pit No S. 21

Project Name Swansea Bay University

Sample No 27

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

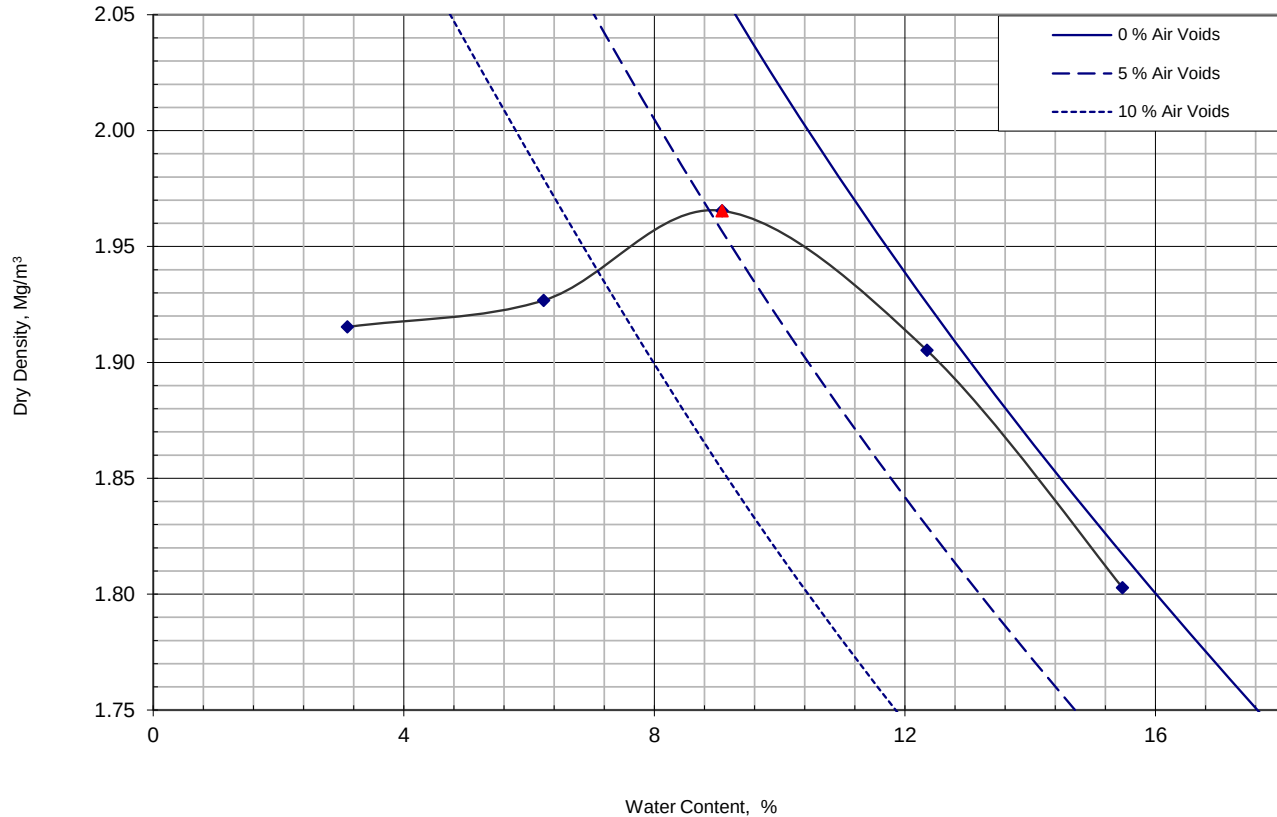
Compaction Clause BS1377-2:2022, Clause 11.4

Sample Type B

Sample Description Brown silty/clayey fine to coarse gravelly fine to coarse SAND

Single or Separate Sample Used Single

Grading Zone Grading Zone 3 - Not Susceptible to Crushing



Compaction Point	1	2	3	4	5							
Water Content	3.1	6.2	9.1	12.4	15.5							
Bulk Density	1.97	2.05	2.14	2.14	2.08							
Dry Density	1.92	1.93	1.97	1.91	1.80							

Initial Water Content	6.2	%
Maximum Dry Density	1.97	Mg/m ³
Optimum Water Content	9.1	%
Particle Density	2.53 Measured	Mg/m ³
Material Retained 37.5mm	0	%
Material Retained 20mm	10	%

Operator

Conal

**Determination of The Dry Density / Water Content Relationship
BS 1377-2:2022**

Contract Number 73625

Borehole / Pit No S. 24

Project Name Swansea Bay University

Sample No 28

Date Tested 19/07/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

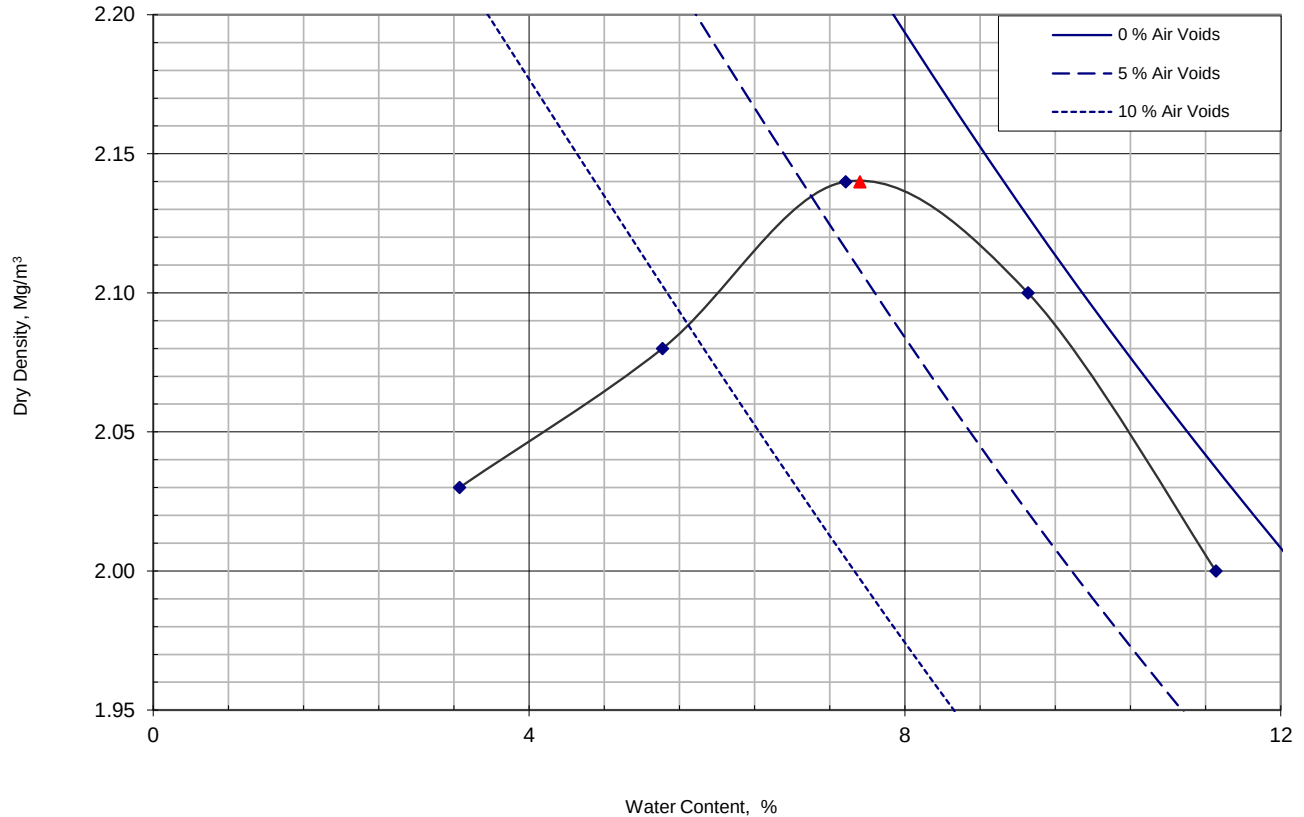
Compaction Clause BS1377-2:2022, Clause 11.3

Sample Type B

Sample Description Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	3.3	5.4	7.4	9.3	11.3							
Bulk Density	2.10	2.19	2.30	2.30	2.23							
Dry Density	2.03	2.08	2.14	2.10	2.00							

Initial Water Content	9.3	%
Maximum Dry Density	2.14	Mg/m3
Optimum Water Content	7.5	%
Particle Density	2.65 Measured	Mg/m3
Material Retained 37.5mm	30	%
Material Retained 20mm	10	%

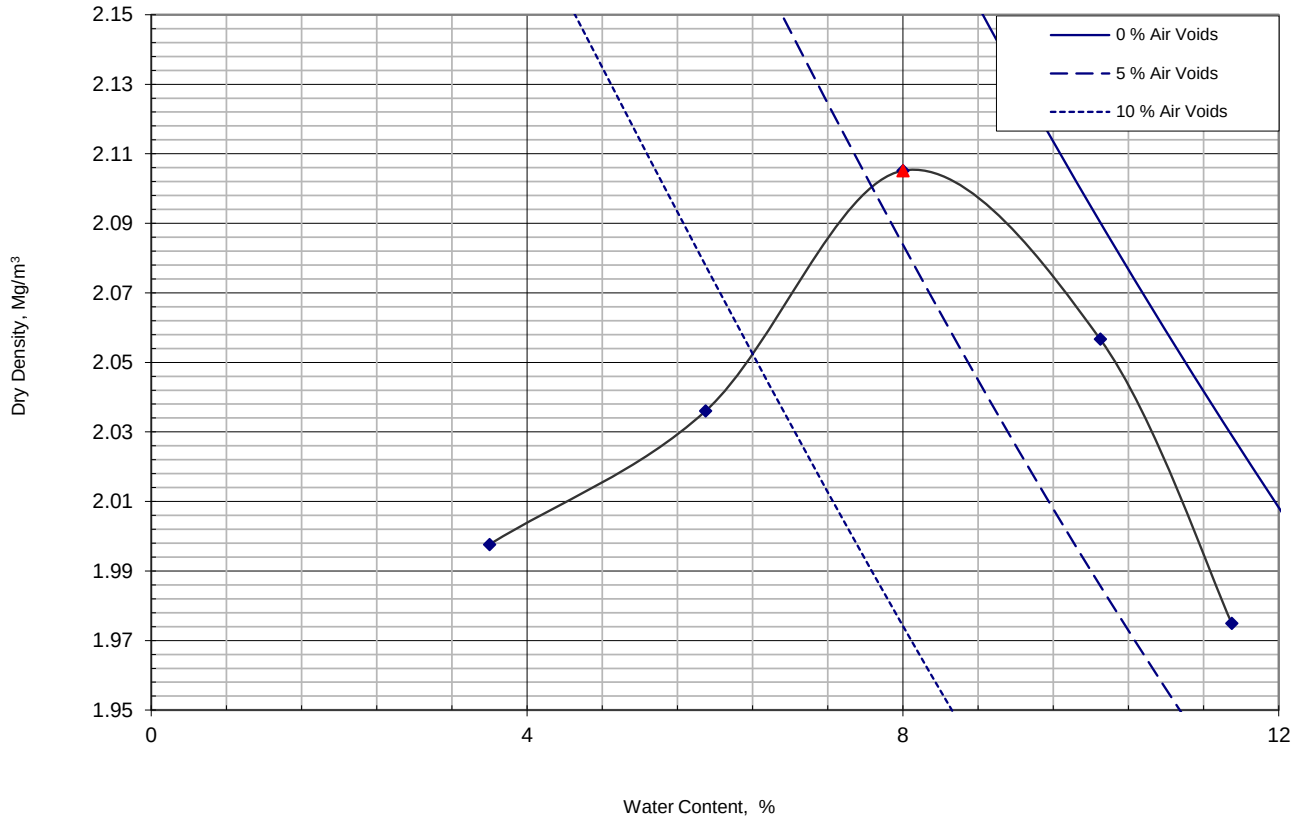
Operator

Conal

Determination of The Dry Density / Water Content Relationship BS 1377-2:2022

Contract Number	73625
Borehole / Pit No	S. 25
Sample No	29
Depth Top	
Depth Base	
Sample Type	B
Single or Separate Sample Used	Single

Project Name	Swansea Bay University
Date Tested	19/07/2024
Compaction Method	2.5 Kg Rammer
Compaction Clause	BS1377-2:2022, Clause 11.3
Sample Description	Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL
Grading Zone	Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	3.6	5.9	8.0	10.1	11.5							
Bulk Density	2.07	2.16	2.27	2.26	2.20							
Dry Density	2.00	2.04	2.11	2.06	1.97							

Initial Water Content	10.1	%
Maximum Dry Density	2.11	Mg/m3
Optimum Water Content	8.0	%
Particle Density	2.65 Measured	Mg/m3
Material Retained 37.5mm	16	%
Material Retained 20mm	12	%

Operator
Conal