



Laboratory Report



Contract Number: 74140

Client Ref:

Client PO:

Date Received: **09-08-2024**

Date Completed: **21-08-2024**

Report Date: **21-08-2024**

Client: **PJA Civil Engineering Limited**

This report has been checked and approved by:

Contract Title: **Hendrefoilan**

For the attention of: **Liam Clark**

Brendan Evans
Office Administrator

Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	3
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	3
Particle Density (Gas Jar) BS 1377-2:2022 Clause 9 - * UKAS	3
Particle Size Distribution BS EN ISO 17892-4 : 5.1 - * UKAS	3
Dry Den/MC (2.5kg Rammer Method 1 litre mould/CBR Mould) BS 1377-2:2022 Clause 11.3 & 11.4 - * UKAS	3
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)

GEO Site & Testing Services Ltd

Unit 3-4 Heol Aur, Dafen Ind Est, Llanelli, Carmarthenshire SA14 8QN

Tel: 01554 784 040 Fax: 01554 784 040 info@gstl.co.uk https://gstl.co.uk

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

Contract Number **74140**

Borehole/Pit No. **SPH**

Project Name **Hendrefoilan**

Sample No. **1**

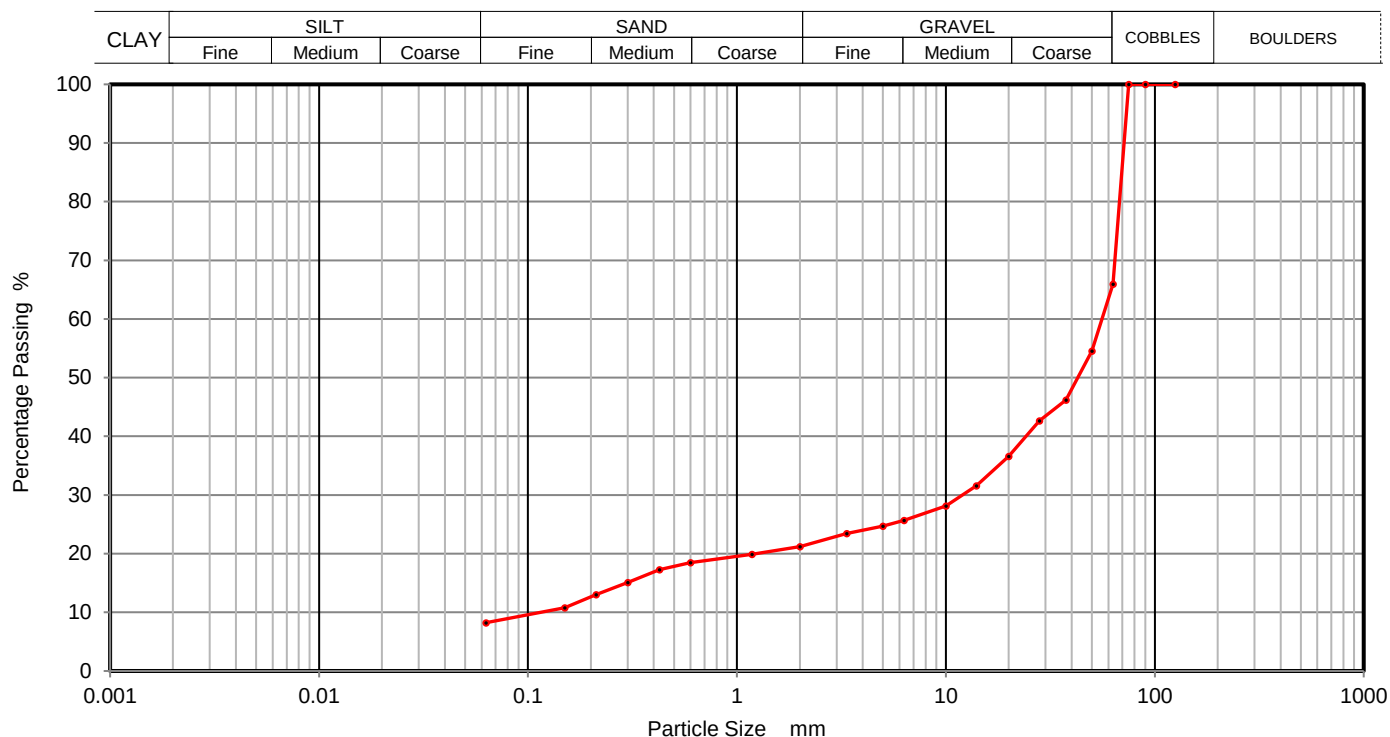
Sample Description **Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL (with cobbles)**

Depth Top

Depth Base

Date Tested **17/08/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	66		
50	55		
37.5	46		
28	43		
20	37		
14	32		
10	28		
6.3	26		
5	25		
3.35	23		
2	21		
1.18	20		
0.63	18		
0.425	17		
0.30	15		
0.20	13		
0.15	11		
0.063	8		

Sample Proportions	% dry mass
Cobbles	34
Gravel	45
Sand	13
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 **74140**

Borehole/Pit No. **SPH**

Project Name **Hendrefoilan**

Sample No. **2**

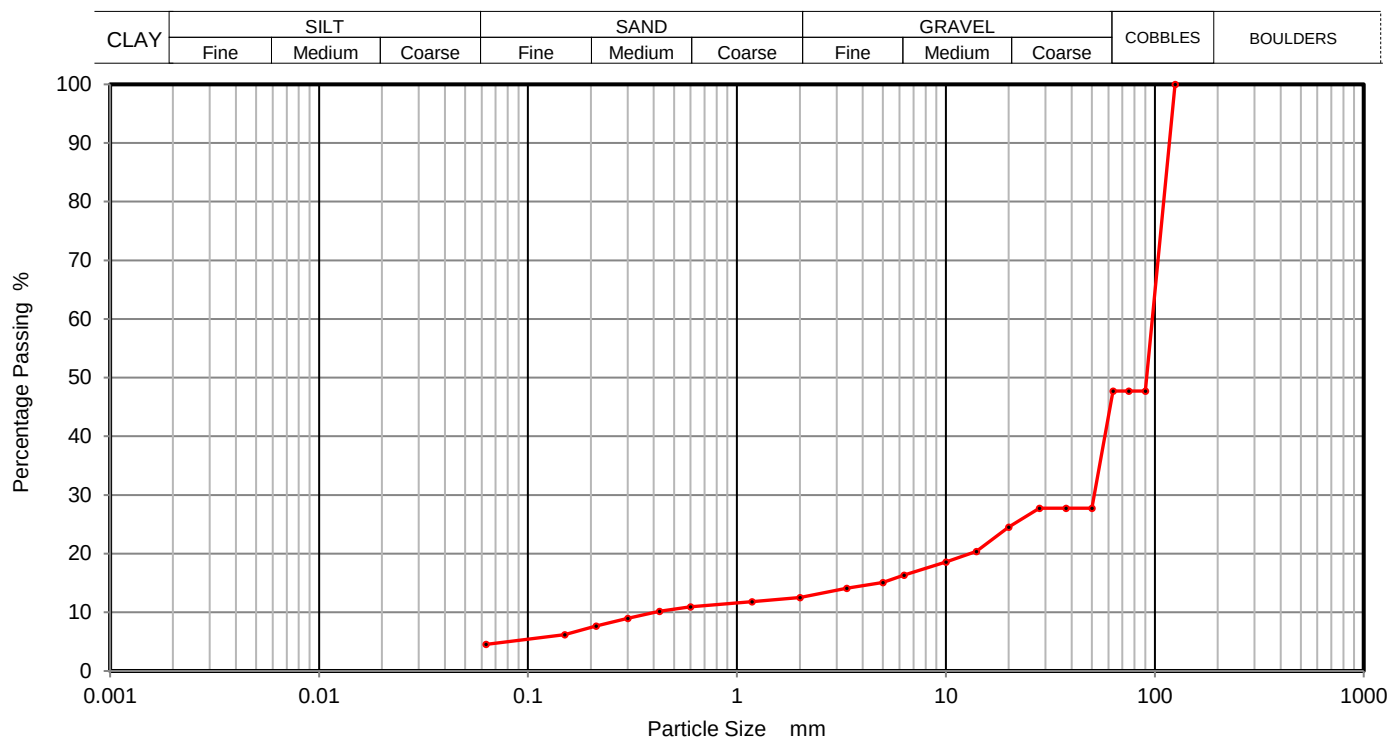
Sample Description **Brown slightly silty/clayey fine to coarse sandy fine to coarse GRAVEL (mainly cobbles)**

Depth Top

Depth Base

Date Tested **17/08/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	48		
75	48		
63	48		
50	28		
37.5	28		
28	28		
20	25		
14	20		
10	19		
6.3	16		
5	15		
3.35	14		
2	13		
1.18	12		
0.63	11		
0.425	10		
0.30	9		
0.20	8		
0.15	6		
0.063	5		

Sample Proportions	% dry mass
Cobbles	52
Gravel	35
Sand	8
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 **74140**

Borehole/Pit No. **SPG**

Project Name **Hendrefoilan**

Sample No. **3**

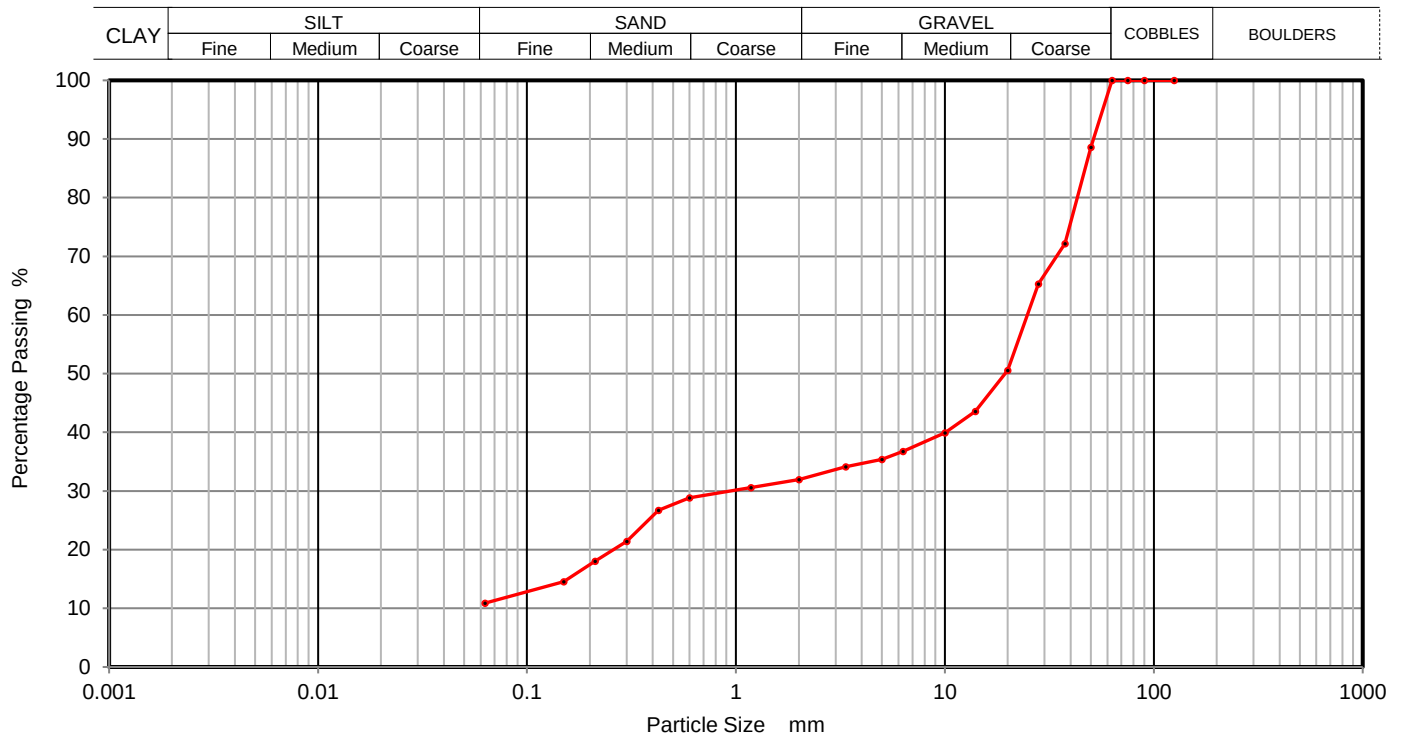
Sample Description **Brown silty/clayey fine to coarse sandy fine to coarse GRAVEL**

Depth Top

Depth Base

Date Tested **17/08/2024**

Sample Type **B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	89		
37.5	72		
28	65		
20	51		
14	44		
10	40		
6.3	37		
5	35		
3.35	34		
2	32		
1.18	31		
0.63	29		
0.425	27		
0.30	21		
0.20	18		
0.15	15		
0.063	11		

Sample Proportions	% dry mass
Cobbles	0
Gravel	68
Sand	21
Silt and Clay	11

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 74140

Borehole / Pit No SPH

Project Name Hendrefoilan

Sample No 1

Date Tested 19/08/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

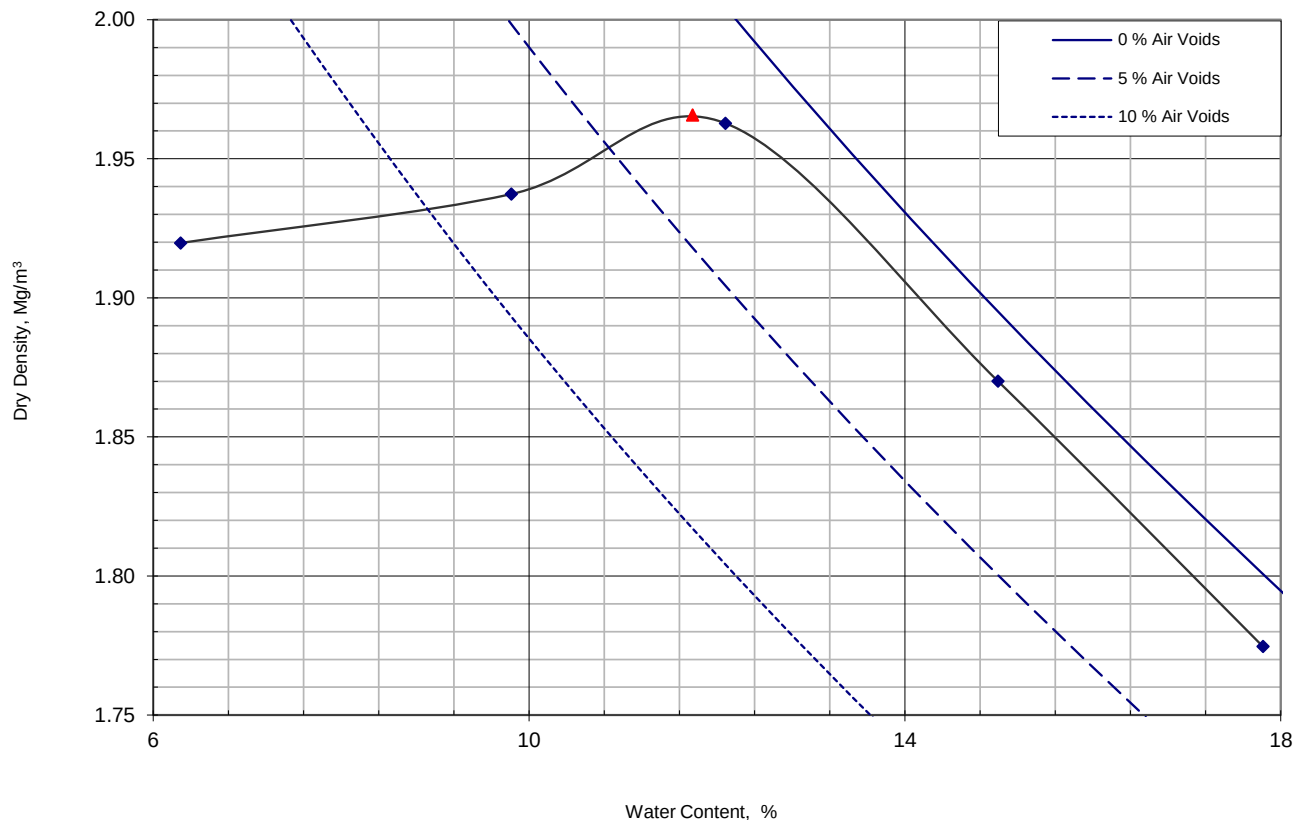
Compaction Clause BS1377-2:2022, Clause 11.3

Sample Type B

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

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	6.3	9.8	12.1	15.0	17.8							
Bulk Density	2.04	2.13	2.20	2.15	2.09							
Dry Density	1.92	1.94	1.96	1.87	1.77							

Initial Water Content	9.8	%
Maximum Dry Density	1.97	Mg/m3
Optimum Water Content	11.7	%
Particle Density	2.65 Measured	Mg/m3
Material Retained 37.5mm	54	%
Material Retained 20mm	9	%

Operator

Stu

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

Contract Number 74140

Borehole / Pit No SPH

Project Name Hendrefoilan

Sample No 2

Date Tested 19/08/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

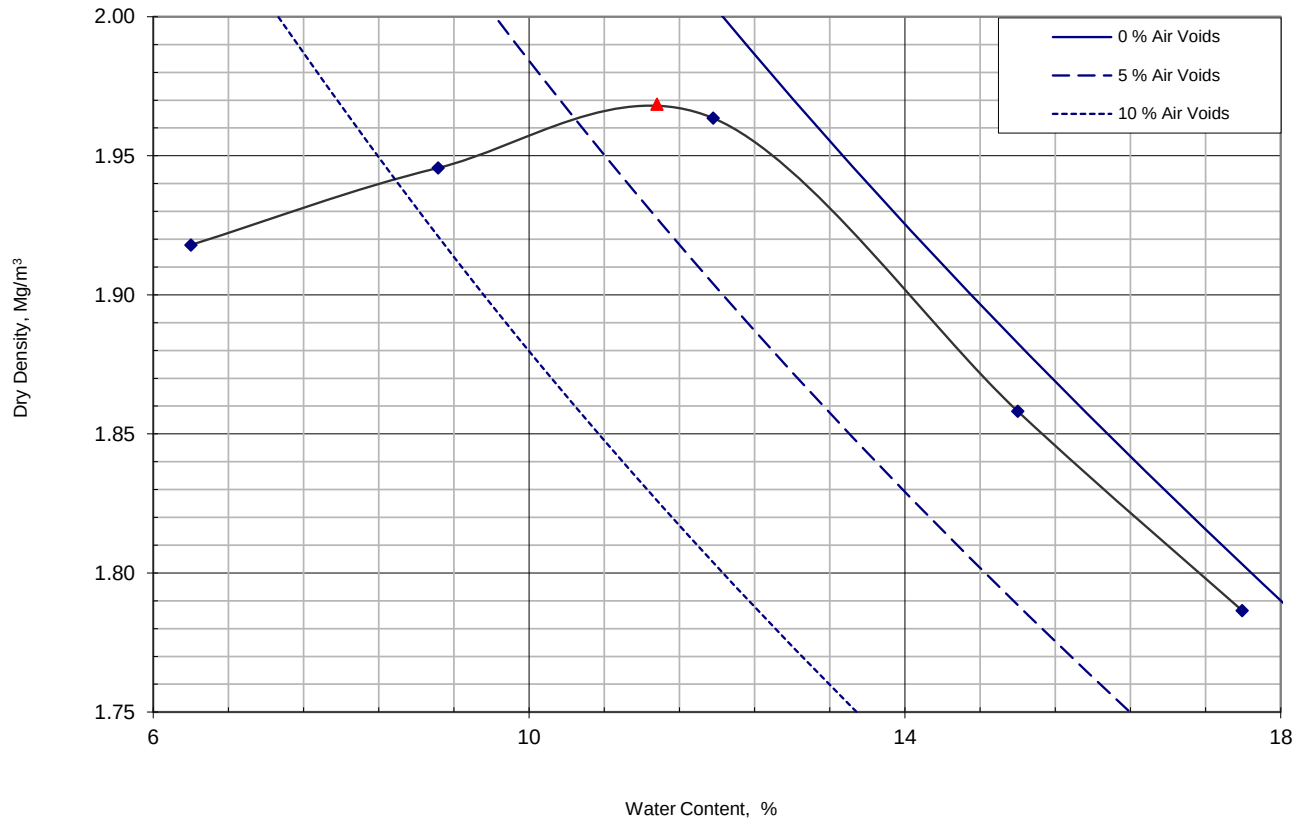
Compaction Clause BS1377-2:2022, Clause 11.3

Sample Type B

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

Single or Separate Sample Used Single

Grading Zone Grading Zone X - Non-Standard



Compaction Point	1	2	3	4	5							
Water Content	6.4	9.0	12.0	15.2	17.6							
Bulk Density	2.04	2.12	2.20	2.14	2.10							
Dry Density	1.92	1.95	1.96	1.86	1.79							

Initial Water Content	9.0	%
Maximum Dry Density	1.97	Mg/m3
Optimum Water Content	11.4	%
Particle Density	2.64 Measured	Mg/m3
Material Retained 37.5mm	72	%
Material Retained 20mm	3	%

Operator

Stu

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

Contract Number 74140

Borehole / Pit No SPG

Project Name Hendrefoilan

Sample No 3

Date Tested 19/08/2024

Depth Top

Compaction Method 2.5 Kg Rammer

Depth Base

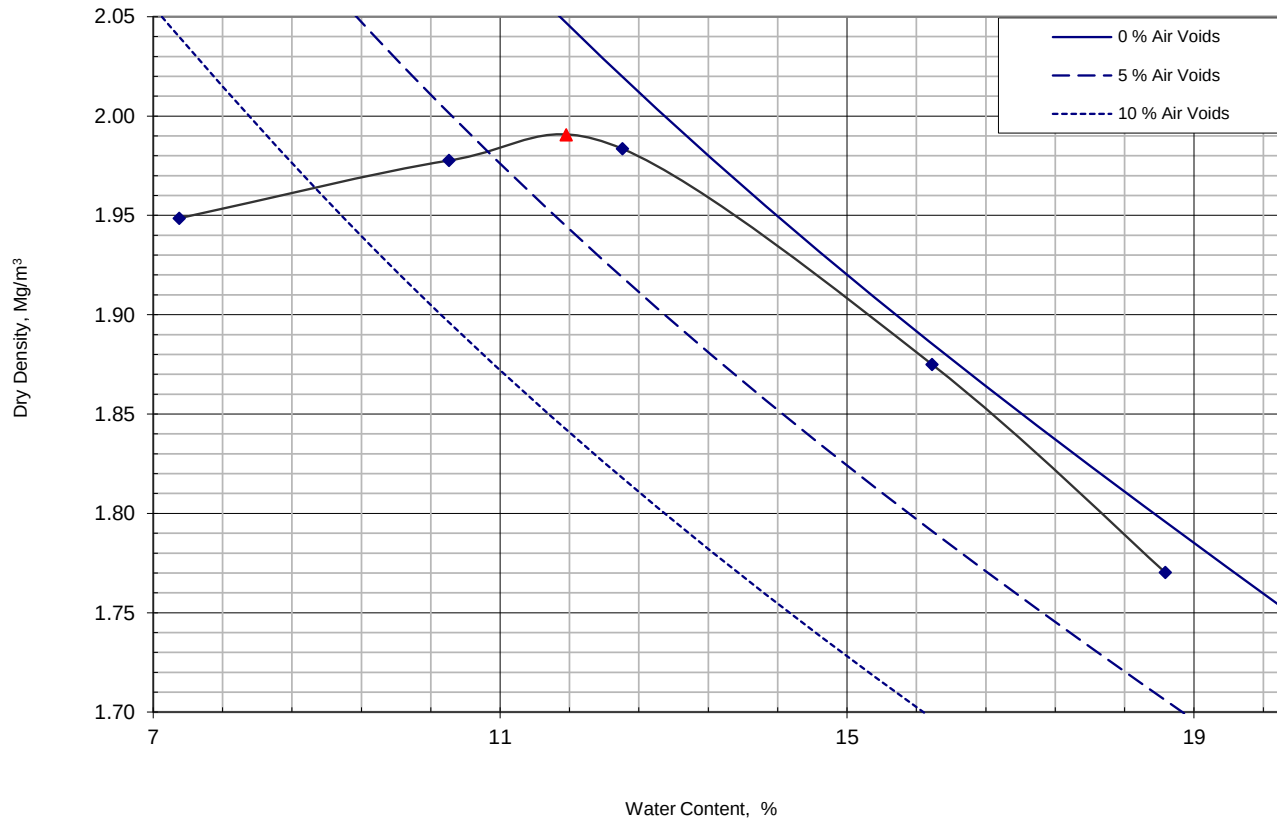
Compaction Clause BS1377-2:2022, Clause 11.3

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	7.3	10.4	12.4	16.0	18.7							
Bulk Density	2.09	2.18	2.23	2.17	2.10							
Dry Density	1.95	1.98	1.98	1.87	1.77							

Initial Water Content	12.4	%
Maximum Dry Density	1.99	Mg/m3
Optimum Water Content	11.8	%
Particle Density	2.7 Measured	Mg/m3
Material Retained 37.5mm	28	%
Material Retained 20mm	21	%

Operator

Stu