Oweninny Wind Farm Phase 3

Environmental Impact Assessment Report

Appendix 9.2 Ground Investigation Report

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

Catherinestown House,
Hazelhatch Road,
Newcastle,
Co. Dublin.
D22 YD52

Tel: 01 601 5175 / 5176
Email: info@gii.ie
Web: www.gii.ie

Ground Investigations Ireland

Oweninny Windfarm

Tobin Engineering

Factual Ground Investigation Report

May 2022

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

Catherinestown House,
Hazelhatch Road,
Newcastle,
Co. Dublin.
D22 YD52

Tel: 01 601 5175 / 5176
Email: info@gii.ie
Web: www.gii.ie

DOCUMENT CONTROL SHEET

Project Title	Oweninny Windfarm
Engineer	Tobin Engineering
Client	Bord na Móna
Project No	10467-03-21
Document Title	Ground Investigation Report

Rev.	Status	Author(s)	Reviewed By	Approved By	Office of Origin	Issue Date
A	Final	M Sheehan	D MagLochlainn	C Finnerty	Dublin	05 May 2022

Ground Investigations Ireland Ltd. present the results of the fieldworks and laboratory testing in accordance with the specification and related documents provided by or on behalf of the client The possibility of variation in the ground and/or groundwater conditions between or below exploratory locations or due to the investigation techniques employed must be taken into account when this report and the appendices inform designs or decisions where such variation may be considered relevant. Ground and/or groundwater conditions may vary due to seasonal, man-made or other activities not apparent during the fieldworks and no responsibility can be taken for such variation. The data presented and the recommendations included in this report and associated appendices are intended for the use of the client and the client's geotechnical representative only and any duty of care to others is excluded unless approved in writing.

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

Catherinestown House,
Hazelhatch Road,
Newcastle,
Co. Dublin.
D22 YD52

Tel: 01 601 5175 / 5176
Email: info@gii.ie
Web: www.gii.ie

CONTENTS

1.0 Preamble....1
2.0 Overview....1
2.1. Background....1
2.2. Purpose and Scope....1
3.0 Subsurface Exploration....1
3.1. General....1
3.2. Trial Pits....1
3.3. Peat Probing....2
3.4. Surveying....2
3.5. Laboratory Testing....2
4.0 Ground Conditions....3
4.1. General....3
4.2. Groundwater....4
4.3. Laboratory Testing....4
4.3.1. Geotechnical Laboratory Testing....4
4.3.2. Chemical Laboratory Testing....4

APPENDICES

Appendix 1 Site Location Plan
Appendix 2 Trial Pit Records
Appendix 3 Peat Probes Records
Appendix 4 Laboratory Testing

1.0 Preamble

On the instructions of Tobin Consulting Engineers, a site investigation was carried out by Ground Investigations Ireland Ltd., between May to October 2021 at the site of the proposed Wind Farm in Oweninny, Bellacorick, Co. Mayo.

2.0 Overview

2.1. Background

It is proposed to construct a Wind Farm with associated services, access roads and car parking at the proposed site. The site is currently greenfield peatlands however a portion in one corner of the site is occupied by a Bord Na Mona work yard and sheds. The proposed construction is envisaged to consist of conventional foundations and pavement make up with some local excavations for services and plant.

2.2. Purpose and Scope

The purpose of the site investigation was to investigate subsurface conditions utilising a variety of investigative methods in accordance with the project specification. The scope of the work undertaken for this project included the following:

- Visit project site to observe existing conditions
- Carry out 36 No. Trial Pits to a maximum depth of 4.30m BGL
- Carry out 46 No. Peat Probes to determine soil strength/density characteristics
- Geotechnical & Environmental Laboratory testing
- Report with recommendations

3.0 Subsurface Exploration

3.1. General

During the ground investigation a programme of intrusive investigation specified by the Consulting Engineer was undertaken to determine the sub surface conditions at the proposed site. Regular sampling and in-situ testing was undertaken in the exploratory holes to facilitate the geotechnical descriptions and to enable laboratory testing to be carried out on the soil samples recovered during excavation and drilling.
The procedures used in this site investigation are in accordance with Eurocode 7 Part 2: Ground Investigation and testing (ISEN 1997 – 2:2007) and B.S. 5930:2015.

3.2. Trial Pits

The trial pits were excavated using a 12T Bogmaster excavator at the locations shown in the exploratory hole location plan in Appendix 1. The locations were checked using a CAT scan to minimise the potential

for encountering services during the excavation. The trial pits were sampled, logged and photographed by an Engineering Geologist prior to backfilling with arisings. Notes were made of any services, inclusions, pit stability, groundwater encountered and the characteristics of the strata encountered and are presented on the trial pit logs which are provided in Appendix 2 of this Report.

3.3. Peat Probing

The peat probing was carried out at the locations shown in Appendix 1. The test consists of manually driving the peat probing rods into the ground until they encounter an obstruction. The depth achieved by the rods is then recorded. The peat probe logs are provided in Appendix 3 of this Report.

3.4. Surveying

The exploratory hole locations have been recorded using a KQ GEO Technologies KQ-M8 System which records the coordinates and elevation of the locations to ITM as required by the project specification. The coordinates and elevations are provided on the exploratory hole logs in the appendices of this Report.

3.5. Laboratory Testing

Samples were selected from the exploratory holes for a range of geotechnical and environmental testing to assist in the classification of soils and to provide information for the proposed design.
Environmental & Chemical testing as required by the specification, including the organic matter, pH, chloride and sulphate testing was carried out by Element Materials Technology Laboratory in the UK.
Geotechnical testing consisting of moisture content, Atterberg limits, Particle Size Distribution (PSD), Particle density, hydrometer, California Bearing Ratio (CBR), Moisture Condition Value (MCV) and 2.5kg Vibrating Rammer Compaction tests were carried out in NMTL's Geotechnical Laboratory in Carlow. Specialist shear strength testing consisting one dimensional and consolidation testing.
The results of the laboratory testing are included in Appendix 5 of this Report.

4.0 Ground Conditions

4.1. General

The ground conditions encountered during the investigation are summarised below with reference to insitu and laboratory test results. The full details of the strata encountered during the ground investigation are provided in the exploratory hole logs included in the appendices of this report.

The sequence of strata encountered were variable across the site and generally comprised;

- Topsoil
- Peat
- Made Ground
- Granular Deposits
- Cohesive Deposits

TOPSOIL: Topsoil was encountered in some exploratory holes and was present to a maximum depth of 0.3m BGL. Peat was also present from ground level in the majority of exploration locations.

MADE GROUND: Made Ground deposits were encountered beneath the surface PEAT at locations TP-BP08 and TP-GRTP02 and were present to depths of between 0.80m and 1.70m BGL. These deposits were described generally as *brown slightly sandy slightly gravelly pseudo-fibrous PEAT* or *Grey* or *light brown slightly silty slightly gravelly fine to coarse SAND with frequent cobbles.*

PEAT: Peat deposits were encountered from ground level or beneath Topsoil and Made Ground deposits and were described typically as *brown or dark brown slightly sandy slightly gravelly pseudo-fibrous PEAT with rootlets and an organic odour*. The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present

COHESIVE DEPOSITS: Cohesive deposits were encountered beneath the Peat and Made Ground and were described typically as *brown or grey brown slightly sandy gravelly SILT occasional cobbles and boulders*. The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present in the cohesive till matrix. The strength of the cohesive deposits typically soft occasionally becoming firm with depth. These deposits had some, occasional or frequent cobble and boulder content where noted on the exploratory hole logs.

GRANULAR DEPOSITS: Granular deposits were encountered beneath Peat and cohesive deposits and were typically described as G*rey brown or light brown slightly silty gravelly fine to medium SAND with some cobbles and boulders.* The secondary sand/gravel and silt/clay constituents varied across the site and with depth while occasional or frequent cobble and boulder content also present where noted on the exploratory hole logs.

4.2. Groundwater

Groundwater strikes are noted on the exploratory hole logs where they occurred and where possible excavations was suspended for twenty minutes to allow the subsequent rise in groundwater to be recorded. We would point out that these exploratory holes did not remain open for sufficiently long periods of time to establish the hydrogeological regime and groundwater levels would be expected to vary with the tide, time of year, rainfall, nearby construction and other factors.

4.3. Laboratory Testing

4.3.1. Geotechnical Laboratory Testing

The geotechnical testing carried out on soil samples recovered generally confirm the descriptions on the logs with the primary constituent of the cohesive deposits found to be a CLAY of low to intermediate plasticity. The Particle Size Distribution tests confirm that generally the cohesive deposits are gap-graded with percentages of sands and gravels ranging between 0.40% and 53.8% generally with fines contents of 21.1% to 97.7%.

The Particle Size Distribution tests confirm that generally the granular deposits are well-graded or gap graded with percentages of sands/gravels and silt/clay typically between 6.2% and 27.9% with a gravel/sand content of typically 1.0% to 82.5%.

The CBR testing on remoulded samples gave results ranging between 0.33% and 104.52% for the cohesive deposits.

The MCV test results ranged from 2.0 to 11.4. A typical value for acceptability for this material is a value of 7 or greater.

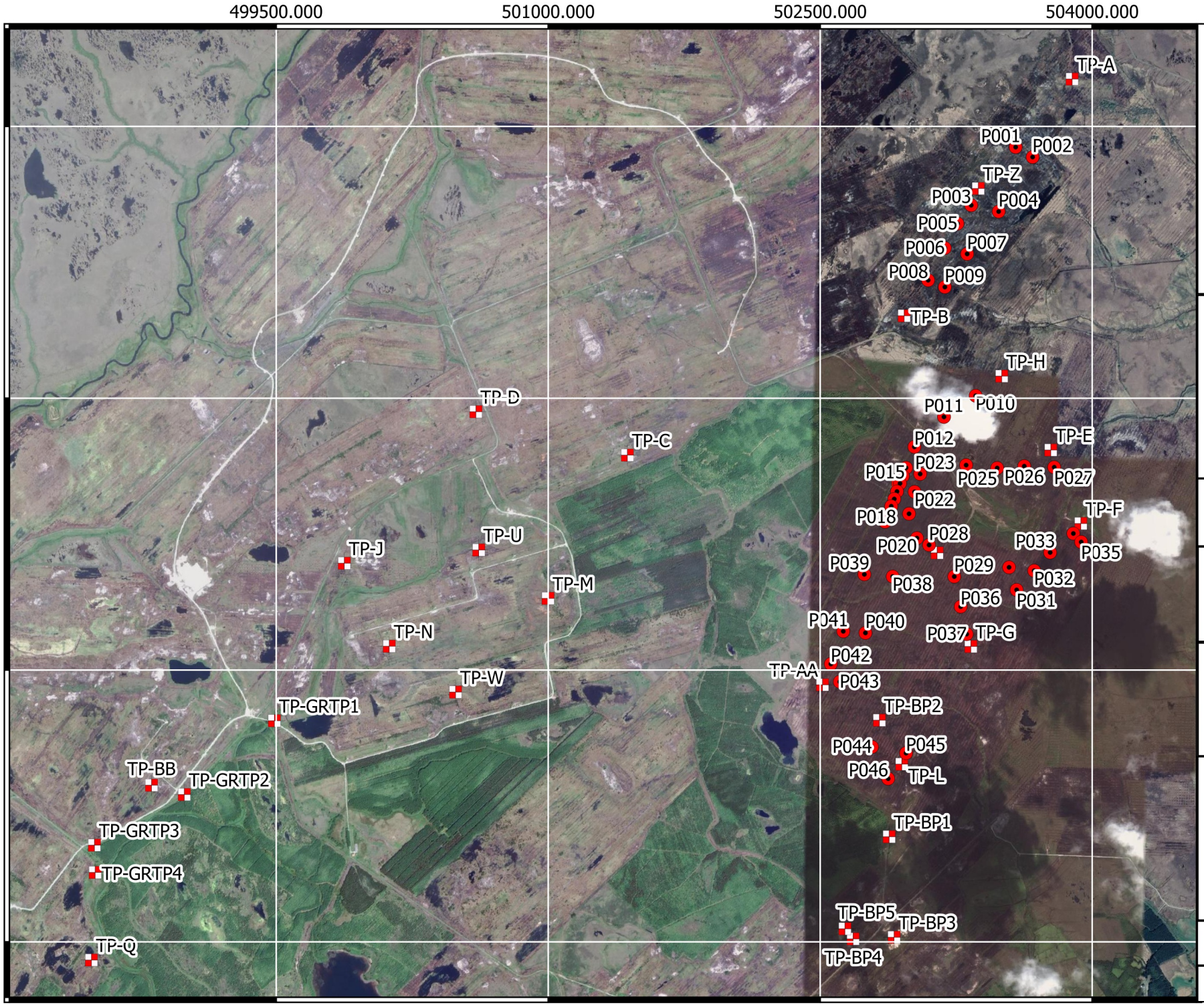
4.3.2. Chemical Laboratory Testing

The pH and sulphate testing carried out at TP-BP10 indicate that pH results are near neutral and that the water soluble sulphate results is low when compared to the guideline values from BRE Special Digest 1:2005. The samples tested classify the soil as a Design Sulphate Level DS-1.

The pH and sulphate testing carried out at TP-J indicate that pH results are near neutral and that the water soluble sulphate results is elevated when compared to the guideline values from BRE Special Digest 1:2005. The samples tested classify the soil as a Design Sulphate Level DS-2.

The results from the laboratory testing is included in Appendix 5 of this report.

APPENDIX 1 - Site Location Plan



Client:

TOBIN

Project Code:

10467-03-21

Project Title:

Oweninny Wind Farm

Drawing Title:

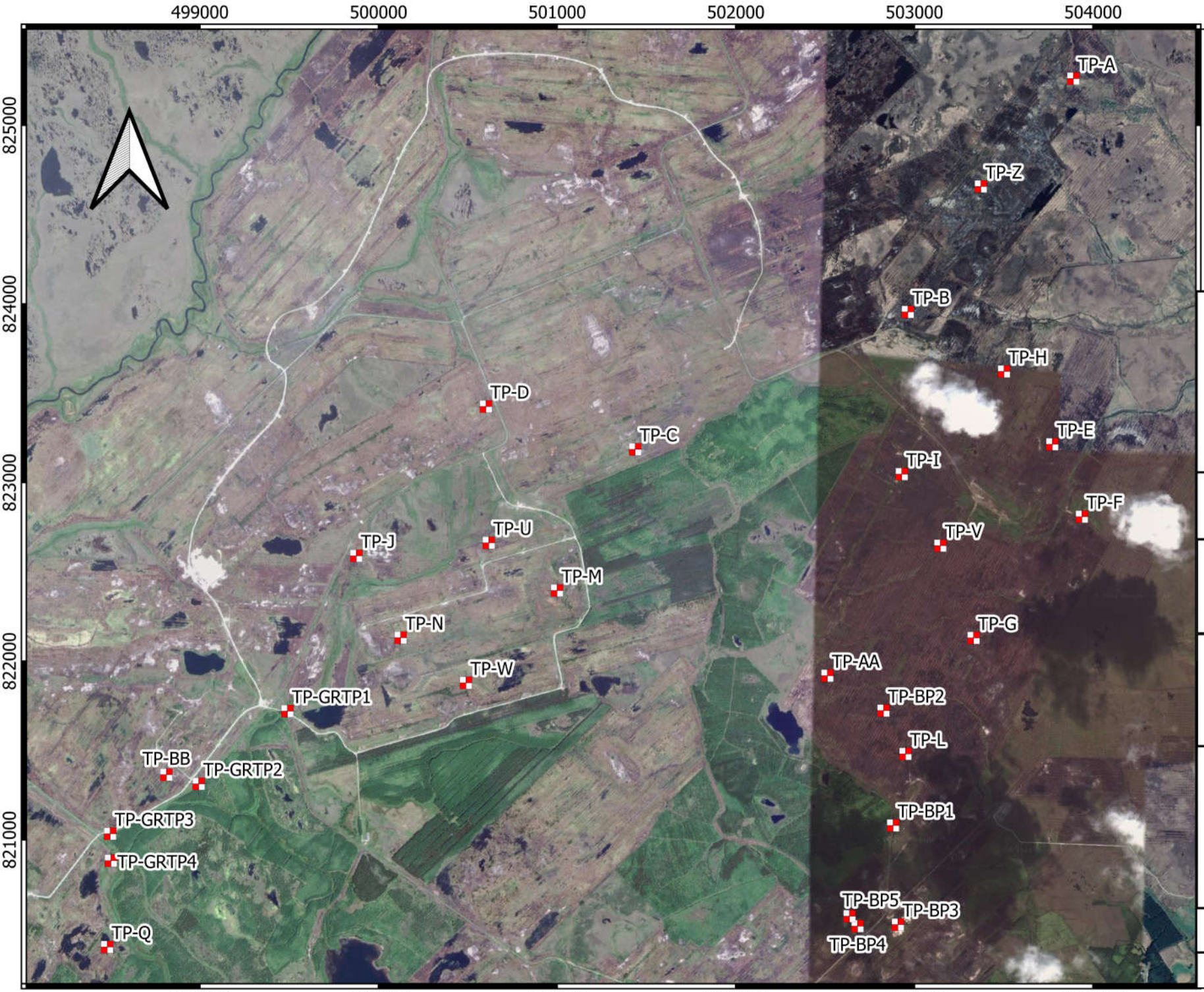
Overview of Trial Pit and Peat Probe Locations

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

Ground Investigations Ireland Ltd.
Catherinstown House,
Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176

0 500 1,000 m

Drawn By:	Date:
JS	03/06/2021



Trial Pit

Client:

TOBIN

Project Code:
10467-03-21

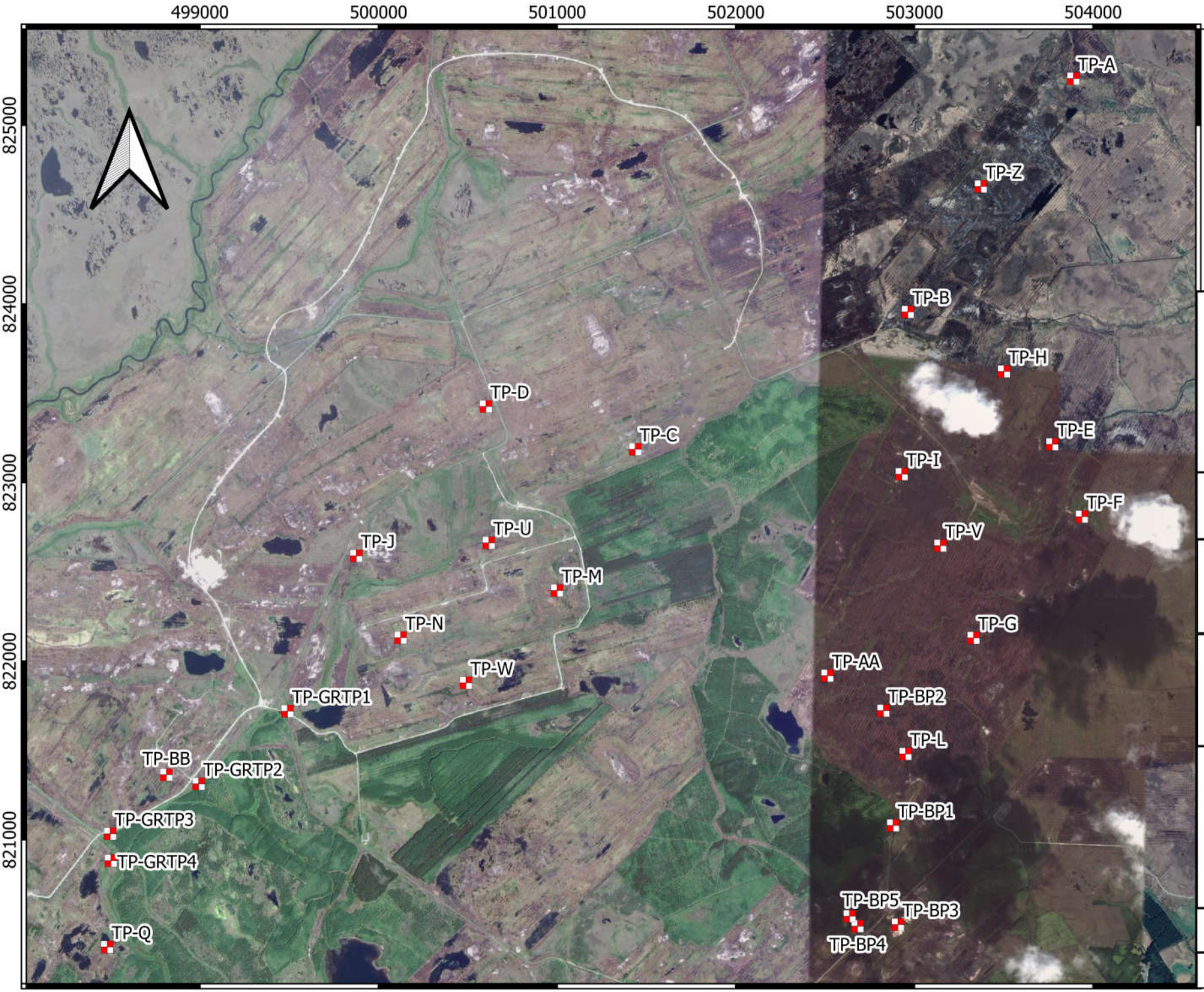
Project Title:
Oweninny Wind Farm

Drawing Title:
Figure 1 - Site Location Plan

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental
Ground Investigations Ireland Ltd.
Catherinstown House,
Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176

0 250 500 750 1,000 m

Drawn By:	Date:
JMD	25/03/2022



Trial Pit

Client:

TOBIN

Project Code:
10467-03-21

Project Title:
Oweninny Wind Farm

Drawing Title:
Figure 1 - Site Location Plan

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental
Ground Investigations Ireland Ltd.
Catherinstown House,
Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176

0 250 500 750 1,000 m

Drawn By:	Date:
JMD	25/03/2022

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

Ground Investigations Ireland Ltd.
Catherinstown House,
Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176

Client:

TOBIN

Project Title:
Oweninny Wind Farm

Drawing Title:
Figure 1 of 3 Peat Probe Locations

GII Project Reference:
10467-03-21

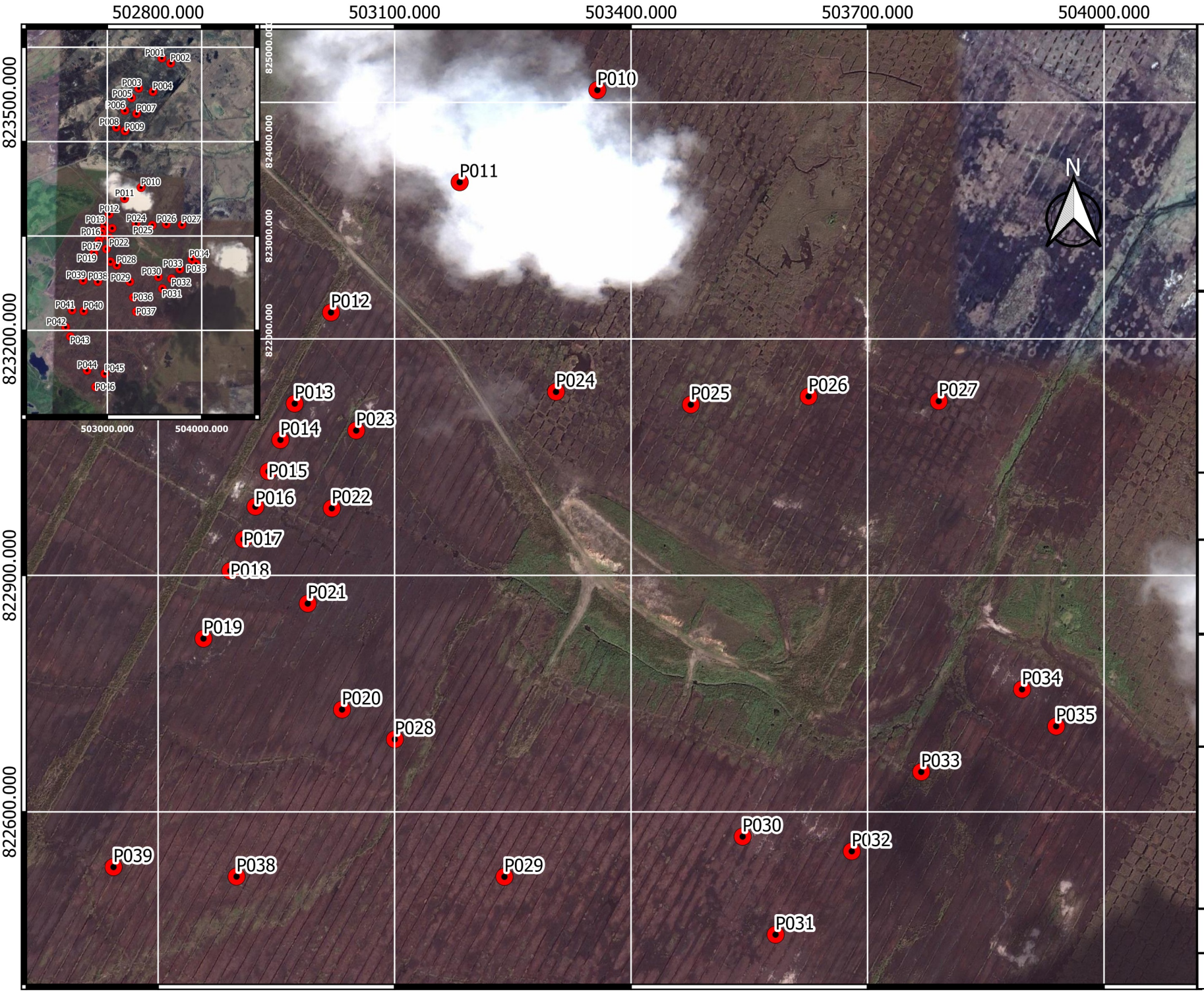
Drawn By:
JS

Date:
03/06/2021

Site Location

Indicative Site Boundary

0 50 100 m



Client:

TOBIN

Project Code:

10467-03-21

Project Title:

Oweninny Wind Farm

Drawing Title:

Figure 2 of 3 Peat Probe Locations

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

Ground Investigations Ireland Ltd.
Catherinstown House,
Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176

0 100 200 m

Drawn By:	Date:
JS	03/06/2021

GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

Ground Investigations Ireland Ltd.
Catherinstown House,
Hazelhatch Road,
Newcastle, Co. Dublin
www.gii.ie 01-6015175/5176

Client:

TOBIN

Project Title:
Oweninny Wind Farm

Drawing Title:
Figure 3 of 3 Peat Probe Locations

GII Project Reference:
10467-03-21

Drawn By:
JS

Date:
03/06/2021

Site Location

Indicative Site Boundary

0 50 100 m

APPENDIX 2 – Trial Pit Records

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-A
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 3.00m x 1.10m x 3.00m (L x W x D)	**Ground Level (mOD)**	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 503889.1 E 825255.5 N	**Dates** 26/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30	I 17.33kPa		18,18,16/Av. 17.33		(0.40)	Soft dark brown slightly sandy slightly gravelly pseudo fibrous PEAT with an organic odour. Gravel is subangular to subrounded fine to coarse		
0.30	R 10.33kPa		10,11,10/Av. 10.33		0.40			
0.50	T				(0.80)	Firm brownish grey sandy gravelly SILT with some laminations. Gravel is subangular to subrounded fine to coarse		
1.00	B				1.20			
					(0.80)	Stiff grey sandy gravelly SILT with occasional subrounded to rounded cobbles and some subrounded to rounded boulders. Gravel is subangular to rounded fine to coarse		
2.00	B		medium seepage(1) at 2.00m.		2.00			▽1
			fast seepage(2) at 2.60m.		(1.00)	Grey sandy gravelly SILT with occasional subangular to rounded cobbles and rare subrounded boulders. High groundwater content		▽2
3.00	B				3.00	Complete at 3.00m		

Plan

Remarks

Groundwater encountered at 2.00m (medium seepage). Fast seepage at 2.60m
Side walls collapsing
Shear vane attempted at 0.30m BGL
Trial pit terminated at 3.00m side walls stability
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-A

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-AA
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.90m x 1.10m x 4.30m (L x W x D)	**Ground Level (mOD)** 103.35	**Client** Tobin	**Job Number** 10467-03-21
	Location 502519.8 E 821919.6 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Soft dark brown slightly sandy slightly gravelly Peat TOPSOIL. Gravel is subangular to subrounded fine to coarse		
				103.15	0.20			
						Soft brown slightly sandy slightly gravelly fibrous PEAT with an organic odour and tree trunk fragments. Gravel is subangular to subrounded fine to medium		
0.50	I 16.67kPa		16,16,18/Av. 16.67					
0.50	T							
0.50	R 14.67kPa		14,14,16/Av. 14.67					
1.00	I 20.67kPa		16,26,20/Av. 20.67					
1.00	T							
1.00	R 17.67kPa		15,22,16/Av. 17.67					
					(2.50)			
2.00	T							
			slow seepage(1) at 2.70m.	100.65	2.70	Greyish brown silty gravelly fine to medium SAND with some subrounded cobbles. Gravel is angular to subrounded fine to coarse		▽1
3.00	B							
					(1.10)			
				99.55	3.80	Grey sandy gravelly SILT with some subrounded cobbles. Gravel is subangular to rounded fine to coarse. High groundwater content		
4.00	B							

Plan

Remarks

Groundwater encountered at 2.70m (slow seepage)
Side walls collapsing
Shear vane attempted at 0.50m and 1.00m
Trial pit terminated at 4.30m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-AA

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-AA
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.90m x 1.10m x 4.30m (L x W x D)	**Ground Level (mOD)** 103.35	**Client** Tobin	**Job Number** 10467-03-21
	Location 502519.8 E 821919.6 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 2/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.50)			
				99.05	4.30	Complete at 4.30m		

Plan

Remarks

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-AA

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-B
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 3.10m x 1.10m x 3.20m (L x W x D)	**Ground Level (mOD)** 99.39	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 502961.5 E 823948.4 N	**Dates** 26/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	I 27.33kPa		22,30,30/Av. 27.33			Soft slightly sandy slightly gravelly PEAT with a strong organic odour. Gravel is subangular to subrounded fine to coarse		
0.50	T							
0.50	R 23.33kPa		18,26,26/Av. 23.33					
					(1.80)			
1.00	I 39.33kPa		36,42,40/Av. 39.33					
1.00	T							
1.00	R 27.33kPa		26,28,28/Av. 27.33					
				97.59	1.80			
2.00	B					Firm brownish grey sandy gravelly SILT with some laminations and occasional subangular to rounded cobbles. Gravel is subangular to rounded fine to coarse.		▽1
			medium seepage(1) at 2.10m.		(0.70)			
				96.89	2.50			▽2
			fast seepage(2) at 2.50m.			Grey sandy gravelly SILT with some gravel lenses. Gravel is subangular to rounded fine to coarse. High groundwater content		
					(0.70)			
3.00	B							
				96.19	3.20			
						Complete at 3.20m		

Plan

Remarks

Groundwater encountered at 2.10m (medium seepage). Fast seepage at 2.50m
Side walls collapsing
Shear vane attempted at 0.50m and 1.00m
Trial pit terminated at 3.20m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-B

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-BB
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 3.20m x 1.10m x 2.80m (L x W x D)	**Ground Level (mOD)**	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 498811.5 E 821358.3 N	**Dates** 25/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.90)	Soft dark brown slightly sandy gravelly pseudo fibrous PEAT with rootlets and tree trunk fragments		
0.50	I 21.67kPa		27,20,18/Av. 21.67					
0.50	T							
0.50	R 14.00kPa		20,10,12/Av. 14.00					
0.90	T				0.90			
					(0.10)	Light brown slightly silty gravelly fine to medium SAND. Gravel is angular to subrounded fine to coarse		
1.00	B				1.00			
					(0.80)	Grey silty gravelly fine to medium SAND with some angular to subrounded cobbles. Gravel is angular to subrounded fine to coarse		
1.50	B							
			fast seepage(1) at 1.80m.		1.80	Firm grey slightly sandy slightly gravelly SILT with some laminations. Gravel is angular to subrounded fine to coarse		▽1
2.00	B				(1.00)			
					2.80	Complete at 2.80m		

Plan

Remarks

Groundwater encountered at 1.80m BGL (fast seepage)
Side walls collapsing
Shear vane attempted at 0.50m BGL
Trial pit terminated at 2.80m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-BB

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-BP01
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 3.20m x 1.10m x 2.80m (L x W x D)	**Ground Level (mOD)** 102.72	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 502863.1 E 821000.2 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Soft brown sandy gravelly Clay TOPSOIL with grass and rootlets. Gravel is subangular to subrounded fine to coarse		
				102.52	0.20			
0.50	B					Light whitish brown slightly silty gravelly fine to medium SAND with occasional angular to subangular cobbles and occasional angular to subangular boulders. Gravel is angular to subrounded fine to coarse		
1.00	B							
					(2.60)			
2.00	B							
				99.92	2.80	Complete at 2.80m		

Plan

Remarks

No groundwater encountered
Side walls spalling at 0.40m
Trial pit terminated at 2.80m due to large boulders
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-BP01

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-BP02
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.60m x 1.10m x 2.55m (L x W x D)	**Ground Level (mOD)** 101.22	**Client** Tobin	**Job Number** 10467-03-21
	Location 502740.2 E 821749 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			low flow(1) at 0.00m.			Soft brown slightly sandy slightly gravelly fibrous PEAT with an organic odour and some tree trunk fragments. Gravel is subangular to subrounded fine to medium		▽1
0.50	I 9.67kPa		10,9,10/Av. 9.67					
0.50	T							
0.50	R 7.00kPa		9,4,8/Av. 7.00					
1.00	T				(2.50)			
2.00	T							
			medium seepage(2) at 2.20m.					▽2
				98.72	2.50	Light brown silty gravelly fine to medium SAND. Gravel is subangular to subrounded fine to coarse		
				98.67	2.55	Complete at 2.55m		

Plan

Remarks

Surface water encountered (low flow). Groundwater encountered at 2.20m (medium seepage)
Side walls collapsing
Shear vane attempted at 0.50m
Trial pit terminated at 2.55m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-BP02

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-BP03
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.50m x 1.10m x 3.40m (L x W x D)	**Ground Level (mOD)** 89.54	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 502907 E 820519 N	**Dates** 28/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				89.44	(0.10) 0.10	Whitish brown gravelly fine to medium Sand TOPSOIL with grass		
0.50	B		medium seepage(1) at 1.10m.			Whitish brown slightly silty gravelly fine to medium SAND with occasional subrounded cobbles. Gravel is subangular to subrounded fine to coarse		▽1
					(1.20)			
1.30	B			88.24	1.30	Dark grey slightly silty gravelly fine to medium SAND with occasional subrounded cobbles. Gravel is subangular to rounded fine to coarse		
					(0.40)			
				87.84	1.70	Grey slightly silty gravelly fine to medium SAND with occasional subrounded cobbles and rare subangular to subrounded boulders. Gravel is subangular to rounded fine to coarse		
2.00	B							
					(1.10)			
				86.74	2.80	Firm to stiff sandy gravelly SILT? with occasional subrounded cobbles and some subangular to subrounded boulders. Gravel is subangular to rounded fine to coarse		
3.00	B							
					(0.60)			
				86.14	3.40	Complete at 3.40m		

Plan

Remarks

Groundwater encountered at 1.10m (medium seepage)
Side walls collapsing
Trial pit terminated at 3.40m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-BP03

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-BP04
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.60m x 1.10m x 3.20m (L x W x D)	**Ground Level (mOD)** 90.44	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 502681 E 820510 N	**Dates** 28/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.70)	Light greyish brown slightly silty gravelly fine to medium SAND with occasional subrounded cobbles. Gravel is subangular to rounded fine to coarse		
0.50	B			89.74	0.70			
					(0.80)	Grey gravelly fine to medium SAND with occasional subrounded cobbles and some subrounded boulders. Gravel is subangular to rounded fine to coarse		
1.00	B			88.94	1.50			
					(0.30)	Grey slightly silty gravelly fine to medium SAND with occasional subrounded cobbles and some subrounded boulders. Gravel is subangular to rounded fine to coarse		
				88.64	1.80			
2.00	B					Soft grey sandy gravelly SILT with occasional subrounded cobbles and some subrounded to rounded boulders. Gravel is subangular to rounded fine to coarse		
					(1.40)			
3.00	B		fast seepage(1) at 2.90m.					▽1
				87.24	3.20			
						Complete at 3.20m		

Plan

Remarks

Groundwater encountered at 2.90m (fast seepage)
Side walls collapsing
Trial pit terminated at 3.20m due to collapsing
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-BP04

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-BP05
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.70m x 1.10m x 2.50m (L x W x D)	**Ground Level (mOD)** 94.02	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 502634.3 E 820567.3 N	**Dates** 28/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	B				(1.70)	Greyish brown slightly silty slightly gravelly slightly peaty fine to medium SAND. Gravel is subangular to subrounded fine to coarse		
1.00	B							
			fast seepage(1) at 1.70m.	92.32	1.70	Grey sandy gravelly SILT. Gravel is subangular to subrounded fine to coarse. High groundwater content		▽1
2.00	B				(0.80)			
				91.52	2.50	Complete at 2.50m		

Plan

Remarks

Groundwater encountered at 1.70m (fast seepage)
Side walls collapsing
Trial pit terminated at 2.50m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-BP05

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-BP06
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.00m x 1.10m x 0.60m (L x W x D)	**Ground Level (mOD)** 100.19	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 503326.5 E 822960.8 N	**Dates** 27/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.60	B				(0.60)	Greyish light brown slightly silty gravelly fine to medium SAND with some subangular cobbles. Gravel is subangular to rounded fine to coarse		
				99.59	0.60	Complete at 0.60m		

Plan

Remarks

No groundwater encountered
Side walls stable
Trial pit terminated at scheduled depth
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-BP06

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-BP07
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.10m x 1.10m x 1.10m (L x W x D)	**Ground Level (mOD)** 100.01	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 503377.1 E 822896.1 N	**Dates** 27/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10-1.10	B			99.91	(0.10) 0.10	Soft dark brown slightly sandy slightly gravelly PEAT. Gravel is subangular to subrounded fine to medium		
					(1.00)	Greyish brown slightly silty gravelly fine to medium SAND with some subrounded cobbles. Gravel is subangular to rounded fine to coarse		
				98.91	1.10	Complete at 1.10m		

Plan

Remarks

No groundwater encountered
Side walls stable
Trial pit terminated at scheduled depth
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-BP07

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-BP08
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 4.00m x 1.10m x 4.40m (L x W x D)	**Ground Level (mOD)** 94.25	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 500860.9 E 822877.1 N	**Dates** 26/05/2021	**Engineer**	**Sheet** 1/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				94.15	(0.10) 0.10	Soft dark brown slightly sandy slightly gravelly PEAT with grass and rootlets.		
0.50	B				(0.70)	MADE GROUND: Grey slightly silty gravelly fine to medium Sand with occasional subrounded cobbles. Gravel is angular to subrounded fine to coarse		
0.90 0.90 1.00	I 30.67kPa R 23.33kPa T		34,28,30/Av. 30.67 30,20,20/Av. 23.33	93.45	0.80	Soft brown slightly sandy slightly gravelly fibrous PEAT with tree trunk fragments. Gravel is subangular to subrounded fine to coarse		
1.50 1.50	I 25.33kPa R 19.33kPa		25,25,26/Av. 25.33 20,18,20/Av. 19.33		(1.10)			
2.00	B			92.35	1.90	Greyish light brown slightly silty gravelly fine to medium SAND with occasional subrounded cobbles and rare subrounded boulders. Gravel is subangular to rounded fine to coarse		
3.00	B				(2.50)			
4.00	B							

Plan

Remarks

Groundwater encountered at 4.00m (medium seepage)
Side walls collapsing
Shear vane attempted at 0.90m and 1.50m
Trial pit terminated at 4.40m due to side wall stability
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-BP08

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-BP08
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 4.00m x 1.10m x 4.40m (L x W x D)	**Ground Level (mOD)** 94.25	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 500860.9 E 822877.1 N	**Dates** 26/05/2021	**Engineer**	**Sheet** 2/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			medium seepage(1) at 4.00m.					▽1
				89.85	4.40	Complete at 4.40m		

Plan

Remarks

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-BP08

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-BP09
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.90m x 1.10m x 2.60m (L x W x D)	**Ground Level (mOD)** 94.96	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 500663 E 823468.3 N	**Dates** 26/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.80)	Soft brown slightly sandy slightly gravelly fibrous PEAT with an organic odour. Gravel is subangular to subrounded fine to coarse		
0.50	I 20.33kPa		20,18,23/Av. 20.33					
0.50	T							
0.50	R 14.00kPa		12,12,18/Av. 14.00					
				94.16	0.80			
					(0.30)	Greyish brown slightly silty gravelly fine to medium SAND with occasional subrounded to rounded cobbles. Gravel is subangular to subrounded fine to coarse		
1.00	B			93.86	1.10			
					(1.50)	Grey slightly silty gravelly fine to medium SAND with occasional subangular to rounded cobbles and rare subrounded boulders. Gravel is subangular to rounded fine to coarse. High groundwater content		
2.00	B		fast seepage(1) at 2.00m.					▽1
				92.36	2.60	Complete at 2.60m		

Plan

Remarks

Groundwater encountered at 2.00m (fast seepage)
Side walls collapsing
Shear vane attempted at 0.50m
Trial pit terminated at 2.60m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-BP09

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-BP10
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 3.10m x 1.10m x 4.20m (L x W x D)	**Ground Level (mOD)** 109.02	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 503434.7 E 822909.3 N	**Dates** 27/05/2021	**Engineer**	**Sheet** 1/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Soft dark brown slightly sandy slightly gravelly PEAT with grass. Gravel is subangular to rounded fine to coarse		
				108.82	0.20			
0.50	B				(0.90)	Orangey light brown slightly silty gravelly fine to medium SAND with occasional subangular to rounded cobbles. Gravel is subangular to rounded fine to coarse		
1.00	B			107.92	1.10			
2.00	B				(3.10)	Light whitish brown slightly gravelly fine to medium SAND with occasional subrounded cobbles. Gravel is subangular to rounded fine to coarse		
3.00	B							
4.00	B							

Plan

Remarks

No groundwater encountered
Side walls collapsing
Trial pit terminated at 4.20m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-BP10

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-BP10
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 3.10m x 1.10m x 4.20m (L x W x D)	**Ground Level (mOD)** 109.02	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 503434.7 E 822909.3 N	**Dates** 27/05/2021	**Engineer**	**Sheet** 2/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				104.82	4.20	Complete at 4.20m		

Plan

Remarks

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-BP10

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-BP11
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 3.30m x 1.10m x 3.10m (L x W x D)	**Ground Level (mOD)** 102.22	**Client** Tobin	**Job Number** 10467-03-21
	Location 502646.2 E 821864.2 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				102.12	(0.10) 0.10	Soft dark brown slightly sandy slightly gravelly PEAT with grass. Gravel is subangular to subrounded fine to coarse		
						Soft brown slightly sandy slightly gravelly fibrous PEAT with an organic smell and tree trunk fragments. Gravel is subangular to subrounded fine to medium		
0.50	I 17.00kPa		15,20,16/Av. 17.00					
0.50	T							
0.50	R 11.00kPa		11,12,10/Av. 11.00					
1.00	I 22.00kPa		22,19,25/Av. 22.00					
1.00	T							
1.00	R 19.33kPa		19,16,23/Av. 19.33					
					(2.90)			
2.00	T							
				99.22	3.00			
					(0.10)	Light brown silty gravelly fine to medium SAND. Gravel is subangular to subrounded fine to coarse		
				99.12	3.10			
						Complete at 3.10m		

Plan

Remarks

No groundwater encountered
Side walls collapsing
Shear vane attempted at 0.50m and 1.00m
Trial pit terminated at 3.10m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-BP11

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-BP12
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 3.40m x 1.10m x 3.80m (L x W x D)	**Ground Level (mOD)** 101.01	**Client** Tobin	**Job Number** 10467-03-21
	Location 502862.9 E 821622.7 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	I 20.33kPa		22,20,19/Av. 20.33			Soft light brown slightly sandy slightly gravelly fibrous PEAT with a strong organic odour. Gravel is subangular to subrounded fine to medium		
0.50	T							
0.50	R 18.33kPa		19,18,18/Av. 18.33					
					(2.00)			
1.00	I 16.67kPa		16,16,18/Av. 16.67					
1.00	T							
1.00	R 11.33kPa		10,10,14/Av. 11.33					
			medium seepage(1) at 1.70m.					▽1
2.00	B			99.01	2.00	Brown silty gravelly fine to medium SAND. Gravel is subangular to subrounded fine to coarse		
					(0.20)			
				98.81	2.20	Firm grey sandy gravelly SILT with some laminations and rare subrounded cobbles. Gravel is subangular to subrounded fine to coarse		
					(0.60)			
				98.21	2.80	Grey slightly gravelly sandy SILT with some subrounded cobbles and rare subrounded boulders. Gravel is subangular to subrounded fine to coarse. High groundwater content		
3.00	B							
					(1.00)			
				97.21	3.80	Complete at 3.80m		

Plan

Remarks

Groundwater encountered at 1.70m
Side walls collapsing
Shear vane attempted at 0.50m and 1.00m
Trial pit terminated due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-BP12

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-C
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.90m x 1.10m x 3.00m (L x W x D)	**Ground Level (mOD)** 97.18	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 501435.7 E 823179.8 N	**Dates** 26/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			low flow(1) at 0.00m.		(0.20)	Soft dark brown slightly sandy slightly gravelly PEAT with grass and rootlets. Gravel is subangular to subrounded fine to medium		▽1
				96.98	0.20			
0.50	B				(0.90)	Soft grey sandy gravelly SILT with occasional subrounded cobbles. Gravel is angular to subrounded fine to coarse		
1.00	B			96.08	1.10			
						Firm grey sandy gravelly SILT with occasional angular to subrounded cobbles and some subangular to rounded boulders. Gravel is angular to subrounded fine to coarse		
2.00	B		slow seepage(2) at 2.00m.		(1.90)			▽2
				94.18	3.00			
3.00	B					Complete at 3.00m		

Plan

Remarks

Groundwater encountered at 2.00m (slow seepage). Surface water encountered (low flow)
Side walls collapsing
Trial pit terminated at 3.00m due to large boulders
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-C

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-D
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 3.00m x 1.10m x 2.50m (L x W x D)	**Ground Level (mOD)** 94.78	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 500617 E 823431.3 N	**Dates** 26/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				94.68	(0.10) 0.10	Soft dark brown slightly sandy slightly gravelly PEAT with grass and rootlets. Gravel is subangular to subrounded fine to coarse.		
0.50 0.50 0.50	I 20.00kPa T R 16.00kPa		22,20,18/Av. 20.00 16,16,16/Av. 16.00		(0.80)	Soft brown slightly sandy slightly gravelly PEAT with a strong organic odour. Gravel is subangular to subrounded fine to coarse		
1.00	B			93.88	0.90 (0.40)	Greyish light brown slightly silty gravelly fine to medium SAND with occasional subrounded cobbles. Gravel is subangular to rounded fine to coarse		
2.00	B		very fast seepage(1) at 1.90m.	93.48	1.30 (1.20)	Grey silty gravelly fine to medium SAND with occasional subangular to rounded cobbles. Gravel is subangular to rounded fine to coarse		▽1
				92.28	2.50	Complete at 2.50m		

Plan

Remarks

Groundwater encountered at 1.90m (very fast seepage)
Side walls collapsing
Shear vane attempted 0.50m
Trial pit terminated at 2.50m due to side wall stability
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-D

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-E
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 3.80m x 1.10m x 3.20m (L x W x D)	**Ground Level (mOD)**	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 503771.4 E 823208.1 N	**Dates** 27/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						Soft brown slightly sandy slightly gravelly fibrous PEAT. Gravel is subangular to subrounded fine to medium		
0.50	I 20.33kPa		20,21,20/Av. 20.33					
0.50	T							
0.50	R 19.33kPa		19,20,19/Av. 19.33					
					(1.60)			
1.00	I 22.00kPa		22,24,20/Av. 22.00					
1.00	T							
1.00	R 11.33kPa		12,12,10/Av. 11.33					
			fast seepage(1) at 1.60m.		1.60	Soft grey sandy slightly gravelly SILT with some subrounded cobbles. Gravel is subangular to subrounded fine to coarse		▽1
2.00	B				(0.90)			
					2.50	Blueish grey sandy gravelly SILT with occasional subrounded cobbles. Gravel is subangular to subrounded fine to coarse. High groundwater content		
					(0.70)			
3.00	B							
					3.20	Complete at 3.20m		

Plan

Remarks

Groundwater encountered at 1.60m (fast seepage)
Side walls collapsing
Shear vane attempted at 0.50m and 1.00m
Trial pit terminated at 3.20m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-E

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-F
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.80m x 1.10m x 3.80m (L x W x D)	**Ground Level (mOD)** 93.54	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 503936.9 E 822803.6 N	**Dates** 27/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.60)	Soft dark brown slightly sandy slightly gravelly pseudo fibrous PEAT. Gravel is subangular to subrounded fine to medium		
0.50	I 36.00kPa		36,34,38/Av. 36.00	92.94	0.60			
0.50	T					Soft grey sandy slightly gravelly SILT. Gravel is subangular to rounded fine to medium		
0.50	R 25.00kPa		22,21,32/Av. 25.00		(0.30)			
				92.64	0.90			
1.00	B					Orangey light brown slightly silty gravelly fine to medium SAND with some subrounded cobbles		
					(0.60)			
				92.04	1.50			
2.00	B					Light whitish brown slightly gravelly slightly silty fine to medium SAND with some subrounded cobbles. Gravel is subangular to rounded fine to coarse		
					(2.30)			
3.00	B							
				89.74	3.80	Complete at 3.80m		

Plan

Remarks

No groundwater encountered
Side walls collapsing
Shear vane attempted at 0.50m
Trial pit terminated at 3.80m due collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-F

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-G
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.70m x 1.10m x 2.20m (L x W x D)	**Ground Level (mOD)** 100.19	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 503330 E 822123.1 N	**Dates** 27/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Soft dark brown slightly sandy slightly gravelly pseudo fibrous PEAT		
				99.79	0.40			
0.50	B				(0.20)	Firm greyish brown sandy gravelly SILT with occasional subangular to rounded cobbles. Gravel is subangular to subrounded fine to coarse		
				99.59	0.60			
1.00	B				(1.20)	Soft grey sandy slightly gravelly SILT with occasional subrounded cobbles. Gravel is subangular to rounded fie to coarse		
			medium seepage(1) at 1.80m.	98.39	1.80			▽1
2.00	B				(0.40)	Grey with blue lenses sandy gravelly SILT with occasional subrounded cobbles. Gravel is subangular to rounded fine to coarse. High groundwater content		
				97.99	2.20	Complete at 2.20m		

Plan

Remarks

Groundwater encountered 1.80m (medium seepage)
Side walls collapsing
Trial pit terminated at 2.20m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-G

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-GRTP01
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.30m x 1.10m x 2.30m (L x W x D)	**Ground Level (mOD)** 79.44	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 499478.5 E 821733.4 N	**Dates** 25/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Soft slightly sandy slightly gravelly PEAT with grass and rootlets. Gravel is subangular to subrounded fine to coarse		
				79.24	0.20			
0.50	I 25.33kPa		24,24,28/Av. 25.33			Soft orangey brown slightly sandy slightly gravelly slightly clayey pseudo fibrous PEAT. Gravel is subangular to subrounded fine to medium		
0.50	T				(0.60)			
0.50	R 14.67kPa		10,16,18/Av. 14.67					
				78.64	0.80			
1.00	T					Soft dark brownish black slightly sandy slightly gravelly slightly clayey fibrous PEAT with an organic odour. Gravel is angular to subrounded fine to medium		
					(0.60)			
				78.04	1.40			
						Firm grey slightly sandy slightly gravelly SILT with some organic matter and sand lenses. Gravel is angular to subrounded fine to coarse		
					(0.90)			
2.00	B							
				77.14	2.30			
						Complete at 2.30m		

Plan

Remarks

No groundwater encountered
Side walls stable
Shear vane attempted at 0.50m BGL
Trial pit terminated at scheduled depth
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-GRTP02
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.70m x 1.10m x 2.10m (L x W x D)	**Ground Level (mOD)** 80.65	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 498999.6 E 821310.2 N	**Dates** 25/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			low(1) at 0.00m.			MADE GROUND: Soft dark brown slightly sandy slightly gravelly pseudo fibrous PEAT with an organic odour. Gravel is angular to subrounded fine to medium		▽1
					(0.80)			
0.50	I 36.00kPa		40,38,30/Av. 36.00					
0.50	T							
0.50	R 29.00kPa		28,32,27/Av. 29.00					
				79.85	0.80	MADE GROUND: Light brown silty gravelly fine to medium Sand with some subangular cobbles. Gravel is angular to subrounded fine to medium		
1.00	B							
					(0.90)			
				78.95	1.70	Soft grey slightly sandy gravelly SILT with some sand lenses. Gravel is angular to subrounded fine to coarse		
			medium seepage(2) at 1.90m.		(0.40)			▽2
2.00	B							
				78.55	2.10	Complete at 2.10m		

Plan

Remarks

Groundwater encountered at 1.90m BGL (medium seepage). Surface water encountered (low flow)
Side walls stable
Shear vane attempted at 0.50m BGL
Trial pit terminated at scheduled depth
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-GRTP03
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.50m x 1.10m x 2.20m (L x W x D)	**Ground Level (mOD)** 79.62	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 498501.4 E 821019.9 N	**Dates** 25/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			medium flow(1) at 0.00m.	79.52	(0.10) 0.10	Soft dark brown slightly sandy slightly gravelly fibrous PEAT with moss. Gravel is subangular to subrounded fine to coarse		▽1
					(0.40)	Soft dark brown slightly sandy slightly gravelly pseudo fibrous PEAT. Gravel is subangular to subrounded fine to coarse		
0.50 0.50 0.50	I 22.67kPa T R 16.67kPa		24,22,22/Av. 22.67 18,18,14/Av. 16.67	79.12	0.50	Soft brown slightly sandy slightly gravelly PEAT with rootlets. Gravel is subangular to subrounded fine to coarse		
1.00 1.00 1.00	I 20.67kPa T R 14.67kPa		20,20,22/Av. 20.67 16,16,12/Av. 14.67		(1.70)			
2.00 2.00 2.00	I 22.00kPa T R 12.00kPa		21,23,22/Av. 22.00 10,14,12/Av. 12.00	77.42	2.20	Complete at 2.20m		

Plan

Remarks

Surface water encountered (medium flow)
Side walls stable
Shear vane attempted at 0.50m,1.00m and 2.00m BGL
Trial pit terminated at scheduled depth
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-GRTP04
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.70m x 1.10m x 2.30m (L x W x D)	**Ground Level (mOD)** 78.58	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 498493.7 E 820865.8 N	**Dates** 25/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			Low(1) at 0.00m.		(0.60)	Soft dark brown slightly sandy slightly gravelly fibrous PEAT with a strong organic odour. Gravel is subangular to subrounded fine to medium		▽1
0.50 0.50 0.50	I 14.50kPa T R 13.33kPa		18,20,20,/Av. 14.50 14,14,12/Av. 13.33	77.98	0.60	Soft brown slightly sandy slightly gravelly fibrous PEAT with a strong organic odour and rootlets. Gravel is subangular to subrounded fine to medium		
1.00 1.00 1.00	I 15.00kPa T R 8.67kPa		17,14,14/Av. 15.00 8,8,10/Av. 8.67		(1.70)			
2.00 2.00 2.00	I 15.00kPa T R 5.67kPa		16,14,15/Av. 15.00 6,6,5/Av. 5.67	76.28	2.30	Complete at 2.30m		

Plan

Remarks

Surface water encountered (low seepage)
Side walls stable
Shear vane attempted at 0.50m, 1.00m and 2.00m BGL
Trial pit terminated at scheduled depth
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-H
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.90m x 1.10m x 3.10m (L x W x D)	**Ground Level (mOD)** 91.60	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 503503.1 E 823617.9 N	**Dates** 26/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			medium flow(1) at 0.00m.			Soft brown slightly sandy slightly gravelly fibrous PEAT with a strong organic odour. Gravel is subangular to subrounded fine to medium		▽1
0.50	T							
1.00	T							
					(3.00)			
2.00	T							
				88.60	3.00			
					(0.10)	Soft greyish brown sandy gravelly SILT . Gravel is subangular to subrounded fine to medium		
				88.50	3.10			
						Complete at 3.10m		

Plan

Remarks

Surface water encountered (medium flow)
Side walls collapsing
Too unstable for shear vane
Trial pit terminated at 3.10m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-H

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-I
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 4.00m x 1.10m x 3.90m (L x W x D)	**Ground Level (mOD)** 100.68	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 502947.3 E 823040.1 N	**Dates** 27/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	T				(1.80)	Soft brown slightly sandy slightly gravelly fibrous PEAT with a strong organic odour. Gravel is subangular to subrounded fine to medium		
1.00	T							
				98.88	1.80			
2.00	B		fast seepage(1) at 2.20m.		(1.00)	Grey silty slightly gravelly fine to medium SAND. Gravel is subangular to subrounded fine to coarse		▽1
				97.88	2.80			
3.00	B				(1.10)	Soft bluish grey sandy gravelly SILT with occasional subrounded cobbles and rare subrounded boulders. Gravel is subangular to subrounded fine to coarse		
				96.78	3.90	Complete at 3.90m		

Plan

Remarks

Groundwater encountered at 2.20m (fast seepage)
Side walls collapsing
Side walls collapsed when attempting shear vane
Trial pit terminated at 3.90m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-I

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-J
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 3.40m x 1.10m x 3.20m (L x W x D)	**Ground Level (mOD)** 85.66	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 499867 E 822596.1 N	**Dates** 25/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						Soft dark brown slightly sandy slightly gravelly fibrous PEAT with a strong organic odour, rootlets and tree trunk fragments		
0.50	I 28.67kPa		30,28,28/Av. 28.67					
0.50	T							
0.50	R 25.33kPa		26,26,24/Av. 25.33					
					(1.90)			
1.00	I 23.67kPa		24,24,23/Av. 23.67					
1.00	B							
1.00	R 20.00kPa		20,20,20/Av. 20.00					
			medium seepage(1) at 1.90m.	83.76	1.90			▽1
2.00	B					Firm grey very sandy slightly gravelly SILT with some subrounded cobbles. Gravel is subangular to subrounded fine to coarse		
					(1.30)			
				82.46	3.20	Complete at 3.20m		

Plan

Remarks

Groundwater encountered at 1.90m (medium seepage)
Side walls collapsing
Shear vane attempted at 0.50m and 1.00m
Trial pit terminated at 3.20m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-J

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-L
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 3.00m x 1.10m x 2.80m (L x W x D)	**Ground Level (mOD)** 100.49	**Client** Tobin	**Job Number** 10467-03-21
	Location 502967.7 E 821560.2 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.80)	Soft brown slightly sandy slightly gravelly pseudo fibrous PEAT. Gravel is subangular to subrounded fine to medium		
0.50	T			99.69	0.80			
					(0.30)	Soft light brown sandy gravelly SILT with rare cobbles. Gravel is subangular to subrounded fine to coarse		
1.00	B			99.39	1.10			
					(1.00)	Firm brownish grey sandy slightly gravelly SILT with some subrounded cobbles and some laminations. Gravel is subangular to subrounded fine to coarse		
2.00	B		medium seepage(1) at 2.00m.	98.39	2.10			▽1
					(0.70)	Grey sandy gravelly SILT with occasional subrounded cobbles and some black gravel lenses. Gravel is subangular to subrounded fine to coarse. High groundwater content		
				97.69	2.80			
						Complete at 2.80m		

Plan

Remarks

Groundwater encountered at 2.00m (medium seepage)
Side walls collapsing
No shear vane attempted (too dangerous)
Trial pit terminated at 2.80m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-L

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-M
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 3.00m x 1.10m x 2.90m (L x W x D)	**Ground Level (mOD)** 90.01	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 500998.5 E 822389.4 N	**Dates** 26/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				89.91	(0.10) 0.10	Soft dark brown slightly sandy slightly gravelly PEAT with grass and rootlets. Gravel is subangular to subrounded fine to coarse		
						Soft dark brown slightly sandy slightly gravelly fibrous PEAT with tree trunk fragments. Gravel is subangular to subrounded fine to coarse		
0.50 0.50 0.50	I 29.33kPa T R 23.00kPa		32,28,28/Av. 29.33 22,24,23/Av. 23.00		(0.80)			
0.90 0.90 1.00	I 23.33kPa R 10.33kPa T		24,22,24/Av. 23.33 10,10,11/Av. 10.33	89.11	0.90	Firm grey sandy gravelly SILT with occasional subrounded cobbles and rare subrounded boulders. Gravel is angular to subrounded fine to coarse		
2.00	B				(1.30)			
				87.81	2.20	Stiff grey sandy gravelly SILT with occasional subrounded cobbles and rare subrounded boulders. Gravel is angular to subrounded fine to coarse		
					(0.40)			
			very fast seepage(1) at 2.60m.	87.41	2.60	Grey sandy gravelly SILT with occasional subrounded cobbles and rare boulders. Gravel is angular to subrounded fine to coarse. High groundwater content		▽1
					(0.30)			
				87.11	2.90	Complete at 2.90m		

Plan

Remarks

Groundwater encountered at 2.60m (very fast seepage)
Side walls collapsing
Shear vane attempted at 0.50m and 0.90m
Trial pit terminated at 2.90m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-M

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-N
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.90m x 1.10m x 2.80m (L x W x D)	**Ground Level (mOD)** 83.53	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 500123.6 E 822106.9 N	**Dates** 25/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.80)	Soft dark brown slightly sandy slightly gravelly fibrous PEAT with rootlets. Gravel is subangular to subrounded fine to medium		
0.50	23.33kPa		22,24,24/Av. 23.33					
0.50	T							
0.50	16.67kPa		12,18,20/Av. 16.67					
				82.73	0.80			
					(0.10)	Soft brownish grey sandy gravelly SILT with occasional subangular to subrounded cobbles. Gravel is angular to subrounded fine to coarse		
			fast seepage(1) at 0.90m.	82.63	0.90			▽1
1.00	B					Grey sandy gravelly SILT with some organic matter and sand lenses. High groundwater content		
					(1.90)			
2.00	B							
				80.73	2.80	Complete at 2.80m		

Plan

Remarks

Groundwater encountered at 0.90m BGL (fast seepage)
Side walls collapsing
Shear vane attempted at 0.50m BGL
Trial pit terminated at 2.80m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-N

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-Q
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 3.40m x 1.10m x 2.70m (L x W x D)	**Ground Level (mOD)** 79.98	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 498443.3 E 820507.3 N	**Dates** 25/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Soft dark brown slightly sandy gravelly fibrous PEAT with an organic odour. Gravel is subangular to subrounded fine to coarse		
				79.78	0.20			
					(0.40)	Soft to firm light brown sandy slightly gravelly clayey SILT. Gravel is angular to subrounded fine to coarse		
0.50	B			79.38	0.60			
					(0.80)	Firm grey slightly sandy gravelly SILT with some laminations and some subangular cobbles. Gravel is angular to subrounded fine to coarse		
1.00	B			78.58	1.40			
					(1.30)	Grey sandy gravelly SILT with some subangular to subrounded cobbles. Gravel is angular to subrounded fine to coarse. High groundwater content		▽1
2.00	B		medium seepage(1) at 2.00m.					
				77.28	2.70	Complete at 2.70m		

Plan

Remarks

Groundwater encountered at 1.40m BGL (medium seepage)
Side walls collapsing
Trial pit terminated at 2.70m BGL due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-Q

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-U
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.50m x 1.10m x 2.60m (L x W x D)	**Ground Level (mOD)** 88.53	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 500617.1 E 822656 N	**Dates** 26/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.90)	Soft brown slightly sandy slightly gravelly fibrous PEAT with tree trunk fragments. Gravel is subangular to subrounded fine to coarse		
0.50	I 20.33kPa		20,21,20/Av. 20.33					
0.50	T							
0.50	R 17.33kPa		18,16,18/Av. 17.33					
				87.63	0.90			
0.90	I 36.67kPa		38,36,36/Av. 36.67			Soft grey sandy gravelly SILT with some laminations and occasional subrounded cobbles and rare subrounded boulders. Gravel is subangular to subrounded fine to coarse		
0.90	R 27.33kPa		26,28,28/Av. 27.33					
1.00	B				(0.30)			
			very fast seepage(1) at 1.20m.	87.33	1.20			▽1
						Grey sandy gravelly SILT with occasional subangular to subrounded cobbles. Gravel is angular to subrounded fine to coarse. High groundwater content		
					(1.40)			
2.00	B							
				85.93	2.60			
						Complete at 2.60m		

Plan

Remarks

Groundwater encountered at 1.20m (very fast seepage)
Side walls collapsing
Shear vane attempted at 0.50m and 0.90m
Trial pit terminated at 2.60m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-U

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-V
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.90m x 1.10m x 4.30m (L x W x D)	**Ground Level (mOD)** 98.75	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 503146.1 E 822640.5 N	**Dates** 27/05/2021	**Engineer**	**Sheet** 1/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						Soft brown slightly sandy slightly gravelly pseudo fibrous PEAT. Gravel is subangular to subrounded fine to medium		
0.50	I 22.33kPa		24,23,20/Av. 22.33					
0.50	T							
0.50	R 14.00kPa		14,14,14/Av. 14.00					
					(1.50)			
1.00	I 20.67kPa		20,22,20/Av. 20.67					
1.00	T							
1.00	R 17.33kPa		18,16,18/Av. 17.33					
				97.25	1.50	Soft brown slightly sandy slightly gravelly fibrous PEAT with tree trunk fragments. Gravel is subangular to subrounded fine to medium		
2.00	T							
					(1.60)			
				95.65	3.10	Firm grey sandy slightly gravelly SILT with occasional subrounded cobbles. Gravel is subangular to rounded fine to coarse		▽1
3.10	B		medium seepage(1) at 3.10m.					
					(1.20)			
4.00	B							

Plan

Remarks

Groundwater encountered at 3.10m (medium seepage)
Side walls collapsing
Shear vane attempted at 0.50m and 1.00m
Trial pit terminated at 4.30m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-V

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-V
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 2.90m x 1.10m x 4.30m (L x W x D)	**Ground Level (mOD)** 98.75	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 503146.1 E 822640.5 N	**Dates** 27/05/2021	**Engineer**	**Sheet** 2/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				94.45	4.30	Complete at 4.30m		

Plan

Remarks

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-V

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-W
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 3.00m x 1.10m x 2.20m (L x W x D)	**Ground Level (mOD)** 85.26	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 500494.1 E 821871.4 N	**Dates** 25/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Soft dark brown slightly sandy slightly gravelly pseudo fibrous PEAT with moss. Gravel is subangular to subrounded fine to medium		
				85.06	0.20			
					(0.40)	Firm brownish grey sandy gravelly SILT with some organic matter. Gravel is subangular to subrounded fine to coarse		
0.50	B			84.66	0.60			
1.00	B					Soft grey sandy slightly gravelly SILT with organic matter and some subrounded cobbles. Gravel is angular to subrounded fine to coarse		
					(1.60)			
				83.06	2.20			
						Complete at 2.20m		

Plan

Remarks

Groundwater encountered at 1.00m BGL (very fast seepage). Surface water encountered (medium flow)
Side walls collapsing
Trial pit terminated d at 2.20m due to collapse
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-W

Ground Investigations Ireland Ltd
www.gii.ie

Site Oweninny Wind Farm			**Trial Pit Number** TP-Z
Machine : Bog Master **Method :** Trial Pit	**Dimensions** 3.20m x 1.10m x 3.40m (L x W x D)	**Ground Level (mOD)** 99.10	**Client** Tobin	**Job Number** 10467-03-21
	Location (dGPS) 503371.7 E 824651.8 N	**Dates** 26/05/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	I 20.00kPa		16,20,24/Av. 20.00			Soft dark brown slightly sandy slightly gravelly fibrous PEAT. Gravel is subangular to subrounded fine to coarse		
0.50	T				(1.20)			
0.50	R 16.00kPa		14,16,18/Av. 16.00					
1.00	I 27.33kPa		28,26,28/Av. 27.33					
1.00	T							
1.00	R 22.33kPa		24,19,24/Av. 22.33	97.90	1.20			
			medium seepage(1) at 1.30m.			Firm grey sandy gravelly SILT with some laminations and occasional subangular to rounded cobbles. Gravel is subangular to rounded fine to coarse		▽1
2.00	B				(1.50)			
				96.40	2.70	Firm to stiff grey sandy gravelly SILT with some laminations and occasional subangular to rounded cobbles. Gravel is subangular to rounded fine to coarse		
3.00	B				(0.70)			
				95.70	3.40	Complete at 3.40m		

Plan

Remarks

Groundwater encountered at 1.30m (medium seepage)
Side walls collapsing
Shear vane attempted at 0.50m
Trial pit terminated at 3.40m due to large boulders
Trial pit backfilled on completion

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.TP-Z

Oweninny Wind Farm Trial Pit Photographs

TP-GRTP01

TP-GRTP01

TP-GRTP01

TP-GRTP02

TP-GRTP02

TP-GRTP02

TP-GRTP03

TP-GRTP03

TP-GRTP03

TP-GRTP04

TP-GRTP04

TP-GRTP04

TP-A

TP-A

TP-A

TP-B

TP-B

TP-B

TP-C

TP-C

TP-C

TP-C

TP-D

TP-D

TP-D

TP-E

TP-E

TP-E

TP-E

TP-F

TP-F

TP-F

TP-G

TP-G

TP-G

TP-G

TP-H

TP-H

TP-H

TP-I

TP-I

TP-I

TP-I

TP-J

TP-J

TP-J

TP-L

TP-L

TP-L

TP-L

TP-L

TP-M

TP-M

TP-M

TP-M

TP-N

TP-N

TP-N

TP-Q

TP-Q

TP-Q

TP-U

TP-U

TP-U

TP-U

TP-U

TP-V

TP-V

TP-V

TP-V

TP-W

TP-W

TP-W

TP-Z

TP-Z

TP-Z

TP-AA

TP-AA

TP-AA

TP-BB

TP-BB

TP-BB

TP-BB

TP-BB

TP-BP01

TP-BP01

TP-BP01

TP-BP01

TP-BP02

TP-BP02

TP-BP02

TP-BP03

TP-BP03

TP-BP03

TP-BP03

TP-BP04

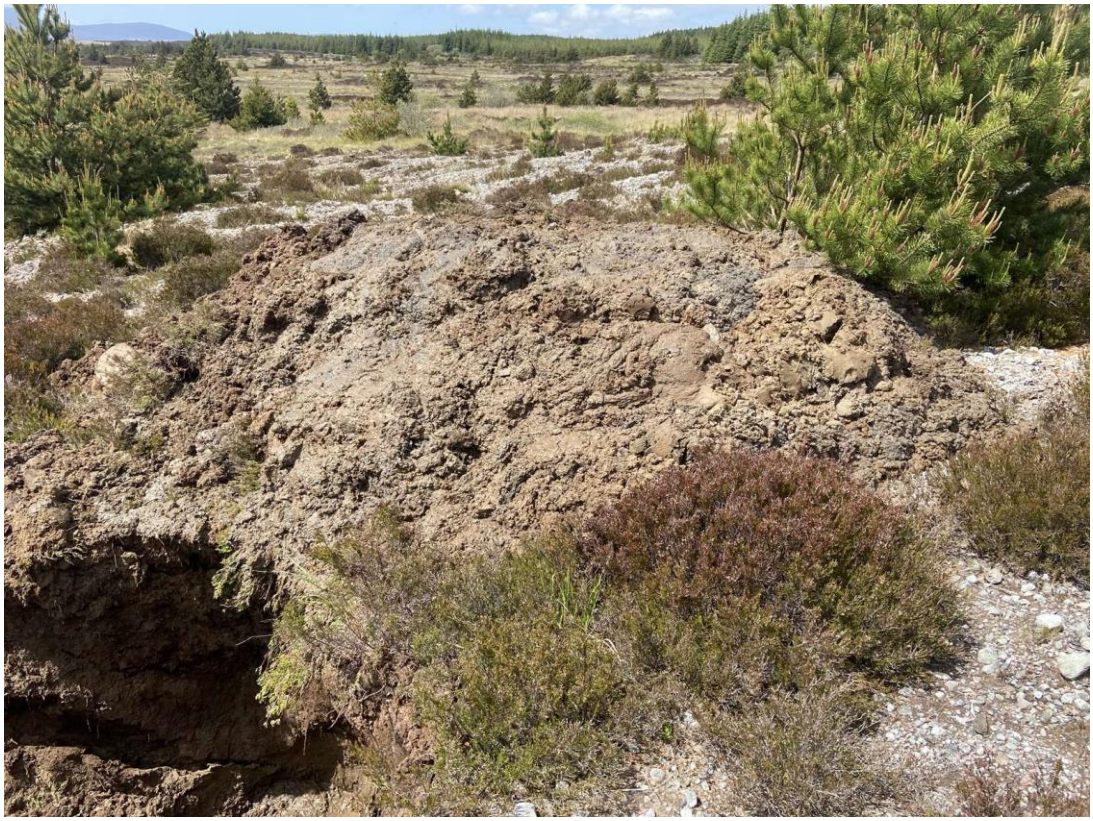
TP-BP04

TP-BP04

TP-BP04

TP-BP05

TP-BP05



TP-BP05

TP-BP06

TP-BP06

TP-BP06

TP-BP07

TP-BP07

TP-BP07

TP-BP08

TP-BP08

TP-BP08

TP-BP09

TP-BP09

TP-BP09

TP-BP09

TP-BP09

TP-BP10

TP-BP10

TP-BP10

TP-BP10

TP-BP11

TP-BP11

TP-BP11

TP-BP12

TP-BP12

TP-BP12

APPENDIX 3 – Peat Probe Records

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P001

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		97.02	Tobin	10467-03-21

Location (dGPS)	Dates	Engineer	Sheet
503579.7 E 824889.6 N	15/06/2021		1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(1.45)	Soft brown slightly sandy slightly gravelly PEAT		
				95.57	1.45	Complete at 1.45m		

Plan

Remarks

Obstruction at 1.45m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P001

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P002

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		94.16	Tobin	10467-03-21
	Location (dGPS) 503680.8 E 824807.2 N	**Dates** 15/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.95)	Soft brown slightly sandy slightly gravelly PEAT		
				93.21	0.95	Complete at 0.95m		

Plan

Remarks

Obstruction at 0.95m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P002

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P003

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		97.07	Tobin	10467-03-21
	Location (dGPS) 503340.4 E 824557.3 N	**Dates** 15/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Soft brown slightly sandy slightly gravelly PEAT		
				96.77	0.30	Complete at 0.30m		

Plan

Remarks

Obstruction at 0.30m BGL
Attempted 3 times

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P003

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P004

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		93.63	Tobin	10467-03-21
	Location (dGPS) 503483.7 E 824532.6 N	**Dates** 15/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.55)	Soft brown slightly sandy slightly gravelly PEAT		
				93.08	0.55	Complete at 0.55m		

Plan

Remarks

Obstruction at 0.55m BGL
Attempted 2 times

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P004

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P005

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		96.13	Tobin	10467-03-21
	Location (dGPS) 503265.4 E 824459.7 N	**Dates** 15/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.75)	Soft brown slightly sandy slightly gravelly PEAT		
				95.38	0.75	Complete at 0.75m		

Plan

Remarks

Obstruction at 0.75m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P005

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P006

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		98.51	Tobin	10467-03-21
	Location (dGPS) 503191.5 E 824330.8 N	**Dates** 15/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.43)	Soft brown slightly sandy slightly gravelly PEAT		
				98.08	0.43	Complete at 0.43m		

Plan

Remarks

Obstruction at 0.43m BGL
Attempted 3 times

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P006

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P007

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		96.90	Tobin	10467-03-21
	Location (dGPS) 503309.9 E 824299.1 N	**Dates** 15/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.25)	Soft brown slightly sandy slightly gravelly PEAT		
				96.65	0.25	Complete at 0.25m		

Plan

Remarks

Obstruction at 0.25m BGL
Attempted 3 times

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P007

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P008

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		100.87	Tobin	10467-03-21
	Location (dGPS) 503095.2 E 824154.1 N	**Dates** 15/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Soft brown slightly sandy slightly gravelly PEAT		
				100.57	0.30	Complete at 0.30m		

Plan

Remarks

Obstruction at 0.30m BGL
Attempted 3 times

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P008

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P009

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		100.17	Tobin	10467-03-21
	Location (dGPS) 503186.7 E 824116 N	**Dates** 15/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.55)	Soft brown slightly sandy slightly gravelly PEAT		
				99.62	0.55	Complete at 0.55m		

Plan

Remarks

Obstruction at 0.55m BGL
Attempted 2 times

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P009

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P010

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		92.80	Tobin	10467-03-21
	Location (dGPS) 503357.8 E 823516.6 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(2.00)	Soft brown slightly sandy slightly gravelly PEAT		
				90.80	2.00	Complete at 2.00m		

Plan

Remarks

Obstruction at 2.00m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P010

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P011

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		96.06	Tobin	10467-03-21
	Location (dGPS) 503182.6 E 823399.7 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.80)	Soft brown slightly sandy slightly gravelly PEAT		
				95.26	0.80	Complete at 0.80m		

Plan

Remarks

Obstruction at 0.80m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P011

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P012

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		102.86	Tobin	10467-03-21
	Location (dGPS) 503019.2 E 823234.5 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.80)	Soft brown slightly sandy slightly gravelly PEAT		
				102.06	0.80	Complete at 0.80m		

Plan

Remarks

Obstruction at 0.80m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P012

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P013

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		101.05	Tobin	10467-03-21
	Location (dGPS) 502973.1 E 823118.6 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(2.30)	Soft brown slightly sandy slightly gravelly PEAT		
				98.75	2.30	Complete at 2.30m		

Plan

Remarks

Obstruction at 2.30m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P013

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P014

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		101.00	Tobin	10467-03-21
	Location (dGPS) 502954.8 E 823072.9 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(2.00)	Soft brown slightly sandy slightly gravelly PEAT		
				99.00	2.00	Complete at 2.00m		

Plan

Remarks

Obstruction at 2.00m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P014

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P015

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		100.43	Tobin	10467-03-21
	Location (dGPS) 502940.8 E 823033.4 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(1.60)	Soft brown slightly sandy slightly gravelly PEAT		
				98.83	1.60	Complete at 1.60m		

Plan

Remarks

Obstruction at 1.60m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P015

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P016

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		99.34	Tobin	10467-03-21
	Location (dGPS) 502923.2 E 822988.1 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.60)	Soft brown slightly sandy slightly gravelly PEAT		
				98.74	0.60	Complete at 0.60m		

Plan

Remarks

Obstruction at 0.60m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P016

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P017

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		99.19	Tobin	10467-03-21

Location (dGPS)	Dates	Engineer	Sheet
502908.8 E 822946.8 N	16/06/2021		1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Soft brown slightly sandy slightly gravelly PEAT		
				98.79	0.40	Complete at 0.40m		

Plan

Remarks

Obstruction at 0.40m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P017

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P018

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		99.18	Tobin	10467-03-21
	Location (dGPS) 502898.8 E 822905.5 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Soft brown slightly sandy slightly gravelly PEAT		
				98.88	0.30	Complete at 0.30m		

Plan

Remarks

Obstruction at 0.30m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P018

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P019

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		99.99	Tobin	10467-03-21
	Location (dGPS) 502865.5 E 822817.1 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.70)	Soft brown slightly sandy slightly gravelly PEAT		
				99.29	0.70	Complete at 0.70m		

Plan

Remarks

Obstruction at 0.70m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P019

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P020

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		97.75	Tobin	10467-03-21
	Location (dGPS) 503036.2 E 822729.5 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(1.70)	Soft brown slightly sandy slightly gravelly PEAT		
				96.05	1.70	Complete at 1.70m		

Plan

Remarks

Obstruction at 1.70m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P020

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P021

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		96.62	Tobin	10467-03-21
	Location (dGPS) 502989.7 E 822861 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(1.70)	Soft brown slightly sandy slightly gravelly PEAT		
				94.92	1.70	Complete at 1.70m		

Plan

Remarks

Obstruction at 1.70m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P021

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P022

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit			Tobin	10467-03-21
	Location (dGPS) 503020.3 E 822985.9 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(1.70)	Soft brown slightly sandy slightly gravelly PEAT		
					1.70	Complete at 1.70m		

Plan

Remarks

Obstruction at 1.70m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P022

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P023

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		98.97	Tobin	10467-03-21
	Location (dGPS) 503051.2 E 823084.6 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.90)	Soft brown slightly sandy slightly gravelly PEAT		
				98.07	0.90	Complete at 0.90m		

Plan

Remarks

Obstruction at 0.90m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P023

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P024

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		100.10	Tobin	10467-03-21

Location (dGPS)	Dates	Engineer	Sheet
503304.3 E 823131.9 N	15/06/2021		1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(2.50)	Soft brown slightly sandy slightly gravelly PEAT		
				97.60	2.50	Complete at 2.50m		

Plan

Remarks

Obstruction at 2.50m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P024

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P025

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		97.50	Tobin	10467-03-21
	Location (dGPS) 503476.2 E 823115.6 N	**Dates** 15/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.85)	Soft brown slightly sandy slightly gravelly PEAT		
				96.65	0.85	Complete at 0.85m		

Plan

Remarks

Obstruction at 0.85m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P025

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P026

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		92.46	Tobin	10467-03-21
	Location (dGPS) 503626.5 E 823130.1 N	**Dates** 15/06/2021	**Engineer**	**Sheet** 1/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(4.50)	Soft brown slightly sandy slightly gravelly PEAT		

Plan

Remarks

Obstruction at 4.50m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P026

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P026

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		92.46	Tobin	10467-03-21
	Location (dGPS) 503626.5 E 823130.1 N	**Dates** 15/06/2021	**Engineer**	**Sheet** 2/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				87.96	4.50	Complete at 4.50m		

Plan

Remarks

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P026

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P027

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		88.23	Tobin	10467-03-21

Location (dGPS)	Dates	Engineer	Sheet
503796 E 823122 N	15/06/2021		1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Soft brown slightly sandy slightly gravelly PEAT		
				87.83	0.40	Complete at 0.40m		

Plan

Remarks

Obstruction at 0.40m BGL
Attempted 3 times

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P027

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P028

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		98.32	Tobin	10467-03-21
	Location (dGPS) 503098.5 E 822680.1 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(2.70)	Soft brown slightly sandy slightly gravelly PEAT		
				95.62	2.70	Complete at 2.70m		

Plan

Remarks

Obstruction at 2.70m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P028

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P029

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		98.82	Tobin	10467-03-21
	Location (dGPS) 503247.6 E 822518 N	**Dates** 15/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(1.60)	Soft brown slightly sandy slightly gravelly PEAT		
				97.22	1.60	Complete at 1.60m		

Plan

Remarks

Obstruction at 1.60m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P029

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P030

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		96.69	Tobin	10467-03-21

Location (dGPS)	Dates	Engineer	Sheet
503555.2 E 822565.7 N	15/06/2021		1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Soft brown slightly sandy slightly gravelly PEAT		
				96.49	0.20	Complete at 0.20m		

Plan

Remarks

Obstruction at 0.20m BGL
Attempted 4 times

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P030

Ground Investigations Ireland Ltd
www.gii.ie

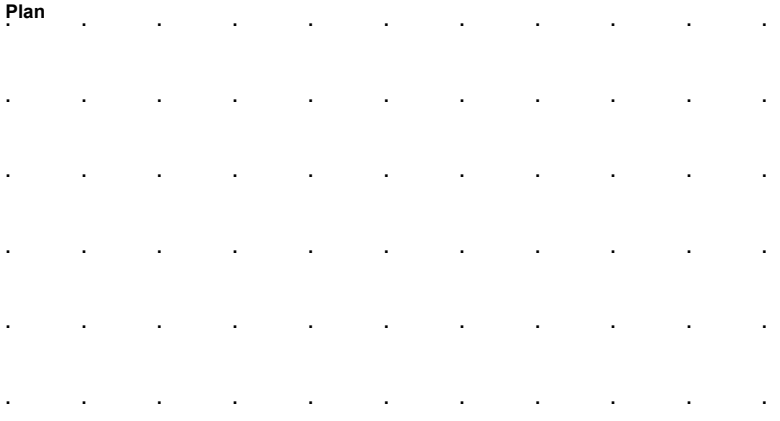
Site	Trial Pit Number
Oweninny Wind Farm	P031

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		96.63	Tobin	10467-03-21

Location (dGPS)	Dates	Engineer	Sheet
503582.7 E 822442.8 N	15/06/2021		1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.65)	Soft brown slightly sandy slightly gravelly PEAT		
				95.98	0.65	Complete at 0.65m		

Plan



Remarks

Obstruction at 0.65m BGL
Attempted 3 times

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P031

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P032

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		92.21	Tobin	10467-03-21
	Location (dGPS) 503680.3 E 822552.8 N	**Dates** 15/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.90)	Soft brown slightly sandy slightly gravelly PEAT		
				91.31	0.90	Complete at 0.90m		

Plan

Remarks

Obstruction at 0.90m BGL
Attempted 3 times

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P032

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P033

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		89.17	Tobin	10467-03-21
	Location (dGPS) 503785.3 E 822631.6 N	**Dates** 15/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(1.90)	Soft brown slightly sandy slightly gravelly PEAT		
				87.27	1.90	Complete at 1.90m		

Plan

Remarks

Obstruction at 1.90m BGL
Attempted 2 times

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P033

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P034

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		90.27	Tobin	10467-03-21

Location (dGPS)	Dates	Engineer	Sheet
503895.1 E 822755.9 N	15/06/2021		1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Soft brown slightly sandy slightly gravelly PEAT		
				89.97	0.30	Complete at 0.30m		

Plan

Remarks

Obstruction at 0.30m BGL
Attempted 3 times

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P034

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P035

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		90.37	Tobin	10467-03-21

Location (dGPS)	Dates	Engineer	Sheet
503941.2 E 822708.8 N	15/06/2021		1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(1.00)	Soft brown slightly sandy slightly gravelly PEAT		
				89.37	1.00	Complete at 1.00m		

Plan

Remarks

Obstruction at 1.00m BGL
Attempted 2 times

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P035

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P036

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		98.46	Tobin	10467-03-21
	Location (dGPS) 503273.3 E 822352.9 N	**Dates** 15/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(2.60)	Soft brown slightly sandy slightly gravelly PEAT		
				95.86	2.60	Complete at 2.60m		

Plan

Remarks

Obstruction at 2.60m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P036

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P037

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		99.23	Tobin	10467-03-21
	Location (dGPS) 503322.5 E 822211.8 N	**Dates** 15/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.90)	Soft brown slightly sandy slightly gravelly PEAT		
				98.33	0.90	Complete at 0.90m		

Plan

Remarks

Obstruction at 0.90m BGL
Attempted 4 times

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P037

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P038

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		101.00	Tobin	10467-03-21
	Location (dGPS) 502893.4 E 822512.5 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(2.80)	Soft brown slightly sandy slightly gravelly PEAT		
				98.20	2.80	Complete at 2.80m		

Plan

Remarks

Obstruction at 2.80m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P038

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P039

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		102.86	Tobin	10467-03-21
	Location (dGPS) 502748.9 E 822530.1 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(2.80)	Soft brown slightly sandy slightly gravelly PEAT		
				100.06	2.80	Complete at 2.80m		

Plan

Remarks

Obstruction at 2.80m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P039

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P040

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		102.71	Tobin	10467-03-21
	Location (dGPS) 502739.3 E 822205.6 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(2.70)	Soft brown slightly sandy slightly gravelly PEAT		
				100.01	2.70	Complete at 2.70m		

Plan

Remarks

Obstruction at 2.70m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P040

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P041

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		104.99	Tobin	10467-03-21

Location (dGPS)	Dates	Engineer	Sheet
502629.5 E 822205.6 N	16/06/2021		1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(1.70)	Soft brown slightly sandy slightly gravelly PEAT		
				103.29	1.70	Complete at 1.70m		

Plan

Remarks

Obstruction at 1.70m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P041

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P042

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		105.71	Tobin	10467-03-21
	Location (dGPS) 502555.3 E 822033.7 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(1.30)	Soft brown slightly sandy slightly gravelly PEAT		
				104.41	1.30	Complete at 1.30m		

Plan

Remarks

Obstruction at 1.30m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P042

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P043

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		103.01	Tobin	10467-03-21
	Location (dGPS) 502607.3 E 821939.1 N	**Dates** 16/06/2021	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(2.30)	Soft brown slightly sandy slightly gravelly PEAT		
				100.71	2.30	Complete at 2.30m		

Plan

Remarks

Obstruction at 2.30m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P043

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P044

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		100.88	Tobin	10467-03-21

Location (dGPS)	Dates	Engineer	Sheet
502786.1 E 821578.6 N	16/06/2021		1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(1.40)	Soft brown slightly sandy slightly gravelly PEAT		
				99.48	1.40	Complete at 1.40m		

Plan

Remarks

Obstruction at 1.40m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P044

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P045

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		100.26	Tobin	10467-03-21

Location (dGPS)	Dates	Engineer	Sheet
502974.2 E 821544.2 N	16/06/2021		1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(1.00)	Soft brown slightly sandy slightly gravelly PEAT		
				99.26	1.00	Complete at 1.00m		

Plan

Remarks

Obstruction at 1.00m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P045

Ground Investigations Ireland Ltd
www.gii.ie

Site	Trial Pit Number
Oweninny Wind Farm	P046

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		101.29	Tobin	10467-03-21

Location (dGPS)	Dates	Engineer	Sheet
502876.9 E 821408.8 N	16/06/2021		1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(1.70)	Soft brown slightly sandy slightly gravelly PEAT		
				99.59	1.70	Complete at 1.70m		

Plan

Remarks

Obstruction at 1.70m BGL

Scale (approx)	Logged By	Figure No.
1:25	M.Sheehan	10467-03-21.P046

APPENDIX 4 - Laboratory Testing

National Materials Testing Laboratory Ltd.

SUMMARY OF TEST RESULTS

				Particle			Index Properties		Bulk	Cell	Undrained Triaxial Tests		Lab	
BH/TP	Depth	sample	Moisture	Density	<425um	LL	PL	PI	Density	Presssure	Compressive	Strain at	Vane	Remarks
No	m	No.	%	Mg/m3	%	%	%	%	Mg/m3	kPa	Stress kPa	Failure %	kPa	
TP-Q	1.00	B	11.0											
TP-Q	2.00	B	13.2											
TP-GRTP04	1.00	T	864.2											
TP-GRTP04	2.00	T	686.2											
TP-GRTP03	1.00	T	950.0											
TP-GRTP03	2.00	T	1104.0											
TP-GRTP02	1.00	B	22.5											
TP-GRTP02	2.00	B	14.1											
TP-GRTP01	1.00	T	182.7											
TP-BB	1.00	B	30.8											
TP-BB	1.50	B	689.0											
TP-BB	2.00	B	19.3		100.0	27	NonPlastic							
TP-BB	0.50	T	689.0											
TP-N	0.50	T	833.7											
TP-J	0.50	T	820.4											
TP-J	1.00	T	791.1											
TP-J	2.00	B	37.0		69.8	50	NonPlastic							
TP-M	0.50	T	735.9											
TP-M	1.00	B	22.1		100	30	NonPlastic							
TP-M	2.00	B	10.4		62.6	20	NonPlastic							
TP-U	1.00	B	24.3											
TP-BP08	1.00	T	656.6											
TP-BP09	0.50	T	765.2											
TP-D	0.50	T	479.0											
NMTL		Notes :									Job ref No.	NMTL 3413	GII Project ID:	1046-03-21
		1. All BS tests carried out using preferred (definitive) method unless otherwise stated.									Location	Oweninny Wid Farm		

National Materials Testing Laboratory Ltd.

SUMMARY OF TEST RESULTS

				Particle			Index Properties		Bulk	Cell	Undrained Triaxial Tests		Lab	
BH/TP	Depth	sample	Moisture	Density	<425um	LL	PL	PI	Density	Presssure	Compressive	Strain at	Vane	Remarks
No	m	No.	%	Mg/m3	%	%	%	%	Mg/m3	kPa	Stress kPa	Failure %	kPa	
TP-C	0.50	B	17.8		88.1	33	Non Plastic							
TP-C	1.00	B	16.9		48.4	28	Non Plastic							
TP-C	2.00	B	16.5		80.0	22	16	6						
TP-A	0.50	T	701.2											
TP-A	1.00	B	22.5		74.5	28	Non Plastic							
TP-A	2.00	B	7.4		76.9	19	Non Plastic							
TP-Z	0.50	T	865.4											
TP-Z	1.00	T	665.5											
TP-Z	2.00	B	12.6		100.0	20	Non Plastic							
TP-B	0.50	T	891.0											
TP-B	1.00	T	689.9											
TP-B	2.00	B	17.4		86.2	20	Non Plastic							
TP-H	0.50	T	1147.0											
TP-H	2.00	T	931.9											
TP-I	0.50	T	959.4											
TP-I	1.00	T	1070.0											
TP-E	0.50	T	913.0											
TP-BP10	1.00	T	9.5											
TP-BP-10	2.00	B		2.64										
TP-BP10	3.00	B	11.9											
TP-BP10	4.00	B	13.4											
TP-F	0.50	T	755.0											
TP-F	3.00	T	17.5											
TP-V	0.50	T	896.8											
NMTL		Notes :									Job ref No.	NMTL 3413	GII Project ID:	1046-03-21
		1. All BS tests carried out using preferred (definitive) method unless otherwise stated.									Location	Oweninny Wid Farm		

Revision-02

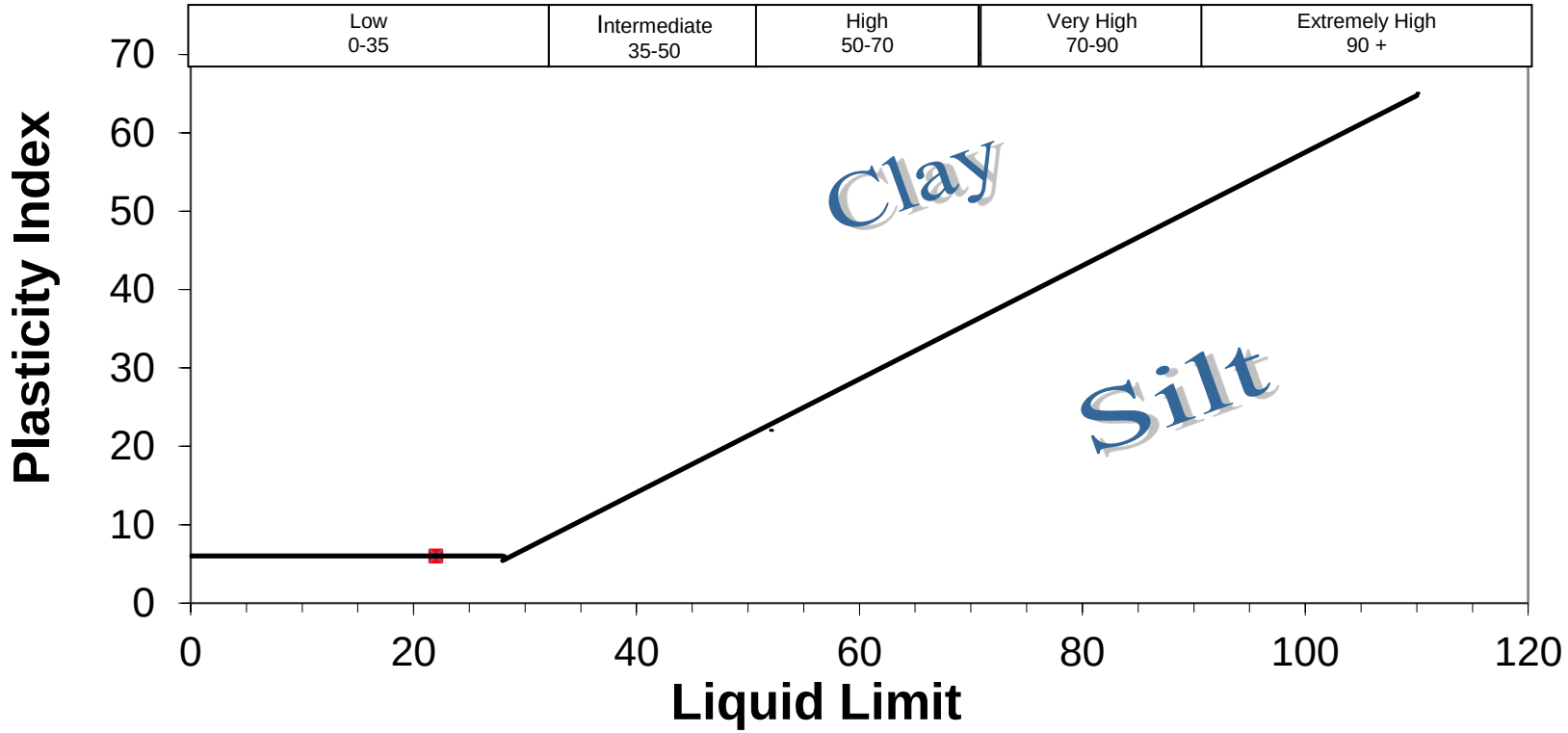
National Materials Testing Laboratory Ltd.

SUMMARY OF TEST RESULTS

				Particle			Index Properties		Bulk	Cell	Undrained Triaxial Tests		Lab	
BH/TP	Depth	sample	Moisture	Density	<425um	LL	PL	PI	Density	Presssure	Compressive	Strain at	Vane	Remarks
No	m	No.	%	Mg/m3	%	%	%	%	Mg/m3	kPa	Stress kPa	Failure %	kPa	
TP-V	1.00	T	825.8											
TP-V	2.00	T	859.7											
TP-V	3.10	B	34.0											
TP-G	0.50	B	25.8		66.5	33	Non Plastic							
TP-G	2.00	B	15.2		74.4	21	Non Plastic							
TP-BP04	1.00	B	12.7											
TP-BP05	1.00	B	20.1											
TP-BP03	1.30	B	16.5											
TP-BP03	3.00	T	11.7											
TP-AA	1.00	T	915.0											
TP-AA	2.00	T		1.47										
TP-AA	4.00	T	17.7											
TP-BP02	1.00	T	827.8											
TP-BP02	2.00	T		1.46										
TP-BP12	1.00	T	847.8											
TP-L	0.50	T	717.7											
TP-L	1.00	B	22.6		82.0	25	Non Plastic							
TP-L	2.00	B	15.5		100	19	Non Plastic							
TP-BP01	1.00	B	5.2											
TP-BP01	2.00	B	6.0											
NMTL		Notes :									Job ref No.	NMTL 3413	GII Project ID:	1046-03-21
		1. All BS tests carried out using preferred (definitive) method unless otherwise stated.									Location	Oweninny Wid Farm		

NMTL LTD
Unit 18c, Tullow Industrial Estate
Tullow
County Carlow
Tel: 00353 59 9180822
Mob: 00353 872575508
billa@nmtl.ie

Contract:	**Oweninny Wid Farm**		
Client:	**Ground Investigations Ireland Ltd**		
Engineer:	**Conor Finnerty**		
GII Project ID	**1046-03-21**		
Date:	**28/07/2021**		
Tested By:	**Sb**	**Checked:**	**Bc**
Job ref No.	**NMTL 3413**		

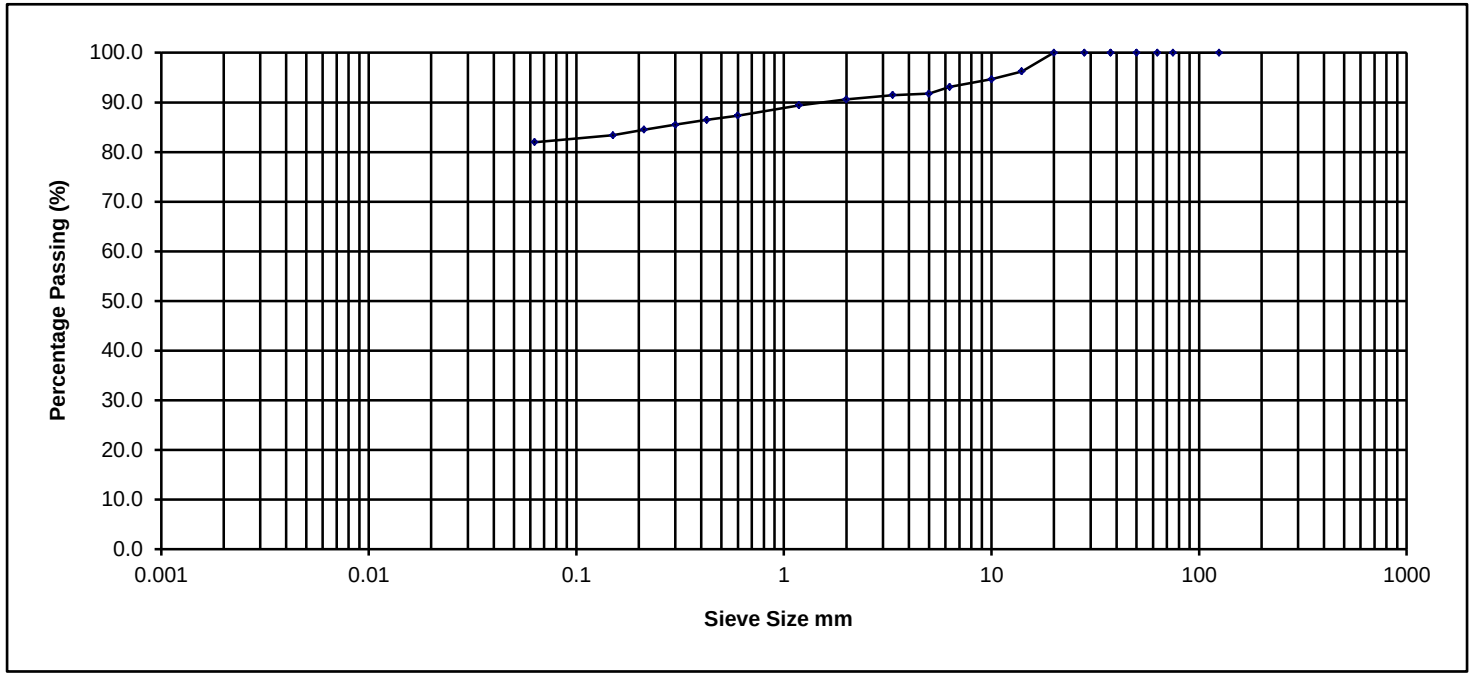


NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	96.2
10.000	94.7
6.300	93.1
5.000	91.8
3.350	91.5
2.000	90.6
1.180	89.4
0.600	87.3
0.425	86.5
0.300	85.5
0.212	84.5
0.150	83.4
0.063	82.0



Percentage Particle Size

Clay	Fine Silt	Medium Silt	Coarse Silt	Fine Sand	Medium Sand	Coarse Sand	Fine Gravel	Medium Gravel	Coarse Gravel	Cobbles	Boulder
		82.0			8.6			9.4		0.0	0.0

Sample Description	Dark brown / black PEAT					Project No.	NMTL 3413
						BH/TP No.	TP-AA
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	16/07/2021	Depth	1.0m

NMTL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	98.4
28.000	97.0
20.000	95.5
14.000	94.2
10.000	92.1
6.300	90.9
5.000	90.0
3.350	88.5
2.000	86.4
1.180	83.5
0.600	78.5
0.425	74.5
0.300	68.6
0.212	60.9
0.150	52.3
0.063	37.9

Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		37.9			48.5			13.6		0.0	0.0

Sample Description	Dark grey slightly gravelly silty sandy SILT.					Project No.	NMTL 3413
						BH/TP No.	TP-A
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	16/07/2021	Depth	1.0m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	97.3
20.000	92.5
14.000	88.0
10.000	84.6
6.300	80.9
5.000	79.2
3.350	77.9
2.000	75.6
1.180	72.9
0.600	66.1
0.425	59.3
0.300	48.3
0.212	32.1
0.150	18.1
0.063	6.2

Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		6.2			69.3			24.4		0.0	0.0

Sample Description	Dark grey silty gravelly SAND					Project No.	NMTL 3413
						BH/TP No.	TP-BB
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	16/07/2021	Depth	1.5m

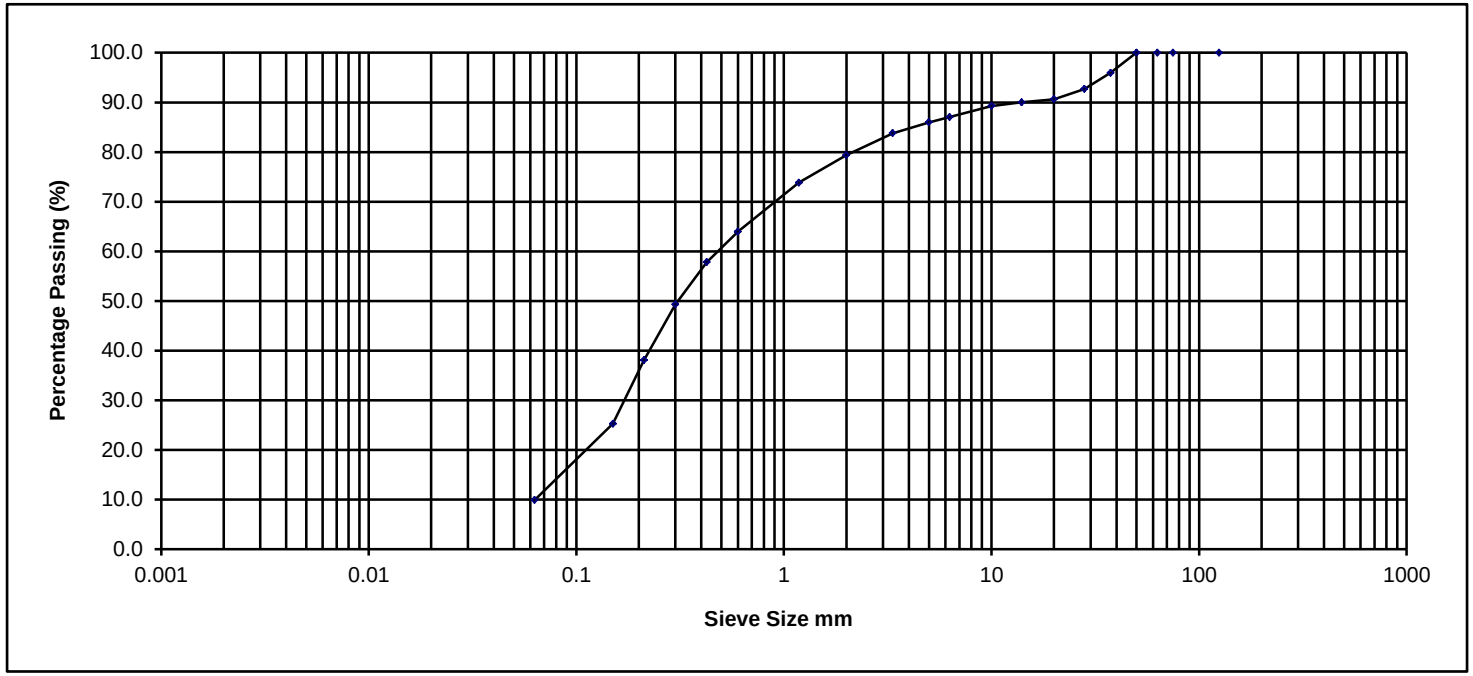
NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	95.9
28.000	92.7
20.000	90.6
14.000	90.0
10.000	89.3
6.300	87.1
5.000	86.0
3.350	83.8
2.000	79.4
1.180	73.8
0.600	64.0
0.425	57.8
0.300	49.3
0.212	38.1
0.150	25.3
0.063	9.9



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		9.9			69.4			20.6		0.0	0.0

Sample Description	Light brown/ cream silty gravelly SAND					Project No.	NMTL 3413
						BH/TP No.	TP-BP01
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Depth	1.00m

Date sample tested 16/07/2021

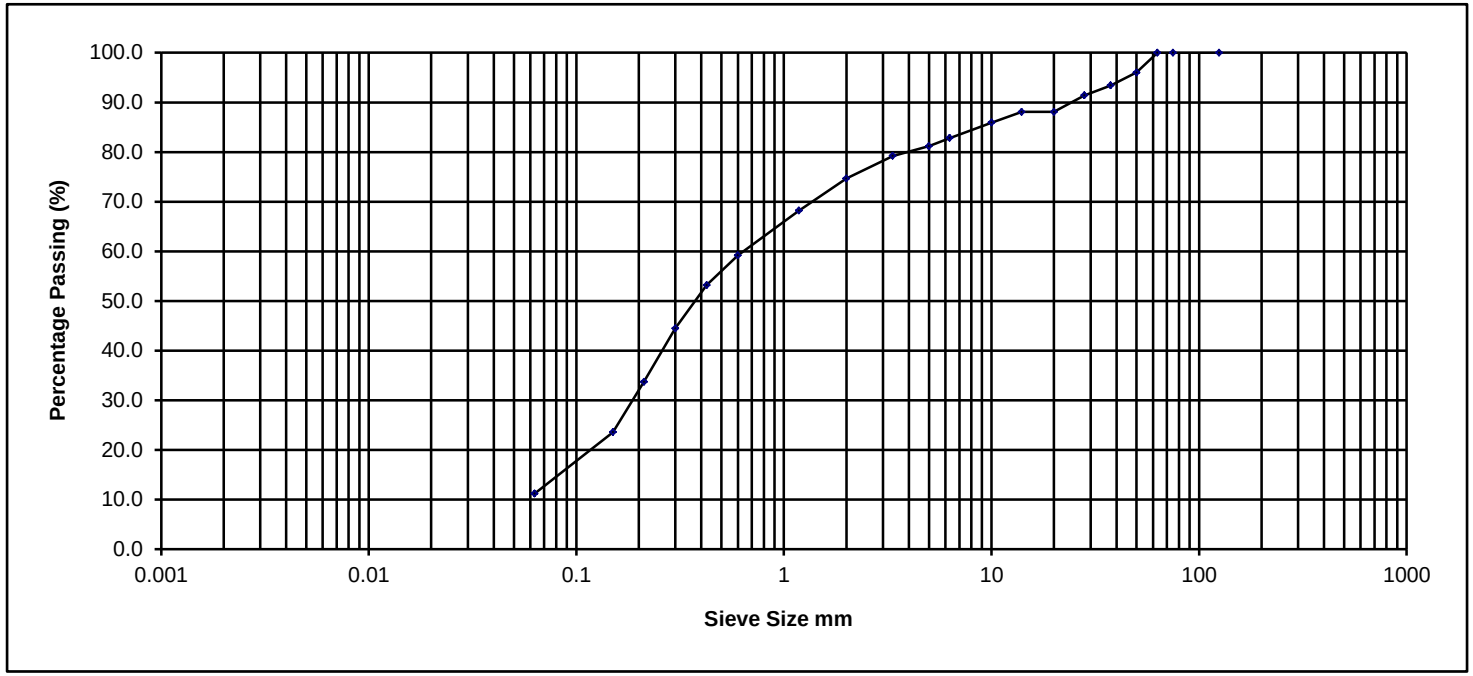
NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	96.0
37.500	93.4
28.000	91.4
20.000	88.1
14.000	88.1
10.000	85.9
6.300	82.8
5.000	81.2
3.350	79.2
2.000	74.7
1.180	68.2
0.600	59.2
0.425	53.2
0.300	44.5
0.212	33.7
0.150	23.6
0.063	11.2



Percentage Particle Size

Clay	Fine Silt	Medium Silt	Coarse Silt	Fine Sand	Medium Sand	Coarse Sand	Fine Gravel	Medium Gravel	Coarse Gravel	Cobbles	Boulder
		11.2			63.4			25.3		0.0	0.0

Sample Description	Light brown/ cream silty gravelly SAND	Project No.	NMTL 3413
		BH/TP No.	TP-BP01
Project	Oweninny Wind Farm	GII PROJECT ID: 10467-03-21	Sample No. B
Operator Tzr	Checked Nc	Approved Bc	Date sample tested 16/07/2021 Depth 2.00m

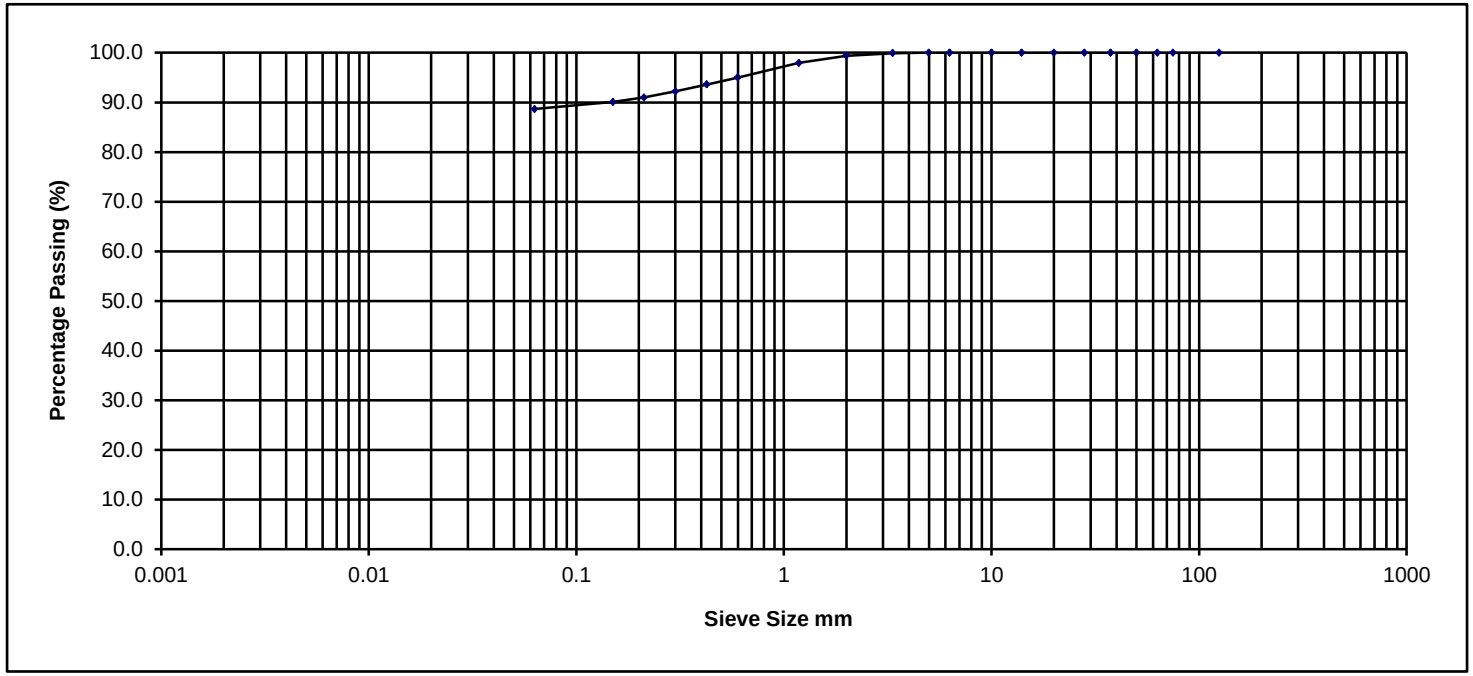
NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	100.0
10.000	100.0
6.300	100.0
5.000	100.0
3.350	99.9
2.000	99.4
1.180	97.9
0.600	95.0
0.425	93.6
0.300	92.2
0.212	91.0
0.150	90.1
0.063	88.7



Percentage Particle Size

Clay	Fine Medium Coarse	Fine Medium Coarse	Fine Medium Coarse	Cobbles	Boulder
	Silt	Sand	Gravel		
	88.7	10.7	0.6	0.0	0.0

Sample Description	Dark brown/black PEAT	Project No.	NMTL 3413
		BH/TP No.	TP-BP02
Project	Oweninny Wind Farm	GII PROJECT ID: 10467-03-21	Sample No.	T
Operator Tzr	Checked Nc	Approved Bc	Date sample tested 16/07/2021	Depth	2.00m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	98.3
20.000	96.5
14.000	94.8
10.000	92.9
6.300	90.8
5.000	89.0
3.350	87.7
2.000	85.0
1.180	81.3
0.600	75.3
0.425	70.9
0.300	64.2
0.212	55.4
0.150	46.0
0.063	31.2

Percentage Particle Size

Clay	Fine Silt	Medium Silt	Coarse Silt	Fine Sand	Medium Sand	Coarse Sand	Fine Gravel	Medium Gravel	Coarse Gravel	Cobbles	Boulder
		31.2			53.8			15.0		0.0	0.0

Sample Description	Green/grey slightly gravelly sandy clayey SILT.			Project No.	NMTL 3413
				BH/TP No.	TP-BP03
Project	Oweninny Wind Farm		GII PROJECT ID: 10467-03-21	Sample No.	B
Operator Tzr	Checked Nc	Approved Bc	Date sample tested 16/07/2021	Depth	1.30m

NMTL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	87.6
50.000	85.9
37.500	78.4
28.000	75.2
20.000	72.7
14.000	69.6
10.000	67.1
6.300	63.5
5.000	62.1
3.350	60.3
2.000	56.6
1.180	52.8
0.600	48.3
0.425	45.5
0.300	41.7
0.212	36.7
0.150	31.4
0.063	21.1

Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		21.1			35.5			31.0		12.4	0.0

Sample Description	Grey slightly gravelly sandy clayey SILT.							Project No.	NMTL 3413
								BH/TP No.	TP-BP03
Project	Oweninny Wind Farm					GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	19/07/2021	Depth	2.00m

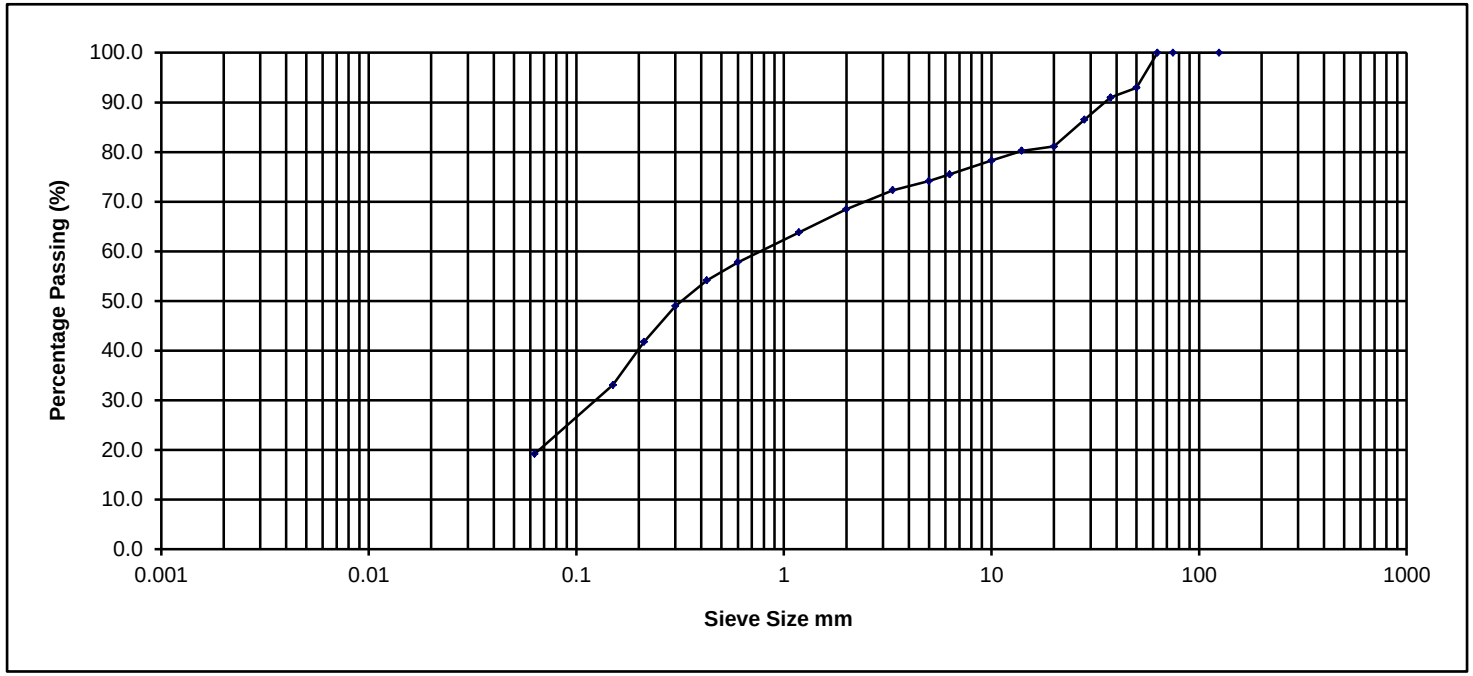
NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	93.0
37.500	91.0
28.000	86.5
20.000	81.1
14.000	80.2
10.000	78.3
6.300	75.5
5.000	74.1
3.350	72.3
2.000	68.5
1.180	63.8
0.600	57.8
0.425	54.1
0.300	49.0
0.212	41.7
0.150	33.1
0.063	19.2



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		19.2			49.3			31.5		0.0	0.0

Sample Description	Grey silty gravelly SAND					Project No.	NMTL 3413
						BH/TP No.	TP-BP04
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	19/07/2021
						Depth	1.00m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	93.5
50.000	89.9
37.500	87.9
28.000	83.6
20.000	80.6
14.000	80.2
10.000	76.6
6.300	73.2
5.000	71.8
3.350	69.9
2.000	66.9
1.180	63.5
0.600	59.2
0.425	56.5
0.300	52.6
0.212	47.4
0.150	41.0
0.063	28.0

Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		28.0			38.8			26.7		6.5	0.0

Sample Description	Grey slightly gravelly sandy clayey SILT.					Project No.	NMTL 3413
						BH/TP No.	TP-BP04
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Depth	2.00m
				Date sample tested	19/07/2021		

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	97.7
37.500	94.1
28.000	93.1
20.000	91.4
14.000	90.3
10.000	88.6
6.300	86.8
5.000	86.0
3.350	84.8
2.000	81.5
1.180	76.3
0.600	67.8
0.425	61.5
0.300	52.8
0.212	42.2
0.150	32.3
0.063	20.1

Percentage Particle Size

Clay	Fine Silt	Medium Silt	Coarse Silt	Fine Sand	Medium Sand	Coarse Sand	Fine Gravel	Medium Gravel	Coarse Gravel	Cobbles	Boulder
		20.1			61.4			18.5		0.0	0.0

Sample Description	Brown slightly gravelly silty SAND			Project No.	NMTL 3413
				BH/TP No.	TP-BP05
Project	Oweninny Wind Farm		GII PROJECT ID: 10467-03-21	Sample No.	B
Operator Tzr	Checked Nc	Approved Bc	Date sample tested 19/07/2021	Depth	1.00m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	95.2
37.500	91.7
28.000	89.2
20.000	86.5
14.000	84.8
10.000	81.4
6.300	79.3
5.000	77.7
3.350	75.9
2.000	73.5
1.180	69.5
0.600	61.3
0.425	54.9
0.300	46.6
0.212	37.4
0.150	28.4
0.063	16.2

Percentage Particle Size

Clay	Fine Medium Coarse	Fine Medium Coarse	Fine Medium Coarse	Cobbles	Boulder
	Silt	Sand	Gravel		
	16.2	57.3	26.5	0.0	0.0

Sample Description	Brown grey silty gravelly silty SAND.	Project No.	NMTL 3413
		BH/TP No.	TP-BP05
Project	Oweninny Wind Farm	GII PROJECT ID: 10467-03-21	Sample No.	B
Operator Tzr	Checked Nc	Approved Bc	Date sample tested 19/07/2021	Depth	2.00m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	96.6
28.000	93.5
20.000	86.9
14.000	86.9
10.000	85.0
6.300	81.3
5.000	80.9
3.350	79.8
2.000	77.3
1.180	74.7
0.600	67.4
0.425	59.4
0.300	46.9
0.212	33.7
0.150	24.7
0.063	13.1

Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		13.1			64.1			22.7		0.0	0.0

Sample Description	Brown silty gravelly SAND					Project No.	NMTL 3413
						BH/TP No.	TP-BP06
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	19/07/2021
						Depth	0-0.60m

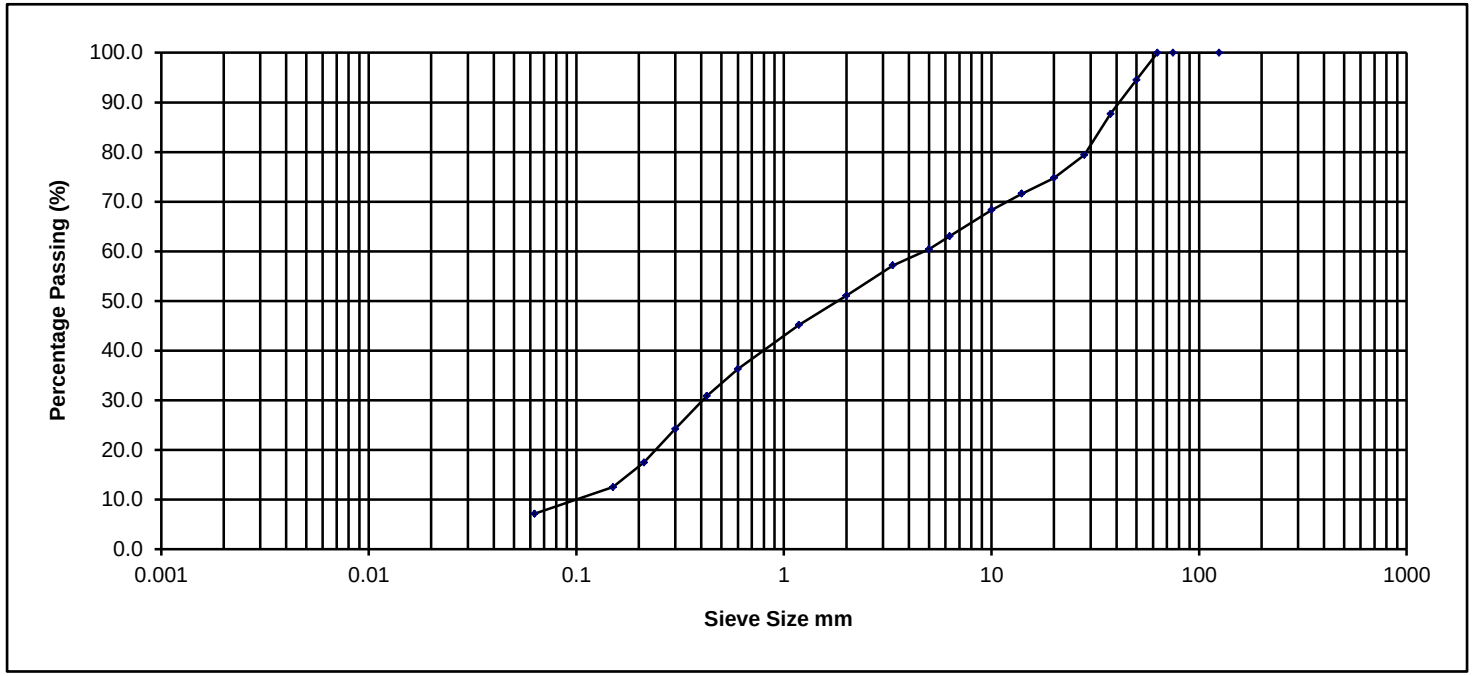
NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	94.5
37.500	87.7
28.000	79.4
20.000	74.8
14.000	71.6
10.000	68.3
6.300	63.1
5.000	60.4
3.350	57.2
2.000	51.1
1.180	45.2
0.600	36.3
0.425	30.9
0.300	24.3
0.212	17.5
0.150	12.5
0.063	7.2



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		7.2			43.9			48.9		0.0	0.0

Sample Description	Brown silty sandy GRAVEL					Project No.	NMTL 3413
						BH/TP No.	TP-BP07
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	16/07/2021	Depth	0.1-1.1m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	90.4
37.500	87.2
28.000	86.5
20.000	84.8
14.000	84.8
10.000	84.8
6.300	84.8
5.000	84.2
3.350	83.8
2.000	82.8
1.180	81.3
0.600	77.2
0.425	73.1
0.300	65.5
0.212	53.4
0.150	39.7
0.063	21.6

Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		21.6			61.3			17.2		0.0	0.0

Sample Description	Brown gravelly silty SAND					Project No.	NMTL 3413
						BH/TP No.	TP-BP08
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	19/07/2021	Depth	2.0m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	93.7
50.000	89.3
37.500	85.8
28.000	81.8
20.000	77.7
14.000	77.3
10.000	75.6
6.300	72.7
5.000	71.4
3.350	70.2
2.000	67.5
1.180	63.4
0.600	56.1
0.425	51.1
0.300	44.3
0.212	35.5
0.150	25.4
0.063	11.3

Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		11.3			56.2			26.2		6.3	0.0

Sample Description	Brown silty gravelly SAND					Project No.	NMTL 3413
						BH/TP No.	TP-BP08
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	19/07/2021	Depth	3.0m

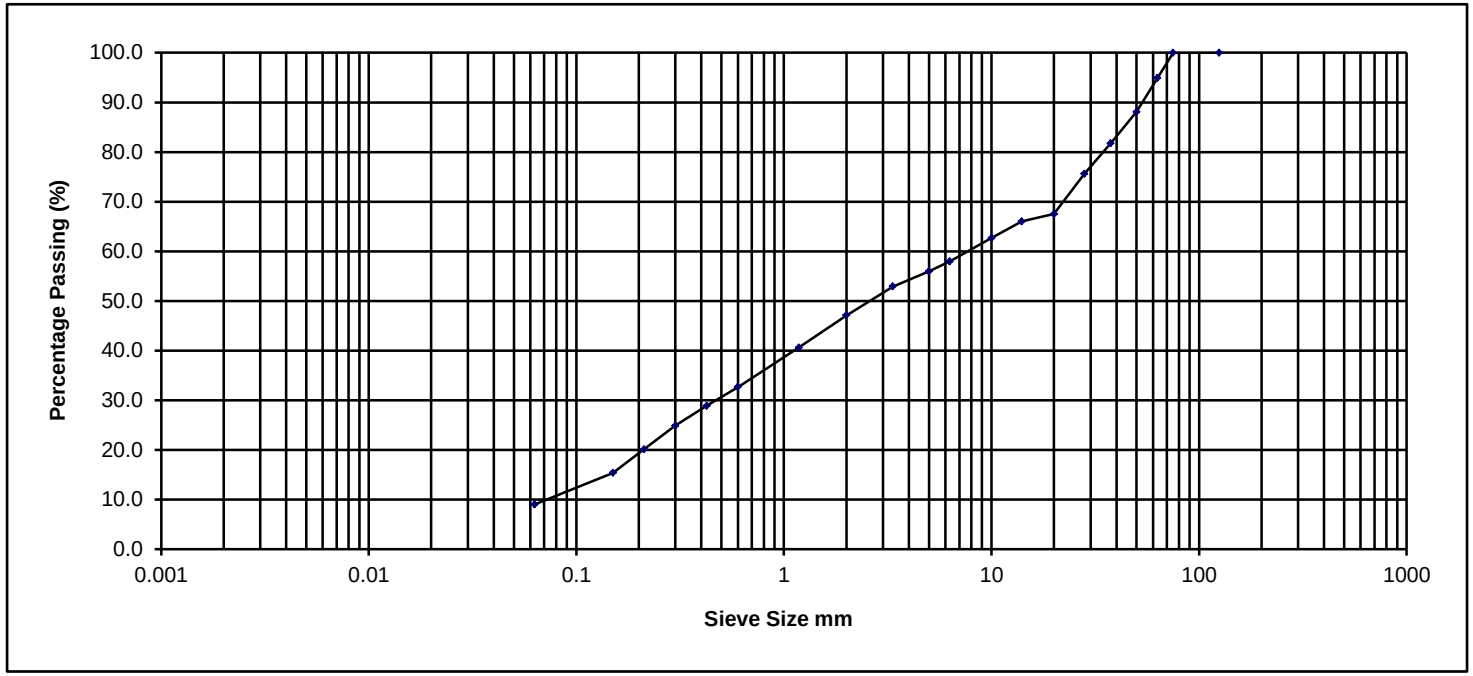
NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	94.9
50.000	88.1
37.500	81.7
28.000	75.6
20.000	67.5
14.000	66.0
10.000	62.7
6.300	58.0
5.000	56.0
3.350	52.9
2.000	47.1
1.180	40.6
0.600	32.7
0.425	28.9
0.300	24.9
0.212	20.1
0.150	15.4
0.063	9.0



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		9.0			38.1			47.8		5.1	0.0

Sample Description	Brown slightly silty very sandy GRAVEL.					Project No.	NMTL 3413
						BH/TP No.	TP-BP08
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	16/07/2021	Depth	4.0m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	96.7
37.500	90.9
28.000	84.6
20.000	78.2
14.000	75.6
10.000	71.7
6.300	68.7
5.000	65.8
3.350	64.0
2.000	60.8
1.180	57.1
0.600	50.7
0.425	45.5
0.300	38.5
0.212	30.5
0.150	24.6
0.063	18.0

Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		18.0			42.8			39.2		0.0	0.0

Sample Description	Brown clayey silty gravelly SAND					Project No.	NMTL 3413
						BH/TP No.	TP-BP09
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	19/07/2021	Depth	1.0m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	95.7
50.000	87.5
37.500	79.6
28.000	70.8
20.000	61.6
14.000	54.8
10.000	51.3
6.300	47.2
5.000	44.4
3.350	41.8
2.000	36.4
1.180	30.4
0.600	19.7
0.425	15.0
0.300	11.8
0.212	10.1
0.150	9.1
0.063	8.0

Percentage Particle Size

Clay	Fine Medium Coarse	Fine Medium Coarse	Fine Medium Coarse	Cobbles	Boulder
	Silt	Sand	Gravel		
	8.0	28.3	59.3	4.3	0.0

Sample Description	Brown silty very sandy GRAVEL	Project No.	NMTL 3413
		BH/TP No.	TP-BP09
Project	Oweninny Wind Farm	GII PROJECT ID: 10467-03-21	Sample No. B
Operator Tzr	Checked Nc	Approved Bc	Date sample tested 19/07/2021 Depth 2.0m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	98.6
28.000	98.2
20.000	97.7
14.000	97.7
10.000	96.3
6.300	94.6
5.000	93.0
3.350	91.7
2.000	88.9
1.180	84.5
0.600	75.2
0.425	67.0
0.300	54.1
0.212	36.8
0.150	20.0
0.063	6.4

Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		6.4			82.5			11.1		0.0	0.0

Sample Description	Brown grey silty gravelly SAND.					Project No.	NMTL 3413
						BH/TP No.	TP-BP10
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	19/07/2021	Depth	1.00m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	97.0
28.000	97.0
20.000	95.9
14.000	95.5
10.000	94.8
6.300	92.6
5.000	92.1
3.350	90.3
2.000	87.6
1.180	83.1
0.600	75.3
0.425	69.6
0.300	60.3
0.212	45.5
0.150	28.1
0.063	9.0

Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		9.0			78.6			12.4		0.0	0.0

Sample Description	Brown silty gravelly SAND			Project No.	NMTL 3413
				BH/TP No.	TP-BP10
Project	Oweninny Wind Farm		GII PROJECT ID: 10467-03-21	Sample No.	B
Operator Tzr	Checked Nc	Approved Bc	Date sample tested 19/07/2021	Depth	3.0m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	93.0
50.000	87.1
37.500	83.2
28.000	79.9
20.000	76.0
14.000	73.7
10.000	72.1
6.300	67.0
5.000	64.1
3.350	61.6
2.000	56.4
1.180	51.4
0.600	45.1
0.425	41.2
0.300	35.9
0.212	29.0
0.150	21.4
0.063	10.4

Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		10.4			46.0			36.6		7.0	0.0

Sample Description	Brown silty gravelly SAND.					Project No.	NMTL 3413
						BH/TP No.	TP-BP10
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	19/07/2021	Depth	4.0m

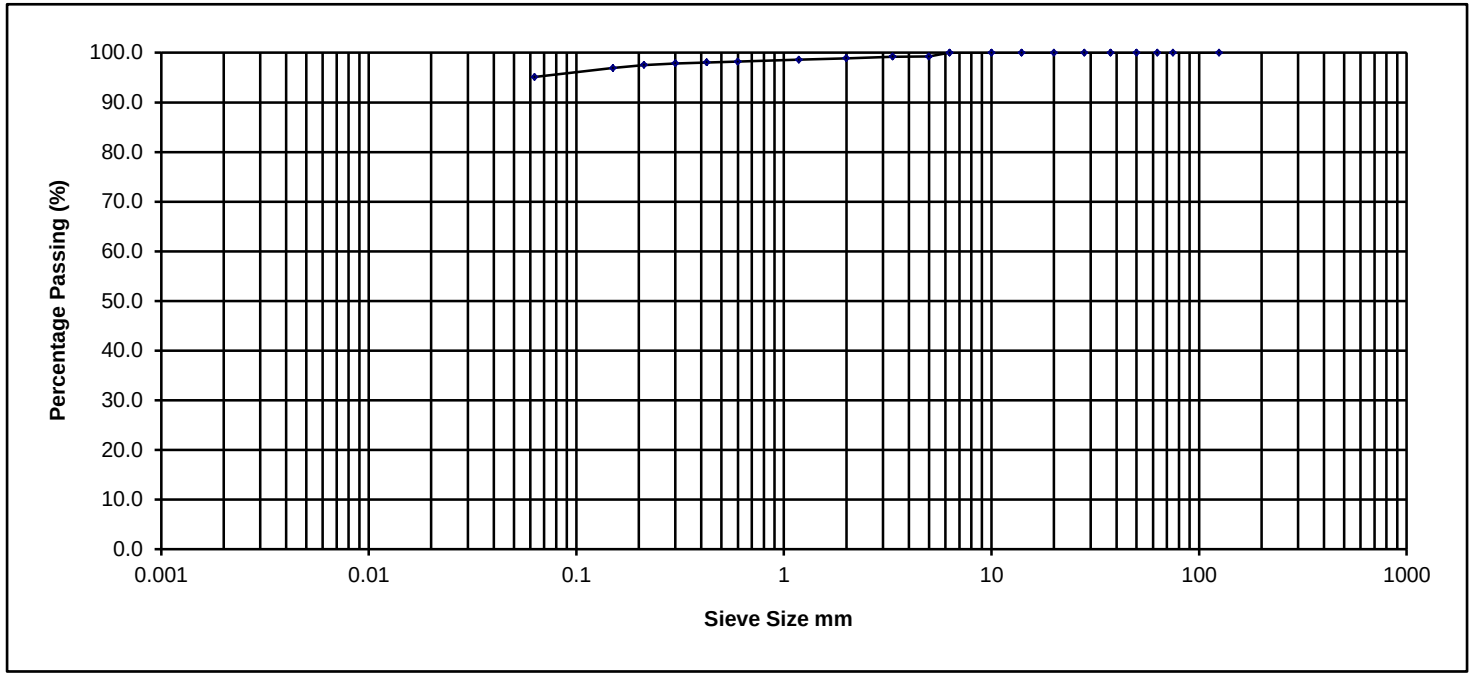
NMTL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	100.0
10.000	100.0
6.300	100.0
5.000	99.2
3.350	99.2
2.000	98.9
1.180	98.6
0.600	98.2
0.425	98.0
0.300	97.8
0.212	97.5
0.150	96.9
0.063	95.1



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		95.1			3.8			1.1		0.0	0.0

Sample Description	Dark brown/black PEAT							Project No.	NMTL 3413
								BH/TP No.	TP-BP12
Project	Oweninny Wind Farm					GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	16/07/2021	Depth	2.0m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	100.0
10.000	100.0
6.300	100.0
5.000	100.0
3.350	99.9
2.000	99.6
1.180	99.3
0.600	98.9
0.425	98.8
0.300	98.6
0.212	98.4
0.150	98.2
0.063	97.7

Percentage Particle Size

Clay	Fine Silt	Medium Silt	Coarse Silt	Fine Sand	Medium Sand	Coarse Sand	Fine Gravel	Medium Gravel	Coarse Gravel	Cobbles	Boulder
		97.7			1.9			0.4		0.0	0.0

Sample Description	Dark brown / black PEAT			Project No.	NMTL 3413
				BH/TP No.	TP-B
Project	Oweninny Wind Farm		GII PROJECT ID: 10467-03-21	Sample No.	T
Operator Tzr	Checked Nc	Approved Bc	Date sample tested 16/07/2021	Depth	1.0m

NMTL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	80.5
50.000	77.4
37.500	74.0
28.000	70.2
20.000	68.3
14.000	65.7
10.000	64.3
6.300	61.9
5.000	60.6
3.350	59.4
2.000	57.4
1.180	54.8
0.600	51.0
0.425	48.4
0.300	45.1
0.212	40.6
0.150	35.6
0.063	27.9

Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		27.9			29.4			23.1		19.5	0.0

Sample Description	Grey slightly gravelly slightly sandy clayey SILT.					Project No.	NMTL 3413
						BH/TP No.	TP-C
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	16/07/2021	Depth	1.0m

NMTL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	89.5
50.000	85.0
37.500	77.9
28.000	74.5
20.000	67.0
14.000	65.8
10.000	64.0
6.300	62.1
5.000	61.2
3.350	60.2
2.000	58.3
1.180	56.0
0.600	52.2
0.425	49.5
0.300	45.1
0.212	37.9
0.150	28.2
0.063	16.3

Percentage Particle Size

Clay	Fine Silt	Medium Silt	Coarse Silt	Fine Sand	Medium Sand	Coarse Sand	Fine Gravel	Medium Gravel	Coarse Gravel	Cobbles	Boulder
		16.3			42.0			31.2		10.5	0.0

Sample Description	Brown silty gravelly SAND			Project No.	NMTL 3413
				BH/TP No.	TP-D
Project	Oweninny Wind Farm		GII PROJECT ID: 10467-03-21	Sample No.	B
Operator Tzr	Checked Nc	Approved Bc	Date sample tested 19/07/2021	Depth	1.0m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	98.8
28.000	95.2
20.000	93.9
14.000	92.2
10.000	90.5
6.300	88.1
5.000	86.6
3.350	85.5
2.000	82.7
1.180	79.2
0.600	74.2
0.425	70.9
0.300	66.2
0.212	59.6
0.150	51.5
0.063	35.4

Percentage Particle Size

Clay	Fine Medium Coarse	Fine Medium Coarse	Fine Medium Coarse	Cobbles	Boulder
	Silt	Sand	Gravel		
	35.4	47.3	17.3	0.0	0.0

Sample Description	Dark grey slightly gravelly sandy clayey SILT.	Project No.	NMTL 3413
		BH/TP No.	TP-E
Project	Oweninny Wind Farm	GII PROJECT ID: 10467-03-21	Sample No.	B
Operator Tzr	Checked Nc	Approved Bc	Date sample tested 16/07/2021	Depth	2.0m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	100.0
10.000	100.0
6.300	100.0
5.000	100.0
3.350	100.0
2.000	99.8
1.180	99.3
0.600	96.6
0.425	92.5
0.300	83.1
0.212	66.0
0.150	45.2
0.063	19.4

Percentage Particle Size

Clay	Fine Medium Coarse	Fine Medium Coarse	Fine Medium Coarse	Cobbles	Boulder
	Silt	Sand	Gravel		
	19.4	80.4	0.2	0.0	0.0

Sample Description	Light brown/ cream silty SAND	Project No.	NMTL 3413
		BH/TP No.	TP-F
Project	Oweninny Wind Farm	GII PROJECT ID: 10467-03-21	Sample No.	B
Operator Tzr	Checked Nc	Approved Bc	Date sample tested 16/07/2021	Depth	2.0m

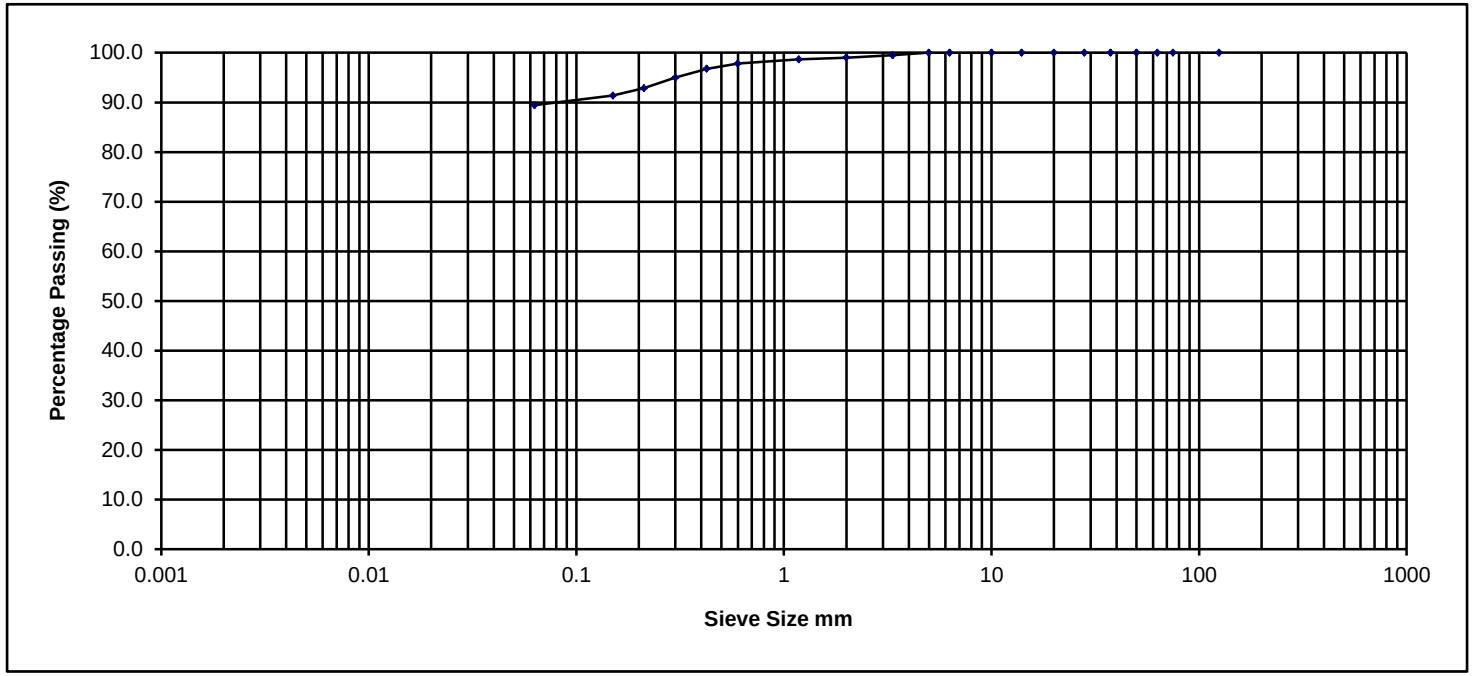
NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	100.0
10.000	100.0
6.300	100.0
5.000	100.0
3.350	99.5
2.000	99.0
1.180	98.7
0.600	97.8
0.425	96.7
0.300	95.0
0.212	92.9
0.150	91.4
0.063	89.4



Percentage Particle Size

Clay	Fine Silt	Medium Silt	Coarse Silt	Fine Sand	Medium Sand	Coarse Sand	Fine Gravel	Medium Gravel	Coarse Gravel	Cobbles	Boulder
		89.4			9.6			1.0		0.0	0.0

Sample Description	Dark brown/ black PEAT			Project No.	NMTL 3413
				BH/TP No.	TP-H
Project	Oweninny Wind Farm		GII PROJECT ID: 10467-03-21	Sample No.	T
Operator Tzr	Checked Nc	Approved Bc	Date sample tested 16/07/2021	Depth	1.0m

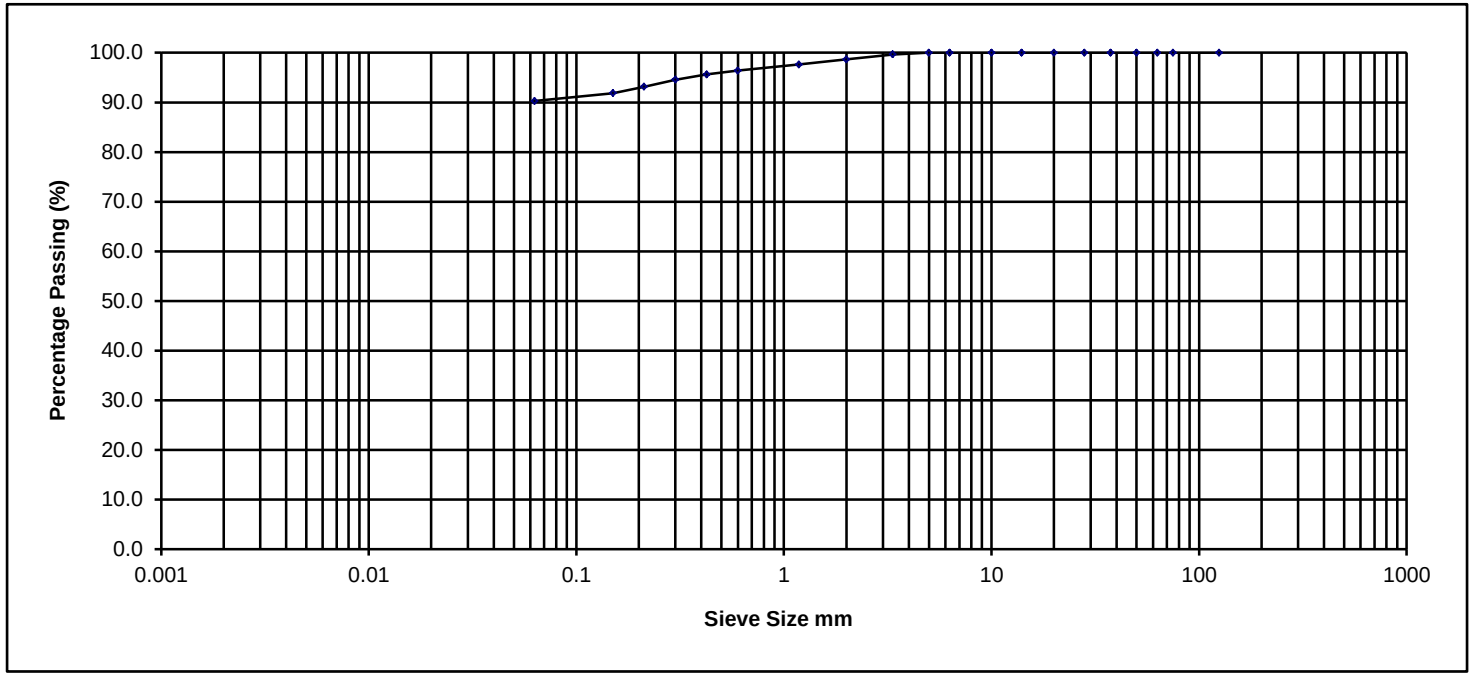
NMTL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	100.0
10.000	100.0
6.300	100.0
5.000	100.0
3.350	99.7
2.000	98.7
1.180	97.6
0.600	96.4
0.425	95.6
0.300	94.6
0.212	93.1
0.150	91.9
0.063	90.3



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		90.3			8.4			1.3		0.0	0.0

Sample Description	Dark brown/black PEAT					Project No.	NMTL 3413
						BH/TP No.	TP-I
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	T
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	19/07/2021	Depth	1.00m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	97.9
20.000	95.2
14.000	95.2
10.000	93.1
6.300	88.7
5.000	87.4
3.350	86.0
2.000	83.2
1.180	80.3
0.600	75.1
0.425	69.8
0.300	60.4
0.212	46.8
0.150	32.7
0.063	17.1

Percentage Particle Size

Clay	Fine Silt	Medium Silt	Coarse Silt	Fine Sand	Medium Sand	Coarse Sand	Fine Gravel	Medium Gravel	Coarse Gravel	Cobbles	Boulder
		17.1			66.1			16.8		0.0	0.0

Sample Description	Dark grey/ black gravelly silty SAND			Project No.	NMTL 3413
				BH/TP No.	TP-J
Project	Oweninny Wind Farm		GII PROJECT ID: 10467-03-21	Sample No.	B
Operator Tzr	Checked Nc	Approved Bc	Date sample tested 19/07/2021	Depth	2.0m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	92.0
50.000	89.5
37.500	86.6
28.000	82.5
20.000	80.4
14.000	77.9
10.000	76.5
6.300	74.7
5.000	73.2
3.350	71.6
2.000	68.2
1.180	63.6
0.600	55.8
0.425	50.5
0.300	43.6
0.212	36.2
0.150	30.4
0.063	21.7

Percentage Particle Size

Clay	Fine Silt	Medium Silt	Coarse Silt	Fine Sand	Medium Sand	Coarse Sand	Fine Gravel	Medium Gravel	Coarse Gravel	Cobbles	Boulder
		21.7			46.5			23.8		8.0	0.0

Sample Description	Grey/ brown slightly gravelly sandy SILT.					Project No.	NMTL 3413
						BH/TP No.	TP-N
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Depth	2.0m

Date sample tested 16/07/2021

NMTL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	96.3
37.500	94.7
28.000	91.5
20.000	89.7
14.000	89.1
10.000	88.8
6.300	87.4
5.000	86.4
3.350	85.3
2.000	83.5
1.180	80.7
0.600	75.4
0.425	70.9
0.300	64.0
0.212	54.8
0.150	45.3
0.063	29.1

Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		29.1			54.3			16.5		0.0	0.0

Sample Description	Grey/ brown slightly gravelly sandy CLAY/SILT.					Project No.	NMTL 3413
						BH/TP No.	TP-Q
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Date sample tested	16/07/2021
						Depth	1.00m

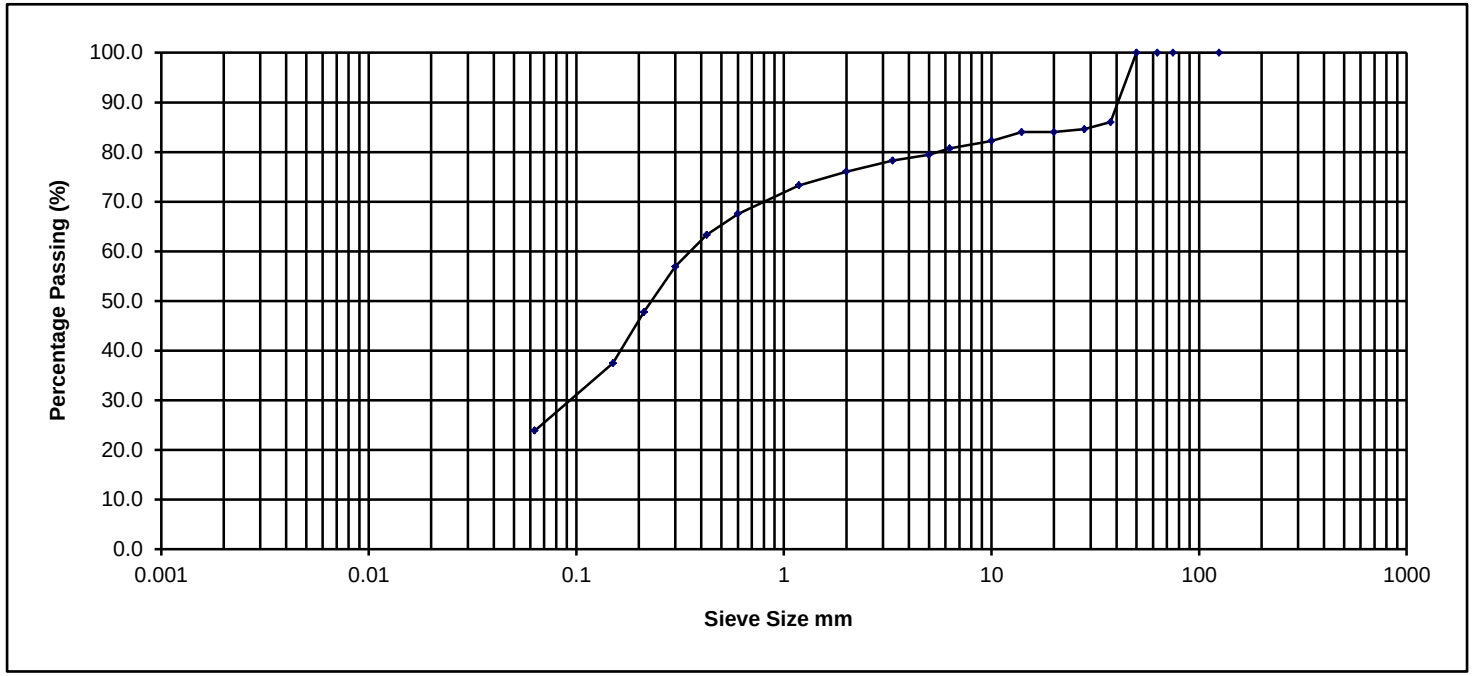
NMTL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	86.0
28.000	84.6
20.000	84.0
14.000	84.0
10.000	82.2
6.300	80.7
5.000	79.4
3.350	78.3
2.000	76.1
1.180	73.3
0.600	67.5
0.425	63.3
0.300	57.0
0.212	47.8
0.150	37.5
0.063	23.9



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		23.9			52.2			23.9		0.0	0.0

Sample Description	Grey/ brown slightly gravelly sandy clayey SILT					Project No.	NMTL 3413
						BH/TP No.	TP-U
Project	Oweninny Wind Farm			GII PROJECT ID: 10467-03-21		Sample No.	B
Operator	Tzr	Checked	Nc	Approved	Bc	Depth	1.00m

Date sample tested 16/07/2021

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	97.6
20.000	96.3
14.000	94.1
10.000	91.8
6.300	88.8
5.000	86.3
3.350	84.6
2.000	80.4
1.180	75.9
0.600	69.6
0.425	65.1
0.300	58.5
0.212	49.9
0.150	41.8
0.063	30.5

Percentage Particle Size

Clay	Fine Medium Coarse	Fine Medium Coarse	Fine Medium Coarse	Cobbles	Boulder
	Silt	Sand	Gravel		
	30.5	49.8	19.6	0.0	0.0

Sample Description	Dark grey/ brown black slightly gravelly sandy CLAY/SILT	Project No.	NMTL 3413
		BH/TP No.	TP-V
Project	Oweninny Wind Farm GII PROJECT ID: 10467-03-21	Sample No.	B
Operator Tzr	Checked Nc Approved Bc Date sample tested 16/07/2021	Depth	3.10m

NM TL Ltd

NMTL Ltd

Determination of Particle Size Distribution

BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	96.5
50.000	89.7
37.500	85.0
28.000	81.2
20.000	79.5
14.000	79.2
10.000	78.2
6.300	75.5
5.000	73.9
3.350	72.2
2.000	68.8
1.180	64.2
0.600	57.1
0.425	52.1
0.300	45.1
0.212	37.1
0.150	30.5
0.063	21.4

Percentage Particle Size

Clay	Fine Silt	Medium Silt	Coarse Silt	Fine Sand	Medium Sand	Coarse Sand	Fine Gravel	Medium Gravel	Coarse Gravel	Cobbles	Boulder
		21.4			47.4			27.7		3.5	0.0

Sample Description	Grey slightly gravelly sandy clayey SILT.	Project No.	NMTL 3413
		BH/TP No.	TP-W
Project	Oweninny Wind Farm	Sample No.	B
Operator Tzr	Checked Nc	Approved Bc	Date sample tested 19/07/2021
GII PROJECT ID: 10467-03-21		Depth	1.00m

NM TL Ltd

LABORATORY REPORT

4043

Contract Number: PSL21/7667

Report Date: 25 October 2021

Client's Reference: 10467-03-21

Client Name: Ground Investigations Ireland Ltd
Catherinestown House
Hazelhatch Road
Newcastle
Co Dublin
D22 YD52

For the attention of: Neil Sheehan

Contract Title: Oweninny Wind Farm

Date Received: 24/9/2021
Date Commenced: 24/9/2021
Date Completed: 25/10/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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

Checked and Approved Signatories:

A Watkins (Director)
R Berriman (Quality Manager)
S Royle (Laboratory Manager)

L Knight (Assistant Laboratory Manager)
S Eyre (Senior Technician)
M Fennell (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
tel: +44 (0)844 815 6641
fax: +44 (0)844 815 6642
e-mail: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
T215		B	2.00		Brown sandy slightly clayey GRAVEL with some cobbles.
T212		B	1.00		Brown slightly gravelly sandy CLAY.

PARTICLE SIZE DISTRIBUTION TEST

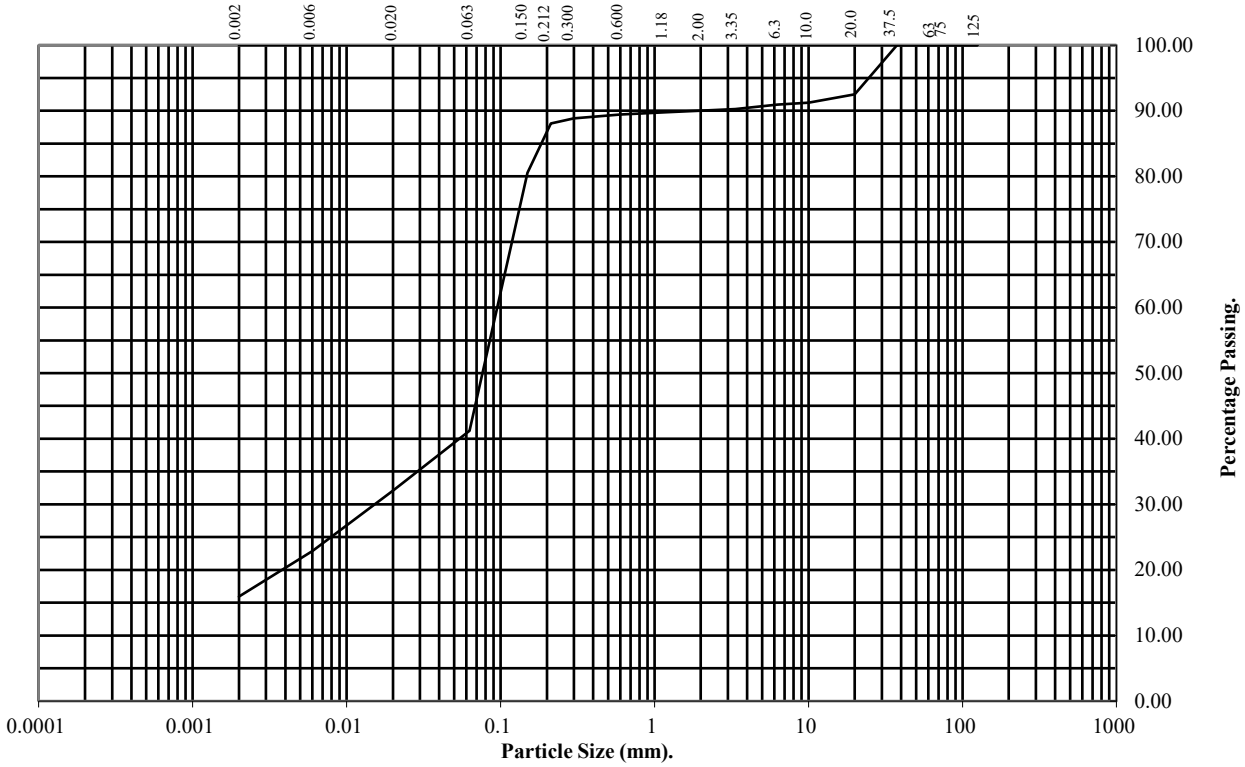
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: T212 **Top Depth (m):** 1.00

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

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	93
10	91
6.3	91
3.35	90
2	90
1.18	90
0.6	89
0.3	89
0.212	88
0.15	81
0.063	41

Particle Diameter	Percentage Passing
0.02	32
0.006	23
0.002	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	10
Sand	49
Silt	25
Clay	16

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

Oweninny Wind Farm

Contract No:
PSL21/7667
Client Ref:
10467-03-21

PARTICLE SIZE DISTRIBUTION TEST

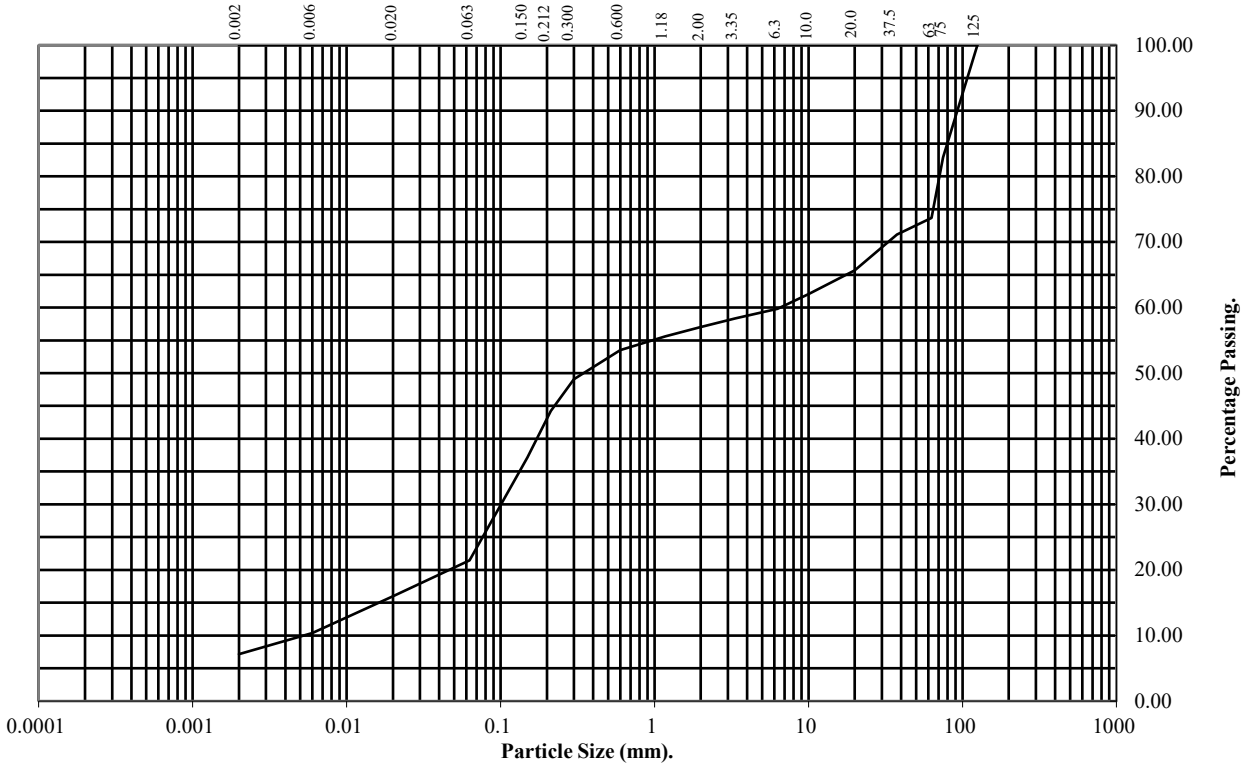
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: T215 **Top Depth (m):** 2.00

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

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	83
63	74
37.5	71
20	66
10	62
6.3	60
3.35	58
2	57
1.18	56
0.6	54
0.3	49
0.212	44
0.15	37
0.063	21

Particle Diameter	Percentage Passing
0.02	16
0.006	10
0.002	7

Soil Fraction	Total Percentage
Cobbles	26
Gravel	17
Sand	36
Silt	14
Clay	7

Remarks:

See Summary of Soil Descriptions

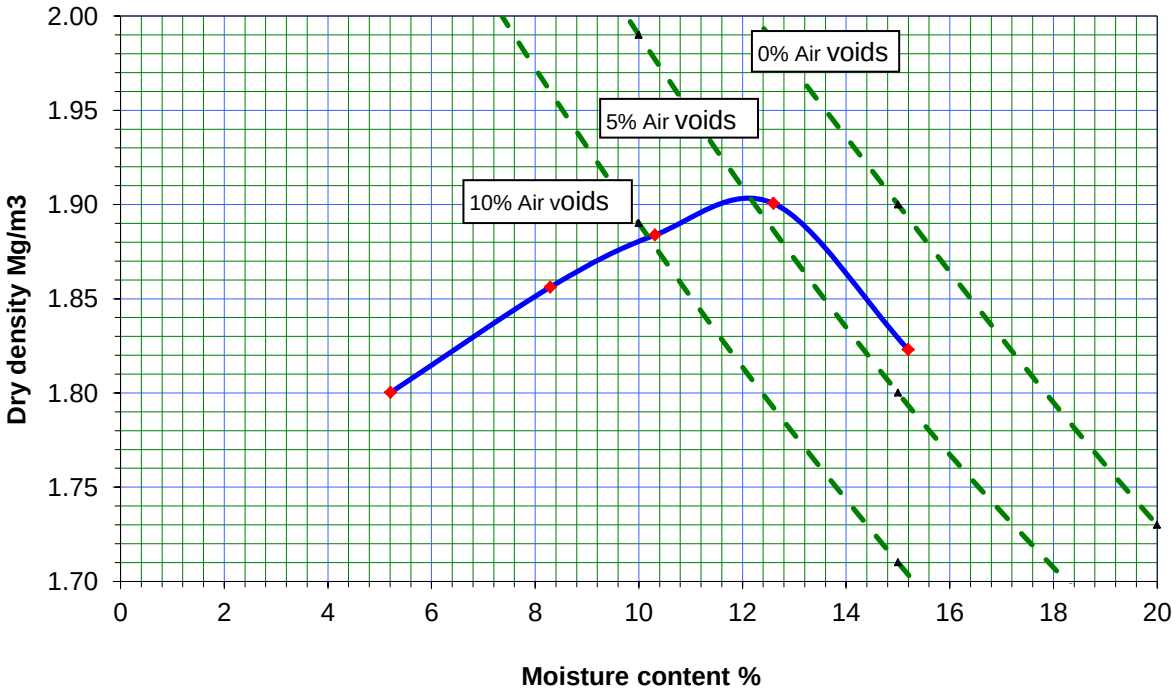
Determination of dry density / moisture content relationship

BS 1377: Part 4: 1990 : Clause 3.4

Location **Oweninny Wind Farm**

Soil description. Light brown/ cream silty gravelly SAND

Test No.		1	2	3	4	5
Bulk Density	Mg/m3	1.89	2.01	2.08	2.14	2.10
Moisture Content	%	5.2	8.3	10.3	12.6	15.2
Dry Density	Mg/m3	1.80	1.86	1.88	1.90	1.82



Maximum Dry Density	1.88	Mg/m3	% passing 37.5 mm sieve	95.9
Optimum Moisture content	10.3	%	% passing 20 mm sieve	90.6
Particle Density	2.65	Assumed		
Natural Moisture content	5.21	%		

NM TL Ltd		Project	Oweninny Wind Farm			Job No.	NMTL3413
						TP/BH	TP-BP01
						Sample No.	B
Operator-Fg	21/07/2021	Checked	Nc	Approved	Bc	28/07/2021	Depth m 1.00m

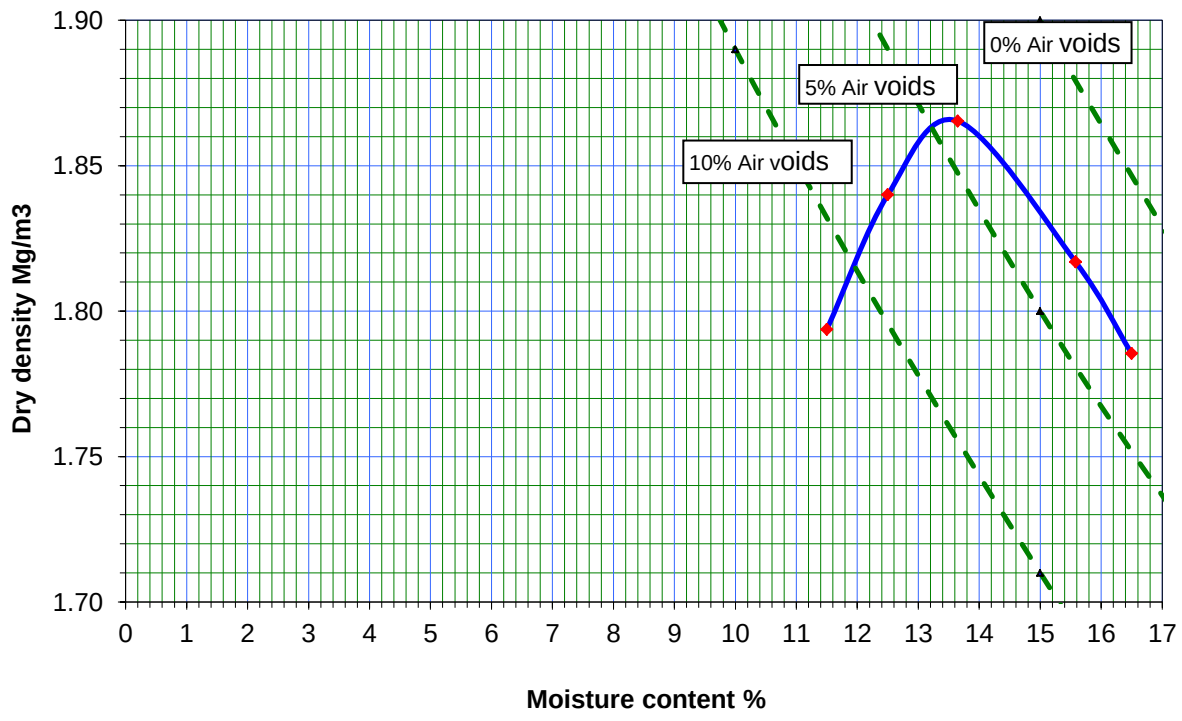
Determination of dry density / moisture content relationship

BS 1377: Part 4: 1990 : Clause 3.4

Location **Oweninny Wind Farm**

Soil description. Brown silty gravelly SAND

Test No.		1	2	3	4	5
Bulk Density	Mg/m3	2.00	2.07	2.12	2.10	2.08
Moisture Content	%	11.5	12.5	13.7	15.6	16.5
Dry Density	Mg/m3	1.79	1.84	1.87	1.82	1.79



Maximum Dry Density	1.87	Mg/m3	% passing 37.5 mm sieve	85.6
Optimum Moisture content	13.7	%	% passing 20 mm sieve	77.7
Particle Density	2.65	Assumed		
Natural Moisture content	13.65	%		

NM TL Ltd		Project	Oweninny Wind Farm			Job No.	NMTL3413
						TP/BH	TP-BP08
						Sample No.	B
Operator-Fg	21/07/2021	Checked	Nc	Approved	Bc 28/07/2021	Depth m	3.0m

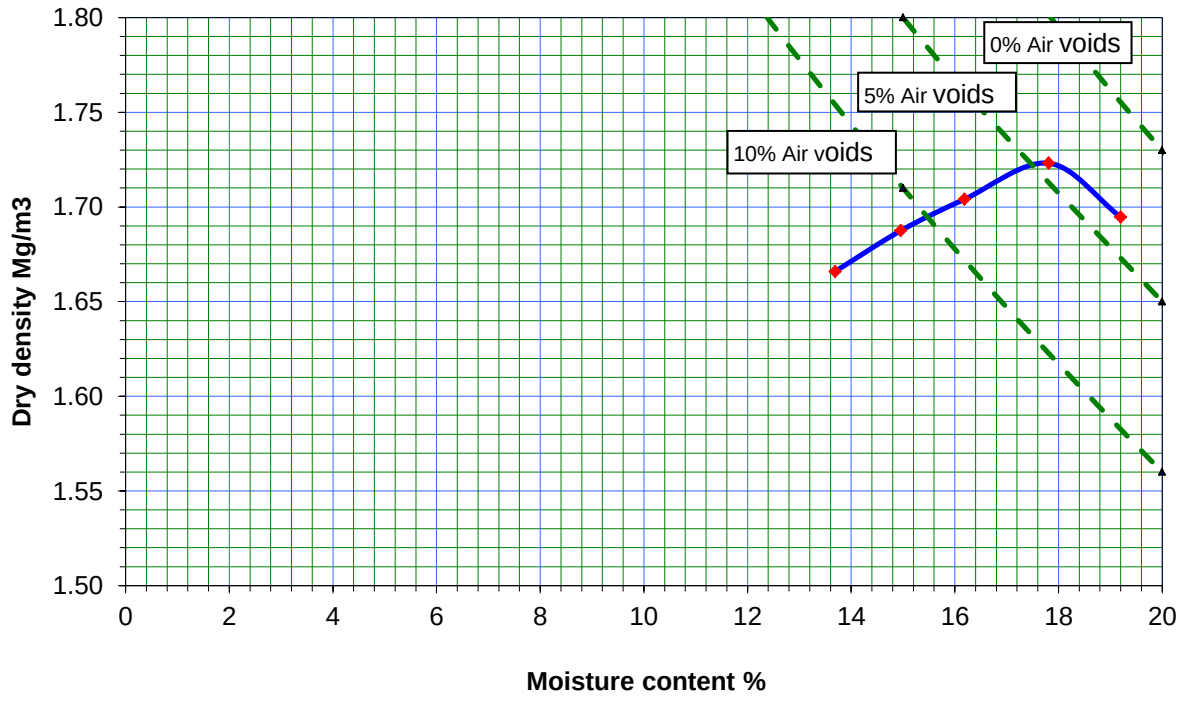
Determination of dry density / moisture content relationship

BS 1377: Part 4: 1990 : Clause 3.4

Location **Oweninny Wind Farm**

Soil description. Light brown cream silty fine SAND

Test No.		1	2	3	4	5
Bulk Density	Mg/m3	1.89	1.94	1.98	2.03	2.02
Moisture Content	%	13.7	15.0	16.2	17.8	19.2
Dry Density	Mg/m3	1.67	1.69	1.70	1.72	1.69



Maximum Dry Density	1.72	Mg/m3	% passing 37.5 mm sieve	100
Optimum Moisture content	17.0	%	% passing 20 mm sieve	100.0
Particle Density	2.64	Measured		
Natural Moisture content	16.19	%		

NM TL Ltd		Project	Oweninny Wind Farm			Job No.	NMTL3413
						TP/BH	TP-BP10
						Sample No.	B
Operator-Fg	21/07/2021	Checked	Nc	Approved	Bc 28/07/2021	Depth m	2.0m

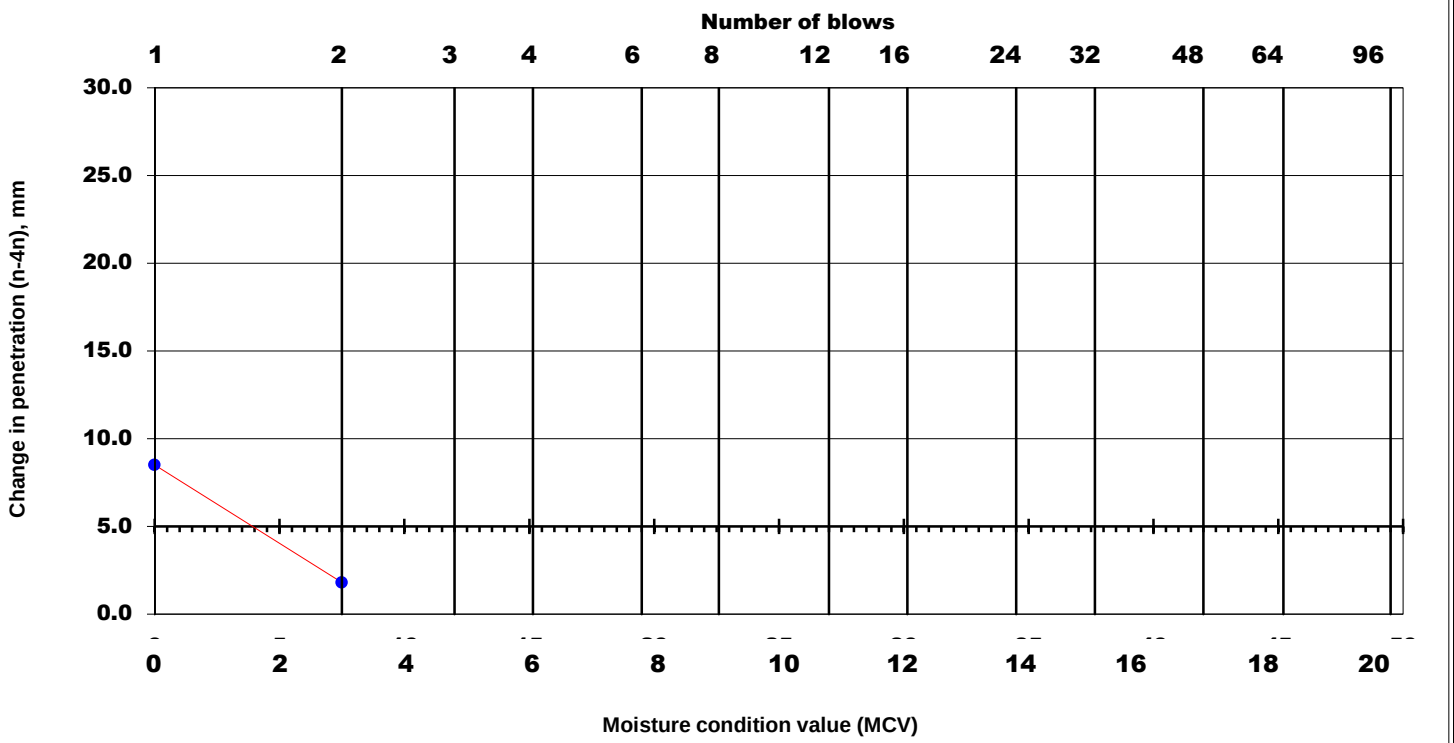
SINGLE POINT MOISTURE CONDITION VALUE TEST

Single sample mass		
Initial sample mass	1447	g
Moisture content	30.8	%
Dry mass	1106.0	g
Mass retained on 20mm sieve	0	g / %

* Delete as appropriate

Project Name:	Oweninny Wind Farm	Job ref.	NMTL_3413
		GII Project ID	10467-03-21
		BH/TP	TP-BB
Soil description:		Sample no.	B
Dark grey /black slightly sandy slightly gravelly clayey SILT.		Depth	1.00m
Test method	BS 1377 : Part 4 : 1990 : 5	Date Tested	19/07/2021
		Date Sampled	N/A
MCV	**1.6** **Natural**	Date Received	30/06/2021

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	59.8	8.5
2	52.8	1.8
3	51.8	
4	51.3	
6	51.0	
8	51.0	
12		
16		
24		
32		
48		
64		
96		
128		
192		
256		



Operator	Checked	Approved
Fg	Nc	Bc

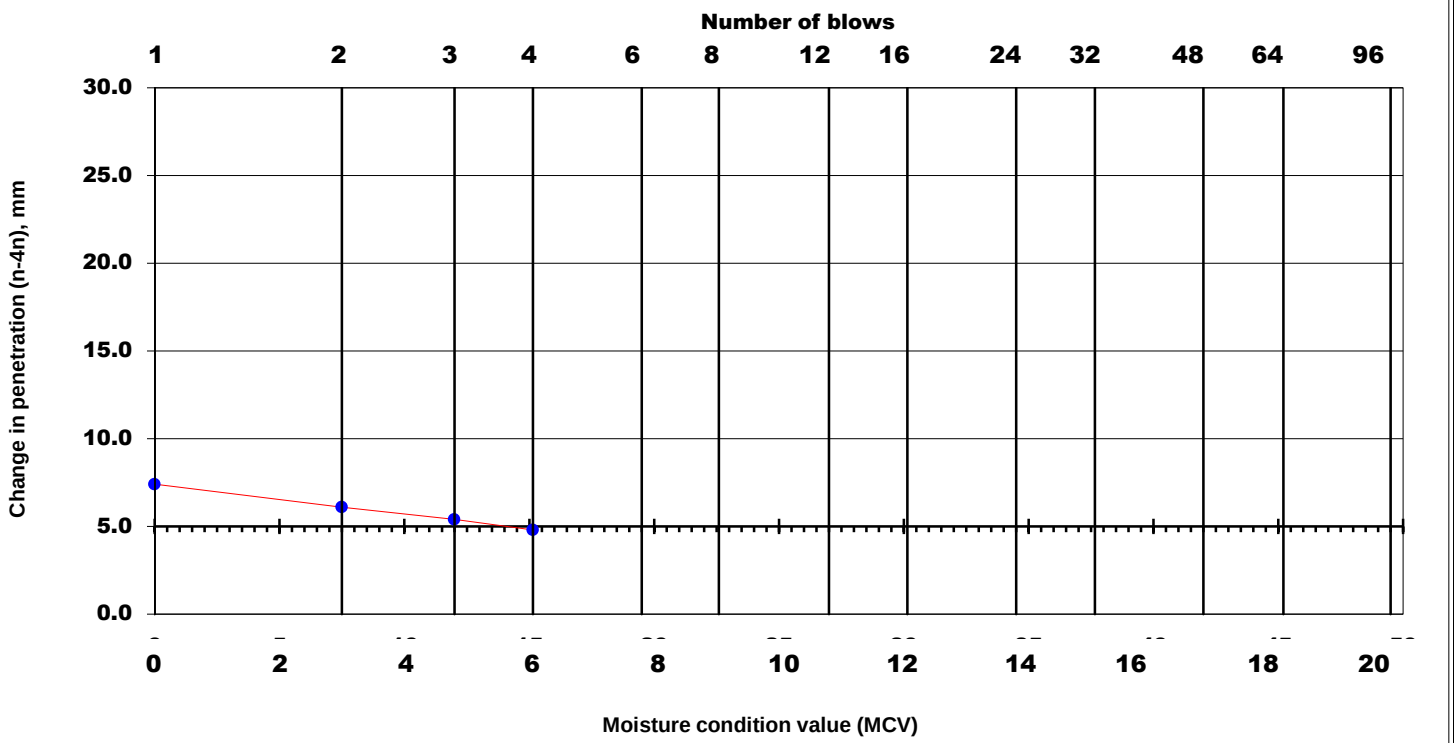
NMTL Ltd

SINGLE POINT MOISTURE CONDITION VALUE TEST

Single sample mass			
Initial sample mass	1609 g		
Moisture content	16.9 %		
Dry mass	1376.0 g		
Mass retained on 20mm sieve	g 7.5 %		
* Delete as appropriate			

Project Name: Oweninny Wind Farm		Job ref.	NMTL_3413
		GII Project ID	10467-03-21
		BH/TP	TP-BB
Soil description:		Sample no.	B
Dark grey silty gravelly SAND		Depth	1.50m
Test method	BS 1377 : Part 4 : 1990 : 5	Date Tested	19/07/2021
		Date Sampled	N/A
MCV	**5.7** **Natural**	Date Received	30/06/2021

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	60.8	7.4
2	56.9	6.1
3	54.7	5.4
4	53.4	4.8
6	51.8	
8	50.8	
12	49.3	
16	48.6	
24		
32		
48		
64		
96		
128		
192		
256		



Operator	Checked	Approved
Fg	Nc	Bc

NMTL Ltd

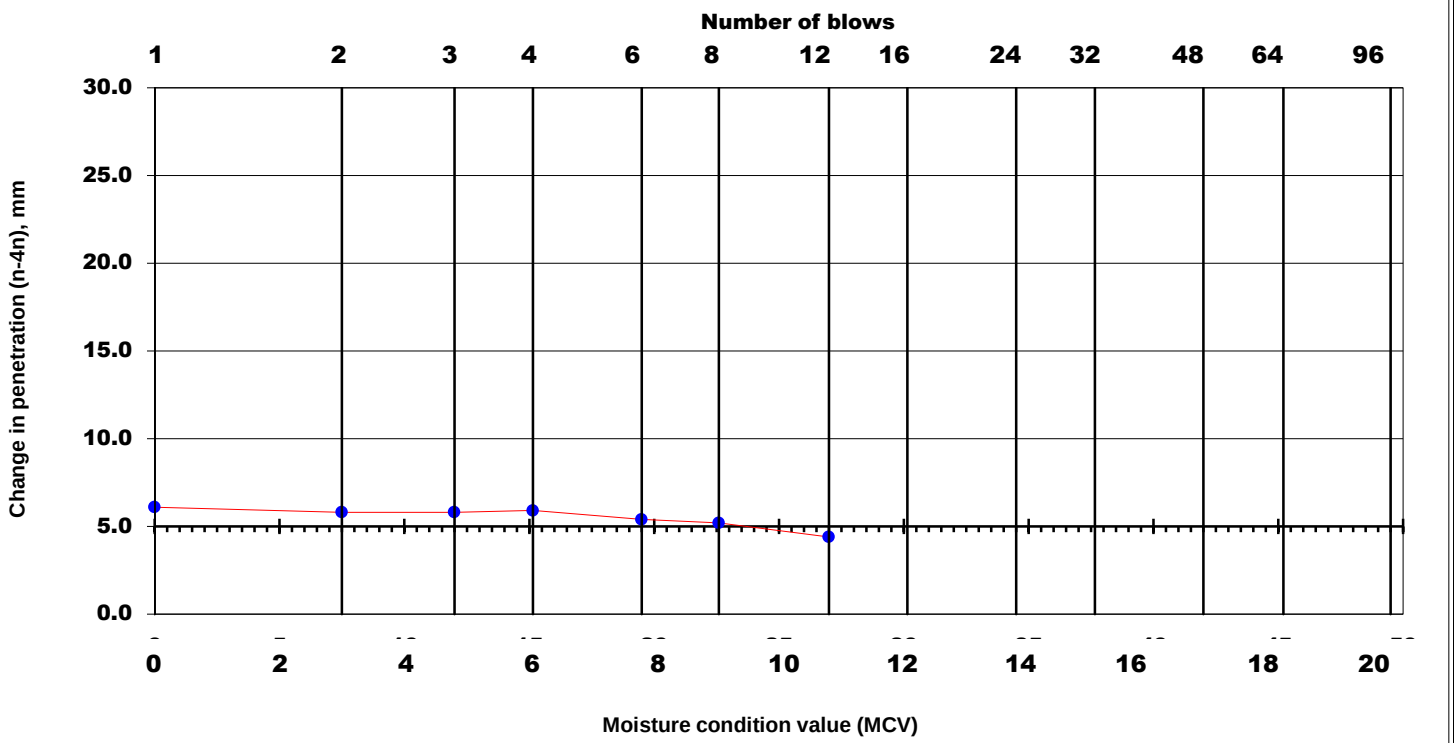
SINGLE POINT MOISTURE CONDITION VALUE TEST

Single sample mass		
Initial sample mass	1509	g
Moisture content	5.0	%
Dry mass	1437.5	g
Mass retained on 20mm sieve	g	9.4 %

* Delete as appropriate

Project Name:	Job ref.	NMTL_3413
Oweninny Wind Farm	GII Project ID	10467-03-21
	BH/TP	TP-BP01
Soil description:	Sample no.	B
Light brown/ cream silty gravelly SAND	Depth	1.00m
Test method BS 1377 : Part 4 : 1990 : 5	Date Tested	21/07/2021
	Date Sampled	N/A
MCV **9.7** **Natural**	Date Received	30/06/2021

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	66.2	6.1
2	63.1	5.8
3	61.3	5.8
4	60.1	5.9
6	58.4	5.4
8	57.3	5.2
12	55.5	4.4
16	54.2	
24	53.0	
32	52.1	
48	51.1	
64		
96		
128		
192		
256		



Operator	Checked	Approved
Fg	Nc	Bc

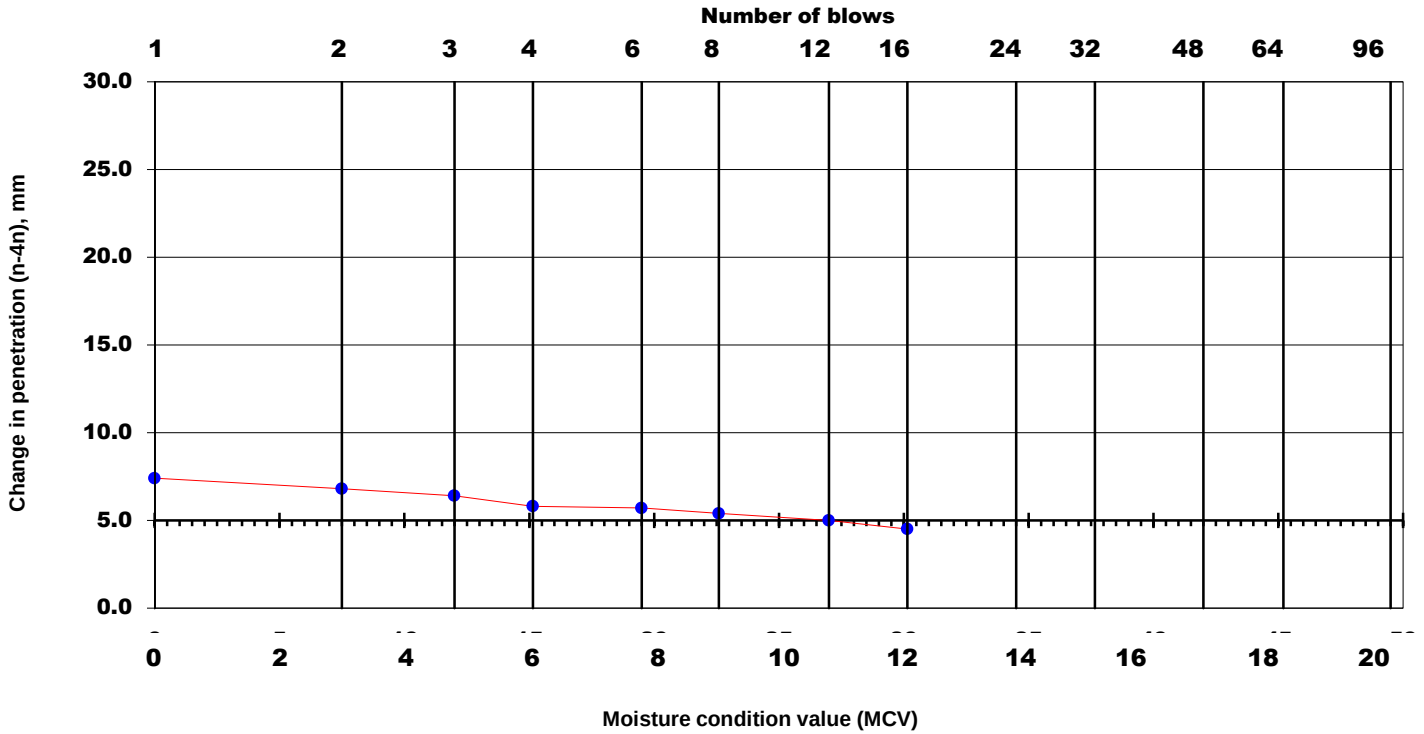
NMTL Ltd

SINGLE POINT MOISTURE CONDITION VALUE TEST

Single sample mass			
Initial sample mass	1609 g		
Moisture content	6.0 %		
Dry mass	1518.5 g		
Mass retained on 20mm sieve	g 11.9 %		
* Delete as appropriate			

Project Name: Oweninny Wind Farm		Job ref.	NMTL_3413
		GII Project ID	10467-03-21
		BH/TP	TP-BP01
Soil description: Light brown/ cream silty gravelly SAND		Sample no.	B
		Depth	2.00m
Test method	BS 1377 : Part 4 : 1990 : 5	Date Tested	16/07/2021
		Date Sampled	N/A
MCV	**10.8** **Natural**	Date Received	30/06/2021

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	68.9	7.4
2	65.1	6.8
3	63.1	6.4
4	61.5	5.8
6	59.7	5.7
8	58.3	5.4
12	56.7	5.0
16	55.7	4.5
24	54.0	
32	52.9	
48	51.7	
64	51.2	
96		
128		
192		
256		



Operator	Checked	Approved
Fg	Nc	Bc

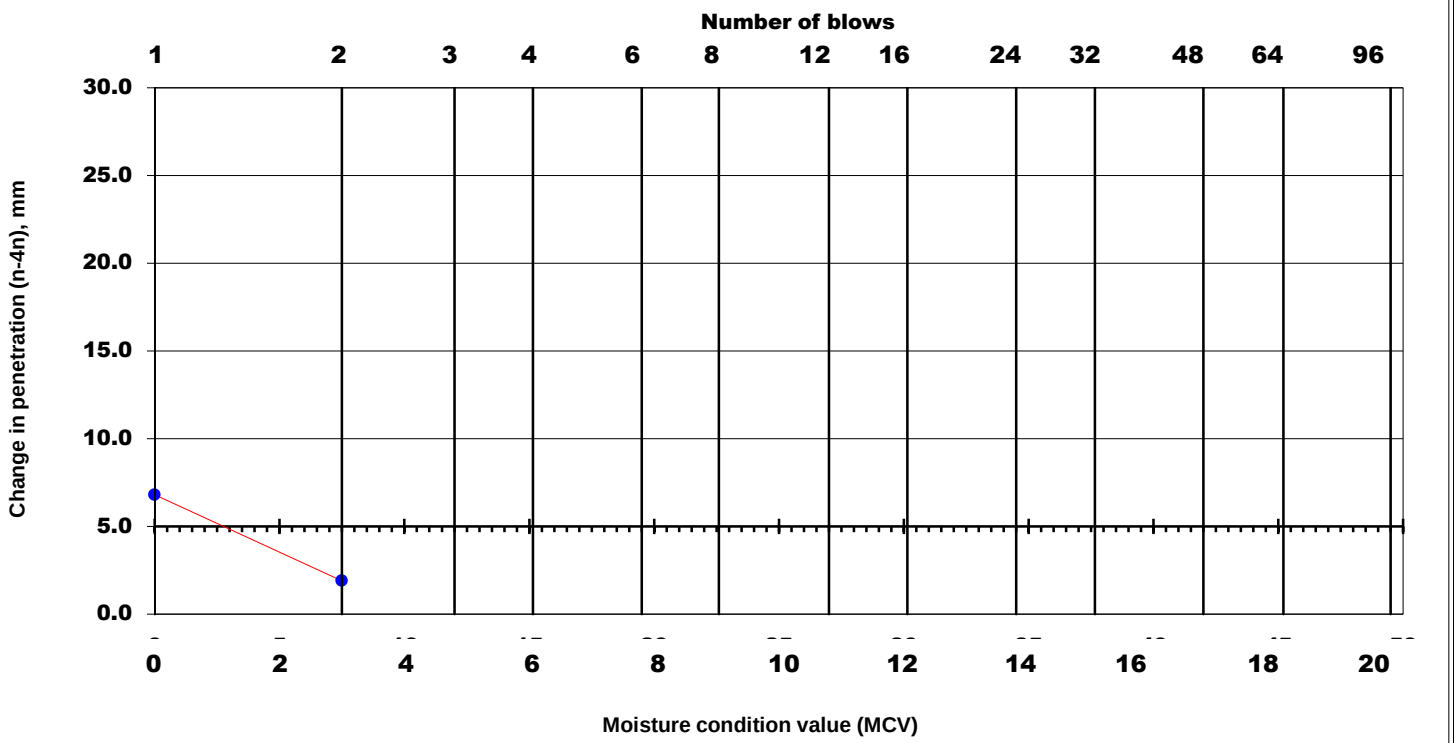
NMTL Ltd

SINGLE POINT MOISTURE CONDITION VALUE TEST

Single sample mass			
Initial sample mass	1465 g		
Moisture content	21.8 %		
Dry mass	1203.1 g		
Mass retained on 20mm sieve	g 21.8 %		
* Delete as appropriate			

Project Name: Oweninny Wind Farm		Job ref.	NMTL_3413
		GII Project ID	10467-03-21
		BH/TP	TP-BP08
Soil description:		Sample no.	B
Brown gravelly silty SAND		Depth	2.00m
Test method	BS 1377 : Part 4 : 1990 : 5	Date Tested	20/07/2021
		Date Sampled	N/A
MCV	**1.1** **Natural**	Date Received	30/06/2021

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	51.9	6.8
2	46.4	1.9
3	45.5	
4	45.1	
6	44.7	
8	44.5	
12		
16		
24		
32		
48		
64		
96		
128		
192		
256		



Operator	Checked	Approved
Fg	Nc	Bc

NMTL Ltd

SINGLE POINT MOISTURE CONDITION VALUE TEST

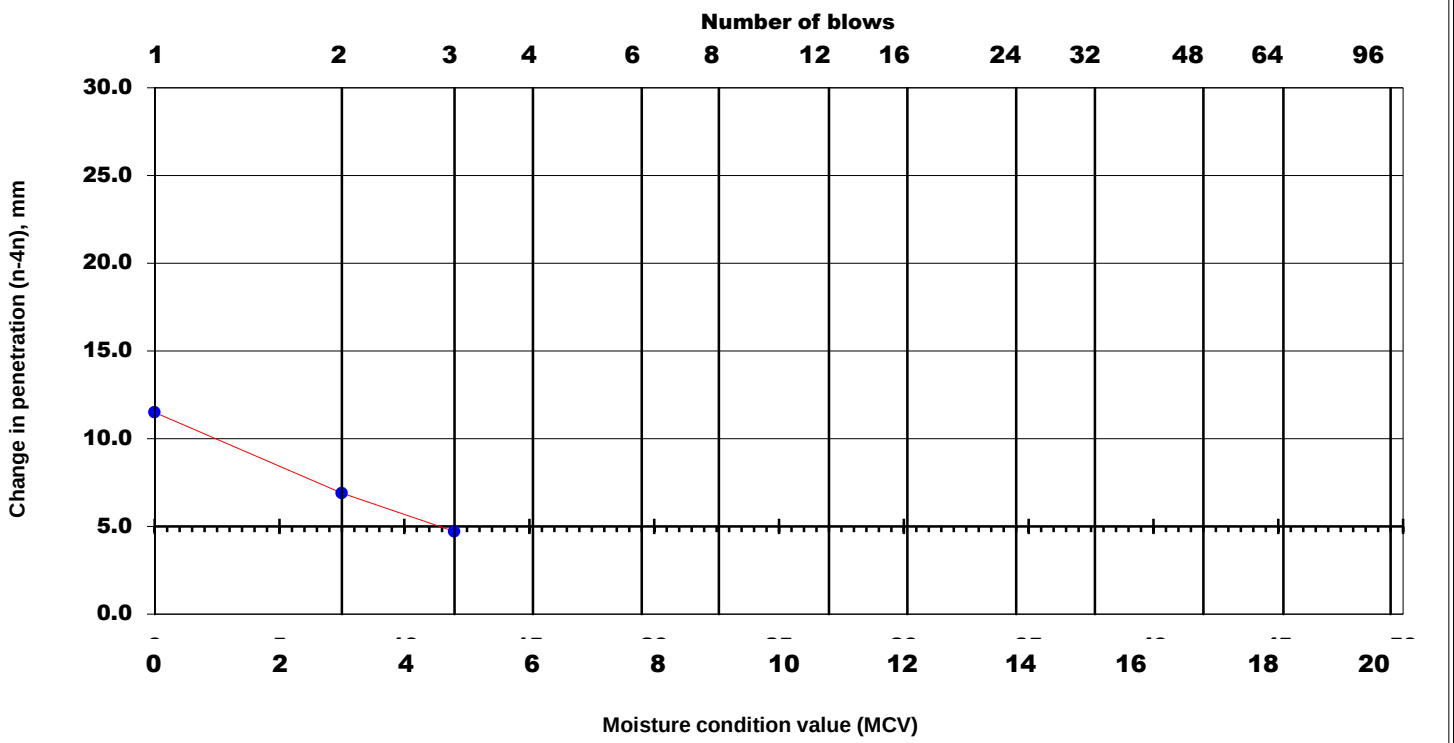
Single sample mass		
Initial sample mass	1619	g
Moisture content	18.3	%
Dry mass	1368.8	g
Mass retained on 20mm sieve	21.8	%

* Delete as appropriate

Project Name: Oweninny Wind Farm		Job ref.	NMTL_3413
		GII Project ID	10467-03-21
		BH/TP	TP-BP09
Soil description:		Sample no.	B
Brown clayey silty gravelly SAND		Depth	1.00m
Test method	BS 1377 : Part 4 : 1990 : 5	Date Tested	19/07/2021
		Date Sampled	N/A
		Date Received	30/06/2021

MCV **4.5** **Natural**

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	63.8	11.5
2	57.7	6.9
3	54.8	4.7
4	52.3	
6	51.0	
8	50.8	
12	50.1	
16		
24		
32		
48		
64		
96		
128		
192		
256		



Operator	Checked	Approved
Fg	Nc	Bc

NMTL Ltd

SINGLE POINT MOISTURE CONDITION VALUE TEST

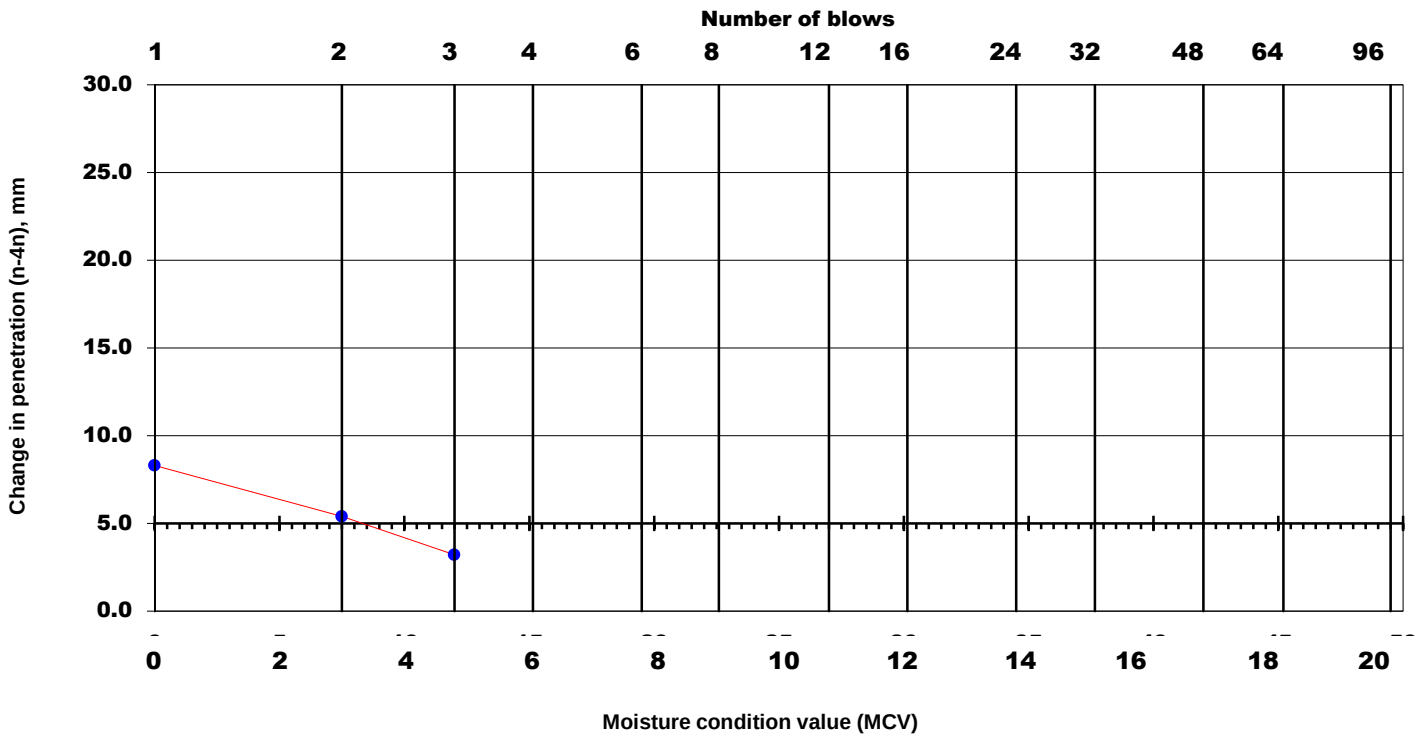
Single sample mass		
Initial sample mass	1567	g
Moisture content	17.5	%
Dry mass	1334.0	g
Mass retained on 20mm sieve	g	21.8 %

* Delete as appropriate

Project Name:	Job ref.	NMTL_3413
Oweninny Wind Farm	GII Project ID	10467-03-21
	BH/TP	TP-BP09
Soil description:	Sample no.	B
Brown clayey silty gravelly SAND	Depth	2.00m
Test method BS 1377 : Part 4 : 1990 : 5	Date Tested	20/07/2021
	Date Sampled	N/A
	Date Received	30/06/2021

MCV **3.4** **Natural**

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	57.2	8.3
2	52.6	5.4
3	50.2	3.2
4	48.9	
6	47.3	
8	47.2	
12	47.0	
16		
24		
32		
48		
64		
96		
128		
192		
256		



Operator	Checked	Approved
Fg	Nc	Bc

NMTL Ltd

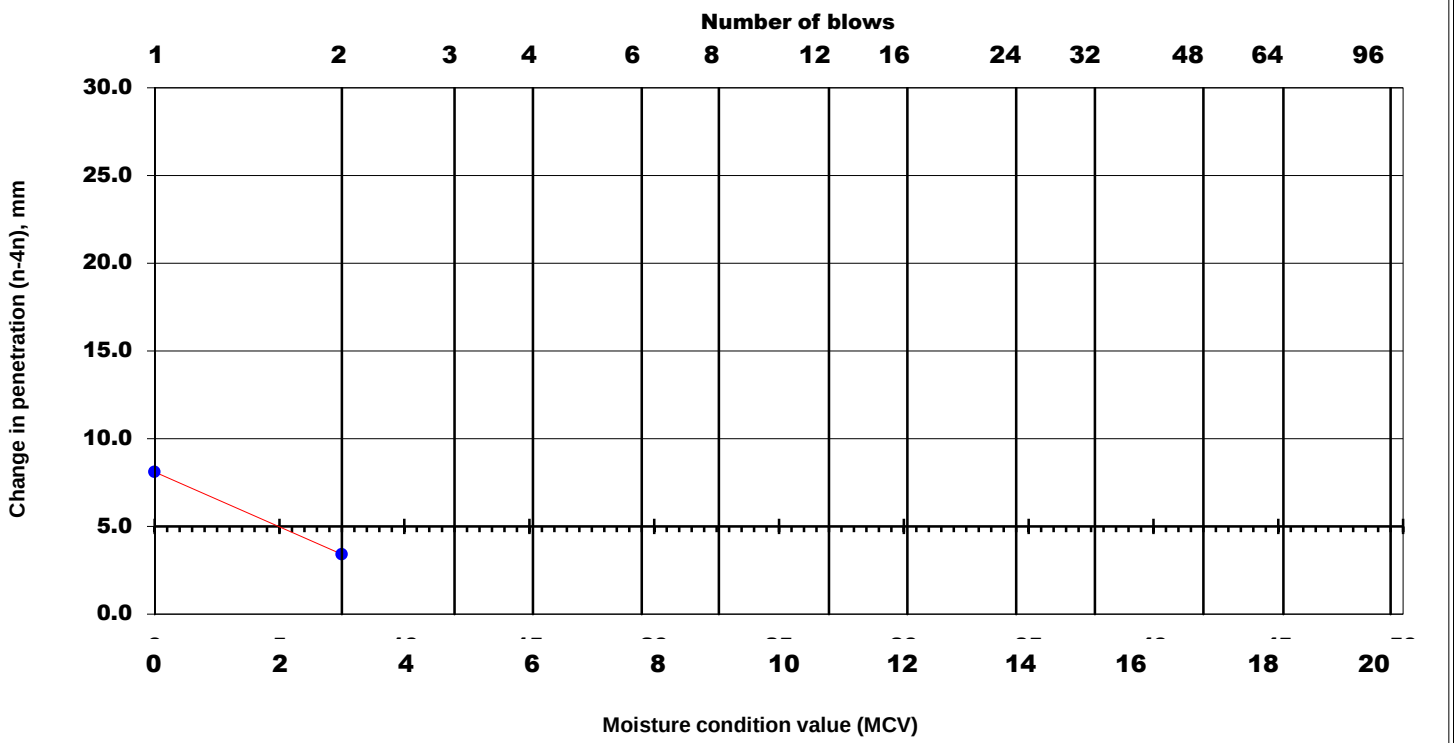
SINGLE POINT MOISTURE CONDITION VALUE TEST

Single sample mass		
Initial sample mass	1648	g
Moisture content	22.0	%
Dry mass	1351.3	g
Mass retained on 20mm sieve	10.5	%

* Delete as appropriate

Project Name: Oweninny Wind Farm		Job ref.	NMTL_3413
		GII Project ID	10467-03-21
		BH/TP	TP-F
Soil description:		Sample no.	B
Dark brown slightly gravelly clayey SILT.		Depth	1.00m
Test method	BS 1377 : Part 4 : 1990 : 5	Date Tested	20/07/2021
		Date Sampled	N/A
MCV	**2**	Date Received	30/06/2021
	Natural		

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	67.0	8.1
2	61.1	3.4
3	59.8	
4	58.9	
6	58.1	
8	57.7	
12		
16		
24		
32		
48		
64		
96		
128		
192		
256		



Operator	Checked	Approved
Fg	Nc	Bc

NMTL Ltd

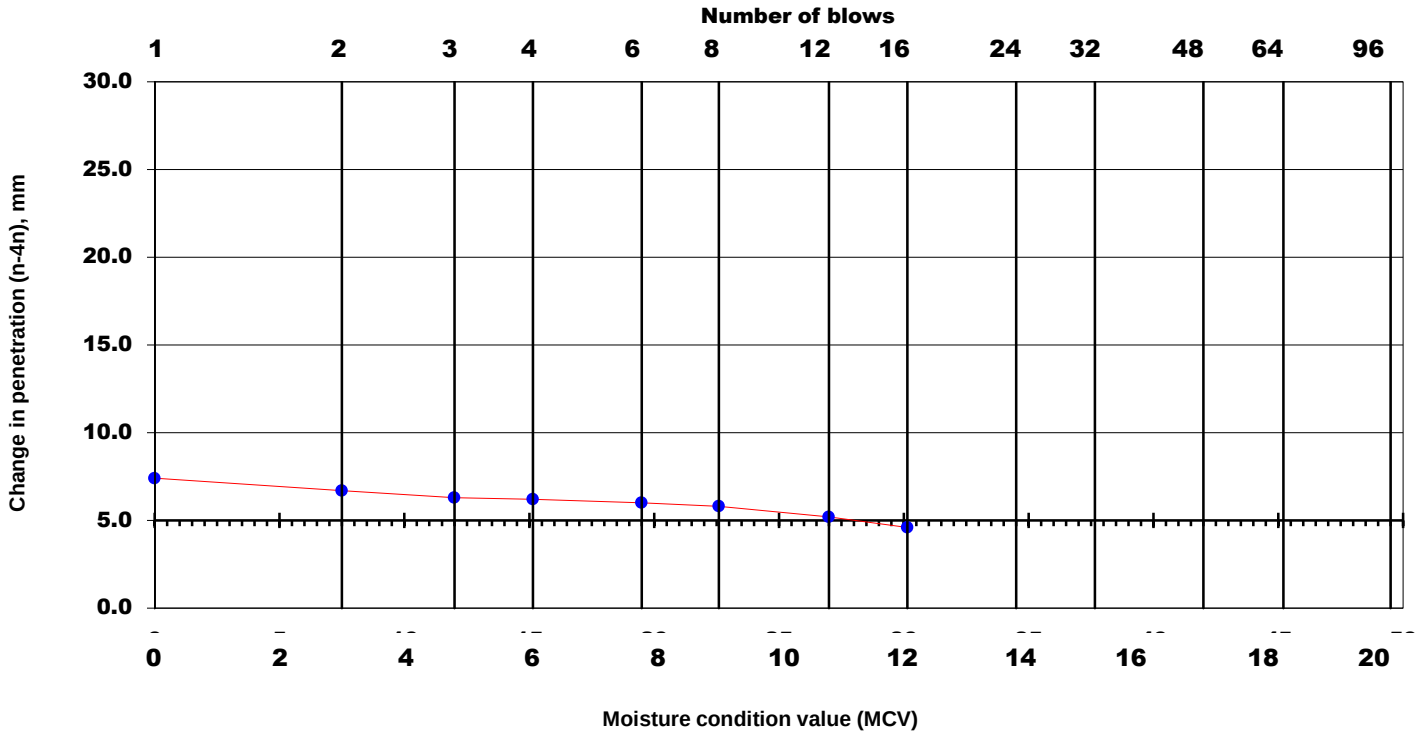
SINGLE POINT MOISTURE CONDITION VALUE TEST

Single sample mass	
Initial sample mass	1554 g
Moisture content	12.9 %
Dry mass	1377.0 g
Mass retained on 20mm sieve	g 0 %

* Delete as appropriate

Project Name: Oweninny Wind Farm		Job ref.	NMTL_3413
		GII Project ID	10467-03-21
		BH/TP	TP-F
Soil description:		Sample no.	B
Light brown/ cream slty SAND		Depth	2.00m
Test method	BS 1377 : Part 4 : 1990 : 5	Date Tested	16/07/2021
		Date Sampled	N/A
MCV	**11.4** **Natural**	Date Received	30/06/2021

Total number of blows n	Penetration or protrusion mm	Change in penetration n to 4n mm
1	75.4	7.4
2	71.7	6.7
3	69.7	6.3
4	68.0	6.2
6	66.1	6.0
8	65.0	5.8
12	63.4	5.2
16	61.8	4.6
24	60.1	
32	59.2	
48	58.2	
64	57.2	
96		
128		
192		
256		



Operator	Checked	Approved
Fg	Nc	Bc

NMTL Ltd

NATIONAL MATERIALS TESTING LABORATORY LTD.

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description Grey slightly gravelly sandy SILT.

Date 19-Jul-21

Test Method BS 1377: Part 4 : 1990 :7.4

Force Measuring Device S86-010304 Test 1

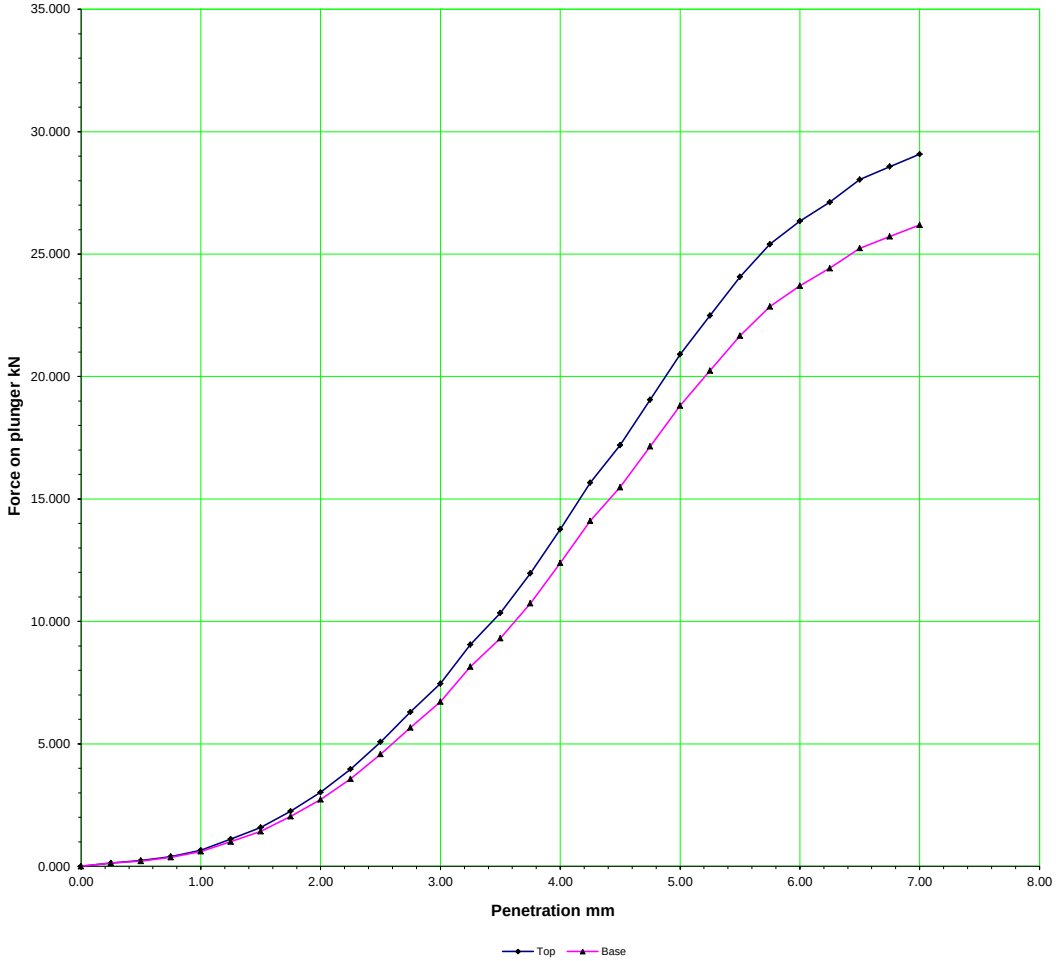
Preperatic Remoulded with 2.5 kg rammer at natural moisture content

Surcharge 10 kPa Mean Calibration 26.46 N/Div

Penetration of plunger mm | Force Gauge reading divisions | Force on plunger kN | California Bearing Ratio Results %

Penetration of plunger mm	Force Gauge reading divisions Top	Force Gauge reading divisions Bottom	Force on plunger kN Top	Force on plunger kN Bottom	California Bearing Ratio Results % Top	California Bearing Ratio Results % Base
0.00	0.0	0.0	0.000	0.000		
0.25	5.0	5.0	0.132	0.132		
0.50	9.0	8.0	0.238	0.212		
0.75	15.0	14.0	0.397	0.370		
1.00	25.0	23.0	0.662	0.609		
1.25	42.0	38.0	1.111	1.005		
1.50	60.0	54.0	1.588	1.429		
1.75	85.0	77.0	2.249	2.037		
2.00	114.0	103.0	3.016	2.725		
2.25	150.0	135.0	3.969	3.572		
2.50	**192.0**	**173.0**	**5.080**	**4.578**	**38.49**	**34.68**
2.75	238.0	214.0	6.297	5.662		
3.00	282.0	254.0	7.462	6.721		
3.25	342.0	308.0	9.049	8.150		
3.50	391.0	352.0	10.346	9.314		
3.75	452.0	406.0	11.960	10.743		
4.00	520.0	468.0	13.759	12.383		
4.25	592.0	533.0	15.664	14.103		
4.50	650.0	585.0	17.199	15.479		
4.75	720.0	648.0	19.051	17.146		
5.00	**790.0**	**711.0**	**20.903**	**18.813**	**104.52**	**94.07**
5.25	850.0	765.0	22.491	20.242		
5.50	910.0	819.0	24.079	21.671		
5.75	960.0	864.0	25.402	22.861		
6.00	996.0	896.0	26.354	23.708		
6.25	1025.0	923.0	27.122	24.423		
6.50	1060.0	954.0	28.048	25.243		
6.75	1080.0	972.0	28.577	25.719		
7.00	1099.0	990.0	29.080	26.195		
7.25						
7.50						

Moisture content after test		Top	Middle	Base	Specimen wt g	5237
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	864.0	916.0	964.0	Length mm	127.0
Mass of dry soil + container	g	816.3	860.8	907.4		
Weight of container	g	189.0	147.0	185.0		
Mass of moisture	g	47.7	55.2	56.6	Average MC %	7.72
Dry weight	g	627.3	713.8	722.4	Density Mg/m3	2.27
Moisture content	%	7.6	7.7	7.8	Dry Density Mg/m3	2.11



NM TL Ltd

Project: Oweninny Wind Farm

GII Project ID: 10467-03-21

		Date
Operator	Tch	19-Jul-21
Checked	Nc	
Approved	Bc	

Project No.	NMTL 3413
Trial Pit No.	TP-A
Sample No.	B
Depth	2.00m

NATIONAL MATERIALS TESTING LABORATORY LTD.

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description Grey slightly gravelly sandy clayey SILT.

Date 20-Jul-21

Test Method BS 1377: Part 4 : 1990 :7.4

Force Measuring Device VJT-08211 Test 1

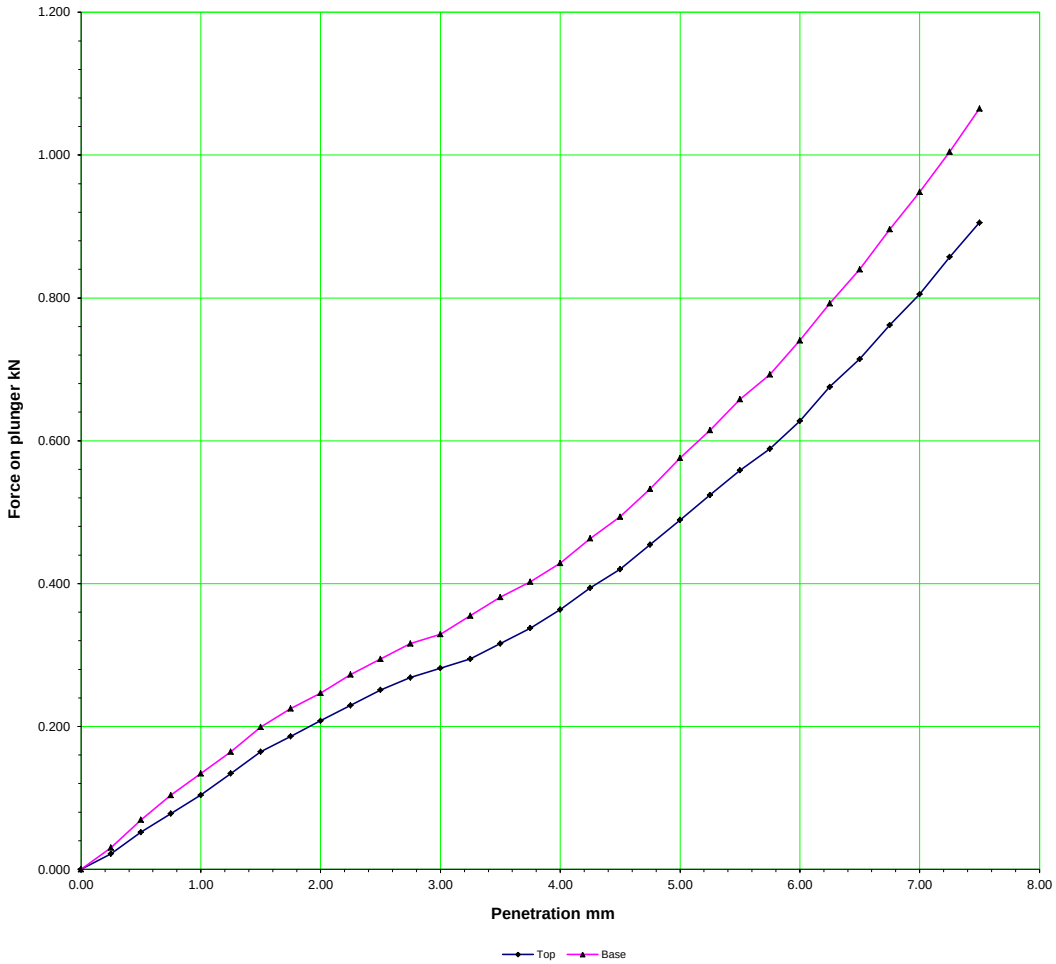
Preperatic Remoulded with 2.5 kg rammer at natural moisture content

Surcharge 10 kPa Mean Calibration 4.33 N/Div

Penetration of plunger mm | Force Gauge reading divisions | Force on plunger kN | California Bearing Ratio Results %

Penetration of plunger mm	Force Gauge reading divisions Top	Force Gauge reading divisions Bottom	Force on plunger kN Top	Force on plunger kN Bottom	California Bearing Ratio Results % Top	California Bearing Ratio Results % Base
0.00	0.0	0.0	0.000	0.000		
0.25	5.0	7.0	0.022	0.030		
0.50	12.0	16.0	0.052	0.069		
0.75	18.0	24.0	0.078	0.104		
1.00	24.0	31.0	0.104	0.134		
1.25	31.0	38.0	0.134	0.165		
1.50	38.0	46.0	0.165	0.199		
1.75	43.0	52.0	0.186	0.225		
2.00	48.0	57.0	0.208	0.247		
2.25	53.0	63.0	0.229	0.273		
2.50	**58.0**	**68.0**	**0.251**	**0.294**	**1.90**	**2.23**
2.75	62.0	73.0	0.268	0.316		
3.00	65.0	76.0	0.281	0.329		
3.25	68.0	82.0	0.294	0.355		
3.50	73.0	88.0	0.316	0.381		
3.75	78.0	93.0	0.338	0.403		
4.00	84.0	99.0	0.364	0.429		
4.25	91.0	107.0	0.394	0.463		
4.50	97.0	114.0	0.420	0.494		
4.75	105.0	123.0	0.455	0.533		
5.00	**113.0**	**133.0**	**0.489**	**0.576**	**2.45**	**2.88**
5.25	121.0	142.0	0.524	0.615		
5.50	129.0	152.0	0.559	0.658		
5.75	136.0	160.0	0.589	0.693		
6.00	145.0	171.0	0.628	0.740		
6.25	156.0	183.0	0.675	0.792		
6.50	165.0	194.0	0.714	0.840		
6.75	176.0	207.0	0.762	0.896		
7.00	186.0	219.0	0.805	0.948		
7.25	198.0	232.0	0.857	1.005		
7.50	209.1	246.0	0.905	1.065		

Moisture content after test		Top	Middle	Base	Specimen wt g	4665
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	834.0	819.0	777.0	Length mm	127.0
Mass of dry soil + container	g	738.2	722.6	684.4		
Weight of container	g	190.0	162.0	143.0		
Mass of moisture	g	95.8	96.4	92.6	Average MC %	17.26
Dry weight	g	548.2	560.6	541.4	Density Mg/m3	2.02
Moisture content	%	17.5	17.2	17.1	Dry Density Mg/m3	1.73



NM TL Ltd

Project: Oweninny Wind Farm

GII Project ID: 10467-03-21

		Date
Operator	Tch	20-Jul-21
Checked	Nc	
Approved	Bc	

Project No.	NMTL 3413
Trial Pit No.	TP-B
Sample No.	B
Depth	2.00m

NATIONAL MATERIALS TESTING LABORATORY LTD.

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description Grey slightly sandy clayey SILT

Date 19-Jul-21

Test Method BS 1377: Part 4 : 1990 :7.4

Force Measuring Device VJT 08211 Test 1

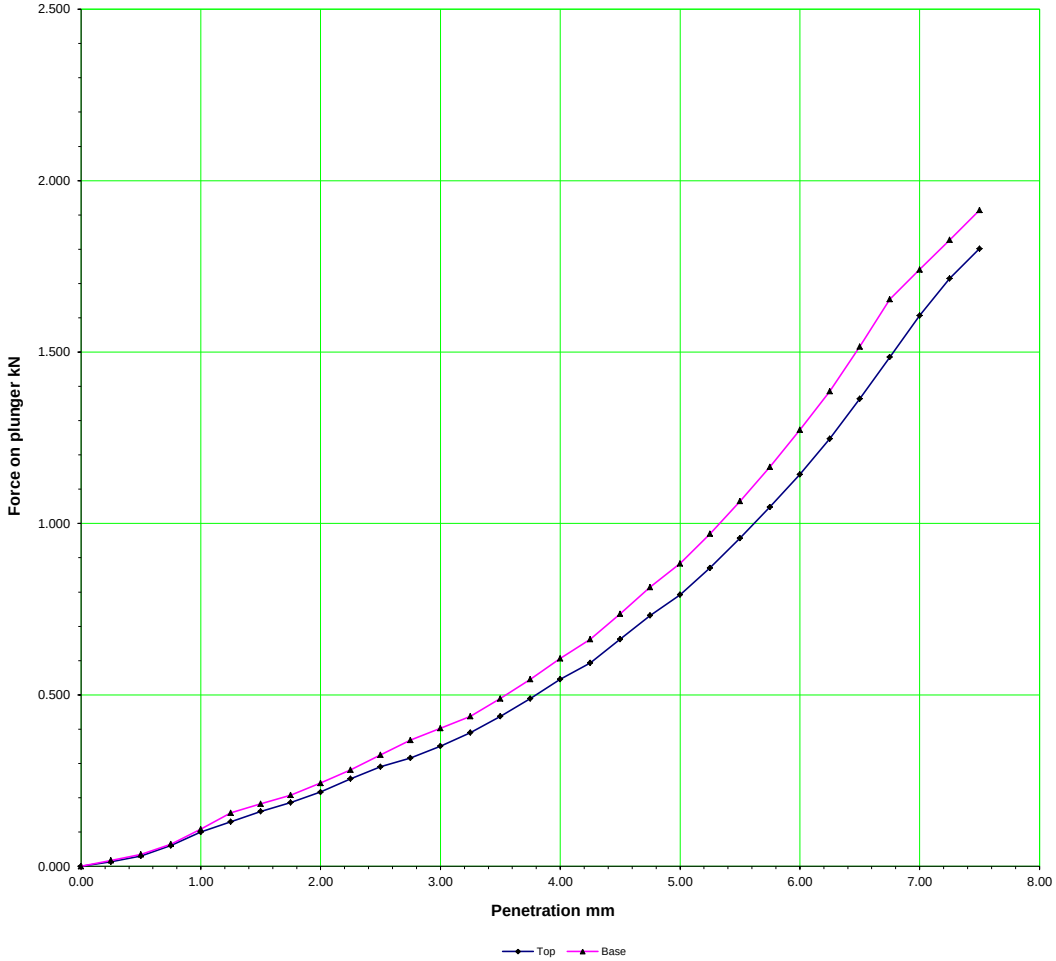
Preperatic Remoulded with 2.5 kg rammer at natural moisture content

Surcharge 10 kPa Mean Calibration 4.33 N/Div

Penetration of plunger mm | Force Gauge reading divisions | Force on plunger kN | California Bearing Ratio Results %

Penetration of plunger mm	Force Gauge reading divisions Top	Force Gauge reading divisions Bottom	Force on plunger kN Top	Force on plunger kN Bottom	California Bearing Ratio Results % Top	California Bearing Ratio Results % Base
0.00	0.0	0.0	0.000	0.000		
0.25	3.0	4.0	0.013	0.017		
0.50	7.0	8.0	0.030	0.035		
0.75	14.0	15.0	0.061	0.065		
1.00	23.0	25.0	0.100	0.108		
1.25	30.0	36.0	0.130	0.156		
1.50	37.0	42.0	0.160	0.182		
1.75	43.0	48.0	0.186	0.208		
2.00	50.0	56.0	0.217	0.242		
2.25	59.0	65.0	0.255	0.281		
2.50	**67.0**	**75.0**	**0.290**	**0.325**	**2.20**	**2.46**
2.75	73.0	85.0	0.316	0.368		
3.00	81.0	93.0	0.351	0.403		
3.25	90.0	101.0	0.390	0.437		
3.50	101.0	113.0	0.437	0.489		
3.75	113.0	126.0	0.489	0.546		
4.00	126.0	140.0	0.546	0.606		
4.25	137.0	153.0	0.593	0.662		
4.50	153.0	170.0	0.662	0.736		
4.75	169.0	188.0	0.732	0.814		
5.00	**183.0**	**204.0**	**0.792**	**0.883**	**3.96**	**4.42**
5.25	201.0	224.0	0.870	0.970		
5.50	221.0	246.0	0.957	1.065		
5.75	242.0	269.0	1.048	1.165		
6.00	264.0	294.0	1.143	1.273		
6.25	288.0	320.0	1.247	1.386		
6.50	315.0	350.0	1.364	1.516		
6.75	343.0	382.0	1.485	1.654		
7.00	371.0	402.0	1.606	1.741		
7.25	396.0	422.0	1.715	1.827		
7.50	416.0	442.0	1.801	1.914		

		Top	Middle	Base		
Moisture content after test					Specimen wt g	4525
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	872.0	807.0	797.0	Length mm	127.0
Mass of dry soil + container	g	761.0	708.0	695.0		
Weight of container	g	190.0	188.0	162.0		
Mass of moisture	g	111.0	99.0	102.0	Average MC %	19.21
Dry weight	g	571.0	520.0	533.0	Density Mg/m3	1.96
Moisture content	%	19.4	19.0	19.1	Dry Density Mg/m3	1.65



NM TL Ltd

Project: Oweninny Wind Farm

GII Project ID: 10467-03-21

		Date		
Operator	Tch	19-Jul-21	Project No.	NMTL 3413
Checked	Nc		Trial Pit No.	TP-BB
Approved	Bc		Sample No.	B
			Depth	2.00m

NATIONAL MATERIALS TESTING LABORATORY LTD.

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description Light brown/ cream silty gravelly SAND

Date 16-Jul-21

Test Method BS 1377: Part 4 : 1990 :7.4

Force Measuring Device S86-010304 Test 1

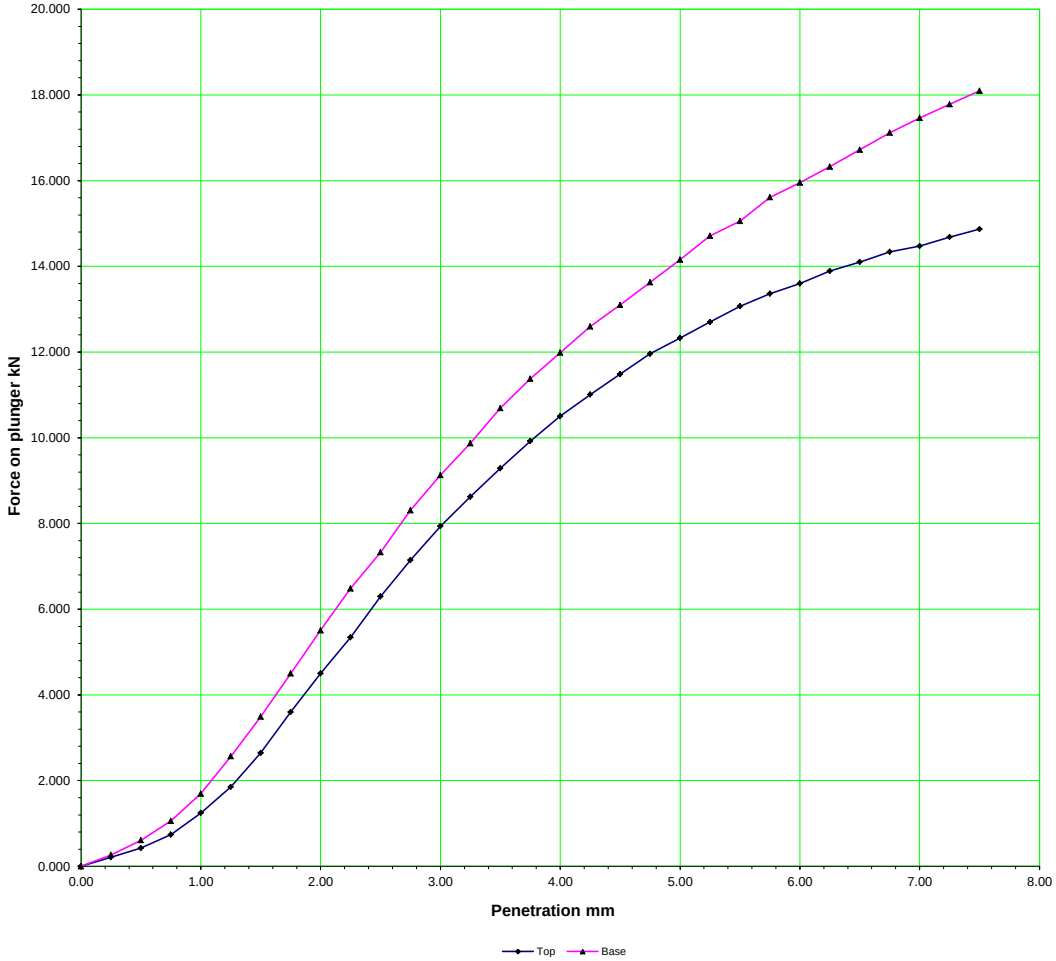
Preperatic Remoulded with 2.5 kg rammer at natural moisture content

Surcharge 10 kPa Mean Calibration 26.46 N/Div

Penetration of plunger mm | Force Gauge reading divisions | Force on plunger kN | California Bearing Ratio Results %

Penetration of plunger mm	Force Gauge reading divisions Top	Force Gauge reading divisions Bottom	Force on plunger kN Top	Force on plunger kN Bottom	California Bearing Ratio Results % Top	California Bearing Ratio Results % Base
0.00	0.0	0.0	0.000	0.000		
0.25	8.0	10.0	0.212	0.265		
0.50	16.0	23.0	0.423	0.609		
0.75	28.0	40.0	0.741	1.058		
1.00	47.0	64.0	1.244	1.693		
1.25	70.0	97.0	1.852	2.567		
1.50	100.0	132.0	2.646	3.493		
1.75	136.0	170.0	3.599	4.498		
2.00	170.0	208.0	4.498	5.504		
2.25	202.0	245.0	5.345	6.483		
2.50	**238.0**	**277.0**	**6.297**	**7.329**	**47.71**	**55.53**
2.75	270.0	314.0	7.144	8.308		
3.00	300.0	345.0	7.938	9.129		
3.25	326.0	373.0	8.626	9.870		
3.50	351.0	404.0	9.287	10.690		
3.75	375.0	430.0	9.923	11.378		
4.00	397.0	453.0	10.505	11.986		
4.25	416.0	476.0	11.007	12.595		
4.50	434.0	495.0	11.484	13.098		
4.75	452.0	515.0	11.960	13.627		
5.00	**466.0**	**535.0**	**12.330**	**14.156**	**61.65**	**70.78**
5.25	480.0	556.0	12.701	14.712		
5.50	494.0	569.0	13.071	15.056		
5.75	505.0	590.0	13.362	15.611		
6.00	514.0	603.0	13.600	15.955		
6.25	525.0	617.0	13.892	16.326		
6.50	533.0	632.0	14.103	16.723		
6.75	542.0	647.0	14.341	17.120		
7.00	547.0	660.0	14.474	17.464		
7.25	555.0	672.0	14.685	17.781		
7.50	562.0	684.0	14.871	18.099		

Moisture content after test		Top	Middle	Base	Specimen wt g	4620
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	1010.0	775.0	585.0	Length mm	127.0
Mass of dry soil + container	g	966.0	740.0	560.0		
Weight of container	g	183.0	145.0	145.0		
Mass of moisture	g	44.0	35.0	25.0	Average MC %	5.84
Dry weight	g	783.0	595.0	415.0	Density Mg/m3	2.00
Moisture content	%	5.6	5.9	6.0	Dry Density Mg/m3	1.89



NM TL Ltd

Project: Oweninny Wind Farm

GII Project ID: 10467-03-21

		Date
Operator	Tch	16-Jul-21
Checked	Nc	
Approved	Bc	

Project No.	NMTL 3413
Trial Pit No.	TP-BP01
Sample No.	B
Depth	2.00m

NATIONAL MATERIALS TESTING LABORATORY LTD.

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description Brown grey silty gravelly silty SAND.

Date 20-Jul-21

Test Method BS 1377: Part 4 : 1990 :7.4

Force Measuring Device VJT-08211 Test 1

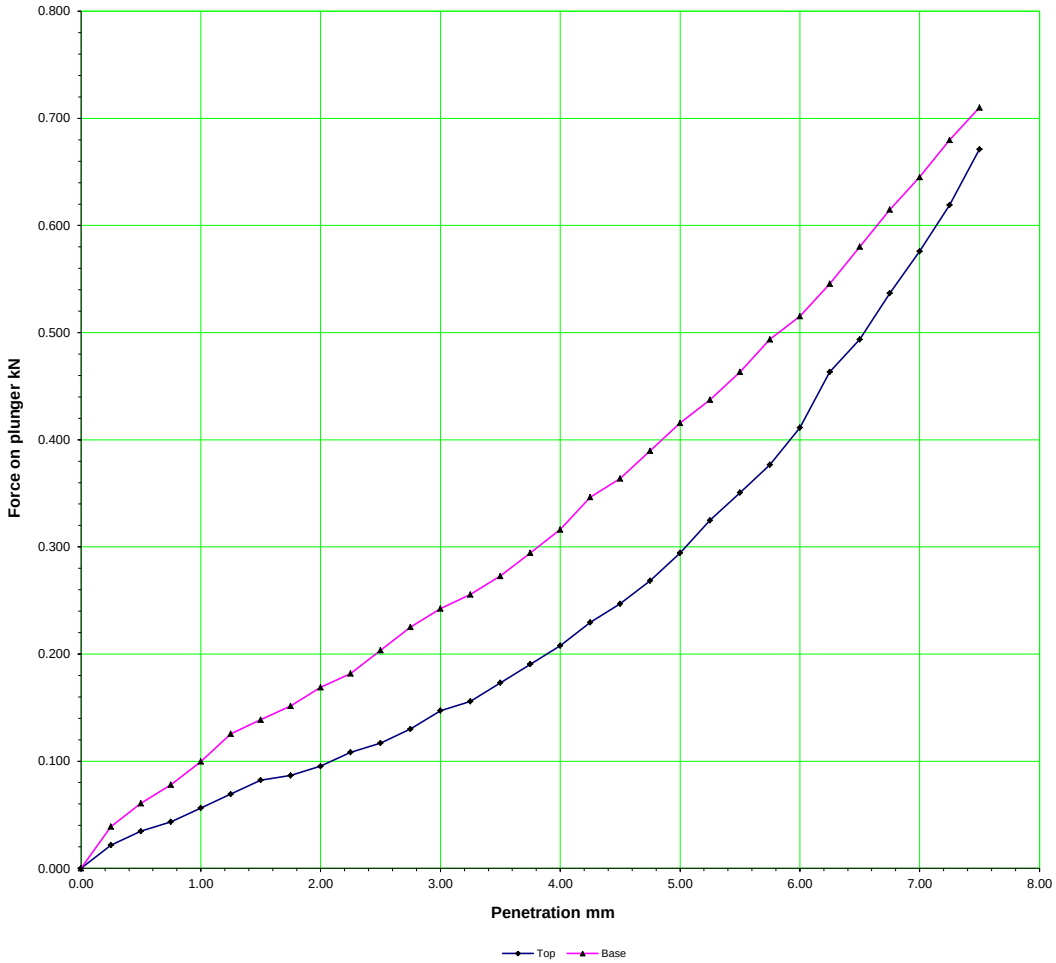
Preperatic Remoulded with 2.5 kg rammer at natural moisture content

Surcharge 10 kPa Mean Calibration 4.33 N/Div

Penetration of plunger mm | Force Gauge reading divisions | Force on plunger kN | California Bearing Ratio Results %

Penetration of plunger mm	Force Gauge reading divisions Top	Force Gauge reading divisions Bottom	Force on plunger kN Top	Force on plunger kN Bottom	California Bearing Ratio Results % Top	California Bearing Ratio Results % Base
0.00	0.0	0.0	0.000	0.000		
0.25	5.0	9.0	0.022	0.039		
0.50	8.0	14.0	0.035	0.061		
0.75	10.0	18.0	0.043	0.078		
1.00	13.0	23.0	0.056	0.100		
1.25	16.0	29.0	0.069	0.126		
1.50	19.0	32.0	0.082	0.139		
1.75	20.0	35.0	0.087	0.152		
2.00	22.0	39.0	0.095	0.169		
2.25	25.0	42.0	0.108	0.182		
2.50	**27.0**	**47.0**	**0.117**	**0.204**	**0.89**	**1.54**
2.75	30.0	52.0	0.130	0.225		
3.00	34.0	56.0	0.147	0.242		
3.25	36.0	59.0	0.156	0.255		
3.50	40.0	63.0	0.173	0.273		
3.75	44.0	68.0	0.191	0.294		
4.00	48.0	73.0	0.208	0.316		
4.25	53.0	80.0	0.229	0.346		
4.50	57.0	84.0	0.247	0.364		
4.75	62.0	90.0	0.268	0.390		
5.00	**68.0**	**96.0**	**0.294**	**0.416**	**1.47**	**2.08**
5.25	75.0	101.0	0.325	0.437		
5.50	81.0	107.0	0.351	0.463		
5.75	87.0	114.0	0.377	0.494		
6.00	95.0	119.0	0.411	0.515		
6.25	107.0	126.0	0.463	0.546		
6.50	114.0	134.0	0.494	0.580		
6.75	124.0	142.0	0.537	0.615		
7.00	133.0	149.0	0.576	0.645		
7.25	143.0	157.0	0.619	0.680		
7.50	155.0	164.0	0.671	0.710		

Moisture content after test		Top	Middle	Base	Specimen wt g	4740
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	754.0	853.0	832.0	Length mm	127.0
Mass of dry soil + container	g	663.2	759.5	736.9		
Weight of container	g	147.0	184.0	191.0		
Mass of moisture	g	90.8	93.5	95.1	Average MC %	17.09
Dry weight	g	516.2	575.5	545.9	Density Mg/m3	2.06
Moisture content	%	17.6	16.2	17.4	Dry Density Mg/m3	1.76



NM TL Ltd

Project: Oweninny Wind Farm

GII Project ID: 10467-03-21

		Date		
Operator	Tch	20-Jul-21	Project No.	NMTL 3413
Checked	Nc		Trial Pit No.	TP-BP05
Approved	Bc		Sample No.	B
			Depth	2.00m

NATIONAL MATERIALS TESTING LABORATORY LTD.

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description Brown gravelly silty SAND

Date 20-Jul-21

Test Method BS 1377: Part 4 : 1990 :7.4

Force Measuring Device VJT-08211 Test 1

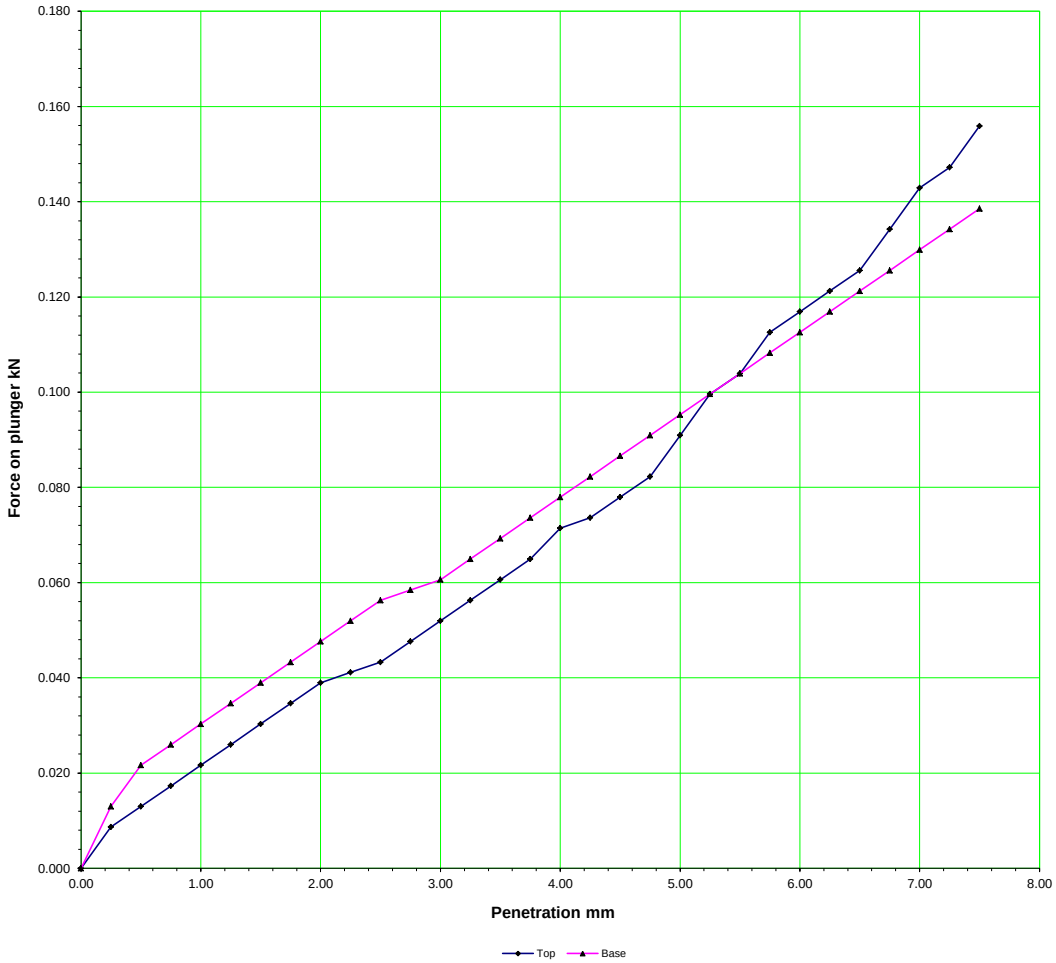
Preperatic Remoulded with 2.5 kg rammer at natural moisture content

Surcharge 10 kPa Mean Calibration 4.33 N/Div

Penetration of plunger mm | Force Gauge reading divisions | Force on plunger kN | California Bearing Ratio Results %

Penetration of plunger mm	Force Gauge reading divisions Top	Force Gauge reading divisions Bottom	Force on plunger kN Top	Force on plunger kN Bottom	California Bearing Ratio Results % Top	California Bearing Ratio Results % Base
0.00	0.0	0.0	0.000	0.000		
0.25	2.0	3.0	0.009	0.013		
0.50	3.0	5.0	0.013	0.022		
0.75	4.0	6.0	0.017	0.026		
1.00	5.0	7.0	0.022	0.030		
1.25	6.0	8.0	0.026	0.035		
1.50	7.0	9.0	0.030	0.039		
1.75	8.0	10.0	0.035	0.043		
2.00	9.0	11.0	0.039	0.048		
2.25	9.5	12.0	0.041	0.052		
2.50	**10.0**	**13.0**	**0.043**	**0.056**	**0.33**	**0.43**
2.75	11.0	13.5	0.048	0.058		
3.00	12.0	14.0	0.052	0.061		
3.25	13.0	15.0	0.056	0.065		
3.50	14.0	16.0	0.061	0.069		
3.75	15.0	17.0	0.065	0.074		
4.00	16.5	18.0	0.071	0.078		
4.25	17.0	19.0	0.074	0.082		
4.50	18.0	20.0	0.078	0.087		
4.75	19.0	21.0	0.082	0.091		
5.00	**21.0**	**22.0**	**0.091**	**0.095**	**0.45**	**0.48**
5.25	23.0	23.0	0.100	0.100		
5.50	24.0	24.0	0.104	0.104		
5.75	26.0	25.0	0.113	0.108		
6.00	27.0	26.0	0.117	0.113		
6.25	28.0	27.0	0.121	0.117		
6.50	29.0	28.0	0.126	0.121		
6.75	31.0	29.0	0.134	0.126		
7.00	33.0	30.0	0.143	0.130		
7.25	34.0	31.0	0.147	0.134		
7.50	36.0	32.0	0.156	0.139		

		Top	Middle	Base		
Moisture content after test					Specimen wt g	4590
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	795.0	813.0	768.0	Length mm	127.0
Mass of dry soil + container	g	681.8	695.7	660.5		
Weight of container	g	144.0	142.0	148.0		
Mass of moisture	g	113.2	117.3	107.5	Average MC %	21.07
Dry weight	g	537.8	553.7	512.5	Density Mg/m3	1.99
Moisture content	%	21.0	21.2	21.0	Dry Density Mg/m3	1.65



NM TL Ltd

Project: Oweninny Wind Farm

GII Project ID: 10467-03-21

		Date		
Operator	Tch	20-Jul-21	Project No.	NMTL 3413
Checked	Nc		Trial Pit No.	TP-BP08
Approved	Bc		Sample No.	B
			Depth	2.00m

NATIONAL MATERIALS TESTING LABORATORY LTD.

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description: Brown silty very sandy GRAVEL

Date: 20-Jul-21

Test Method: BS 1377: Part 4 : 1990 :7.4

Force Measuring Device: VJT-08211 — Test 1

Preperatic: Remoulded with 2.5 kg rammer at natural moisture content

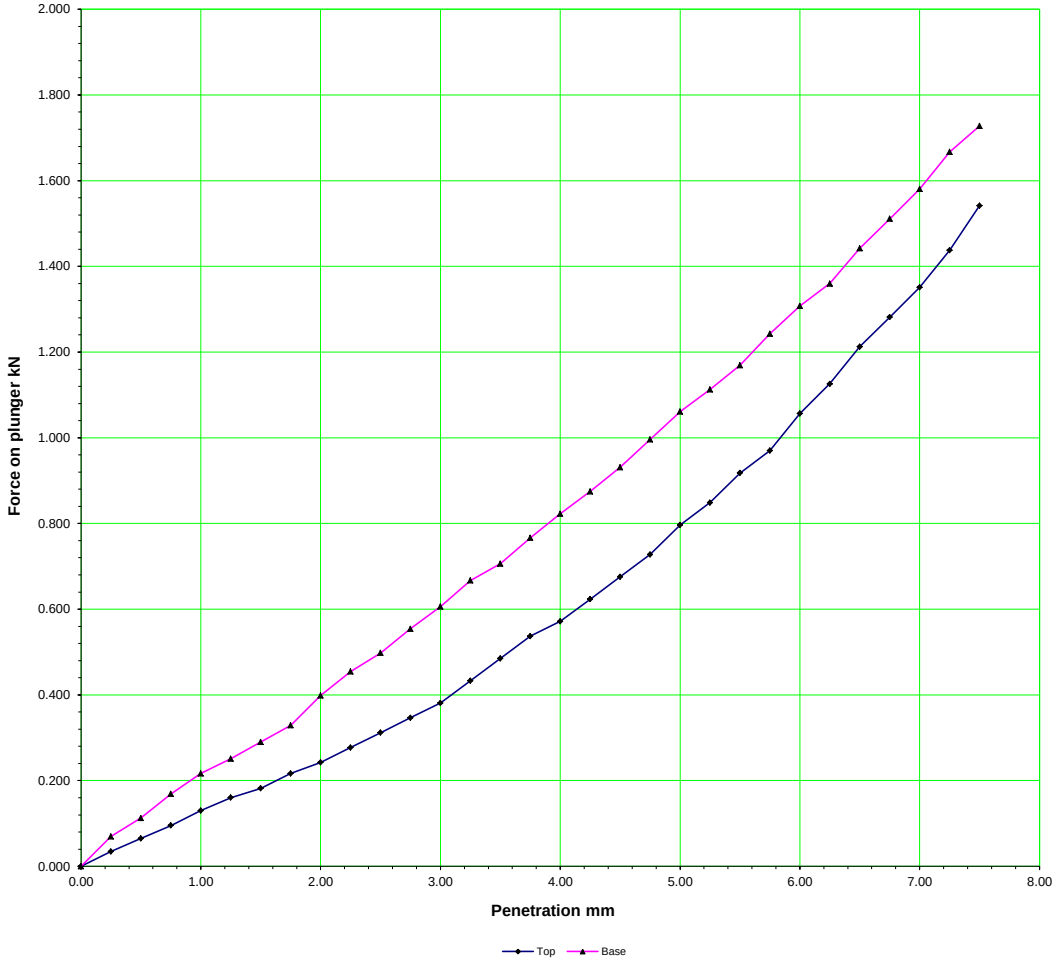
Surcharge: 10 kPa — Mean Calibration: 4.33 N/Div

Penetration of plunger mm — Force Gauge reading divisions — Force on plunger kN — Mean Calibration: 4.33 N/Div

California Bearing Ratio Results %

Penetration of plunger mm	Force Gauge reading divisions Top	Force Gauge reading divisions Bottom	Force on plunger kN Top	Force on plunger kN Bottom	California Bearing Ratio Results % Top	California Bearing Ratio Results % Base
0.00	0.0	0.0	0.000	0.000		
0.25	8.0	16.0	0.035	0.069		
0.50	15.0	26.0	0.065	0.113		
0.75	22.0	39.0	0.095	0.169		
1.00	30.0	50.0	0.130	0.217		
1.25	37.0	58.0	0.160	0.251		
1.50	42.0	67.0	0.182	0.290		
1.75	50.0	76.0	0.217	0.329		
2.00	56.0	92.0	0.242	0.398		
2.25	64.0	105.0	0.277	0.455		
2.50	**72.0**	**115.0**	**0.312**	**0.498**	**2.36**	**3.77**
2.75	80.0	128.0	0.346	0.554		
3.00	88.0	140.0	0.381	0.606		
3.25	100.0	154.0	0.433	0.667		
3.50	112.0	163.0	0.485	0.706		
3.75	124.0	177.0	0.537	0.766		
4.00	132.0	190.0	0.572	0.823		
4.25	144.0	202.0	0.624	0.875		
4.50	156.0	215.0	0.675	0.931		
4.75	168.0	230.0	0.727	0.996		
5.00	**184.0**	**245.0**	**0.797**	**1.061**	**3.98**	**5.30**
5.25	196.0	257.0	0.849	1.113		
5.50	212.0	270.0	0.918	1.169		
5.75	224.0	287.0	0.970	1.243		
6.00	244.0	302.0	1.057	1.308		
6.25	260.0	314.0	1.126	1.360		
6.50	280.0	333.0	1.212	1.442		
6.75	296.0	349.0	1.282	1.511		
7.00	312.0	365.0	1.351	1.580		
7.25	332.0	385.0	1.438	1.667		
7.50	356.0	399.0	1.541	1.728		

Moisture content after test		Top	Middle	Base	Specimen wt g	4890
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	709.0	888.0	688.0	Length mm	127.0
Mass of dry soil + container	g	624.0	780.1	608.2		
Weight of container	g	146.0	156.0	145.0		
Mass of moisture	g	85.0	107.9	79.8	Average MC %	17.43
Dry weight	g	478.0	624.1	463.2	Density Mg/m3	2.12
Moisture content	%	17.8	17.3	17.2	Dry Density Mg/m3	1.81



NM TL Ltd

Project: Oweninny Wind Farm

GII Project ID: 10467-03-21

		Date
Operator	Tch	20-Jul-21
Checked	Nc	
Approved	Bc	

Project No.	NMTL 3413
Trial Pit No.	TP-BP09
Sample No.	B
Depth	2.00m

NATIONAL MATERIALS TESTING LABORATORY LTD.

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description Brown silty gravelly SAND

Date 21-Jul-21

Test Method BS 1377: Part 4 : 1990 :7.4

Force Measuring Device 086-010304 Test 1

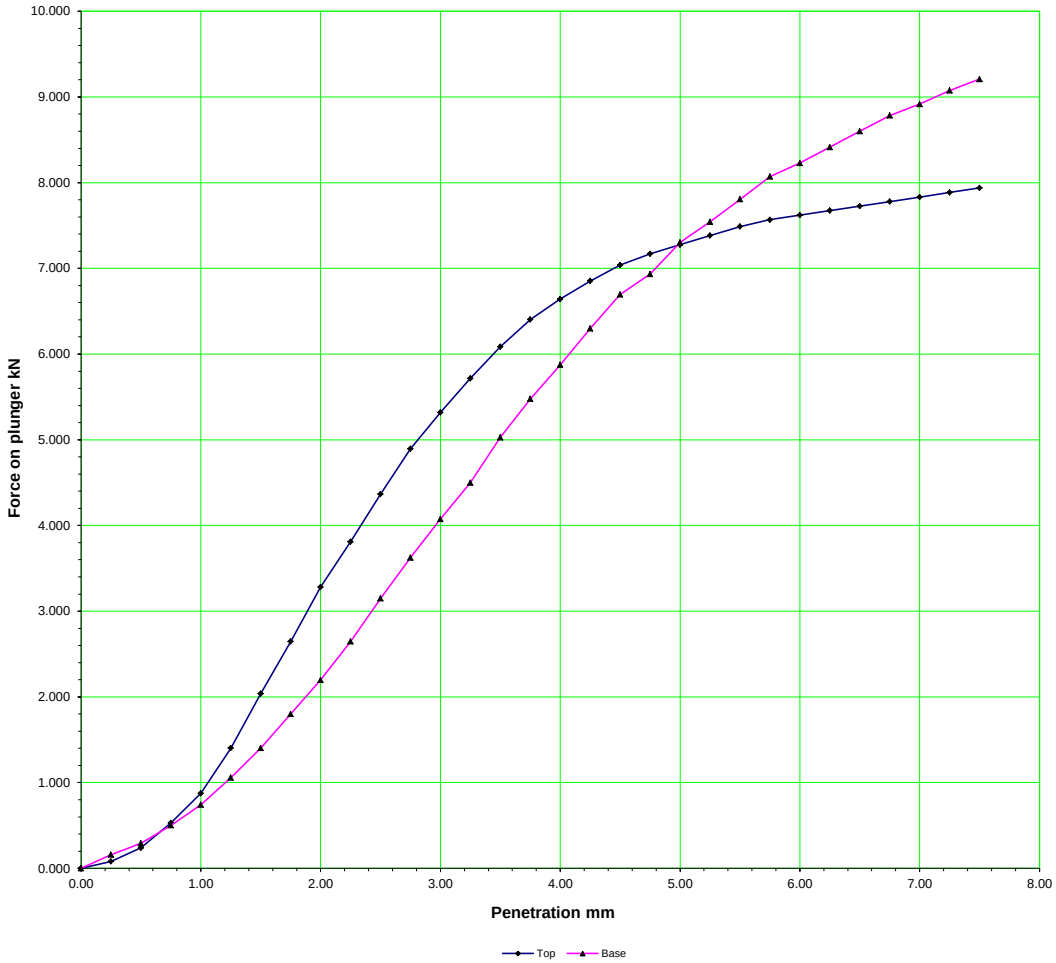
Preperatic Remoulded with 2.5 kg rammer at natural moisture content

Surcharge 10 kPa Mean Calibration 26.46 N/Div

Penetration of plunger mm | Force Gauge reading divisions | Force on plunger kN | California Bearing Ratio Results %

Penetration of plunger mm	Force Gauge reading divisions Top	Force Gauge reading divisions Bottom	Force on plunger kN Top	Force on plunger kN Bottom	California Bearing Ratio Results % Top	California Bearing Ratio Results % Base
0.00	0.0	0.0	0.000	0.000		
0.25	3.0	6.0	0.079	0.159		
0.50	9.0	11.0	0.238	0.291		
0.75	20.0	19.0	0.529	0.503		
1.00	33.0	28.0	0.873	0.741		
1.25	53.0	40.0	1.402	1.058		
1.50	77.0	53.0	2.037	1.402		
1.75	100.0	68.0	2.646	1.799		
2.00	124.0	83.0	3.281	2.196		
2.25	144.0	100.0	3.810	2.646		
2.50	**165.0**	**119.0**	**4.366**	3.149	**33.08**	**23.85**
2.75	185.0	137.0	4.895	3.625		
3.00	201.0	154.0	5.318	4.075		
3.25	216.0	170.0	5.715	4.498		
3.50	230.0	190.0	6.086	5.027		
3.75	242.0	207.0	6.403	5.477		
4.00	251.0	222.0	6.641	5.874		
4.25	259.0	238.0	6.853	6.297		
4.50	266.0	253.0	7.038	6.694		
4.75	271.0	262.0	7.171	6.933		
5.00	**275.0**	**276.0**	**7.277**	**7.303**	**36.38**	**36.51**
5.25	279.0	285.0	7.382	7.541		
5.50	283.0	295.0	7.488	7.806		
5.75	286.0	305.0	7.568	8.070		
6.00	288.0	311.0	7.620	8.229		
6.25	290.0	318.0	7.673	8.414		
6.50	292.0	325.0	7.726	8.600		
6.75	294.0	332.0	7.779	8.785		
7.00	296.0	337.0	7.832	8.917		
7.25	298.0	343.0	7.885	9.076		
7.50	300.0	348.0	7.938	9.208		

Moisture content after test		Top	Middle	Base	Specimen wt g	4536
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	783.0	588.0	887.0	Length mm	127.0
Mass of dry soil + container	g	712.0	540.6	810.4		
Weight of container	g	144.0	148.0	193.0		
Mass of moisture	g	71.0	47.4	76.6	Average MC %	12.33
Dry weight	g	568.0	392.6	617.4	Density Mg/m3	1.97
Moisture content	%	12.5	12.1	12.4	Dry Density Mg/m3	1.75



NM TL Ltd

Project: Oweninny Wind Farm

GII Project ID: 10467-03-21

		Date	Project No.	NMTL 3413
Operator	Tch	21-Jul-21	Trial Pit No.	TP-BP010
Checked	Nc		Sample No.	B
Approved	Bc		Depth	2.00m

NATIONAL MATERIALS TESTING LABORATORY LTD.

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description Grey slightly gravelly sandy clayey SILT.

Date 20-Jul-21

Test Method BS 1377: Part 4 : 1990 :7.4

Force Measuring Device VJT-08211 Test 1

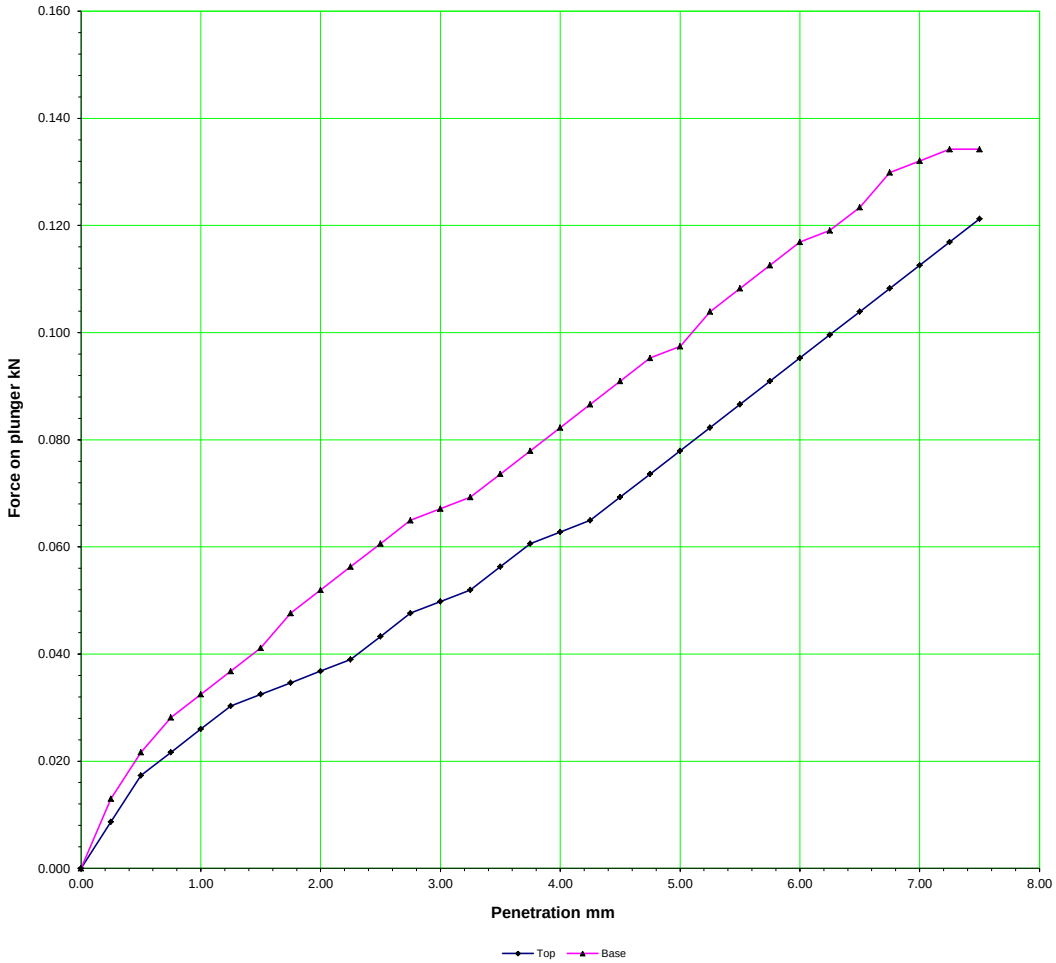
Preperatic Remoulded with 2.5 kg rammer at natural moisture content

Surcharge 10 kPa Mean Calibration 4.33 N/Div

Penetration of plunger mm | Force Gauge reading divisions | Force on plunger kN | California Bearing Ratio Results %

Penetration of plunger mm	Force Gauge reading divisions Top	Force Gauge reading divisions Bottom	Force on plunger kN Top	Force on plunger kN Bottom	California Bearing Ratio Results % Top	California Bearing Ratio Results % Base
0.00	0.0	0.0	0.000	0.000		
0.25	2.0	3.0	0.009	0.013		
0.50	4.0	5.0	0.017	0.022		
0.75	5.0	6.5	0.022	0.028		
1.00	6.0	7.5	0.026	0.032		
1.25	7.0	8.5	0.030	0.037		
1.50	7.5	9.5	0.032	0.041		
1.75	8.0	11.0	0.035	0.048		
2.00	8.5	12.0	0.037	0.052		
2.25	9.0	13.0	0.039	0.056		
2.50	**10.0**	**14.0**	**0.043**	**0.061**	**0.33**	**0.46**
2.75	11.0	15.0	0.048	0.065		
3.00	11.5	15.5	0.050	0.067		
3.25	12.0	16.0	0.052	0.069		
3.50	13.0	17.0	0.056	0.074		
3.75	14.0	18.0	0.061	0.078		
4.00	14.5	19.0	0.063	0.082		
4.25	15.0	20.0	0.065	0.087		
4.50	16.0	21.0	0.069	0.091		
4.75	17.0	22.0	0.074	0.095		
5.00	**18.0**	**22.5**	**0.078**	**0.097**	**0.39**	**0.49**
5.25	19.0	24.0	0.082	0.104		
5.50	20.0	25.0	0.087	0.108		
5.75	21.0	26.0	0.091	0.113		
6.00	22.0	27.0	0.095	0.117		
6.25	23.0	27.5	0.100	0.119		
6.50	24.0	28.5	0.104	0.123		
6.75	25.0	30.0	0.108	0.130		
7.00	26.0	30.5	0.113	0.132		
7.25	27.0	31.0	0.117	0.134		
7.50	28.0	31.0	0.121	0.134		

Moisture content after test		Top	Middle	Base	Specimen wt g	4665
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	842.0	846.0	931.0	Length mm	127.0
Mass of dry soil + container	g	748.0	745.0	820.0		
Weight of container	g	184.0	145.0	146.0		
Mass of moisture	g	94.0	101.0	111.0	Average MC %	16.66
Dry weight	g	564.0	600.0	674.0	Density Mg/m3	2.02
Moisture content	%	16.7	16.8	16.5	Dry Density Mg/m3	1.74



NM TL Ltd

Project: Oweninny Wind Farm

GII Project ID: 10467-03-21

		Date
Operator	Tch	20-Jul-21
Checked	Nc	
Approved	Bc	

Project No.	NMTL 3413
Trial Pit No.	TP-C
Sample No.	B
Depth	2.00m

NATIONAL MATERIALS TESTING LABORATORY LTD.

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description Light brown/ cream silty SAND

Date 20-Jul-21

Test Method BS 1377: Part 4 : 1990 :7.4

Force Measuring Device S86-010304 Test 1

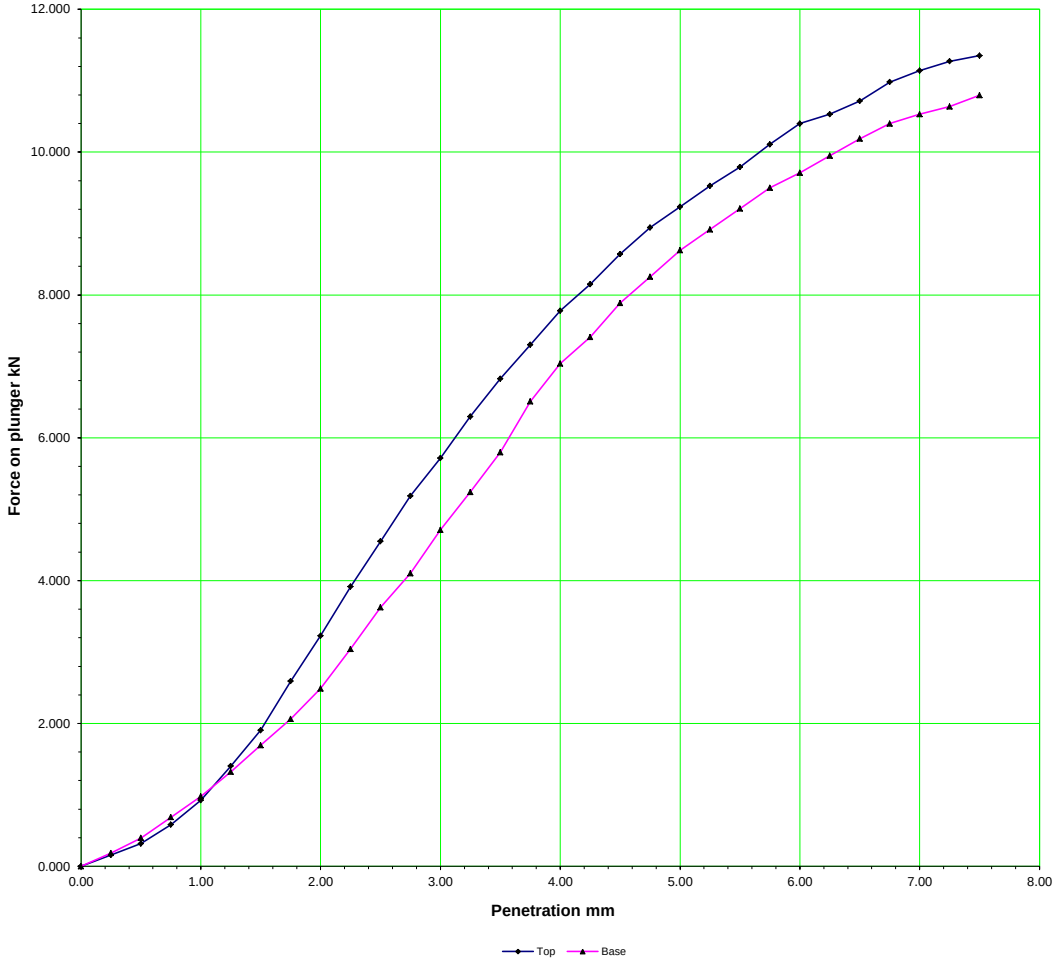
Preperatic Remoulded with 2.5 kg rammer at natural moisture content

Surcharge 10 kPa Mean Calibration 26.46 N/Div

Penetration of plunger mm | Force Gauge reading divisions | Force on plunger kN | California Bearing Ratio Results %

Penetration of plunger mm	Force Gauge reading divisions Top	Force Gauge reading divisions Bottom	Force on plunger kN Top	Force on plunger kN Bottom	California Bearing Ratio Results % Top	California Bearing Ratio Results % Base
0.00	0.0	0.0	0.000	0.000		
0.25	6.0	7.0	0.159	0.185		
0.50	12.0	15.0	0.318	0.397		
0.75	22.0	26.0	0.582	0.688		
1.00	35.0	37.0	0.926	0.979		
1.25	53.0	50.0	1.402	1.323		
1.50	72.0	64.0	1.905	1.693		
1.75	98.0	78.0	2.593	2.064		
2.00	122.0	94.0	3.228	2.487		
2.25	148.0	115.0	3.916	3.043		
2.50	**172.0**	**137.0**	**4.551**	**3.625**	**34.48**	**27.46**
2.75	196.0	155.0	5.186	4.101		
3.00	216.0	178.0	5.715	4.710		
3.25	238.0	198.0	6.297	5.239		
3.50	258.0	219.0	6.827	5.795		
3.75	276.0	246.0	7.303	6.509		
4.00	294.0	266.0	7.779	7.038		
4.25	308.0	280.0	8.150	7.409		
4.50	324.0	298.0	8.573	7.885		
4.75	338.0	312.0	8.943	8.256		
5.00	**349.0**	**326.0**	**9.235**	**8.626**	**46.17**	**43.13**
5.25	360.0	337.0	9.526	8.917		
5.50	370.0	348.0	9.790	9.208		
5.75	382.0	359.0	10.108	9.499		
6.00	393.0	367.0	10.399	9.711		
6.25	398.0	376.0	10.531	9.949		
6.50	405.0	385.0	10.716	10.187		
6.75	415.0	393.0	10.981	10.399		
7.00	421.0	398.0	11.140	10.531		
7.25	426.0	402.0	11.272	10.637		
7.50	429.0	408.0	11.351	10.796		

Moisture content after test		Top	Middle	Base	Specimen wt g	4226
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	840.0	822.0	908.0	Length mm	127.0
Mass of dry soil + container	g	765.0	745.0	821.0		
Weight of container	g	184.0	145.0	143.0		
Mass of moisture	g	75.0	77.0	87.0	Average MC %	12.86
Dry weight	g	581.0	600.0	678.0	Density Mg/m3	1.83
Moisture content	%	12.9	12.8	12.8	Dry Density Mg/m3	1.62



Project: Oweninny Wind Farm

GII Project ID: 10467-03-21

		Date
Operator	Tch	20-Jul-21
Checked	Nc	
Approved	Bc	

Project No.	NMTL 3413
Trial Pit No.	TP-F
Sample No.	B
Depth	2.00m

NATIONAL MATERIALS TESTING LABORATORY LTD.

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description Grey slightly gravelly sandy clayey SILT.

Date 20-Jul-21

Test Method BS 1377: Part 4 : 1990 :7.4

Force Measuring Device VJT-08211 Test 1

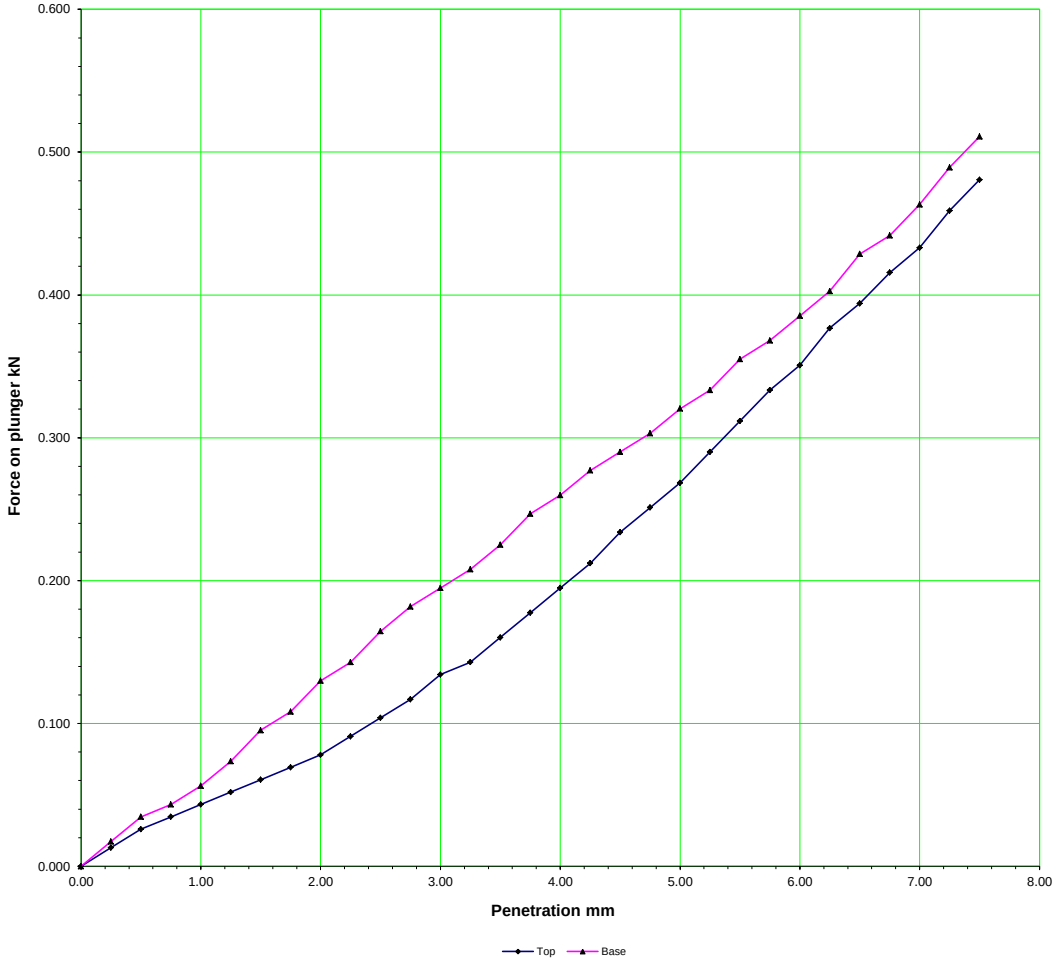
Preperatic Remoulded with 2.5 kg rammer at natural moisture content

Surcharge 10 kPa Mean Calibration 4.33 N/Div

Penetration of plunger mm | Force Gauge reading divisions | Force on plunger kN | California Bearing Ratio Results %

Penetration of plunger mm	Force Gauge reading divisions Top	Force Gauge reading divisions Bottom	Force on plunger kN Top	Force on plunger kN Bottom	California Bearing Ratio Results % Top	California Bearing Ratio Results % Base
0.00	0.0	0.0	0.000	0.000		
0.25	3.0	4.0	0.013	0.017		
0.50	6.0	8.0	0.026	0.035		
0.75	8.0	10.0	0.035	0.043		
1.00	10.0	13.0	0.043	0.056		
1.25	12.0	17.0	0.052	0.074		
1.50	14.0	22.0	0.061	0.095		
1.75	16.0	25.0	0.069	0.108		
2.00	18.0	30.0	0.078	0.130		
2.25	21.0	33.0	0.091	0.143		
2.50	**24.0**	**38.0**	**0.104**	**0.165**	**0.79**	**1.25**
2.75	27.0	42.0	0.117	0.182		
3.00	31.0	45.0	0.134	0.195		
3.25	33.0	48.0	0.143	0.208		
3.50	37.0	52.0	0.160	0.225		
3.75	41.0	57.0	0.178	0.247		
4.00	45.0	60.0	0.195	0.260		
4.25	49.0	64.0	0.212	0.277		
4.50	54.0	67.0	0.234	0.290		
4.75	58.0	70.0	0.251	0.303		
5.00	**62.0**	**74.0**	**0.268**	**0.320**	**1.34**	**1.60**
5.25	67.0	77.0	0.290	0.333		
5.50	72.0	82.0	0.312	0.355		
5.75	77.0	85.0	0.333	0.368		
6.00	81.0	89.0	0.351	0.385		
6.25	87.0	93.0	0.377	0.403		
6.50	91.0	99.0	0.394	0.429		
6.75	96.0	102.0	0.416	0.442		
7.00	100.0	107.0	0.433	0.463		
7.25	106.0	113.0	0.459	0.489		
7.50	111.0	118.0	0.481	0.511		

		Top	Middle	Base		
Moisture content after test					Specimen wt g	4899
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	895.0	817.0	894.0	Length mm	127.0
Mass of dry soil + container	g	797.7	737.6	800.8		
Weight of container	g	146.0	186.0	162.0		
Mass of moisture	g	97.3	79.4	93.2	Average MC %	14.64
Dry weight	g	651.7	551.6	638.8	Density Mg/m3	2.13
Moisture content	%	14.9	14.4	14.6	Dry Density Mg/m3	1.85



NM TL Ltd

Project: Oweninny Wind Farm

GII Project ID: 10467-03-21

		Date
Operator	Tch	20-Jul-21
Checked	Nc	
Approved	Bc	

Project No.	NMTL 3413
Trial Pit No.	TP-G
Sample No.	B
Depth	2.00m

NATIONAL MATERIALS TESTING LABORATORY LTD.

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description Dark grey/ black gravelly silty SAND

Date 20-Jul-21

Test Method BS 1377: Part 4 : 1990 :7.4

Force Measuring Device VJT 08211 Test 1

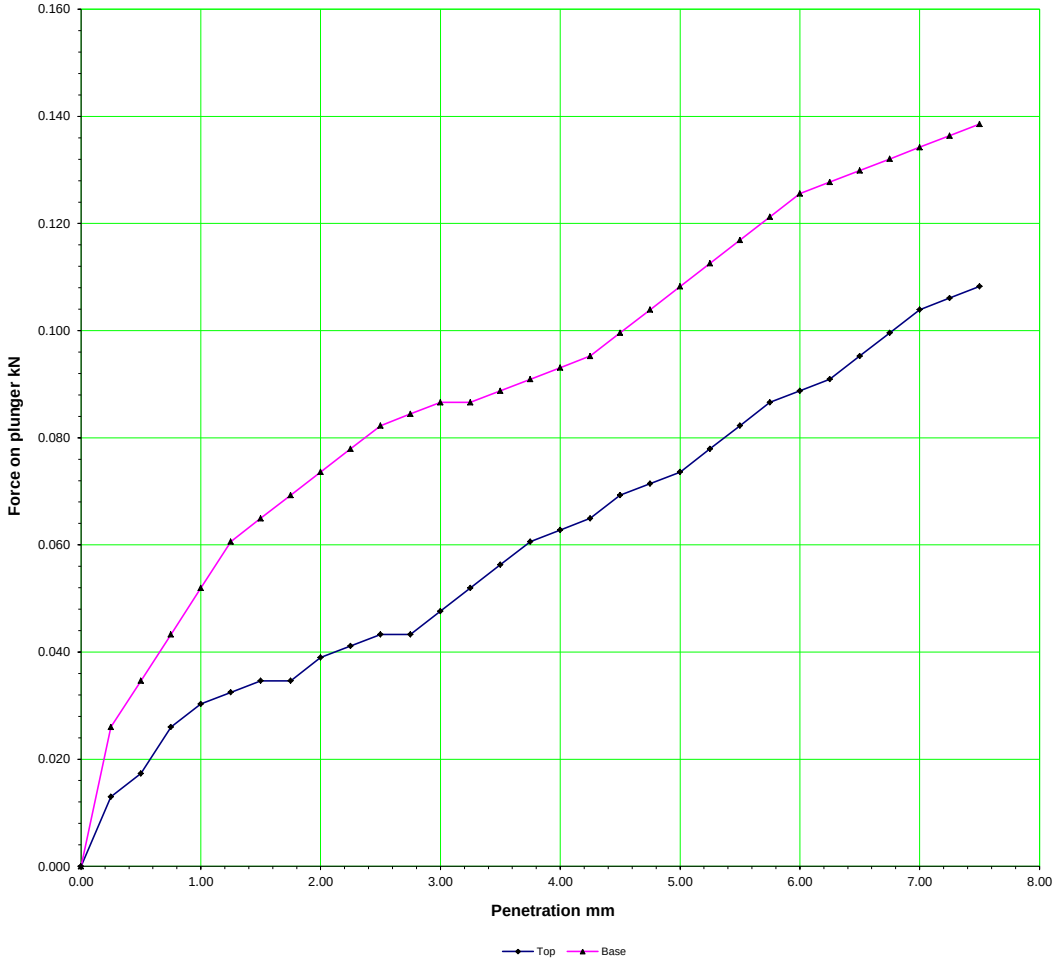
Preperatic Remoulded with 2.5 kg rammer at natural moisture content

Surcharge 10 kPa Mean Calibration 4.33 N/Div

Penetration of plunger mm | Force Gauge reading divisions | Force on plunger kN | California Bearing Ratio Results %

Penetration of plunger mm	Force Gauge reading divisions Top	Force Gauge reading divisions Bottom	Force on plunger kN Top	Force on plunger kN Bottom	California Bearing Ratio Results % Top	California Bearing Ratio Results % Base
0.00	0.0	0.0	0.000	0.000		
0.25	3.0	6.0	0.013	0.026		
0.50	4.0	8.0	0.017	0.035		
0.75	6.0	10.0	0.026	0.043		
1.00	7.0	12.0	0.030	0.052		
1.25	7.5	14.0	0.032	0.061		
1.50	8.0	15.0	0.035	0.065		
1.75	8.0	16.0	0.035	0.069		
2.00	9.0	17.0	0.039	0.074		
2.25	9.5	18.0	0.041	0.078		
2.50	**10.0**	**19.0**	**0.043**	**0.082**	**0.33**	**0.62**
2.75	10.0	19.5	0.043	0.084		
3.00	11.0	20.0	0.048	0.087		
3.25	12.0	20.0	0.052	0.087		
3.50	13.0	20.5	0.056	0.089		
3.75	14.0	21.0	0.061	0.091		
4.00	14.5	21.5	0.063	0.093		
4.25	15.0	22.0	0.065	0.095		
4.50	16.0	23.0	0.069	0.100		
4.75	16.5	24.0	0.071	0.104		
5.00	**17.0**	**25.0**	**0.074**	**0.108**	**0.37**	**0.54**
5.25	18.0	26.0	0.078	0.113		
5.50	19.0	27.0	0.082	0.117		
5.75	20.0	28.0	0.087	0.121		
6.00	20.5	29.0	0.089	0.126		
6.25	21.0	29.5	0.091	0.128		
6.50	22.0	30.0	0.095	0.130		
6.75	23.0	30.5	0.100	0.132		
7.00	24.0	31.0	0.104	0.134		
7.25	24.5	31.5	0.106	0.136		
7.50	25.0	32.0	0.108	0.139		

Moisture content after test		Top	Middle	Base	Specimen wt g	4010
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	704.0	665.0	693.0	Length mm	127.0
Mass of dry soil + container	g	554.8	523.4	559.0		
Weight of container	g	146.0	145.0	190.0		
Mass of moisture	g	149.2	141.6	134.0	Average MC %	36.74
Dry weight	g	408.8	378.4	369.0	Density Mg/m3	1.74
Moisture content	%	36.5	37.4	36.3	Dry Density Mg/m3	1.27



NM TL Ltd

Project: Oweninny Wind Farm

GII Project ID: 10467-03-21

		Date
Operator	Tch	20-Jul-21
Checked	Nc	
Approved	Bc	

Project No.	NMTL 3413
Trial Pit No.	TP-J
Sample No.	B
Depth	2.00m

NATIONAL MATERIALS TESTING LABORATORY LTD.

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description: Dark brown/black slightly gravelly slightly sandy clayey SILT.

Date: 20-Jul-21

Test Method: BS 1377: Part 4 : 1990 :7.4

Force Measuring Device: VJT-08211 — Test 1

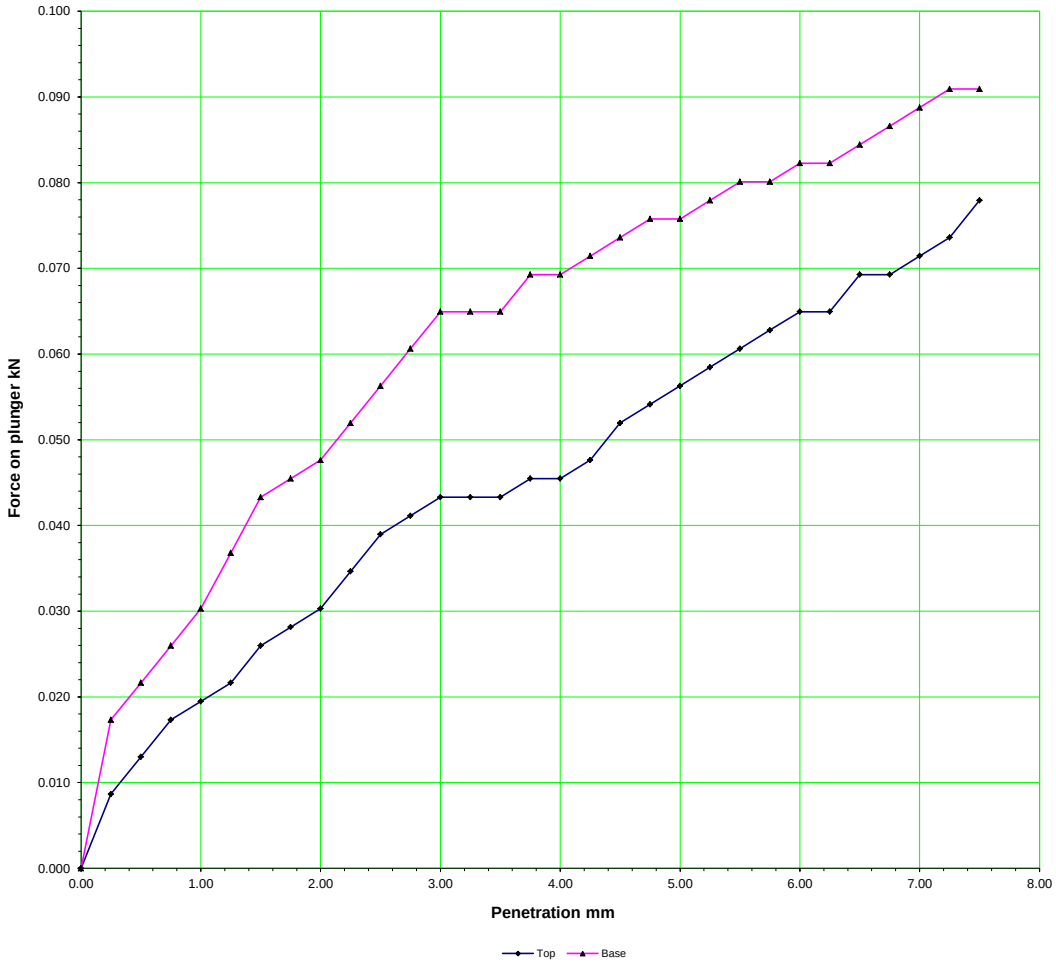
Preperatic: Remoulded with 2.5 kg rammer at natural moisture content

Surcharge: 10 kPa — Mean Calibration: 4.33 N/Div

Penetration of plunger mm | Force Gauge reading divisions | Force on plunger kN | California Bearing Ratio Results %

Penetration of plunger mm	Force Gauge reading divisions Top	Force Gauge reading divisions Bottom	Force on plunger kN Top	Force on plunger kN Bottom	California Bearing Ratio Results % Top	California Bearing Ratio Results % Base
0.00	0.0	0.0	0.000	0.000		
0.25	2.0	4.0	0.009	0.017		
0.50	3.0	5.0	0.013	0.022		
0.75	4.0	6.0	0.017	0.026		
1.00	4.5	7.0	0.019	0.030		
1.25	5.0	8.5	0.022	0.037		
1.50	6.0	10.0	0.026	0.043		
1.75	6.5	10.5	0.028	0.045		
2.00	7.0	11.0	0.030	0.048		
2.25	8.0	12.0	0.035	0.052		
2.50	**9.0**	**13.0**	**0.039**	**0.056**	**0.30**	**0.43**
2.75	9.5	14.0	0.041	0.061		
3.00	10.0	15.0	0.043	0.065		
3.25	10.0	15.0	0.043	0.065		
3.50	10.0	15.0	0.043	0.065		
3.75	10.5	16.0	0.045	0.069		
4.00	10.5	16.0	0.045	0.069		
4.25	11.0	16.5	0.048	0.071		
4.50	12.0	17.0	0.052	0.074		
4.75	12.5	17.5	0.054	0.076		
5.00	**13.0**	**17.5**	**0.056**	**0.076**	**0.28**	**0.38**
5.25	13.5	18.0	0.058	0.078		
5.50	14.0	18.5	0.061	0.080		
5.75	14.5	18.5	0.063	0.080		
6.00	15.0	19.0	0.065	0.082		
6.25	15.0	19.0	0.065	0.082		
6.50	16.0	19.5	0.069	0.084		
6.75	16.0	20.0	0.069	0.087		
7.00	16.5	20.5	0.071	0.089		
7.25	17.0	21.0	0.074	0.091		
7.50	18.0	21.0	0.078	0.091		

Moisture content after test		Top	Middle	Base	Specimen wt g	4596
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	848.0	815.0	742.0	Length mm	127.0
Mass of dry soil + container	g	718.7	693.2	641.8		
Weight of container	g	149.0	148.0	189.0		
Mass of moisture	g	129.3	121.8	100.2	Average MC %	22.39
Dry weight	g	569.7	545.2	452.8	Density Mg/m3	1.99
Moisture content	%	22.7	22.3	22.1	Dry Density Mg/m3	1.63



NM TL Ltd

Project: Oweninny Wind Farm

GII Project ID: 10467-03-21

		Date		
Operator	Tch	20-Jul-21	Project No.	NMTL 3413
Checked	Nc		Trial Pit No.	TP-L
Approved	Bc		Sample No.	B
			Depth	1.00m

NATIONAL MATERIALS TESTING LABORATORY LTD.

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description Grey slightly gravelly sandy SILT.

Date 19-Jul-21

Test Method BS 1377: Part 4 : 1990 :7.4

Force Measuring Device VJT 08211 Test 1

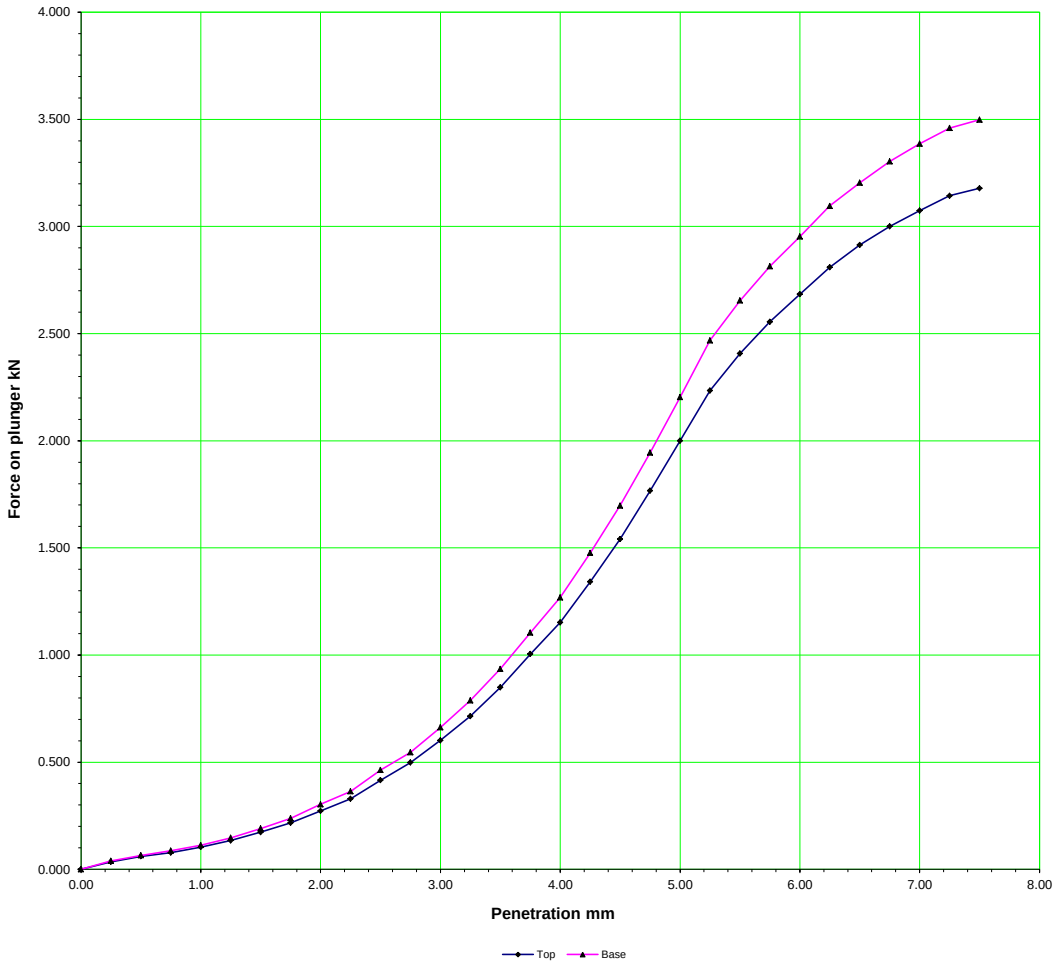
Preperatic Remoulded with 2.5 kg rammer at natural moisture content

Surcharge 10 kPa Mean Calibration 4.33 N/Div

Penetration of plunger mm | Force Gauge reading divisions | Force on plunger kN | California Bearing Ratio Results %

Penetration of plunger mm	Force Gauge reading divisions Top	Force Gauge reading divisions Bottom	Force on plunger kN Top	Force on plunger kN Bottom	California Bearing Ratio Results % Top	California Bearing Ratio Results % Base
0.00	0.0	0.0	0.000	0.000		
0.25	8.0	9.0	0.035	0.039		
0.50	14.0	15.0	0.061	0.065		
0.75	18.0	20.0	0.078	0.087		
1.00	24.0	26.0	0.104	0.113		
1.25	31.0	34.0	0.134	0.147		
1.50	40.0	44.0	0.173	0.191		
1.75	50.0	55.0	0.217	0.238		
2.00	63.0	70.0	0.273	0.303		
2.25	76.0	84.0	0.329	0.364		
2.50	**96.0**	**107.0**	**0.416**	**0.463**	**3.15**	**3.51**
2.75	115.0	126.0	0.498	0.546		
3.00	139.0	153.0	0.602	0.662		
3.25	165.0	182.0	0.714	0.788		
3.50	196.0	216.0	0.849	0.935		
3.75	232.0	255.0	1.005	1.104		
4.00	266.0	293.0	1.152	1.269		
4.25	310.0	341.0	1.342	1.477		
4.50	356.0	392.0	1.541	1.697		
4.75	408.0	449.0	1.767	1.944		
5.00	**462.0**	509.0	**2.000**	**2.204**	**10.00**	**11.02**
5.25	516.0	570.0	2.234	2.468		
5.50	556.0	613.0	2.407	2.654		
5.75	590.0	650.0	2.555	2.815		
6.00	620.0	682.0	2.685	2.953		
6.25	649.0	715.0	2.810	3.096		
6.50	673.0	740.0	2.914	3.204		
6.75	693.0	763.0	3.001	3.304		
7.00	710.0	782.0	3.074	3.386		
7.25	726.0	799.0	3.144	3.460		
7.50	734.0	808.0	3.178	3.499		

Moisture content after test		Top	Middle	Base	Specimen wt g	5125
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	872.0	788.0	921.0	Length mm	127.0
Mass of dry soil + container	g	801.0	728.0	851.0		
Weight of container	g	144.0	143.0	191.0		
Mass of moisture	g	71.0	60.0	70.0	Average MC %	10.56
Dry weight	g	657.0	585.0	660.0	Density Mg/m3	2.22
Moisture content	%	10.8	10.3	10.6	Dry Density Mg/m3	2.01



NM TL Ltd

Project: Oweninny Wind Farm

GII Project ID: 10467-03-21

		Date		
Operator	Tch	19-Jul-21	Project No.	NMTL 3413
Checked	Nc		Trial Pit No.	TP-M
Approved	Bc		Sample No.	B
			Depth	2.00m

NATIONAL MATERIALS TESTING LABORATORY LTD.

DETERMINATION OF THE CALIFORNIA BEARING RATIO TEST
BS 1377 : PART 4 : CLAUSE 7 : 1990

Soil Description Grey slightly sandy clayey SILT.

Date 20-Jul-21

Test Method BS 1377: Part 4 : 1990 :7.4

Force Measuring Device VJT-08211 Test 1

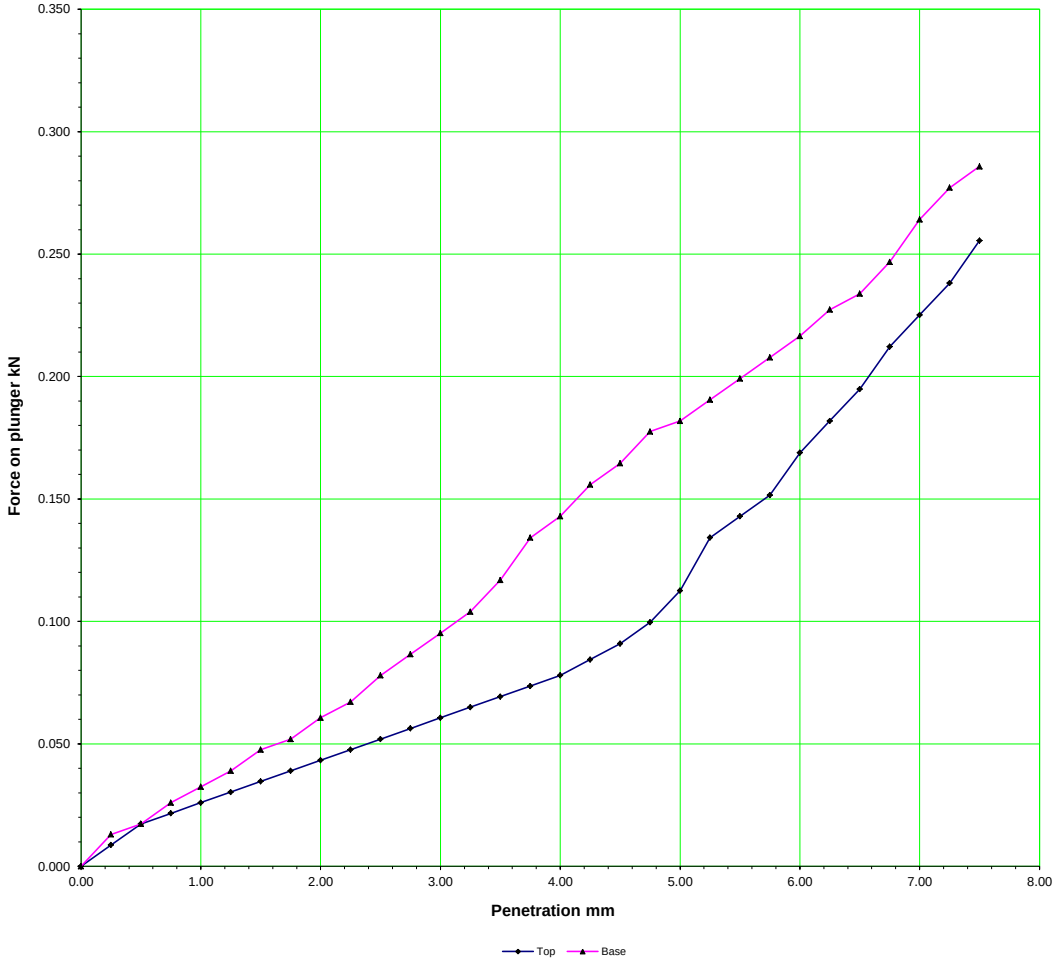
Preperatic Remoulded with 2.5 kg rammer at natural moisture content

Surcharge 10 kPa Mean Calibration 4.33 N/Div

Penetration of plunger mm | Force Gauge reading divisions | Force on plunger kN | California Bearing Ratio Results %

Penetration of plunger mm	Force Gauge reading divisions Top	Force Gauge reading divisions Bottom	Force on plunger kN Top	Force on plunger kN Bottom	California Bearing Ratio Results % Top	California Bearing Ratio Results % Base
0.00	0.0	0.0	0.000	0.000		
0.25	2.0	3.0	0.009	0.013		
0.50	4.0	4.0	0.017	0.017		
0.75	5.0	6.0	0.022	0.026		
1.00	6.0	7.5	0.026	0.032		
1.25	7.0	9.0	0.030	0.039		
1.50	8.0	11.0	0.035	0.048		
1.75	9.0	12.0	0.039	0.052		
2.00	10.0	14.0	0.043	0.061		
2.25	11.0	15.5	0.048	0.067		
2.50	**12.0**	**18.0**	**0.052**	0.078	**0.39**	**0.59**
2.75	13.0	20.0	0.056	0.087		
3.00	14.0	22.0	0.061	0.095		
3.25	15.0	24.0	0.065	0.104		
3.50	16.0	27.0	0.069	0.117		
3.75	17.0	31.0	0.074	0.134		
4.00	18.0	33.0	0.078	0.143		
4.25	19.5	36.0	0.084	0.156		
4.50	21.0	38.0	0.091	0.165		
4.75	23.0	41.0	0.100	0.178		
5.00	**26.0**	**42.0**	**0.113**	**0.182**	**0.56**	**0.91**
5.25	31.0	44.0	0.134	0.191		
5.50	33.0	46.0	0.143	0.199		
5.75	35.0	48.0	0.152	0.208		
6.00	39.0	50.0	0.169	0.217		
6.25	42.0	52.5	0.182	0.227		
6.50	45.0	54.0	0.195	0.234		
6.75	49.0	57.0	0.212	0.247		
7.00	52.0	61.0	0.225	0.264		
7.25	55.0	64.0	0.238	0.277		
7.50	59.0	66.0	0.255	0.286		

		Top	Middle	Base		
Moisture content after test					Specimen wt g	5070
Container No.		Tray	Tray	Tray	Diameter mm	152
Mass of wet soil + container	g	783.0	588.0	887.0	Length mm	127.0
Mass of dry soil + container	g	712.0	540.6	810.4		
Weight of container	g	144.0	148.0	193.0		
Mass of moisture	g	71.0	47.4	76.6	Average MC %	12.33
Dry weight	g	568.0	392.6	617.4	Density Mg/m3	2.20
Moisture content	%	12.5	12.1	12.4	Dry Density Mg/m3	1.96



NM TL Ltd

Project: Oweninny Wind Farm

GII Project ID: 10467-03-21

		Date		
Operator	Tch	20-Jul-21	Project No.	NMTL 3413
Checked	Nc		Trial Pit No.	TP-Z
Approved	Bc		Sample No.	B
			Depth	2.00m

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 21/10548

SOILS

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.

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.

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.

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, this result is not accredited.
*	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

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 21/10548

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
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
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		AD	Yes
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Dark brown slightly sandy slightly gravelly slightly organic clayey SILT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		77.57
Bulk density (Mg/m3)		1.98
Particle density	(Assumed)	2.65

Initial conditions

Settlement Channel	SB2
Moisture content (%)	21.58
Dry density (Mg/m3)	1.62
Initial Voids Ratio	0.63
Deg of Saturation (%)	90.6
Swelling pressure (kPa)	n/a

Final conditions

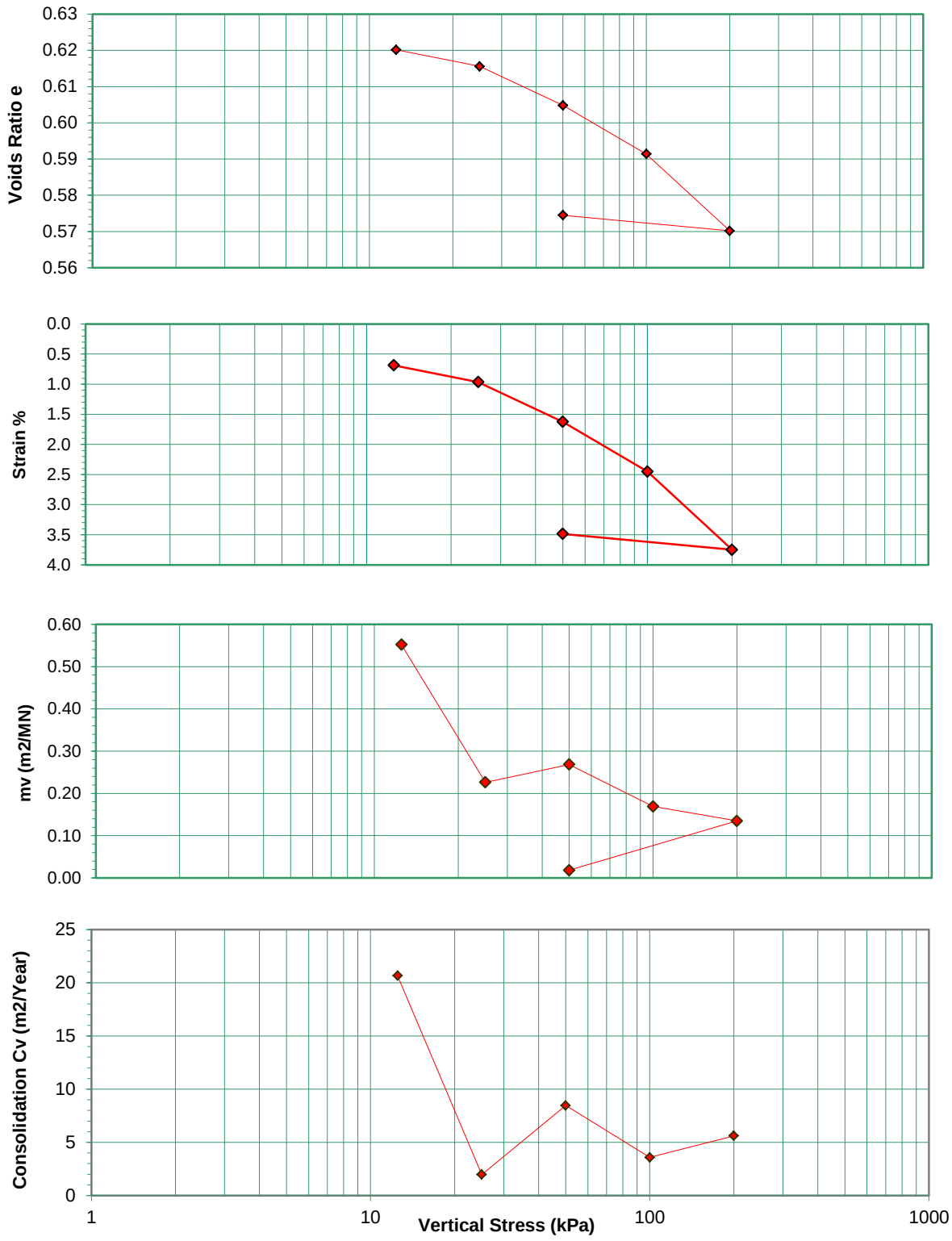
Moisture Content (%)	21.0
Dry Density (Mg/m3)	1.68
Final voids ratio	0.57
Final degree of saturation (%)	97.0
Final settlement	0.697

Notes:
1) Log time method used for t50 time
2) Tested at 20°c
3) Sample remoulded at natural moisture content.

NM TL Ltd	Project	Job No.	NMTL-3413
		Borehole No.	TP-G
	Oweninny Wind Farm	Sample No.	B
Standard		Depth m.	1.00m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project: Oweninny Wind Farm	Job No. NMTL-3413 Borehole No. TP-G Sample No. B Depth m. 1.00m

Oedometer Test

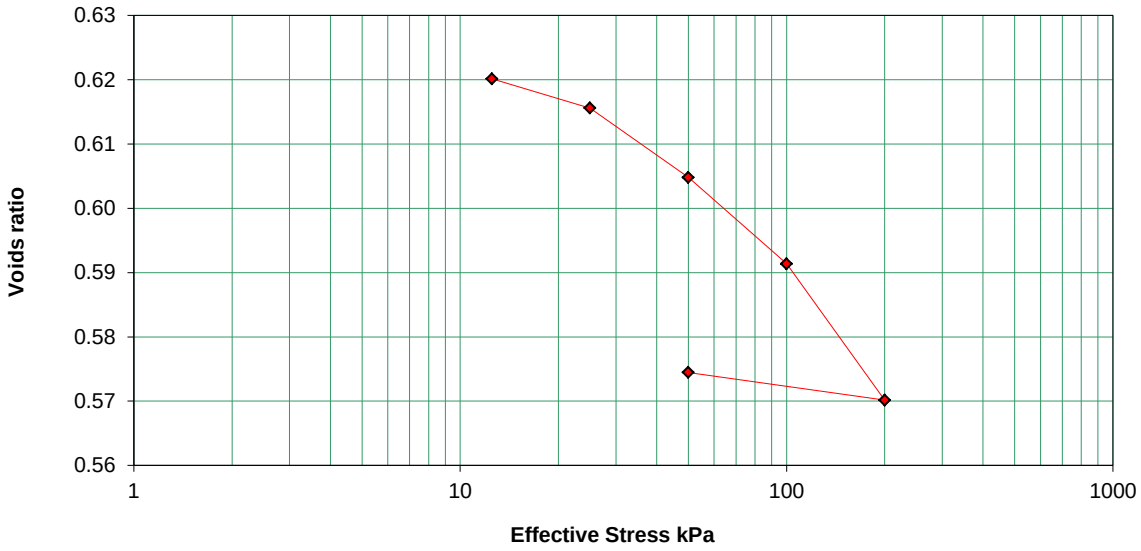
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Dark brown slightly sandy slightly gravelly slightly organic clayey SILT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		77.57
Bulk Density (mg/m3)		1.975
Particle Density	Assumed	2.65

Initial Conditions		Final Conditions	
Moisture content	21.6	21.0	%
Dry Density	1.62	1.68	Mg/m3
Initial Voids Ratio	0.6313	0.5745	
Degree of Saturation	90.59	96.96	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	12.5	0.685	0.6202	0.552	20.66	0.137
2	25	0.965	0.6156	0.226	1.97	0.193
3	50	1.625	0.6048	0.268	8.47	0.325
4	100	2.450	0.5914	0.169	3.58	0.490
5	200	3.750	0.5702	0.135	5.62	0.750
6	50	3.485	0.5745	0.018		0.697

NM TL Ltd Standard	Project: Oweninny Wind Farm	Job No.	NMTL-3413
		Borehole No.	TP-G
		Sample No.	B
		Depth m.	1.00m

Oedometer Settlement Tests

Test Method: BS1377 : Part 5 : 1990 Clause 3

Sample Details

Soil description:		Dark brown slightly sandy clayey SILT.
Initial height (mm)		20.0
Diameter (mm)		50
Initial wet weight of specimen (gms)		85.76
Bulk density (Mg/m3)		2.18
Particle density	(Assumed)	2.65

Initial conditions

Settlement Channel	SB1
Moisture content (%)	15.46
Dry density (Mg/m3)	1.89
Initial Voids Ratio	0.40
Deg of Saturation (%)	102.1
Swelling pressure (kPa)	n/a

Final conditions

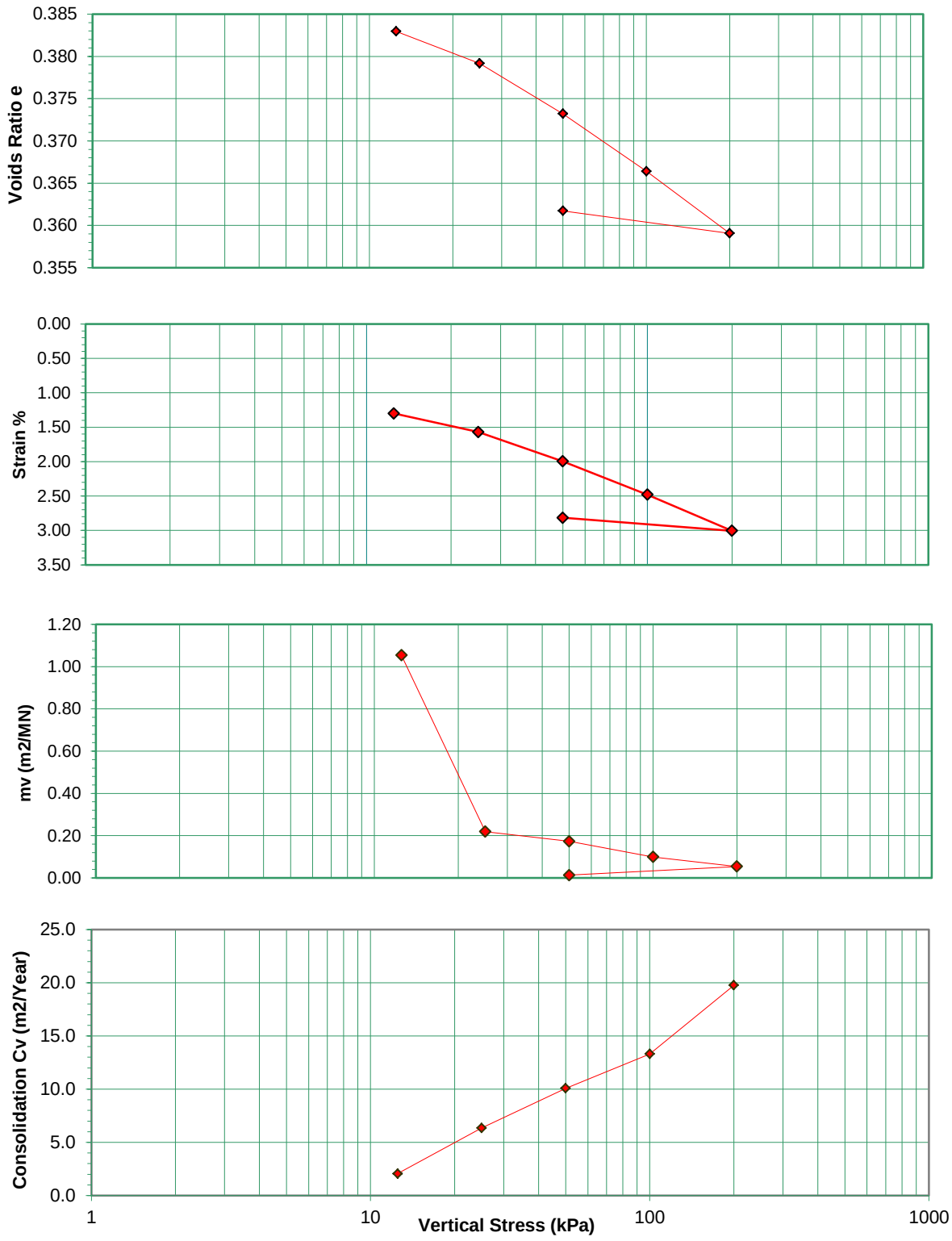
Moisture Content (%)	13.4
Dry Density (Mg/m3)	1.95
Final voids ratio	0.36
Final degree of saturation (%)	97.8
Final settlement	0.563

Notes:
1) Log time method used for t50 time
2) Tested at 20°c
3) Sample remoulded at natural moisture content.

NM TL Ltd Standard	Project	Job No.	NMTL-3413
		Borehole No.	TP-L
	Oweninny Wind Farm	Sample No.	B
		Depth m.	1.00m

Oedometer settlement Tests

Test Method: BS 1377 : Part 5: 1990 Clause 3



NM TL Ltd Standard	Project: Oweninny Wind Farm	Job No. NMTL-3413 Borehole No. TP-L Sample No. B Depth m. 1.00m

Oedometer Test

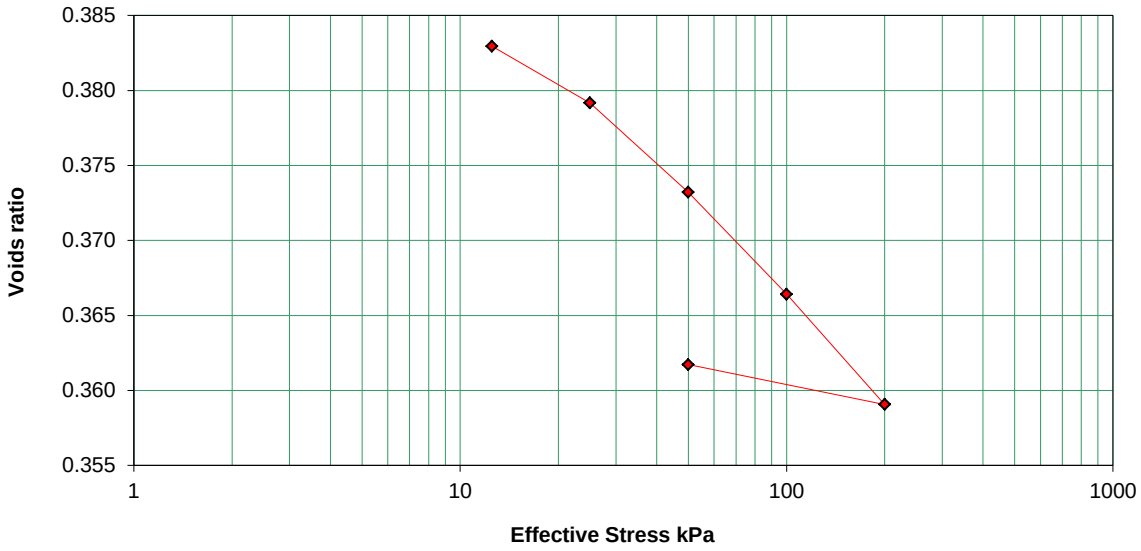
Test Method: BS 1377 : Part 5 1990 Clause 3

Sample Details

Description: Dark brown slightly sandy clayey SILT.

Initial height (mm)		20.00
Diameter (mm)		50.00
Initial weight of specimen (gms)		85.76
Bulk Density (mg/m3)		2.184
Particle Density	Assumed	2.65

Initial Conditions		Final Conditions	
Moisture content	15.5	13.4	%
Dry Density	1.89	1.95	Mg/m3
Initial Voids Ratio	0.4012	0.3617	
Degree of Saturation	102.09	97.84	%



Stage No.	Effective Stress kPa	Strain %	Voids Ratio	Mv m2/MN	CV m2/Year	Settlement mm
1	12.5	1.300	0.3830	1.054	2.05	0.260
2	25	1.570	0.3792	0.219	6.36	0.314
3	50	1.995	0.3732	0.173	10.08	0.399
4	100	2.480	0.3664	0.099	13.31	0.496
5	200	3.005	0.3591	0.054	19.77	0.601
6	50	2.815	0.3617	0.013		0.563

NM TL Ltd Standard	Project: Oweninny Wind Farm	Job No.	NMTL-3413
		Borehole No.	TP-L
		Sample No.	B
		Depth m.	1.00m