Appendix 2 - Dynamic Probe Test Results Report

Dynamic Probe
Test Results

Ruabon Park, Ruabon

FACTUAL REPORT

Prepared for:

E-Geo Solutions,
Windsor House,
26 Mostyn Avenue,
Craig y Don,
Llandudno,
LL30 1YY

Report Reference: FTR 37877 **Prepared by: Neil Aindow**

ISSUE REF: 01

Issue Date: 11th February 2022

Celtest limited
Trefelin
Llandegai
BANGOR
Gwynedd,
LL57 4LH
☎ - 01248 355 269

FTR 37877

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1.0 Introduction

Following your instructions twenty-two (22) dynamic probe tests were carried out using a Dynamic Probe with Super Heavy hammer (DPSH-B) with 90° cone.

The test was carried out in with BS 1377: Part 9: clause 3.2 & BS EN ISO 22476-2 to determine the Dynamic Probe resistance of the underlying material.

It is assumed that the DPSH-B method has a direct correlation to the SPT.

NOTE: The SPT 'N' values should be used as guidelines only.

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited. These results relate only to the locations tested.

Site Address: Ruabon Park, Ruabon

Date of Test: 18th 21st 26th and 28th of January 2022

Weather Conditions: Dry

Tested By: Mr Daley Thomas and Mr Willis Bunting

[redacted]

This report was prepared by: _____

Mr. Neil Aindow

[redacted]

This report is issued on behalf of Celtest Limited by: _____

(✓) *Mr. Jason Chinery – Operations Manager*

Date of issue: 11th February 2022

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2.0 Location Plan

Not Provided

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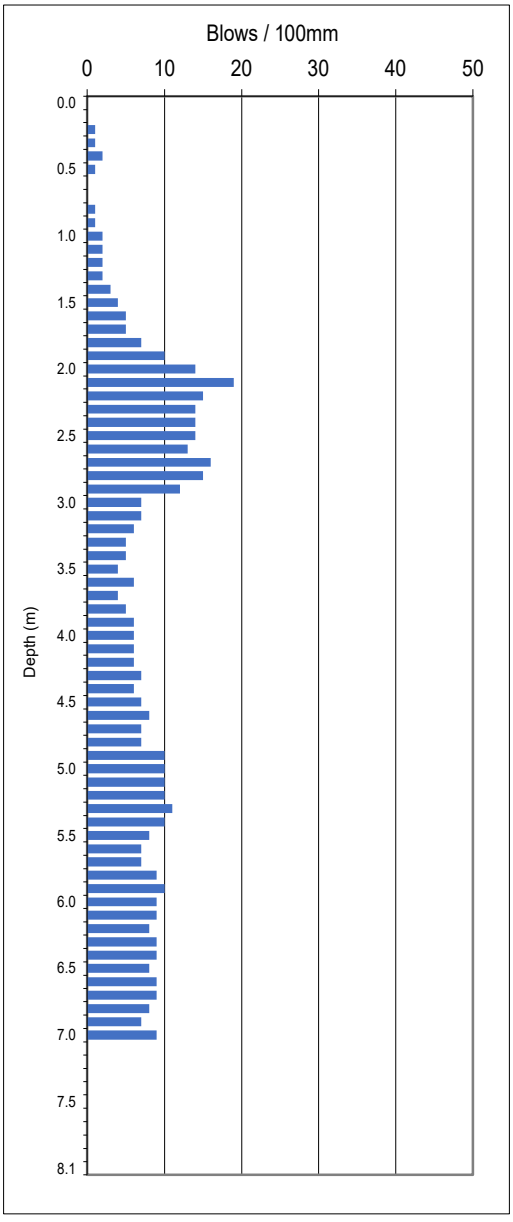
3.0 Test Results

3.1 – Test 1

LOCATION ON SITE : **Location 1**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	1	4.0
0.3	0.4	1	
0.4	0.5	2	
0.5	0.6	1	1.0
0.6	0.7	0	
0.7	0.8	0	
0.8	0.9	1	4.0
0.9	1.0	1	
1.0	1.1	2	
1.1	1.2	2	6.0
1.2	1.3	2	
1.3	1.4	2	
1.4	1.5	3	12.0
1.5	1.6	4	
1.6	1.7	5	
1.7	1.8	5	22.0
1.8	1.9	7	
1.9	2.0	10	
2.0	2.1	14	48.0
2.1	2.2	19	
2.2	2.3	15	
2.3	2.4	14	42.0
2.4	2.5	14	
2.5	2.6	14	
2.6	2.7	13	44.0
2.7	2.8	16	
2.8	2.9	15	
2.9	3.0	12	26.0
3.0	3.1	7	
3.1	3.2	7	
3.2	3.3	6	16.0
3.3	3.4	5	
3.4	3.5	5	
3.5	3.6	4	14.0
3.6	3.7	6	
3.7	3.8	4	
3.8	3.9	5	17.0
3.9	4.0	6	
4.0	4.1	6	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	6	19.0
4.2	4.3	6	
4.3	4.4	7	
4.4	4.5	6	21.0
4.5	4.6	7	
4.6	4.7	8	
4.7	4.8	7	24.0
4.8	4.9	7	
4.9	5.0	10	
5.0	5.1	10	30.0
5.1	5.2	10	
5.2	5.3	10	
5.3	5.4	11	29.0
5.4	5.5	10	
5.5	5.6	8	
5.6	5.7	7	23.0
5.7	5.8	7	
5.8	5.9	9	
5.9	6.0	10	28.0
6.0	6.1	9	
6.1	6.2	9	
6.2	6.3	8	26.0
6.3	6.4	9	
6.4	6.5	9	
6.5	6.6	8	26.0
6.6	6.7	9	
6.7	6.8	9	
6.8	6.9	8	24.0
6.9	7.0	7	
7.0	7.1	9	
7.1	7.2	END	0.0
7.2	7.3	0	
7.3	7.4	0	
7.4	7.5	0	0.0
7.5	7.6	0	
7.6	7.7	0	
7.7	7.8	0	0.0
7.8	7.9	0	
7.9	8.0	0	
8.1	8.0	0	0.0



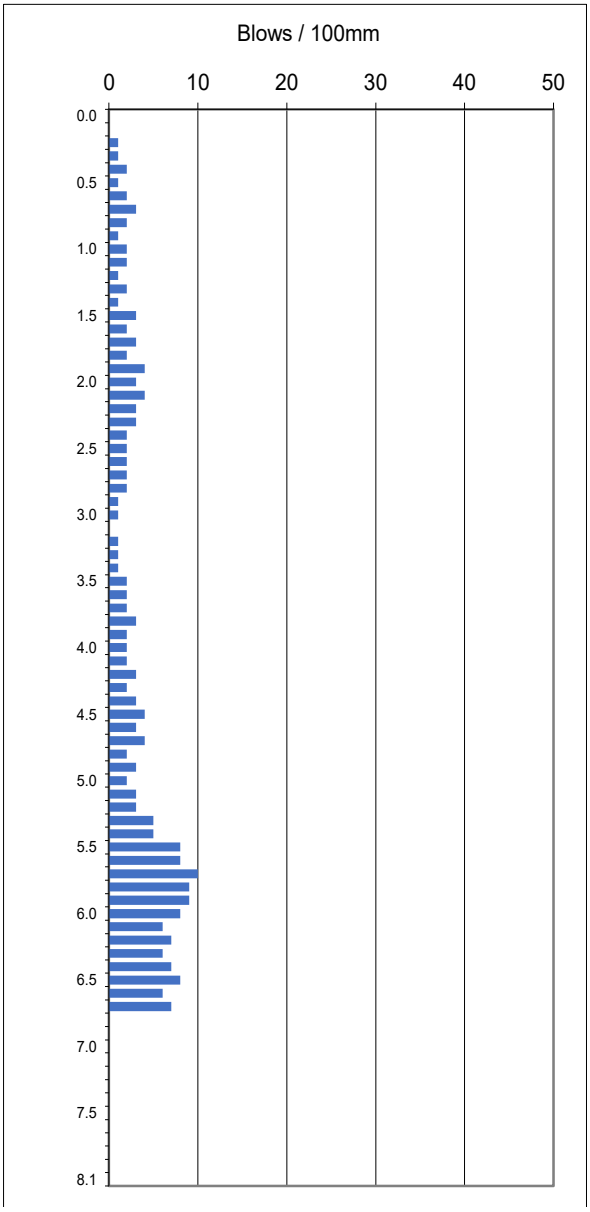
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3.0 Test Results

3.1 – Test 2

LOCATION ON SITE : **Location 2**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	1	4.0
0.3	0.4	1	
0.4	0.5	2	
0.5	0.6	1	6.0
0.6	0.7	2	
0.7	0.8	3	
0.8	0.9	2	5.0
0.9	1.0	1	
1.0	1.1	2	
1.1	1.2	2	5.0
1.2	1.3	1	
1.3	1.4	2	
1.4	1.5	1	6.0
1.5	1.6	3	
1.6	1.7	2	
1.7	1.8	3	9.0
1.8	1.9	2	
1.9	2.0	4	
2.0	2.1	3	10.0
2.1	2.2	4	
2.2	2.3	3	
2.3	2.4	3	7.0
2.4	2.5	2	
2.5	2.6	2	
2.6	2.7	2	6.0
2.7	2.8	2	
2.8	2.9	2	
2.9	3.0	1	2.0
3.0	3.1	1	
3.1	3.2	0	
3.2	3.3	1	3.0
3.3	3.4	1	
3.4	3.5	1	
3.5	3.6	2	6.0
3.6	3.7	2	
3.7	3.8	2	
3.8	3.9	3	7.0
3.9	4.0	2	
4.0	4.1	2	
4.1	4.2	2	7.0
4.2	4.3	3	
4.3	4.4	2	
4.4	4.5	3	10.0
4.5	4.6	4	
4.6	4.7	3	
4.7	4.8	4	9.0
4.8	4.9	2	
4.9	5.0	3	
5.0	5.1	2	8.0
5.1	5.2	3	
5.2	5.3	3	
5.3	5.4	5	18.0
5.4	5.5	5	
5.5	5.6	8	
5.6	5.7	8	27.0
5.7	5.8	10	
5.8	5.9	9	
5.9	6.0	9	23.0
6.0	6.1	8	
6.1	6.2	6	
6.2	6.3	7	20.0
6.3	6.4	6	
6.4	6.5	7	
6.5	6.6	8	21.0
6.6	6.7	6	
6.7	6.8	7	
6.8	6.9	END	0.0
6.9	7.0	0	
7.0	7.1	0	
7.1	7.2	0	0.0
7.2	7.3	0	
7.3	7.4	0	
7.4	7.5	0	0.0
7.5	7.6	0	
7.6	7.7	0	
7.7	7.8	0	0.0
7.8	7.9	0	
7.9	8.0	0	
8.1	8.0	0	0.0



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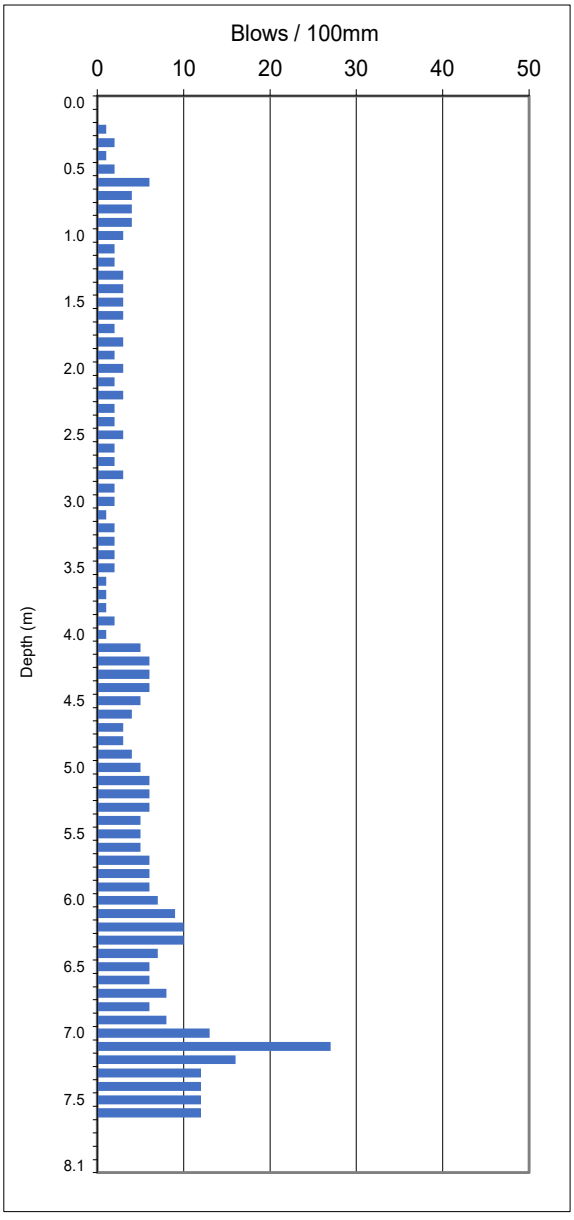
3.0 Test Results **Page 5**

3.3 – Test 3

LOCATION ON SITE : **Location 3**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	1	4.0
0.3	0.4	2	
0.4	0.5	1	
0.5	0.6	2	12.0
0.6	0.7	6	
0.7	0.8	4	
0.8	0.9	4	11.0
0.9	1.0	4	
1.0	1.1	3	
1.1	1.2	2	7.0
1.2	1.3	2	
1.3	1.4	3	
1.4	1.5	3	9.0
1.5	1.6	3	
1.6	1.7	3	
1.7	1.8	2	7.0
1.8	1.9	3	
1.9	2.0	2	
2.0	2.1	3	8.0
2.1	2.2	2	
2.2	2.3	3	
2.3	2.4	2	7.0
2.4	2.5	2	
2.5	2.6	3	
2.6	2.7	2	7.0
2.7	2.8	2	
2.8	2.9	3	
2.9	3.0	2	5.0
3.0	3.1	2	
3.1	3.2	1	
3.2	3.3	2	6.0
3.3	3.4	2	
3.4	3.5	2	
3.5	3.6	2	4.0
3.6	3.7	1	
3.7	3.8	1	
3.8	3.9	1	4.0
3.9	4.0	2	
4.0	4.1	1	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	5	17.0
4.2	4.3	6	
4.3	4.4	6	
4.4	4.5	6	15.0
4.5	4.6	5	
4.6	4.7	4	
4.7	4.8	3	10.0
4.8	4.9	3	
4.9	5.0	4	
5.0	5.1	5	17.0
5.1	5.2	6	
5.2	5.3	6	
5.3	5.4	6	16.0
5.4	5.5	5	
5.5	5.6	5	
5.6	5.7	5	17.0
5.7	5.8	6	
5.8	5.9	6	
5.9	6.0	6	22.0
6.0	6.1	7	
6.1	6.2	9	
6.2	6.3	10	27.0
6.3	6.4	10	
6.4	6.5	7	
6.5	6.6	6	20.0
6.6	6.7	6	
6.7	6.8	8	
6.8	6.9	6	27.0
6.9	7.0	8	
7.0	7.1	13	
7.1	7.2	27	55.0
7.2	7.3	16	
7.3	7.4	12	
7.4	7.5	12	36.0
7.5	7.6	12	
7.6	7.7	12	
7.7	7.8	END	0.0
7.8	7.9	0	
7.9	8.0	0	
8.1	8.0	0	0.0



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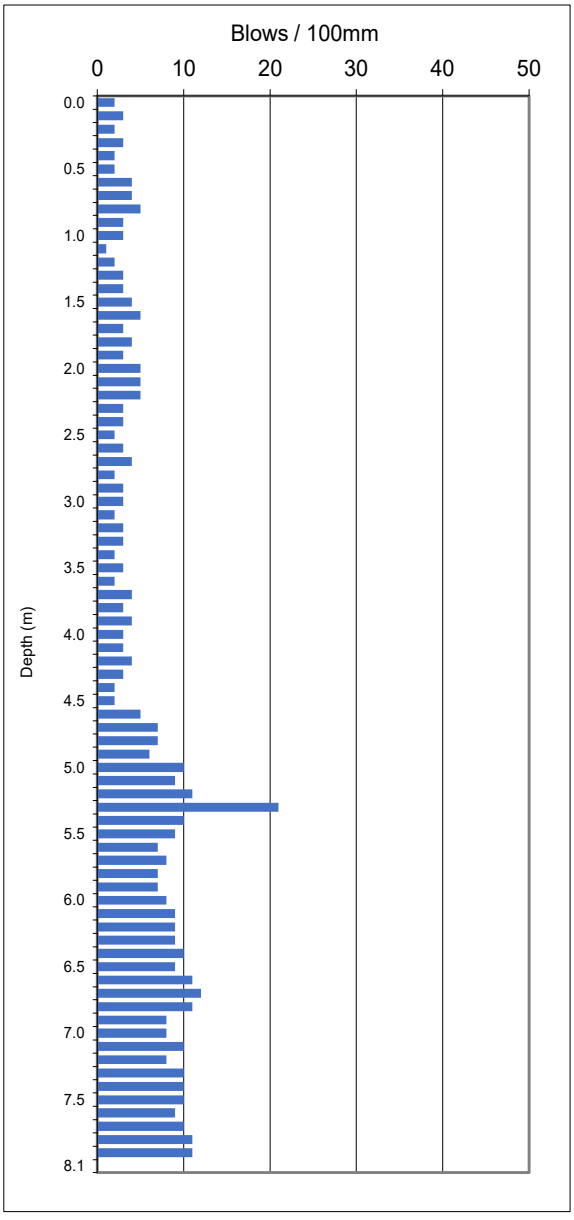
3.0 Test Results

3.4 – Test 4

LOCATION ON SITE : **Location 4**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	2	N/A
0.1	0.2	3	
0.2	0.3	2	7.0
0.3	0.4	3	
0.4	0.5	2	
0.5	0.6	2	10.0
0.6	0.7	4	
0.7	0.8	4	
0.8	0.9	5	11.0
0.9	1.0	3	
1.0	1.1	3	
1.1	1.2	1	6.0
1.2	1.3	2	
1.3	1.4	3	
1.4	1.5	3	12.0
1.5	1.6	4	
1.6	1.7	5	
1.7	1.8	3	10.0
1.8	1.9	4	
1.9	2.0	3	
2.0	2.1	5	15.0
2.1	2.2	5	
2.2	2.3	5	
2.3	2.4	3	8.0
2.4	2.5	3	
2.5	2.6	2	
2.6	2.7	3	9.0
2.7	2.8	4	
2.8	2.9	2	
2.9	3.0	3	8.0
3.0	3.1	3	
3.1	3.2	2	
3.2	3.3	3	8.0
3.3	3.4	3	
3.4	3.5	2	
3.5	3.6	3	9.0
3.6	3.7	2	
3.7	3.8	4	
3.8	3.9	3	10.0
3.9	4.0	4	
4.0	4.1	3	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	3	10.0
4.2	4.3	4	
4.3	4.4	3	
4.4	4.5	2	9.0
4.5	4.6	2	
4.6	4.7	5	
4.7	4.8	7	20.0
4.8	4.9	7	
4.9	5.0	6	
5.0	5.1	10	30.0
5.1	5.2	9	
5.2	5.3	11	
5.3	5.4	21	40.0
5.4	5.5	10	
5.5	5.6	9	
5.6	5.7	7	22.0
5.7	5.8	8	
5.8	5.9	7	
5.9	6.0	7	24.0
6.0	6.1	8	
6.1	6.2	9	
6.2	6.3	9	28.0
6.3	6.4	9	
6.4	6.5	10	
6.5	6.6	9	32.0
6.6	6.7	11	
6.7	6.8	12	
6.8	6.9	11	27.0
6.9	7.0	8	
7.0	7.1	8	
7.1	7.2	10	28.0
7.2	7.3	8	
7.3	7.4	10	
7.4	7.5	10	29.0
7.5	7.6	10	
7.6	7.7	9	
7.7	7.8	10	32.0
7.8	7.9	11	
7.9	8.0	11	
8.1	8.0	END	0.0



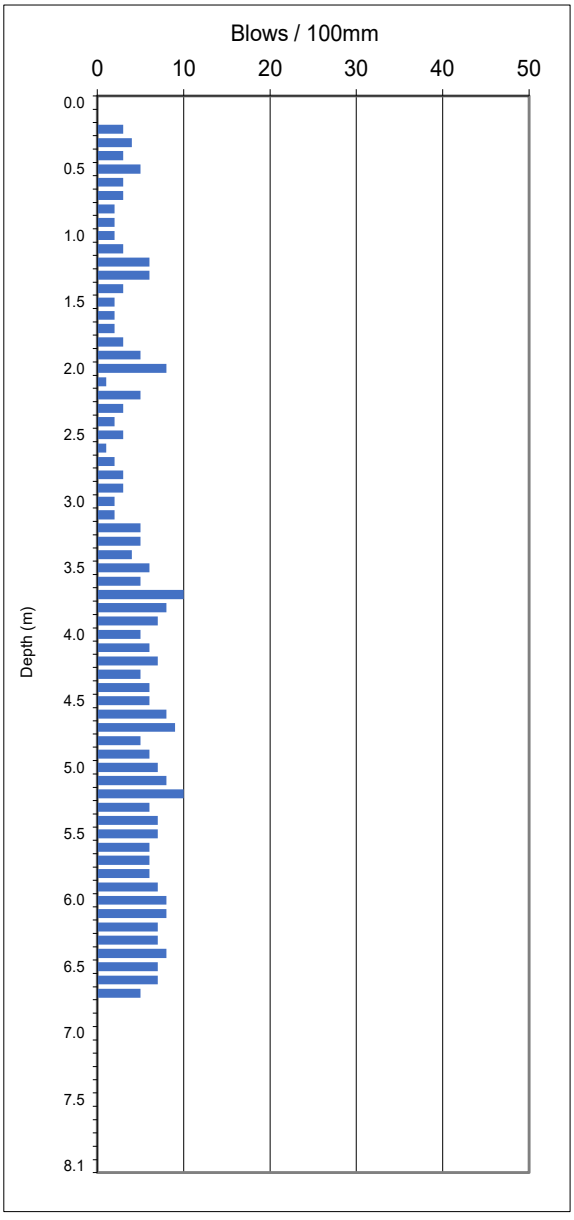
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3.0 Test Results **Page 7**

3.5 – Test 5

LOCATION ON SITE : **Location 5**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	3	10.0
0.3	0.4	4	
0.4	0.5	3	
0.5	0.6	5	11.0
0.6	0.7	3	
0.7	0.8	3	
0.8	0.9	2	6.0
0.9	1.0	2	
1.0	1.1	2	
1.1	1.2	3	15.0
1.2	1.3	6	
1.3	1.4	6	
1.4	1.5	3	7.0
1.5	1.6	2	
1.6	1.7	2	
1.7	1.8	2	10.0
1.8	1.9	3	
1.9	2.0	5	
2.0	2.1	8	14.0
2.1	2.2	1	
2.2	2.3	5	
2.3	2.4	3	8.0
2.4	2.5	2	
2.5	2.6	3	
2.6	2.7	1	6.0
2.7	2.8	2	
2.8	2.9	3	
2.9	3.0	3	7.0
3.0	3.1	2	
3.1	3.2	2	
3.2	3.3	5	14.0
3.3	3.4	5	
3.4	3.5	4	
3.5	3.6	6	21.0
3.6	3.7	5	
3.7	3.8	10	
3.8	3.9	8	20.0
3.9	4.0	7	
4.0	4.1	5	
4.1	4.2	6	18.0
4.2	4.3	7	
4.3	4.4	5	
4.4	4.5	6	20.0
4.5	4.6	6	
4.6	4.7	8	
4.7	4.8	9	20.0
4.8	4.9	5	
4.9	5.0	6	
5.0	5.1	7	25.0
5.1	5.2	8	
5.2	5.3	10	
5.3	5.4	6	20.0
5.4	5.5	7	
5.5	5.6	7	
5.6	5.7	6	18.0
5.7	5.8	6	
5.8	5.9	6	
5.9	6.0	7	23.0
6.0	6.1	8	
6.1	6.2	8	
6.2	6.3	7	22.0
6.3	6.4	7	
6.4	6.5	8	
6.5	6.6	7	19.0
6.6	6.7	7	
6.7	6.8	5	
6.8	6.9	END	0.0
6.9	7.0	0	
7.0	7.1	0	
7.1	7.2	0	0.0
7.2	7.3	0	
7.3	7.4	0	
7.4	7.5	0	0.0
7.5	7.6	0	
7.6	7.7	0	
7.7	7.8	0	0.0
7.8	7.9	0	
7.9	8.0	0	
8.1	8.0	0	0.0



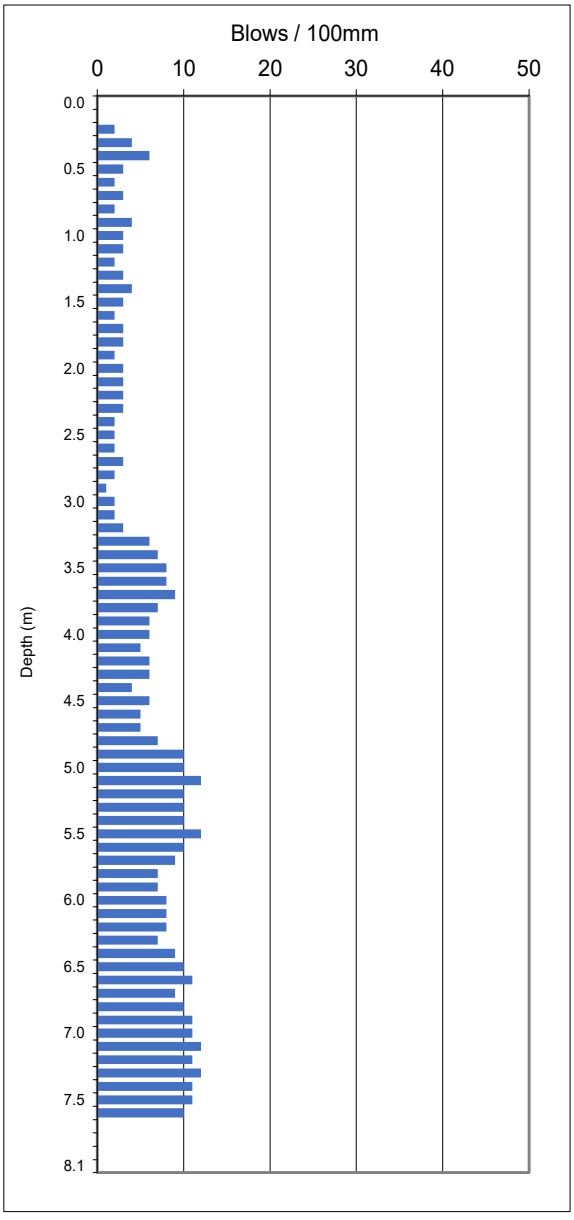
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3.0 Test Results **Page 8**

3.6 – Test 6

LOCATION ON SITE : **Location 6**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	2	12.0
0.3	0.4	4	
0.4	0.5	6	
0.5	0.6	3	8.0
0.6	0.7	2	
0.7	0.8	3	
0.8	0.9	2	9.0
0.9	1.0	4	
1.0	1.1	3	
1.1	1.2	3	8.0
1.2	1.3	2	
1.3	1.4	3	
1.4	1.5	4	9.0
1.5	1.6	3	
1.6	1.7	2	
1.7	1.8	3	8.0
1.8	1.9	3	
1.9	2.0	2	
2.0	2.1	3	9.0
2.1	2.2	3	
2.2	2.3	3	
2.3	2.4	3	7.0
2.4	2.5	2	
2.5	2.6	2	
2.6	2.7	2	7.0
2.7	2.8	3	
2.8	2.9	2	
2.9	3.0	1	5.0
3.0	3.1	2	
3.1	3.2	2	
3.2	3.3	3	16.0
3.3	3.4	6	
3.4	3.5	7	
3.5	3.6	8	25.0
3.6	3.7	8	
3.7	3.8	9	
3.8	3.9	7	19.0
3.9	4.0	6	
4.0	4.1	6	
4.1	4.2	5	17.0
4.2	4.3	6	
4.3	4.4	6	
4.4	4.5	4	15.0
4.5	4.6	6	
4.6	4.7	5	
4.7	4.8	5	22.0
4.8	4.9	7	
4.9	5.0	10	
5.0	5.1	10	32.0
5.1	5.2	12	
5.2	5.3	10	
5.3	5.4	10	32.0
5.4	5.5	10	
5.5	5.6	12	
5.6	5.7	10	26.0
5.7	5.8	9	
5.8	5.9	7	
5.9	6.0	7	23.0
6.0	6.1	8	
6.1	6.2	8	
6.2	6.3	8	24.0
6.3	6.4	7	
6.4	6.5	9	
6.5	6.6	10	30.0
6.6	6.7	11	
6.7	6.8	9	
6.8	6.9	10	32.0
6.9	7.0	11	
7.0	7.1	11	
7.1	7.2	12	35.0
7.2	7.3	11	
7.3	7.4	12	
7.4	7.5	11	32.0
7.5	7.6	11	
7.6	7.7	10	
7.7	7.8	END	0.0
7.8	7.9	0	
7.9	8.0	0	
8.1	8.0	0	0.0



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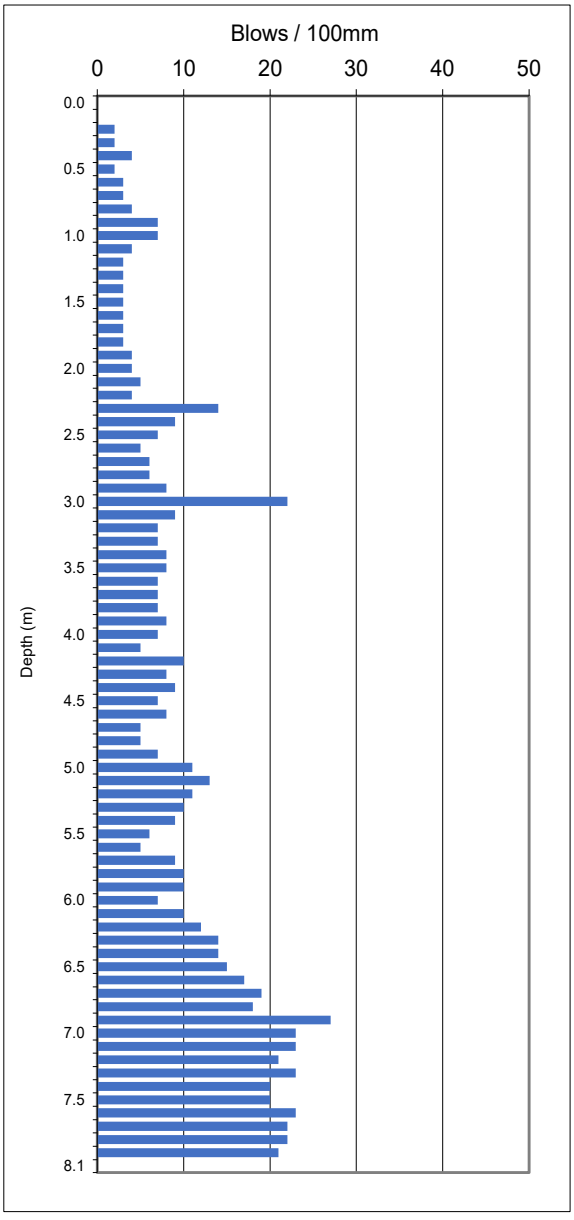
3.0 Test Results **Page 9**

3.7 – Test 7

LOCATION ON SITE : **Location 7**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	2	8.0
0.3	0.4	2	
0.4	0.5	4	
0.5	0.6	2	8.0
0.6	0.7	3	
0.7	0.8	3	
0.8	0.9	4	18.0
0.9	1.0	7	
1.0	1.1	7	
1.1	1.2	4	10.0
1.2	1.3	3	
1.3	1.4	3	
1.4	1.5	3	9.0
1.5	1.6	3	
1.6	1.7	3	
1.7	1.8	3	10.0
1.8	1.9	3	
1.9	2.0	4	
2.0	2.1	4	13.0
2.1	2.2	5	
2.2	2.3	4	
2.3	2.4	14	30.0
2.4	2.5	9	
2.5	2.6	7	
2.6	2.7	5	17.0
2.7	2.8	6	
2.8	2.9	6	
2.9	3.0	8	39.0
3.0	3.1	22	
3.1	3.2	9	
3.2	3.3	7	22.0
3.3	3.4	7	
3.4	3.5	8	
3.5	3.6	8	22.0
3.6	3.7	7	
3.7	3.8	7	
3.8	3.9	7	22.0
3.9	4.0	8	
4.0	4.1	7	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	5	23.0
4.2	4.3	10	
4.3	4.4	8	
4.4	4.5	9	24.0
4.5	4.6	7	
4.6	4.7	8	
4.7	4.8	5	17.0
4.8	4.9	5	
4.9	5.0	7	
5.0	5.1	11	35.0
5.1	5.2	13	
5.2	5.3	11	
5.3	5.4	10	25.0
5.4	5.5	9	
5.5	5.6	6	
5.6	5.7	5	24.0
5.7	5.8	9	
5.8	5.9	10	
5.9	6.0	10	27.0
6.0	6.1	7	
6.1	6.2	10	
6.2	6.3	12	40.0
6.3	6.4	14	
6.4	6.5	14	
6.5	6.6	15	51.0
6.6	6.7	17	
6.7	6.8	19	
6.8	6.9	18	68.0
6.9	7.0	27	
7.0	7.1	23	
7.1	7.2	23	67.0
7.2	7.3	21	
7.3	7.4	23	
7.4	7.5	20	63.0
7.5	7.6	20	
7.6	7.7	23	
7.7	7.8	22	65.0
7.8	7.9	22	
7.9	8.0	21	
8.1	8.0	END	0.0



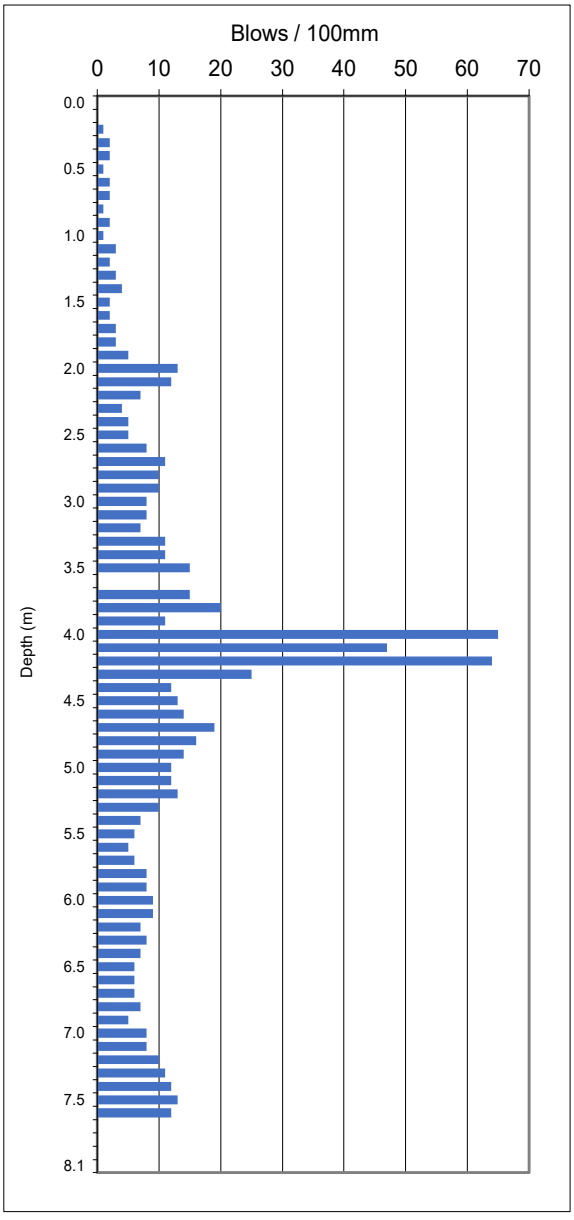
FTR 37877

3.0 Test Results

3.8 – Test 8

LOCATION ON SITE : **Location 8**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	1	5.0
0.3	0.4	2	
0.4	0.5	2	
0.5	0.6	1	5.0
0.6	0.7	2	
0.7	0.8	2	
0.8	0.9	1	4.0
0.9	1.0	2	
1.0	1.1	1	
1.1	1.2	3	8.0
1.2	1.3	2	
1.3	1.4	3	
1.4	1.5	4	8.0
1.5	1.6	2	
1.6	1.7	2	
1.7	1.8	3	11.0
1.8	1.9	3	
1.9	2.0	5	
2.0	2.1	13	32.0
2.1	2.2	12	
2.2	2.3	7	
2.3	2.4	4	14.0
2.4	2.5	5	
2.5	2.6	5	
2.6	2.7	8	29.0
2.7	2.8	11	
2.8	2.9	10	
2.9	3.0	10	26.0
3.0	3.1	8	
3.1	3.2	8	
3.2	3.3	7	29.0
3.3	3.4	11	
3.4	3.5	11	
3.5	3.6	15	30.0
3.6	3.7	1`4	
3.7	3.8	15	
3.8	3.9	20	96.0
3.9	4.0	11	
4.0	4.1	65	
4.1	4.2	47	136.0
4.2	4.3	64	
4.3	4.4	25	
4.4	4.5	12	39.0
4.5	4.6	13	
4.6	4.7	14	
4.7	4.8	19	49.0
4.8	4.9	16	
4.9	5.0	14	
5.0	5.1	12	37.0
5.1	5.2	12	
5.2	5.3	13	
5.3	5.4	10	23.0
5.4	5.5	7	
5.5	5.6	6	
5.6	5.7	5	19.0
5.7	5.8	6	
5.8	5.9	8	
5.9	6.0	8	26.0
6.0	6.1	9	
6.1	6.2	9	
6.2	6.3	7	22.0
6.3	6.4	8	
6.4	6.5	7	
6.5	6.6	6	18.0
6.6	6.7	6	
6.7	6.8	6	
6.8	6.9	7	20.0
6.9	7.0	5	
7.0	7.1	8	
7.1	7.2	8	29.0
7.2	7.3	10	
7.3	7.4	11	
7.4	7.5	12	37.0
7.5	7.6	13	
7.6	7.7	12	
7.7	7.8	End	0.0
7.8	7.9	0	
7.9	8.0	0	
8.1	8.0	0	0.0



FTR 37877

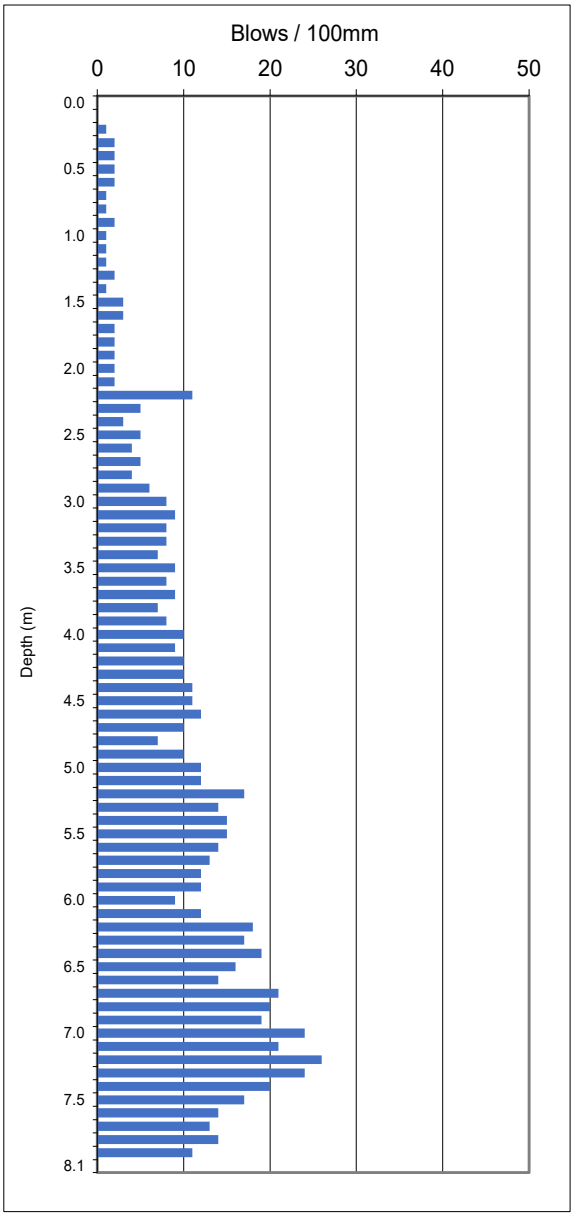
3.0 Test Results

3.9 – Test 9

LOCATION ON SITE : **Location 9**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	1	5.0
0.3	0.4	2	
0.4	0.5	2	
0.5	0.6	2	5.0
0.6	0.7	2	
0.7	0.8	1	
0.8	0.9	1	4.0
0.9	1.0	2	
1.0	1.1	1	
1.1	1.2	1	4.0
1.2	1.3	1	
1.3	1.4	2	
1.4	1.5	1	7.0
1.5	1.6	3	
1.6	1.7	3	
1.7	1.8	2	6.0
1.8	1.9	2	
1.9	2.0	2	
2.0	2.1	2	15.0
2.1	2.2	2	
2.2	2.3	11	
2.3	2.4	5	13.0
2.4	2.5	3	
2.5	2.6	5	
2.6	2.7	4	13.0
2.7	2.8	5	
2.8	2.9	4	
2.9	3.0	6	23.0
3.0	3.1	8	
3.1	3.2	9	
3.2	3.3	8	23.0
3.3	3.4	8	
3.4	3.5	7	
3.5	3.6	9	26.0
3.6	3.7	8	
3.7	3.8	9	
3.8	3.9	7	25.0
3.9	4.0	8	
4.0	4.1	10	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	9	29.0
4.2	4.3	10	
4.3	4.4	10	
4.4	4.5	11	34.0
4.5	4.6	11	
4.6	4.7	12	
4.7	4.8	10	27.0
4.8	4.9	7	
4.9	5.0	10	
5.0	5.1	12	41.0
5.1	5.2	12	
5.2	5.3	17	
5.3	5.4	14	44.0
5.4	5.5	15	
5.5	5.6	15	
5.6	5.7	14	39.0
5.7	5.8	13	
5.8	5.9	12	
5.9	6.0	12	33.0
6.0	6.1	9	
6.1	6.2	12	
6.2	6.3	18	54.0
6.3	6.4	17	
6.4	6.5	19	
6.5	6.6	16	51.0
6.6	6.7	14	
6.7	6.8	21	
6.8	6.9	20	63.0
6.9	7.0	19	
7.0	7.1	24	
7.1	7.2	21	71.0
7.2	7.3	26	
7.3	7.4	24	
7.4	7.5	20	51.0
7.5	7.6	17	
7.6	7.7	14	
7.7	7.8	13	38.0
7.8	7.9	14	
7.9	8.0	11	
8.1	8.0	END	0.0



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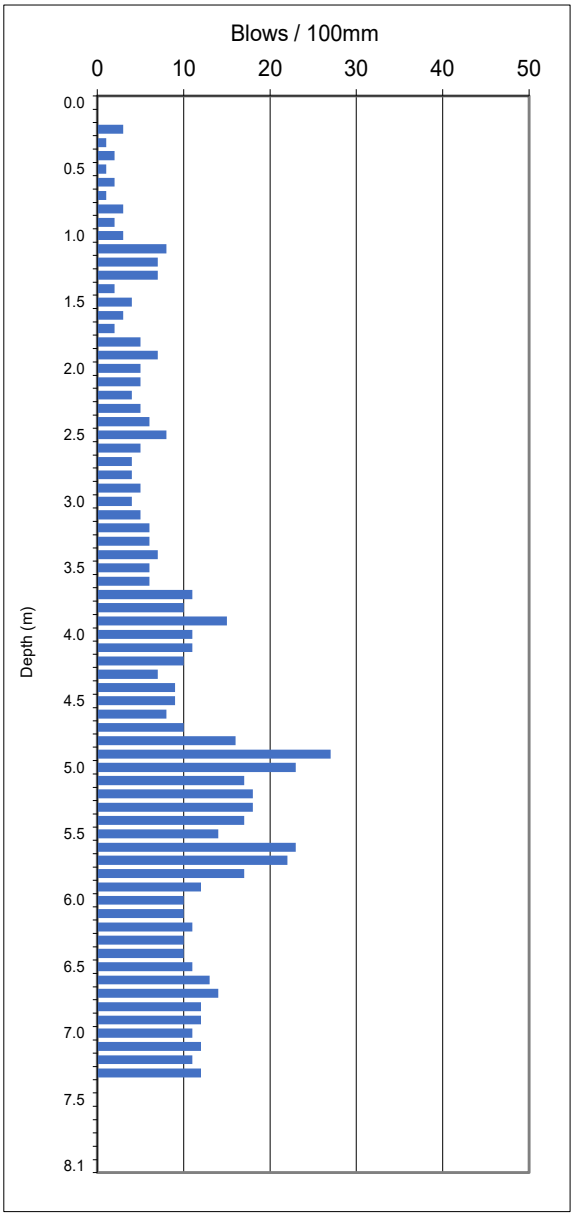
3.0 Test Results **Page 12**

3.10 – Test 10

LOCATION ON SITE : **Location 10**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	3	6.0
0.3	0.4	1	
0.4	0.5	2	
0.5	0.6	1	4.0
0.6	0.7	2	
0.7	0.8	1	
0.8	0.9	3	8.0
0.9	1.0	2	
1.0	1.1	3	
1.1	1.2	8	22.0
1.2	1.3	7	
1.3	1.4	7	
1.4	1.5	2	9.0
1.5	1.6	4	
1.6	1.7	3	
1.7	1.8	2	14.0
1.8	1.9	5	
1.9	2.0	7	
2.0	2.1	5	14.0
2.1	2.2	5	
2.2	2.3	4	
2.3	2.4	5	19.0
2.4	2.5	6	
2.5	2.6	8	
2.6	2.7	5	13.0
2.7	2.8	4	
2.8	2.9	4	
2.9	3.0	5	14.0
3.0	3.1	4	
3.1	3.2	5	
3.2	3.3	6	19.0
3.3	3.4	6	
3.4	3.5	7	
3.5	3.6	6	23.0
3.6	3.7	6	
3.7	3.8	11	
3.8	3.9	10	36.0
3.9	4.0	15	
4.0	4.1	11	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	11	28.0
4.2	4.3	10	
4.3	4.4	7	
4.4	4.5	9	26.0
4.5	4.6	9	
4.6	4.7	8	
4.7	4.8	10	53.0
4.8	4.9	16	
4.9	5.0	27	
5.0	5.1	23	58.0
5.1	5.2	17	
5.2	5.3	18	
5.3	5.4	18	49.0
5.4	5.5	17	
5.5	5.6	14	
5.6	5.7	23	62.0
5.7	5.8	22	
5.8	5.9	17	
5.9	6.0	12	32.0
6.0	6.1	10	
6.1	6.2	10	
6.2	6.3	11	31.0
6.3	6.4	10	
6.4	6.5	10	
6.5	6.6	11	38.0
6.6	6.7	13	
6.7	6.8	14	
6.8	6.9	12	35.0
6.9	7.0	12	
7.0	7.1	11	
7.1	7.2	12	35.0
7.2	7.3	11	
7.3	7.4	12	
7.4	7.5	END	0.0
7.5	7.6	0	
7.6	7.7	0	0.0
7.7	7.8	0	
7.8	7.9	0	
7.9	8.0	0	0.0
8.1	8.0	0	



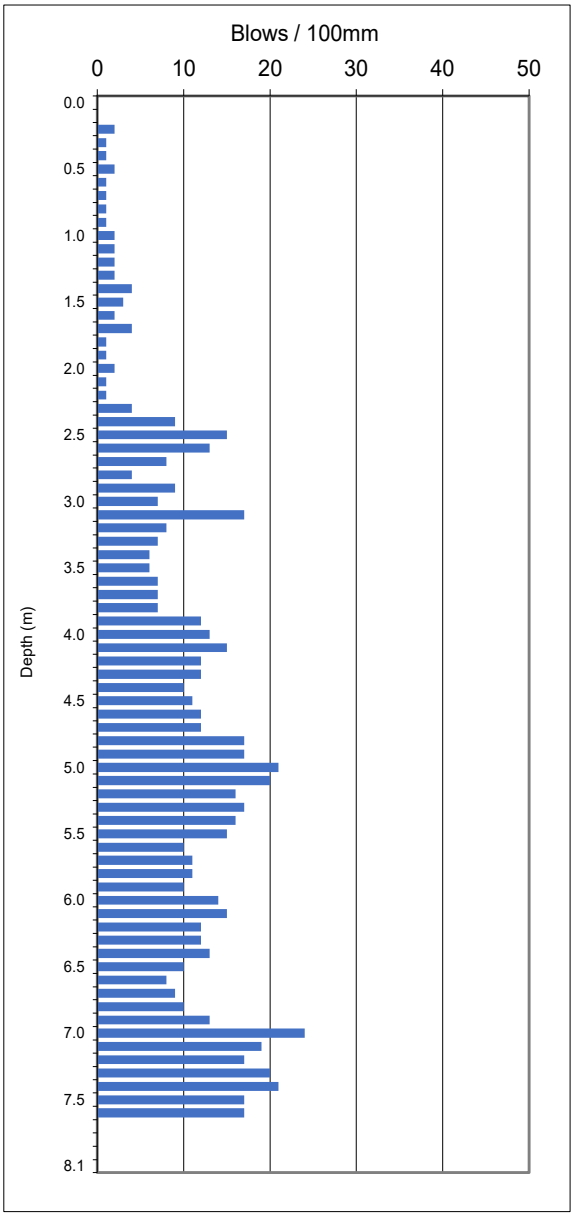
FTR 37877

3.0 Test Results

3.11 – Test 11

LOCATION ON SITE : **Location 11**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	2	4.0
0.3	0.4	1	
0.4	0.5	1	
0.5	0.6	2	4.0
0.6	0.7	1	
0.7	0.8	1	
0.8	0.9	1	4.0
0.9	1.0	1	
1.0	1.1	2	
1.1	1.2	2	6.0
1.2	1.3	2	
1.3	1.4	2	
1.4	1.5	4	9.0
1.5	1.6	3	
1.6	1.7	2	
1.7	1.8	4	6.0
1.8	1.9	1	
1.9	2.0	1	
2.0	2.1	2	4.0
2.1	2.2	1	
2.2	2.3	1	
2.3	2.4	4	28.0
2.4	2.5	9	
2.5	2.6	15	
2.6	2.7	13	25.0
2.7	2.8	8	
2.8	2.9	4	
2.9	3.0	9	33.0
3.0	3.1	7	
3.1	3.2	17	
3.2	3.3	8	21.0
3.3	3.4	7	
3.4	3.5	6	
3.5	3.6	6	20.0
3.6	3.7	7	
3.7	3.8	7	
3.8	3.9	7	32.0
3.9	4.0	12	
4.0	4.1	13	
4.1	4.2	15	39.0
4.2	4.3	12	
4.3	4.4	12	
4.4	4.5	10	33.0
4.5	4.6	11	
4.6	4.7	12	
4.7	4.8	12	46.0
4.8	4.9	17	
4.9	5.0	17	
5.0	5.1	21	57.0
5.1	5.2	20	
5.2	5.3	16	
5.3	5.4	17	48.0
5.4	5.5	16	
5.5	5.6	15	
5.6	5.7	10	32.0
5.7	5.8	11	
5.8	5.9	11	
5.9	6.0	10	39.0
6.0	6.1	14	
6.1	6.2	15	
6.2	6.3	12	37.0
6.3	6.4	12	
6.4	6.5	13	
6.5	6.6	10	27.0
6.6	6.7	8	
6.7	6.8	9	
6.8	6.9	10	47.0
6.9	7.0	13	
7.0	7.1	24	
7.1	7.2	19	56.0
7.2	7.3	17	
7.3	7.4	20	
7.4	7.5	21	55.0
7.5	7.6	17	
7.6	7.7	17	
7.7	7.8	END	0.0
7.8	7.9	0	
7.9	8.0	0	
8.1	8.0	0	0.0



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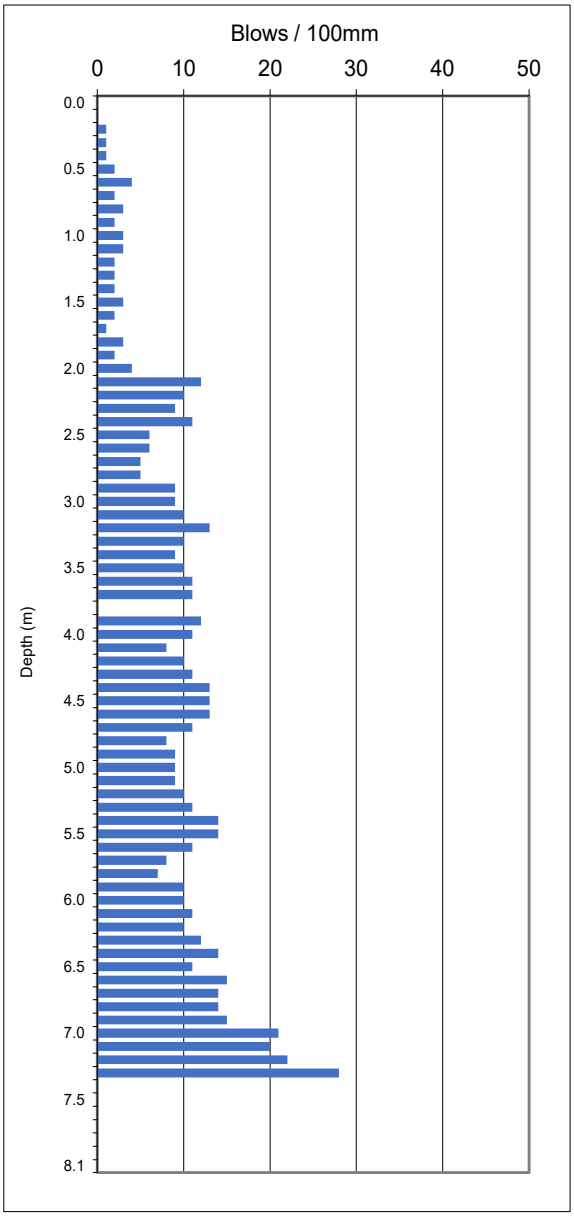
3.0 Test Results

3.12 – Test 12

LOCATION ON SITE : **Location 12**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	1	3.0
0.3	0.4	1	
0.4	0.5	1	
0.5	0.6	2	8.0
0.6	0.7	4	
0.7	0.8	2	
0.8	0.9	3	8.0
0.9	1.0	2	
1.0	1.1	3	
1.1	1.2	3	7.0
1.2	1.3	2	
1.3	1.4	2	
1.4	1.5	2	7.0
1.5	1.6	3	
1.6	1.7	2	
1.7	1.8	1	6.0
1.8	1.9	3	
1.9	2.0	2	
2.0	2.1	4	26.0
2.1	2.2	12	
2.2	2.3	10	
2.3	2.4	9	26.0
2.4	2.5	11	
2.5	2.6	6	
2.6	2.7	6	16.0
2.7	2.8	5	
2.8	2.9	5	
2.9	3.0	9	28.0
3.0	3.1	9	
3.1	3.2	10	
3.2	3.3	13	32.0
3.3	3.4	10	
3.4	3.5	9	
3.5	3.6	10	32.0
3.6	3.7	11	
3.7	3.8	11	
3.8	3.9	0	23.0
3.9	4.0	12	
4.0	4.1	11	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	8	29.0
4.2	4.3	10	
4.3	4.4	11	
4.4	4.5	13	39.0
4.5	4.6	13	
4.6	4.7	13	
4.7	4.8	11	28.0
4.8	4.9	8	
4.9	5.0	9	
5.0	5.1	9	28.0
5.1	5.2	9	
5.2	5.3	10	
5.3	5.4	11	39.0
5.4	5.5	14	
5.5	5.6	14	
5.6	5.7	11	26.0
5.7	5.8	8	
5.8	5.9	7	
5.9	6.0	10	31.0
6.0	6.1	10	
6.1	6.2	11	
6.2	6.3	10	36.0
6.3	6.4	12	
6.4	6.5	14	
6.5	6.6	11	40.0
6.6	6.7	15	
6.7	6.8	14	
6.8	6.9	14	50.0
6.9	7.0	15	
7.0	7.1	21	
7.1	7.2	20	70.0
7.2	7.3	22	
7.3	7.4	28	
7.4	7.5	END	0.0
7.5	7.6	0	
7.6	7.7	0	
7.7	7.8	0	0.0
7.8	7.9	0	
7.9	8.0	0	
8.1	8.0	0	0.0



FTR 37877

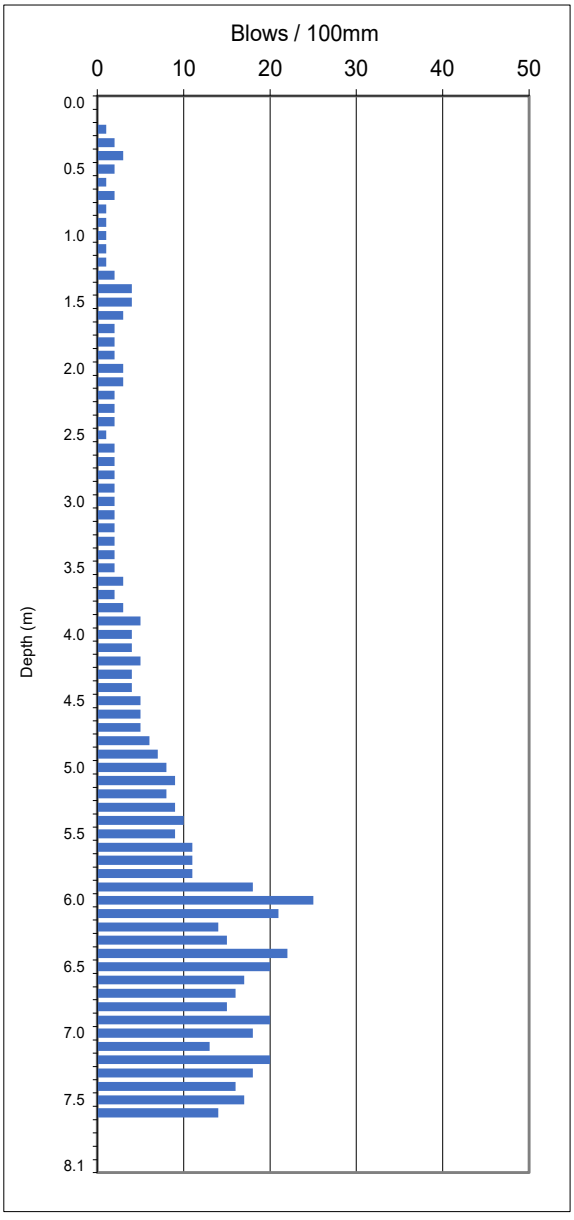
3.0 Test Results

3.13 – Test 13

LOCATION ON SITE : **Location 13**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	1	6.0
0.3	0.4	2	
0.4	0.5	3	
0.5	0.6	2	5.0
0.6	0.7	1	
0.7	0.8	2	
0.8	0.9	1	3.0
0.9	1.0	1	
1.0	1.1	1	
1.1	1.2	1	4.0
1.2	1.3	1	
1.3	1.4	2	
1.4	1.5	4	11.0
1.5	1.6	4	
1.6	1.7	3	
1.7	1.8	2	6.0
1.8	1.9	2	
1.9	2.0	2	
2.0	2.1	3	8.0
2.1	2.2	3	
2.2	2.3	2	
2.3	2.4	2	5.0
2.4	2.5	2	
2.5	2.6	1	
2.6	2.7	2	6.0
2.7	2.8	2	
2.8	2.9	2	
2.9	3.0	2	6.0
3.0	3.1	2	
3.1	3.2	2	
3.2	3.3	2	6.0
3.3	3.4	2	
3.4	3.5	2	
3.5	3.6	2	7.0
3.6	3.7	3	
3.7	3.8	2	
3.8	3.9	3	12.0
3.9	4.0	5	
4.0	4.1	4	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	4	13.0
4.2	4.3	5	
4.3	4.4	4	
4.4	4.5	4	14.0
4.5	4.6	5	
4.6	4.7	5	
4.7	4.8	5	18.0
4.8	4.9	6	
4.9	5.0	7	
5.0	5.1	8	25.0
5.1	5.2	9	
5.2	5.3	8	
5.3	5.4	9	28.0
5.4	5.5	10	
5.5	5.6	9	
5.6	5.7	11	33.0
5.7	5.8	11	
5.8	5.9	11	
5.9	6.0	18	64.0
6.0	6.1	25	
6.1	6.2	21	
6.2	6.3	14	51.0
6.3	6.4	15	
6.4	6.5	22	
6.5	6.6	20	53.0
6.6	6.7	17	
6.7	6.8	16	
6.8	6.9	15	53.0
6.9	7.0	20	
7.0	7.1	18	
7.1	7.2	13	51.0
7.2	7.3	20	
7.3	7.4	18	
7.4	7.5	16	47.0
7.5	7.6	17	
7.6	7.7	14	
7.7	7.8	END	0.0
7.8	7.9	0	
7.9	8.0	0	
8.1	8.0	0	0.0



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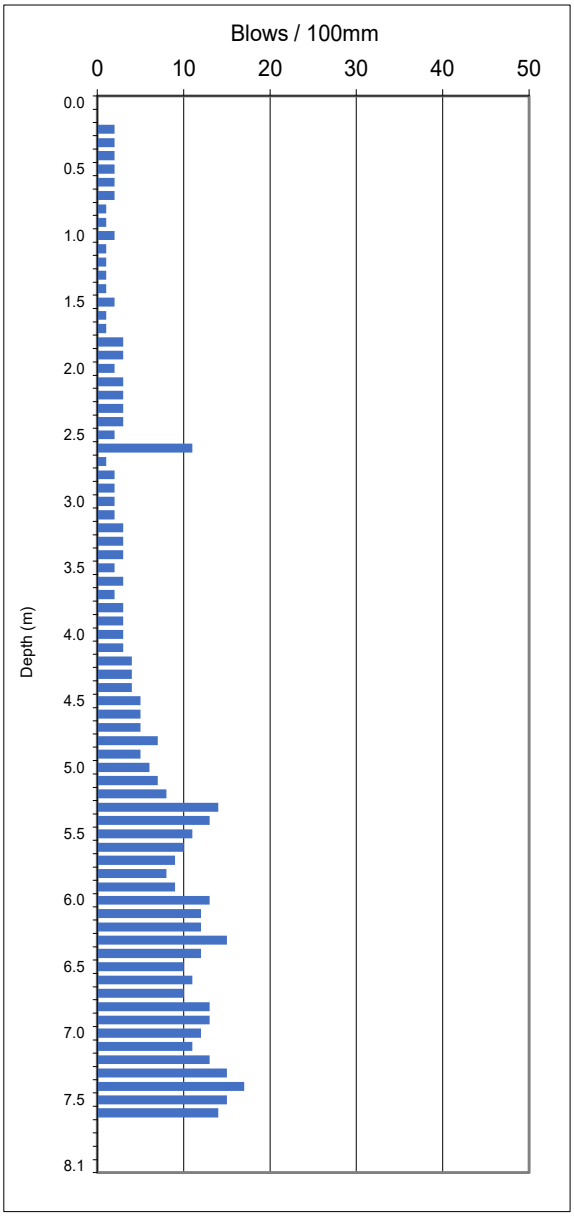
3.0 Test Results

3.14 – Test 14

LOCATION ON SITE : **Location 14**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	2	6.0
0.3	0.4	2	
0.4	0.5	2	
0.5	0.6	2	6.0
0.6	0.7	2	
0.7	0.8	2	
0.8	0.9	1	4.0
0.9	1.0	1	
1.0	1.1	2	
1.1	1.2	1	3.0
1.2	1.3	1	
1.3	1.4	1	
1.4	1.5	1	4.0
1.5	1.6	2	
1.6	1.7	1	
1.7	1.8	1	7.0
1.8	1.9	3	
1.9	2.0	3	
2.0	2.1	2	8.0
2.1	2.2	3	
2.2	2.3	3	
2.3	2.4	3	8.0
2.4	2.5	3	
2.5	2.6	2	
2.6	2.7	11	14.0
2.7	2.8	1	
2.8	2.9	2	
2.9	3.0	2	6.0
3.0	3.1	2	
3.1	3.2	2	
3.2	3.3	3	9.0
3.3	3.4	3	
3.4	3.5	3	
3.5	3.6	2	7.0
3.6	3.7	3	
3.7	3.8	2	
3.8	3.9	3	9.0
3.9	4.0	3	
4.0	4.1	3	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	3	11.0
4.2	4.3	4	
4.3	4.4	4	
4.4	4.5	4	14.0
4.5	4.6	5	
4.6	4.7	5	
4.7	4.8	5	17.0
4.8	4.9	7	
4.9	5.0	5	
5.0	5.1	6	21.0
5.1	5.2	7	
5.2	5.3	8	
5.3	5.4	14	38.0
5.4	5.5	13	
5.5	5.6	11	
5.6	5.7	10	27.0
5.7	5.8	9	
5.8	5.9	8	
5.9	6.0	9	34.0
6.0	6.1	13	
6.1	6.2	12	
6.2	6.3	12	39.0
6.3	6.4	15	
6.4	6.5	12	
6.5	6.6	10	31.0
6.6	6.7	11	
6.7	6.8	10	
6.8	6.9	13	38.0
6.9	7.0	13	
7.0	7.1	12	
7.1	7.2	11	39.0
7.2	7.3	13	
7.3	7.4	15	
7.4	7.5	17	46.0
7.5	7.6	15	
7.6	7.7	14	
7.7	7.8	END	0.0
7.8	7.9	0	
7.9	8.0	0	
8.1	8.0	0	0.0



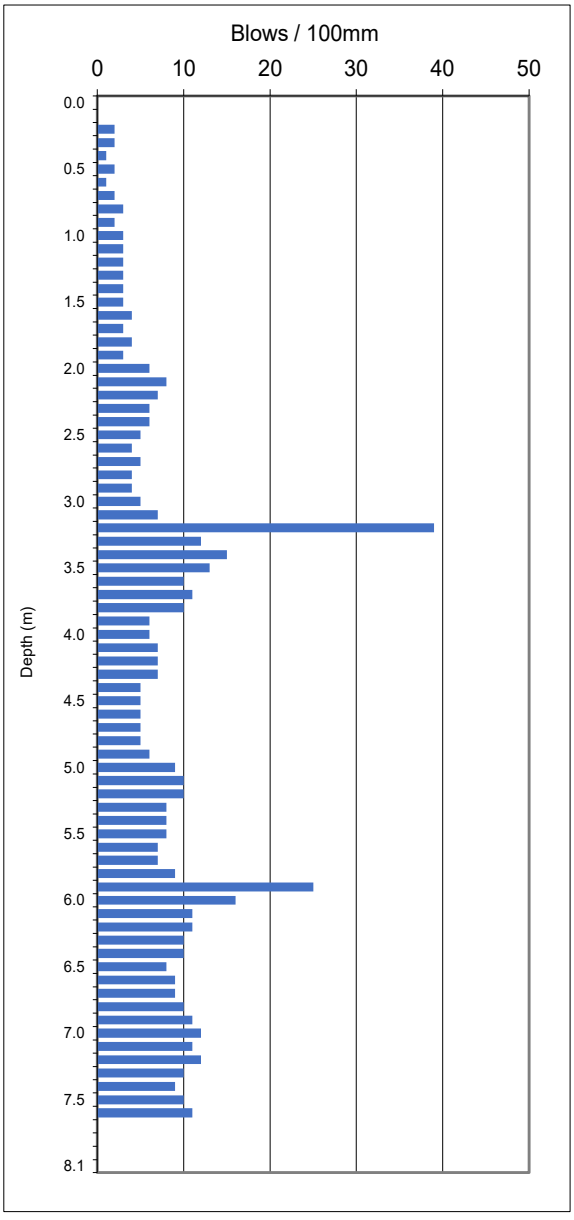
FTR 37877

3.0 Test Results

3.15 – Test 15

LOCATION ON SITE : **Location 15**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	2	5.0
0.3	0.4	2	
0.4	0.5	1	
0.5	0.6	2	5.0
0.6	0.7	1	
0.7	0.8	2	
0.8	0.9	3	8.0
0.9	1.0	2	
1.0	1.1	3	
1.1	1.2	3	9.0
1.2	1.3	3	
1.3	1.4	3	
1.4	1.5	3	10.0
1.5	1.6	3	
1.6	1.7	4	
1.7	1.8	3	10.0
1.8	1.9	4	
1.9	2.0	3	
2.0	2.1	6	21.0
2.1	2.2	8	
2.2	2.3	7	
2.3	2.4	6	17.0
2.4	2.5	6	
2.5	2.6	5	
2.6	2.7	4	13.0
2.7	2.8	5	
2.8	2.9	4	
2.9	3.0	4	16.0
3.0	3.1	5	
3.1	3.2	7	
3.2	3.3	39	66.0
3.3	3.4	12	
3.4	3.5	15	
3.5	3.6	13	34.0
3.6	3.7	10	
3.7	3.8	11	
3.8	3.9	10	22.0
3.9	4.0	6	
4.0	4.1	6	
4.1	4.2	7	21.0
4.2	4.3	7	
4.3	4.4	7	
4.4	4.5	5	15.0
4.5	4.6	5	
4.6	4.7	5	
4.7	4.8	5	16.0
4.8	4.9	5	
4.9	5.0	6	
5.0	5.1	9	29.0
5.1	5.2	10	
5.2	5.3	10	
5.3	5.4	8	24.0
5.4	5.5	8	
5.5	5.6	8	
5.6	5.7	7	23.0
5.7	5.8	7	
5.8	5.9	9	
5.9	6.0	25	52.0
6.0	6.1	16	
6.1	6.2	11	
6.2	6.3	11	31.0
6.3	6.4	10	
6.4	6.5	10	
6.5	6.6	8	26.0
6.6	6.7	9	
6.7	6.8	9	
6.8	6.9	10	33.0
6.9	7.0	11	
7.0	7.1	12	
7.1	7.2	11	33.0
7.2	7.3	12	
7.3	7.4	10	
7.4	7.5	9	30.0
7.5	7.6	10	
7.6	7.7	11	
7.7	7.8	END	0.0
7.8	7.9	0	
7.9	8.0	0	
8.1	8.0	0	0.0



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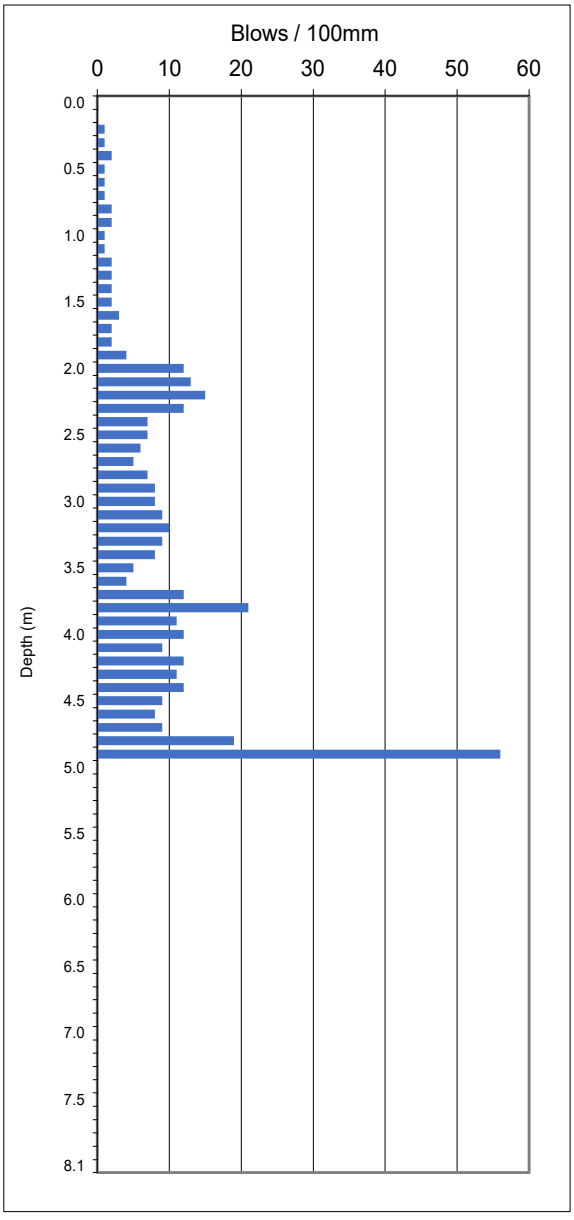
3.0 Test Results

3.16 – Test 16

LOCATION ON SITE : **Location 16**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	1	4.0
0.3	0.4	1	
0.4	0.5	2	
0.5	0.6	1	3.0
0.6	0.7	1	
0.7	0.8	1	
0.8	0.9	2	5.0
0.9	1.0	2	
1.0	1.1	1	
1.1	1.2	1	5.0
1.2	1.3	2	
1.3	1.4	2	
1.4	1.5	2	7.0
1.5	1.6	2	
1.6	1.7	3	
1.7	1.8	2	8.0
1.8	1.9	2	
1.9	2.0	4	
2.0	2.1	12	40.0
2.1	2.2	13	
2.2	2.3	15	
2.3	2.4	12	26.0
2.4	2.5	7	
2.5	2.6	7	
2.6	2.7	6	18.0
2.7	2.8	5	
2.8	2.9	7	
2.9	3.0	8	25.0
3.0	3.1	8	
3.1	3.2	9	
3.2	3.3	10	27.0
3.3	3.4	9	
3.4	3.5	8	
3.5	3.6	5	21.0
3.6	3.7	4	
3.7	3.8	12	
3.8	3.9	21	44.0
3.9	4.0	11	
4.0	4.1	12	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	9	32.0
4.2	4.3	12	
4.3	4.4	11	
4.4	4.5	12	29.0
4.5	4.6	9	
4.6	4.7	8	
4.7	4.8	9	84.0
4.8	4.9	19	
4.9	5.0	56	
5.0	5.1	END	0.0
5.1	5.2	0	
5.2	5.3	0	
5.3	5.4	0	0.0
5.4	5.5	0	
5.5	5.6	0	
5.6	5.7	0	0.0
5.7	5.8	0	
5.8	5.9	0	
5.9	6.0	0	0.0
6.0	6.1	0	
6.1	6.2	0	
6.2	6.3	0	0.0
6.3	6.4	0	
6.4	6.5	0	
6.5	6.6	0	0.0
6.6	6.7	0	
6.7	6.8	0	
6.8	6.9	0	0.0
6.9	7.0	0	
7.0	7.1	0	
7.1	7.2	0	0.0
7.2	7.3	0	
7.3	7.4	0	
7.4	7.5	0	0.0
7.5	7.6	0	
7.6	7.7	0	
7.7	7.8	0	0.0
7.8	7.9	0	
7.9	8.0	0	
8.1	8.0	0	0.0



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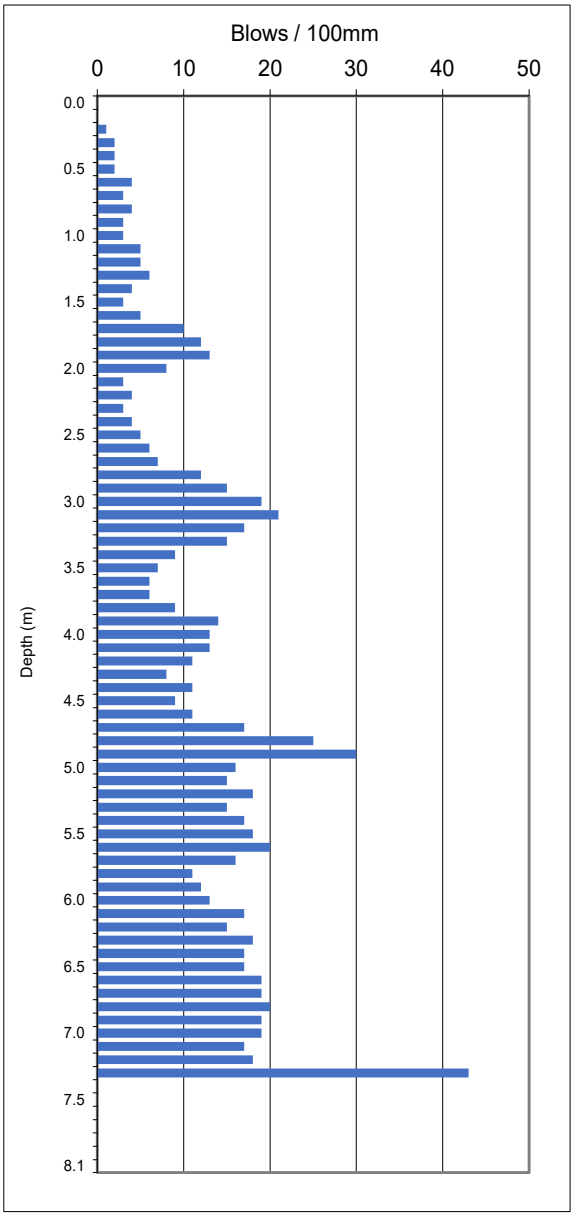
3.0 Test Results

3.17 – Test 17

LOCATION ON SITE : **Location 17**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	1	5.0
0.3	0.4	2	
0.4	0.5	2	
0.5	0.6	2	9.0
0.6	0.7	4	
0.7	0.8	3	
0.8	0.9	4	10.0
0.9	1.0	3	
1.0	1.1	3	
1.1	1.2	5	16.0
1.2	1.3	5	
1.3	1.4	6	
1.4	1.5	4	12.0
1.5	1.6	3	
1.6	1.7	5	
1.7	1.8	10	35.0
1.8	1.9	12	
1.9	2.0	13	
2.0	2.1	8	15.0
2.1	2.2	3	
2.2	2.3	4	
2.3	2.4	3	12.0
2.4	2.5	4	
2.5	2.6	5	
2.6	2.7	6	25.0
2.7	2.8	7	
2.8	2.9	12	
2.9	3.0	15	55.0
3.0	3.1	19	
3.1	3.2	21	
3.2	3.3	17	41.0
3.3	3.4	15	
3.4	3.5	9	
3.5	3.6	7	19.0
3.6	3.7	6	
3.7	3.8	6	
3.8	3.9	9	36.0
3.9	4.0	14	
4.0	4.1	13	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	13	32.0
4.2	4.3	11	
4.3	4.4	8	
4.4	4.5	11	31.0
4.5	4.6	9	
4.6	4.7	11	
4.7	4.8	17	72.0
4.8	4.9	25	
4.9	5.0	30	
5.0	5.1	16	49.0
5.1	5.2	15	
5.2	5.3	18	
5.3	5.4	15	50.0
5.4	5.5	17	
5.5	5.6	18	
5.6	5.7	20	47.0
5.7	5.8	16	
5.8	5.9	11	
5.9	6.0	12	42.0
6.0	6.1	13	
6.1	6.2	17	
6.2	6.3	15	50.0
6.3	6.4	18	
6.4	6.5	17	
6.5	6.6	17	55.0
6.6	6.7	19	
6.7	6.8	19	
6.8	6.9	20	58.0
6.9	7.0	19	
7.0	7.1	19	
7.1	7.2	17	78.0
7.2	7.3	18	
7.3	7.4	43	
7.4	7.5	END	0.0
7.5	7.6	0	
7.6	7.7	0	
7.7	7.8	0	0.0
7.8	7.9	0	
7.9	8.0	0	
8.1	8.0	0	0.0



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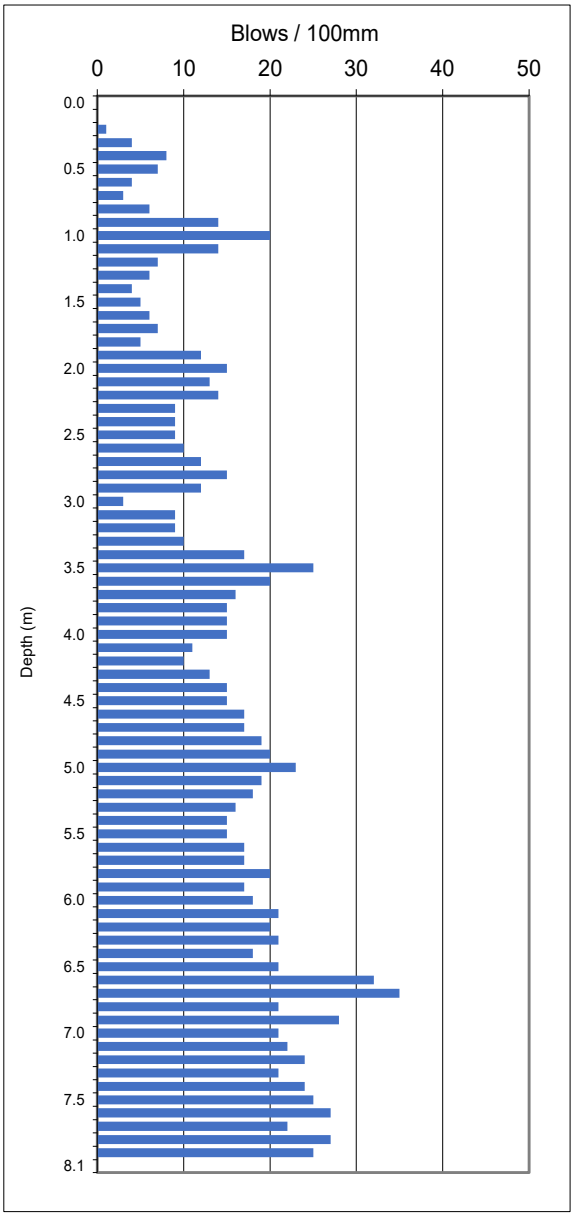
3.0 Test Results

3.18 – Test 18

LOCATION ON SITE : **Location 18**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	1	13.0
0.3	0.4	4	
0.4	0.5	8	
0.5	0.6	7	14.0
0.6	0.7	4	
0.7	0.8	3	
0.8	0.9	6	40.0
0.9	1.0	14	
1.0	1.1	20	
1.1	1.2	14	27.0
1.2	1.3	7	
1.3	1.4	6	
1.4	1.5	4	15.0
1.5	1.6	5	
1.6	1.7	6	
1.7	1.8	7	24.0
1.8	1.9	5	
1.9	2.0	12	
2.0	2.1	15	42.0
2.1	2.2	13	
2.2	2.3	14	
2.3	2.4	9	27.0
2.4	2.5	9	
2.5	2.6	9	
2.6	2.7	10	37.0
2.7	2.8	12	
2.8	2.9	15	
2.9	3.0	12	24.0
3.0	3.1	3	
3.1	3.2	9	
3.2	3.3	9	36.0
3.3	3.4	10	
3.4	3.5	17	
3.5	3.6	25	61.0
3.6	3.7	20	
3.7	3.8	16	
3.8	3.9	15	45.0
3.9	4.0	15	
4.0	4.1	15	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	11	34.0
4.2	4.3	10	
4.3	4.4	13	
4.4	4.5	15	47.0
4.5	4.6	15	
4.6	4.7	17	
4.7	4.8	17	56.0
4.8	4.9	19	
4.9	5.0	20	
5.0	5.1	23	60.0
5.1	5.2	19	
5.2	5.3	18	
5.3	5.4	16	46.0
5.4	5.5	15	
5.5	5.6	15	
5.6	5.7	17	54.0
5.7	5.8	17	
5.8	5.9	20	
5.9	6.0	17	56.0
6.0	6.1	18	
6.1	6.2	21	
6.2	6.3	20	59.0
6.3	6.4	21	
6.4	6.5	18	
6.5	6.6	21	88.0
6.6	6.7	32	
6.7	6.8	35	
6.8	6.9	21	70.0
6.9	7.0	28	
7.0	7.1	21	
7.1	7.2	22	67.0
7.2	7.3	24	
7.3	7.4	21	
7.4	7.5	24	76.0
7.5	7.6	25	
7.6	7.7	27	
7.7	7.8	22	74.0
7.8	7.9	27	
7.9	8.0	25	
8.1	8.0	END	0.0



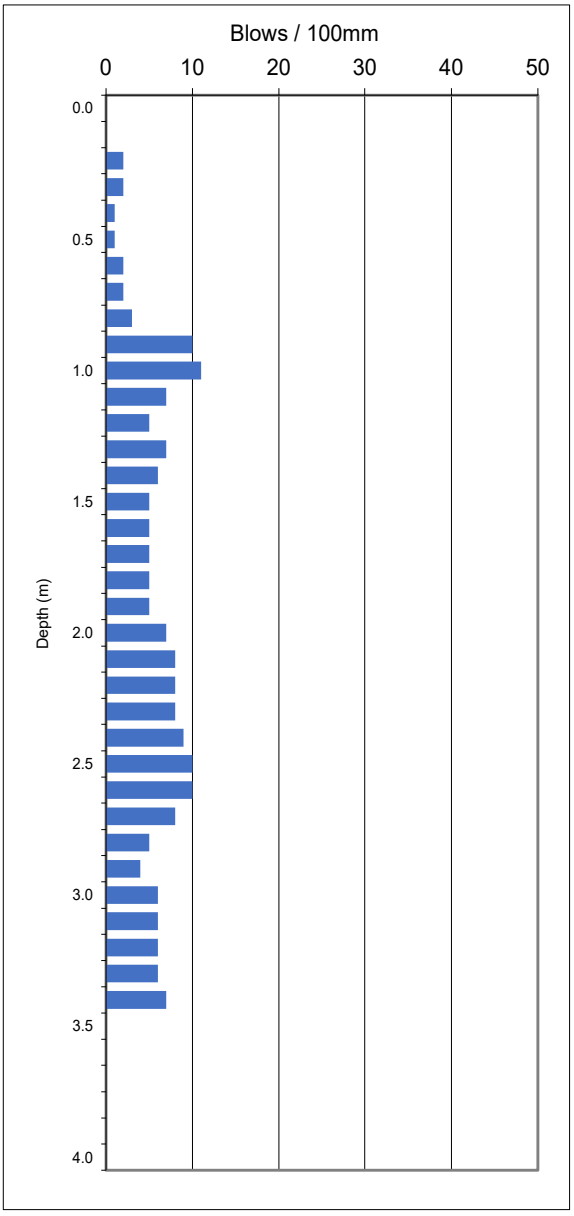
FTR 37877

3.0 Test Results

3.19 – Test 19

LOCATION ON SITE : **Location 19**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm Ø**	ROD TYPE/MASS : **8Kg/35mm Ø**
DAMPER USED : **NO**	CONE LEFT BEHIND : **NO**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	0.0
0.1	0.2	0	
0.2	0.3	2	5.0
0.3	0.4	2	
0.4	0.5	1	
0.5	0.6	1	5.0
0.6	0.7	2	
0.7	0.8	2	
0.8	0.9	3	24.0
0.9	1.0	10	
1.0	1.1	11	
1.1	1.2	7	19.0
1.2	1.3	5	
1.3	1.4	7	
1.4	1.5	6	16.0
1.5	1.6	5	
1.6	1.7	5	
1.7	1.8	5	15.0
1.8	1.9	5	
1.9	2.0	5	
2.0	2.1	7	23.0
2.1	2.2	8	
2.2	2.3	8	
2.3	2.4	8	27.0
2.4	2.5	9	
2.5	2.6	10	
2.6	2.7	10	23.0
2.7	2.8	8	
2.8	2.9	5	
2.9	3.0	4	16.0
3.0	3.1	6	
3.1	3.2	6	
3.2	3.3	6	
3.3	3.4	6	
3.4	3.5	7	
3.5	3.6	END	0.0
3.6	3.7		
3.7	3.8		
3.8	3.9		0.0
3.9	4.0		
4.0	4.1		



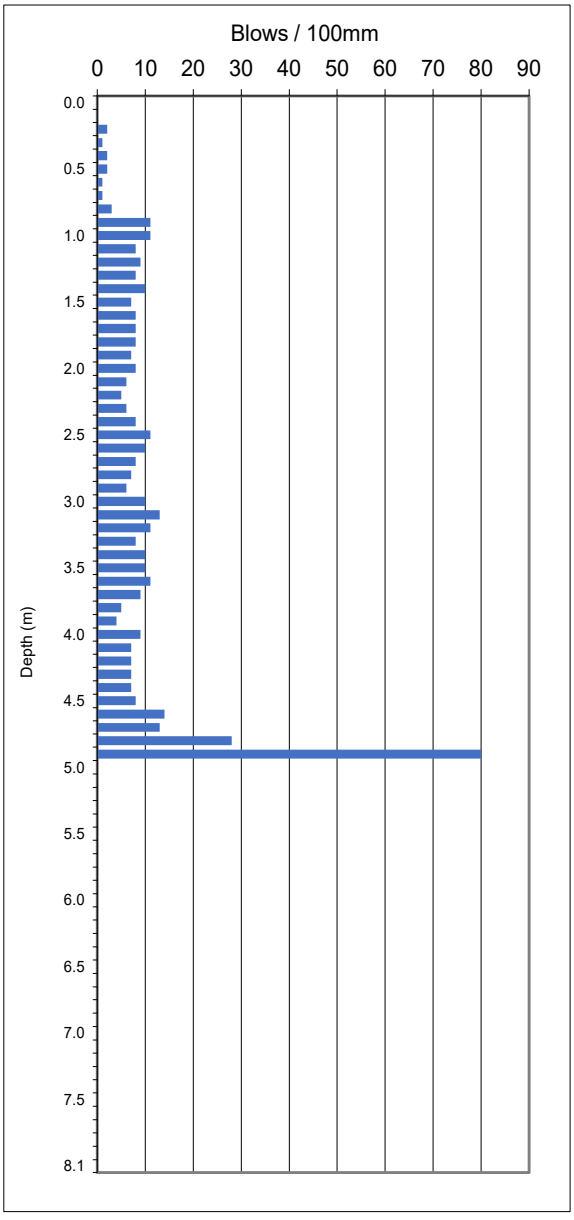
FTR 37877

3.0 Test Results

3.20 – Test 20

LOCATION ON SITE : **Location 19A Moved 5 meters**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	2	5.0
0.3	0.4	1	
0.4	0.5	2	
0.5	0.6	2	4.0
0.6	0.7	1	
0.7	0.8	1	
0.8	0.9	3	25.0
0.9	1.0	11	
1.0	1.1	11	
1.1	1.2	8	25.0
1.2	1.3	9	
1.3	1.4	8	
1.4	1.5	10	25.0
1.5	1.6	7	
1.6	1.7	8	
1.7	1.8	8	23.0
1.8	1.9	8	
1.9	2.0	7	
2.0	2.1	8	19.0
2.1	2.2	6	
2.2	2.3	5	
2.3	2.4	6	25.0
2.4	2.5	8	
2.5	2.6	11	
2.6	2.7	10	25.0
2.7	2.8	8	
2.8	2.9	7	
2.9	3.0	6	29.0
3.0	3.1	10	
3.1	3.2	13	
3.2	3.3	11	29.0
3.3	3.4	8	
3.4	3.5	10	
3.5	3.6	10	30.0
3.6	3.7	11	
3.7	3.8	9	
3.8	3.9	5	18.0
3.9	4.0	4	
4.0	4.1	9	
4.1	4.2	7	21.0
4.2	4.3	7	
4.3	4.4	7	
4.4	4.5	7	29.0
4.5	4.6	8	
4.6	4.7	14	
4.7	4.8	13	121.0
4.8	4.9	28	
4.9	5.0	80	
5.0	5.1	END	0.0
5.1	5.2	0	
5.2	5.3	0	
5.3	5.4	0	0.0
5.4	5.5	0	
5.5	5.6	0	
5.6	5.7	0	0.0
5.7	5.8	0	
5.8	5.9	0	
5.9	6.0	0	0.0
6.0	6.1	0	
6.1	6.2	0	
6.2	6.3	0	0.0
6.3	6.4	0	
6.4	6.5	0	
6.5	6.6	0	0.0
6.6	6.7	0	
6.7	6.8	0	
6.8	6.9	0	0.0
6.9	7.0	0	
7.0	7.1	0	
7.1	7.2	0	0.0
7.2	7.3	0	
7.3	7.4	0	
7.4	7.5	0	0.0
7.5	7.6	0	
7.6	7.7	0	
7.7	7.8	0	0.0
7.8	7.9	0	
7.9	8.0	0	
8.1	8.0	0	0.0



FTR 37877

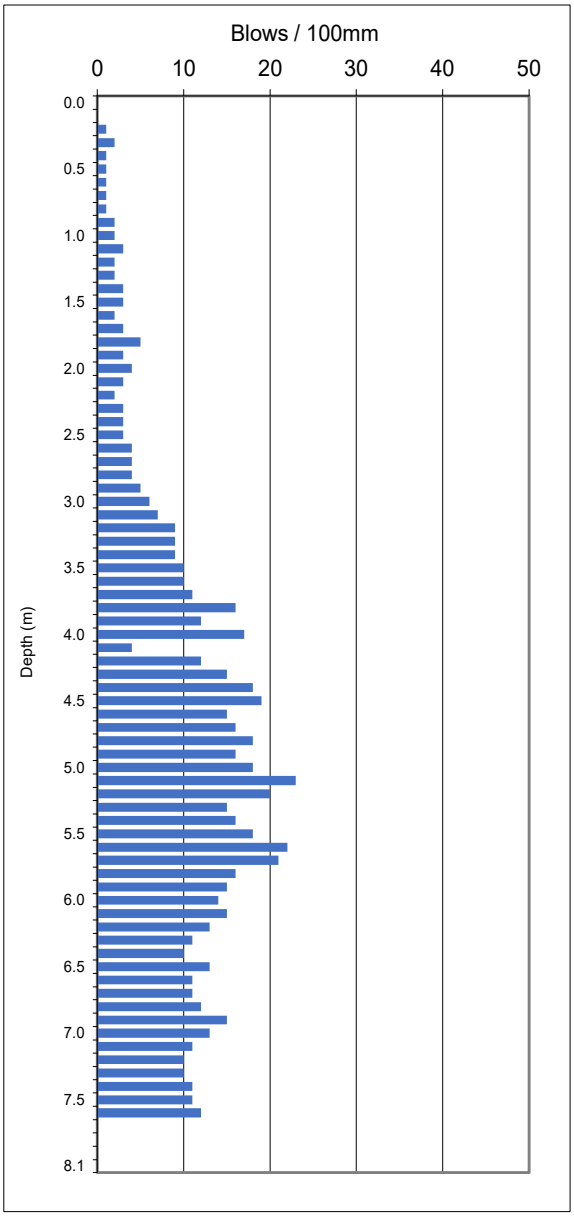
3.0 Test Results

3.21 – Test 21

LOCATION ON SITE : **Location 20**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	1	4.0
0.3	0.4	2	
0.4	0.5	1	
0.5	0.6	1	3.0
0.6	0.7	1	
0.7	0.8	1	
0.8	0.9	1	5.0
0.9	1.0	2	
1.0	1.1	2	
1.1	1.2	3	7.0
1.2	1.3	2	
1.3	1.4	2	
1.4	1.5	3	8.0
1.5	1.6	3	
1.6	1.7	2	
1.7	1.8	3	11.0
1.8	1.9	5	
1.9	2.0	3	
2.0	2.1	4	9.0
2.1	2.2	3	
2.2	2.3	2	
2.3	2.4	3	9.0
2.4	2.5	3	
2.5	2.6	3	
2.6	2.7	4	12.0
2.7	2.8	4	
2.8	2.9	4	
2.9	3.0	5	18.0
3.0	3.1	6	
3.1	3.2	7	
3.2	3.3	9	27.0
3.3	3.4	9	
3.4	3.5	9	
3.5	3.6	10	31.0
3.6	3.7	10	
3.7	3.8	11	
3.8	3.9	16	45.0
3.9	4.0	12	
4.0	4.1	17	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	4	31.0
4.2	4.3	12	
4.3	4.4	15	
4.4	4.5	18	52.0
4.5	4.6	19	
4.6	4.7	15	
4.7	4.8	16	50.0
4.8	4.9	18	
4.9	5.0	16	
5.0	5.1	18	61.0
5.1	5.2	23	
5.2	5.3	20	
5.3	5.4	15	49.0
5.4	5.5	16	
5.5	5.6	18	
5.6	5.7	22	59.0
5.7	5.8	21	
5.8	5.9	16	
5.9	6.0	15	44.0
6.0	6.1	14	
6.1	6.2	15	
6.2	6.3	13	34.0
6.3	6.4	11	
6.4	6.5	10	
6.5	6.6	13	35.0
6.6	6.7	11	
6.7	6.8	11	
6.8	6.9	12	40.0
6.9	7.0	15	
7.0	7.1	13	
7.1	7.2	11	31.0
7.2	7.3	10	
7.3	7.4	10	
7.4	7.5	11	34.0
7.5	7.6	11	
7.6	7.7	12	
7.7	7.8	END	0.0
7.8	7.9	0	
7.9	8.0	0	
8.1	8.0	0	0.0



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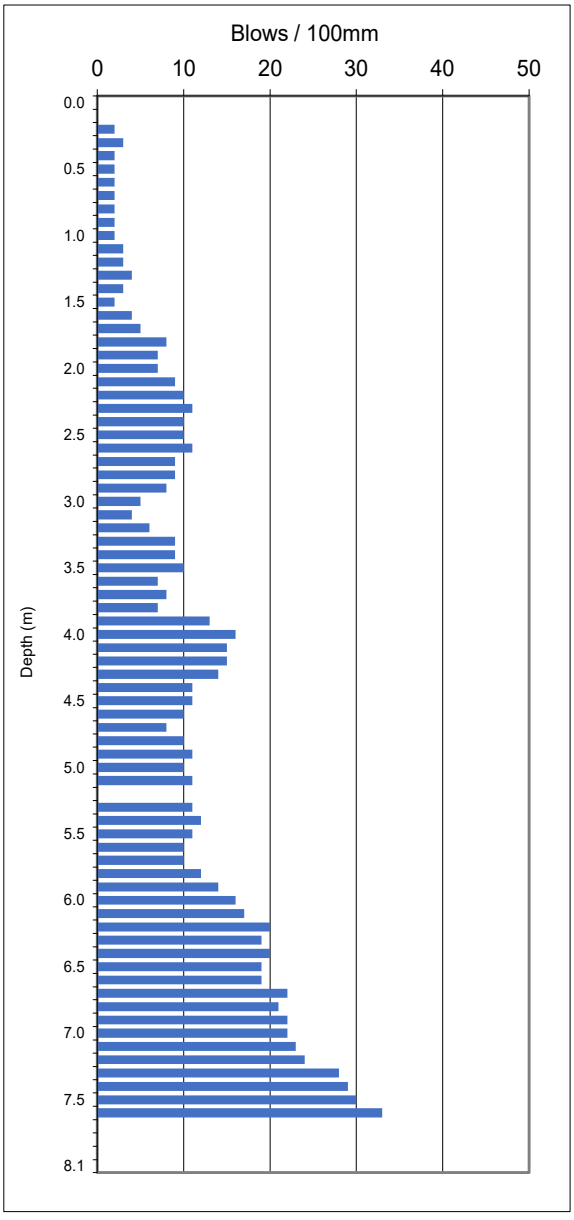
3.0 Test Results

3.21 – Test 22

LOCATION ON SITE : **Location 21**	
HAMMER TYPE/MASS: **Super Heavy/63.5Kg**	STANDARD DROP: **760mm**
CONE TYPE/DIAMETER: **90°/50.5mm ∅**	ROD TYPE/MASS : **8Kg/35mm ∅**
DAMPER USED : **NO**	CONE LEFT BEHIND : **YES**
HOLES BACKFILLED : **NO**	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
0.0	0.1	0	N/A
0.1	0.2	0	
0.2	0.3	2	7.0
0.3	0.4	3	
0.4	0.5	2	
0.5	0.6	2	6.0
0.6	0.7	2	
0.7	0.8	2	
0.8	0.9	2	6.0
0.9	1.0	2	
1.0	1.1	2	
1.1	1.2	3	10.0
1.2	1.3	3	
1.3	1.4	4	
1.4	1.5	3	9.0
1.5	1.6	2	
1.6	1.7	4	
1.7	1.8	5	20.0
1.8	1.9	8	
1.9	2.0	7	
2.0	2.1	7	26.0
2.1	2.2	9	
2.2	2.3	10	
2.3	2.4	11	31.0
2.4	2.5	10	
2.5	2.6	10	
2.6	2.7	11	29.0
2.7	2.8	9	
2.8	2.9	9	
2.9	3.0	8	17.0
3.0	3.1	5	
3.1	3.2	4	
3.2	3.3	6	24.0
3.3	3.4	9	
3.4	3.5	9	
3.5	3.6	10	25.0
3.6	3.7	7	
3.7	3.8	8	
3.8	3.9	7	36.0
3.9	4.0	13	
4.0	4.1	16	

Depth (m) From	To	Blows/ 100mm	SPT 'N' Values
4.1	4.2	15	44.0
4.2	4.3	15	
4.3	4.4	14	
4.4	4.5	11	32.0
4.5	4.6	11	
4.6	4.7	10	
4.7	4.8	8	29.0
4.8	4.9	10	
4.9	5.0	11	
5.0	5.1	10	21.0
5.1	5.2	11	
5.2	5.3	0	
5.3	5.4	11	34.0
5.4	5.5	12	
5.5	5.6	11	
5.6	5.7	10	32.0
5.7	5.8	10	
5.8	5.9	12	
5.9	6.0	14	47.0
6.0	6.1	16	
6.1	6.2	17	
6.2	6.3	20	59.0
6.3	6.4	19	
6.4	6.5	20	
6.5	6.6	19	60.0
6.6	6.7	19	
6.7	6.8	22	
6.8	6.9	21	65.0
6.9	7.0	22	
7.0	7.1	22	
7.1	7.2	23	75.0
7.2	7.3	24	
7.3	7.4	28	
7.4	7.5	29	92.0
7.5	7.6	30	
7.6	7.7	33	
7.7	7.8	END	0.0
7.8	7.9	0	
7.9	8.0	0	
8.1	8.0	0	0.0



END OF REPORT

Appendix 3 - Geotechnical Laboratory Test Results

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 07 March 2022
Test Report Ref: TR 860919

Contract: Ruabon Park, Ruabon, Wrecsam

LABORATORY TEST REPORT

TEST REQUIREMENTS: Determination of liquid limit (80g/30° fall cone method: 4 point with increasing water content); Plastic limit and plasticity index in accordance with **BS EN ISO 17892-12: 2018 Clause 5.3, 5.5 and 6.5 respectively.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S100437**
Client Ref. :	**WSE1 at 1.5m**
Date and Time of Sampling:	**26/01/2022**
Date of Receipt at Lab:	**28/01/2022**
Date of Start of Test:	**23/02/2022**
Sampling Location:	**WSE1 at 1.3m**
Name of Source:	**Site won**
Method of Sampling:	**Disturbed Bulk Sample**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**DB**
Soil Description:	**Brown gravelly silty clayey SAND**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**68**
Plastic Limit	**=**	**Non-plastic**
Liquid Limit	**=**	**N/A**
Plasticity Index	**=**	**N/A**

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:
[redacted]
Euros Jones
Soils Team Manager

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 07 March 2022
Test Report Ref: TR 860920

Contract: Ruabon Park, Ruabon, Wrecsam

LABORATORY TEST REPORT

TEST REQUIREMENTS: Determination of liquid limit (80g/30° fall cone method: 4 point with increasing water content); Plastic limit and plasticity index in accordance with **BS EN ISO 17892-12: 2018 Clause 5.3, 5.5 and 6.5 respectively.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S100437**
Client Ref. :	**WS2 at 1.6m**
Date and Time of Sampling:	**26/01/2022**
Date of Receipt at Lab:	**28/01/2022**
Date of Start of Test:	**23/02/2022**
Sampling Location:	**WS2 at 1.6m**
Name of Source:	**Site won**
Method of Sampling:	**Disturbed Bulk Sample**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**DJ**
Soil Description:	**Greyish brown slightly sandy silty CLAY**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**99**
Plastic Limit	**=**	**19**
Liquid Limit	**=**	**40**
Plasticity Index	**=**	**21**

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These results relate only to the items tested.

Comments:
None

Report checked and approved by:
[redacted]
Euros Jones
Soils Team Manager

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 07 March 2022
Test Report Ref: TR 860921

Contract: Ruabon Park, Ruabon, Wrecsam

LABORATORY TEST REPORT

TEST REQUIREMENTS: Determination of liquid limit (80g/30° fall cone method: 4 point with increasing water content); Plastic limit and plasticity index in accordance with **BS EN ISO 17892-12: 2018 Clause 5.3, 5.5 and 6.5 respectively.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S100437**
Client Ref. :	**WS9 at 3.0m**
Date and Time of Sampling:	**26/01/2022**
Date of Receipt at Lab:	**28/01/2022**
Date of Start of Test:	**23/02/2022**
Sampling Location:	**WS9 at 3.0m**
Name of Source:	**Site won**
Method of Sampling:	**Disturbed Bulk Sample**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**DJ**
Soil Description:	**Brown gravelly slightly sandy silty CLAY**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**51**
Plastic Limit	**=**	**15**
Liquid Limit	**=**	**27**
Plasticity Index	**=**	**12**

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These results relate only to the items tested.

Comments:
None

Report checked and approved by:
[redacted]
Euros Jones
Soils Team Manager

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 07 March 2022
Test Report Ref: TR 860922

Contract: Ruabon Park, Ruabon, Wrecsam

LABORATORY TEST REPORT

TEST REQUIREMENTS: Determination of liquid limit (80g/30° fall cone method: 4 point with increasing water content); Plastic limit and plasticity index in accordance with **BS EN ISO 17892-12: 2018 Clause 5.3, 5.5 and 6.5 respectively.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S100437**
Client Ref. :	**WS11 at 2.0m**
Date and Time of Sampling:	**26/01/2022**
Date of Receipt at Lab:	**28/01/2022**
Date of Start of Test:	**21/02/2022**
Sampling Location:	**WS11 at 2.0m**
Name of Source:	**Site won**
Method of Sampling:	**Disturbed Bulk Sample**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**DJ**
Soil Description:	**Brown slightly gravelly slightly sandy silty CLAY**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**67**
Plastic Limit	**=**	**13**
Liquid Limit	**=**	**26**
Plasticity Index	**=**	**13**

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These results relate only to the items tested.

Comments:
None

Report checked and approved by:
[redacted]
Euros Jones
Soils Team Manager

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 07 March 2022
Test Report Ref: TR 860923

Contract: Ruabon Park, Ruabon, Wrecsam

LABORATORY TEST REPORT

TEST REQUIREMENTS: Determination of liquid limit (80g/30° fall cone method: 4 point with increasing water content); Plastic limit and plasticity index in accordance with **BS EN ISO 17892-12: 2018 Clause 5.3, 5.5 and 6.5 respectively.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S100437**
Client Ref. :	**WS13 at 1.3m**
Date and Time of Sampling:	**26/01/2022**
Date of Receipt at Lab:	**28/01/2022**
Date of Start of Test:	**21/02/2022**
Sampling Location:	**WS13 at 1.3m**
Name of Source:	**Site won**
Method of Sampling:	**Disturbed Bulk Sample**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**DJ**
Soil Description:	**Brown slightly sandy silty CLAY**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**98**
Plastic Limit	**=**	**16**
Liquid Limit	**=**	**31**
Plasticity Index	**=**	**15**

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These results relate only to the items tested.

Comments:
None

Report checked and approved by:
[redacted]
Euros Jones
Soils Team Manager

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 07 March 2022
Test Report Ref: TR 860924

Contract: Ruabon Park, Ruabon, Wrecsam

LABORATORY TEST REPORT

TEST REQUIREMENTS: Determination of liquid limit (80g/30° fall cone method: 4 point with increasing water content); Plastic limit and plasticity index in accordance with **BS EN ISO 17892-12: 2018 Clause 5.3, 5.5 and 6.5 respectively.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S100437**
Client Ref. :	**WS13 at 1.7m**
Date and Time of Sampling:	**26/01/2022**
Date of Receipt at Lab:	**28/01/2022**
Date of Start of Test:	**21/02/2022**
Sampling Location:	**WS13 at 1.7m**
Name of Source:	**Site won**
Method of Sampling:	**Disturbed Bulk Sample**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**DB**
Soil Description:	**Brown gravelly silty SAND**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**70**
Plastic Limit	**=**	**Non-plastic**
Liquid Limit	**=**	**N/A**
Plasticity Index	**=**	**N/A**

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:
[redacted]
Euros Jones
Soils Team Manager

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 07 March 2022
Test Report Ref: TR 860925

Contract: Ruabon Park, Ruabon, Wrecsam

LABORATORY TEST REPORT

TEST REQUIREMENTS: Determination of liquid limit (80g/30° fall cone method: 4 point with increasing water content); Plastic limit and plasticity index in accordance with **BS EN ISO 17892-12: 2018 Clause 5.3, 5.5 and 6.5 respectively.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S100437**
Client Ref. :	**WS15 at 1.5m**
Date and Time of Sampling:	**26/01/2022**
Date of Receipt at Lab:	**28/01/2022**
Date of Start of Test:	**22/02/2022**
Sampling Location:	**WS15 at 1.5m**
Name of Source:	**Site won**
Method of Sampling:	**Disturbed Bulk Sample**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**DB**
Soil Description:	**Brown slightly gravelly slightly sandy silty CLAY**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**69**
Plastic Limit	**=**	**14**
Liquid Limit	**=**	**29**
Plasticity Index	**=**	**15**

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:
[redacted]
Euros Jones
Soils Team Manager

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 07 March 2022
Test Report Ref: TR 860926

Contract: Ruabon Park, Ruabon, Wrecsam

LABORATORY TEST REPORT

TEST REQUIREMENTS: Determination of liquid limit (80g/30° fall cone method: 4 point with increasing water content); Plastic limit and plasticity index in accordance with **BS EN ISO 17892-12: 2018 Clause 5.3, 5.5 and 6.5 respectively.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S100437**
Client Ref. :	**WS17 at 1.2m**
Date and Time of Sampling:	**26/01/2022**
Date of Receipt at Lab:	**28/01/2022**
Date of Start of Test:	**22/02/2022**
Sampling Location:	**WS17 at 1.2m**
Name of Source:	**Site won**
Method of Sampling:	**Disturbed Bulk Sample**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**DJ**
Soil Description:	**Reddish brown slightly gravelly slightly sandy silty CLAY**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**54**
Plastic Limit	**=**	**15**
Liquid Limit	**=**	**24**
Plasticity Index	**=**	**9**

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:
[redacted]
Euros Jones
Soils Team Manager

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 07 March 2022
Test Report Ref: TR 860927

Contract: Ruabon Park, Ruabon, Wrecsam

LABORATORY TEST REPORT

TEST REQUIREMENTS: Determination of liquid limit (80g/30° fall cone method: 4 point with increasing water content); Plastic limit and plasticity index in accordance with **BS EN ISO 17892-12: 2018 Clause 5.3, 5.5 and 6.5 respectively.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S100437**
Client Ref. :	**WS18 at 1.2m**
Date and Time of Sampling:	**26/01/2022**
Date of Receipt at Lab:	**28/01/2022**
Date of Start of Test:	**22/02/2022**
Sampling Location:	**WS18 at 1.2m**
Name of Source:	**Site won**
Method of Sampling:	**Disturbed Bulk Sample**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**DJ**
Soil Description:	**Brown slightly gravelly slightly sandy silty CLAY**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**64**
Plastic Limit	**=**	**15**
Liquid Limit	**=**	**28**
Plasticity Index	**=**	**13**

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:
[redacted]
Euros Jones
Soils Team Manager

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 07 March 2022
Test Report Ref: TR 860928

Contract: Ruabon Park, Ruabon, Wrecsam

LABORATORY TEST REPORT

TEST REQUIREMENTS: Determination of liquid limit (80g/30° fall cone method: 4 point with increasing water content); Plastic limit and plasticity index in accordance with **BS EN ISO 17892-12: 2018 Clause 5.3, 5.5 and 6.5 respectively.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S100437**
Client Ref. :	**WS20 at 1.5m**
Date and Time of Sampling:	**26/01/2022**
Date of Receipt at Lab:	**28/01/2022**
Date of Start of Test:	**23/02/2022**
Sampling Location:	**WS20 at 1.5m**
Name of Source:	**Site won**
Method of Sampling:	**Disturbed Bulk Sample**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**DB**
Soil Description:	**Brown slightly gravelly slightly sandy silty CLAY**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**63**
Plastic Limit	**=**	**13**
Liquid Limit	**=**	**23**
Plasticity Index	**=**	**10**

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:
[redacted]
Euros Jones
Soils Team Manager

E-geo Solutions Ltd.
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0RD

Date: 07 March 2022
Test Report Ref: TR 860929

Contract: Ruabon Park, Ruabon, Wrecsam

LABORATORY TEST REPORT

TEST REQUIREMENTS: Determination of liquid limit (80g/30° fall cone method: 4 point with increasing water content); Plastic limit and plasticity index in accordance with **BS EN ISO 17892-12: 2018 Clause 5.3, 5.5 and 6.5 respectively.**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S100437**
Client Ref. :	**WS20 at 2.1m**
Date and Time of Sampling:	**26/01/2022**
Date of Receipt at Lab:	**28/01/2022**
Date of Start of Test:	**23/02/2022**
Sampling Location:	**WS20 at 2.1m**
Name of Source:	**Site won**
Method of Sampling:	**Disturbed Bulk Sample**
Sampled By:	**Client (Test results apply to sample as received)**
Tested By:	**DB**
Soil Description:	**Brown slightly gravelly slightly sandy silty CLAY**

RESULTS:

History of sample:	**:**	**After wet sieving**
% Materials passing 425µm	**=**	**69**
Plastic Limit	**=**	**15**
Liquid Limit	**=**	**27**
Plasticity Index	**=**	**12**

This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:
[redacted]
Euros Jones
Soils Team Manager

Appendix 4 - Gas Monitoring Results

PLOT1, PLOT2, PLOT3 RUABON PARK, RUABON
Ground Gas Monitoring

Monitoring Date	01/02/2022					
Borehole Nr	WS2	WS6	WS11	WS15	WS18	WS21
CH4 by VOL %	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
CO2 by VOL %	0.50%	0.40%	0.50%	0.90%	1.00%	0.50%
O2 by VOL %	19.60%	19.70%	19.20%	19.00%	19.10%	19.70%
BAL	91.90%	91.90%	91.90%	91.50%	91.40%	92.20%
LEL CH4	0%	0%	0%	0%	0%	0%
PEAK CH4 by VOL %	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
PEAK CO2 by VOL %	0.50%	0.50%	0.50%	1.00%	1.00%	1.00%
MIN O2 by VOL %	19.60%	19.70%	19.20%	19.00%	19.10%	19.70%
BARO PRESSURE	0988mb	0988mb	0988mb	0988mb	0988mb	0988mb
FLOW l/hr	<0.0 1/hr	<0.0 1/hr	0.0 1/hr	0.0 1/hr	0.0 1/hr	<0.0 1/hr

PLOT1, PLOT2, PLOT3 RUABON PARK, RUABON
Ground Gas Monitoring

Monitoring Date	16/02/2022					
Borehole Nr	WS2	WS6	WS11	WS15	WS18	WS21
CH4 by VOL %	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
CO2 by VOL %	0.90%	0.40%	1.50%	1.60%	1.40%	0.50%
O2 by VOL %	19.80%	19.60%	19.60%	19.50%	19.20%	19.80%
BAL	91.90%	91.90%	91.90%	91.50%	91.40%	92.20%
LEL CH4	0%	0%	0%	0%	0%	0%
PEAK CH4 by VOL %	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
PEAK CO2 by VOL %	0.90%	0.90%	1.50%	1.70%	1.60%	1.60%
MIN O2 by VOL %	19.80%	19.60%	19.60%	19.50%	19.20%	19.80%
BARO PRESSURE	1003mb	1003mb	1003mb	1003mb	1003mb	1003mb
FLOW l/hr	<0.0 1/hr	<0.0 1/hr	<0.0 1/hr	0.0 1/hr	0.0 1/hr	<0.0 1/hr

PLOT1, PLOT2, PLOT3 RUABON PARK, RUABON
Ground Gas Monitoring

Monitoring Date	04/03/2022					
Borehole Nr	WS2	WS6	WS11	WS15	WS18	WS21
CH4 by VOL %	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
CO2 by VOL %	1.70%	0.60%	1.70%	1.60%	2.20%	0.50%
O2 by VOL %	19.40%	19.60%	19.60%	19.10%	19.30%	19.50%
BAL	88.80%	89.40%	87.00%	88.00%	88.10%	89.40%
LEL CH4	0%	0%	0%	0%	0%	0%
PEAK CH4 by VOL %	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
PEAK CO2 by VOL %	1.80%	1.00%	1.80%	1.60%	2.30%	0.50%
MIN O2 by VOL %	19.40%	19.60%	19.60%	19.10%	19.30%	19.50%
BARO PRESSURE	1008mb	1008mb	1008mb	1008mb	1008mb	1008mb
FLOW l/hr	<0.0 1/hr	<0.0 1/hr	0.0 1/hr	0.0 1/hr	0.0 1/hr	<0.0 1/hr

PLOT1, PLOT2, PLOT3 RUABON PARK, RUABON
Ground Gas Monitoring

Monitoring Date	25/03/2022					
Borehole Nr	WS2	WS6	WS11	WS15	WS18	WS21
CH4 by VOL %	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
CO2 by VOL %	1.80%	1.00%	0.80%	0.40%	2.20%	0.80%
O2 by VOL %	19.50%	19.40%	19.50%	19.30%	19.30%	19.60%
BAL	87.30%	89.20%	89.40%	89.50%	88.00%	89.10%
LEL CH4	0%	0%	0%	0%	0%	0%
PEAK CH4 by VOL %	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
PEAK CO2 by VOL %	1.90%	1.10%	0.80%	0.40%	2.30%	0.90%
MIN O2 by VOL %	19.50%	19.40%	19.50%	19.30%	19.30%	19.60%
BARO PRESSURE	1020mb	1020mb	1020mb	1020mb	1020mb	1020mb
FLOW l/hr	<0.0 1/hr	0.0 1/hr	0.0 1/hr	0.0 1/hr	0.0 1/hr	<0.0 1/hr

PLOT1, PLOT2, PLOT3 RUABON PARK, RUABON
Ground Gas Monitoring

Monitoring Date	19/04/2022					
Borehole Nr	WS2	WS6	WS11	WS15	WS18	WS21
CH4 by VOL %	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
CO2 by VOL %	0.40%	1.60%	0.50%	1.90%	0.40%	1.90%
O2 by VOL %	19.60%	19.60%	19.40%	19.40%	19.50%	19.60%
BAL	92.30%	88.90%	92.30%	91.20%	92.20%	91.20%
LEL CH4	0%	0%	0%	0%	0%	0%
PEAK CH4 by VOL %	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%	<0.1%
PEAK CO2 by VOL %	0.50%	1.60%	0.50%	2.00%	0.50%	1.90%
MIN O2 by VOL %	19.60%	19.60%	19.40%	19.40%	19.50%	19.60%
BARO PRESSURE	1006mb	1006mb	1006mb	1006mb	1006mb	1006mb
FLOW l/hr	<0.0 1/hr	0.0 1/hr	0.0 1/hr	0.0 1/hr	0.0 1/hr	<0.0 1/hr

PLOT1, PLOT2, PLOT3 RUABON PARK, RUABON
Ground Gas Monitoring

Monitoring Date	12/05/2018					
Borehole Nr	WS2	WS6	WS11	WS15	WS18	WS21
CH4 by VOL %	NA	<0.1%	NA	NA	NA	<0.1%
CO2 by VOL %	NA	0.90%	NA	NA	NA	0.40%
O2 by VOL %	NA	19.50%	NA	NA	NA	19.60%
BAL	NA	91.90%	NA	NA	NA	92.40%
LEL CH4		0%				0%
PEAK CH4 by VOL %	NA	<0.1%	NA	NA	NA	<0.1%
PEAK CO2 by VOL %	NA	1.00%	NA	NA	NA	1.00%
MIN O2 by VOL %	NA	19.50%	NA	NA	NA	19.60%
BARO PRESSURE	NA	1004mb	NA	NA	NA	1004mb
FLOW l/hr	NA	<0.0 1/hr	NA	NA	NA	<0.0 1/hr

CERTIFICATION OF CALIBRATION

Date Of Calibration: 03-Nov-2021

Certificate Number: G507303_2/29174

Issued by: QED Environmental Systems Ltd.

Customer: **Ashtead Technology Ltd**
Ashtead House Discovery Drive Arnhall Business Park
Westhill Aberdeenshire AB32 6FG UNITED KINGDOM

Description: Gas Analyser

Model: GA5000

Serial Number: G507303

UKAS Accredited results:

Results after adjustment :

Methane (CH_4)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	4.8	0.072
14.9	14.7	0.13
59.7	59.3	0.42

Carbon Dioxide (CO_2)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	4.8	0.074
15.1	14.8	0.13
40.3	40.2	0.29

Oxygen (O_2)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
21.2	21.3	0.25

The inwards assessment was carried out 21-Oct-2021.
The maximum adjustment is larger than the specification limit.
Inwards assessment data is available if requested.

All concentrations are molar.

CH_4, CO_2 readings recorded at : 32.3 °C ± 2.5 °C

O2 readings recorded at : 22.0 °C ± 2.5 °C

Barometric Pressure : 0993 mbar ± 4 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.

Instrument has passed calibration as the measurement result is within the specification limit. The specification limit takes into account the measurement uncertainty.
The results relate only to the item calibrated

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

www.qedenv.com +44 (0) 333 800 0088 sales@qedenv.co.uk

QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1888734

CERTIFICATION OF CALIBRATION

Date Of Calibration: 03-Nov-2021

Certificate Number: G507303_2/29174

Issued by: QED Environmenta Systems Ltd.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

Non-UKAS accredited results after adjustment:

Barometer (mbar)	
Reference	Instrument Reading
993	994

Additional Gas Cells		
Gas	Certified Gas (ppm)	Instrument Reading (ppm)
CO	509	511
H_2S	259	259

Internal Flow	
Applied (l/hr)	Instrument Reading (l/hr)
5.00	4.90
10.00	9.90

Date of Issue : 05-Nov-2021 Approved by Signatory Laura McBride

Laboratory Inspection

End of Certificate

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

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QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1888734

Appendix 5 - BGS Radon Report BGS_326495/34724

GeoReports

British Geological Survey

Gareth Huw Jones
E-Geo Solutions Ltd
Glasgow House
High Street
Llanelwy
LL17 0RD

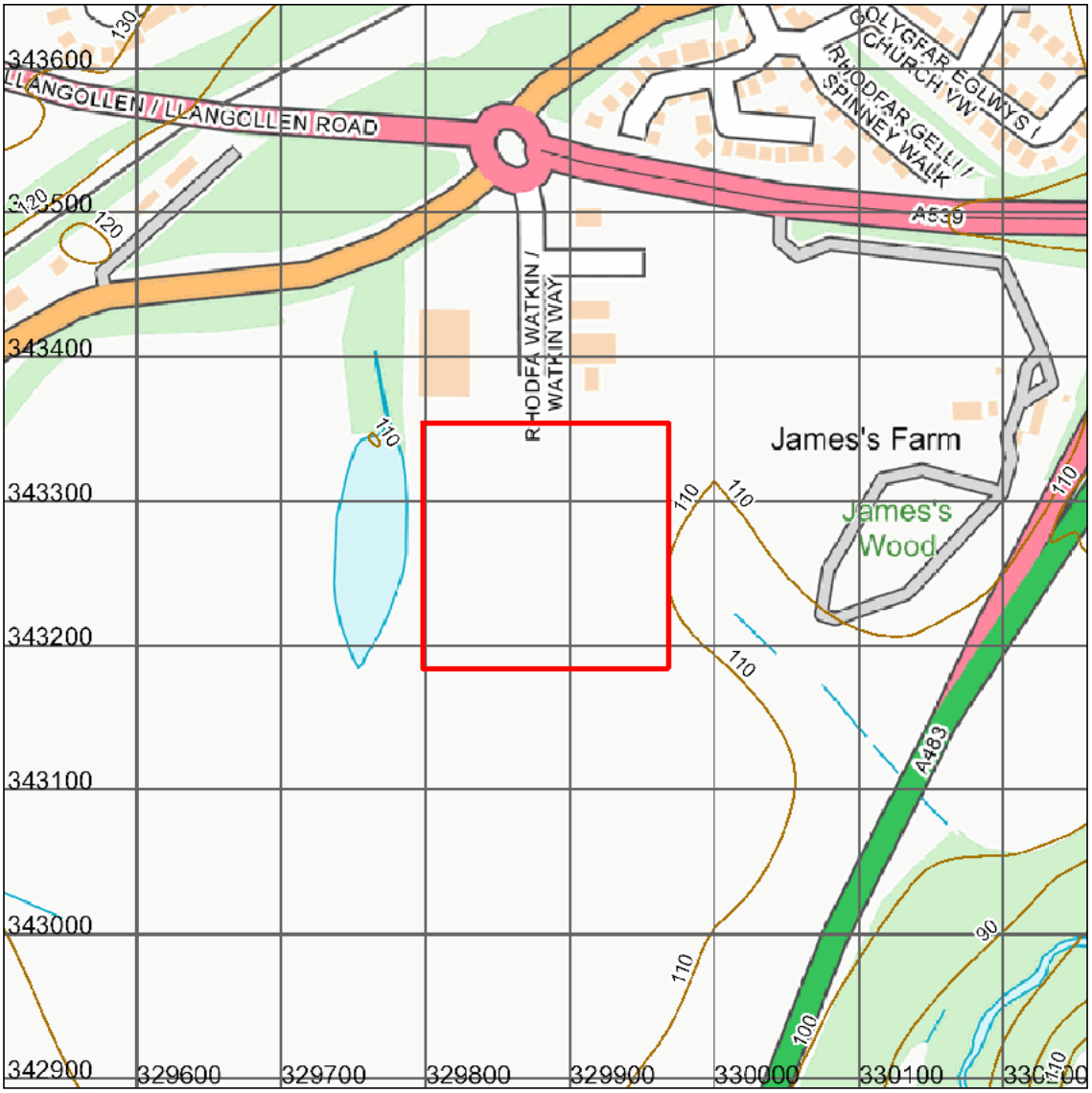
Radon Report

Advisory report on the requirement for radon protective measures in new buildings, conversions and extensions to existing buildings. The report also indicates whether a site is located within a radon Affected Area

Report Id: ***BGS_326495/34724***

Client reference:

Search location



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Search location indicated in red

This report describes a site located at National Grid Reference 329883, 343269. Note that for sites of irregular shape, this point may lie outside the site boundary. Where the client has submitted a site plan the assessment will be based on the area given.

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Radon Report: UK

When extensions are made to existing buildings in high radon areas, or new buildings are constructed in these areas, the Building Regulations for England, Wales, Scotland and Northern Ireland require that protective measures are taken against radon entering the building.

This report provides information on whether radon protective measures are required. Depending on the probability of buildings having high radon levels, the Regulations may require either:

1. No protective measures
2. Basic protective measures
3. Full protective measures

This is an advisory report on the requirement for radon protective measures in new buildings, conversions and extensions. The report also indicates whether a site is located within a radon Affected Area

Requirement for radon protective measures

The determination below follows advice in *BR211 Radon: Guidance on protective measures for new buildings (2015 edition), which also provides guidance on what to do if the* result *indicates that protective measures are required.*

Is the property in an area where radon protective measures are required for new buildings or extensions to existing ones as described in publication BR211 (2015 edition) Radon: Guidance on protective measures for new buildings?

BASIC RADON PROTECTIVE MEASURES ARE REQUIRED FOR THE REPORT AREA.

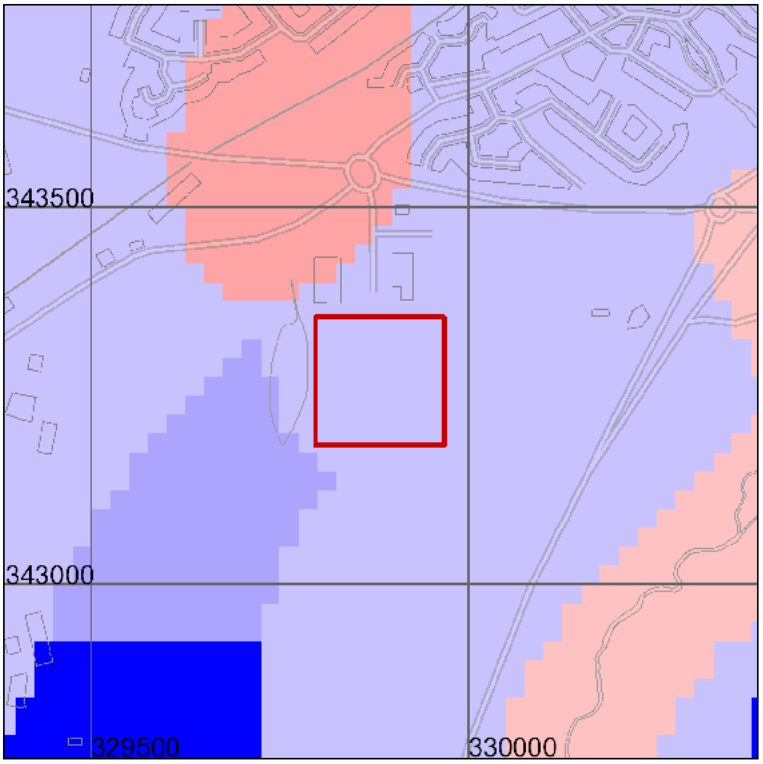
More details of the protective measures required are available in *BR211 Radon: Guidance on protective measures for new buildings (2015 Edition)*. Additional information and guidance is available from the Building Research Establishment website (http://www.bre.co.uk/radon/).

Whether or not the radon level in a building is above or below the radon Action Level can only be established by having the building tested. The UKHSA provides a radon testing service which can be accessed at www.ukradon.org or by telephone (01235 822622).

If you require further information or guidance, you should contact your local authority building control officer or approved inspector.

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Radon Affected Area



	% Homes estimated to be at or above the action level
	0-1%
	1-3%
	3-5%
	5-10%
	10-30%
	30-100%

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Scale: 1:10 000 (1cm = 100 m)
Search area indicated in red

Is the property in a radon Affected Area as defined by the UK Health Security Agency (UKHSA) and if so what percentage of homes are estimated to be above the Action Level? YES

Additional Information

THE PROPERTY IS IN A RADON AFFECTED AREA WHERE 3 TO 5% OF HOMES ARE ESTIMATED TO BE AT OR ABOVE THE ACTION LEVEL.

The UKHSA recommends a radon 'Action Level' of 200 Becquerels per cubic metre of air (Bq m^{-3}) for the annual average of the radon gas concentration in a home. Where 1% or more of homes are estimated to exceed the Action Level the area should be regarded as a radon Affected Area.

This report informs you whether the property is in a radon Affected Area and the percentage of homes that are estimated to be at or above the radon Action Level at this location. Being in an Affected Area does not necessarily mean there is a radon problem in the property; the only way to find out whether the radon level is above or below the Action Level is to carry out a radon measurement.

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The UKHSA advises that radon gas should be measured in all properties within radon Affected Areas and that homes with radon levels above the Action Level (200 Bq m^{-3}) should be remediated. Householders with levels between the Target Level (100 Bq m^{-3}) and Action Level should seriously consider reducing their radon level, especially if they are at greater risk, such as if they are current or ex smokers. Whether or not a home is in fact above or below the Action Level or Target Level can only be established by having the building tested. The UKHSA provides a validated radon testing service which can be accessed at www.ukradon.org.

The information in this report provides an answer to one of the standard legal enquiries on house purchase in England and Wales, known as Law Society CON29 Enquiries of the Local Authority (2016); 3.14 Radon Gas: Do records indicate that the property is in a “Radon Affected Area” as identified by the UKHSA. The data can also be used to advise house buyers and sellers in Scotland and Northern Ireland.

If you are buying a new build property in a Radon Affected Area, you should ask the builder whether radon protective measures were incorporated in the construction of the property.

If you are buying a currently occupied property in a radon Affected Area, you should ask the present owner whether radon levels have been measured in the property. If they have, ask whether the results were above the radon Action Level and if so, whether remedial measures were installed, radon levels were re-tested, and if the results of re-testing confirmed the effectiveness of the measures.

Further information on radon is available from the UKHSA at www.ukradon.org.

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What is radon?

Radon is a naturally occurring radioactive gas, which is produced by the radioactive decay of radium which, in turn, is derived from the radioactive decay of uranium. Uranium is found in small quantities in all soils and rocks, although the amount varies from place to place. Radon released from rocks and soils is quickly diluted in the atmosphere. Concentrations in the open air are normally very low and do not present a hazard. Radon that enters enclosed spaces such as some buildings (particularly basements), caves, mines, and tunnels may reach high concentrations in some circumstances. The construction method and degree of ventilation will influence radon levels in individual buildings. A person's exposure to radon will also vary according to how particular buildings and spaces are used.
Inhalation of the radioactive decay products of radon gas increases the chance of developing lung cancer. If individuals are exposed to high concentrations for significant periods of time, there may be cause for concern. In order to limit the risk to individuals, the Government has adopted an Action Level for radon in homes of 200 becquerels per cubic metre (Bq m^{-3}). The Government advises householders that, where the radon level exceeds the Action Level, measures should be taken to reduce the concentration.

Radon in workplaces

The Ionising Radiation Regulations, 1999, require employers to take action when radon is present above a defined level in the workplace. Advice may be obtained from your local Health and Safety Executive Area Office or the Environmental Health Department of your local authority. The BRE publishes a guide (BR293)**: Radon in the workplace.** BRE publications may be obtained from the BRE Bookshop, Tel: 01923 664262, email: bookshop@bre.co.ukwebsite: www.brebookshop.com

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Contact Details

Keyworth Office
British Geological Survey
Environmental Science Centre
Nicker Hill
Keyworth
Nottingham
NG12 5GG
Tel: 0115 9363143
Email: enquiries@bgs.ac.uk

Wallingford Office
British Geological Survey
Maclean Building
Wallingford
Oxford
OX10 8BB
Email: enquiries@bgs.ac.uk

Edinburgh Office
British Geological Survey
Lyell Centre
Research Avenue South
Edinburgh
EH14 4AP
Tel: 0131 6671000
Email: enquiry@bgs.ac.uk

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Important notes about this Report

- The data, information and related records supplied in this Report by BGS can only be indicative and should not be taken as a substitute for specialist interpretations, professional advice and/or detailed site investigations. You must seek professional advice before making technical interpretations on the basis of the materials provided.
- Geological observations and interpretations are made according to the prevailing understanding of the subject at the time. The quality of such observations and interpretations may be affected by the availability of new data, by subsequent advances in knowledge, improved methods of interpretation, and better access to sampling locations.
- Raw data may have been transcribed from analogue to digital format, or may have been acquired by means of automated measuring techniques. Although such processes are subjected to quality control to ensure reliability where possible, some raw data may have been processed without human intervention and may in consequence contain undetected errors.
- Detail, which is clearly defined and accurately depicted on large-scale maps, may be lost when small-scale maps are derived from them.
- Although samples and records are maintained with all reasonable care, there may be some deterioration in the long term.
- The most appropriate techniques for copying original records are used, but there may be some loss of detail and dimensional distortion when such records are copied.
- Data may be compiled from the disparate sources of information at BGS's disposal, including material donated to BGS by third parties, and may not originally have been subject to any verification or other quality control process.
- Data, information and related records, which have been donated to BGS, have been produced for a specific purpose, and that may affect the type and completeness of the data recorded and any interpretation. The nature and purpose of data collection, and the age of the resultant material may render it unsuitable for certain applications/uses. You must verify the suitability of the material for your intended usage.
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- The topography shown on any map extracts is based on the latest OS mapping and is not necessarily the same as that used in the original compilation of the BGS geological map, and to which the geological linework available at that time was fitted.
- Note that for some sites, the latest available records may be historical in nature, and while every effort is made to place the analysis in a modern geological context, it is possible in some cases that the detailed geology at a site may differ from that described.

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Ordnance Survey

Report issued by
BGS Enquiry Service

Appendix 6 - Chemical Analysis Results

Element Materials Technology
Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

P: +44 (0) 1244 833780
F: +44 (0) 1244 833781
W: www.element.com

E-Geo Solutions
Glasgow House
High Street
St Asaph
Denbighshire
LL17 0UN

Attention :	Huw Littler-Jones
Date :	9th February, 2022
Your reference :	
Our reference :	Test Report 22/1472 Batch 1
Location :	Ruabon
Date samples received :	31st January, 2022
Status :	Final Report
Issue :	1

Nine samples were received for analysis on 31st January, 2022 of which nine were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Hayley Prowse
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology Environmental UK Limited
Registered in England and Wales
Registered Office: 3rd Floor Davidson Building, 5 Southampton Street, London WC2E 7HA
Company Registration No: 11371415

Client Name: E-Geo Solutions
Reference:
Location: Ruabon
Contact: Huw Littler-Jones
EMT Job No: 22/1472

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1	2	3	4	5	6	7	8	9		LOD/LOR	Units	Method No.
Sample ID	WS3-1.50	WS9	WS11-1.5	WS13-1.4	WS15-1.5	WS17-1.2	WS18-1.2	WS20-1.50	WS20-2.1				
Depth	1.50	1.00	1.50	1.40	1.50	1.20	1.20	1.50	2.10				
COC No / misc													
Containers	J	J	J	J	J	J	J	J	J				
Sample Date	18/01/2022	21/01/2022	25/01/2022	25/01/2022	27/01/2022	27/01/2022	27/01/2022	27/01/2022	27/01/2022				
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	31/01/2022	31/01/2022	31/01/2022	31/01/2022	31/01/2022	31/01/2022	31/01/2022	31/01/2022	31/01/2022				
Sulphate as SO4 (2:1 Ext) #M	0.0053	0.0135	0.0034	0.0064	0.0087	0.0091	0.0099	0.0081	0.0680		<0.0015	g/l	TM38/PM20
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay			None	PM13/PM0
Sample Colour	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown			None	PM13/PM0
Other Items	stones	stones, sand	stones	stones	stones	stones, vegetation	stones	stones	stones			None	PM13/PM0

Please see attached notes for all abbreviations and acronyms

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: E-Geo Solutions
Reference:
Location: Ruabon
Contact: Huw Littler-Jones

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/1472						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 22/1472

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

EMT Job No: 22/1472

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	No
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes	Yes	AD	Yes