APPENDIX 8-1

GEOTECHNICAL AND PEAT STABILITY REPORT

FEHILY TIMONEY

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

CUNLAGHFADDA GREEN ENERGY PROJECT

GEOTECHNICAL & PEAT STABILITY REPORT

Prepared for: **MKO Ltd**

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GEOTECHNICAL & PEAT STABILITY ASSESSMENT REPORT
CUNLAGHFADDA GREEN ENERGY PROJECT

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Abstract: Fehily Timoney and Company (FT) were engaged by McCarthy Keville O'Sullivan (MKO) to undertake a geotechnical assessment of the proposed Cunlaghfadda Green Energy Project with respect to peat stability. As part of the geotechnical assessment of the Site, FT completed a walkover survey at the Site as well as a ground investigation comprising boreholes and trial pits. The findings of the geotechnical and peat stability assessment showed that the site has an acceptable margin of safety and is suitable for the Proposed Project.

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1. NON-TECHNICAL SUMMARY

Fehily Timoney and Company (FT) were engaged by McCarthy Keville O'Sullivan (MKO) to undertake a geotechnical and peat stability assessment of the proposed Cunlaghfadda Green Energy Project (the 'Proposed Project'). In accordance with planning guidelines compiled by the Department of the Housing, Planning and Local Government (Draft Revised Wind Energy Development Guidelines, DoHPLG, 2019), where peat >0.5m in thickness is present on a proposed wind farm development, a peat stability assessment is required.

A walkover including intrusive peat depth probing, desk study, stability analysis and risk assessment was carried out to assess the susceptibility of the Proposed Project site to peat failure following the principles in Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (2nd Edition, Scottish Government, 2017).

The findings, which involved a stability analysis of 262 locations, show that the Proposed Project has an acceptable margin of safety and is suitable for the proposed green energy project. The findings include recommendations and control measures for construction work in peat lands to ensure that all works adhere to an acceptable standard of safety.

The Proposed Project comprises 7 no. wind turbines and associated infrastructure.

The Site is relatively flat-lying with drainage channels running typically north-south. The land uses and types within the Site are a mixture of bare cutover and cutaway peat, re-vegetation of bare peat, forestry, and agricultural fields.

A walkover including intrusive peat depth probing, a ground investigation comprising trial pits, desk study, stability analysis and risk assessment was carried out to assess the susceptibility of the Site to peat failure following the principles in Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (2nd Edition, Scottish Government, 2017).

Peat depth recorded during the site walkovers and from the ground investigation ranged from 0.0 to 6.1m with an average peat depth of 1.2m. 59% of the probes recorded peat depths of less than 1.0m, with 77% of peat depth probes recorded peat depths of less than 2.0m and 91% of peat depth probes recorded peat depths of less than 3.0m. A number of localised readings recorded peat depths from 3.5 to 6.1m.

Slope inclinations at the main infrastructure locations range from 1 to 8 degrees. The flat topography/nature of the terrain on the Site reflects the low risk of peat failure. Ground conditions comprised mainly of peat overlying lacustrine clay overlying fluvioglacial sands and gravel.

The purpose of the stability analysis was to determine the stability i.e. Factor of Safety (FoS), of the peat slopes. The FoS provides a direct measure of the degree of stability of a peat slope. A FoS of less than 1.0 indicates that a slope is unstable; a FoS of greater than 1.0 indicates a stable slope. An acceptable FoS for slopes is generally taken as a minimum of 1.3. The stability analysis for this project, which analysed the turbine locations, access tracks and 110kV substation, resulted in FoS above the minimum acceptable value of 1.3 and hence the Site has a satisfactory margin of safety.

The risk assessment uses the results of the stability analysis in combination with qualitative factors, which cannot be reasonably included in a stability calculation but nevertheless may affect the occurrence of peat instability, to assess the risk of peat failure at the Site. The results of the risk assessment are given in Appendix B. A construction buffer zone plan based on qualitative factors identified during the site walkover is included as Drawing P23270-0600-0002.

The findings of the peat assessment (which combines the FOS and the risk assessment), which involved analysis of 262 no. locations, showed that the Site has an acceptable margin of safety and is suitable for the Proposed Project. Notwithstanding the above, the management of peat stability and appropriate construction practices will be inherent in the construction phase of the wind farm to ensure peat failures do not occur on the Site.

In summary, the Proposed Project has an acceptable margin of safety and is considered to be at **low** risk of peat failure providing appropriate mitigation measures and construction controls are implemented and is suitable for wind farm development.

2. INTRODUCTION

2.1 Fehily Timoney and Company

Fehily Timoney and Company (FT) is an Irish engineering, environmental science and planning consultancy with offices in Cork, Dublin and Carlow. The practice was established in 1990 and currently has c.100 members of staff, including engineers, scientists, planners and technical support staff. FT deliver projects in Ireland and internationally in our core competency areas of Waste Management, Environment and Energy, Civils Infrastructure, Planning and GIS and Data Management.

FT have been involved in over 100 wind farm developments in both Ireland and the UK at various stages of development i.e. preliminary feasibility, planning, design, construction, and operational stage and have established themselves as one of the leading engineering consultancies in peat stability assessment, geohazard mapping in peat land areas, investigation of peat failures and site assessment of peat.

This Report was written by Ian Higgins (FT Technical Director, PGeo, MSc in Geotechnical Engineering) and Alan Whelan (FT Senior Project Engineer, BEng Civil Engineering). Ian is a Technical Director with Fehily Timoney and has 25 years' experience in geotechnical engineering. Alan is a Senior Project Engineer with Fehily Timoney and has 5 years' experience in geotechnical engineering.

2.2 Project Description

FT was engaged in December 2023 by McCarthy Keville O'Sullivan (MKO) to undertake a geotechnical & peat stability assessment of the proposed Cunlaghfadda Green Energy Project site.

The Proposed Project is located approximately 5.3km north-west of Claremorris, approximately 16km south-east of Castlebar in Co. Mayo.

The Site comprises an area of approximately 1.65km^2. Current land-use on the Proposed Wind Farm comprises coniferous forestry and agriculture. Current land-use along the Proposed Grid Connection Route comprises of agricultural pastures and coniferous forestry. Land-use in the wider landscape of the Site comprises a mix of agriculture, peat cutting, low density residential.

The Proposed Project will comprise the following, which is described in detail in Chapter 4 of the EIAR:

(1) 7 no. wind turbines and all associated hard-standing areas

(2) 1 no. borrow pit

(3) 1 no. 110kV electrical substation

(4) Provision of new site access tracks and associated drainage

(5) All works associated with the connection of the Proposed Wind Farm to the national electricity grid

(6) 1 no permanent meteorological mast with a height of 92m

(7) New access junctions, improvements, and temporary modifications to existing public road infrastructure to facilitate delivery of abnormal loads and construction access

(8) All associated site development works

2.3 Peat Stability Assessment Methodology

FT undertook the assessment following the principles in Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (2nd Edition, Scottish Government, 2017). The Peat Landslide Hazard and Risk Assessment Guide (PLHRAG) is used in this report as it provides best practice methods to identify, mitigate and manage peat slide hazards and associated risks in respect of consent applications for electricity generation projects.

The aforementioned best practice guide was produced following peat failures in the Shetland Islands, Scotland in September 2003 but more pertinently following the peat failure in October 2003, during the construction of a wind farm at Derrybrien, County Galway, Ireland.

This peat stability assessment has been undertaken taking into account peat failures that have occurred on upland peatland sites (such as recent failures at Shass Mountain (2020), Co. Leitrim and Meenbog (2020), Co. Donegal). The lessons learned from both peat slide events have been incorporated into the design of this project and the construction methodologies to be implemented. The Meenbog failure, which occurred during wind farm construction works, involved a large area of deep, soft peat, poorly maintained forestry drainage, and the presence of a break in slope along the downslope margin of the area of deep peat, all of which were considered contributary factors to the failure which occurred as a floating road was under construction. The failure at Shass Mountain occurred where a large volume of water draining from a forestry plantation was concentrated into the headwaters of a stream, in an area of deep peat (>4m).

The slope angles on the Site are lower than those at Meenbog, and no significant breaks in slope are present. The peat (raised bog rather than the blanket bog found at the two aforementioned failure sites) has also been drained to allow for small-scale peat extraction, which has resulted in an increase in the strength of the in-situ peat. Given the flat site and the higher strength of the peat, the site conditions are not considered to be similar to Meenbog, nor is it considered likely that a similar failure to Meenbog could occur at the Site. It should be noted that the peat depth at Shass Mountain was significantly deeper (up to 5m) than the peat depth recorded across the majority of the Site, making the likelihood of this type of failure occurring very low. The topography of the Site is also different to that at Shass Mountain and does not contain any areas where a large catchment area is focussed into a localised area of deep peat.

A constraints study was initially undertaken by the Environmental, Hydrogeological and Ecological members of the design team to determine the developable area on the Site, prior to the site reconnaissance by engineering geologists/geotechnical engineers from FT. The extent a of peat stability analysis by FT has been undertaken in accordance with guidance within PLHRAG (2017) to investigate peat slopes that have the potential to impact on the Proposed Project, as applicable. Sufficient peat depth data has been recorded during the site walkovers to enable the characterisation of the peat depth across the Site, with additional detail at infrastructure locations. The peat stability assessment is undertaken within the Proposed Project to identify peat slope at risk from the Proposed Project, and to identify peat slopes that may pose a risk to the Proposed Project.

The geotechnical and peat stability assessment at the Site included the following activities:

(1) Desk study.

(2) Site reconnaissance including shear strength and peat depth measurements undertaken following initial constraints study (by design team) to determine the proposed construction envelope within the Site, i.e., the area within the overall site where development is possible following multidisciplinary review and assessment of constraints (refer to Chapter 3 of the EIAR).

(3) Peat stability assessment of the peat slopes on the Site using a deterministic and qualitative approach.

(4) Peat contour depth plan – compiled based on the peat depth probes carried out across the Site by FT (2024) and MKO (2023 and 2025).

(5) Factor of safety plan – compiled for the short-term critical condition (undrained) for 262 no. FoS points analysed along the proposed infrastructure envelope on the Site.

(6) Construction buffer zone plan – identifies areas with an elevated or higher construction risk where mitigation/control measures will need to be implemented during construction to minimise the potential risks and ensure they are kept within an acceptable range.

(7) A peat stability risk register was compiled to assess the potential design/construction risks at the infrastructure locations and determine adequate mitigation/control measures for each location to minimise the potential risks and ensure they are kept within an acceptable range, where necessary.

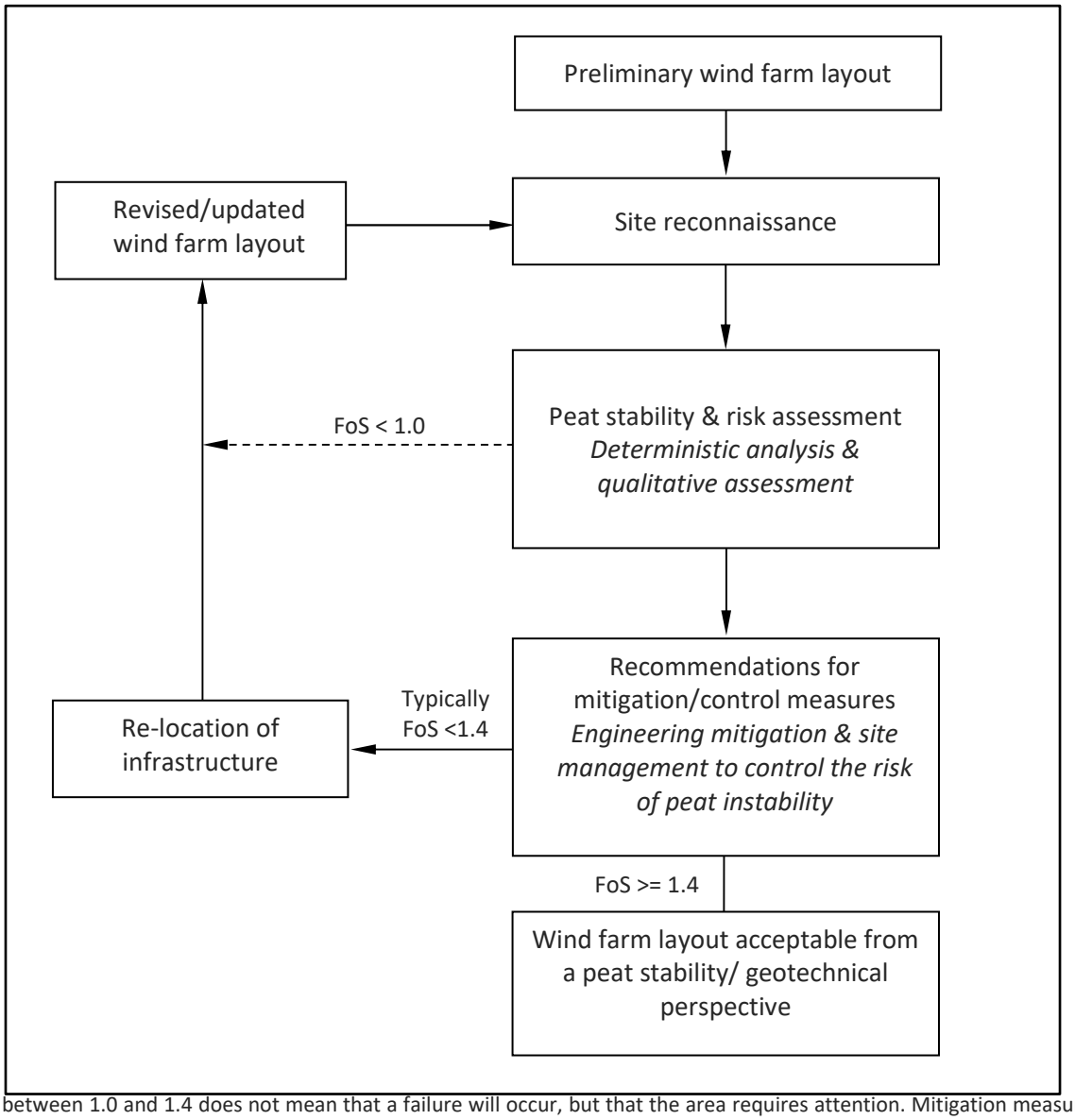
(8) Review of ground investigation carried out at the Site by Ground Investigation Ireland Ltd (GII).

(9) Preliminary assessment of foundation type for turbines.

(10) Commentary of founding details for other infrastructure elements such as access tracks, crane hardstands, 110kV substation & construction compound platforms and met mast foundation.

A flow diagram showing the general methodology for the peat stability assessment is shown in Figure 2.1. The methodology illustrates the optimisation of the Proposed Project layout based on the findings from the site reconnaissance and stability analysis and subsequent feedback.

Figure 2.1: Methodology for Peat Stability Assessment



*An FoS of between 1.0 and 1.4 does not mean that a failure will occur, but that the area requires attention. Mitigation measures can be provided for areas with an FoS of between 1.0 and 1.4 to reduce the risk of failure.

As for all construction projects, a detailed engineering construction design must be carried out by the appointed construction stage designer prior to any construction work commencing on the Site. This must take account of the consented project details and any conditions imposed by that consent. This must include a confirmatory peat stability assessment to account for any changes in the environment which may have occurred in the time leading up to the commencement of construction, and a peat and spoil management plan to allow for the most appropriate geotechnical and environmental led solutions to be developed for the management of peat and spoil.

2.4 Peat Failure Definition

Peat failure in this report refers to a significant mass movement of a body of peat that would have an adverse impact on the proposed wind farm development or the surrounding environment. Peat failure excludes localised movement of peat that would occur below an access road, creep movement or erosion type events.

The potential for peat failure at the Site is examined with respect to wind farm construction and associated activities.

2.5 Main Approaches to Assessing Peat Stability

The main approaches for assessing peat stability for wind farm developments include the following:

(1) Geomorphological

(2) Qualitative (judgement)

(3) Index/Probabilistic (probability)

(4) Deterministic (factor of safety)

Approaches (1) to (3) listed above are considered subjective and do not provide a definitive indication of stability; in addition, a high level of judgement/experience is required which makes it difficult to relate the findings to real conditions. FT apply a more objective approach, the deterministic approach (as discussed in Section 2.6).

As part of FT's deterministic approach, a qualitative risk assessment is also carried out taking into account qualitative factors, which cannot necessarily be quantified, such as the presence of mechanically cut peat, quaking peat, bog pools, sub peat water flow, slope characteristics and numerous other factors. The qualitative factors used in the risk assessment are compiled based on FT's experience of assessments and construction in peat land sites and peat failures throughout Ireland and the UK. FT have been involved with in excess of 100 wind farm developments across Ireland and the UK at various stages of development, from preliminary feasibility stage through planning and from scheme development at tender design and detailed design stage, through to the construction and operational stages. This approach follows the guidelines for geotechnical risk management as given in Clayton (2001), as referenced in the best practice for Peat Landslide Hazard and Risk Assessment Guide (2nd Edition, Scottish Government, 2017), and takes into account the approach of MacCulloch (2005).

The risk assessment uses the results of the deterministic approach in combination with qualitative factors, which cannot be reasonably included in a stability calculation but nevertheless may affect the occurrence of peat instability to assess the risk of instability on a peatland site.

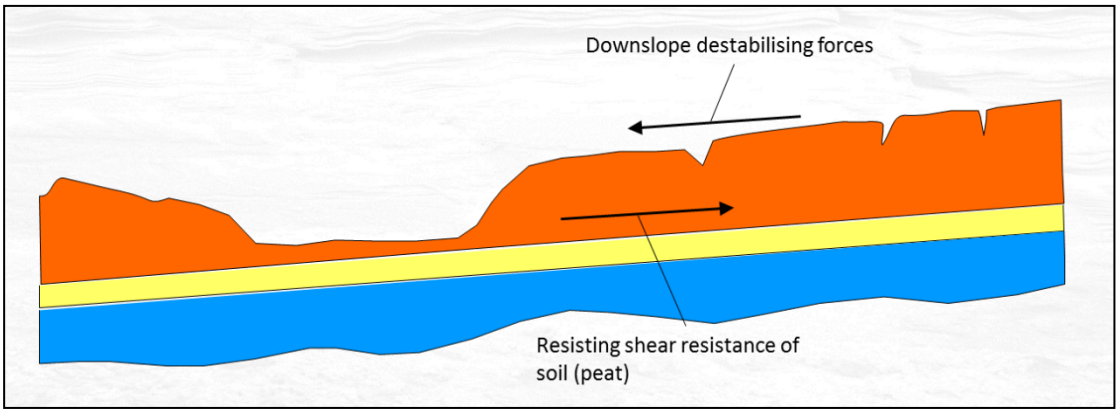
2.6 Peat Stability Assessment – Deterministic Approach

The peat stability assessment is carried out across a wide area of peatland to determine the stability of peat slopes and to identify areas of peatland that are suitable for development; this allows the layout of infrastructure on a particular wind farm site to be optimised. The assessment provides a numerical value (factor of safety) of the stability of individual parcels of peatland. The findings of the assessment discriminate between areas of stable and unstable peat, and areas of marginal stability where restrictions may apply. This allows for the identification of the most suitable locations for turbines, access tracks and infrastructure.

A deterministic assessment requires geotechnical information and site characteristics which are obtained from desk study and site walkover, e.g. properties of peat/soil/rock, slope geometry, depth of peat, underlying strata, groundwater, etc. An adverse combination of the factors listed above could potentially result in instability. Using the information above, a factor of safety is calculated for the stability of individual parcels of peatland on a site (as discussed in Section 7).

The factor of safety is a measure of the stability of a particular slope. For any slope, the degree of stability depends on the balance of forces between the weight of the soil/peat working downslope (destabilising force) and the inherent strength of the peat/soil (shear resistance) to resist the downslope weight, see Figure 2.2.

Figure 2.2: Peat Slope Showing Balance of Forces to Maintain Stability



The factor of safety provides a direct measure of the degree of stability of a slope and is the ratio of the shear resistance over the downslope destabilising force. Provided the available shear resistance is greater than the downslope destabilising force then the factor of safety will be greater than 1.0 and the slope will remain stable. If the factor of safety is less than 1.0 the slope is unstable and liable to fail. The acceptable range for factor of safety is typically from 1.3 to 1.4.

2.7 Applicability of the Factor of Safety (Deterministic) Approach for Peat Slopes

The factor of safety approach is a standard engineering approach in assessing slopes which is applied to many engineering materials, such as peat, soil, rock, etc.

The factor of safety approach is included in the Peat Landslide Hazard and Risk Assessments Best Practice Guide for Proposed Electricity Generation Developments (2nd Edition, Scottish Government, 2017); see Section 5.3.1 of the guide. This guide provides best practice methods to identify, mitigate and manage peat slide hazards and associated risks in respect of consent applications for electricity generation projects.

Furthermore, the best practice guide notes that the results from the factor of safety approach 'has provided the most informative results' with respect to analysing peat stability (Section 5.3.1 of the guide).

The factor of safety approach in this report includes undrained (short-term stability) and drained (long-term stability) analyses. The undrained condition is the critical condition for a development. The purpose of the drained analysis is to identify the relative susceptibility of rainfall-induced failures at the Site.

Notwithstanding the above, the stability analysis used by FT in this report also includes qualitative factors to determine the potential for peat stability i.e. the analysis used does not solely rely on the factor of safety approach.

The deterministic analysis is considered an acceptable engineering design approach. This concurs with the best practice guide referenced above.

2.8 Assessment of Change in Water Level on the Peat Slope

The deterministic approach undertaken by FT includes and undrained (short-term stability) and drained (long-term stability) analysis to assess the factor of safety for the peat slopes against a peat failure.

The drained loading condition applies in the long-term. This condition examines the effect of the change in groundwater level as a result of rainfall on the existing stability of the natural peat slopes. For the drained analysis the level of the water table above the failure surface is required to calculate the factor of safety for the peat slope.

In order to represent varying water levels within the peat slopes, a sensitivity analysis is carried out which assesses varying water level in the peat slopes i.e. water levels ranging from 0 to 100% of the peat depth is conducted, where 0% equates to the peat been completely dry and 100% equates to the peat being fully saturated.

By carrying out such a sensitivity analysis with varying water level in the peat slopes, the effects of changes in water level with the peat deposits are considered and analysed. The results of this are presented in Section 7 of this report.

3. DESK STUDY

3.1 Desk Study

The main relevant sources of interest with respect to the Site include:

- Geological plans and Geological Survey of Ireland database
- Ordnance survey plans
- Literature review of peat failures

The Geological Survey of Ireland online dataset viewer (GSI, 2025) and geological plans (GSI, 1999) for the Site were used to verify the soil and bedrock conditions.

The Ordnance Survey plans were reviewed to determine if any notable features or areas of particular interest (from a geotechnical point of view) are present on the Site.

The desk study also includes a review of both published literature and GSI online dataset viewer (GSI, 2025) on peat failures/landslides in the vicinity of the Site.

3.2 Soils, Subsoil & Bedrock

A review of the Geological Survey of Ireland online database and published documents from GSI was carried out.

The GSI subsoils maps indicates that the Site is underlain by a combination of predominantly cut over raised peat with small pockets of till derived from limestones, and gravels derived from limestones.

In relation to bedrock, the Site location and surrounding area is predominantly underlain by the Ardnasillagh Formation, a dark cherty limestone and thin shale. The south and south-eastern portion of the Site is underlain by Cong Canal Formation, a medium to thick-bedded pure limestone. The east of the Site has a small section of Visean Limestones.

There is a quarry recorded approximately 6.5km south-west of the EIAR site boundary.

No karst features were identified on the Site. The nearest karst feature was recorded circa 3km to the west of the Site and is described as a borehole. A similar distance to the east of the Site an enclosed depression is recorded.

No geological heritage sites are noted within 5km of the Site.

3.3 Previous Failures

There are no recorded peat failures within the Site (GSI, 2025). The nearest recorded failure is located in the townland of Carranteaun, Co. Mayo, approximately 12km north of the study area. This failure described as a translational slide failure. It occurred in 2001 and there have been no other recorded failures since.

The landslide susceptibility of the Site was classified by the GSI (2025) as low to moderately low susceptibility, which is expected given the flat terrain present.

The presence, or otherwise, of relict peat failures or clustering of relict failures within an area is an indicator that particular site conditions exist that pre-dispose a site to failure or not as the case may be. Hence based on the historical data reviewed and the terrain and ground conditions present on the Site it can be concluded that site conditions in the area of the Proposed Project have a limited potential of peat failure.

4. FINDINGS OF SITE RECONNAISSANCE

4.1 Site Reconnaissance

As part of the assessment of the potential for peat failure at the Site, FT carried out a site reconnaissance in conjunction with the desk study review described in Section 3. This comprised a walkover inspection of the Site with recording of salient geomorphological features with respect to the Proposed Project which included peat depth and a preliminary assessment of peat strength. General photographs of the Site are included at the end of the main text. The information gathered from the site visit provide sufficient information for a site-wide assessment of the extent, depth and strength of peat present at the Proposed Project.

The following salient geomorphological features were considered:

- Active, incipient or relict instability (where present) within the peat deposits
- Presence of shallow valley or drainage line
- Wet areas
- Any change in vegetation
- Peat depth
- Slope inclination and break in slope

A number of localised readings were recorded where peat depths were 3.5 to 6.1m.

The survey covered the proposed locations for the turbines and associated infrastructure.

The method adopted for carrying out the site reconnaissance relied on experienced practitioners carrying out a visual assessment of the Site supplemented with measurement of slope inclinations.

4.2 Findings of Site Reconnaissance

The site reconnaissance comprised a walkover inspection of the site undertaken by FT in January 2024. Weather conditions for the site visit ranged from dry to wet. Site visits have also been undertaken by MKO in 2023 and 2025.

The main findings of the site walkover of the Proposed Project are as follows:

(1) The Site is typically covered in a layer of peat and relatively flat. Peat depths vary across the Site depending on mainly topography. Generally deeper peat was encountered in the flatter areas of the Site with thinner peat on the few areas of higher ground. Bare cutover and cutaway peat, re-vegetation of bare peat, forestry and agricultural fields are present across the site (see Appendix A).

(2) A total of 262. peat depth probes were carried out on the Site. Peat depths recorded from peat probing across the Site ranged from 0.0 to 6.1m with an average depth of 1.2m (Drawing P23270-600-0001). Approximately 91 percent of peat depth probes recorded peat depths of less than 3.0m. A number of localised readings were recorded where peat depths were 3.5 to 6.1m. The deepest peat was recorded in an area where no development is proposed.

(3) The peat depths recorded at the turbine locations varied from 0.0 to 2.8m with an average depth of 0.8m.

(4) With respect to the new proposed access tracks, peat depths are typically less than 3.5m with localised depths of up to 5.2m recorded.

(5) The access tracks for the Proposed Project comprise of existing access tracks and the construction of new proposed access tracks. The construction of new proposed access tracks will be carried out using either a floating or an excavate & replace construction technique which involves the removal and replacement of peat or soft ground where encountered.

(6) Slope angles at the turbine locations ranged from 1 to 8 degrees. These slope angle readings were obtained using a combination of readings taken during the site reconnaissance by FT using handheld equipment, such as the Silva Clino Master which has an accuracy of +/- 0.25 degrees and from contour survey plans for the Site.

(7) The slope angle quoted typically reflects the slope within the footprint of each infrastructure location. The flat topography/nature of the terrain on site highlights the low risk of peat failure.

(8) Localised areas of ponded water were recorded. This is not unexpected given the ground conditions and the flat terrain present in the eastern portion of the Site.

(9) No evidence of past failures or any significant signs of peat instability were noted on the Site.

(10) A summary of the site walkover findings for the Site are as follows:

(a) The Site is typically covered in a layer of peat with typically flat terrain and open peatland. Peat depths recorded across the Site ranged from 0.0 to 6.1m with an average depth of 1.2m.

(b) A construction buffer zone plan has been produced for the Site (Drawing P23270-0600-0002). This shows areas on the Site where no development is advised and areas with an elevated or higher construction risk. The above identified buffer areas are based on qualitative factors identified during the walkover survey e.g. relatively deep peat, quaking peat, mechanically cut peat, recent peat landslide, etc.

(c) The results of the peat depth probing, shear strength testing of the peat and qualitative factors identified on the Site have been used in the stability and risk assessments, see Sections 6, 7 and 8 of this report for details.

(d) Based on the findings from the walkover survey, the Proposed Project is considered to have a **low** risk of peat failure.

5. GROUND INVESTIGATION

Ground investigations in the form of trial pits were carried out at the Site by Ground Investigation Ireland Limited (GII) in October 2023. The ground investigations by GII comprised a total of 19 no. trial pits with associated laboratory testing. Further ground investigation, comprising 9 no. trial pits and 1 no. rotary core, was undertaken by GII on the 14th and 15th August 2024.

The laboratory testing included the following:

- Moisture Content
- Atterberg Limits
- Particle Size Distribution – Wet Sieving and Hydrometer

The trial pits logs, photographs and associated laboratory testing are included within Appendix E of this report.

The purpose of the ground investigation was to assess the ground conditions at the main infrastructure locations and potential borrow pit locations across the Site. A ground investigation location plan is included as drawing P23270-0600-0003 in this report.

5.1 Summary of Ground Conditions

The ground conditions at the Site can be typically categorised into the following deposits:

Peat – Typically described as very soft dark brown spongy pseudo fibrous peat with occasional wood fragments. Peat thicknesses ranged from 0.2m to 3.1m from trial pits.

Lacustrine Clay – Light grey to brown, firm slightly sandy gravelly CLAY with some cobbles and boulders. The thickness of the layer is variable across the Site.

Glacial Till – firm to stiff greyish brown slightly sandy gravelly Clay with high cobble and boulder count.

Fluvioglacial Sand and Gravel – Typically described as grey clayey sandy fine to coarse angular to sub-rounded GRAVEL with cobbles and some boulders, increasing with depth. The thickness of the layer is variable across the Site.

Limestone Bedrock – described as medium strong to strong grey fine-grained Limestone with clay infill, slightly to moderately weathered. Bedrock was recorded at a depth of 10.6m bgl in the rotary corehole.

Groundwater was recorded in fifteen of the twenty-eight trial pits on the Site and varied between 0.6 and 3.2m bgl.

5.2 Summary of Laboratory Tests

Following completion of intrusive site investigations by GII laboratory testing was scheduled by FT and undertaken by GII. Soil testing was carried out in accordance with BS1377 (1990) - *Methods of Test for Soils for Civil Engineering Purposes* in GII's Materials Laboratory, accredited in accordance with the Irish National Accreditation Board (INAB).

The samples of the overburden material were analysed for a range of parameters which included Particle Size Distribution (PSD), Moisture Content and Atterberg Limits.

The results are summarised in Table 5.1. Atterberg limit tests carried out on the samples classify the material as Clay of low to high plasticity, or non-plastic (Silt). No elevated sulphate levels were detected in the samples tested. Samples of the cohesive materials were low plasticity or non-plastic.

Table 5.1: Laboratory Testing

Type	N	Min	Max	Remarks
Natural Moisture Content (%)	12	9.8	642.2	Typical % lower from gravel dominated soil and higher for silt dominated soil. Highest values recorded on peat samples.
Atterberg Limits	9	0	(12) 399	Low plasticity or non-plastic Clay, tests on peat recorded extremely high plasticity.
Particle Size Distribution	22	-	-	% passing 63 µm ranged from 12.3 to 95.5%

5.3 Summary of Geotechnical Parameters

Table 5-2 contains characteristic geotechnical parameters for the main material types likely to be encountered on the Site. Where direct measurement of parameters has not been carried out, established correlations with measured properties have been used to derive values. Characteristic values are defined as a cautious estimate of the value affecting the occurrence of limit state based on clause 2.4.5.2 from Eurocode 7.

Table 5-2: Summary of Geotechnical Parameters

Material Type/Strata	Unit Weight	Geotechnical Parameters		
		Undrained Parameters	Drained Parameters	
	γ (kN/m^3)	c_u (kPa)	ϕ' (°)	c' (kPa)
Peat	11	6 (3)	25	4
Lacustrine Soil	18	20	26	0
Glacial Till	19	40	30	0
Fluvioglacial – Sand & Gravel	20	-	32	0

Notes
Note (1) The above parameters are indicative only and have been derived based on experience and from a review of the ground investigation carried out at the Site.
Note (2) Where direct measurement of parameters has not been carried out, established correlations with measured properties have been used to derive values.
Note (3) A lower bound undrained shear strength, c_u for the peat of 6kPa was selected. The lowest recorded value on the Site was 12kPa hence a value of 6kPa is a conservative value.

6. PEAT DEPTHS, STRENGTH & SLOPE AT PROPOSED INFRASTRUCTURE LOCATIONS

As part of the site walkover, peat depth, in-situ peat strength and slope angles were recorded at various locations across the Site.

6.1 Peat Depth

Peat depth probes were carried out at/near to proposed turbine locations and access tracks and other main infrastructure elements. At turbine locations 5 probes were carried out around the turbine location, and an average peat depth was calculated.

6.2 Peat Strength

The strength testing was carried out in-situ using a Geonor H-60 Hand-Field Vane Tester. From FT's experience hand vanes give indicative results for in-situ strength of peat and would be considered best practice for the field assessment of peat strength. Strength testing was carried out at selected locations across the site to provide representative coverage of indicative peat strengths. The results of the vane testing with depth are presented in Figure 6.1.

6.3 Slope Angle

The slope angles at each of the main infrastructure locations were obtained using a combination of readings taken during the site reconnaissance by FT using handheld equipment, such as the Silva Clino Master and from contour survey plans for the Site.

The slope angle quoted typically reflects the slope within the footprint of each infrastructure location. It should be noted that slope angles derived from contour survey plans would be considered approximate, as such surveys are dependent on the density of survey data and do not always reflect local variations in ground topography. Slope angles recorded during the site reconnaissance by FT using handheld equipment would generally be deemed more accurate and representative of local topography.

6.4 Summary of Findings

Based on the peat depths recorded across the Site by FT and MKO and the trial pits excavated by GII, the peat varied in depth from 0.1 to 6.1m with an average depth of 1.2m. All peat depth probes carried out on site have been utilised to produce a peat depth contour plan for the Site (Drawing P23270-0600-0001).

A summary of the peat depths at the proposed infrastructure locations is given in Table 6.1. The data presented in Table 6.1 is used in the peat stability assessment of the Site.

Table 6.1: Peat Depth & Slope Angle at Proposed Infrastructure Locations

Turbine	ITM (X)	ITM (Y)	Peat Depth Range (m) (1)	Average Peat Depth (m)	Slope Angle (°) (2)
T01	528306	777860	0.0 – 2.0	0.8	3
T02	528467	778197	0.0 - 0.1	0.1	4
T03	528831	777975	0.9 - 2.8	2.8	3
T04	529101	778181	0.1 – 1.1	0.32	6
T05	529174	777777	0.1 – 0.2	0.16	6
T06	528789	778419	1.4 – 2.7	2.12	3
T07	528327	778643	0.1	0.1	4
Borrow Pit	528355	777815	0.0 – 2.2	1.1	6
Met Mast	528428	778335	0.2	0.2	6
110kV Substation	528196	779034	0.0 – 0.9	0.29	4
Construction Compound (substation)	528249	778889	0.0 - 0.4	0.2	3
Construction Compound (wind farm)	528434	777832	0.0 - 0.5	0.2	4

Note (1) Based on probe results from the site walkovers. The range of peat depths for the infrastructure locations are typically based on a 10m grid carried out around the infrastructure element, where accessible.

Note (2) The slope angles at each of the main infrastructure locations were obtained using a combination of readings taken during the site reconnaissance by FT using handheld equipment, such as the Silva Clino Master (which has an accuracy of +/- 0.25 degrees) and from contour survey plans for site. The slope angle quoted typically reflects the slope within the footprint of each infrastructure location.

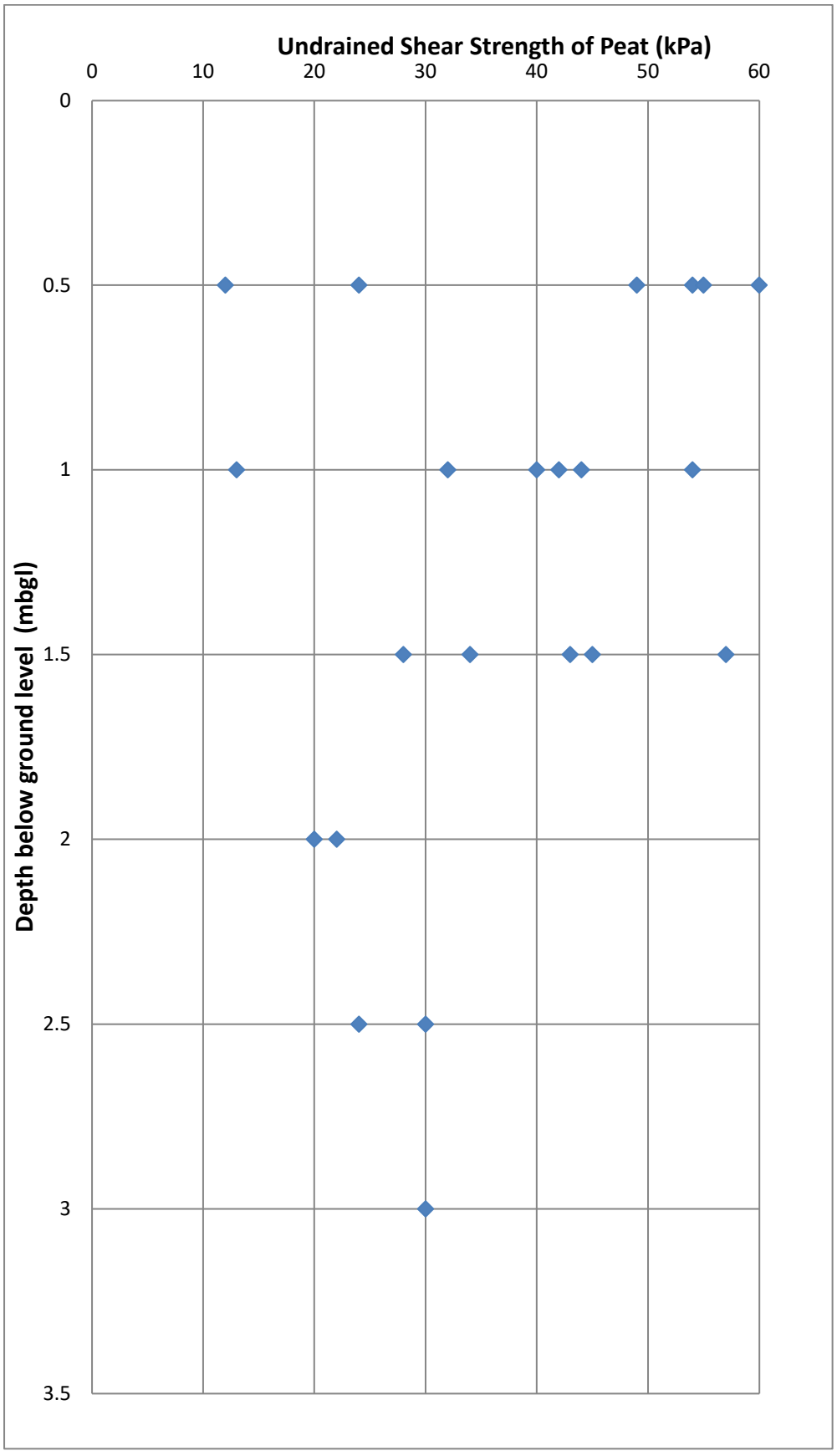
Note (3) The data presented in the Table above is used in the peat stability assessment of the site.

In addition to probing, in-situ shear vane testing was carried out as part of the ground investigation. Strength testing was carried out at selected locations across the Site to provide representative coverage of indicative peat strengths. The results of the vane testing with depth are presented in Figure 6.1.

The hand vane results indicate undrained shear strengths in the range 12 to 65kPa, with an average value of about 40kPa. The strengths recorded would be typical of well drained peat as is present on the Site.

Peat strength at sites of known peat failures (assuming undrained loading failure) are generally very low, for example the undrained shear strength at the Derrybrien failure (AGEC, 2004) as derived from back-analysis, was estimated at 2.5kPa. The recorded undrained strength at the Site is significantly greater than the lower bound values for Derrybrien indicating that there is no close correlation to the peat conditions at the Derrybrien site and that there is significantly less likelihood of failure on the Site.

Figure 6.1: Undrained Shear Strength (c_u) Profile for Peat with Depth



7. PEAT STABILITY ASSESSMENTS

The peat stability assessment includes an assessment of the stability of the natural peat slopes for individual parcels across the Site including at the turbine locations and along the proposed access tracks. The assessment also analyses the stability of the natural peat slopes with a surcharge loading of 10kPa, equivalent to placing 1m of stockpiled peat on the surface of the peat slope.

7.1 Methodology for Peat Stability Assessment

Stability of a peat slope is dependent on several factors working in combination. The main factors that influence peat stability are slope angle, shear strength of peat, depth of peat, pore water pressure and loading conditions.

An adverse combination of factors could potentially result in peat sliding. An adverse condition of one of the above-mentioned factors alone is unlikely to result in peat failure. The infinite slope model (Skempton and DeLory, 1957) is used to combine these factors to determine a factor of safety for peat sliding. This model is based on a translational slide, which is a reasonable representation of the dominant mode of movement for peat failures.

To assess the factor of safety for a peat slide, an undrained (short-term stability) and drained (long-term stability) analysis has been undertaken to determine the stability of the peat slopes on the Site.

1. The undrained loading condition applies in the short-term during construction and until construction induced pore water pressures dissipate.

2. The drained loading condition applies in the long-term. The condition examines the effect of the change in groundwater level as a result of rainfall on the existing stability of the natural peat slopes.

Undrained shear strength values (c_u) for peat are used for the total stress analysis. Based on the findings of the 2003 Derrybrien failure and other failures in peat, undrained loading during construction was found to be the critical failure mechanism.

A drained analysis requires effective cohesion (c') and effective friction angle (ø') values for the calculations. These values can be difficult to obtain because of disturbance experienced when sampling peat and the difficulties in interpreting test results due to the excessive strain induced within the peat. To determine suitable drained strength values a review of published information on peat was carried out. Table 7.1 shows a summary of the published information on peat together with drained strength values.

From Table 7.1 the values for c' ranged from 1.1 to 8.74kPa and ø' ranged from 21.6 to 43°. The average c' and ø' values are 4.5kPa and 30° respectively. Based on the above, it was considered to adopt a conservative approach and to use design values below the averages. For design the following general drained strength values have been used for the Site:

c' = 4kPa
$ø'$ = 25°

Table 7.1: List of Effective Cohesion and Friction Angle Values for Peat

Reference	Cohesion, c' (kPa)	Friction Angle, ø' (degs)	Testing Apparatus/ Comments
Hanrahan et al (1967)	5 to 7	36 to 43	From triaxial apparatus
Rowe and Mylleville (1996)	2.5	28	From simple shear apparatus
Landva (1980)	2 to 4	27.1 to 32.5	Mainly ring shear apparatus for normal stress greater than 13kPa
	5 to 6	-	At zero normal stress
Carling (1986)	6.5	0	-
Farrell and Hebib (1998)	0	38	From ring shear and shear box apparatus. Results are not considered representative.
	0.61	31	From direct simple shear (DSS) apparatus. Result considered too low therefore DSS not considered appropriate
Rowe, Maclean and Soderman (1984)	1.1	26	From simple shear apparatus
	3	27	From DSS apparatus
McGreever and Farrell (1988)	6	38	From triaxial apparatus using soil with 20% organic content
	6	31	From shear box apparatus using soil with 20% organic content
Hungr and Evans (1985)	3.3	-	Back-analysed from failure
Dykes and Kirk (2006)	3.2	30.4	Test within acrotelm
Dykes and Kirk (2006)	4	28.8	Test within catotelm
Warburton et al (2003)	5	23.9	Test in basal peat
Warburton et al (2003)	8.74	21.6	Test using fibrous peat
Hendry et al (2012)	0	31	Remoulded test specimen
Komatsu et al (2011)	8	34	Remoulded test specimen
Zwanenburg et al (2012)	2.3	32.3	From DSS apparatus
Den Haan & Grognet (2014)	-	37.4	From large DSS apparatus
O'Kelly & Zhang (2013)	0	28.9 to 30.3	Tests carried out on reconstituted, undisturbed and blended peat samples

7.2 Analysis to Determine Factor of Safety (Deterministic Approach)

The purpose of the analysis was to determine the Factor of Safety (FoS) of the peat slopes using infinite slope analysis. The analysis was carried out at the turbine locations, along the proposed access tracks and at various locations across the Site.

The FoS provides a direct measure of the degree of stability of the slope. A FoS of less than unity indicates that a slope is unstable, a FoS of greater than unity indicates a stable slope.

The acceptable safe range for FoS typically ranges from 1.3 to 1.4. The previous code of practice for earthworks BS 6031:1981 (BSI, 1981), provided advice on design of earthworks slopes. It stated that for a first-time failure with a good standard of site investigation the design FoS should be greater than 1.3. For a conservative assessment, a minimum FoS of 1.4 has been used on this project.

As a general guide the FoS limits for peat slopes in this report are summarised in Table 7.2.

Table 7.2: Factor of Safety Limits for Slopes

Factor of Safety (FoS)	Degree of Stability
Less than 1.0	Unstable (red)
Between 1.0 and 1.3	Marginally stable (yellow)
1.3 or greater	Acceptable (green)

Eurocode 7 (EC7) (IS EN 1997-1:2005) now serves as the reference document and the basis for design geotechnical engineering works. The design philosophy used in EC7 applies partial factors to soil parameters, actions and resistances. Unlike the traditional approach, EC7 does not provide a direct measure of stability, since global Factors of Safety are not used.

As such, and in order to provide a direct measure of the level of safety on the Site, EC7 partial factors have not been used in this stability assessment. The results are given in terms of FoS.

A lower bound undrained shear strength, c_u for the peat of 6kPa was selected for the assessment based on the c_u values recorded at the Site. It should be noted that a c_u of 6kPa for the peat is considered a conservative value for the analysis and is not representative of all peat present across the Site. In reality the peat generally has a higher undrained strength.

The formula used to determine the factor of safety for the undrained condition in the peat (Bromhead, 1986) is as follows:

$$F = \frac{c_u}{\gamma z \sin\alpha \cos\alpha}$$

Where:

F = Factor of Safety
c_u = Undrained strength
γ = Bulk unit weight of material

z = Depth to failure plane assumed as depth of peat

α = Slope angle

The formula used to determine the factor of safety for the drained condition in the peat (Bromhead, 1986) is as follows:

$$F = \frac{c' + (\gamma z - \gamma_w h_w)\cos^2 \alpha \tan \phi'}{\gamma z \sin \alpha \cos \alpha}$$

Where:

F = Factor of Safety

c' = Effective cohesion

γ = Bulk unit weight of material

z = Depth to failure plane assumed as depth of peat

γ_w = Unit weight of water

h_w = Height of water table above failure plane

α = Slope angle

ϕ' = Effective friction angle

For the drained analysis the level of the water table above the failure surface is required to calculate the factor of safety for the slope. Since the water level in blanket peat can be variable and can be recharged by rainfall, it is not feasible to establish its precise location throughout the Site. Therefore, a sensitivity analysis using water level ranging between 0% and 100% of the peat depth was conducted, where 0% equates to the peat being completely dry and 100% equates to the peat been fully saturated.

The following general assumptions were used in the analysis of peat slopes at each location:

(1) Peat depths are based on the maximum peat depth recorded at each location from the walkover surveys and ground investigation.

(2) The slope angles used in the peat stability assessment were obtained using a combination of readings taken during the site reconnaissance by FT using handheld equipment and from contour survey plans for the Site. It should be noted that slope angles derived from contour survey plans would be considered approximate, as such surveys are dependent on the density of survey data and do not always reflect local variations in ground topography.

(3) Slope angle at base of sliding assumed to be parallel to ground surface.

(4) A lower bound undrained shear strength, c_u for the peat of 6kPa was selected for the assessment. The lowest recorded value on the Site during the site walkover was 12kPa. It should be noted that a c_u of 6kPa for the peat is considered a conservative value for the analysis and is not representative of all peat present across the Site. In reality, the peat has a significantly higher undrained strength as a result of the extensive drainage & extraction works which have been carried out on the Site.

For the stability analysis two load conditions were examined, namely

Condition (1): no surcharge loading
Condition (2): surcharge of 10 kPa, equivalent to 1m of stockpiled peat assumed as a worst case.

7.3 Results of Analysis

7.3.1 Undrained Analysis for the Peat

The results of the undrained analysis for the natural peat slopes are presented in Appendix C and the results of the undrained analysis for the most critical load case (load condition 2) are shown on Drawing P23270-0600-0004. The undrained analysis for load condition 2 is considered the most critical load case as most peat failures occur in the short term upon loading of the peat surface. The results from the main infrastructure locations are summarised in Table 7.3.

The calculated FoS for load condition 1 is in excess of 1.40 for each of the infrastructure locations (262 no. locations) analysed with a range of FoS of 2.21 to 172.03, indicating a low risk of peat instability.

The calculated FoS for load condition 2 is in excess of 1.40 for each of the infrastructure locations (262 no. locations) analysed with a range of FoS of 1.85 to 17.19, indicating a low risk of peat instability.

Table 7.3: Factor of Safety Results (Undrained Condition)

Turbine No./Waypoint	ITM (X)	ITM (Y)	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
T01	528306	777860	**2.75**	**3.83**
T02	528467	778197	**86.22**	**7.84**
T03	528831	777975	**4.10**	**3.02**
T04	529101	778181	**5.25**	**2.75**
T05	529174	777777	**28.86**	**4.81**
T06	528789	778419	**4.25**	**3.10**
T07	528329	778643	**86.22**	**7.84**
Met Mast	528428	778335	**28.86**	**4.81**
110kV Substation	528196	779034	**28.70**	**8.20**
Construction Compound (Substation)	528249	778889	**57.40**	**9.57**
Construction Compound (Wind Farm)	528434	777832	**17.24**	**5.75**
Borrow Pit	528355	777815	**8.62**	**4.31**
Peat and Spoil Management Area 1	528512	777792	**8.60**	**5.73**
Peat and Spoil Management Area 2	528949	778148	**4.59**	**3.28**
Peat and Spoil Management Area 3	529048	778114	**43.54**	**3.96**

Turbine No./Waypoint	ITM (X)	ITM (Y)	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
Peat and Spoil Management Area 4	528897	778200	4.54	2.97
Peat and Spoil Management Area 5	529022	778222	5.25	2.75
Peat and Spoil Management Area 6	529023	778356	6.14	4.53
Peat and Spoil Management Area 7	528843	778419	4.79	3.08
Peat and Spoil Management Area 8	528685	778582	8.62	4.31
Peat and Spoil Management Area 9	528375	778595	No peat recorded at this location	
Peat and Spoil Management Area 10	529297	778859	No peat recorded at this location	

7.3.2 Drained Analysis for the Peat

The results of the drained analysis for the peat are presented in Appendix C. The results from the main infrastructure locations are summarised in Table 7.4. As stated previously, the drained loading condition examines the effect of rainfall and water on the existing stability of the natural peat slopes.

The calculated FoS for load condition 1 is in excess of 1.40 for each of the locations (262 no. locations) analysed with a range of FoS of 1.47 to 114.68, indicating a low risk of peat instability.

The calculated FoS for load condition 2 is in excess of 1.40 for each of the locations (262 no. locations) analysed with a range of FoS of 2.67 to 38.18, indicating a low risk of peat instability.

Table 7.4: Factor of Safety Results (Drained Conditions)

Turbine No./Waypoint	ITM (X)	ITM (Y)	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
T01	528306	777860	3.83	5.52
T02	528467	778197	57.48	11.29
T03	528831	777975	2.73	4.36
T04	529101	778181	3.50	3.94
T05	529174	777777	19.24	6.90
T06	528789	778419	2.83	4.47
T07	528329	778643	57.48	11.29

Turbine No./Waypoint	ITM (X)	ITM (Y)	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
Met Mast	528428	778335	**19.24**	**6.90**
110kV Substation	528196	779034	**19.13**	**11.82**
Construction Compound (Substation)	528249	778889	**38.27**	**13.79**
Construction Compound (Wind Farm)	528434	777832	**11.50**	**8.28**
Borrow Pit	528355	777815	**12.42**	**9.54**
Peat and Spoil Management Area 1	528512	777792	**19.09**	**17.18**
Peat and Spoil Management Area 2	528949	778148	**11.96**	**11.08**
Peat and Spoil Management Area 3	529048	778114	**29.02**	**5.65**
Peat and Spoil Management Area 4	528897	778200	**9.69**	**8.65**
Peat and Spoil Management Area 5	529022	778222	**3.50**	**3.94**
Peat and Spoil Management Area 6	529023	778356	**16.83**	**16.02**
Peat and Spoil Management Area 7	528843	778419	**3.19**	**4.43**
Peat and Spoil Management Area 8	528685	778582	**5.75**	**6.21**
Peat and Spoil Management Area 9	528375	778595	**No peat recorded at this location**	
Peat and Spoil Management Area 10	529297	778859	**No peat recorded at this location**	

8. PEAT STABILITY RISK ASSESSMENT

A peat stability risk assessment was carried out for the main infrastructure elements at the Site. This approach takes into account guidelines for geotechnical/peat stability risk assessments as given in PLHRAG (2017) and MacCulloch (2005).

The risk assessment uses the results of the stability analysis (deterministic approach) in combination with qualitative factors, which cannot be reasonably included in a stability calculation but nevertheless may affect the occurrence of peat instability, to assess the risk for each infrastructure element.

For each of the main infrastructure elements, a risk rating (product of probability and impact) is calculated and rated as shown in Table 8.1. Where a subsection is rated 'Medium' or 'High', control measures are required to reduce the risk to at least a 'Low' risk rating. Where a subsection is rated 'Low' or 'Negligible', only routine control measures are required.

Table 8.1: Risk Rating Legend

17 to 25	High: avoid works in area or significant control measures required
11 to 16	Medium: notable control measures required
5 to 10	Low: only routine control measures required
1 to 4	Negligible: none or only routine control measures required

A full methodology for the peat stability risk assessment is given in Appendix D.

8.1 Summary of Risk Assessment Results

The results of the peat stability risk assessment for potential peat failure at the main infrastructure elements is presented as a Geotechnical Risk Register in Appendix B and summarised in Table 8.2.

The risk rating for each infrastructure element at the Proposed Project is designated Negligible following some mitigation/control measures being implemented. Sections of access tracks to the nearest infrastructure element will be subject to the same mitigation/control measures that apply to the nearest infrastructure element.

Details of the required mitigation/control measures can be found in the Geotechnical Risk Register for each infrastructure element (Appendix B).

Table 8.2: Summary of Peat Stability Risk Register

Infrastructure	Pre-Control Measure Implementation Risk Rating	Pre-Control Measure Implementation Risk Rating Category	Notable Control Measures Required	Post-Control Measure Implementation Risk Rating	Post-Control Measure Implementation Risk Rating Category
T1	Negligible	1 to 4	Yes	Negligible	1 to 4
T2	Negligible	1 to 4	No	Negligible	1 to 4
T3	Negligible	1 to 4	Yes	Negligible	1 to 4
T4	Negligible	1 to 4	No	Negligible	1 to 4
T5	Negligible	1 to 4	No	Negligible	1 to 4
T6	Negligible	1 to 4	Yes	Negligible	1 to 4
T7	Negligible	1 to 4	No	Negligible	1 to 4
Met Mast	Negligible	1 to 4	No	Negligible	1 to 4
110kV Substation	Negligible	1 to 4	No	Negligible	1 to 4
Construction Compound (Substation)	Negligible	1 to 4	No	Negligible	1 to 4
Construction Compound (Wind Farm)	Negligible	1 to 4	No	Negligible	1 to 4
Main Entrance Track	Negligible	1 to 4	No	Negligible	1 to 4
Access Track to T7	Negligible	1 to 4	No	Negligible	1 to 4
Access Track to Substation	Negligible	1 to 4	No	Negligible	1 to 4
Access Track to T2 (including Met Mast)	Negligible	1 to 4	No	Negligible	1 to 4
Access Track to T1	Negligible	1 to 4	No	Negligible	1 to 4
Access Track to T3	Negligible	1 to 4	No	Negligible	1 to 4
Access Track to T4	Negligible	1 to 4	No	Negligible	1 to 4
Access Track to T5	Negligible	1 to 4	No	Negligible	1 to 4
Peat and Spoil Management Area 1	Negligible	1 to 4	No	Negligible	1 to 4
Peat and Spoil Management Area 2	Negligible	1 to 4	No	Negligible	1 to 4
Peat and Spoil Management Area 3	Negligible	1 to 4	No	Negligible	1 to 4

Peat and Spoil Management Area 4	Negligible	1 to 4	No	Negligible	1 to 4
Peat and Spoil Management Area 5	Negligible	1 to 4	No	Negligible	1 to 4
Peat and Spoil Management Area 6	Negligible	1 to 4	No	Negligible	1 to 4
Peat and Spoil Management Area 7	Negligible	1 to 4	No	Negligible	1 to 4
Peat and Spoil Management Area 8	Negligible	1 to 4	No	Negligible	1 to 4
Peat and Spoil Management Area 9	Not Applicable (no peat)				
Peat and Spoil Management Area 10	Not Applicable (no peat)				

9. INDICATIVE FOUNDATION TYPE AND FOUNDATION DEPTH FOR TURBINES

9.1 Summary

Based on a review of the ground investigation information for the Site, a preliminary assessment of the likely foundation type and founding depths for each turbine location was carried out. A summary of this assessment is provided in Table 9-1.

Table 9-1: Summary of Indicative Turbine Foundation Type and Founding Depths

Turbine No.	Turbine Foundation Type	Relevant GI	Indicative founding depth (m bgl)	Comment
T1	Gravity foundation	TPT4	>3.0	The site investigation works carried out indicate that a gravity foundation will be required.
T2	Gravity foundation	TPT3	>3.0	Found on stiff Clay at >3.0m bgl.
T3	Gravity foundation	TPT1	3.0	Found on sandy Gravel at 3.0m bgl.
T4	Gravity foundation	TPT5	3.0	Found on sandy Gravel at 3.0m bgl
T5	Gravity foundation	TPT2	3.0	Found on clayey Gravel or stiff Clay at 3.0m bgl.
T6	Gravity foundation	TPT6	3.0	Found on sandy Gravel at 3.0m bgl
T7	Gravity foundation	TPT7	3.0	Found on sandy Gravel at 3.0m bgl
110kV Substation	Gravity foundations	TPSS1, TPSS2	1.0	Found on sandy Gravel at 1m bgl.
Met Mast	Gravity foundations	TPMM	2.0	The site investigation works carried out indicate that a gravity foundation will be required.

It should be noted that further ground investigation will be carried out prior to construction at each turbine location, in the form of a borehole with in-situ SPT testing at 1m intervals in the overburden and follow-on rotary core through bedrock to confirm the foundation types and founding stratums assumed in Table 9-1. It is likely that following the completion of further ground investigation prior to construction that the turbine bases will be deemed suitable for gravity type foundations.

For gravity type turbine foundations, where the depth of excavation exceeds the required founding depth for the proposed turbine base, up-fill material consisting of granular fill (6N) shall be used to backfill the excavation to the required founding depth.

10. FOUNDING DETAILS FOR OTHER INFRASTRUCTURE ELEMENTS

This section provides a summary of the founding details for various elements of the proposed infrastructure across the Site. The detailed methodologies for the construction of these elements of the Proposed Project are included in Chapter 4 of the EIAR.

10.1 Access Tracks

Floating access tracks are the predominant construction type proposed for the Site which, given the ground conditions and type of terrain present, is deemed an appropriate construction approach.

The total length of the new proposed access tracks to be constructed on the Site is 3.7km. The total length of existing access tracks to be upgraded on the Site is 1.0km. As part of the development, a 772m section of public road will be upgraded in addition to the above. As part of the access track network, approximately 615m of temporary construction tracks will be constructed as part of the Proposed Project.

The access tracks will be a mixture of founded and floating construction methodologies. The typical make-up of the founded access tracks is a minimum stone thickness of 500mm. For the floated access tracks, a minimum stone thickness of 800mm is anticipated. The requirement for a layer of geotextile and geogrid and the necessary stone thickness will be confirmed at detailed design stage.

10.2 Crane Hardstands

The crane hardstands will be constructed using the founded technique (i.e. not floated technique).

Crane hardstands are constructed using compacted Class 1/6F material on a suitable sub-formation to achieve the required bearing resistance. The hardstands will be designed for the most critical loading combinations from the crane.

The hardstands will require to be founded on competent material underlying the peat deposits. The founding levels for the hardstands will be variable across the Site and will be determined at pre-construction stage.

The typical make-up of the hardstands will include a minimum of 1000mm of granular stone fill with possibly a layer of geotextile and/or geogrid, if deemed necessary by the Designer.

10.3 Substation Foundations & Platforms

The onsite 110kV substation platform will be constructed using the founded technique (i.e. not floated technique). The 110kV substation foundations may comprise strip/raft foundations under the main footprint of the building with possibly a basement/pit for cable connections.

Substation platforms are constructed using compacted Class 1/6F material in accordance with Eirgrid/ESB network requirements on a suitable sub-formation to achieve the required bearing resistance.

The substation platform will require to be founded on competent material underlying the peat deposits.

Given the ground conditions present at the proposed 110kV substation, it is envisaged that the foundations will require to be founded on glacial till. The peat will not be a suitable founding stratum for the 110kV substation foundations.

Typical founding depth for substation platforms is likely to be 1.0m.

The typical make-up of the 110kV substation platform will require approximately 1.0-1.5m of granular stone fill with possibly a layer of geotextile and/or geogrid. At the underside of the 110kV substation foundations, a layer of structural up-fill (class 6N/6P) in accordance with Eirgrid requirements will likely be required.

10.4 Construction Compound Platforms

The construction compound platforms will be constructed using the founded or floated technique as appropriate.

The construction compound platforms are generally constructed using compacted Class 1/6F material on a suitable sub-formation to achieve the required bearing resistance.

The construction compound platforms will require to be founded on material underlying the peat deposits.

Typical founding depth for construction compound platforms will require excavations from 0.5m to 1.5m bgl.

The typical make-up of the construction compound platform will include up to 1000mm of granular stone fill with possibly a layer of geotextile and/or geogrid.

10.5 Met Mast Foundations

The met mast foundation will likely comprise gravity type foundation.

Given the ground conditions present at the proposed met mast, it is envisaged that the foundation will require to be founded on a competent stratum below the peat.

Typical founding depth for the met mast foundation is envisaged to be 2m bgl. At the underside of the met mast foundation, a layer of structural up-fill (class 6N) will be required.

11. SUMMARY AND RECOMMENDATIONS

11.1 Summary

The following summary is given.

FT was engaged by MKO to undertake a geotechnical and peat stability assessment of the Site.

The findings of the peat assessment showed that the Site has an acceptable margin of safety and is suitable for the Proposed Project. The findings include recommendations and control measures for construction work in peat lands to ensure that all works adhere to an acceptable standard of safety.

The Site, which is typically flat, consists predominantly of bare, locally re-vegetated, cut-away raised peat and intact shallow peat.

Peat thicknesses recorded during the site walkover and from the ground investigation ranged from 0.1 to 6.1m with an average peat depth of 1.2m. 59% of the probes recorded peat depths of less than 1.0m, with 77% of peat depth probes recorded peat depths of less than 2.0m and 91% of peat depth probes recorded peat depths of less than 3.0m. A number of localised readings recorded peat depths from 3.5 to 6.1m; however, these are outside of the development footprint.

Slope inclinations at the main infrastructure locations range from 1 to 8 degrees.

An analysis of peat sliding was carried out at the main infrastructure locations across the Proposed Project for both the undrained and drained conditions. The purpose of the analysis was to determine the Factor of Safety (FoS) of the peat slopes.

An undrained analysis was carried out, which applies in the short-term during construction. For the undrained condition, the calculated FoS for load conditions (1) and (2) for the locations analysed, showed that all locations have an acceptable FoS of greater than 1.3, indicating a low risk of peat failure. The undrained analysis would be considered the most critical condition for the peat slopes.

A drained analysis was also carried out, which examined the effect of, in particular, rainfall on the existing stability of the natural peat slopes on the Site. For the drained condition, the calculated FoS for load conditions (1) & (2) for the locations analysed, showed that all infrastructure locations have an acceptable FoS of greater than 1.3.

The peat stability risk assessment at each infrastructure location identified a number of mitigation/control measures to reduce the potential risk of peat failure. Sections of access tracks to the nearest infrastructure element should be subject to the same mitigation/control measures that apply to the nearest infrastructure element. See Appendix B for details of the required mitigation/control measures for each infrastructure element.

A single borrow pit is proposed as part of the Proposed Project, adjacent to T01. The borrow pit will be backfilled with excess peat and spoil excavated from the Proposed Project.

In summary, the findings of the peat assessment showed that the proposed Cunlaghfadda Green Energy Project has an acceptable margin of safety, is suitable for the Proposed Project and is considered to be at **low** risk of peat failure. The findings include recommendations and control measures for construction work in peat lands to ensure that all works adhere to an acceptable standard of safety.

11.2 Recommendations

The following recommendations are given.

Notwithstanding that the Site has an acceptable margin of safety a number of mitigation/control measures are given to ensure that all works adhere to an acceptable standard of safety for work in peatlands. Mitigation/control measures identified for each of the infrastructure elements in the risk assessment will be taken into account and implemented throughout design and construction works (Appendix B).

To minimise the risk of construction activity causing potential peat instability the Construction Method Statements (CMSs) for the project will take into account, but not be limited, to the recommendations above. This will ensure that best practice guidance regarding the management of peat stability will be inherent in the construction phase.

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DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

DRAWINGS



Legend:

- EIAR Study Area
- Turbine / Hardstand
- Turbine / Hardstand Temporary Areas
- Upgrade to Existing Track
- New Track
- Temporary Construction Track
- Upgrade to Public Road
- Proposed Construction Compound
- Proposed Substation
- Proposed Borrow Pit
- Peat and Spoil Management Areas
- Turbine Delivery Route

Peat Depth Legend:

- ≥ 0 < 0.5
- ≥ 0.5 < 1
- ≥ 1 < 1.5
- ≥ 1.5 < 2
- ≥ 2 < 2.5
- ≥ 2.5 < 3
- ≥ 3 < 3.5
- ≥ 3.5 < 4
- ≥ 4 < 4.5
- ≥ 4.5 < 5
- ≥ 5 < 5.5
- ≥ 5.5 < 6
- ≥ 6

0m 50m 100m 150m 200m 250m 300m 350m 400m 450m 500m

Scale 1:5000

PLAN

Scale 1:5000

If Applicable : Ordnance Survey Ireland Licence No. CYAL50221678 © Ordnance Survey Ireland and Government of Ireland

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A	FOR INFORMATION	IH	06.03.24
B	FOR INFORMATION	BDH	01.07.25
C	FOR INFORMATION	BDH	05.12.25
D	FOR INFORMATION	BDH	17.04.26
E	FOR INFORMATION	BDH	27.04.26

PROJECT: CUNLAGHFADDA GREEN ENERGY PROJECT

CLIENT: MKO

SHEET: PEAT DEPTH CONTOUR PLAN

Date: 27.04.26
Drawn by: POR
Checked by: IH
Project number: P23-270
Scale (@ A1): 1:5000
Drawing Number: P23-270-0600-0001
Rev: E

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27 April 2026

End Mast
End Mast
T7
Security Cabin
Met Mast
T6
T2
T4
T3
Security Cabin
T1
T5
Passing Bay
Wheel Wash
Temporary Site Entrance

Legend:

- EIAR Study Area
- Turbine / Hardstand
- Turbine / Hardstand Temporary Areas
- Upgrade to Existing Track
- New Track
- Temporary Construction Track
- Upgrade to Public Road
- Proposed Construction Compound
- Proposed Substation
- Proposed Borrow Pit
- Peat and Spoil Management Areas
- Turbine Delivery Route

Construction Buffer Zone Legend:

- Marginal buffer zones which may need supervision should construction works take place in these areas.

PLAN

Scale 1:5000

0m 50m 100m 150m 200m 250m 300m 350m 400m 450m 500m

Scale 1:5000

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D	FOR INFORMATION	BDH	17.04.26
E	FOR INFORMATION	BDH	27.04.26

PROJECT: **CUNLAGHFADDA GREEN ENERGY PROJECT**

CLIENT: **MKO**

SHEET: **CONSTRUCTION BUFFER ZONE PLAN**

Date: 27.04.26
Project number: P23-270
Scale (@ A1): 1:5000
Drawn by: POR
Checked by: IH
Drawing Number: **P23-270-0600-0002**
Rev: **E**

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27 April 2026



Legend:

- EIAR Study Area
- Turbine / Hardstand
- Turbine / Hardstand Temporary Areas
- Upgrade to Existing Track
- New Track
- Temporary Construction Track
- Upgrade to Public Road
- Proposed Construction Compound
- Proposed Substation
- Proposed Borrow Pit
- Peat and Spoil Management Areas
- Turbine Delivery Route

Ground Investigation Legend:

- TP... Trial Pit Location
- RC... Rotary Corehole Location

0m 50m 100m 150m 200m 250m 300m 350m 400m 450m 500m

Scale 1:5000

PLAN

Scale 1:5000

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D	FOR INFORMATION	BDH	17.04.26
E	FOR INFORMATION	BDH	27.04.26

PROJECT: CUNLAGHFADDA GREEN ENERGY PROJECT

CLIENT: MKO

SHEET: GROUND INVESTIGATION LOCATION PLAN

Date: 27.04.26

Drawn by: POR

Checked by: IH

Project number: P23-270

Scale (@ A1): 1:5000

Drawing Number: P23-270-0600-0003

Rev: E

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27 April 2026

End Mast
End Mast
T7
Security Cabin
Met Mast
T6
T2
T4
T3
Security Cabin
T1
T5
Passing Bay
Wheel Wash
Temporary Site Entrance

Legend:

- EIAR Study Area
- Turbine / Hardstand
- Turbine / Hardstand Temporary Areas
- Upgrade to Existing Track
- New Track
- Temporary Construction Track
- Upgrade to Public Road
- Proposed Construction Compound
- Proposed Substation
- Proposed Borrow Pit
- Peat and Spoil Management Areas
- Turbine Delivery Route

Factor of Safety Legend:

- 0 < 1.0
- ≥ 1.0 < 1.3
- ≥ 1.3

Increasing Stability

No Peat Recorded At This Location

PLAN

Scale 1:5000

0m 50m 100m 150m 200m 250m 300m 350m 400m 450m 500m

Scale 1:5000

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D	FOR INFORMATION	BDH	17.04.26
E	FOR INFORMATION	BDH	27.04.26

PROJECT: CUNLAGHFADDA GREEN ENERGY PROJECT

CLIENT: MKO

SHEET: FACTOR OF SAFETY PLAN – SHORT TERM CRITICAL CONDITION (UNDRAINED)

Date: 27.04.26
Drawn by: POR
Checked by: IH
Project number: P23-270
Scale (@ A1): 1:5000
Drawing Number: P23-270-0600-0004
Rev: E

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27 April 2026

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APPENDIX A

Photos from Site Walkover



Photo 1: Existing Local Road to be Upgraded



Photo 2: Existing Site Track to be Upgraded



Photo 3: Proposed Borrow Pit Location



Photo 4: Location of T6 (Peat Depth of 2.7m Recorded)

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DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

APPENDIX B

Peat Stability Risk Registers

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Turbine T1

Grid Reference (Eastings, Northings):	528306	777860
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.0 - 2.0	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 3.02 (u), 2.73 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	3	1	3	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	2	1	2	Negligible	No		2	1	2	Negligible
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	1	1	1	Negligible	No		1	1	1	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T1**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Turbine T2

Grid Reference (Eastings, Northings):	528467	778197
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.1 - 0.2	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 4.81 (u), 6.90 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T2**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Turbine T3

Grid Reference (Eastings, Northings):	528831	777975
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.9-2.8	
Control Required:	Yes	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 7.84 (u), 11.29 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatviely deep peat	3	1	3	Negligible	No		1	1	1	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T3**
i	Due to relatively deep peat at this turbine location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
vi	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vii	Movement monitoring posts to be installed upslope of the turbine/hardstand excavation and monitored on a regular basis

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Turbine T4

Grid Reference (Eastings, Northings):	**529101**	**778181**
Distance to Watercourse (m)	**> 150**	
Min & Max Measured Peat Depth (m):	**0.1 - 1.1**	
Control Required:	**No**	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 4.79 (u), 6.90 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T4**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Turbine T5

Grid Reference (Eastings, Northings):	**529174**	**777777**
Distance to Watercourse (m)	**> 150**	
Min & Max Measured Peat Depth (m):	**0.1-0.2**	
Control Required:	**No**	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 2.75 (u), 3.50 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T5**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Turbine T6

Grid Reference (Eastings, Northings):	528789	778419
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.4 - 2.7	
Control Required:	Yes	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 3.10 (u), 2.83 (d)	1	1	1	Negligible	No		1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No	See Below	2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T6**
i	Due to relatively deep peat at this turbine location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
vi	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vii	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Turbine T7

Grid Reference (Eastings, Northings):	**528329**	**778643**
Distance to Watercourse (m)	**> 150**	
Min & Max Measured Peat Depth (m):	**0.1**	
Control Required:	**No**	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 7.84 (u), 11.29 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T7**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vi	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Main Entrance Track

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.1 - 3.7**
Control Required:	**Yes**

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 2.69 (u), 2.61 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	3	1	3	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	3	1	3	Negligible	No		2	1	2	Negligible
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **Main Entrance Track**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Movement monitoring posts to be installed upslope of the access track and monitored on a regular basis

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix D in PSA.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Entrance to T01

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.0 - 3.3**
Control Required:	**No**

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 4.00 (u), 16.02 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		1	1	1	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		1	1	1	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		1	1	1	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **Entrance to T01**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Movement monitoring posts to be installed upslope of the access track and monitored on a regular basis

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix D in PSA.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Access Track to T02 /Met Mast

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.0 - 0.8**
Control Required:	**No**

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 7.84 (u), 11.29 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		1	1	1	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		1	1	1	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		1	1	1	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Access Track to T02/Met Mast**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Movement monitoring posts to be installed upslope of the access track and monitored on a regular basis

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix D in PSA.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	**Access Track to T03**

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.9-2.5**
Control Required:	**Yes**

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 2.06 (u), 2.14 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		1	1	1	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		1	1	1	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		1	1	1	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **Access Track to T03**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
vi	Movement monitoring posts to be installed upslope of the access track and monitored on a regular basis

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix D in PSA.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Access Track T03 to T

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.0-2.0**
Control Required:	**No**

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 5.03 (u), 19.09 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		1	1	1	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		1	1	1	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		1	1	1	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for Access Track **T03 to T04**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Movement monitoring posts to be installed upslope of the access track and monitored on a regular basis

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix D in PSA.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Access Track T04 to T05

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.0 - 1.3**
Control Required:	**No**

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 4.99 (u), 5.89 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		1	1	1	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		1	1	1	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		1	1	1	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **Access Track T04 to T05**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix D in PSA.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Access Track to T06

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.0 - 2.3**
Control Required:	**No**

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 5.74 (u), 12.72 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		1	1	1	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		1	1	1	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		1	1	1	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Access Track to T06**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
vi	Movement monitoring posts to be installed upslope of the access track and monitored on a regular basis

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix D in PSA.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Access Track T06 to T07

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.0 - 1.0**
Control Required:	**No**

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 4.31 (u), 5.75 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		1	1	1	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		1	1	1	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		1	1	1	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Access Track T06 to T07**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix D in PSA.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Const. Comp. (Substation)

Grid Reference (Eastings, Northings):	**528249**	**778889**
Distance to Watercourse (m)	**> 150**	
Min & Max Measured Peat Depth (m):	**0.0-0.4**	
Control Required:	**No**	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 3.92 (u), 4.79 (d)	1	1	1	Negligible	No		1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	1	1	1	Negligible	No		1	1	1	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	1	1	1	Negligible	No	See Below	1	1	1	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Construction Compound (Substation)**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vi	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Const. Comp. (Wind Farm)

Grid Reference (Eastings, Northings):	**528434**	**777832**
Distance to Watercourse (m)	**> 150**	
Min & Max Measured Peat Depth (m):	**0.0-0.5**	
Control Required:	**No**	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 4.81 (u), 6.90 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	1	1	1	Negligible	No		1	1	1	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	1	1	1	Negligible	No		1	1	1	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Construction Compound (Wind Farm)**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vi	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	Met Mast

Grid Reference (Eastings, Northings):	528428	778335
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.0 - 0.2	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 4.81 (u), 6.90 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		1	1	1	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	1	1	1	Negligible	No		1	1	1	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Met. Mast**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vi	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	110kV Substation

Grid Reference (Eastings, Northings):	**528196**	**779034**
Distance to Watercourse (m)	**> 150**	
Min & Max Measured Peat Depth (m):	**0.0 - 0.9**	
Control Required:	**No**	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 8.20 (u), 11.82 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		1	1	1	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	1	1	1	Negligible	No		1	1	1	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Substation**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vi	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	PS01

Grid Reference (Eastings, Northings):	528512	777792
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.1-2.0	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 8.60 (u), 17.18 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	3	1	3	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	2	1	2	Negligible	No		2	1	2	Negligible
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	1	1	1	Negligible	No		1	1	1	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **PS01**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	PS02

Grid Reference (Eastings, Northings):	528949	778148
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.1-1.0	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 4.59 (u), 11.08 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **PS02**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	PS03

Grid Reference (Eastings, Northings):	529048	778113
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.0-0.1	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 43.54 (u), 5.65 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatviely deep peat	3	1	3	Negligible	No		1	1	1	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **PS03**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	PS04

Grid Reference (Eastings, Northings):	528897	778200
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.2-1.9	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 4.54 (u), 8.65 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **PS04**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	PS05

Grid Reference (Eastings, Northings):	529022	778222
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.1-0.3	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 5.25 (u), 3.94 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **PS05**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	PS06

Grid Reference (Eastings, Northings):	529023	778356
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	2.0-3.3	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 6.14 (u), 16.02 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **PS06**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	PS07

Grid Reference (Eastings, Northings):	528843	778419
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.3-1.8	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 4.79 (u), 4.43 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **PS07**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	PS08

Grid Reference (Eastings, Northings):	528685	778582
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.0-1.0	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 8.62 (u), 6.21 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **PS08**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	PS09

Grid Reference (Eastings, Northings):	528375	778595
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	No peat	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = N/A (u), N/A (d)	0	1	0	Not Applicable	No	See Below	0	1	0	Not Applicable
2	Evidence of sub peat water flow	0	1	0	Not Applicable	No		0	1	0	Not Applicable
3	Evidence of surface water flow	0	1	0	Not Applicable	No		0	1	0	Not Applicable
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	0	1	0	Not Applicable	No		0	1	0	Not Applicable
6	General slope characteristics upslope/downslope from infrastructure location	0	1	0	Not Applicable	No		0	1	0	Not Applicable
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **PS09**

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Cunlaghfadda Green Energy Project - Peat Stability Risk Register (Rev 0)

Location:	PS10

Grid Reference (Eastings, Northings):	529297	778859
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	No peat	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = N/A (u), N/A (d)	0	1	0	Not Applicable	No	See Below	0	1	0	Not Applicable
2	Evidence of sub peat water flow	0	1	0	Not Applicable	No		0	1	0	Not Applicable
3	Evidence of surface water flow	0	1	0	Not Applicable	No		0	1	0	Not Applicable
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	0	1	0	Not Applicable	No		0	1	0	Not Applicable
6	General slope characteristics upslope/downslope from infrastructure location	0	1	0	Not Applicable	No		0	1	0	Not Applicable
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **PS10**

Note
(1) FOS abbreviations are: u: FOS for undrained analysis, d: FOS for drained analysis.
(2) Probability assessed as per Table A and B of Appendix E.
(3) Impact based on distance of infrastructure element to nearest watercourse.

FEHILY TIMONEY

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APPENDIX C

Calculated FOS for Peat Slopes on Site

Calculated FoS of Natural Peat Slopes for Cunlaghfadda Green Energy Project - Undrained Analysis

Turbine No./Waypoint	Easting	Northing	Slope	Undrained shear strength	Bulk unit weight of Peat	Peat Depth	Surcharge Equivalent Placed Fill Depth (m)	Factor of Safety for Load Condition	
			β (deg)	c_u (kPa)	γ (kN/m^3)	(m)	Condition (2)	Condition (1)	Condition (2)
T1	528306	777860	3	6	10	2.0	3.0	**5.74**	**3.83**
T2	528467	778197	4	6	10	0.1	1.1	**86.22**	**7.84**
T3	528831	777975	3	6	10	2.8	3.8	**4.10**	**3.02**
T4	529101	778181	6	6	10	1.1	2.1	**5.25**	**2.75**
T5	529174	777777	6	6	10	0.2	1.2	**28.86**	**4.81**
T6	528789	778419	3	6	10	2.7	3.7	**4.25**	**3.10**
T7	528329	778643	4	6	10	0.1	1.1	**86.22**	**7.84**
TCC (SS)	528249	778889	3	6	10	0.2	1.2	**57.40**	**9.57**
TCC (2)	528434	777832	4	6	10	0.5	1.5	**17.24**	**5.75**
MM	528428	778335	6	6	10	0.2	1.2	**28.86**	**4.81**
SS	528196	779034	3	6	10	0.4	1.4	**28.70**	**8.20**
FT01	528408	777169	4	6	10	0.1	1.1	**86.22**	**7.84**
FT02	528363	777220	3	6	10	1.0	2.0	**11.48**	**5.74**
FT03	528370	777330	3	6	10	2.0	3.0	**5.74**	**3.83**
FT04	528392	777424	6	6	10	1.0	2.0	**5.77**	**2.89**
FT05	528424	777508	6	6	10	0.2	1.2	**28.86**	**4.81**
FT06	528469	777583	4	6	10	2.2	3.2	**3.92**	**2.69**
FT07	528526	777675	3	6	10	5.2	6.2	**2.21**	**1.85**
FT08	528576	777759	4	6	10	1.8	2.8	**4.79**	**3.08**
FT09	528631	777852	3	6	10	3.7	4.7	**3.10**	**2.44**
FT10	528674	777928	2	6	10	2.2	3.2	**7.82**	**5.38**
FT11	528726	778021	4	6	10	1.0	2.0	**8.62**	**4.31**
FT12	528766	778070	4	6	10	2.2	3.2	**3.92**	**2.69**
FT13	528819	778013	3	6	10	0.9	1.9	**12.76**	**6.04**
FT21	529030	778055	3	6	10	1.3	2.3	**8.83**	**4.99**
FT22	529058	777978	4	6	10	0.3	1.3	**28.74**	**6.63**
FT23	529093	777848	4	6	10	0.1	1.1	**86.22**	**7.84**
FT24	528873	778082	6	6	10	1.8	2.8	**3.21**	**2.06**
FT25	529082	778141	8	6	10	0.1	1.1	**43.54**	**3.96**
FT26	529105	778169	4	6	10	0.2	1.2	**43.11**	**7.19**
FT27	528401	778727	4	6	10	0.1	1.1	**86.22**	**7.84**
FT28	528374	778802	3	6	10	0.1	1.1	**114.80**	**10.44**
FT34	528712	778108	3	6	10	0.8	1.8	**14.35**	**6.38**
FT35	528358	777979	4	6	10	0.1	1.1	**86.22**	**7.84**
FT37	528809	778160	6	6	10	1.8	2.8	**3.21**	**2.06**
FT38	528880	778294	3	6	10	1.6	2.6	**7.18**	**4.42**
FT39	528840	778372	4	6	10	1.8	2.8	**4.79**	**3.08**
FT40	528800	778397	3	6	10	1.3	2.3	**8.83**	**4.99**
FT41	528743	778462	2	6	10	0.8	1.8	**21.50**	**9.56**
FT42	528706	778577	4	6	10	1.0	2.0	**8.62**	**4.31**
FT50	528615	777643	2	6	10	5.6	6.6	**3.07**	**2.61**
FT51	528797	777601	2	6	10	6.1	7.1	**2.82**	**2.42**
MKO Probes									
MKO127	528526	778936	5	6	10	0.2	1.2	**34.55**	**5.76**
MKO128	528512	778929	5	No peat recorded at this location					
MKO129	528505	778927	5	6	10	0.1	1.1	**69.11**	**6.28**
MKO130	528502	778933	5	6	10	0.1	1.1	**69.11**	**6.28**
MKO131	528481	778917	3	6	10	0.1	1.1	**114.80**	**10.44**
MKO132	528444	778892	5	6	10	0.2	1.2	**34.55**	**5.76**
MKO133	528387	778851	2	6	10	0.1	1.1	**172.03**	**15.64**
MKO134	528484	778913	3	6	10	0.2	1.2	**57.40**	**9.57**
MKO135	528439	778879	5	6	10	0.1	1.1	**69.11**	**6.28**
MKO136	528401	778852	2	6	10	0.1	1.1	**172.03**	**15.64**
MKO137	528358	778867	3	6	10	0.1	1.1	**114.80**	**10.44**
MKO138	528341	778900	5	6	10	0.2	1.2	**34.55**	**5.76**
MKO139	528310	778943	5	6	10	0.2	1.2	**34.55**	**5.76**
MKO140	528265	779007	3	6	10	0.2	1.2	**57.40**	**9.57**
MKO141	528239	779072	3	6	10	0.2	1.2	**57.40**	**9.57**
MKO143	528280	779084	3	6	10	0.2	1.2	**57.40**	**9.57**
MKO144	528333	779104	3	6	10	0.4	1.4	**28.70**	**8.20**
MKO145	528352	779116	3	6	10	0.3	1.3	**38.27**	**8.83**
MKO146	528242	779022	3	6	10	0.2	1.2	**57.40**	**9.57**
MKO147	528218	779056	3	6	10	0.1	1.1	**114.80**	**10.44**
MKO148	528148	779010	3	6	10	0.9	1.9	**12.76**	**6.04**
MKO149	528170	778998	3	6	10	0.5	1.5	**22.96**	**7.65**
MKO150	528196	778974	4	6	10	0.1	1.1	**86.22**	**7.84**
MKO151	528157	778911	4	6	10	0.1	1.1	**86.22**	**7.84**
MKO152	528170	778931	4	6	10	0.4	1.4	**21.56**	**6.16**
MKO153	528214	778913	4	6	10	0.1	1.1	**86.22**	**7.84**
MKO154	528264	778980	4	6	10	0.1	1.1	**86.22**	**7.84**
MKO213	528504	778848	4	No peat recorded at this location					
MKO214	528509	778900	5	No peat recorded at this location					
MKO215	528498	778933	5	No peat recorded at this location					
MKO216	529156	778191	2	6	10	1.9	2.9	**9.05**	**5.93**
MKO217	529243	777950	2	6	10	1.0	2.0	**17.20**	**8.60**
MKO218	528668	778638	2	6	10	2.2	3.2	**7.82**	**5.38**
MKO219	529166	778243	2	6	10	2.5	3.5	**6.88**	**4.92**
MKO228	528780	778908	4	No peat recorded at this location					
MKO229	528631	778286	3	No peat recorded at this location					
MKO230	528786	778413	3	6	10	1.2	2.2	**9.57**	**5.22**
MKO234	528780	778407	3	6	10	3.0	4.0	**3.83**	**2.87**
MKO236	528781	778144	4	No peat recorded at this location					
MKO237	528615	778139	3	No peat recorded at this location					
MKO238	528937	778276	2	6	10	2.0	3.0	**8.60**	**5.73**
MKO239	529092	778359	1	6	10	3.0	4.0	**11.46**	**8.60**
MKO240	529049	778421	2	6	10	3.3	4.3	**5.21**	**4.00**

Calculated FoS of Natural Peat Slopes for Cunlaghfadda Green Energy Project - Undrained Analysis

Turbine No./Waypoint	Easting	Northing	Slope	Undrained shear strength	Bulk unit weight of Peat	Peat Depth	Surcharge Equivalent Placed Fill Depth (m)	Factor of Safety for Load Condition	
			β (deg)	c_u (kPa)	γ (kN/m^3)	(m)	Condition (2)	Condition (1)	Condition (2)
MKO243	528996	778383	2	6	10	2.8	3.8	**6.14**	**4.53**
MKO245	529083	778291	4	6	10	1.0	2.0	**8.62**	**4.31**
MKO249	529117	778193	6	No peat recorded at this location					
MKO250	529187	778159	3	6	10	2.0	3.0	**5.74**	**3.83**
MKO253	528941	777688	6	6	10	0.3	1.3	**19.24**	**4.44**
MKO254	528941	777839	3	6	10	1.2	2.2	**9.57**	**5.22**
MKO255	528785	777840	2	6	10	4.8	5.8	**3.58**	**2.97**
MKO256	528962	777960	2	6	10	2.6	3.6	**6.62**	**4.78**
MKO261	528619	777681	1	6	10	6	7.0	**5.73**	**4.91**
MKO262	528623	778710	1	6	10	3	4.0	**11.46**	**8.60**
MKO264	528761	777549	3	6	10	1.2	2.2	**9.57**	**5.22**
MKO300	528447	778160	3	No peat recorded at this location					
MKO301	528447	778160	3	No peat recorded at this location					
MKO302	528450	778166	3	No peat recorded at this location					
MKO303	528448	778166	3	No peat recorded at this location					
MKO304	528447	778160	3	No peat recorded at this location					
MKO305	528450	778170	3	No peat recorded at this location					
MKO306	528388	778092	5	6	10	0.2	1.2	**34.55**	**5.76**
MKO307	528388	778092	5	6	10	2	3.0	**3.46**	**2.30**
MKO308	528374	778036	3	6	10	0.2	1.2	**57.40**	**9.57**
MKO309	528342	777912	4	No peat recorded at this location					
MKO310	528274	777864	4	6	10	2	3.0	**4.31**	**2.87**
MKO311	528269	777868	4	6	10	2	3.0	**4.31**	**2.87**
MKO312	528277	777840	4	6	10	2	3.0	**4.31**	**2.87**
MKO313	528256	777831	2	6	10	3.5	4.5	**4.92**	**3.82**
MKO314	528256	777831	2	6	10	3.5	4.5	**4.92**	**3.82**
MKO315	528328	777806	4	6	10	2.2	3.2	**3.92**	**2.69**
MKO316	528319	777777	4	6	10	2	3.0	**4.31**	**2.87**
MKO317	528325	777774	4	6	10	2.2	3.2	**3.92**	**2.69**
MKO318	528809	778107	4	6	10	1.2	2.2	**7.19**	**3.92**
MKO319	528816	778135	3	6	10	2.7	3.7	**4.25**	**3.10**
MKO320	528816	778135	3	6	10	2.7	3.7	**4.25**	**3.10**
MKO321	528834	778142	3	6	10	2.5	3.5	**4.59**	**3.28**
MKO322	528845	778174	2	6	10	2.6	3.6	**6.62**	**4.78**
MKO323	528875	778198	4	6	10	1.9	2.9	**4.54**	**2.97**
MKO324	528890	778233	4	6	10	1.2	2.2	**7.19**	**3.92**
MKO325	528792	778101	5	6	10	0.2	1.2	**34.55**	**5.76**
MKO326	528850	778066	2	6	10	1.8	2.8	**9.56**	**6.14**
MKO327	528818	778040	3	6	10	2	3.0	**5.74**	**3.83**
MKO328	528833	778010	3	6	10	2.5	3.5	**4.59**	**3.28**
MKO329	528858	777966	3	6	10	3.2	4.2	**3.59**	**2.73**
MKO330	528874	777992	3	6	10	4.4	5.4	**2.61**	**2.13**
MKO331	528887	777996	3	6	10	4.4	5.4	**2.61**	**2.13**
MKO332	528846	777958	3	6	10	1.5	2.5	**7.65**	**4.59**
MKO333	528876	777872	3	6	10	2.7	3.7	**4.25**	**3.10**
MKO334	529120	777820	5	No peat recorded at this location					
MKO335	529182	777762	6	No peat recorded at this location					
MKO336	529177	777764	6	No peat recorded at this location					
MKO337	529165	777764	6	No peat recorded at this location					
MKO338	529175	777841	2	No peat recorded at this location					
MKO339	529178	777846	2	No peat recorded at this location					
MKO340	529080	777888	4	No peat recorded at this location					
MKO341	529077	777929	4	No peat recorded at this location					
MKO342	529040	778024	4	6	10	1.1	2.1	**7.84**	**4.11**
MKO343	529017	778085	5	No peat recorded at this location					
MKO344	529068	778113	6	No peat recorded at this location					
MKO345	529112	778131	3	6	10	0.9	1.9	**12.76**	**6.04**
MKO346	529152	778150	2	6	10	1	2.0	**17.20**	**8.60**
MKO347	529172	778158	2	6	10	1.5	2.5	**11.47**	**6.88**
MKO348	529183	778154	2	6	10	1.3	2.3	**13.23**	**7.48**
MKO349	529181	778134	2	6	10	1.7	2.7	**10.12**	**6.37**
MKO350	528987	778070	2	6	10	1.3	2.3	**13.23**	**7.48**
MKO351	528941	778068	3	6	10	2.3	3.3	**4.99**	**3.48**
MKO352	528905	778072	2	6	10	2.3	3.3	**7.48**	**5.21**
MKO353	528941	778055	3	6	10	2.7	3.7	**4.25**	**3.10**
MKO354	528842	778076	2	6	10	2.7	3.7	**6.37**	**4.65**
MKO355	528792	777762	2	6	10	4.3	5.3	**4.00**	**3.25**
MKO356	528773	777675	1	6	10	3.6	4.6	**9.55**	**7.47**
MKO357	528307	777943	2	6	10	4	5.0	**4.30**	**3.44**
MKO358	528297	777811	2	6	10	3.2	4.2	**5.38**	**4.10**
MKO359	528448	778166	3	No peat recorded at this location					
MKO360	528389	778094	5	No peat recorded at this location					
MKO361	528376	778034	3	No peat recorded at this location					
MKO362	528270	777832	2	6	10	2.2	3.2	**7.82**	**5.38**
MKO363	528258	777827	2	6	10	3.5	4.5	**4.92**	**3.82**
MKO364	528425	778273	5	6	10	0.2	1.2	**34.55**	**5.76**
MKO365	528802	778076	3	6	10	0.9	1.9	**12.76**	**6.04**
MKO366	528818	778123	3	No peat recorded at this location					
MKO367	528392	778094	5	No peat recorded at this location					
MKO368	528376	778036	3	No peat recorded at this location					
MKO369	528271	777831	2	6	10	2.3	3.3	**7.48**	**5.21**
MKO370	528253	777829	2	6	10	3.5	4.5	**4.92**	**3.82**
MKO371	528338	777787	4	6	10	1	2.0	**8.62**	**4.31**
MKO372	528327	777775	4	6	10	2.2	3.2	**3.92**	**2.69**
MKO373	528326	777808	4	No peat recorded at this location					
MKO374	528326	777808	4	No peat recorded at this location					
MKO375	528326	777808	4	No peat recorded at this location					
MKO376	528412	778204	3	6	10	0.7	1.7	**16.40**	**6.75**
MKO377	528425	778269	5	6	10	0.2	1.2	**34.55**	**5.76**

Calculated FoS of Natural Peat Slopes for Cunlaghfadda Green Energy Project - Undrained Analysis

Turbine No./Waypoint	Easting	Northing	Slope	Undrained shear strength	Bulk unit weight of Peat	Peat Depth	Surcharge Equivalent Placed Fill Depth (m)	Factor of Safety for Load Condition	
			β (deg)	c_u (kPa)	γ (kN/m^3)	(m)	Condition (2)	Condition (1)	Condition (2)
MKO378	528429	778335	6	No peat recorded at this location					
MKO379	528495	778171	2	No peat recorded at this location					
MKO380	528535	778162	3	No peat recorded at this location					
MKO381	528595	778143	4	No peat recorded at this location					
MKO382	528658	778123	3	No peat recorded at this location					
MKO383	528766	778087	2	No peat recorded at this location					
MKO384	528766	778088	2	6	10	2.1	3.1	**8.19**	**5.55**
MKO385	528887	778354	2	No peat recorded at this location					
MKO386	528885	778452	3	6	10	3.5	4.5	**3.28**	**2.55**
MKO387	528875	778581	2	6	10	1.5	2.5	**11.47**	**6.88**
MKO388	528871	778634	1	No peat recorded at this location					
MKO389	528868	778673	1	No peat recorded at this location					
MKO390	528833	778611	1	No peat recorded at this location					
MKO391	528709	778630	4	No peat recorded at this location					
MKO392	528706	778630	4	No peat recorded at this location					
MKO393	528635	778607	3	No peat recorded at this location					
MKO394	528551	778580	3	No peat recorded at this location					
MKO395	528544	778567	3	No peat recorded at this location					
MKO396	528539	778598	5	No peat recorded at this location					
MKO397	528514	778618	5	No peat recorded at this location					
MKO398	528461	778657	3	No peat recorded at this location					
MKO399	528461	778657	3	No peat recorded at this location					
MKO400	528405	778647	3	No peat recorded at this location					
MKO401	528329	778645	4	No peat recorded at this location					
MKO402	528647	778580	4	No peat recorded at this location					
MKO403	528696	778531	3	6	10	0.7	1.7	**16.40**	**6.75**
MKO404	528714	778478	2	6	10	1	2.0	**17.20**	**8.60**
MKO405	528739	778427	2	6	10	1.9	2.9	**9.05**	**5.93**
MKO406	528760	778427	2	6	10	1.3	2.3	**13.23**	**7.48**
MKO407	528733	778368	1	6	10	1	2.0	**34.38**	**17.19**
MKO408	528811	778342	2	6	10	0.9	1.9	**19.11**	**9.05**
MKO409	528810	778337	2	6	10	0.9	1.9	**19.11**	**9.05**
MKO410	528805	778335	2	6	10	0.3	1.3	**57.34**	**13.23**
MKO411	528852	778284	2	6	10	1.3	2.3	**13.23**	**7.48**
MKO412	529079	778285	4	6	10	0.3	1.3	**28.74**	**6.63**
MKO413	529103	778234	3	6	10	0.3	1.3	**38.27**	**8.83**
MKO414	529133	778193	2	6	10	1	2.0	**17.20**	**8.60**
MKO415	529036	778304	3	No peat recorded at this location					
MKO416	528963	778282	2	No peat recorded at this location					
MKO417	528905	778272	2	No peat recorded at this location					
BPTP1	528345	777851	5	No peat recorded at this location					
BPTP2	528384	777809	8	No peat recorded at this location					
TPMM	528426	778338	6	No peat recorded at this location					
TPR1	528648	778606	3	No peat recorded at this location					
TPR3	529041	778019	4	6	10	1.9	2.9	**4.54**	**2.97**
TPR4	528623	778124	3	No peat recorded at this location					
TPR5	528748	778014	4	6	10	0.9	1.9	**9.58**	**4.54**
TPR6	528547	777716	3	6	10	3.1	4.1	**3.70**	**2.80**
TPR7	528559	778775	2	6	10	0.6	1.6	**28.67**	**10.75**
TPR8	528392	778962	2	No peat recorded at this location					
TPSS1	528192	779020	3	6	10	0.8	1.8	**14.35**	**6.38**
TPSS2	528216	778928	4	No peat recorded at this location					
TPT1	528831	777978	3	6	10	1.7	2.7	**6.75**	**4.25**
TPT2	529149	777792	6	No peat recorded at this location					
TPT3	528455	778210	4	No peat recorded at this location					
TPT4	528287	777852	4	6	10	1.9	2.9	**4.54**	**2.97**
TPT5	529123	778188	6	6	10	0.3	1.3	**19.24**	**4.44**
TPT6	528741	778435	2	6	10	0.2	1.2	**86.01**	**14.34**
TPT7	528328	778639	4	6	10	0.3	1.3	**28.74**	**6.63**
APP001	528569	777758	2	6	10	2.1	3.1	**8.19**	**5.55**
APP002	528536	777767	2	6	10	3.3	4.3	**5.21**	**4.00**
APP003	528539	777781	2	6	10	2.0	3.0	**8.60**	**5.73**
APP004	528498	777804	2	6	10	1.1	2.1	**15.64**	**8.19**
APP005	528498	777767	2	6	10	1.0	2.0	**17.20**	**8.60**
APP006	528874	778131	2	6	10	2.0	3.0	**8.60**	**5.73**
APP007	528872	778129	2	6	10	2.0	3.0	**8.60**	**5.73**
APP008	529155	777885	2	No peat recorded at this location					
APP009	529143	777939	1	No peat recorded at this location					
APP010	529104	777989	1	No peat recorded at this location					
APP011	529077	778035	2	6	10	0.1	1.1	**172.03**	**15.64**
APP012	529008	778151	2	6	10	0.1	1.1	**172.03**	**15.64**
APP013	528959	778123	2	6	10	0.1	1.1	**172.03**	**15.64**
APP014	528764	778909	2	6	10	0.2	1.2	**86.01**	**14.34**
APP015	528710	778907	2	6	10	0.8	1.8	**21.50**	**9.56**
APP016	528669	778938	2	6	10	0.2	1.2	**86.01**	**14.34**
APP017	528577	778963	2	6	10	1.5	2.5	**11.47**	**6.88**
APP018	528434	777837	2.5	No peat recorded at this location					
APP019	528444	777808	2.5	No peat recorded at this location					
APP020	528391	777873	2.5	6	10	0.1	1.1	**137.68**	**12.52**
APP021	528385	777926	4	No peat recorded at this location					
APP022	528399	777990	5	6	10	0.1	1.1	**69.11**	**6.28**
APP023	528690	778195	3	No peat recorded at this location					
APP024	528726	778218	3	6	10	1.0	2.0	**11.48**	**5.74**
APP025	528733	778255	2	6	10	1.0	2.0	**17.20**	**8.60**
APP026	528732	778308	2	6	10	2.3	3.3	**7.48**	**5.21**
APP027	528755	778340	2	6	10	1.2	2.2	**14.34**	**7.82**
APP028	528764	778428	2	No peat recorded at this location					
APP029	528750	778573	2	6	10	3.5	4.5	**4.92**	**3.82**

Calculated FoS of Natural Peat Slopes for Cunlaghfadda Green Energy Project - Undrained Analysis

Turbine No./Waypoint	Easting	Northing	Slope	Undrained shear strength	Bulk unit weight of Peat	Peat Depth	Surcharge Equivalent Placed Fill Depth (m)	Factor of Safety for Load Condition	
			β (deg)	c_u (kPa)	γ (kN/m^3)	(m)	Condition (2)	Condition (1)	Condition (2)

Minimum =	**2.21**	**1.85**
Maximum =	**172.03**	**17.19**
Average =	**27.83**	**6.14**

Notes:

(1) Assuming a bulk unit weight for peat of 10kN/m^3

(2) Assuming a surcharge equivalent to fill depth of 1m of peat i.e. 10kPa.

(3) Slope inclination (β) based on site readings and site contour plans.

(4) A lower bound undrained shear strength, cu for the peat of 6kPa was selected for the assessment. It should be noted that a cu of 8kPa for the peat is considered a conservative value for the analysis and is not representative of all peat present across the site. In reality the peat has a significantly higher undrained strength.

(5) Peat depths based on probes carried out by FT.

(6) For load conditions see report text.

Calculated FoS of Natural Peat Slopes for Cunlaghfadda Green Energy Project - Drained Analysis

Turbine No./Waypoint	Slope	Design c'	Bulk unit weight of Peat	Unit weight of Water	Depth of In situ Peat	Friction Angle	Surcharge Equivalent Placed Fill	Equivalent Total Depth of Peat (m)	Factor of Safety for Load Condition	
	α (deg)	c' (kPa)	γ (kN/m^3)	γ_w (kN/m^3)	(m)	ø' (deg)	Condition (2)	Condition (2)	Condition (1)	Condition (2)
									100% Water	100% Water
T1	3	4	10.0	10.0	2.0	25	1.0	3.0	**3.83**	**5.52**
T2	4	4	10.0	10.0	0.1	25	1.0	1.1	**57.48**	**11.29**
T3	3	4	10.0	10.0	2.8	25	1.0	3.8	**2.73**	**4.36**
T4	6	4	10.0	10.0	1.1	25	1.0	2.1	**3.50**	**3.94**
T5	6	4	10.0	10.0	0.2	25	1.0	1.2	**19.24**	**6.90**
T6	3	4	10.0	10.0	2.7	25	1.0	3.7	**2.83**	**4.47**
T7	4	4	10.0	10.0	0.1	25	1.0	1.1	**57.48**	**11.29**
TCC (SS)	3	4	10.0	10.0	0.2	25	1.0	1.2	**38.27**	**13.79**
TCC (2)	4	4	10.0	10.0	0.5	25	1.0	1.5	**11.50**	**8.28**
MM	6	4	10.0	10.0	0.2	25	1.0	1.2	**19.24**	**6.90**
SS	3	4	10.0	10.0	0.4	25	1.0	1.4	**19.13**	**11.82**
FT01	4	4	10.0	10.0	0.1	25	1.0	1.1	**57.48**	**11.29**
FT02	3	4	10.0	10.0	1.0	25	1.0	2.0	**7.65**	**8.28**
FT03	3	4	10.0	10.0	2.0	25	1.0	3.0	**3.83**	**5.52**
FT04	6	4	10.0	10.0	1.0	25	1.0	2.0	**3.85**	**4.14**
FT05	6	4	10.0	10.0	0.2	25	1.0	1.2	**19.24**	**6.90**
FT06	4	4	10.0	10.0	2.2	25	1.0	3.2	**2.61**	**3.88**
FT07	3	4	10.0	10.0	5.2	25	1.0	6.2	**1.47**	**2.67**
FT08	4	4	10.0	10.0	1.8	25	1.0	2.8	**3.19**	**4.43**
FT09	3	4	10.0	10.0	3.7	25	1.0	4.7	**2.07**	**3.52**
FT10	2	4	10.0	10.0	2.2	25	1.0	3.2	**5.21**	**7.76**
FT11	4	4	10.0	10.0	1.0	25	1.0	2.0	**5.75**	**6.21**
FT12	4	4	10.0	10.0	2.2	25	1.0	3.2	**2.61**	**3.88**
FT13	3	4	10.0	10.0	0.9	25	1.0	1.9	**8.50**	**8.71**
FT21	3	4	10.0	10.0	1.3	25	1.0	2.3	**5.89**	**7.20**
FT22	4	4	10.0	10.0	0.3	25	1.0	1.3	**19.16**	**9.55**
FT23	4	4	10.0	10.0	0.1	25	1.0	1.1	**57.48**	**11.29**
FT24	6	4	10.0	10.0	1.8	25	1.0	2.8	**2.14**	**2.96**
FT25	8	4	10.0	10.0	0.1	25	1.0	1.1	**29.02**	**5.65**
FT26	4	4	10.0	10.0	0.2	25	1.0	1.2	**28.74**	**10.35**
FT27	4	4	10.0	10.0	0.1	25	1.0	1.1	**57.48**	**11.29**
FT28	3	4	10.0	10.0	0.1	25	1.0	1.1	**76.53**	**15.05**
FT34	3	4	10.0	10.0	0.8	25	1.0	1.8	**9.57**	**9.20**
FT35	4	4	10.0	10.0	0.1	25	1.0	1.1	**57.48**	**11.29**
FT37	6	4	10.0	10.0	1.8	25	1.0	2.8	**2.14**	**2.96**
FT38	3	4	10.0	10.0	1.6	25	1.0	2.6	**4.78**	**6.37**
FT39	4	4	10.0	10.0	1.8	25	1.0	2.8	**3.19**	**4.43**
FT40	3	4	10.0	10.0	1.3	25	1.0	2.3	**5.89**	**7.20**
FT41	2	4	10.0	10.0	0.8	25	1.0	1.8	**14.34**	**13.79**
FT42	4	4	10.0	10.0	1.0	25	1.0	2.0	**5.75**	**6.21**
FT50	2	4	10.0	10.0	5.6	25	1.0	6.6	**2.05**	**3.76**
FT51	2	4	10.0	10.0	6.1	25	1.0	7.1	**1.88**	**3.50**
MKO Probes										
MKO127	5	4	10.0	10.0	0.2	25	1.0	1.2	**23.04**	**8.28**
MKO128	5	No peat recorded at this location								
MKO129	5	4	10.0	10.0	0.1	25	1.0	1.1	**46.07**	**9.03**
MKO130	5	4	10.0	10.0	0.1	25	1.0	1.1	**46.07**	**9.03**
MKO131	3	4	10.0	10.0	0.1	25	1.0	1.1	**76.53**	**15.05**
MKO132	5	4	10.0	10.0	0.2	25	1.0	1.2	**23.04**	**8.28**
MKO133	2	4	10.0	10.0	0.1	25	1.0	1.1	**114.68**	**22.57**
MKO134	3	4	10.0	10.0	0.2	25	1.0	1.2	**38.27**	**13.79**
MKO135	5	4	10.0	10.0	0.1	25	1.0	1.1	**46.07**	**9.03**
MKO136	2	4	10.0	10.0	0.1	25	1.0	1.1	**114.68**	**22.57**
MKO137	3	4	10.0	10.0	0.1	25	1.0	1.1	**76.53**	**15.05**
MKO138	5	4	10.0	10.0	0.2	25	1.0	1.2	**23.04**	**8.28**
MKO139	5	4	10.0	10.0	0.2	25	1.0	1.2	**28.37**	**9.17**
MKO140	3	4	10.0	10.0	0.2	25	1.0	1.2	**47.16**	**15.28**
MKO141	3	4	10.0	10.0	0.2	25	1.0	1.2	**47.16**	**15.28**
MKO143	3	4	10.0	10.0	0.2	25	1.0	1.2	**47.16**	**15.28**
MKO144	3	4	10.0	10.0	0.4	25	1.0	1.4	**28.03**	**14.36**
MKO145	3	4	10.0	10.0	0.3	25	1.0	1.3	**34.41**	**14.78**
MKO146	3	4	10.0	10.0	0.2	25	1.0	1.2	**47.16**	**15.28**
MKO147	3	4	10.0	10.0	0.1	25	1.0	1.1	**85.43**	**15.86**
MKO148	3	4	10.0	10.0	0.9	25	1.0	1.9	**17.40**	**12.93**
MKO149	3	4	10.0	10.0	0.5	25	1.0	1.5	**24.20**	**14.00**
MKO150	4	4	10.0	10.0	0.1	25	1.0	1.1	**64.15**	**11.89**
MKO151	4	4	10.0	10.0	0.1	25	1.0	1.1	**64.15**	**11.89**
MKO152	4	4	10.0	10.0	0.4	25	1.0	1.4	**21.04**	**10.77**
MKO153	4	4	10.0	10.0	0.1	25	1.0	1.1	**64.15**	**11.89**
MKO154	4	4	10.0	10.0	0.1	25	1.0	1.1	**64.15**	**11.89**
MKO213	4	No peat recorded at this location								
MKO214	5	No peat recorded at this location								
MKO215	5	No peat recorded at this location								
MKO216	2	4	10.0	10.0	1.9	25	1.0	2.9	**19.39**	**17.31**
MKO217	2	4	10.0	10.0	1.0	25	1.0	2.0	**24.82**	**19.09**
MKO218	2	4	10.0	10.0	2.2	25	1.0	3.2	**18.57**	**16.94**
MKO219	2	4	10.0	10.0	2.5	25	1.0	3.5	**17.94**	**16.63**
MKO228	4	No peat recorded at this location								
MKO229	3	No peat recorded at this location								
MKO230	3	4	10.0	10.0	1.2	25	1.0	2.2	**15.28**	**12.38**
MKO234	3	4	10.0	10.0	3.0	25	1.0	4.0	**11.45**	**10.81**
MKO236	4	No peat recorded at this location								
MKO237	3	No peat recorded at this location								
MKO238	2	4	10.0	10.0	2.0	25	1.0	3.0	**19.09**	**17.18**
MKO239	1	4	10.0	10.0	3.0	25	1.0	4.0	**34.36**	**32.45**
MKO240	2	4	10.0	10.0	3.3	25	1.0	4.3	**16.83**	**16.02**
MKO243	2	4	10.0	10.0	2.8	25	1.0	3.8	**17.45**	**16.37**
MKO245	4	4	10.0	10.0	1.0	25	1.0	2.0	**12.42**	**9.54**
MKO249	6	No peat recorded at this location								
MKO250	3	4	10.0	10.0	2.0	25	1.0	3.0	**12.72**	**11.45**
MKO253	6	4	10.0	10.0	0.3	25	1.0	1.3	**17.26**	**7.40**

Calculated FoS of Natural Peat Slopes for Cunlaghfadda Green Energy Project - Drained Analysis

Turbine No./Waypoint	Slope	Design c'	Bulk unit weight of Peat	Unit weight of Water	Depth of In situ Peat	Friction Angle	Surcharge Equivalent Placed Fill	Equivalent Total Depth of Peat (m)	Factor of Safety for Load Condition	
	α (deg)	c' (kPa)	γ (kN/m^3)	γ_w (kN/m^3)	(m)	ø' (deg)	Condition (2)	Condition (2)	Condition (1)	Condition (2)
									100% Water	100% Water
MKO254	3	4	10.0	10.0	1.2	25	1.0	2.2	**15.28**	**12.38**
MKO255	2	4	10.0	10.0	4.8	25	1.0	5.8	**15.74**	**15.33**
MKO256	2	4	10.0	10.0	2.6	25	1.0	3.6	**17.76**	**16.54**
MKO261	1	4	10.0	10.0	6	25	1.0	7.0	**30.54**	**29.99**
MKO262	1	4	10.0	10.0	3	25	1.0	4.0	**34.36**	**32.45**
MKO264	3	4	10.0	10.0	1.2	25	1.0	2.2	**15.28**	**12.38**
MKO300	3	No peat recorded at this location								
MKO301	3	No peat recorded at this location								
MKO302	3	No peat recorded at this location								
MKO303	3	No peat recorded at this location								
MKO304	3	No peat recorded at this location								
MKO305	3	No peat recorded at this location								
MKO306	5	4	10.0	10.0	0.2	25	1.0	1.2	**28.37**	**9.17**
MKO307	5	4	10.0	10.0	2	25	1.0	3.0	**7.63**	**6.87**
MKO308	3	4	10.0	10.0	0.2	25	1.0	1.2	**47.16**	**15.28**
MKO309	4	No peat recorded at this location								
MKO310	4	4	10.0	10.0	2	25	1.0	3.0	**9.54**	**8.58**
MKO311	4	4	10.0	10.0	2	25	1.0	3.0	**9.54**	**8.58**
MKO312	4	4	10.0	10.0	2	25	1.0	3.0	**9.54**	**8.58**
MKO313	2	4	10.0	10.0	3.5	25	1.0	4.5	**16.63**	**15.90**
MKO314	2	4	10.0	10.0	3.5	25	1.0	4.5	**16.63**	**15.90**
MKO315	4	4	10.0	10.0	2.2	25	1.0	3.2	**9.28**	**8.46**
MKO316	4	4	10.0	10.0	2	25	1.0	3.0	**9.54**	**8.58**
MKO317	4	4	10.0	10.0	2.2	25	1.0	3.2	**9.28**	**8.46**
MKO318	4	4	10.0	10.0	1.2	25	1.0	2.2	**11.46**	**9.28**
MKO319	3	4	10.0	10.0	2.7	25	1.0	3.7	**11.73**	**10.97**
MKO320	3	4	10.0	10.0	2.7	25	1.0	3.7	**11.73**	**10.97**
MKO321	3	4	10.0	10.0	2.5	25	1.0	3.5	**11.96**	**11.08**
MKO322	2	4	10.0	10.0	2.6	25	1.0	3.6	**17.76**	**16.54**
MKO323	4	4	10.0	10.0	1.9	25	1.0	2.9	**9.69**	**8.65**
MKO324	4	4	10.0	10.0	1.2	25	1.0	2.2	**11.46**	**9.28**
MKO325	5	4	10.0	10.0	0.2	25	1.0	1.2	**28.37**	**9.17**
MKO326	2	4	10.0	10.0	1.8	25	1.0	2.8	**19.72**	**17.45**
MKO327	3	4	10.0	10.0	2	25	1.0	3.0	**12.72**	**11.45**
MKO328	3	4	10.0	10.0	2.5	25	1.0	3.5	**11.96**	**11.08**
MKO329	3	4	10.0	10.0	3.2	25	1.0	4.2	**11.29**	**10.72**
MKO330	3	4	10.0	10.0	4.4	25	1.0	5.4	**10.64**	**10.31**
MKO331	3	4	10.0	10.0	4.4	25	1.0	5.4	**10.64**	**10.31**
MKO332	3	4	10.0	10.0	1.5	25	1.0	2.5	**14.00**	**11.96**
MKO333	3	4	10.0	10.0	2.7	25	1.0	3.7	**11.73**	**10.97**
MKO334	5	No peat recorded at this location								
MKO335	6	No peat recorded at this location								
MKO336	6	No peat recorded at this location								
MKO337	6	No peat recorded at this location								
MKO338	2	No peat recorded at this location								
MKO339	2	No peat recorded at this location								
MKO340	4	No peat recorded at this location								
MKO341	4	No peat recorded at this location								
MKO342	4	4	10.0	10.0	1.1	25	1.0	2.1	**11.89**	**9.41**
MKO343	5	No peat recorded at this location								
MKO344	6	No peat recorded at this location								
MKO345	3	4	10.0	10.0	0.9	25	1.0	1.9	**17.40**	**12.93**
MKO346	2	4	10.0	10.0	1	25	1.0	2.0	**24.82**	**19.09**
MKO347	2	4	10.0	10.0	1.5	25	1.0	2.5	**21.00**	**17.94**
MKO348	2	4	10.0	10.0	1.3	25	1.0	2.3	**22.18**	**18.34**
MKO349	2	4	10.0	10.0	1.7	25	1.0	2.7	**20.10**	**17.60**
MKO350	2	4	10.0	10.0	1.3	25	1.0	2.3	**22.18**	**18.34**
MKO351	3	4	10.0	10.0	2.3	25	1.0	3.3	**12.23**	**11.22**
MKO352	2	4	10.0	10.0	2.3	25	1.0	3.3	**18.34**	**16.83**
MKO353	3	4	10.0	10.0	2.7	25	1.0	3.7	**11.73**	**10.97**
MKO354	2	4	10.0	10.0	2.7	25	1.0	3.7	**17.60**	**16.45**
MKO355	2	4	10.0	10.0	4.3	25	1.0	5.3	**16.02**	**15.52**
MKO356	1	4	10.0	10.0	3.6	25	1.0	4.6	**33.08**	**31.70**
MKO357	2	4	10.0	10.0	4	25	1.0	5.0	**16.22**	**15.65**
MKO358	2	4	10.0	10.0	3.2	25	1.0	4.2	**16.94**	**16.08**
MKO359	3	No peat recorded at this location								
MKO360	5	No peat recorded at this location								
MKO361	3	No peat recorded at this location								
MKO362	2	4	10.0	10.0	2.2	25	1.0	3.2	**18.57**	**16.94**
MKO363	2	4	10.0	10.0	3.5	25	1.0	4.5	**16.63**	**15.90**
MKO364	5	4	10.0	10.0	0.2	25	1.0	1.2	**28.37**	**9.17**
MKO365	3	4	10.0	10.0	0.9	25	1.0	1.9	**17.40**	**12.93**
MKO366	3	No peat recorded at this location								
MKO367	5	No peat recorded at this location								
MKO368	3	No peat recorded at this location								
MKO369	2	4	10.0	10.0	2.3	25	1.0	3.3	**18.34**	**16.83**
MKO370	2	4	10.0	10.0	3.5	25	1.0	4.5	**16.63**	**15.90**
MKO371	4	4	10.0	10.0	1	25	1.0	2.0	**12.42**	**9.54**
MKO372	4	4	10.0	10.0	2.2	25	1.0	3.2	**9.28**	**8.46**
MKO373	4	No peat recorded at this location								
MKO374	4	No peat recorded at this location								
MKO375	4	No peat recorded at this location								
MKO376	3	4	10.0	10.0	0.7	25	1.0	1.7	**19.83**	**13.40**
MKO377	5	4	10.0	10.0	0.2	25	1.0	1.2	**28.37**	**9.17**
MKO378	6	No peat recorded at this location								
MKO379	2	No peat recorded at this location								
MKO380	3	No peat recorded at this location								
MKO381	4	No peat recorded at this location								
MKO382	3	No peat recorded at this location								
MKO383	2	No peat recorded at this location								
MKO384	2	4	10.0	10.0	2.1	25	1.0	3.1	**18.81**	**17.05**
MKO385	2	No peat recorded at this location								
MKO386	3	4	10.0	10.0	3.5	25	1.0	4.5	**11.08**	**10.60**

Calculated FoS of Natural Peat Slopes for Cunlaghfadda Green Energy Project - Drained Analysis

Turbine No./Waypoint	Slope	Design c'	Bulk unit weight of Peat	Unit weight of Water	Depth of In situ Peat	Friction Angle	Surcharge Equivalent Placed Fill	Equivalent Total Depth of Peat (m)	Factor of Safety for Load Condition	
	α (deg)	c' (kPa)	γ (kN/m^3)	γ_w (kN/m^3)	(m)	ø' (deg)	Condition (2)	Condition (2)	Condition (1)	Condition (2)
									100% Water	100% Water
MKO387	2	4	10.0	10.0	1.5	25	1.0	2.5	**21.00**	**17.94**
MKO388	1	No peat recorded at this location								
MKO389	1	No peat recorded at this location								
MKO390	1	No peat recorded at this location								
MKO391	4	No peat recorded at this location								
MKO392	4	No peat recorded at this location								
MKO393	3	No peat recorded at this location								
MKO394	3	No peat recorded at this location								
MKO395	3	No peat recorded at this location								
MKO396	5	No peat recorded at this location								
MKO397	5	No peat recorded at this location								
MKO398	3	No peat recorded at this location								
MKO399	3	No peat recorded at this location								
MKO400	3	No peat recorded at this location								
MKO401	4	No peat recorded at this location								
MKO402	4	No peat recorded at this location								
MKO403	3	4	10.0	10.0	0.7	25	1.0	1.7	**19.83**	**13.40**
MKO404	2	4	10.0	10.0	1	25	1.0	2.0	**24.82**	**19.09**
MKO405	2	4	10.0	10.0	1.9	25	1.0	2.9	**19.39**	**17.31**
MKO406	2	4	10.0	10.0	1.3	25	1.0	2.3	**22.18**	**18.34**
MKO407	1	4	10.0	10.0	1	25	1.0	2.0	**49.64**	**38.18**
MKO408	2	4	10.0	10.0	0.9	25	1.0	1.9	**26.10**	**19.39**
MKO409	2	4	10.0	10.0	0.9	25	1.0	1.9	**26.10**	**19.39**
MKO410	2	4	10.0	10.0	0.3	25	1.0	1.3	**51.58**	**22.18**
MKO411	2	4	10.0	10.0	1.3	25	1.0	2.3	**22.18**	**18.34**
MKO412	4	4	10.0	10.0	0.3	25	1.0	1.3	**25.83**	**11.09**
MKO413	3	4	10.0	10.0	0.3	25	1.0	1.3	**34.41**	**14.78**
MKO414	2	4	10.0	10.0	1	25	1.0	2.0	**24.82**	**19.09**
MKO415	3	No peat recorded at this location								
MKO416	2	No peat recorded at this location								
MKO417	2	No peat recorded at this location								
BPTP1	5	No peat recorded at this location								
BPTP2	8	No peat recorded at this location								
TPMM	6	No peat recorded at this location								
TPR1	3	No peat recorded at this location								
TPR3	4	4	10.0	10.0	1.9	25	1.0	2.9	**9.69**	**8.65**
TPR4	3	No peat recorded at this location								
TPR5	4	4	10.0	10.0	0.9	25	1.0	1.9	**13.06**	**9.69**
TPR6	3	4	10.0	10.0	3.1	25	1.0	4.1	**11.37**	**10.76**
TPR7	2	4	10.0	10.0	0.6	25	1.0	1.6	**32.47**	**20.52**
TPR8	2	No peat recorded at this location								
TPSS1	3	4	10.0	10.0	0.8	25	1.0	1.8	**18.46**	**13.15**
TPSS2	4	No peat recorded at this location								
TPT1	3	4	10.0	10.0	1.7	25	1.0	2.7	**13.40**	**11.73**
TPT2	6	No peat recorded at this location								
TPT3	4	No peat recorded at this location								
TPT4	4	4	10.0	10.0	1.9	25	1.0	2.9	**9.69**	**8.65**
TPT5	6	4	10.0	10.0	0.3	25	1.0	1.3	**17.26**	**7.40**
TPT6	2	4	10.0	10.0	0.2	25	1.0	1.2	**70.70**	**22.91**
TPT7	4	4	10.0	10.0	0.3	25	1.0	1.3	**25.83**	**11.09**
APP001	2	4	10.0	10.0	2.1	25	1.0	3.1	**18.81**	**17.05**
APP002	2	4	10.0	10.0	3.3	25	1.0	4.3	**16.83**	**16.02**
APP003	2	4	10.0	10.0	2.0	25	1.0	3.0	**19.09**	**17.18**
APP004	2	4	10.0	10.0	1.1	25	1.0	2.1	**23.78**	**18.81**
APP005	2	4	10.0	10.0	1.0	25	1.0	2.0	**24.82**	**19.09**
APP006	2	4	10.0	10.0	2.0	25	1.0	3.0	**19.09**	**17.18**
APP007	2	4	10.0	10.0	2.0	25	1.0	3.0	**19.09**	**17.18**
APP008	2	No peat recorded at this location								
APP009	1	No peat recorded at this location								
APP010	1	No peat recorded at this location								
APP011	2	4	10.0	10.0	0.1	25	1.0	1.1	**128.04**	**23.78**
APP012	2	4	10.0	10.0	0.1	25	1.0	1.1	**128.04**	**23.78**
APP013	2	4	10.0	10.0	0.1	25	1.0	1.1	**128.04**	**23.78**
APP014	2	4	10.0	10.0	0.2	25	1.0	1.2	**70.70**	**22.91**
APP015	2	4	10.0	10.0	0.8	25	1.0	1.8	**27.69**	**19.72**
APP016	2	4	10.0	10.0	0.2	25	1.0	1.2	**70.70**	**22.91**
APP017	2	4	10.0	10.0	1.5	25	1.0	2.5	**21.00**	**17.94**
APP018	2.5	No peat recorded at this location								
APP019	2.5	No peat recorded at this location								
APP020	2.5	4	10.0	10.0	0.1	25	1.0	1.1	**102.47**	**19.02**
APP021	4	No peat recorded at this location								
APP022	5	4	10.0	10.0	0.1	25	1.0	1.1	**51.40**	**9.52**
APP023	3	No peat recorded at this location								
APP024	3	4	10.0	10.0	1.0	25	1.0	2.0	**16.55**	**12.72**
APP025	2	4	10.0	10.0	1.0	25	1.0	2.0	**24.82**	**19.09**
APP026	2	4	10.0	10.0	2.3	25	1.0	3.3	**18.34**	**16.83**
APP027	2	4	10.0	10.0	1.2	25	1.0	2.2	**22.91**	**18.57**
APP028	2	No peat recorded at this location								
APP029	2	4	10.0	10.0	3.5	25	1.0	4.5	**16.63**	**15.90**

Minimum =	**1.47**	**2.67**
Maximum =	**128.04**	**38.18**
Average =	**26.31**	**13.15**

Notes:

(1) Assuming a bulk unit weight of peat of 10 (kN/m^3)
(2) Assuming a surcharge equivalent to fill depth of 1.0m.
(3) Slope inclination (β) based on site readings and contour survey plans of site.
(4) FoS is based on slope inclination and shear test results obtained from published data.
(5) Peat depths based on probes carried out by FT.
(6) For load conditions see Report text.
(7) Minimum acceptable factor of safety required of 1.3 for first-time failures based on BS: 6031:1981 Code of practice for Earthworks.

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APPENDIX D

Methodology for Peat Stability Risk Assessment

Methodology for Peat Stability Risk Assessment

A peat stability risk assessment was carried out for each of the main infrastructure elements at the proposed wind farm development. This approach takes into account guidelines for geotechnical/peat stability risk assessments as given in PLHRAG (2nd Edition, 2017) and MacCulloch (2005). The degree of risk is determined as a Risk Rating (R), which is the product of probability (P) and impact (I). How these factors are determined and applied in the analysis is described below.

The main approaches for assessing peat stability include the following:

(a) Geomorphological

(b) Qualitative (judgement)

(c) Index/Probabilistic (probability)

(d) Deterministic (factor of safety)

Approaches (a) to (c) listed above would be considered subjective and do not provide a definitive indication of stability; in addition, a high level of judgement/experience is required which makes it difficult to relate the findings to real conditions. FT apply a more objective approach, the deterministic approach. As part of FT's deterministic approach, a qualitative risk assessment is also carried out taking into account qualitative factors, which cannot necessarily be quantified.

Probability

The likelihood of a peat failure occurring was assessed based on the results of both the quantitative results of stability calculations (deterministic approach using factors of safety) and the assessment of the severity of several qualitative factors which cannot be reasonably included in a stability calculation but nevertheless may affect the occurrence of peat instability.

The qualitative factors used in the risk assessment are outlined in Table A and have been compiled based on FT's experience of assessments and construction in peat land sites and peat failures throughout Ireland and the UK.

Table A: Qualitative Factors used to Assess Potential for Peat Failure

Qualitative Factor	Type of Feature/Indicator for each Qualitative Factor (1)	Explanation/Description of Qualitative Factor
Evidence of sub peat water flow	No	Based on site walkover observations. Sub peat water flow generally occurs in the form of natural piping at the base of peat. Where there is a constriction or blockage in natural pipes a build-up of water can occur at the base of the peat causing a reduction in effective stress at the base of the peat resulting in failure; this is particularly critical during periods of intense rainfall.
	Possibly	
	Probably	
	Yes	

Qualitative Factor	Type of Feature/Indicator for each Qualitative Factor [1]	Explanation/Description of Qualitative Factor
Evidence of surface water flow	Dry	Based on site walkover observations. The presence of surface water flow indicates if peat in an area is well drained or saturated and if any additional loading from the ponding of surface water onto the peat is likely.
	Localised/Flowing in drains	
	Ponded in drains	
	Springs/surface water	
Evidence of previous failures/slips	No	Based on site walkover observations. The presence of clustering of relict failures may indicate that particular pre-existing site conditions predispose a site to failure.
	In general area	
	On site	
	Within 500m of location	
Type of vegetation	Grass/Crops	Based on site walkover observations. The type of vegetation present indicates if peat in an area is well drained, saturated, etc. Vegetation that indicates wetter ground may also indicate softer underlying peat deposits.
	Improved Grass/Dry Heather	
	Wet Grassland/Juncus (Rushes)	
	Wetlands Sphagnum (Peat moss)	
General slope characteristics upslope/downslope from infrastructure location	Concave	Based on site walkover observations. Slope morphology in the area of the infrastructure location is an important factor. A number of recorded peat failures have occurred in close proximity to a convex break in slope.
	Planar to concave	
	Planar to convex	
	Convex	
Evidence of very soft/soft clay at base of peat	No	Based on inspection of exposures in general area from site walkover. Several reported peat failures identify the presence of a weak layer at the base of the peat along which shear failure has occurred.
	Yes	
Evidence of mechanically cut peat	No	Based on site walkover observations. Mechanically cut peat typically cut using a ‘sausage’ machine to extract

Qualitative Factor	Type of Feature/Indicator for each Qualitative Factor (1)	Explanation/Description of Qualitative Factor
	Yes	peat for harvesting. Areas which have been cut in this manner have been linked to peat instability. The mechanical cuts can notably reduce the intrinsic strength of the peat and also allow ingress of rainfall/surface water.
Evidence of quaking or buoyant peat	No	Based on site walkover observations. Quaking/buoyant peat is indicative of highly saturated peat, which would generally be considered to have a low strength. Quaking peat is a feature on sites that have been previously linked with peat instability.
	Yes	
Evidence of bog pools	No	Based on site walkover observations. Bog pools are generally an indicator of areas of weak, saturated peat. Commonly where there are open areas of water within peat these can be interconnected, with the result that there may be sub-surface bodies of water. The presence of bog pools have been previously linked with peat instability.
	Yes	
Other	Varies	In addition to the above features/ indicators and based on site recordings the following are some of the features which may be identified: Excessively deep peat, weak peat, overly steep slope angles, etc.

Note (1) The list of features/indicators for each qualitative factor are given in increasing order of probability of leading to peat instability/failure.

It should be noted that the presence of one of the qualitative factors alone from Table A is unlikely to lead to peat instability/failure. Peat instability/failure at a site is generally the combination of a number of these factors occurring at the same time at a particular location. The probability rating assigned to the quantitative and qualitative factors is judged on a 5-point scale from 1 (indicating negligible or no probability of failure) to 5 (indicating a very likely failure), as outlined in Table B.

Table B: Probability Scale

Scale	Factor of Safety	Probability
1	1.30 or greater	Negligible/None
2	1.29 to 1.20	Unlikely
3	1.19 to 1.11	Likely
4	1.01 to 1.10	Probable
5	≤1.0	Very Likely

Scale	Likelihood of Qualitative Factor leading to Peat Failure	Probability of Failure
1	Negligible/None	Least
2	Unlikely	
3	Probable	
4	Likely	
5	Very Likely	Greatest

Impact

The severity of the risk is also assessed qualitatively in terms of impact. The impact of a peat failure on the environment within and beyond the immediate wind farm site is assessed based on the potential travel distance of a peat failure. Where a peat failure enters a watercourse, it can travel a considerable distance downstream. Therefore, the proximity of a potential peat failure to a drainage course is a significant indicator of the likely potential impact.

The risk is determined based on the combination of hazard and impact. A qualitative scale has been derived for the impact of the hazard based on distance of infrastructure element to a watercourse (Table C).

The location of watercourses is based on topographic maps and supplemented by site observations from walkover survey. Note that not all water courses are shown on maps.

Table C: Impact Scale

Scale	Criteria	Impact
1	Proposed infrastructure element greater than 150m of watercourse	Negligible/None
2	Proposed infrastructure element within 150 to 101m of watercourse	Low
3	Proposed infrastructure element within 100 to 51m of watercourse	Medium

4	Proposed infrastructure element within 50 m of watercourse	High
5	Proposed infrastructure element within 50 m of watercourse, in an environmentally sensitive area	Extremely High

Risk Rating

The degree of risk is determined as the product of probability (P) and impact (I), which gives the Risk Rating (R) as follows:

The Risk Rating is calculated from: R = P x I

Due to the 5-point scales used to assess Probability and Impact, the Risk Rating can range from 1 to 25 as shown in Table D.

Table D: Qualitative Risk Rating

Impact \ Probability	1	2	3	4	5
5	5	10	15	20	25
4	4	8	12	16	20
3	3	6	9	12	15
2	2	4	6	8	10
1	1	2	3	4	5

Risk Rating & Control Measures	
17 to 25	High: avoid working in area or significant control measures required
11 to 16	Medium: notable control measures required
5 to 10	Low: only routine control measures required
1 to 4	Negligible: none or only routine control measures required

The risk rating is calculated individually for each contributory factor. Control measures are required to reduce the risk to at least a 'Low' risk rating. The control measures in response to the qualitative risk ratings are included in the peat stability risk registers for each main infrastructure element in Appendix B.

The risk rating is calculated individually for each contributory factor. Control measures are required to reduce the risk to at least a 'Low' risk rating.

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A SUSTAINABLE FUTURE

APPENDIX E

Ground Investigation (October 2023 and August 2024) – GII Factual Report

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Ground Investigations Ireland

Cunlaghfadda Wind Farm

Hydro Environmental Services

Factual Ground Investigation Report

December 2023

Directors: Fergal McNamara (MD), Conor Finnerty, Aisling McDonnell, Barry Sexton & Stephen Kealy
Ground Investigations Ireland Limited | Registered in Ireland Company Registration No.: 405726

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DOCUMENT CONTROL SHEET

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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.

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APPENDICES

Appendix 1 Figures
Appendix 2 Trial Pit Records
Appendix 3 Laboratory Testing

1.0 Preamble

On the instructions of MKO Ireland, a site investigation was carried out by Ground Investigations Ireland Ltd., in October 2023 at the site of the proposed wind farm in Cunlaghfadda, County Mayo.

2.0 Overview

2.1. Background

It is proposed to construct a wind farm consisting of seven wind turbines with associated services and access roads at the proposed site. At the time of the site investigation the site was greenfield and used primarily as agricultural land. The site is situated an estimated 5km to the northwest of Claremorris, County Mayo.

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 19 No. Trial Pits to a maximum depth of 3.30m BGL
- Geotechnical laboratory testing
- Factual Report

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 were 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+A1:2020.

3.2. Trial Pits

The trial pits were excavated using an 8T tracked 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 a Geotechnical Engineer/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. Surveying

The exploratory hole locations have been recorded using a KQGeo M8 GNSS 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.

3.4. Laboratory Testing

Samples were selected from the exploratory holes for a range of geotechnical testing to assist in the classification of soils and to provide information for the proposed design.
Geotechnical testing consisting of moisture content, Atterberg limits, Particle Size Distribution (PSD) and hydrometer tests were carried out in NMTL's Geotechnical Laboratory in County Carlow.
The results of the laboratory testing are included in Appendix 3 of this Report.

4.0 Ground Conditions

4.1. General

The ground conditions encountered during the investigation are summarised below with reference to in-situ 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 but generally comprised;

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

TOPSOIL: *TOPSOIL* was encountered at most locations and was present to a maximum depth of 0.30m BGL.

PEAT: *Very soft dark brown clayey pseudo fibrous PEAT* was encountered from ground level in TPR3, TPR5, TPR6, TPR7, TPT1 and TPT4 and were present to a depth of 0.60m to 3.10m BGL. Peat was also encountered in TPR1 and TPSS1 beneath the Made Ground.

MADE GROUND: Made Ground deposits were encountered from the surface at BPTP1 and beneath the Topsoil in TPR1 and TPSS1 and were present to a depth of 0.40m to 1.50m BGL. These deposits were

described generally as *brown slightly sandy slightly gravelly Clay with cobbles* and contained *rare fragments plastic.*

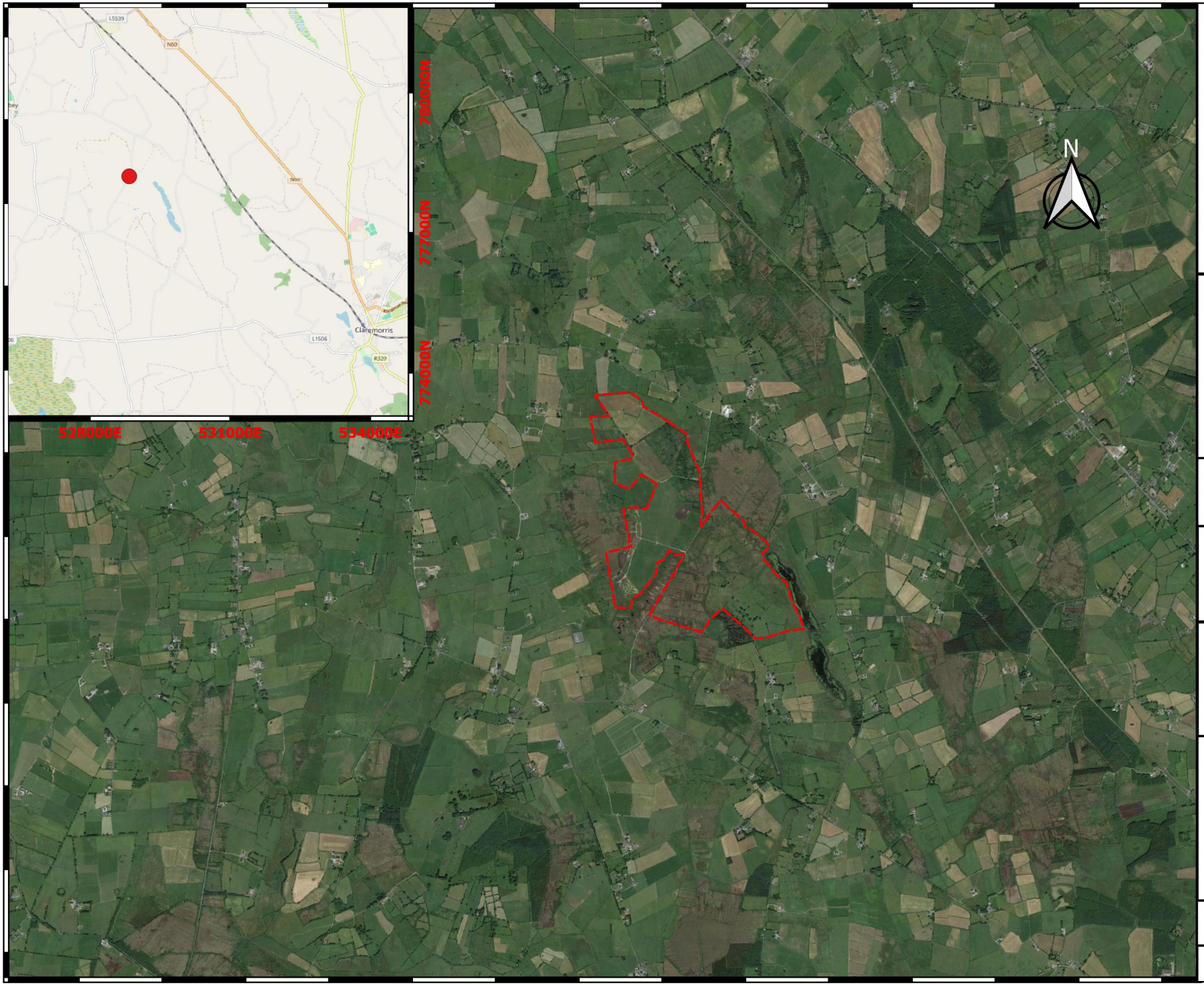
COHESIVE DEPOSITS: Cohesive deposits were encountered at most locations and was described typically as *brownish grey slightly sandy gravelly CLAY/SILT with cobbles and boulders*. The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present where mentioned in the exploratory hole logs. These deposits had low (<5%), medium (5%-20%) or high (20%-50%) cobble and boulder content, where noted on the exploratory hole logs.

GRANULAR DEPOSITS: Granular deposits were encountered below the peat or cohesive deposits at most locations and were typically described as g*rey clayey sandy subangular to subrounded fine to coarse GRAVEL with cobbles and boulders. A grey clayey gravelly fine to coarse SAND* was encountered beneath the Peat at TPR3. The secondary sand/gravel and fines constituents varied across the site and with depth, while low (<5%), medium (5%-20%) or high (20%-50%) cobble and boulder content was also present, where noted on the exploratory hole logs.

4.2. Groundwater

Groundwater strikes are noted on the exploratory hole logs where they occurred. It should be noted 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.

APPENDIX 1 - Figures



Site Location

Indicative Site Boundary

Client:

MKO

Project Code:

13116-08-23

Project Title:

Cunlaghfadda Wind Farm

Drawing Title:

Figure 1 Site Location

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0 200 400 600 800 1,000 m

Drawn By:	Date:
CMP	07/12/2023



Indicative Site Boundary

Trial Pit

Client:

MKO

Project Code:

13116-08-23

Project Title:

Cunlaghfadda Wind Farm

Drawing Title:

Figure 2 Site Investigation Points

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0 100 200 300 400 m

Drawn By:	Date:
CMP	07/12/2023

APPENDIX 2 – Trial Pit Records

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** BPTP1
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 4.00m x 1.50m x 2.70m x (L x W x D)	**Ground Level (mOD)** 64.46	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528345.2 E 777851 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B D				(1.50)	MADE GROUND: Brown/red slightly sandy gravelly CLAY with many cobbles and boulders (Reworked)		
1.50 1.50	B D			62.96	1.50	Firm to stiff brownish grey slightly sandy gravelly CLAY with high cobble and boulder content		
					(0.60)			
2.50 2.50	B D			62.36	2.10	Light grey clayey sandy fine to coarse grained angular to subangular GRAVEL with high cobble and boulder content		
					(0.60)			
				61.76	2.70	OBSTRUCTION due to large cobbles and boulders Complete at 2.70m		

Plan

Remarks

No groundwater encountered
Trial pit spalling below 0.50m BGL
Refusal at 2.70m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.BPTP1

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** BPTP2
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.50m x 0.90m x 2.30m (L x W x D)	**Ground Level (mOD)** 67.09	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528384.3 E 777809.9 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				66.99	(0.10) 0.10	TOPSOIL		
						Firm brown slightly sandy gravelly CLAY with high cobble and boulder content		
					(0.50)			
0.50 0.50	B D			66.49	0.60	Light grey slightly clayey sandy fine to coarse grained angular to subangular GRAVEL with high cobble and boulder content		
					(1.70)			
1.50 1.50	B D							
				64.79	2.30	OBSTRUCTION due to large cobbles or boulders		
2.30 2.30	B D					Complete at 2.30m		

Plan

Remarks

No groundwater was encountered
Trial pit spalling from surface
Refusal at 2.30m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.BPTP2

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPMM
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.60m x 1.50m x 1.70m (L x W x D)	**Ground Level (mOD)** 65.63	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528426.5 E 778338 N	**Dates** 03/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	TOPSOIL with occasional plastic fragments		
				65.33	0.30			
					(0.40)	Firm light grey mottled brown slightly sandy gravelly CLAY with low cobble content		
0.50 0.50	B D			64.93	0.70			
			Medium Ingress(1) at 1.20m.		(1.00)	Soft brownish grey slightly sandy gravelly CLAY with medium cobble and boulder content		▽1
1.50 1.50	B D			63.93	1.70			
						Complete at 1.70m		

Plan

Remarks

Groundwater encountered at 1.20m BGL - Medium Ingress
Trial pit collapsed from surface
Refusal at 1.70m BGL due to collapse
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPMM

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPR1
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.80m x 1.50m x 2.90m (L x W x D)	**Ground Level (mOD)** 61.45	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528648.6 E 778606.7 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly peaty TOPSOIL		
				61.25	0.20	MADE GROUND: Firm brown slightly sandy slightly gravelly Clay (Reworked)		
					(0.30)			
				60.95	0.50	Very soft dark brown spongy pseudo fibrous PEAT		
					(0.20)			
0.70	B			60.75	0.70	Firm light grey sandy gravelly CLAY with low cobble content		
0.70	D							
					(0.40)			
				60.35	1.10	Grey clayey sandy fine to coarse angular to subrounded GRAVEL with medium cobble and boulder content		
1.50	B				(0.90)			
1.50	D							
				59.45	2.00	Firm light brownish grey sandy gravelly CLAY with medium cobble and boulder content		
					(0.90)			
2.50	B							
2.50	D							
				58.55	2.90	OBSTRUCTION due to large cobbles or boulders		
						Complete at 2.90m		

Plan

Remarks

No groundwater encountered
Trial pit spalling from 0.70m BGL
Refusal at 2.90m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPR1

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPR3
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.80m x 1.50m x 3.20m (L x W x D)	**Ground Level (mOD)** 60.84	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 529041.4 E 778019.3 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B D				(1.90)	Very soft dark brown slightly clayey spongy speudo fiibrous PEAT with occasional wood fragments		
1.50 1.50	B D		Medium Ingress(1) at 1.90m.	58.94	1.90	Light grey clayey gravelly fine to coarse grained SAND with low cobble and boulder content		▽1
					(0.40)			
2.50 2.50	B D			58.54	2.30	Soft dark brownish grey sandy gravelly CLAY with high cobble and boulder content and occasional fragments of organic matter		
					(0.90)			
				57.64	3.20	OBSTRUCTION due to large cobbles or boulders		
						Complete at 3.20m		

Plan

Remarks

Groundwater encountered at 1.90m BGL - Medium Ingress
Trial pit spalling below 2.30m BGL
Refusal at 3.20m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.BPTP2

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPR4
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.50m x 0.90m x 2.70m (L x W x D)	**Ground Level (mOD)** 63.97	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528623.6 E 778124.7 N	**Dates** 03/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				63.87	(0.10) 0.10	Brown TOPSOIL		
					(0.30)	Soft to firm grey slightly sandy gravelly CLAY with low cobble content		
				63.57	0.40			
0.50 0.50	B D				(0.80)	Firm brownish grey slightly sandy gravelly CLAY with Medium cobble and boulder content		
				62.77	1.20			
1.50 1.50	B D				(0.80)	Firm brownish grey slightly sandy gravelly CLAY with low cobble and boulder content		
			moderate (1) at 2.00m.	61.97	2.00			▽1
					(0.70)	Firm brownish grey slightly sandy gravelly CLAY with medium to high cobble and boulder content		
2.50 2.50	B D							
				61.27	2.70	OBSTRUCTION due to large cobbles or boulders		
						Complete at 2.70m		

Plan

Remarks

Groundwater encountered at 2.00m BGL - Medium Ingress
Trial pit spalling from 0.50m BGL
Refusal at 2.70m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPR4

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPR5
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.90m x 1.50m x 2.10m (L x W x D)	**Ground Level (mOD)** 60.17	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528748.8 E 778014.6 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B D				(0.90)	Very soft dark brown slightly clayey spongy pseudo fibrous PEAT		
				59.27	0.90			
					(0.20)	Soft grey brown slightly sandy slightly gravelly CLAY with medium cobble and boulder content		
				59.07	1.10			
1.50 1.50	B D		Medium Ingress(1) at 1.80m.		(1.00)	Soft bluish grey slightly sandy slightly gravelly CLAY with high cobble and boulder content		▽1
				58.07	2.10	OBSTRUCTION due to large cobbles or boulders Complete at 2.10m		

Plan

Remarks

Groundwater encountered at 1.80m BGL - Medium Ingress
Trial pit spalling below 1.10m BGL
Refusal at 2.10m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPR5

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPR6
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 4.00m x 1.50m x 3.30m (L x W x D)	**Ground Level (mOD)** 60.67	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528547.1 E 777716.5 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B D					Very soft dark brown spongy pseudo fibrous PEAT with occasional wood fragments		
1.50 1.50	B D				(3.10)			
2.50 2.50	B D							
				57.57	3.10			
			Slow Seepage(1) at 3.20m.		(0.20)	Soft light grey slightly sandy gravelly CLAY with medium cobble and boulder content		▽1
3.30 3.30	B D			57.37	3.30	Complete at 3.30m		

Plan

Remarks

Groundwater encountered at 3.20m BGL - Slow Seepage
Trial pit stable
Complete at 3.30m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPR6

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPR7
Machine : 8T Tracked Excavator **Method :** Trial pit	**Dimensions** 3.90m x 1.50m x 2.20m (L x W x D)	**Ground Level (mOD)** 60.19	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528559.5 E 778775.4 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.60)	Very soft dark brown spongy pseudo fibrous PEAT		
0.50 0.50	B D		Medium Ingress(1) at 0.60m.	59.59	0.60			▽1
					(0.70)	Soft to firm light grey mottled brown sandy gravelly CLAY with medium cobble and boulder content		
1.50 1.50	B D			58.89	1.30	Light grey clayey sandy fine to coarse grained angular to subangular GRAVEL with high cobble and boulder content		
					(0.90)			
				57.99	2.20	Complete at 2.20m		

Plan

Remarks

Groundwater encountered at 0.60m BGL - Medium Ingress
Trial pit collapsed from surface
Refusal at 2.20m BGL due to collapse
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPR7

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPR8
Machine : 8T Tracked Excavator **Method :** Trial pit	**Dimensions** 3.60m x 1.50m x 2.70m (L x W x D)	**Ground Level (mOD)** 61.31	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528392.8 E 778962.1 N	**Dates** 05/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				61.21	(0.10) 0.10	Brown TOPSOIL		
0.50 0.50	B D				(0.60)	Soft to firm reddish brown slightly sandy slightly gravelly CLAY		
				60.61	0.70	Grey clayey sandy fine to coarse grained angular to subangular GRAVEL with medium cobble and boulder content		
1.50 1.50	B D				(2.00)			
			Slow Seepage(1) at 2.00m.					▽1
2.50 2.50	B D			58.61	2.70	OBSTRUCTION due to large cobbles or boulders		
						Complete at 2.70m		

Plan

Remarks

Groundwater encountered at 2.00m BGL - Slow Seepage
Trial pit spalling below 0.70m BGL
Refusal at 2.70m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPR8

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPSS1
Machine : 8T Tracked Excavator **Method :** Trial pit	**Dimensions** 3.60m x 1.50m x 2.50m (L x W x D)	**Ground Level (mOD)** 58.50	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528192.3 E 779020.5 N	**Dates** 05/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown TOPSOIL		
				58.30	0.20			
					(0.20)	MADE GROUND: Soft grey slightly sandy gravelly Clay with medium cobble content (Reworked)		
				58.10	0.40			
0.50 0.50	B D				(0.40)	Very soft dark brown spongy pseudo fibrous PEAT		
			Fast Ingress(1) at 0.80m.	57.70	0.80			▽1
					(1.00)	Light grey clayey sandy fine to coarse grained angular to subanglar GRAVEL with medium cobble and boulder content		
1.50 1.50	B D							
				56.70	1.80			
					(0.70)	Grey sandy fine to coarse grained angular to subangular GRAVEL with high cobble and boulder content		
2.50 2.50	B D			56.00	2.50			
						Complete at 2.50m		

Plan

Remarks

Groundwater encountered at 0.80m BGL - Fast Ingress
Trial pit spalling from surface
Refusal at 2.50m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPSS1

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPSS2
Machine : 8T Tracked Excavator **Method :** Trial pit	**Dimensions** 3.60m x 1.50m x 1.90m (L x W x D)	**Ground Level (mOD)** 61.81	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528216.3 E 778928.1 N	**Dates** 05/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				61.71	(0.10) 0.10	Brown TOPSOIL		
						Firm reddish brown slightly sandy slightly gravelly CLAY		
					(0.50)			
0.50 0.50	B D			61.21	0.60	Firm dark brown slightly sandy gravelly CLAY with low cobble and boulder content		
					(0.40)			
				60.81	1.00	Light grey sandy fine to coarse grained angular to subangular GRAVEL with high cobble and boulder content		
					(0.90)			
1.50 1.50	B D			59.91	1.90	OBSTRUCTION due to large cobbles or boulders		
						Complete at 1.90m		

Plan

Remarks

No groundwater encountered
Trial pit spalling from 0.50m BGL
Refusal ar 1.90m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPSS2

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPT1
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 4.00m x 1.50m x 2.80m (L x W x D)	**Ground Level (mOD)** 59.06	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528831.3 E 777978.7 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B D				(1.70)	Very soft dark brown spongy pseudo fibrous PEAT with occasional fragments of wood		
1.50 1.50	B D		Medium Ingress(1) at 1.50m.					▽1
				57.36	1.70	Light grey clayey sandy fine to coarse grained angular to subangular GRAVEL with high cobble and boulder content		
					(1.10)			
2.50 2.50	B D							
				56.26	2.80	OBSTRUCTION due to large cobbles or boulders		
						Complete at 2.80m		

Plan

Remarks

Groundwater encountered at 1.50m BGL - Medium Ingress
Trial pit collapsing below 1.70m BGL
Refusal at 2.80m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPT1

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPT2
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.60m x 1.50m x 3.10m (L x W x D)	**Ground Level (mOD)** 63.22	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 529149.6 E 777792.3 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Brown TOPSOIL		
				62.92	0.30	Soft to firm reddish brown slightly sandy slightly gravelly CLAY		
0.50 0.50	B D				(0.90)			
				62.02	1.20	Light brownish grey clayey sandy fine to coarse grained subangular to subrounded GRAVEL with medium to high cobble and boulder content		
1.50 1.50	B D				(1.70)			
2.50 2.50	B D							
				60.32	2.90	Stiff light grey slightly sandy gravelly CLAY with medium to high cobble and boulder content		
					(0.20)			
				60.12	3.10	OBSTRUCTION due to large cobbles or boulders		
						Complete at 3.10m		

Plan

Remarks

No groundwater encountered
Trial pit spalling from 0.20m BGL
Refusal at 3.10m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPT2

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPT3
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.90m x 1.50m x 2.60m (L x W x D)	**Ground Level (mOD)** 68.30	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528455.1 E 778210.1 N	**Dates** 03/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly peaty TOPSOIL		
				68.10	0.20	Soft light greyish brown slightly sandy gravelly CLAY		
					(0.20)			
				67.90	0.40	Soft to firm brown slightly sandy gravelly CLAY low cobble content		
0.50 0.50	B D							
					(1.20)			
1.50 1.50	B D			66.70	1.60	Firm to stiff brown slightly sandy gravelly CLAY with medium to high cobble and boulder content		
					(1.00)			
2.50 2.50	B D			65.70	2.60	OBSTRUCTION due to large cobbles or boulders		
						Complete at 2.60m		

Plan

Remarks

No groundwater encountered
Trial pit stable
Refusal at 2.60m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPT3

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPT4
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 4.00m x 1.50m x 2.90m (L x W x D)	**Ground Level (mOD)** 61.48	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528287.4 E 777852.8 N	**Dates** 03/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B D				(1.90)	Very soft dark brown spongey pseudo fibrous PEAT with occasional fragments of wood		
1.50 1.50	B D			59.58	1.90	Soft to firm light grey slightly sandy gravelly CLAY with high cobble and boulder content		
2.50 2.50	B D		Fast ingress(1) at 2.50m.		(1.00)			▽1
				58.58	2.90	OBSTRUCTION due to large cobbles or boulders Complete at 2.90m		

Plan

Remarks

Groundwater encountered at 2.50m BGL - Fast Ingress
Trial pit spalling below 1.90m BGL
Refusal at 2.90m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPT4

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPT5
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.60m x 1.50m x 2.60m (L x W x D)	**Ground Level (mOD)** 57.19	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 529123.5 E 778188 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Dark brown peaty TOPSOIL		
				56.89	0.30			
0.50 0.50	B D				(0.60)	Soft light grey slightly sandy gravelly CLAY with medium cobble and boulder content		
				56.29	0.90			
1.50 1.50	B D		Medium Ingress(1) at 1.50m.		(1.70)	Light grey clayey sandy fine to coarse grained subangular to subrounded GRAVEL with high cobble and boulder content		▽1
2.50 2.50	B D			54.59	2.60	Complete at 2.60m		

Plan

Remarks

Groundwater encountered at 1.50m BGL - Medium Ingress
Trial pit collapsed below 0.30m BGL
Refusal at 0.30m BGL due to collapse
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPT5

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPT6
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.80m x 1.50m x 1.80m (L x W x D)	**Ground Level (mOD)** 60.55	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528741.1 E 778435.5 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown peaty TOPSOIL		
				60.35	0.20	Firm to stiff grey/black slightly sandy gravelly CLAY with low cobble and boulder content		
0.50 0.50	B D				(0.90)			
			Medium Ingress(1) at 1.10m.	59.45	1.10	Light grey clayey sandy fine to coarse subangular to subrounded GRAVEL with high cobble and boulder content		▽1
1.50 1.50	B D				(0.70)			
				58.75	1.80	Complete at 1.80m		

Plan

Remarks

Groundwater encountered at 1.10m BGL - Medium Ingress
Trial pit collapsed below 0.20m BGL
Refusal at 1.80m BGL due to collapse
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPT6

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPT7
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.60m x 1.50m x 2.70m (L x W x D)	**Ground Level (mOD)** 65.59	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528328.8 E 778639.1 N	**Dates** 05/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Brown TOPSOIL		
				65.29	0.30			
0.50 0.50	B D				(0.60)	Soft to firm reddish brown slightly sandy slightly gravelly CLAY		
				64.69	0.90			
1.50 1.50	B D				(1.80)	Grey clayey sandy fine to coarse grained angular to subangular GRAVEL with medium cobble and boulder content		
2.50 2.50	B D			62.89	2.70	OBSTRUCTION due to large cobbles or boulders Complete at 2.70m		

Plan

Remarks

No groundwater encountered
Trial pit stable
Refusal at 2.70m BGL
Trial pit backifilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPT7

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Cunlaghfadda Wind Farm– Trial Pit Photographs

BP-TP1



BP-TP1



Cunlaghfadda Wind Farm– Trial Pit Photographs

BP-TP1



BP-TP1



Cunlaghfadda Wind Farm– Trial Pit Photographs

BP-TP2



BP-TP2



Cunlaghfadda Wind Farm– Trial Pit Photographs

BP-TP2



BP-TP2



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-MM



TP-MM



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-MM



TP-MM



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-R1



TP-R1



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-R1



TP-R1



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-R3



TP-R3



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-R3



TP-R3



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-R4



TP-R4



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-R4



TP-R4



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-R5



TP-R5



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-R5



TP-R5



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-R6



TP-R6



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-R6



TP-R6



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-R7



TP-R7



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-R7



TP-R7



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-R8



TP-R8



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-R8



TP-R8



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-SS1



TP-SS1



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-SS1



TP-SS1



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-SS2



TP-SS2



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-SS2



TP-SS2



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-T1



TP-T1



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-T1



TP-T1



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-T2



TP-T2



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-T2



TP-T2



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-T3



TP-T3



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-T3



TP-T3



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-T4



TP-T4



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-T4



TP-T4



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-T5



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Cunlaghfadda Wind Farm– Trial Pit Photographs

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Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-T6



TP-T6



Cunlaghfadda Wind Farm– Trial Pit Photographs

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TP-T6



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-T7



TP-T7



Cunlaghfadda Wind Farm– Trial Pit Photographs

TP-T7



TP-T7



APPENDIX 3 – Laboratory Testing

National Materials Testing Laboratory Ltd.

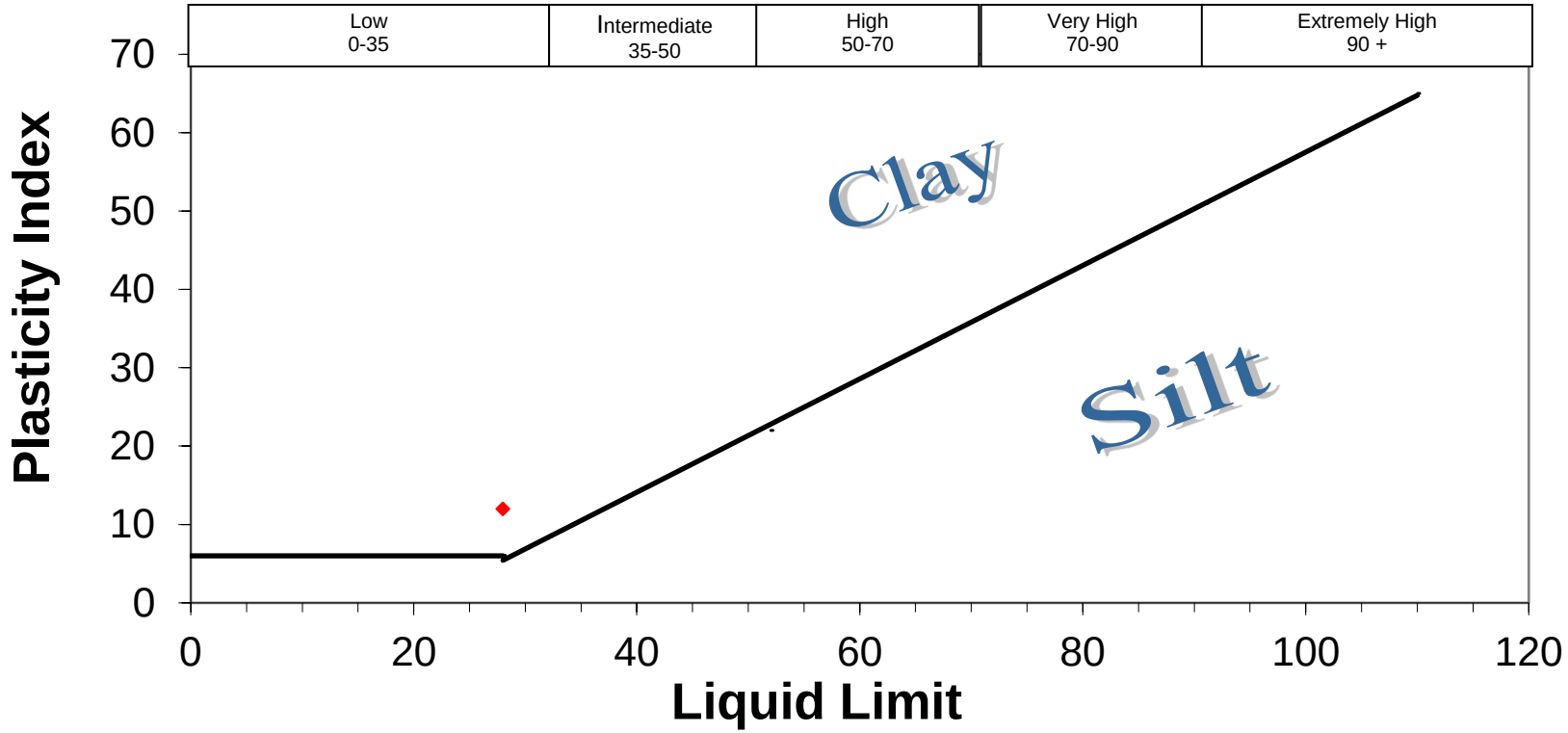
SUMMARY OF TEST RESULTS

				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	
BPTP1	0.05	B	33.7		53.7	38	Non Plastic							
BPTP1	2.50	B	16.7											
BPTP2	1.50	B	14.8											
BPTP2	2.30	B	22.8											
TPTR1	1.50	B	450.0		76.0	480	235	245						
TPTR3	1.50	B	642.2		80.9	648	249	399						
TPTR7	0.50	B	406.1		87.7	465	219	246						
TPTR8	1.50	B	9.8		33.6	21	Non Plastic							
TPT1	2.50	B	16.0		24.7	27	Non Plastic							
TPT3	1.50	B	11.3		43.3	28	16	12						
TPT4	1.50	B	249.8		58.0	420	236	184						
TPT7	1.50	B	10.3		47.2	20	Non Plastic							

NMTL	Notes :	Job ref No.	NMTL 3676	GII Project ID:	13116-08-23
	1. All BS tests carried out using preferred (definitive) method unless otherwise stated.	Location	Cunlaghfadda Windfarm		

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

Contract:	**Cunlaghfadda Windfarm**		
Client:	**Ground Investigations Ireland Ltd**		
Engineer:	**James Cashen**		
GII Project ID	**13116-08-23**		
Date:	**30/11/2023**		
Tested By:	**Sb**	**Checked:**	**Bc**
Job ref No.	**NMTL 3676**		

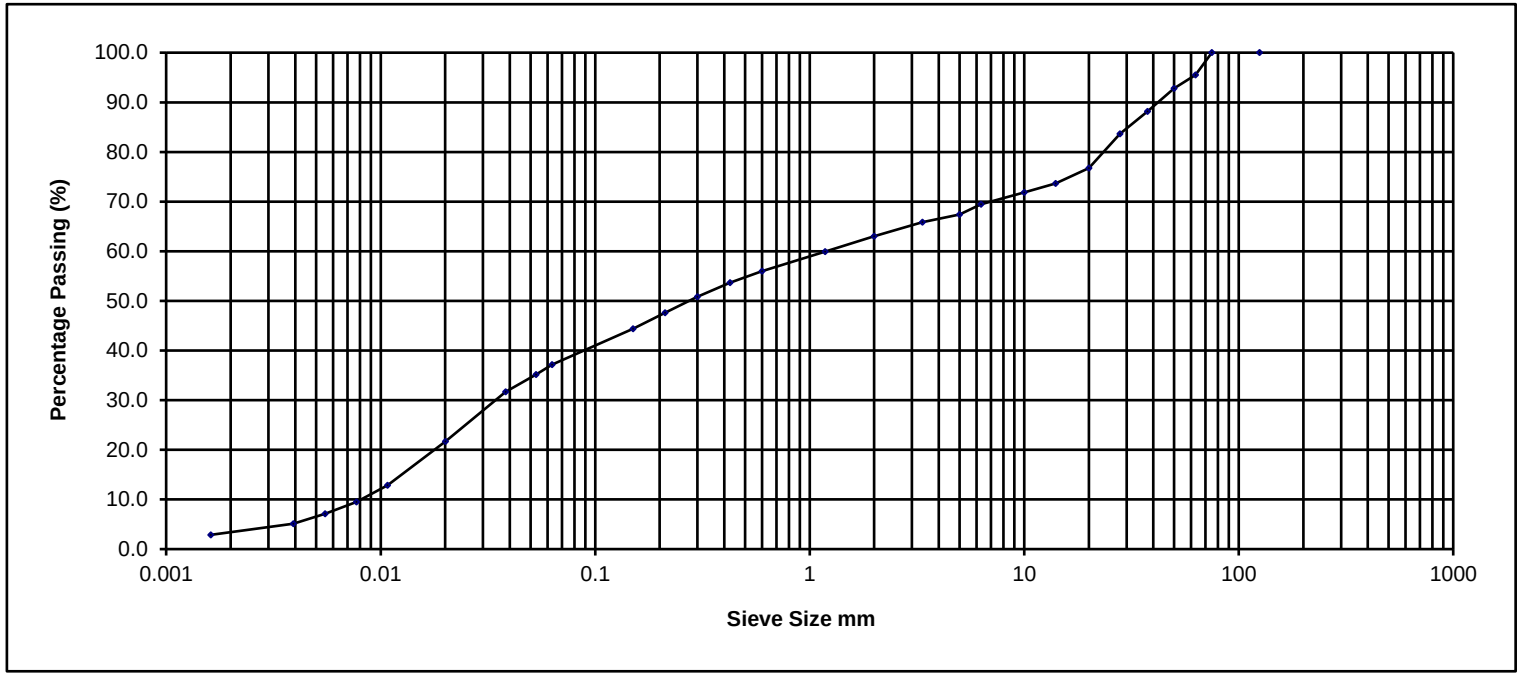


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Determination of Particle Size Distribution

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

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	95.5
50.000	92.8
37.500	88.2
28.000	83.7
20.000	76.7
14.000	73.7
10.000	71.8
6.300	69.4
5.000	67.4
3.350	65.9
2.000	63.0
1.180	60.0
0.600	56.0
0.425	53.7
0.300	50.8
0.212	47.6
0.150	44.4
0.063	37.2
0.053	35.2
0.038	31.7
0.020	21.7
0.011	12.8
0.008	9.5
0.006	7.1
0.004	5.1
0.002	2.9



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
2.9		34.3			25.8			32.5		4.5	0.0

Sample Description	Brown slightly sandy slightly gravelly clayey SILT.					Project No.	NMTL 3676
						BH/TP No.	BHPT1
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	BH
Operator	Js	Checked	Nc	Approved	Bc	Depth	0.5m
Date sample tested	21/11/2023						

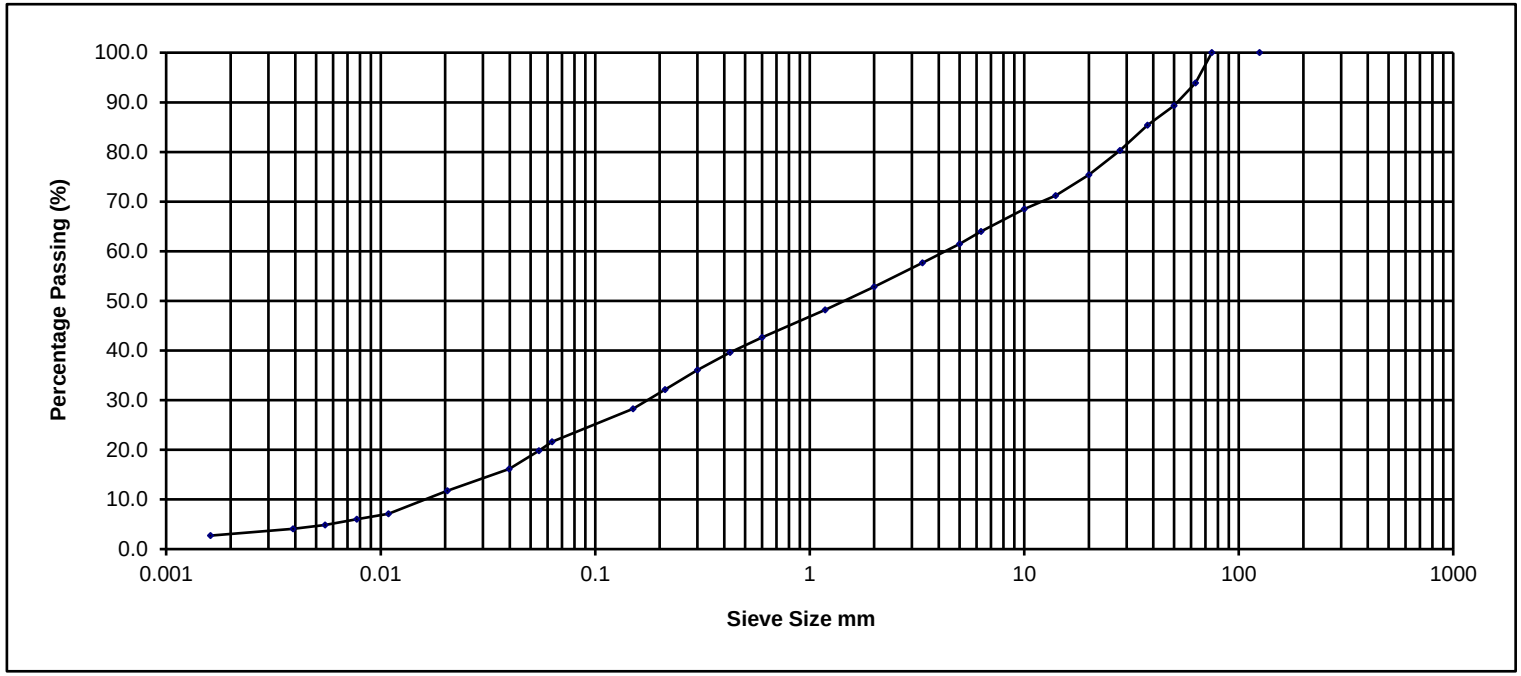
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Determination of Particle Size Distribution

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

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	93.9
50.000	89.3
37.500	85.4
28.000	80.3
20.000	75.4
14.000	71.2
10.000	68.5
6.300	64.0
5.000	61.5
3.350	57.7
2.000	52.8
1.180	48.2
0.600	42.7
0.425	39.6
0.300	36.0
0.212	32.1
0.150	28.3
0.063	21.6
0.055	19.8
0.040	16.2
0.020	11.8
0.011	7.1
0.008	6.0
0.006	4.8
0.004	4.1
0.002	2.7



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
2.7		18.9			31.2			41.1		6.1	0.0

Sample Description	Light brown slightly sandy gravellt clayey SILT.					Project No.	NMTL 3676
						BH/TP No.	BHPT1
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Date sample tested	21/11/2023	Depth	2.50m

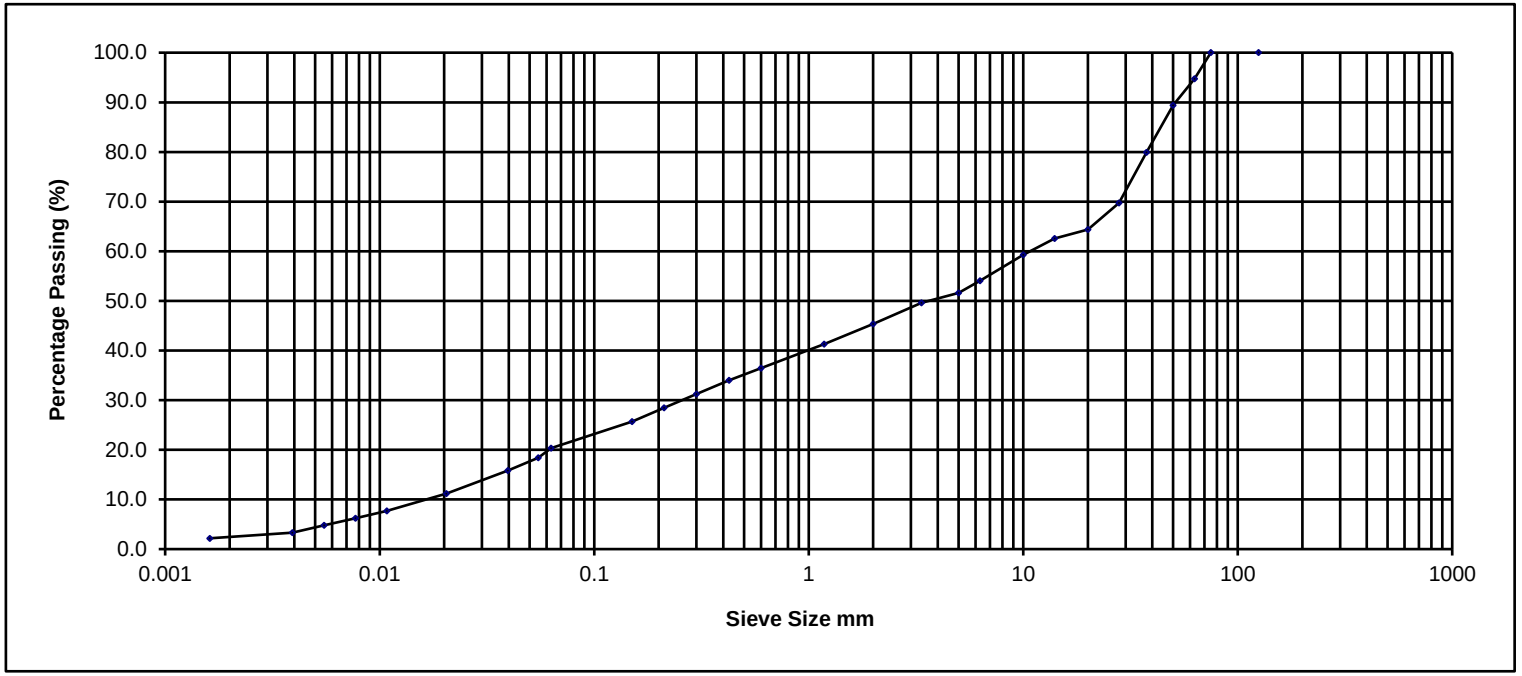
NM TL Ltd

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	94.7
50.000	89.4
37.500	79.9
28.000	69.7
20.000	64.4
14.000	62.6
10.000	59.3
6.300	54.0
5.000	51.6
3.350	49.6
2.000	45.4
1.180	41.3
0.600	36.4
0.425	34.0
0.300	31.3
0.212	28.4
0.150	25.7
0.063	20.3
0.055	18.4
0.040	15.8
0.020	11.2
0.011	7.7
0.008	6.2
0.006	4.8
0.004	3.3
0.002	2.2



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
2.2		18.1			25.1			49.4		5.3	0.0

Sample Description	Grey brown slightly sandy gravelly clayey SILT.					Project No.	NMTL 3676
						BH/TP No.	BHPT2
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Date sample tested	21/11/2023	Depth	1.50m

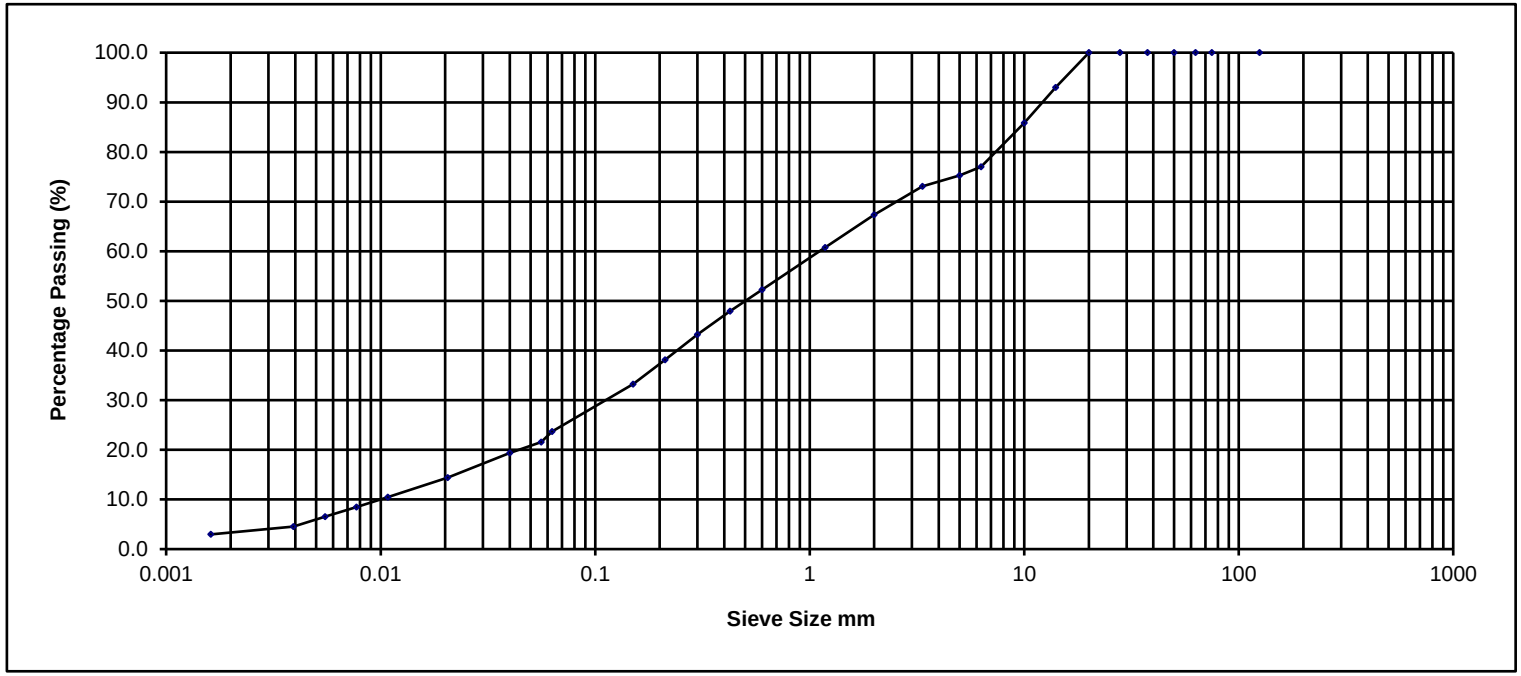
NMTL Ltd

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	93.0
10.000	85.9
6.300	77.0
5.000	75.3
3.350	73.1
2.000	67.3
1.180	60.7
0.600	52.2
0.425	48.0
0.300	43.2
0.212	38.2
0.150	33.2
0.063	23.7
0.056	21.5
0.040	19.4
0.021	14.4
0.011	10.5
0.008	8.5
0.006	6.5
0.004	4.5
0.002	3.0



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
3.0		20.7			43.6			32.7		0.0	0.0

Sample Description	Grey slightly gravelly sandy clayey SILT.					Project No.	NMTL 3676
						BH/TP No.	BHPT2
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Date sample tested	21/11/2023	Depth	2.30m

NM TL Ltd

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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	94.4
50.000	90.0
37.500	83.6
28.000	79.9
20.000	75.1
14.000	69.1
10.000	66.9
6.300	62.4
5.000	61.7
3.350	60.3
2.000	57.7
1.180	54.1
0.600	49.4
0.425	46.5
0.300	42.8
0.212	38.2
0.150	33.6
0.063	25.3
0.056	23.2
0.040	19.1
0.021	10.9
0.011	6.6
0.008	3.9
0.006	2.7
0.004	2.3
0.002	1.0



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
1.0		24.2			32.4			36.7		5.6	0.0

Sample Description	Brown/orange slightly sandy gravelly clayey SILT.					Project No.	NMTL 3676
						BH/TP No.	TPMM
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Date sample tested	21/11/2023	Depth	1.50m

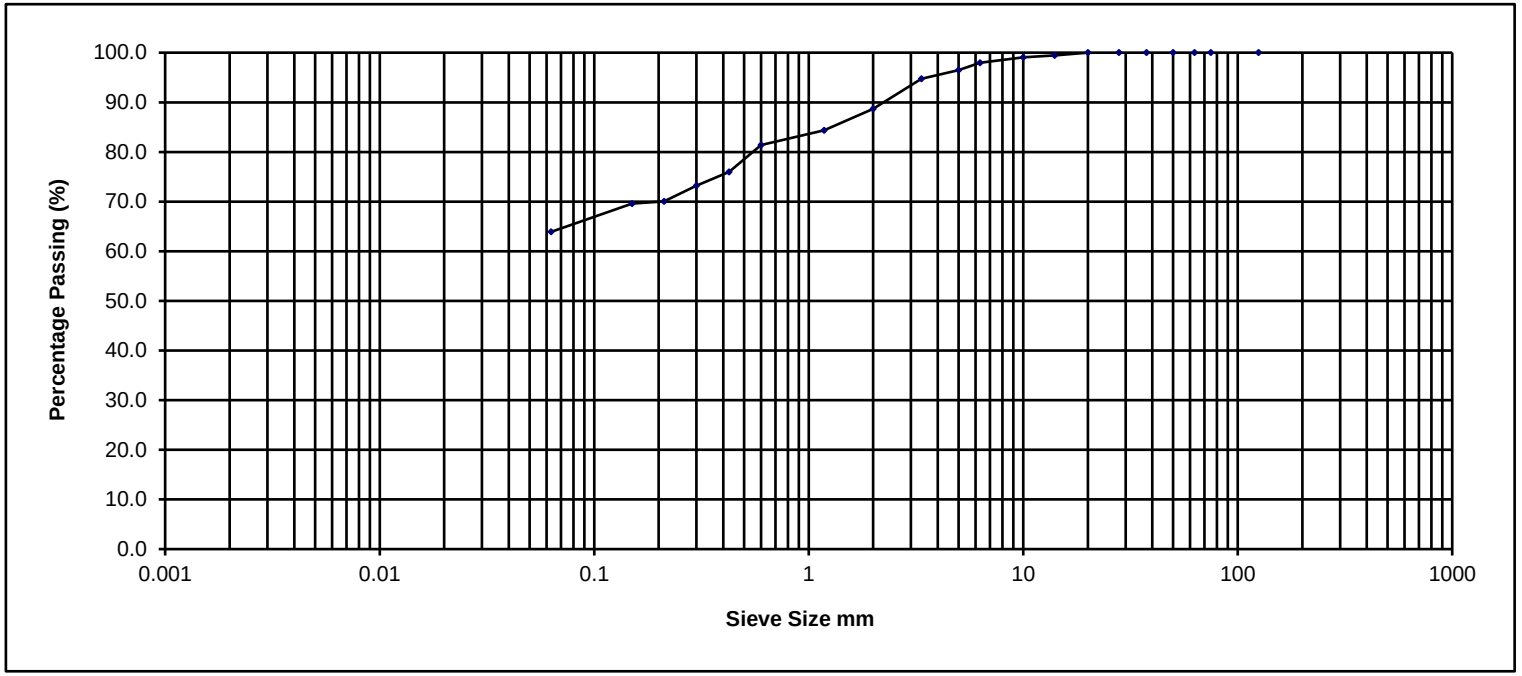
NM TL Ltd

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	99.5
10.000	99.1
6.300	98.0
5.000	96.5
3.350	94.7
2.000	88.7
1.180	84.3
0.600	81.4
0.425	76.0
0.300	73.2
0.212	70.0
0.150	69.6
0.063	63.9



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		63.9			24.8			11.3		0.0	0.0

Sample Description	Dark brown black PEAT			Project No.	NMTL 3676
	Sands and gravels are small fibers and pieces of wood fragment.			BH/TP No.	TPR1
Project	Cunlaghfadda Wind Farm		GII PROJECT ID:13116-08-23	Sample No.	B
Operator Js	Checked Nc	Approved Bc	Date sample tested 21/11/2023	Depth	1.50m

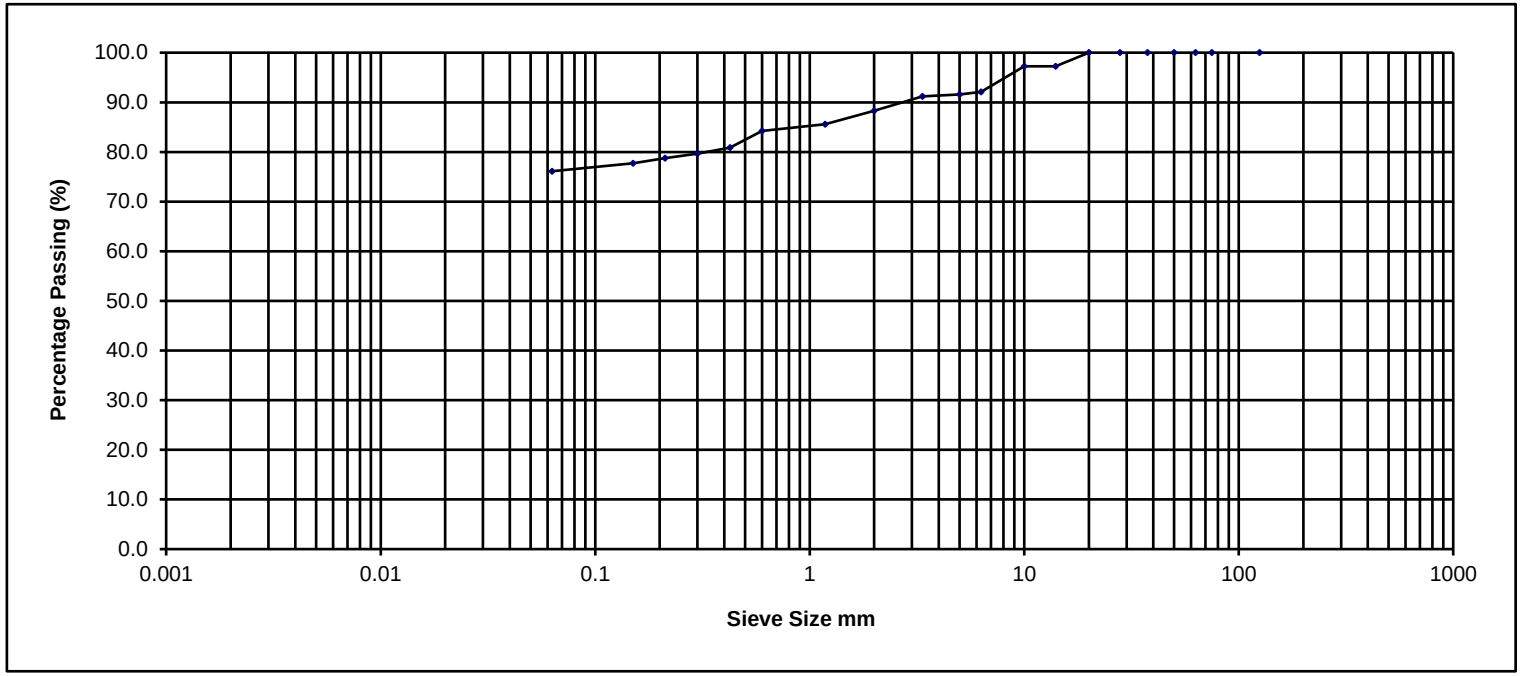
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Determination of Particle Size Distribution

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	97.2
10.000	97.2
6.300	92.1
5.000	91.6
3.350	91.2
2.000	88.3
1.180	85.6
0.600	84.3
0.425	80.9
0.300	79.7
0.212	78.7
0.150	77.7
0.063	76.1



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		76.1			12.2			11.7		0.0	0.0

Sample Description	Brown slighly fiberous PEAT	Project No.	NMTL 3676
	Sands and gravels are small fibres and pieces of wood fragment.	BH/TP No.	TPR3
Project	Cunlaghfadda Wind Farm GII PROJECT ID:13116-08-23	Sample No.	B
Operator Js	Checked Nc / Approved Bc / Date sample tested 21/11/2023	Depth	1.50m

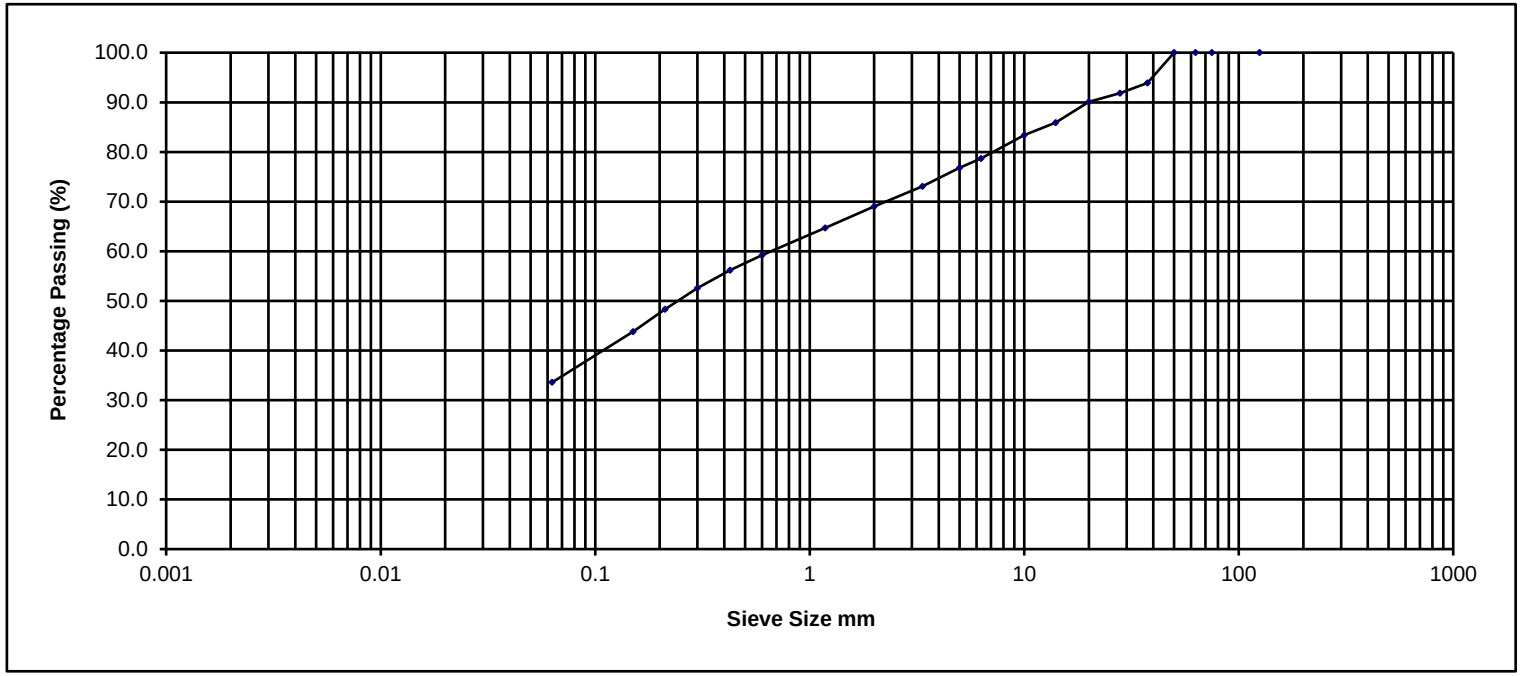
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Determination of Particle Size Distribution

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	93.9
28.000	91.9
20.000	90.1
14.000	85.9
10.000	83.4
6.300	78.7
5.000	76.8
3.350	73.0
2.000	69.0
1.180	64.7
0.600	59.2
0.425	56.2
0.300	52.5
0.212	48.3
0.150	43.8
0.063	33.6



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		33.6			35.4			31.0		0.0	0.0

Sample Description	Dark brown slightly gravelly sandy SILT/CLAY.					Project No.	NMTL 3676
						BH/TP No.	TPR3
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Depth	2.50m

Date sample tested 21/11/2023

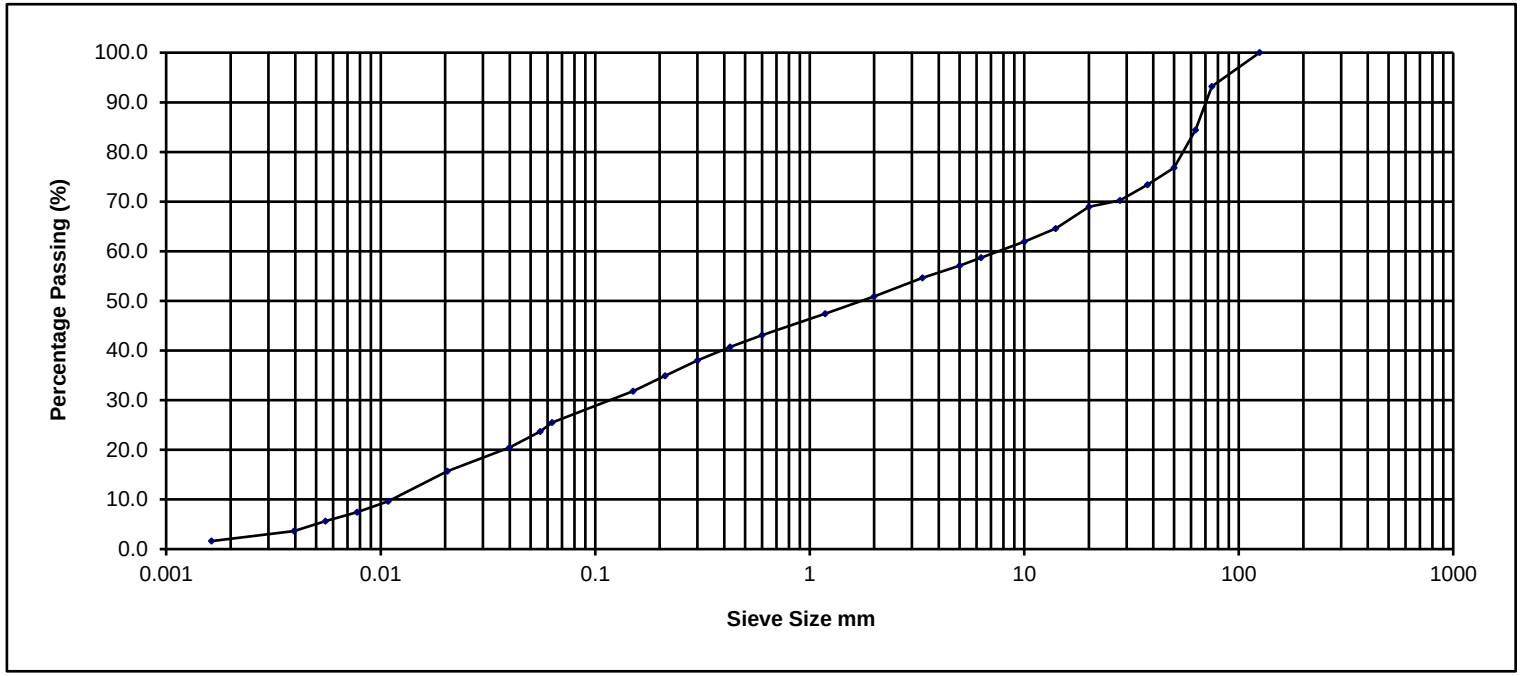
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Determination of Particle Size Distribution

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

Sieve Size mm	% Passing
125.000	100.0
75.000	93.2
63.000	84.4
50.000	76.8
37.500	73.4
28.000	70.2
20.000	68.9
14.000	64.5
10.000	61.9
6.300	58.7
5.000	57.1
3.350	54.7
2.000	50.9
1.180	47.4
0.600	43.1
0.425	40.7
0.300	38.0
0.212	34.9
0.150	31.8
0.063	25.5
0.055	23.7
0.040	20.5
0.020	15.7
0.011	9.6
0.008	7.4
0.006	5.6
0.004	3.6
0.002	1.6



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
1.6		23.9			25.4			33.5		15.6	0.0

Sample Description	Grey/brown slightly sandy slightly gravelly clayey SILT.					Project No.	NMTL 3676
						BH/TP No.	TPR4
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Depth	1.50m

Date sample tested 21/11/2023

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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	89.5
63.000	84.0
50.000	78.2
37.500	74.8
28.000	70.3
20.000	66.0
14.000	60.7
10.000	58.5
6.300	54.8
5.000	53.2
3.350	51.1
2.000	48.4
1.180	45.7
0.600	42.4
0.425	40.8
0.300	38.8
0.212	36.7
0.150	34.5
0.063	30.1
0.053	29.2
0.038	26.8
0.020	20.0
0.011	13.9
0.008	11.6
0.005	9.2
0.004	7.8
0.002	5.2



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
5.2		25.0			18.3			35.6		16.0	0.0

Sample Description: Grey slightly sandy gravelly SILT/CLAY.

Project: Cunlaghfadda Wind Farm

GII PROJECT ID:13116-08-23

Project No.	NMTL 3676
BH/TP No.	TPR5
Sample No.	B
Depth	1.50m

Operator	Checked	Approved	Date sample tested
Js	Nc	Bc	21/11/2023

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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	99.3
5.000	99.3
3.350	99.1
2.000	98.5
1.180	97.8
0.600	97.0
0.425	96.7
0.300	96.4
0.212	96.1
0.150	95.9
0.063	95.5



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		95.5			2.9			1.5		0.0	0.0

Sample Description	Dark brown/black slightly fiberous PEAT	Project No.	NMTL 3676
	Silts sands and gravels are particles fine medium and coarse fibers.	BH/TP No.	TPR6
Project	Cunlaghfadda Wind Farm GII PROJECT ID:13116-08-23	Sample No.	B
Operator Js	Checked Nc / Approved Bc / Date sample tested 21/11/2023	Depth	1.50m

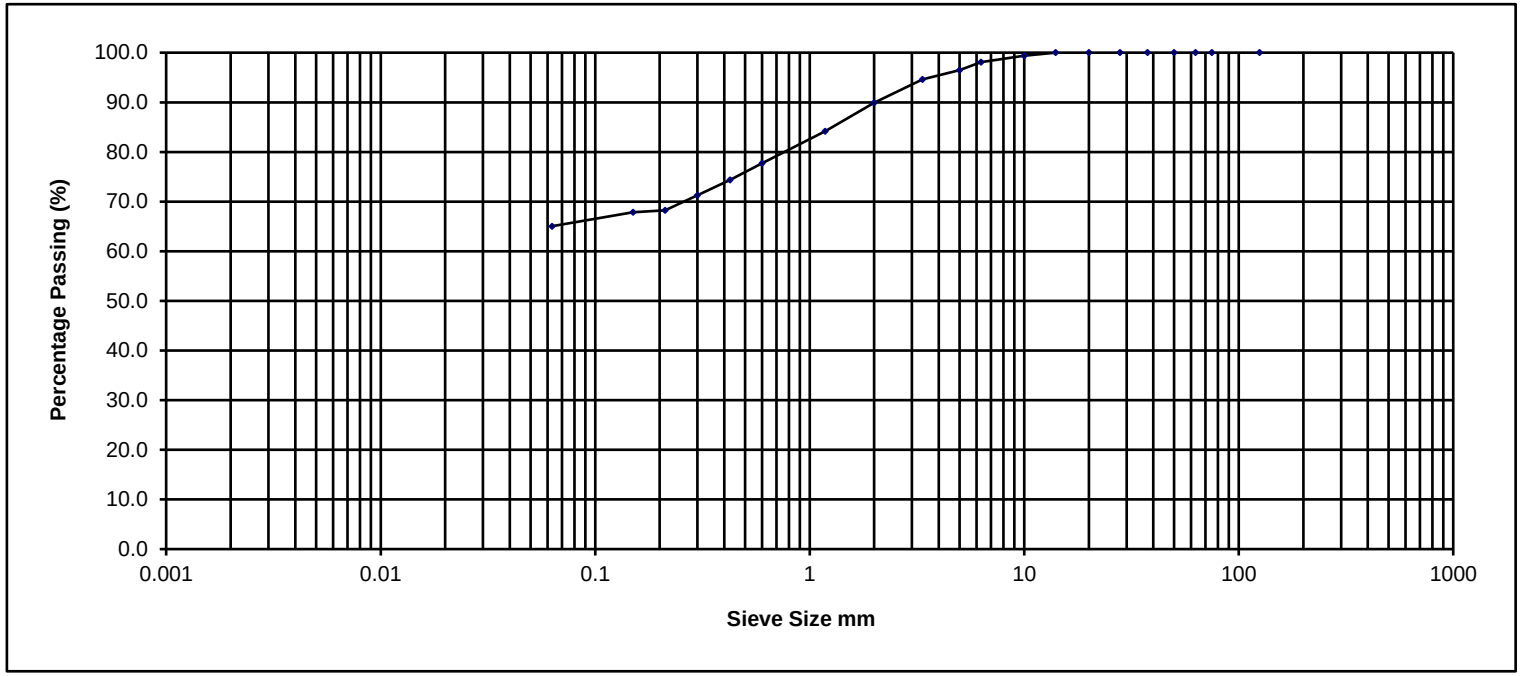
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Determination of Particle Size Distribution

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	99.4
6.300	98.1
5.000	96.5
3.350	94.6
2.000	89.9
1.180	84.2
0.600	77.7
0.425	74.4
0.300	71.2
0.212	68.3
0.150	67.8
0.063	65.0



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		65.0			24.9			10.1		0.0	0.0

Sample Description	Dark brown/black slightly fiberous PEAT	Project No.	NMTL 3676
	Silts sands and gravels are particles fine medium and coarse fibers	BH/TP No.	TPR6
Project	Cunlaghfadda Wind Farm GII PROJECT ID:13116-08-23	Sample No.	B
Operator Js	Checked Nc / Approved Bc / Date sample tested 21/11/2023	Depth	2.50m

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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	99.6
10.000	99.3
6.300	98.9
5.000	98.0
3.350	97.3
2.000	95.0
1.180	91.9
0.600	89.2
0.425	87.7
0.300	86.1
0.212	84.6
0.150	84.4
0.063	81.5



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		81.5			13.5			5.0		0.0	0.0

Sample Description	Dark brown/black slightly fiberous PEAT	Project No.	NMTL 3676
	Silts sands and gravels are particles fine medium and coarse fibers	BH/TP No.	TPR7
Project	Cunlaghfadda Wind Farm GII PROJECT ID:13116-08-23	Sample No.	B
Operator Js	Checked Nc / Approved Bc / Date sample tested 21/11/2023	Depth	0.50m

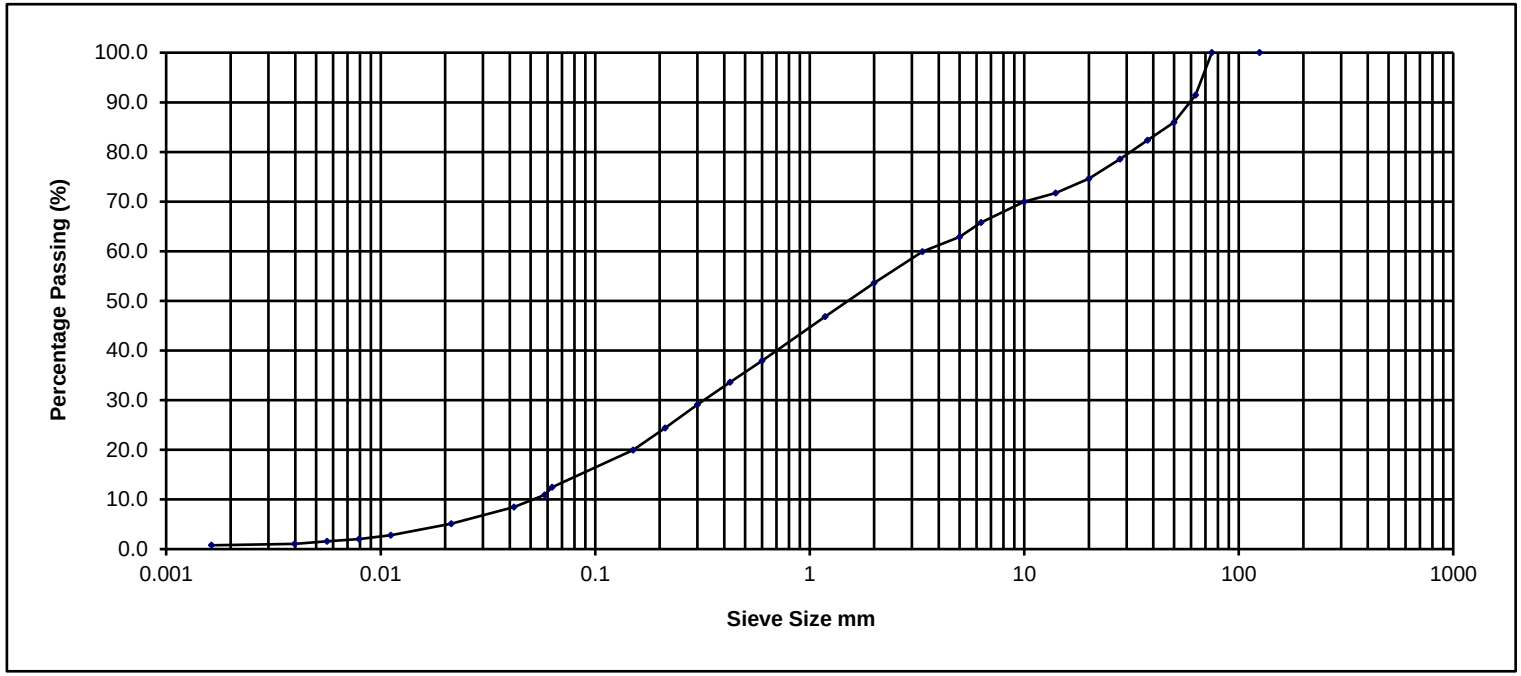
NM TL Ltd

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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	91.4
50.000	85.9
37.500	82.3
28.000	78.6
20.000	74.6
14.000	71.7
10.000	70.0
6.300	65.8
5.000	62.9
3.350	59.9
2.000	53.6
1.180	46.9
0.600	37.9
0.425	33.6
0.300	29.1
0.212	24.4
0.150	19.9
0.063	12.5
0.058	10.9
0.042	8.5
0.021	5.1
0.011	2.8
0.008	2.0
0.006	1.5
0.004	1.1
0.002	0.8



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
0.8		11.7			41.2			37.8		8.6	0.0

Sample Description	Grey brown silty gravelly SAND.					Project No.	NMTL 3676
						BH/TP No.	TPR8
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Depth	1.50m

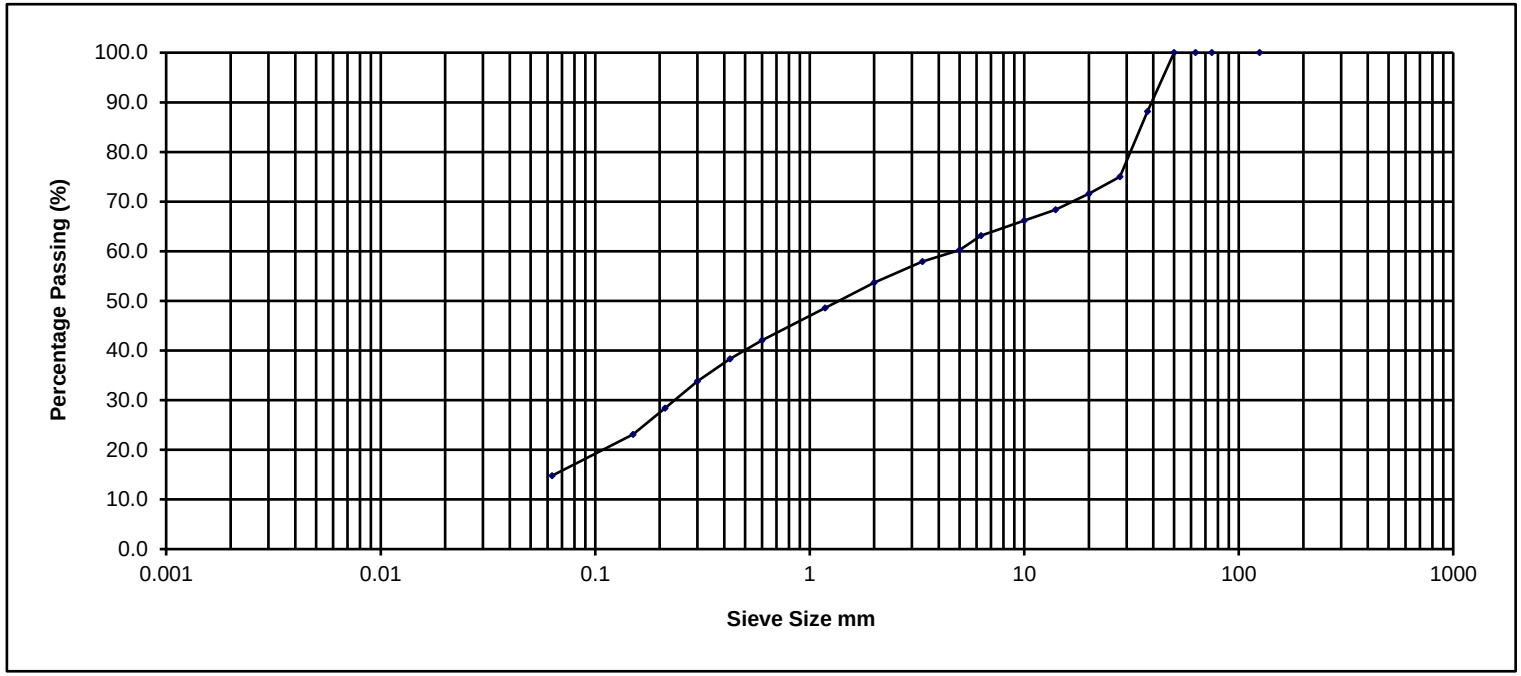
Date sample tested 21/11/2023

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	88.2
28.000	75.0
20.000	71.6
14.000	68.4
10.000	66.2
6.300	63.1
5.000	60.3
3.350	57.9
2.000	53.7
1.180	48.6
0.600	42.0
0.425	38.3
0.300	33.8
0.212	28.4
0.150	23.1
0.063	14.8



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		14.8			38.9			46.3		0.0	0.0

Sample Description	Grey/brown silty very sandy GRAVEL.			Project No.	NMTL 3676
				BH/TP No.	TPR8
Project	Cunlaghfadda Wind Farm		GII PROJECT ID:13116-08-23	Sample No.	B
Operator Js	Checked Nc	Approved Bc	Date sample tested 21/11/2023	Depth	2.50m

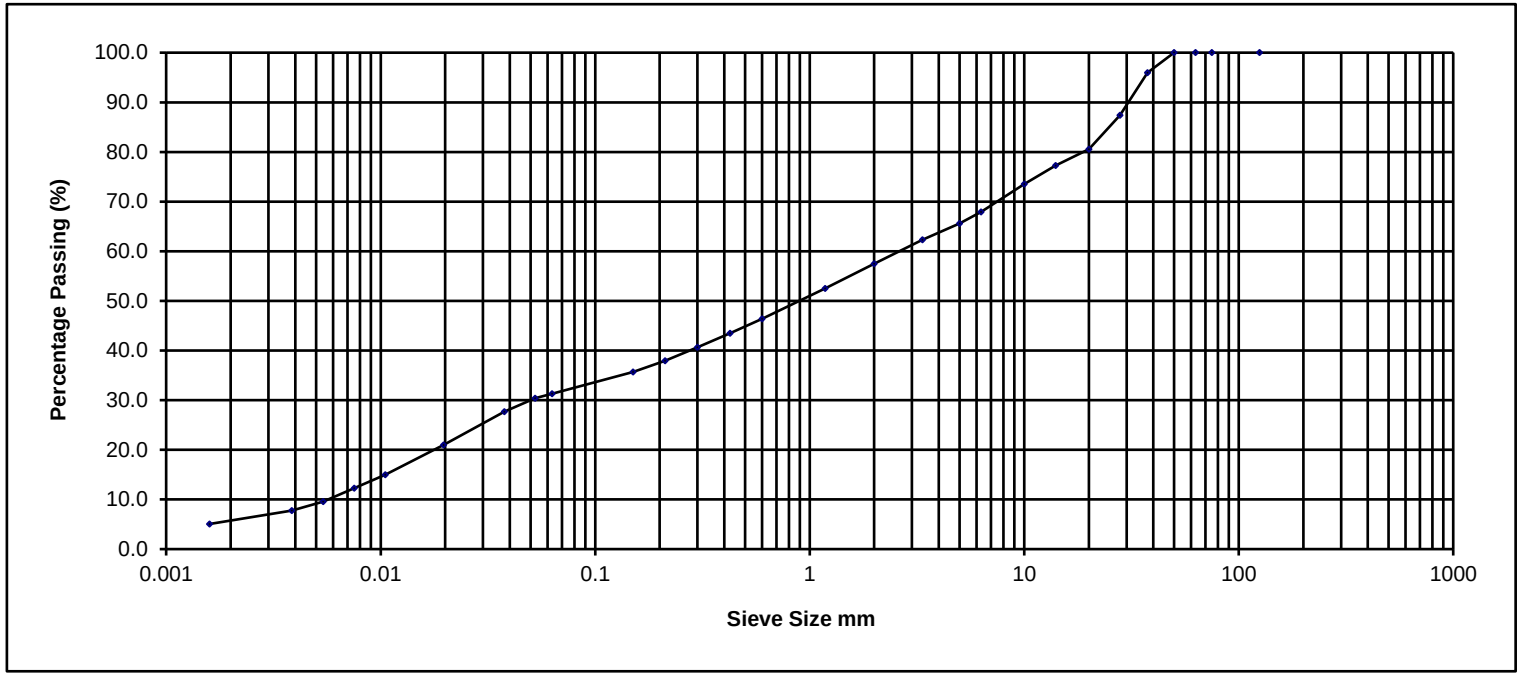
NM TL Ltd

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	87.4
20.000	80.6
14.000	77.3
10.000	73.5
6.300	67.9
5.000	65.6
3.350	62.3
2.000	57.5
1.180	52.5
0.600	46.4
0.425	43.5
0.300	40.7
0.212	38.0
0.150	35.7
0.063	31.3
0.052	30.4
0.038	27.7
0.020	21.0
0.010	15.0
0.008	12.3
0.005	9.6
0.004	7.8
0.002	5.1



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
5.1		26.2			26.2			42.5		0.0	0.0

Sample Description	Grey brown slightly sandy gravelly CLAY/SILT					Project No.	NMTL 3676
						BH/TP No.	TPSS1
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Depth	1.50m

Date sample tested 21/11/2023

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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	94.6
63.000	87.5
50.000	81.3
37.500	77.6
28.000	69.7
20.000	62.5
14.000	58.3
10.000	53.8
6.300	48.3
5.000	45.0
3.350	42.1
2.000	37.2
1.180	32.6
0.600	27.3
0.425	24.7
0.300	22.0
0.212	19.3
0.150	16.8
0.063	12.3



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		12.3			24.9			50.4		12.5	0.0

Sample Description	Grey brown silty very sandy GRAVEL.					Project No.	NMTL 3676
						BH/TP No.	TPT1
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Date sample tested	21/11/2023	Depth	2.50m

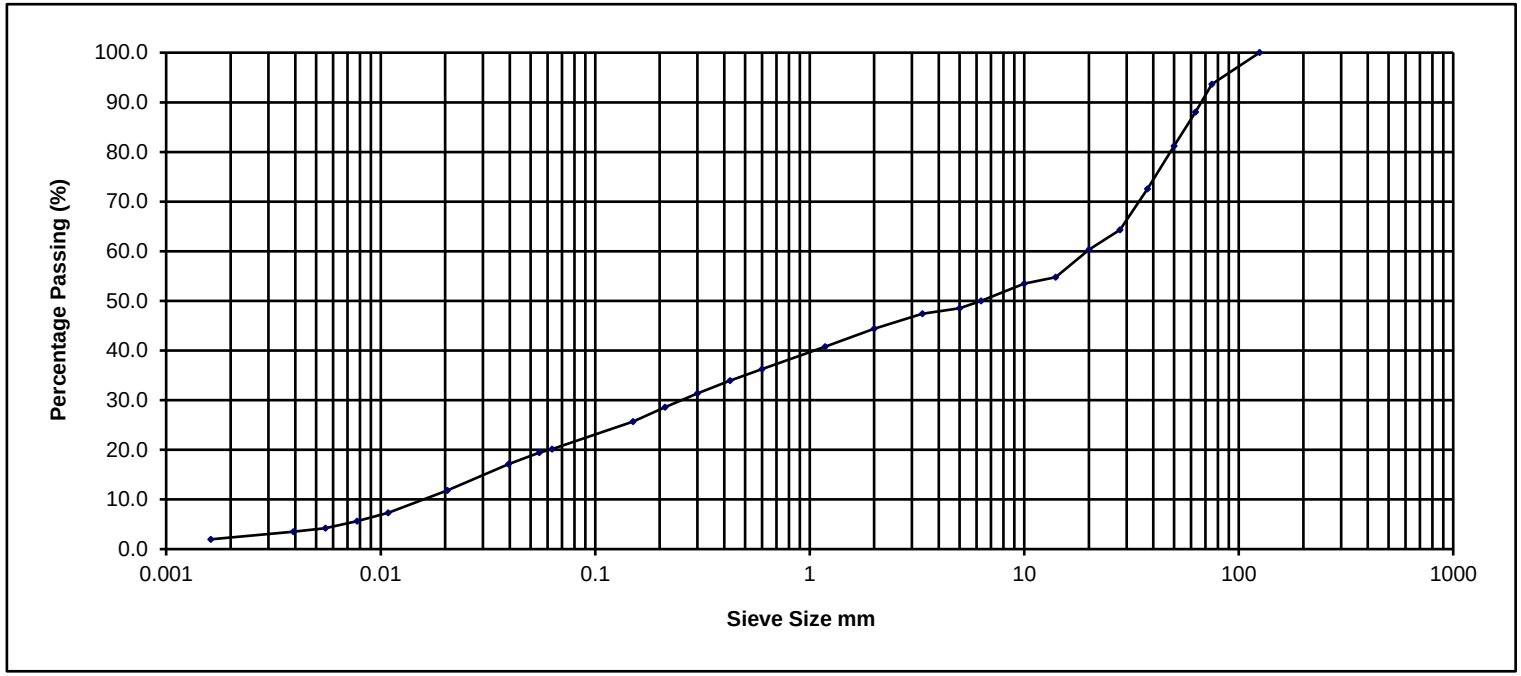
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Determination of Particle Size Distribution

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

Sieve Size mm	% Passing
125.000	100.0
75.000	93.7
63.000	88.1
50.000	81.2
37.500	72.6
28.000	64.3
20.000	60.3
14.000	54.8
10.000	53.5
6.300	50.0
5.000	48.5
3.350	47.4
2.000	44.4
1.180	40.8
0.600	36.3
0.425	34.0
0.300	31.4
0.212	28.6
0.150	25.7
0.063	20.2
0.055	19.4
0.039	17.1
0.020	11.8
0.011	7.3
0.008	5.6
0.006	4.2
0.004	3.5
0.002	2.0



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
2.0		18.2			24.2			43.7		11.9	0.0

Sample Description	Brown slghtly sandy gravelly clayey SILT.					Project No.	NMTL 3676
						BH/TP No.	TPT2
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Depth	1.50m

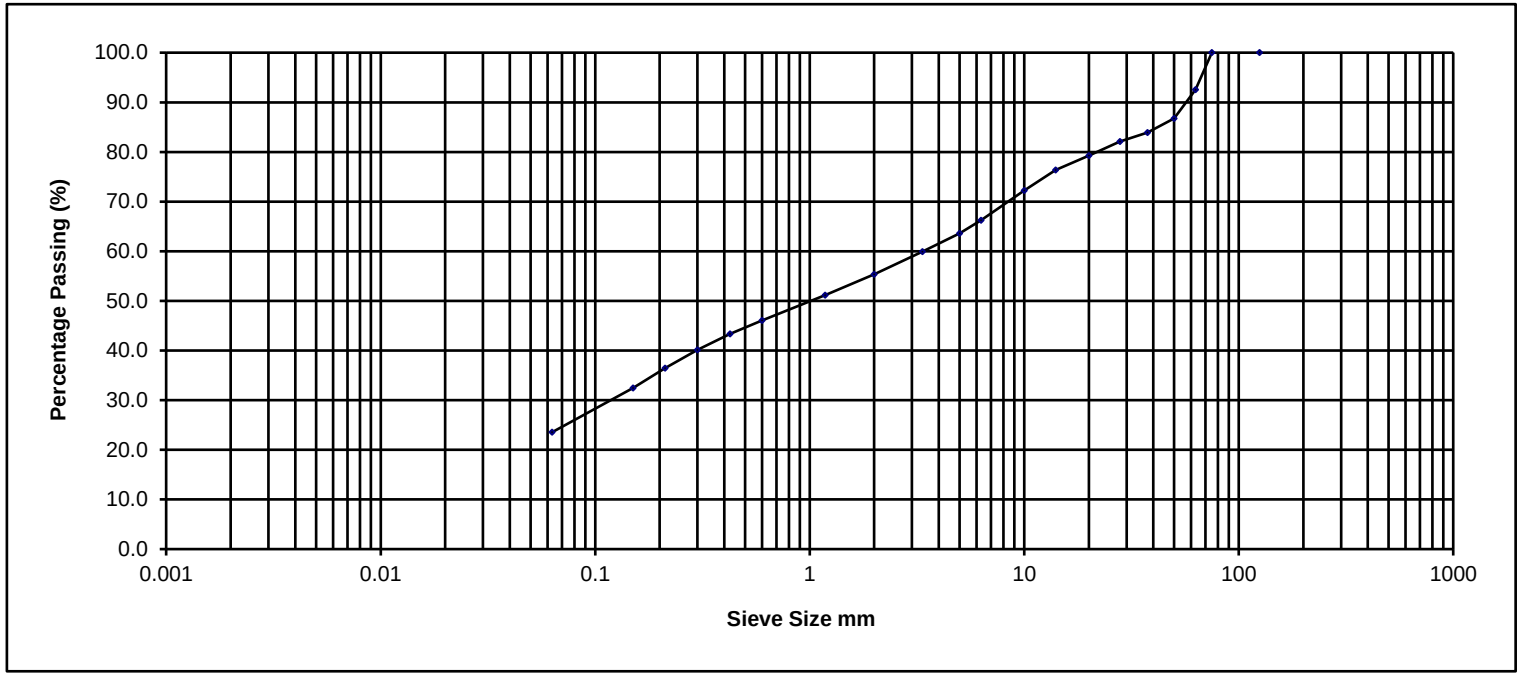
Date sample tested 21/11/2023

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	92.5
50.000	86.7
37.500	83.9
28.000	82.1
20.000	79.3
14.000	76.4
10.000	72.2
6.300	66.2
5.000	63.6
3.350	60.0
2.000	55.4
1.180	51.2
0.600	46.1
0.425	43.3
0.300	40.2
0.212	36.5
0.150	32.4
0.063	23.5



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		23.5			31.8			37.2		7.5	0.0

Sample Description	Brown slightly sandy gravelly CLAY/SILT.							Project No.	NMTL 3676
								BH/TP No.	TPT3
Project	Cunlaghfadda Wind Farm					GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Date sample tested	21/11/2023	Depth	1.50m

NM TL Ltd

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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	98.5
5.000	92.8
3.350	89.3
2.000	82.5
1.180	73.9
0.600	62.9
0.425	58.0
0.300	53.8
0.212	50.6
0.150	48.5
0.063	45.7



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		45.7			36.8			17.5		0.0	0.0

Sample Description	Dark brown/black fiberous PEATwith decompsed wood fragments	Project No.	NMTL 3676
	Silts sands and gravels are fine medium coarse fibers and decomposed wood.	BH/TP No.	TPT4
Project	Cunlaghfadda Wind Farm GII PROJECT ID:13116-08-23	Sample No.	B
Operator Js	Checked Nc / Approved Bc / Date sample tested 21/11/2023	Depth	1.50m

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	97.1
10.000	93.2
6.300	86.4
5.000	83.5
3.350	79.6
2.000	74.5
1.180	69.9
0.600	65.1
0.425	63.0
0.300	61.2
0.212	59.6
0.150	57.9
0.063	52.8



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		52.8			21.6			25.5		0.0	0.0

Sample Description: Grey slightly sandy slightly gravelly SILT/CLAY.

Project: Cunlaghfadda Wind Farm — GII PROJECT ID:13116-08-23

Operator	Checked	Approved	Date sample tested
Js	Nc	Bc	21/11/2023

Project No.	NMTL 3676
BH/TP No.	TPT5
Sample No.	B
Depth	1.50m

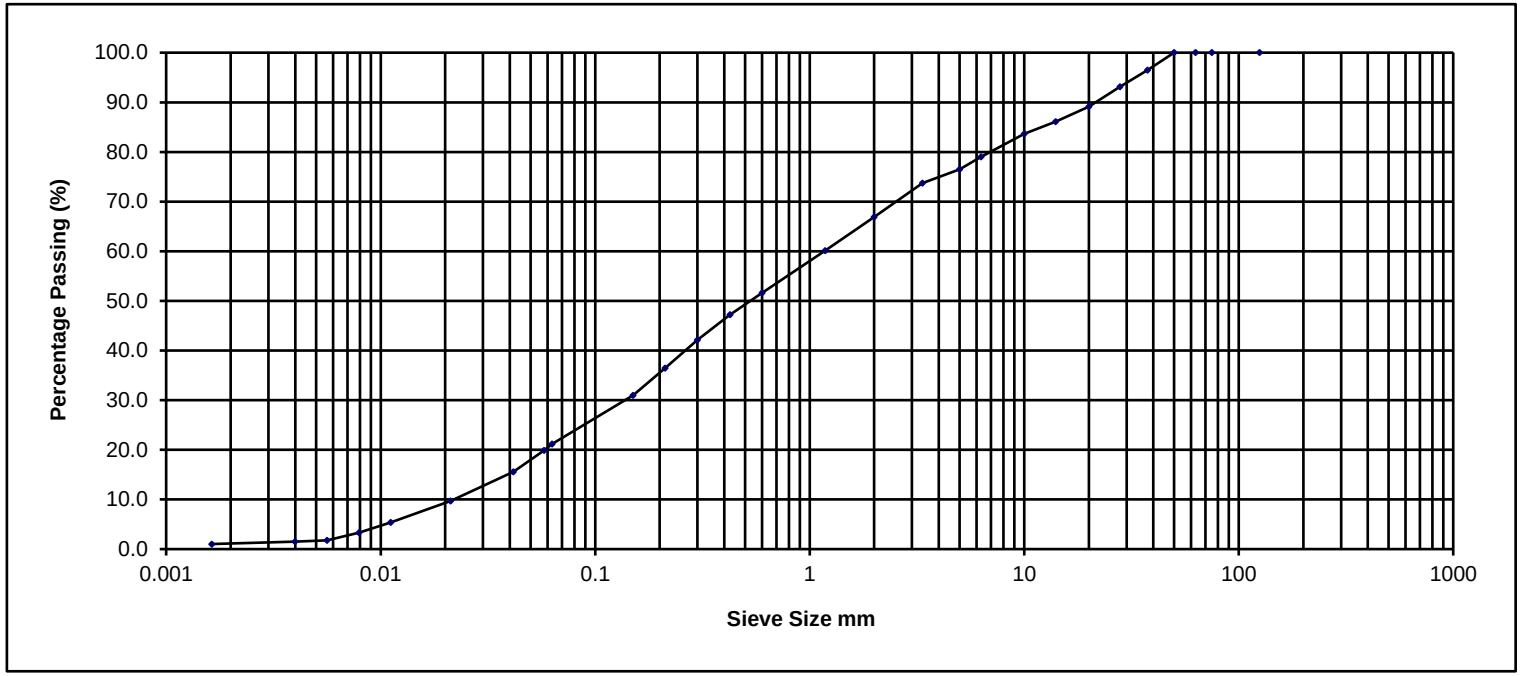
NM TL Ltd

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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	96.5
28.000	93.1
20.000	89.1
14.000	86.1
10.000	83.7
6.300	79.0
5.000	76.5
3.350	73.7
2.000	66.9
1.180	60.1
0.600	51.6
0.425	47.2
0.300	42.1
0.212	36.5
0.150	31.0
0.063	21.2
0.058	19.9
0.042	15.6
0.021	9.7
0.011	5.4
0.008	3.3
0.006	1.8
0.004	1.5
0.002	1.0



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
1.0		20.2			45.7			33.1		0.0	0.0

Sample Description: Grey brown slightly gravelly sandy slightly clayey SILT.

Project: Cunlaghfadda Wind Farm — GII PROJECT ID:13116-08-23

Operator	Checked	Approved	Date sample tested
Js	Nc	Bc	21/11/2023

Project No.	NMTL 3676
BH/TP No.	TPT7
Sample No.	B
Depth	1.50m

NMTL Ltd

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Ground Investigations Ireland

Cunlaghfadda Wind Farm – Additional Work

MKO Ireland

Factual Ground Investigation Report

August 2024

Directors: Fergal McNamara (MD), Conor Finnerty, Aisling McDonnell, Barry Sexton & Stephen Kealy
Ground Investigations Ireland Limited | Registered in Ireland Company Registration No.: 405726

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DOCUMENT CONTROL SHEET

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Client	MKO Ireland
Project No	13116-08-23
Document Title	Factual Ground Investigation Report

Rev.	Status	Author(s)	Reviewed By	Approved By	Office of Origin	Issue Date
A	Final	J Cashen	B Sexton	B Sexton	Dublin	30 August 2024

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.

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APPENDICES

Appendix 1 Figures
Appendix 2 Trial Pit Records
Appendix 3 Rotary Borehole Record

1.0 Preamble

On the instructions of MKO Ireland, a site investigation was carried out by Ground Investigations Ireland Ltd. (GII) in August 2024 at the site of the proposed wind farm in Cunlaghfadda, County Mayo. A previous site investigation was completed by GII on the site in October 2023 and reported in December 2023[1].

2.0 Overview

2.1. Background

It is proposed to construct a wind farm consisting of seven wind turbines with associated services and access roads at the proposed site. At the time of the site investigation the site was greenfield and used primarily as agricultural land. The site is situated an estimated 5km to the northwest of Claremorris, County Mayo.

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 9 No. Trial Pits to a maximum depth of 2.60m BGL
- Carry out 1 No. Rotary Core Borehole to a maximum depth of 12.00m BGL
- Factual Report

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 were 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+A1:2020.

[1] Ground Investigations Ireland, Cunlaghfadda Wind Farm, Ground Investigation Report, 6th December 2023.

3.2. Trial Pits

The trial pits were excavated using an 13T tracked 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 a Geotechnical Engineer/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. Rotary Boreholes

The rotary coring was carried out by a track mounted T44 Beretta rig at the location shown on the location plan in Appendix 1. The rotary borehole was completed from the ground surface.
The T44 Beretta is equipped with rubber tracks which allow for short travel on pavement surfaces avoiding any damage to the surface. The T44 Beretta utilises a triple tube core barrel system operated using a wireline drilling process. The outer barrel is rotated by the drill rods and at its lower end, carries the coring bit. The inner barrel is mounted on a swivel so that it does not rotate during the process. The third barrel or liner is placed within the second one to retain the core intact and to preserve as much as possible the fabric of the drilling stratum. The core is cut by the coring bit and passes to the inner liner. The core is brought up to the surface within the inner barrel on a small diameter wire rope or line attached to the “overshoot” recovery tool which is then placed into a core box in order of recovery. A drilling fluid, typically air mist or water flush is passed from the surface through hollow drill rods to the drill bit and is used to cool the drill bit. Temporary casing is used in some situations to support unstable ground or to seal off fissures or voids. It should be noted that the rotary coring can only achieve limited recovery in overburden, particularly granular or weakly cemented strata due to the flushing medium washing away the cohesive fraction during coring. The recovery achieved, where required is noted on the borehole log and core photographs are provided to allow assessment of the core recovered. The rotary borehole log is provided in Appendix 3 of this Report.

3.4. Surveying

The exploratory hole locations have been recorded using a KQGeo M8 GNSS 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.

4.0 Ground Conditions

4.1. General

The ground conditions encountered during the investigation are summarised below with reference to in-situ 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 but generally comprised;

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

TOPSOIL: Topsoil was encountered at most locations and was present to a maximum depth of 0.30m BGL.

MADE GROUND: Made Ground deposits were encountered from the surface at TP209 and beneath the Topsoil in TP201 and were present to a depth of 0.60m and 0.90m BGL. These deposits were described generally as *light grey / brown slightly sandy gravelly Clay with cobbles and boulders* and contained *rare fragments of plastic and peat* at TP209.

PEAT: *Very soft dark brown amorphous PEAT* was encountered below the made ground at TP201 and TP209. The peat extended to a depth of 1.20m BGL at TP201, while at TP209, the deposit was intermixed with large boulders which led to the termination of the trial pit at 1.30m BGL.

COHESIVE DEPOSITS: Cohesive deposits were encountered beneath the topsoil at most locations, and beneath the peat at TP201, and were described typically as *brownish grey slightly sandy gravelly with cobbles and boulders*. The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present where mentioned in the exploratory hole logs. These deposits had low (<5%), medium (5%-20%) or high (20%-50%) cobble and boulder content, where noted on the exploratory hole logs.

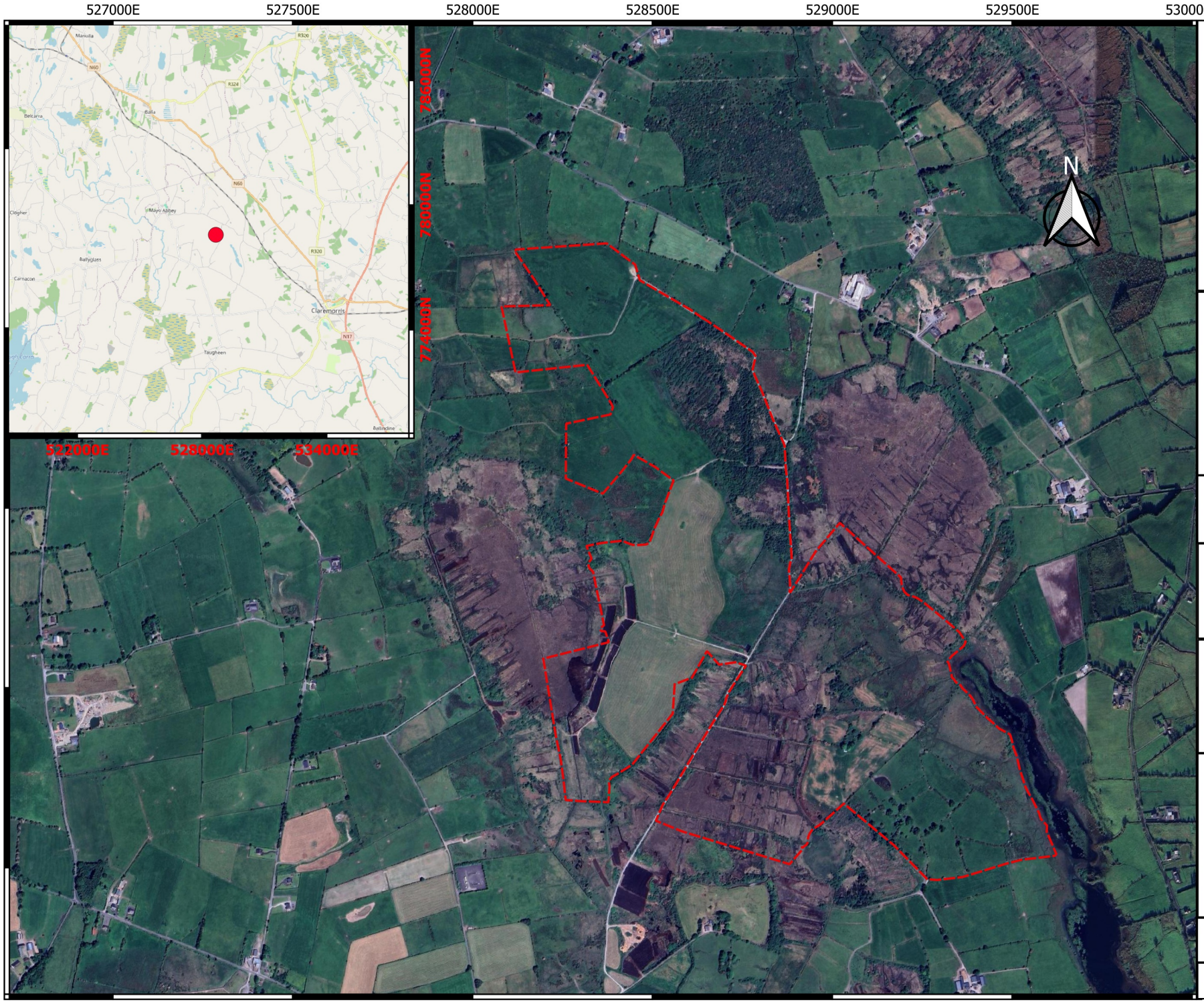
GRANULAR DEPOSITS: Granular deposits were encountered below the topsoil or cohesive deposits at several locations and were typically described as *light grey clayey sandy subangular to subrounded fine to coarse GRAVEL or light grey clayey gravelly fine to coarse SAND with high cobble and boulder content.* The secondary sand/gravel and fines constituents varied across the site and with depth, while low (<5%), medium (5%-20%) or high (20%-50%) cobble and boulder content was also present, where noted on the exploratory hole logs.

BEDROCK: The rotary core borehole recovered *medium strong to strong thinly to thickly bedded dark grey fine grained argillaceous LIMESTONE.* This is typical of the Ardnasillagh Formation, which is noted on Geological Survey Ireland's (GSI) geological mapping of the site. The degree of weathering ranged from slightly to moderately weathered with clay infill of fractures. The depth to bedrock was noted as 10.60m BGL in RC01.

4.2. Groundwater

Groundwater strikes are noted on the exploratory hole logs where they occurred. It should be noted 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.

APPENDIX 1 - Figures



Client:

MKO

Project Code:
13908-06-24

Project Title:
Cunlaghfadda Wind Farm

Drawing Title:
Figure 1 Site Location

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0 15 30 45 60 m

Drawn By:	Date:
LM	28-08-2024



Indicative Site Boundary

Trial Pit

Client:

MKO

Project Code:
13908-06-24

Project Title:
Cunlaghfadda Wind Farm

Drawing Title:
Figure 2 Trial Pit Locations

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www.gii.ie 01-6015175/5176

0 7 14 21 28 m

Drawn By:	Date:
LM	28-08-2024



Indicative Site Boundary

Rotary Core Borehole

Client:

MKO

Project Code:

13908-06-24

Project Title:

Cunlaghfadda Wind Farm

Drawing Title:

Figure 3 Borehole Location

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0 7 14 21 28 m

Drawn By:	Date:
LM	28-08-2024

APPENDIX 2 – Trial Pit Records

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TP201
Machine : 13T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.00m x 1.00m x 2.70m (L x W x D)	**Ground Level (mOD)** 58.74	**Client**	**Job Number** 13908-06-24
	Location 528194.3 E 779022.8 N	**Dates** 14/08/2024	**Engineer** MKO Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL		
				58.54	0.20	MADE GROUND: Brown slightly sandy slightly gravelly Clay with occasional fragments of plastic and peat		
0.50 0.50	B D				(0.70)			
				57.84	0.90	Very soft dark brown amorphous PEAT with rare fragments of wood and occasional clay lenses		▽1
			Water strike(1) at 1.00m.		(0.30)			
				57.54	1.20	Firm light grey mottled brown slightly sandy slightly gravelly CLAY with medium cobble and boulder content		
1.50 1.50	B D				(1.50)			
2.50 2.50	B D			56.04	2.70	Terminated at 2.70m		

Plan

Remarks

Groundwater encountere at 1.00m BGL; medium ingress
Trial pit unstable; side wall spalling
Trial pit terminated at 2.70m BGL due to obstruction; cobbles and boulders and side wall spalling
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13908-06-24.TP201

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TP202
Machine : 13T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.40m x 0.90m x 2.60m (L x W x D)	**Ground Level (mOD)** 60.57	**Client**	**Job Number** 13908-06-24
	Location 528216.7 E 779031.1 N	**Dates** 14/08/2024	**Engineer** MKO Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL		
				60.37	0.20	Soft to firm brown slightly sandy slightly gravelly CLAY with low cobble content		
0.50 0.50	B D							
					(1.60)			
1.50 1.50	B D							
				58.77	1.80	Grey clayey sandy subangular to subrounded fine to coarse GRAVEL with medium cobble and boulder content		
					(0.80)			
2.50 2.50	B D			57.97	2.60	Terminated at 2.60m		

Plan

Remarks

No groundwater encountere
Trial pit unstable; side wall spalling
Trial pit terminated at 2.60m BGL due to obstruction; cobbles and boulders
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13908-06-24.TP202

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TP203
Machine : 13T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.20m x 1.00m x 2.00m (L x W x D)	**Ground Level (mOD)** 63.58	**Client**	**Job Number** 13908-06-24
	Location 528248.9 E 778983.4 N	**Dates** 14/08/2024	**Engineer** MKO Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL		
				63.38	0.20	Soft to firm brown slightly sandy slightly gravelly CLAY with low cobble and boulder content		
0.50 0.50	B D				(0.70)			
				62.68	0.90	Soft to firm greyish brown slightly sandy gravelly CLAY with medium cobble and boulder content		
1.50 1.50	B D				(1.10)			
				61.58	2.00	Terminated at 2.00m		

Plan

Remarks

No groundwater encountered
Trial pit unstable; side wall spalling
Trial pit terminated at 2.00m BGL due to obstruction; boulders
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13908-06-24.TP203

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TP204
Machine : 13T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.50m x 1.00m x 1.70m (L x W x D)	**Ground Level (mOD)** 60.48	**Client**	**Job Number** 13908-06-24
	Location 528200 E 778993 N	**Dates** 14/08/2024	**Engineer** MKO Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL		
				60.28	0.20	Firm light brown slightly sandy gravelly CLAY with low cobble and boulder content		
0.50 0.50	B D				(1.00)			
				59.28	1.20	Firm to stiff greyish brown mottled brown slightly sandy gravelly CLAY with high cobble and boulder content		
1.50 1.50	B D				(0.50)			
				58.78	1.70	Terminated at 1.70m		

Plan

Remarks

No groundwater encountered
Trial pit stable
Trial pit terminated at 1.70m BGL due to obstruction; boulders
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13908-06-24.TP204

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TP205
Machine : 13T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.40m x 1.00m x 1.80m (L x W x D)	**Ground Level (mOD)** 63.80	**Client**	**Job Number** 13908-06-24
	Location 528232.8 E 779005 N	**Dates** 14/08/2024	**Engineer** MKO Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				63.70	(0.10) 0.10	TOPSOIL		
					(0.30)	Soft to firm brown slightly sandy slightly gravelly CLAY with low cobble content		
				63.40	0.40			
0.50 0.50	B D					Light grey clayey sandy subangular to subrounded fine to coarse GRAVEL with high cobble and boulder content		
					(1.40)			
1.50 1.50	B D							
				62.00	1.80	Terminated at 1.80m		

Plan

Remarks

No groundwater encountere
Trial pit stable
Trial pit terminated at 1.80m BGL due to obstruction; boulders
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13908-06-24.TP205

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TP206
Machine : 13T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.00m x 1.00m x 2.60m (L x W x D)	**Ground Level (mOD)** 62.32	**Client**	**Job Number** 13908-06-24
	Location 528271.3 E 778950 N	**Dates** 14/08/2024	**Engineer** MKO Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				62.22	(0.10) 0.10	TOPSOIL		
						Light grey clayey gravelly fine to coarse SAND with high cobble and boulder content		
0.50 0.50	B D							
					(2.50)			
1.50 1.50	B D							
2.50 2.50	B D			59.72	2.60	Terminated at 2.60m		

Plan

Remarks

No groundwater encountered
Trial pit unstable; side wall spalling
Trial pit terminated 2.60m BGL due to obstruction; cobbles and boulders and side wall spalling
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13908-06-24.TP206

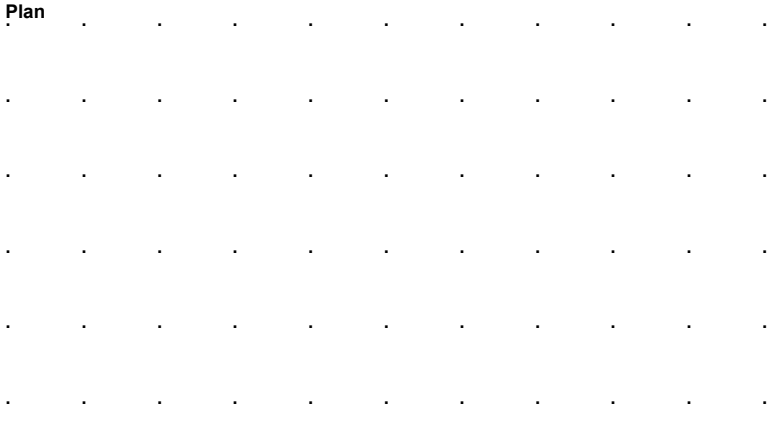
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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TP207
Machine : 13T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.10m x 0.80m x 1.80m (L x W x D)	**Ground Level (mOD)** 63.89	**Client**	**Job Number** 13908-06-24
	Location 528229.9 E 778934.7 N	**Dates** 14/08/2024	**Engineer** MKO Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	TOPSOIL		
				63.59	0.30	Light grey clayey sandy angular to subangular fine to coarse GRAVEL with medium cobble and boulder content		
0.50 0.50	B D				(1.50)			
1.50 1.50	B D			62.09	1.80	Terminated at 1.80m		

Plan



Remarks

No groundwater encountered
Trial pit unstable; side wall spalling
Trial pit terminated at 1.80m BGL due to obstruction; boulders
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13908-06-24.TP207

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TP208
Machine : 13T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.50m x 0.90m x 1.90m (L x W x D)	**Ground Level (mOD)** 58.32	**Client**	**Job Number** 13908-06-24
	Location 528173.9 E 779177.8 N	**Dates** 14/08/2024	**Engineer** MKO Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL		
				58.12	0.20			
0.50 0.50	B D				(0.70)	Firm to stiff light grey slightly sandy gravelly CLAY with low cobble and boulder content		
				57.42	0.90			
1.50 1.50	B D		Water strike(1) at 1.60m.		(1.00)	Firm to stiff greyish brown mottle ddark brown slightly sandy slightly gravelly CLAY with medium cobble and boulder content		▽1
				56.42	1.90	Terminated at 1.90m		

Plan

Remarks

Groundwater encountered at 1.60m BGL; seepage
Trial pit unstable; side wall collapse
Trial pit terminated at 190m BGL due to obstruction; cobbles and boulders and side wall collapse
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13908-06-24.TP208

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TP209
Machine : 13T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.00m x 0.70m x 1.30m (L x W x D)	**Ground Level (mOD)** 56.37	**Client**	**Job Number** 13908-06-24
	Location 528781.2 E 778911 N	**Dates** 14/08/2024	**Engineer** MKO Ireland	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.60)	MADE GROUND: Light grey slightly sandy gravelly Clay with high cobble and boulder content		
0.50 0.50	B D			55.77	0.60			
					(0.70)	Very soft dark brown amorphous PEAT with high boulder content		▽1
1.20 1.20	B D		Water strike(1) at 1.10m.	55.07	1.30			
						Terminated at 1.30m		

Plan

Remarks

Groundwater encountered at 1.10m BGL; medium ingress
Trial pit stable
Trial pit terminated at 1.30m BGL due to obstruction; boulders
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13908-06-24.TP209

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Cunlaghfadda Wind Farm – Trial Pit Photographs

TP201



TP201



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP201



TP201



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP202



TP202



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP202



TP202



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP203



TP203



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP203



TP203



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP204



TP204



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP204



TP204



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP205



TP205



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP205



TP205



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP206



TP206



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP206



TP206



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP207



TP207



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP207



TP207



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP208



TP208



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP208



TP208



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP209



TP209



Cunlaghfadda Wind Farm – Trial Pit Photographs

TP209



TP209



APPENDIX 3 – Rotary Borehole Record

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Site Cunlaghfadda Wind Farm			**Borehole Number** RC01
Machine : Beretta T-44 **Flush :** Water **Core Dia :** 63.5 mm **Method :** Rotary Cored	**Casing Diameter** 96mm cased to 12.00m	**Ground Level (mOD)** 66.20	**Client**	**Job Number** 13908-06-24
	Location 528356.1 E 777835 N	**Dates** 14/08/2024-15/08/2024	**Engineer** MKO Ireland	**Sheet** 1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						66.00	(0.20) 0.20	TOPSOIL			
	28						(1.80)	Recovery consists of; Light grey slightly clayey sandy subangular to subrounded fine to coarse GRAVEL with medium cobble and boulder content. Driller notes; sand and gravel			
2.00 2.00-2.20	93				9,16/50 SPT(C) 50/50	64.20	2.00 (1.50)	Recovery consists of; Light grey slightly clayey sandy subangular to subrounded fine to coarse GRAVEL with medium cobble and boulder content. Driller notes; sand and gravel (Dense)			
3.50 3.50-3.93	67				6,5/9,12,12,17 SPT(C) 50/275	62.70	3.50 (1.50)	Recovery consist of; Grey slightly clayey sandy subangular to subrounded fine to coarse GRAVEL with medium cobble and boulder content. Driller notes; gravel onto clay (Dense)			
5.00 5.00-5.13	56				13,10/50 SPT(C) 23*/75 50/50	61.20	5.00 (1.50)	Recovery consist of; Light brown slightly sandy gravelly CLAY with medium cobble and boulder content. Driller notes; boulder clay (Very stiff)			
6.50 6.50-6.70	87				16,20/50 SPT(C) 50/50	59.70	6.50 (2.20)	Very stiff light brown slightly sandy gravelly CLAY with medium cobble and boulder content			
8.00 8.00-8.20	85				13,15/50 SPT(C) 50/50	57.50	8.70 (0.80)	Dense dark grey slightly clayey fine to coarse SAND			
9.50 9.50-9.95					9,11/9,6,16,19 SPT(C) N=50	56.70	9.50	Recovery consist of; Dark grey slightly clayey subangular to subrounded fine to coarse GRAVEL with low cobble content. Driller notes gravel (Dense)			

Remarks
Borehole complete at 12.00m BGL
Bentonite backfilll from 12.00m to 5.00m BGL. 50mm slotted standpipe with pea gravel surround installed from 5.00m to 1.50m BGL. 50mm plain standpipe with bentonite seal installed from 1.50m to GL with a raised cover.

Scale (approx)	Logged By
1:50	HVC

Figure No. 13908-06-24.RC01

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Site Cunlaghfadda Wind Farm			**Borehole Number** RC01
Machine : Beretta T-44 **Flush :** Water **Core Dia :** 63.5 mm **Method :** Rotary Cored	**Casing Diameter** 96mm cased to 12.00m	**Ground Level (mOD)** 66.20	**Client**	**Job Number** 13908-06-24
	Location 528356.1 E 777835 N	**Dates** 14/08/2024-15/08/2024	**Engineer** MKO Ireland	**Sheet** 2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
							(1.10)				
10.60	53	25	25			55.60	10.60	Possible bedrock recovered as; Medium strong to strong thinly to thickly bedded dark grey fine grained LIMESTONE with clay infill. Slightly to moderately weathered. 10.60 - 11.60m BGL. 2 No. fracture sets: F1 - 0-20 degree fractures medium spaced planar rough with clay infill. F2 - 40-60 degree fractures medium spaced planar rough with clay infill. 11.20 - 11.40m BGL. 1 No. fracture. F1 - 70-90 degree fracture stepped rough			
11.00-11.10				7	20,20/50 SPT(C) 40*/75 50/20		(1.40)				
11.50	100	32	32								
12.00						54.20	12.00	Complete at 12.00m			

Remarks

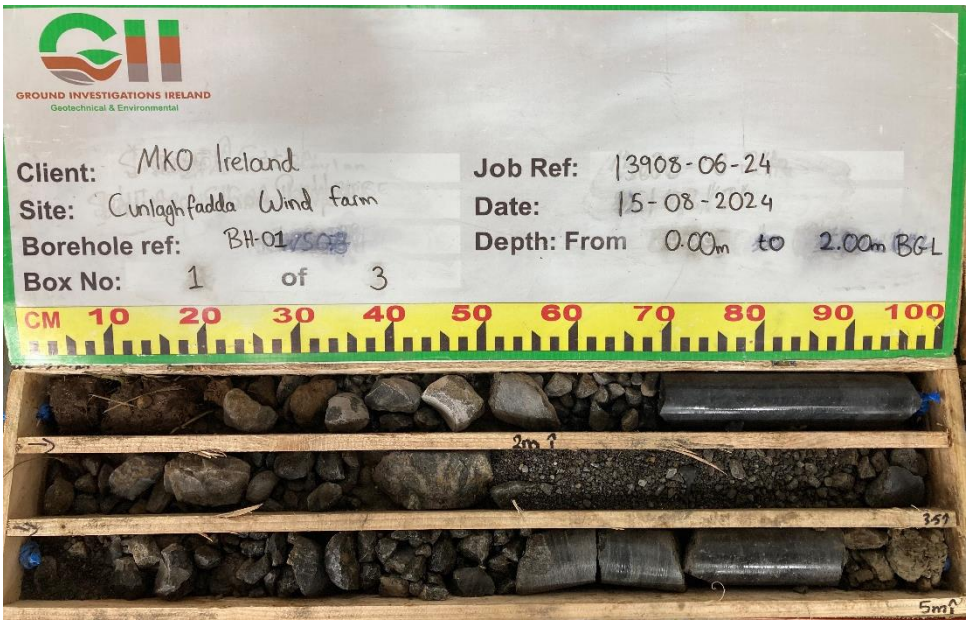
Scale (approx)	Logged By
1:50	HVC

Figure No. 13908-06-24.RC01

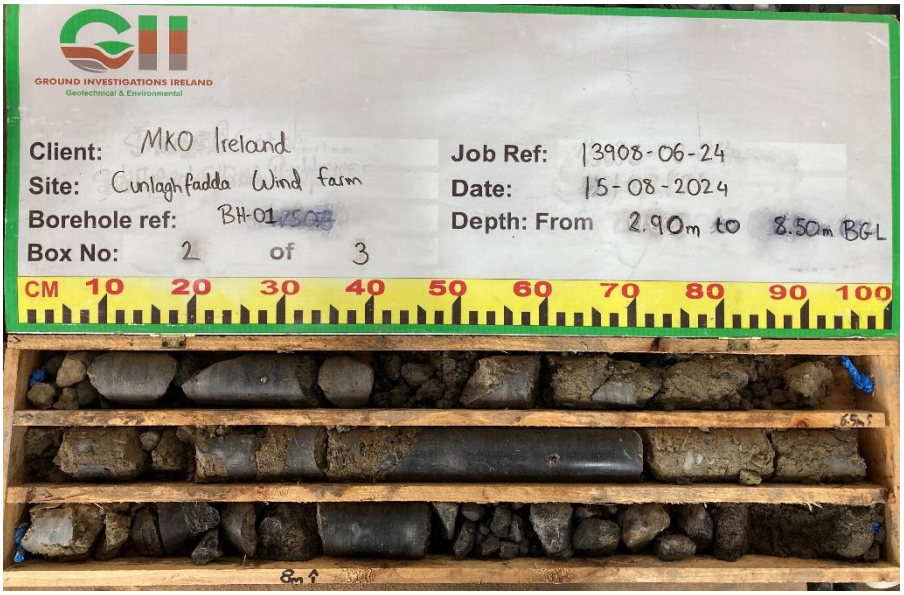
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Cunlaghfadda Wind Farm – Rotary Core Photographs

RC01



RC01



RC01

Cunlaghfadda Wind Farm – Rotary Core Photographs



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Site Cunlaghfadda Wind Farm			**Trial Pit Number** BPTP1
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 4.00m x 1.50m x 2.70m x (L x W x D)	**Ground Level (mOD)** 64.46	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528345.2 E 777851 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B D				(1.50)	MADE GROUND: Brown/red slightly sandy gravelly CLAY with many cobbles and boulders (Reworked)		
1.50 1.50	B D			62.96	1.50	Firm to stiff brownish grey slightly sandy gravelly CLAY with high cobble and boulder content		
					(0.60)			
2.50 2.50	B D			62.36	2.10	Light grey clayey sandy fine to coarse grained angular to subangular GRAVEL with high cobble and boulder content		
					(0.60)			
				61.76	2.70	OBSTRUCTION due to large cobbles and boulders Complete at 2.70m		

Plan

Remarks

No groundwater encountered
Trial pit spalling below 0.50m BGL
Refusal at 2.70m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.BPTP1

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** BPTP2
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.50m x 0.90m x 2.30m (L x W x D)	**Ground Level (mOD)** 67.09	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528384.3 E 777809.9 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				66.99	(0.10) 0.10	TOPSOIL		
						Firm brown slightly sandy gravelly CLAY with high cobble and boulder content		
					(0.50)			
0.50 0.50	B D			66.49	0.60	Light grey slightly clayey sandy fine to coarse grained angular to subangular GRAVEL with high cobble and boulder content		
					(1.70)			
1.50 1.50	B D							
				64.79	2.30	OBSTRUCTION due to large cobbles or boulders		
2.30 2.30	B D					Complete at 2.30m		

Plan

Remarks

No groundwater was encountered
Trial pit spalling from surface
Refusal at 2.30m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.BPTP2

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPMM
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.60m x 1.50m x 1.70m (L x W x D)	**Ground Level (mOD)** 65.63	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528426.5 E 778338 N	**Dates** 03/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	TOPSOIL with occasional plastic fragments		
				65.33	0.30			
					(0.40)	Firm light grey mottled brown slightly sandy gravelly CLAY with low cobble content		
0.50 0.50	B D			64.93	0.70			
			Medium Ingress(1) at 1.20m.		(1.00)	Soft brownish grey slightly sandy gravelly CLAY with medium cobble and boulder content		▽1
1.50 1.50	B D			63.93	1.70			
						Complete at 1.70m		

Plan

Remarks

Groundwater encountered at 1.20m BGL - Medium Ingress
Trial pit collapsed from surface
Refusal at 1.70m BGL due to collapse
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPMM

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPR1
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.80m x 1.50m x 2.90m (L x W x D)	**Ground Level (mOD)** 61.45	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528648.6 E 778606.7 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly peaty TOPSOIL		
				61.25	0.20	MADE GROUND: Firm brown slightly sandy slightly gravelly Clay (Reworked)		
					(0.30)			
				60.95	0.50	Very soft dark brown spongy pseudo fibrous PEAT		
					(0.20)			
0.70	B			60.75	0.70	Firm light grey sandy gravelly CLAY with low cobble content		
0.70	D							
					(0.40)			
				60.35	1.10	Grey clayey sandy fine to coarse angular to subrounded GRAVEL with medium cobble and boulder content		
1.50	B				(0.90)			
1.50	D							
				59.45	2.00	Firm light brownish grey sandy gravelly CLAY with medium cobble and boulder content		
					(0.90)			
2.50	B							
2.50	D							
				58.55	2.90	OBSTRUCTION due to large cobbles or boulders		
						Complete at 2.90m		

Plan

Remarks

No groundwater encountered
Trial pit spalling from 0.70m BGL
Refusal at 2.90m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPR1

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPR3
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.80m x 1.50m x 3.20m (L x W x D)	**Ground Level (mOD)** 60.84	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 529041.4 E 778019.3 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B D				(1.90)	Very soft dark brown slightly clayey spongy speudo fiibrous PEAT with occasional wood fragments		
1.50 1.50	B D		Medium Ingress(1) at 1.90m.	58.94	1.90	Light grey clayey gravelly fine to coarse grained SAND with low cobble and boulder content		▽1
					(0.40)			
2.50 2.50	B D			58.54	2.30	Soft dark brownish grey sandy gravelly CLAY with high cobble and boulder content and occasional fragments of organic matter		
					(0.90)			
				57.64	3.20	OBSTRUCTION due to large cobbles or boulders		
						Complete at 3.20m		

Plan

Remarks

Groundwater encountered at 1.90m BGL - Medium Ingress
Trial pit spalling below 2.30m BGL
Refusal at 3.20m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.BPTP2

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPR4
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.50m x 0.90m x 2.70m (L x W x D)	**Ground Level (mOD)** 63.97	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528623.6 E 778124.7 N	**Dates** 03/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				63.87	(0.10) 0.10	Brown TOPSOIL		
					(0.30)	Soft to firm grey slightly sandy gravelly CLAY with low cobble content		
				63.57	0.40			
0.50 0.50	B D				(0.80)	Firm brownish grey slightly sandy gravelly CLAY with Medium cobble and boulder content		
				62.77	1.20			
1.50 1.50	B D				(0.80)	Firm brownish grey slightly sandy gravelly CLAY with low cobble and boulder content		
			moderate (1) at 2.00m.	61.97	2.00			▽1
					(0.70)	Firm brownish grey slightly sandy gravelly CLAY with medium to high cobble and boulder content		
2.50 2.50	B D							
				61.27	2.70	OBSTRUCTION due to large cobbles or boulders		
						Complete at 2.70m		

Plan

Remarks

Groundwater encountered at 2.00m BGL - Medium Ingress
Trial pit spalling from 0.50m BGL
Refusal at 2.70m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPR4

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPR5
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.90m x 1.50m x 2.10m (L x W x D)	**Ground Level (mOD)** 60.17	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528748.8 E 778014.6 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B D				(0.90)	Very soft dark brown slightly clayey spongy pseudo fibrous PEAT		
				59.27	0.90			
					(0.20)	Soft grey brown slightly sandy slightly gravelly CLAY with medium cobble and boulder content		
				59.07	1.10			
1.50 1.50	B D		Medium Ingress(1) at 1.80m.		(1.00)	Soft bluish grey slightly sandy slightly gravelly CLAY with high cobble and boulder content		▽1
				58.07	2.10	OBSTRUCTION due to large cobbles or boulders Complete at 2.10m		

Plan

Remarks

Groundwater encountered at 1.80m BGL - Medium Ingress
Trial pit spalling below 1.10m BGL
Refusal at 2.10m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPR5

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPR6
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 4.00m x 1.50m x 3.30m (L x W x D)	**Ground Level (mOD)** 60.67	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528547.1 E 777716.5 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B D					Very soft dark brown spongy pseudo fibrous PEAT with occasional wood fragments		
1.50 1.50	B D				(3.10)			
2.50 2.50	B D							
				57.57	3.10			
			Slow Seepage(1) at 3.20m.		(0.20)	Soft light grey slightly sandy gravelly CLAY with medium cobble and boulder content		▽1
3.30 3.30	B D			57.37	3.30	Complete at 3.30m		

Plan

Remarks

Groundwater encountered at 3.20m BGL - Slow Seepage
Trial pit stable
Complete at 3.30m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPR6

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPR7
Machine : 8T Tracked Excavator **Method :** Trial pit	**Dimensions** 3.90m x 1.50m x 2.20m (L x W x D)	**Ground Level (mOD)** 60.19	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528559.5 E 778775.4 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.60)	Very soft dark brown spongy pseudo fibrous PEAT		
0.50 0.50	B D		Medium Ingress(1) at 0.60m.	59.59	0.60			▽1
					(0.70)	Soft to firm light grey mottled brown sandy gravelly CLAY with medium cobble and boulder content		
1.50 1.50	B D			58.89	1.30	Light grey clayey sandy fine to coarse grained angular to subangular GRAVEL with high cobble and boulder content		
					(0.90)			
				57.99	2.20	Complete at 2.20m		

Plan

Remarks

Groundwater encountered at 0.60m BGL - Medium Ingress
Trial pit collapsed from surface
Refusal at 2.20m BGL due to collapse
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPR7

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPR8
Machine : 8T Tracked Excavator **Method :** Trial pit	**Dimensions** 3.60m x 1.50m x 2.70m (L x W x D)	**Ground Level (mOD)** 61.31	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528392.8 E 778962.1 N	**Dates** 05/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				61.21	(0.10) 0.10	Brown TOPSOIL		
0.50 0.50	B D				(0.60)	Soft to firm reddish brown slightly sandy slightly gravelly CLAY		
				60.61	0.70	Grey clayey sandy fine to coarse grained angular to subangular GRAVEL with medium cobble and boulder content		
1.50 1.50	B D				(2.00)			
			Slow Seepage(1) at 2.00m.					▽1
2.50 2.50	B D			58.61	2.70	OBSTRUCTION due to large cobbles or boulders		
						Complete at 2.70m		

Plan

Remarks

Groundwater encountered at 2.00m BGL - Slow Seepage
Trial pit spalling below 0.70m BGL
Refusal at 2.70m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPR8

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPSS1
Machine : 8T Tracked Excavator **Method :** Trial pit	**Dimensions** 3.60m x 1.50m x 2.50m (L x W x D)	**Ground Level (mOD)** 58.50	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528192.3 E 779020.5 N	**Dates** 05/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown TOPSOIL		
				58.30	0.20			
					(0.20)	MADE GROUND: Soft grey slightly sandy gravelly Clay with medium cobble content (Reworked)		
				58.10	0.40			
0.50 0.50	B D				(0.40)	Very soft dark brown spongy pseudo fibrous PEAT		
			Fast Ingress(1) at 0.80m.	57.70	0.80			▽1
					(1.00)	Light grey clayey sandy fine to coarse grained angular to subanglar GRAVEL with medium cobble and boulder content		
1.50 1.50	B D							
				56.70	1.80			
					(0.70)	Grey sandy fine to coarse grained angular to subangular GRAVEL with high cobble and boulder content		
2.50 2.50	B D			56.00	2.50			
						Complete at 2.50m		

Plan

Remarks

Groundwater encountered at 0.80m BGL - Fast Ingress
Trial pit spalling from surface
Refusal at 2.50m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPSS1

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPSS2
Machine : 8T Tracked Excavator **Method :** Trial pit	**Dimensions** 3.60m x 1.50m x 1.90m (L x W x D)	**Ground Level (mOD)** 61.81	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528216.3 E 778928.1 N	**Dates** 05/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				61.71	(0.10) 0.10	Brown TOPSOIL		
						Firm reddish brown slightly sandy slightly gravelly CLAY		
					(0.50)			
0.50 0.50	B D			61.21	0.60	Firm dark brown slightly sandy gravelly CLAY with low cobble and boulder content		
					(0.40)			
				60.81	1.00	Light grey sandy fine to coarse grained angular to subangular GRAVEL with high cobble and boulder content		
					(0.90)			
1.50 1.50	B D			59.91	1.90	OBSTRUCTION due to large cobbles or boulders		
						Complete at 1.90m		

Plan

Remarks

No groundwater encountered
Trial pit spalling from 0.50m BGL
Refusal ar 1.90m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPSS2

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPT1
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 4.00m x 1.50m x 2.80m (L x W x D)	**Ground Level (mOD)** 59.06	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528831.3 E 777978.7 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B D				(1.70)	Very soft dark brown spongy pseudo fibrous PEAT with occasional fragments of wood		
1.50 1.50	B D		Medium Ingress(1) at 1.50m.					▽1
				57.36	1.70	Light grey clayey sandy fine to coarse grained angular to subangular GRAVEL with high cobble and boulder content		
					(1.10)			
2.50 2.50	B D							
				56.26	2.80	OBSTRUCTION due to large cobbles or boulders		
						Complete at 2.80m		

Plan

Remarks

Groundwater encountered at 1.50m BGL - Medium Ingress
Trial pit collapsing below 1.70m BGL
Refusal at 2.80m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPT1

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPT2
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.60m x 1.50m x 3.10m (L x W x D)	**Ground Level (mOD)** 63.22	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 529149.6 E 777792.3 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Brown TOPSOIL		
				62.92	0.30	Soft to firm reddish brown slightly sandy slightly gravelly CLAY		
0.50 0.50	B D				(0.90)			
				62.02	1.20	Light brownish grey clayey sandy fine to coarse grained subangular to subrounded GRAVEL with medium to high cobble and boulder content		
1.50 1.50	B D				(1.70)			
2.50 2.50	B D							
				60.32	2.90	Stiff light grey slightly sandy gravelly CLAY with medium to high cobble and boulder content		
					(0.20)			
				60.12	3.10	OBSTRUCTION due to large cobbles or boulders		
						Complete at 3.10m		

Plan

Remarks

No groundwater encountered
Trial pit spalling from 0.20m BGL
Refusal at 3.10m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPT2

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPT3
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.90m x 1.50m x 2.60m (L x W x D)	**Ground Level (mOD)** 68.30	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528455.1 E 778210.1 N	**Dates** 03/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown slightly gravelly peaty TOPSOIL		
				68.10	0.20	Soft light greyish brown slightly sandy gravelly CLAY		
					(0.20)			
				67.90	0.40	Soft to firm brown slightly sandy gravelly CLAY low cobble content		
0.50 0.50	B D							
					(1.20)			
1.50 1.50	B D			66.70	1.60	Firm to stiff brown slightly sandy gravelly CLAY with medium to high cobble and boulder content		
					(1.00)			
2.50 2.50	B D			65.70	2.60	OBSTRUCTION due to large cobbles or boulders		
						Complete at 2.60m		

Plan

Remarks

No groundwater encountered
Trial pit stable
Refusal at 2.60m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPT3

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPT4
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 4.00m x 1.50m x 2.90m (L x W x D)	**Ground Level (mOD)** 61.48	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528287.4 E 777852.8 N	**Dates** 03/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50 0.50	B D				(1.90)	Very soft dark brown spongey pseudo fibrous PEAT with occasional fragments of wood		
1.50 1.50	B D			59.58	1.90	Soft to firm light grey slightly sandy gravelly CLAY with high cobble and boulder content		
2.50 2.50	B D		Fast ingress(1) at 2.50m.		(1.00)			▽1
				58.58	2.90	OBSTRUCTION due to large cobbles or boulders Complete at 2.90m		

Plan

Remarks

Groundwater encountered at 2.50m BGL - Fast Ingress
Trial pit spalling below 1.90m BGL
Refusal at 2.90m BGL
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPT4

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPT5
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.60m x 1.50m x 2.60m (L x W x D)	**Ground Level (mOD)** 57.19	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 529123.5 E 778188 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Dark brown peaty TOPSOIL		
				56.89	0.30			
0.50 0.50	B D				(0.60)	Soft light grey slightly sandy gravelly CLAY with medium cobble and boulder content		
				56.29	0.90			
1.50 1.50	B D		Medium Ingress(1) at 1.50m.		(1.70)	Light grey clayey sandy fine to coarse grained subangular to subrounded GRAVEL with high cobble and boulder content		▽1
2.50 2.50	B D			54.59	2.60	Complete at 2.60m		

Plan

Remarks

Groundwater encountered at 1.50m BGL - Medium Ingress
Trial pit collapsed below 0.30m BGL
Refusal at 0.30m BGL due to collapse
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPT5

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPT6
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.80m x 1.50m x 1.80m (L x W x D)	**Ground Level (mOD)** 60.55	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528741.1 E 778435.5 N	**Dates** 04/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Brown peaty TOPSOIL		
				60.35	0.20	Firm to stiff grey/black slightly sandy gravelly CLAY with low cobble and boulder content		
0.50 0.50	B D				(0.90)			
			Medium Ingress(1) at 1.10m.	59.45	1.10	Light grey clayey sandy fine to coarse subangular to subrounded GRAVEL with high cobble and boulder content		▽1
1.50 1.50	B D				(0.70)			
				58.75	1.80	Complete at 1.80m		

Plan

Remarks

Groundwater encountered at 1.10m BGL - Medium Ingress
Trial pit collapsed below 0.20m BGL
Refusal at 1.80m BGL due to collapse
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPT6

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Site Cunlaghfadda Wind Farm			**Trial Pit Number** TPT7
Machine : 8T Tracked Excavator **Method :** Trial Pit	**Dimensions** 3.60m x 1.50m x 2.70m (L x W x D)	**Ground Level (mOD)** 65.59	**Client** MKO Ireland	**Job Number** 13116-08-23
	Location 528328.8 E 778639.1 N	**Dates** 05/10/2023	**Engineer** Hydro Environmental Services	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Brown TOPSOIL		
				65.29	0.30			
0.50 0.50	B D				(0.60)	Soft to firm reddish brown slightly sandy slightly gravelly CLAY		
				64.69	0.90			
1.50 1.50	B D				(1.80)	Grey clayey sandy fine to coarse grained angular to subangular GRAVEL with medium cobble and boulder content		
2.50 2.50	B D			62.89	2.70	OBSTRUCTION due to large cobbles or boulders Complete at 2.70m		

Plan

Remarks

No groundwater encountered
Trial pit stable
Refusal at 2.70m BGL
Trial pit backifilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	AB	13116-08-23.TPT7

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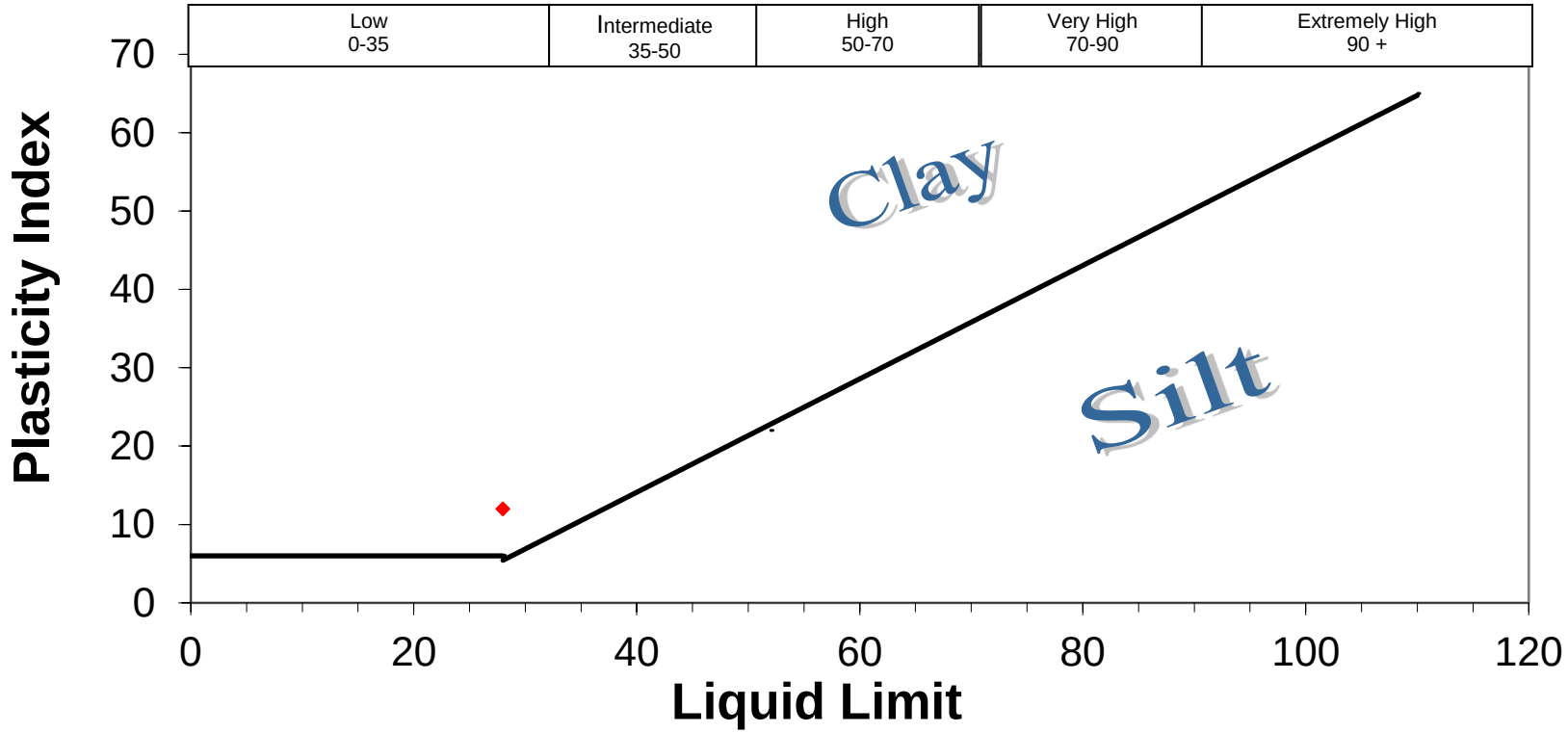
SUMMARY OF TEST RESULTS

				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	
BPTP1	0.05	B	33.7		53.7	38	Non Plastic							
BPTP1	2.50	B	16.7											
BPTP2	1.50	B	14.8											
BPTP2	2.30	B	22.8											
TPTR1	1.50	B	450.0		76.0	480	235	245						
TPTR3	1.50	B	642.2		80.9	648	249	399						
TPTR7	0.50	B	406.1		87.7	465	219	246						
TPTR8	1.50	B	9.8		33.6	21	Non Plastic							
TPT1	2.50	B	16.0		24.7	27	Non Plastic							
TPT3	1.50	B	11.3		43.3	28	16	12						
TPT4	1.50	B	249.8		58.0	420	236	184						
TPT7	1.50	B	10.3		47.2	20	Non Plastic							

NMTL	Notes :	Job ref No.	NMTL 3676	GII Project ID:	13116-08-23
	1. All BS tests carried out using preferred (definitive) method unless otherwise stated.	Location	Cunlaghfadda Windfarm		

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Unit 18c, Tullow Industrial Estate
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billa@nmtl.ie

Contract:	**Cunlaghfadda Windfarm**		
Client:	**Ground Investigations Ireland Ltd**		
Engineer:	**James Cashen**		
GII Project ID	**13116-08-23**		
Date:	**30/11/2023**		
Tested By:	**Sb**	**Checked:**	**Bc**
Job ref No.	**NMTL 3676**		

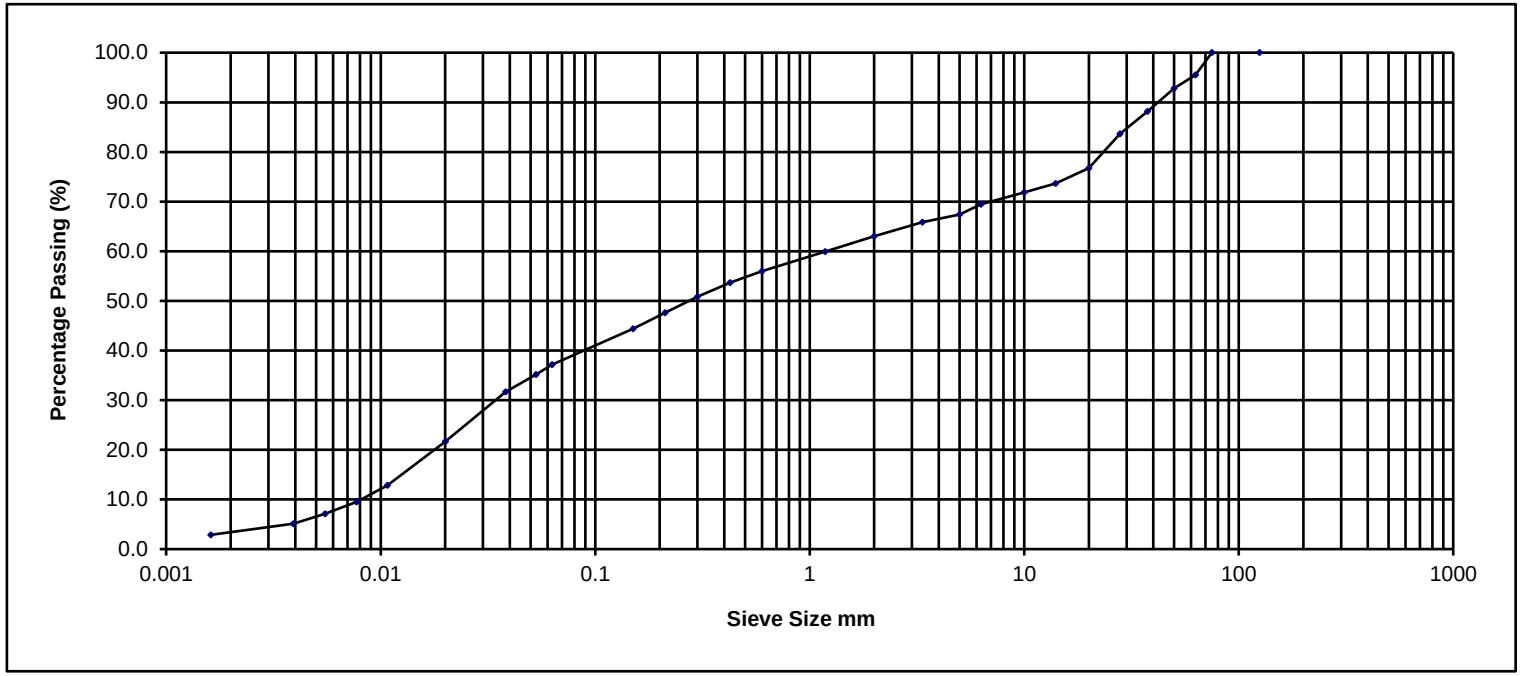


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Determination of Particle Size Distribution

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

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	95.5
50.000	92.8
37.500	88.2
28.000	83.7
20.000	76.7
14.000	73.7
10.000	71.8
6.300	69.4
5.000	67.4
3.350	65.9
2.000	63.0
1.180	60.0
0.600	56.0
0.425	53.7
0.300	50.8
0.212	47.6
0.150	44.4
0.063	37.2
0.053	35.2
0.038	31.7
0.020	21.7
0.011	12.8
0.008	9.5
0.006	7.1
0.004	5.1
0.002	2.9



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
2.9		34.3			25.8			32.5		4.5	0.0

Sample Description	Brown slightly sandy slightly gravelly clayey SILT.					Project No.	NMTL 3676
						BH/TP No.	BHPT1
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	BH
Operator	Js	Checked	Nc	Approved	Bc	Depth	0.5m
Date sample tested	21/11/2023						

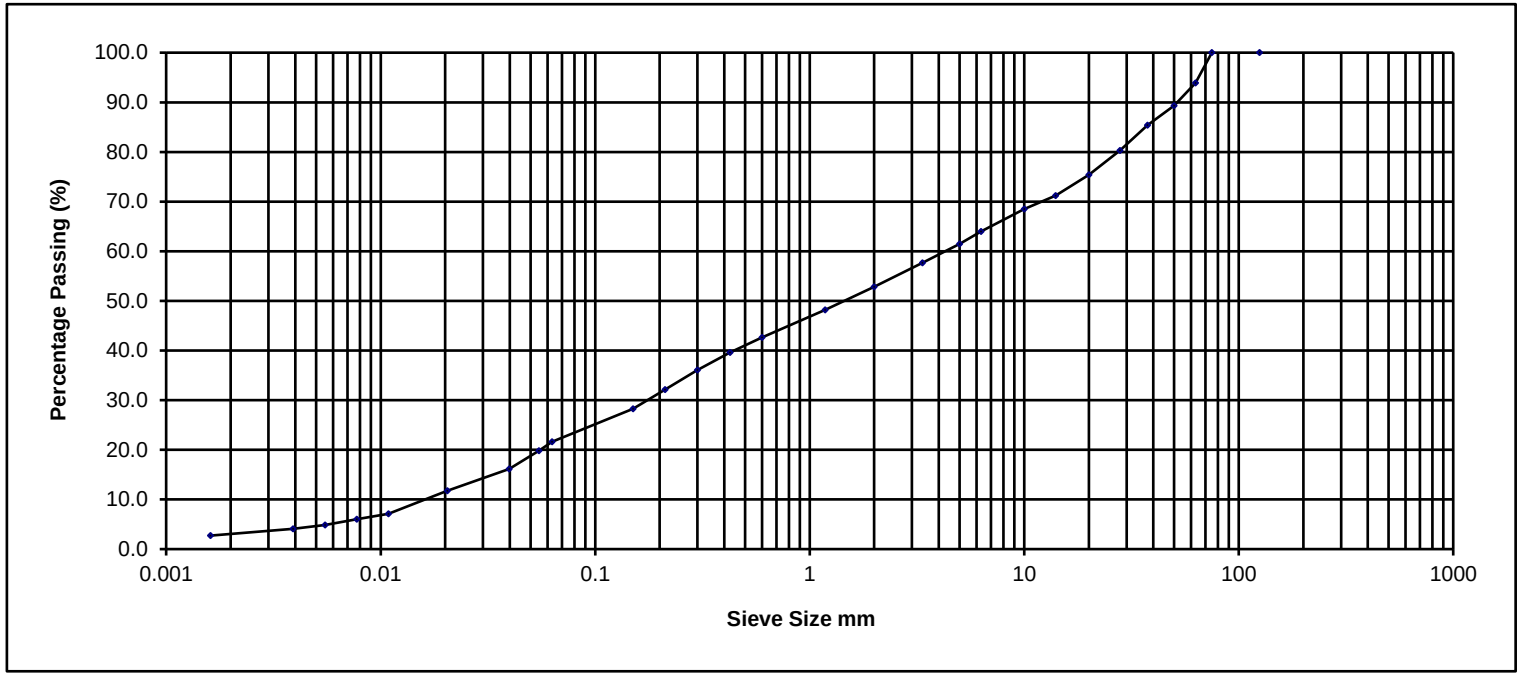
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Determination of Particle Size Distribution

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

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	93.9
50.000	89.3
37.500	85.4
28.000	80.3
20.000	75.4
14.000	71.2
10.000	68.5
6.300	64.0
5.000	61.5
3.350	57.7
2.000	52.8
1.180	48.2
0.600	42.7
0.425	39.6
0.300	36.0
0.212	32.1
0.150	28.3
0.063	21.6
0.055	19.8
0.040	16.2
0.020	11.8
0.011	7.1
0.008	6.0
0.006	4.8
0.004	4.1
0.002	2.7



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
2.7		18.9			31.2			41.1		6.1	0.0

Sample Description	Light brown slightly sandy gravellt clayey SILT.					Project No.	NMTL 3676
						BH/TP No.	BHPT1
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Date sample tested	21/11/2023	Depth	2.50m

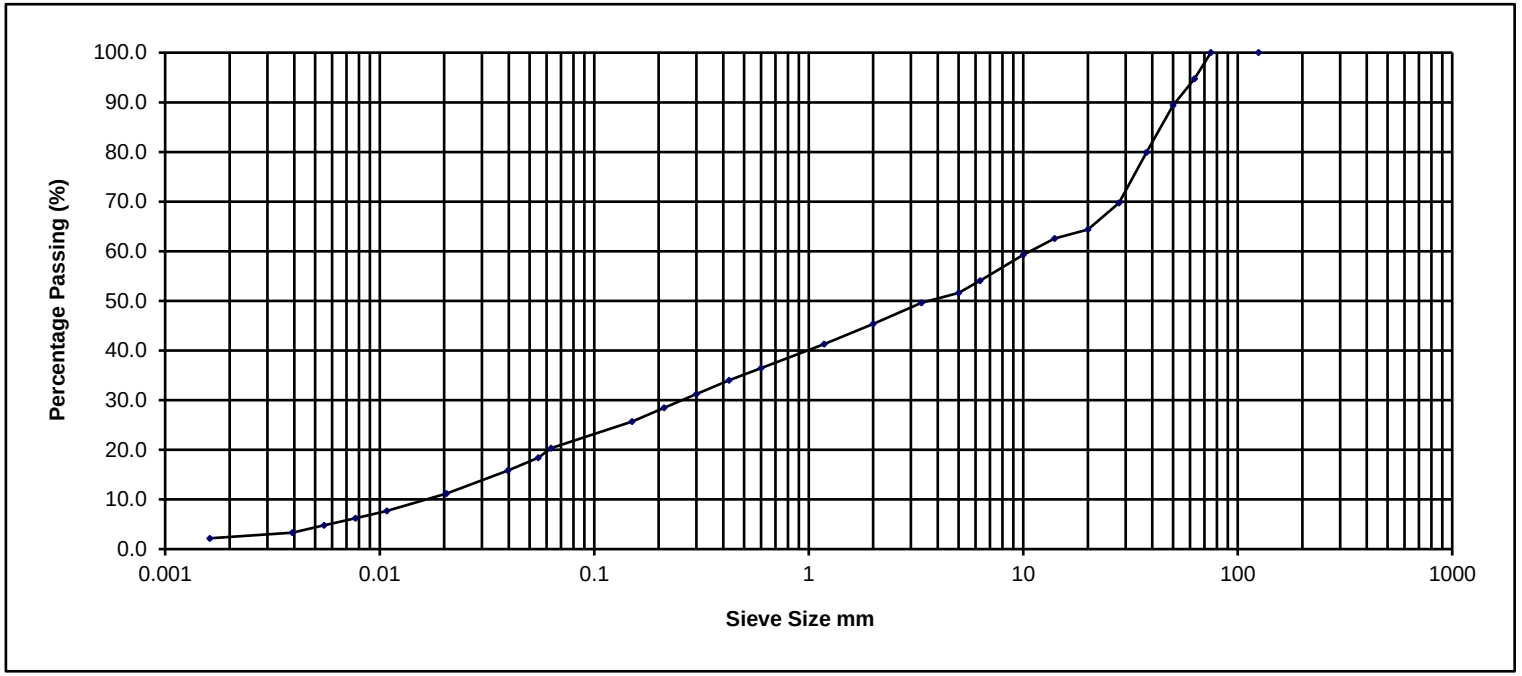
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Determination of Particle Size Distribution

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

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	94.7
50.000	89.4
37.500	79.9
28.000	69.7
20.000	64.4
14.000	62.6
10.000	59.3
6.300	54.0
5.000	51.6
3.350	49.6
2.000	45.4
1.180	41.3
0.600	36.4
0.425	34.0
0.300	31.3
0.212	28.4
0.150	25.7
0.063	20.3
0.055	18.4
0.040	15.8
0.020	11.2
0.011	7.7
0.008	6.2
0.006	4.8
0.004	3.3
0.002	2.2



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
2.2		18.1			25.1			49.4		5.3	0.0

Sample Description	Grey brown slightly sandy gravelly clayey SILT.					Project No.	NMTL 3676
						BH/TP No.	BHPT2
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Date sample tested	21/11/2023	Depth	1.50m

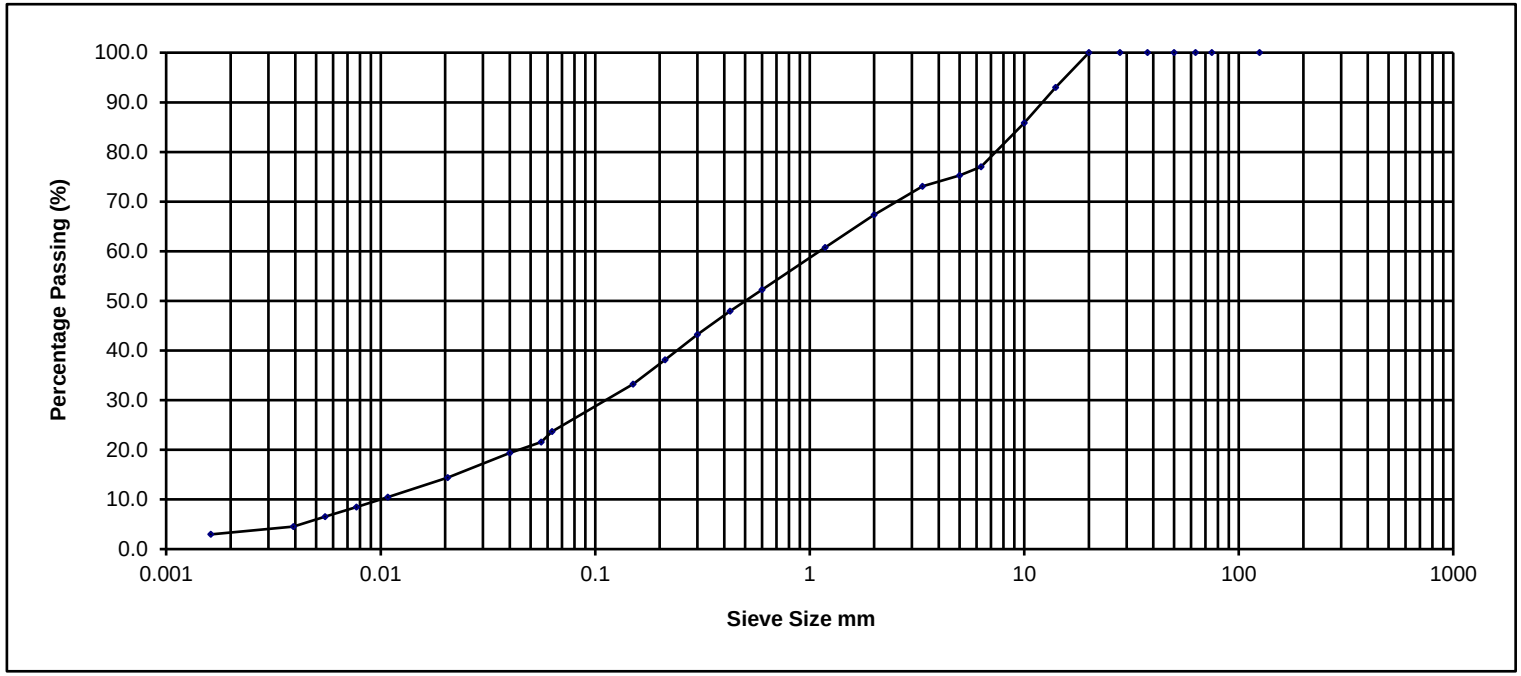
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Determination of Particle Size Distribution

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	93.0
10.000	85.9
6.300	77.0
5.000	75.3
3.350	73.1
2.000	67.3
1.180	60.7
0.600	52.2
0.425	48.0
0.300	43.2
0.212	38.2
0.150	33.2
0.063	23.7
0.056	21.5
0.040	19.4
0.021	14.4
0.011	10.5
0.008	8.5
0.006	6.5
0.004	4.5
0.002	3.0



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
3.0		20.7			43.6			32.7		0.0	0.0

Sample Description	Grey slightly gravelly sandy clayey SILT.					Project No.	NMTL 3676
						BH/TP No.	BHPT2
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Date sample tested	21/11/2023	Depth	2.30m

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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	94.4
50.000	90.0
37.500	83.6
28.000	79.9
20.000	75.1
14.000	69.1
10.000	66.9
6.300	62.4
5.000	61.7
3.350	60.3
2.000	57.7
1.180	54.1
0.600	49.4
0.425	46.5
0.300	42.8
0.212	38.2
0.150	33.6
0.063	25.3
0.056	23.2
0.040	19.1
0.021	10.9
0.011	6.6
0.008	3.9
0.006	2.7
0.004	2.3
0.002	1.0



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
1.0		24.2			32.4			36.7		5.6	0.0

Sample Description	Brown/orange slightly sandy gravelly clayey SILT.					Project No.	NMTL 3676
						BH/TP No.	TPMM
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Date sample tested	21/11/2023	Depth	1.50m

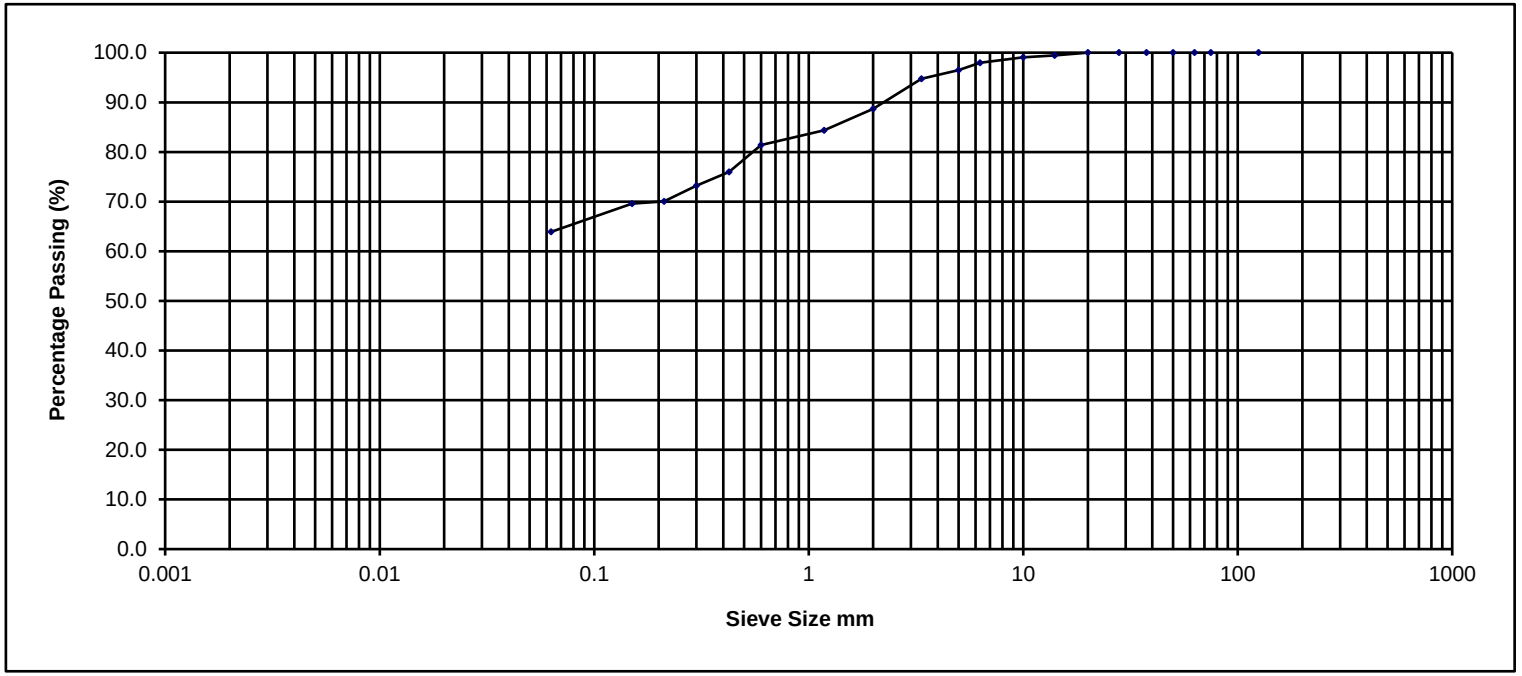
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Determination of Particle Size Distribution

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	99.5
10.000	99.1
6.300	98.0
5.000	96.5
3.350	94.7
2.000	88.7
1.180	84.3
0.600	81.4
0.425	76.0
0.300	73.2
0.212	70.0
0.150	69.6
0.063	63.9



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		63.9			24.8			11.3		0.0	0.0

Sample Description	Dark brown black PEAT			Project No.	NMTL 3676
	Sands and gravels are small fibers and pieces of wood fragment.			BH/TP No.	TPR1
Project	Cunlaghfadda Wind Farm		GII PROJECT ID:13116-08-23	Sample No.	B
Operator Js	Checked Nc	Approved Bc	Date sample tested 21/11/2023	Depth	1.50m

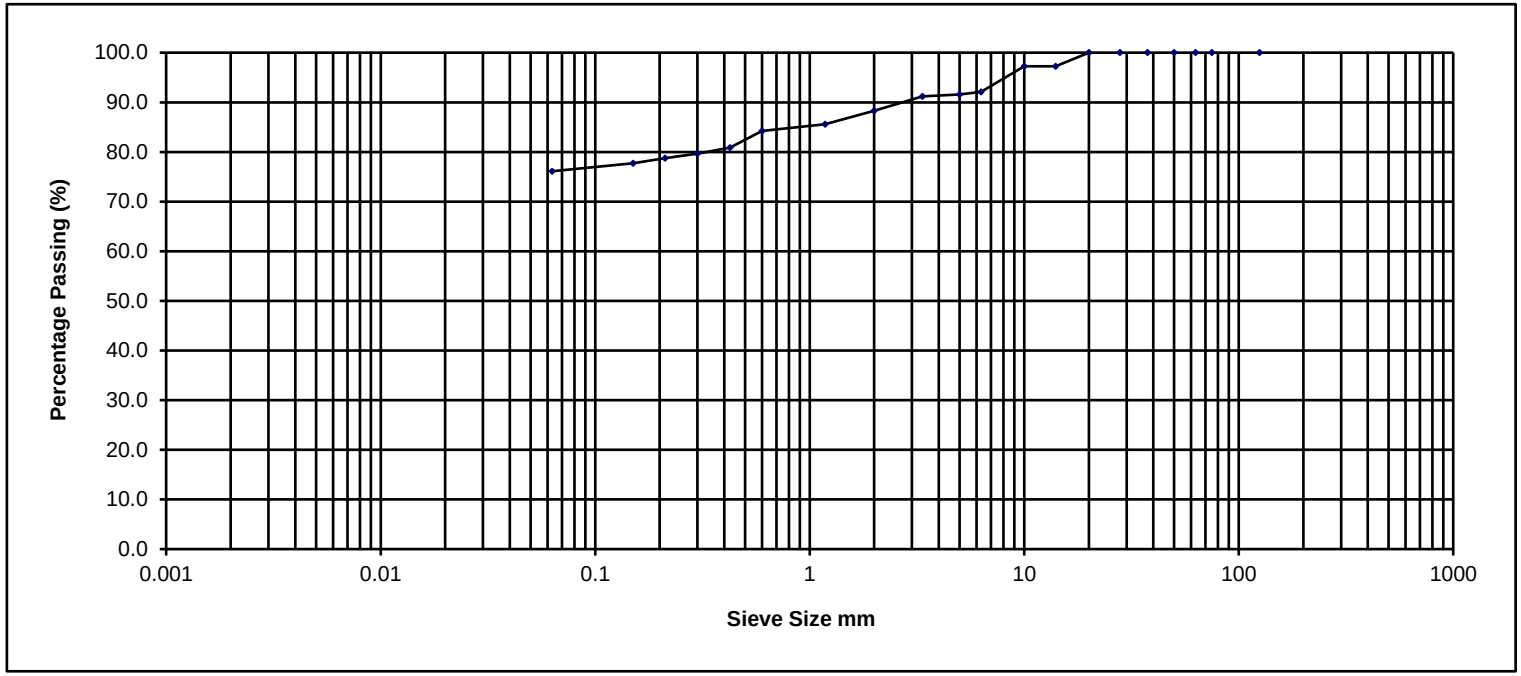
NM TL Ltd

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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	97.2
10.000	97.2
6.300	92.1
5.000	91.6
3.350	91.2
2.000	88.3
1.180	85.6
0.600	84.3
0.425	80.9
0.300	79.7
0.212	78.7
0.150	77.7
0.063	76.1



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		76.1			12.2			11.7		0.0	0.0

Sample Description	Brown slighly fiberous PEAT	Project No.	NMTL 3676
	Sands and gravels are small fibres and pieces of wood fragment.	BH/TP No.	TPR3
Project	Cunlaghfadda Wind Farm GII PROJECT ID:13116-08-23	Sample No.	B
Operator Js	Checked Nc / Approved Bc / Date sample tested 21/11/2023	Depth	1.50m

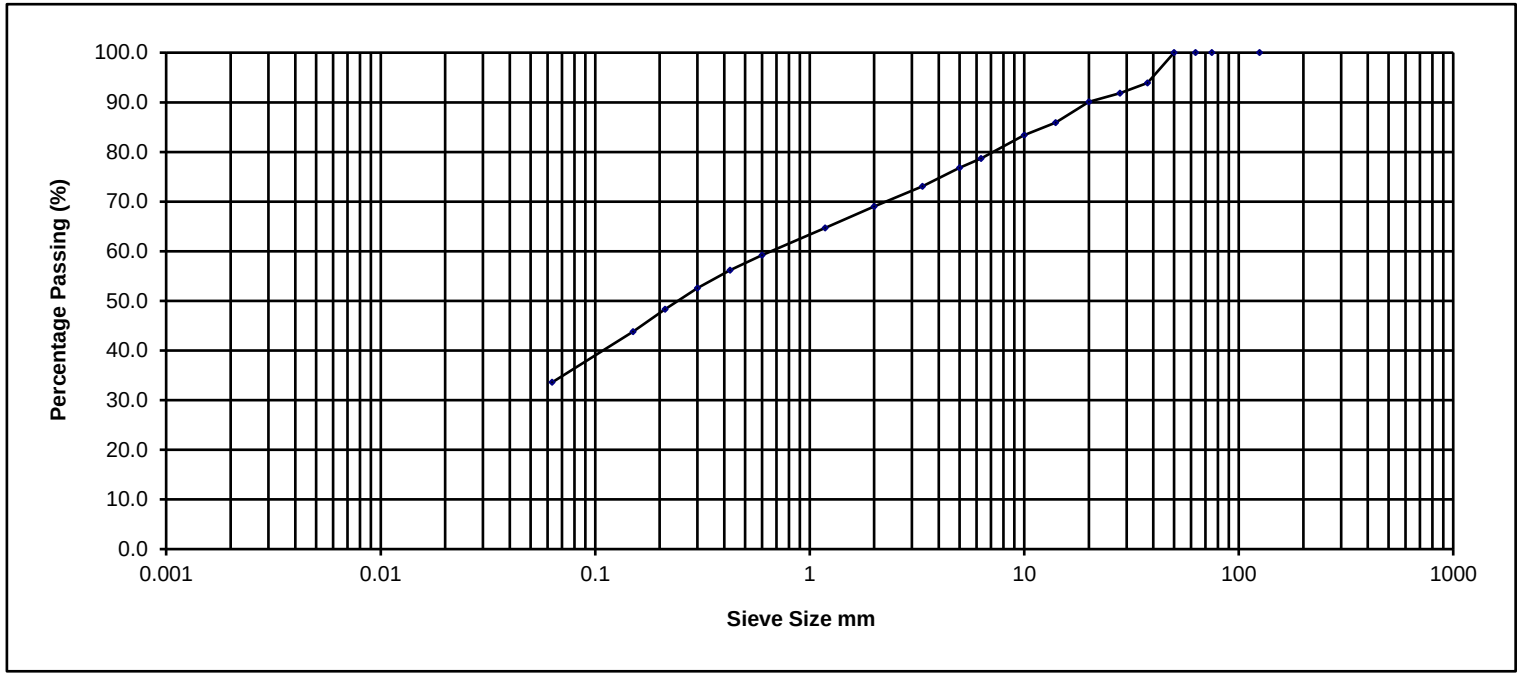
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Determination of Particle Size Distribution

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	93.9
28.000	91.9
20.000	90.1
14.000	85.9
10.000	83.4
6.300	78.7
5.000	76.8
3.350	73.0
2.000	69.0
1.180	64.7
0.600	59.2
0.425	56.2
0.300	52.5
0.212	48.3
0.150	43.8
0.063	33.6



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		33.6			35.4			31.0		0.0	0.0

Sample Description	Dark brown slightly gravelly sandy SILT/CLAY.					Project No.	NMTL 3676
						BH/TP No.	TPR3
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Depth	2.50m

Date sample tested 21/11/2023

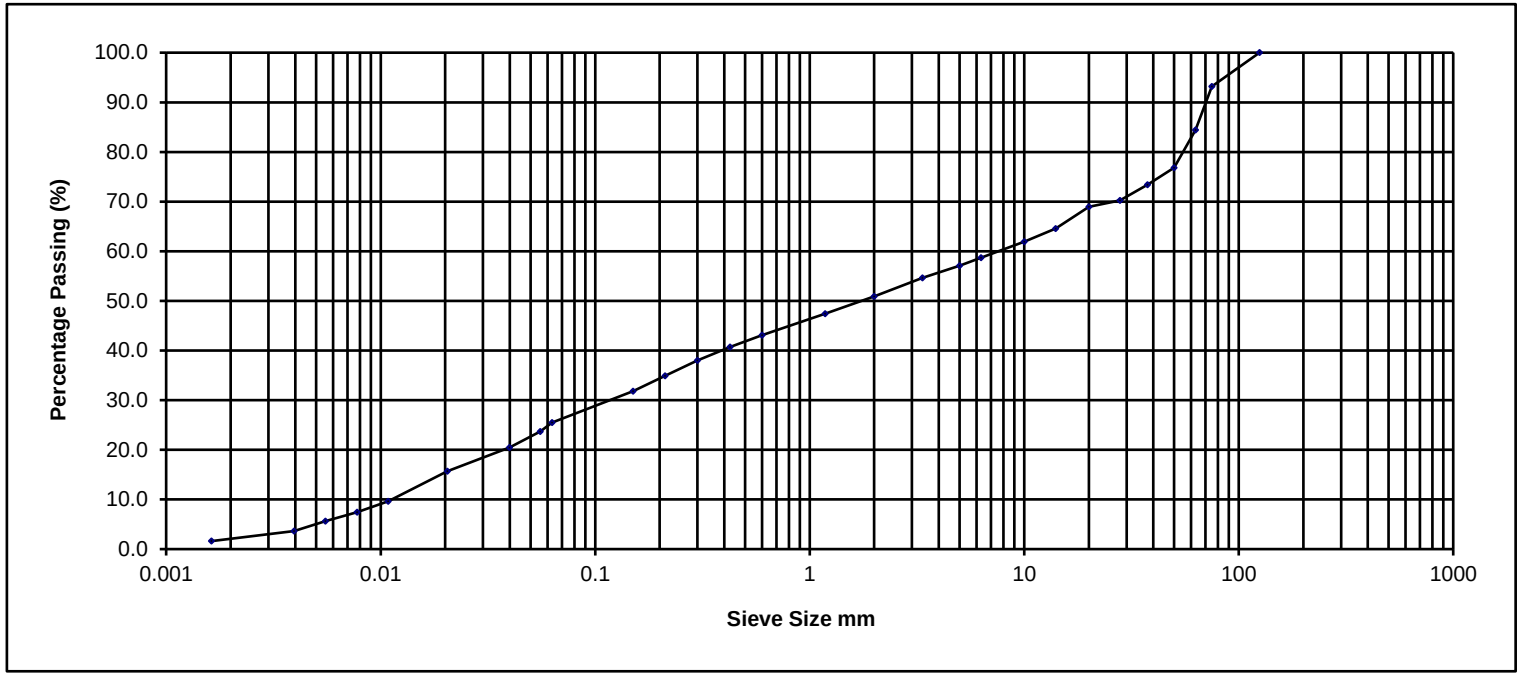
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Determination of Particle Size Distribution

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

Sieve Size mm	% Passing
125.000	100.0
75.000	93.2
63.000	84.4
50.000	76.8
37.500	73.4
28.000	70.2
20.000	68.9
14.000	64.5
10.000	61.9
6.300	58.7
5.000	57.1
3.350	54.7
2.000	50.9
1.180	47.4
0.600	43.1
0.425	40.7
0.300	38.0
0.212	34.9
0.150	31.8
0.063	25.5
0.055	23.7
0.040	20.5
0.020	15.7
0.011	9.6
0.008	7.4
0.006	5.6
0.004	3.6
0.002	1.6



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
1.6		23.9			25.4			33.5		15.6	0.0

Sample Description	Grey/brown slightly sandy slightly gravelly clayey SILT.					Project No.	NMTL 3676
						BH/TP No.	TPR4
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Depth	1.50m

Date sample tested 21/11/2023

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	89.5
63.000	84.0
50.000	78.2
37.500	74.8
28.000	70.3
20.000	66.0
14.000	60.7
10.000	58.5
6.300	54.8
5.000	53.2
3.350	51.1
2.000	48.4
1.180	45.7
0.600	42.4
0.425	40.8
0.300	38.8
0.212	36.7
0.150	34.5
0.063	30.1
0.053	29.2
0.038	26.8
0.020	20.0
0.011	13.9
0.008	11.6
0.005	9.2
0.004	7.8
0.002	5.2



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
5.2		25.0			18.3			35.6		16.0	0.0

Sample Description: Grey slightly sandy gravelly SILT/CLAY.

Project: Cunlaghfadda Wind Farm

GII PROJECT ID:13116-08-23

Project No.	NMTL 3676
BH/TP No.	TPR5
Sample No.	B
Depth	1.50m

Operator	Checked	Approved	Date sample tested
Js	Nc	Bc	21/11/2023

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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	99.3
5.000	99.3
3.350	99.1
2.000	98.5
1.180	97.8
0.600	97.0
0.425	96.7
0.300	96.4
0.212	96.1
0.150	95.9
0.063	95.5



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		95.5			2.9			1.5		0.0	0.0

Sample Description	Dark brown/black slightly fiberous PEAT	Project No.	NMTL 3676
	Silts sands and gravels are particles fine medium and coarse fibers.	BH/TP No.	TPR6
Project	Cunlaghfadda Wind Farm GII PROJECT ID:13116-08-23	Sample No.	B
Operator Js	Checked Nc / Approved Bc / Date sample tested 21/11/2023	Depth	1.50m

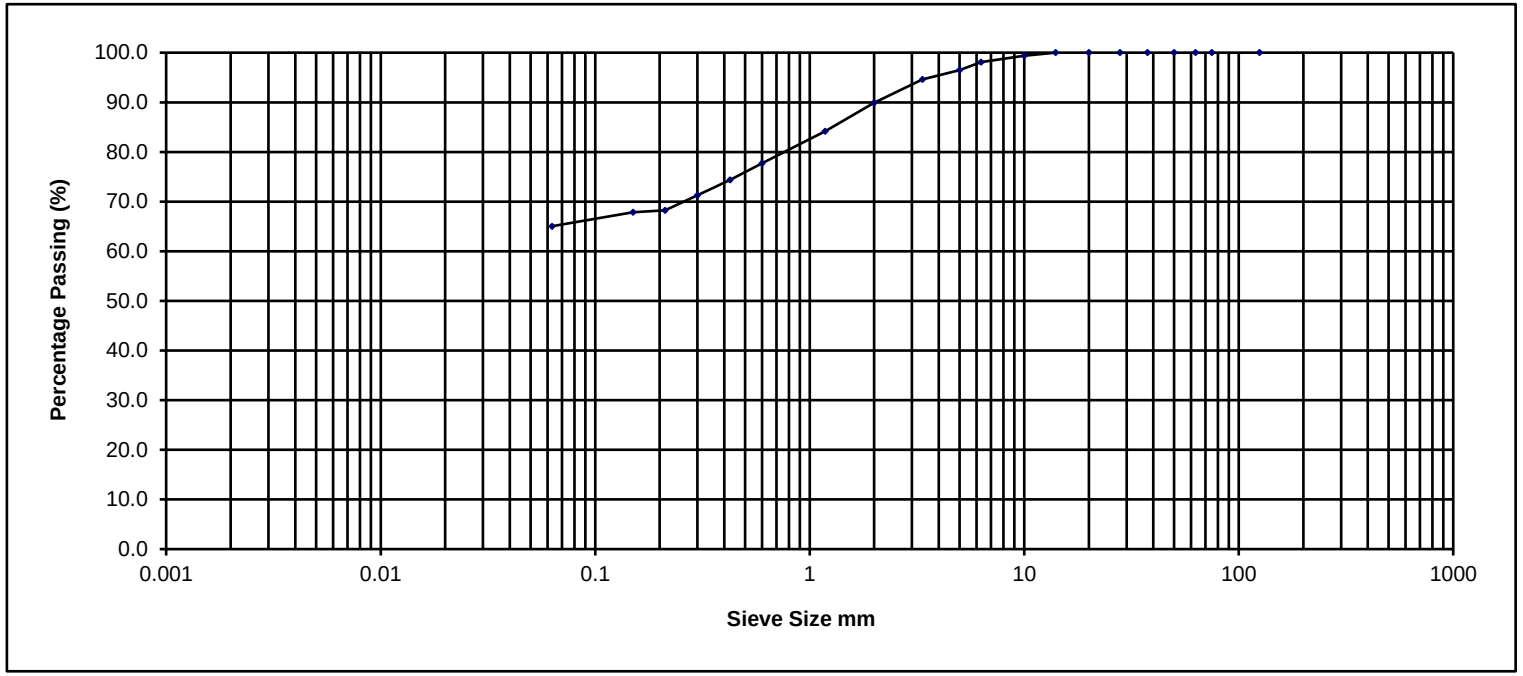
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Determination of Particle Size Distribution

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	99.4
6.300	98.1
5.000	96.5
3.350	94.6
2.000	89.9
1.180	84.2
0.600	77.7
0.425	74.4
0.300	71.2
0.212	68.3
0.150	67.8
0.063	65.0



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		65.0			24.9			10.1		0.0	0.0

Sample Description	Dark brown/black slightly fiberous PEAT	Project No.	NMTL 3676
	Silts sands and gravels are particles fine medium and coarse fibers	BH/TP No.	TPR6
Project	Cunlaghfadda Wind Farm GII PROJECT ID:13116-08-23	Sample No.	B
Operator Js	Checked Nc / Approved Bc / Date sample tested 21/11/2023	Depth	2.50m

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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	99.6
10.000	99.3
6.300	98.9
5.000	98.0
3.350	97.3
2.000	95.0
1.180	91.9
0.600	89.2
0.425	87.7
0.300	86.1
0.212	84.6
0.150	84.4
0.063	81.5



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		81.5			13.5			5.0		0.0	0.0

Sample Description	Dark brown/black slightly fiberous PEAT	Project No.	NMTL 3676
	Silts sands and gravels are particles fine medium and coarse fibers	BH/TP No.	TPR7
Project	Cunlaghfadda Wind Farm GII PROJECT ID:13116-08-23	Sample No.	B
Operator Js	Checked Nc / Approved Bc / Date sample tested 21/11/2023	Depth	0.50m

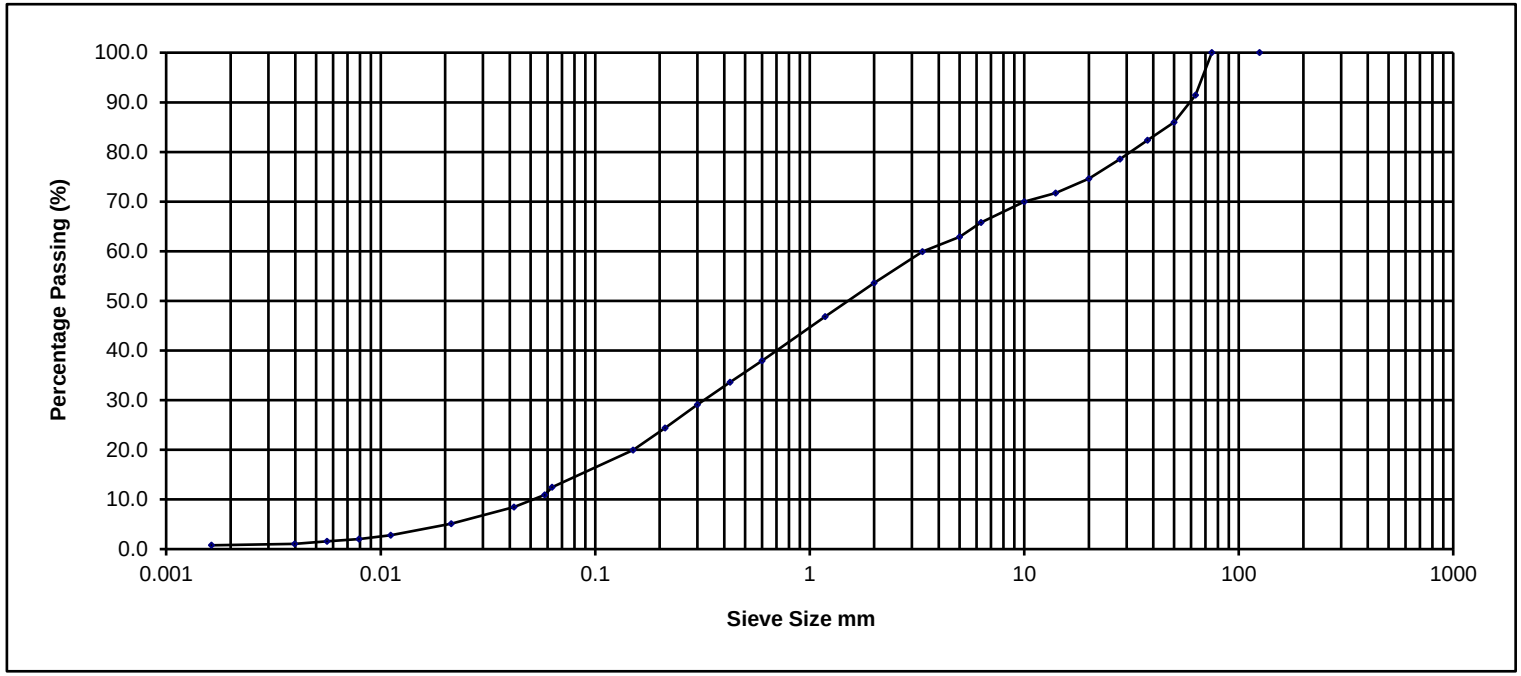
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Determination of Particle Size Distribution

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

Sieve Size mm	% Passing
125.000	100.0
75.000	100.0
63.000	91.4
50.000	85.9
37.500	82.3
28.000	78.6
20.000	74.6
14.000	71.7
10.000	70.0
6.300	65.8
5.000	62.9
3.350	59.9
2.000	53.6
1.180	46.9
0.600	37.9
0.425	33.6
0.300	29.1
0.212	24.4
0.150	19.9
0.063	12.5
0.058	10.9
0.042	8.5
0.021	5.1
0.011	2.8
0.008	2.0
0.006	1.5
0.004	1.1
0.002	0.8



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
0.8		11.7			41.2			37.8		8.6	0.0

Sample Description	Grey brown silty gravelly SAND.					Project No.	NMTL 3676
						BH/TP No.	TPR8
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Depth	1.50m

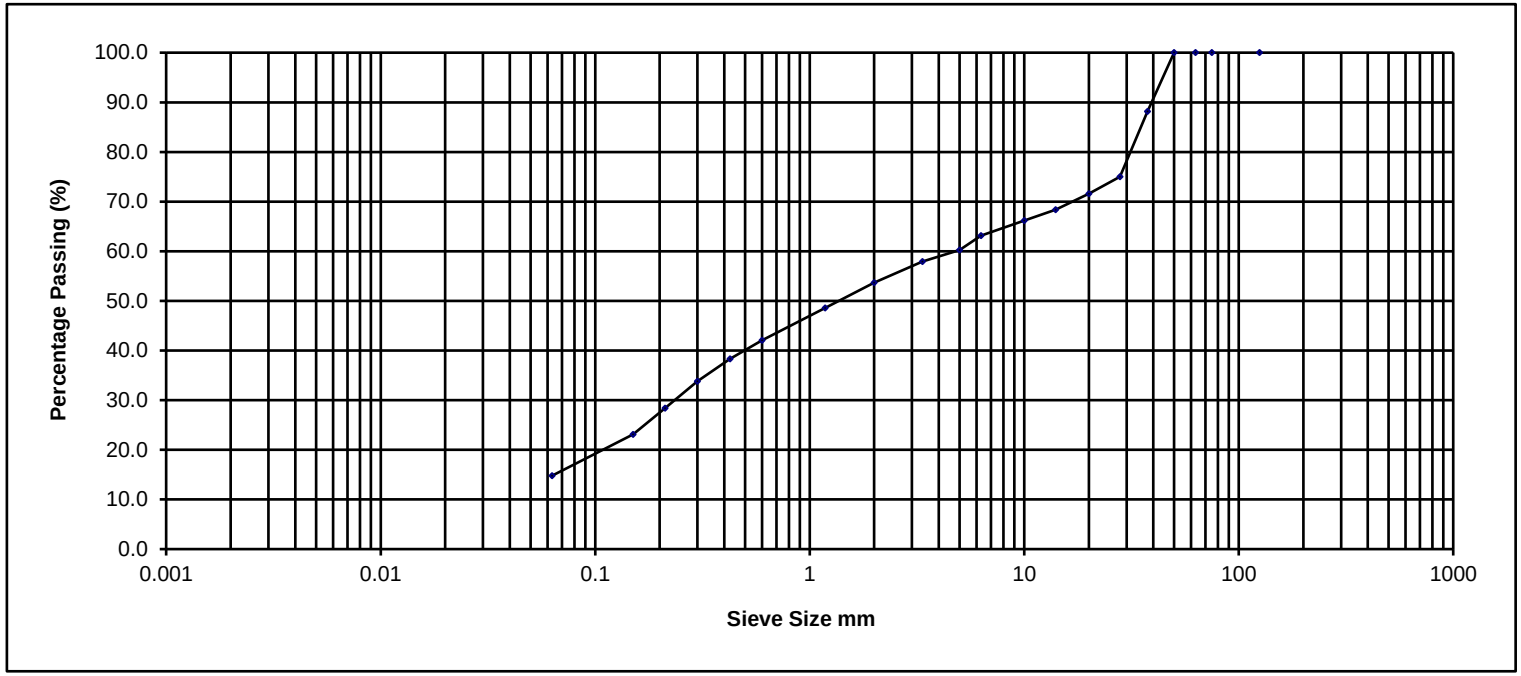
Date sample tested 21/11/2023

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	88.2
28.000	75.0
20.000	71.6
14.000	68.4
10.000	66.2
6.300	63.1
5.000	60.3
3.350	57.9
2.000	53.7
1.180	48.6
0.600	42.0
0.425	38.3
0.300	33.8
0.212	28.4
0.150	23.1
0.063	14.8



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		14.8			38.9			46.3		0.0	0.0

Sample Description	Grey/brown silty very sandy GRAVEL.			Project No.	NMTL 3676
				BH/TP No.	TPR8
Project	Cunlaghfadda Wind Farm		GII PROJECT ID:13116-08-23	Sample No.	B
Operator Js	Checked Nc	Approved Bc	Date sample tested 21/11/2023	Depth	2.50m

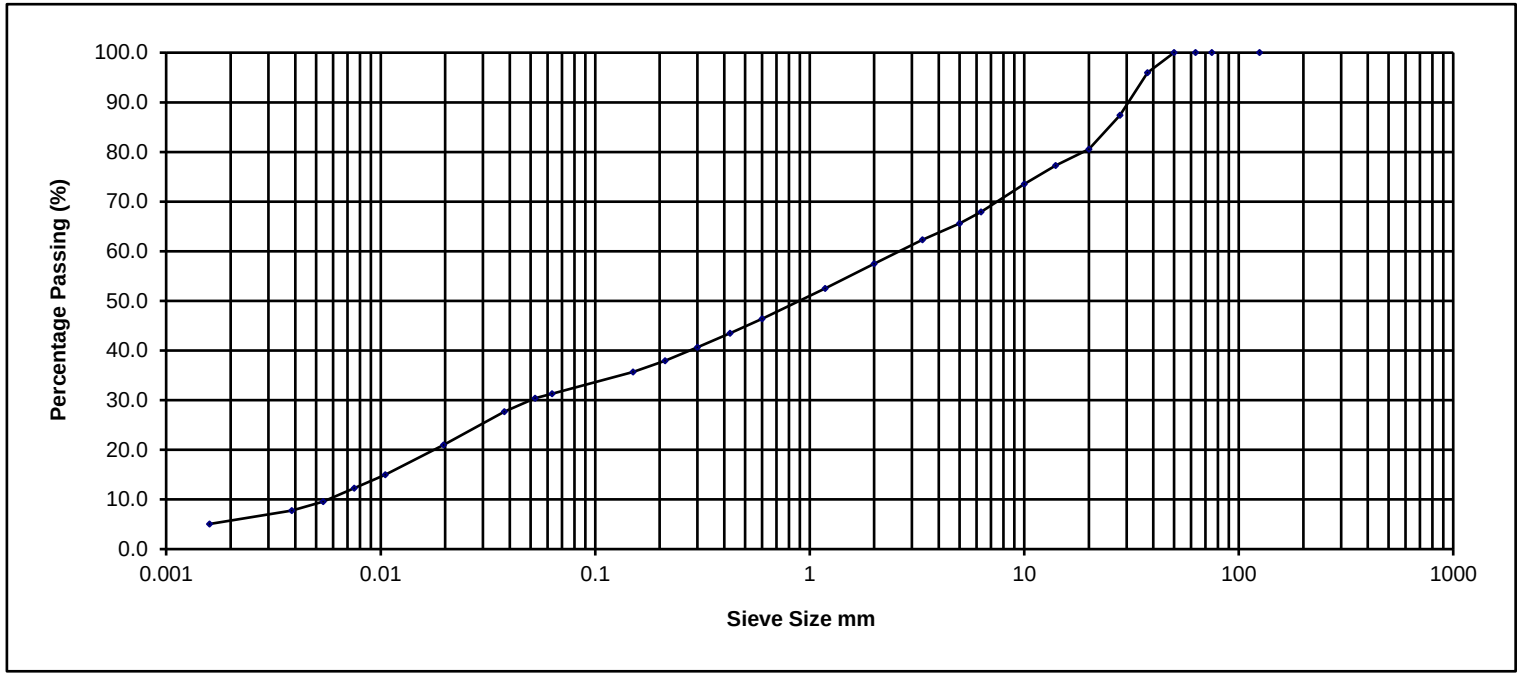
NM TL Ltd

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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	87.4
20.000	80.6
14.000	77.3
10.000	73.5
6.300	67.9
5.000	65.6
3.350	62.3
2.000	57.5
1.180	52.5
0.600	46.4
0.425	43.5
0.300	40.7
0.212	38.0
0.150	35.7
0.063	31.3
0.052	30.4
0.038	27.7
0.020	21.0
0.010	15.0
0.008	12.3
0.005	9.6
0.004	7.8
0.002	5.1



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
5.1		26.2			26.2			42.5		0.0	0.0

Sample Description	Grey brown slightly sandy gravelly CLAY/SILT					Project No.	NMTL 3676
						BH/TP No.	TPSS1
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Depth	1.50m

Date sample tested 21/11/2023

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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	94.6
63.000	87.5
50.000	81.3
37.500	77.6
28.000	69.7
20.000	62.5
14.000	58.3
10.000	53.8
6.300	48.3
5.000	45.0
3.350	42.1
2.000	37.2
1.180	32.6
0.600	27.3
0.425	24.7
0.300	22.0
0.212	19.3
0.150	16.8
0.063	12.3



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		12.3			24.9			50.4		12.5	0.0

Sample Description	Grey brown silty very sandy GRAVEL.					Project No.	NMTL 3676
						BH/TP No.	TPT1
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Date sample tested	21/11/2023	Depth	2.50m

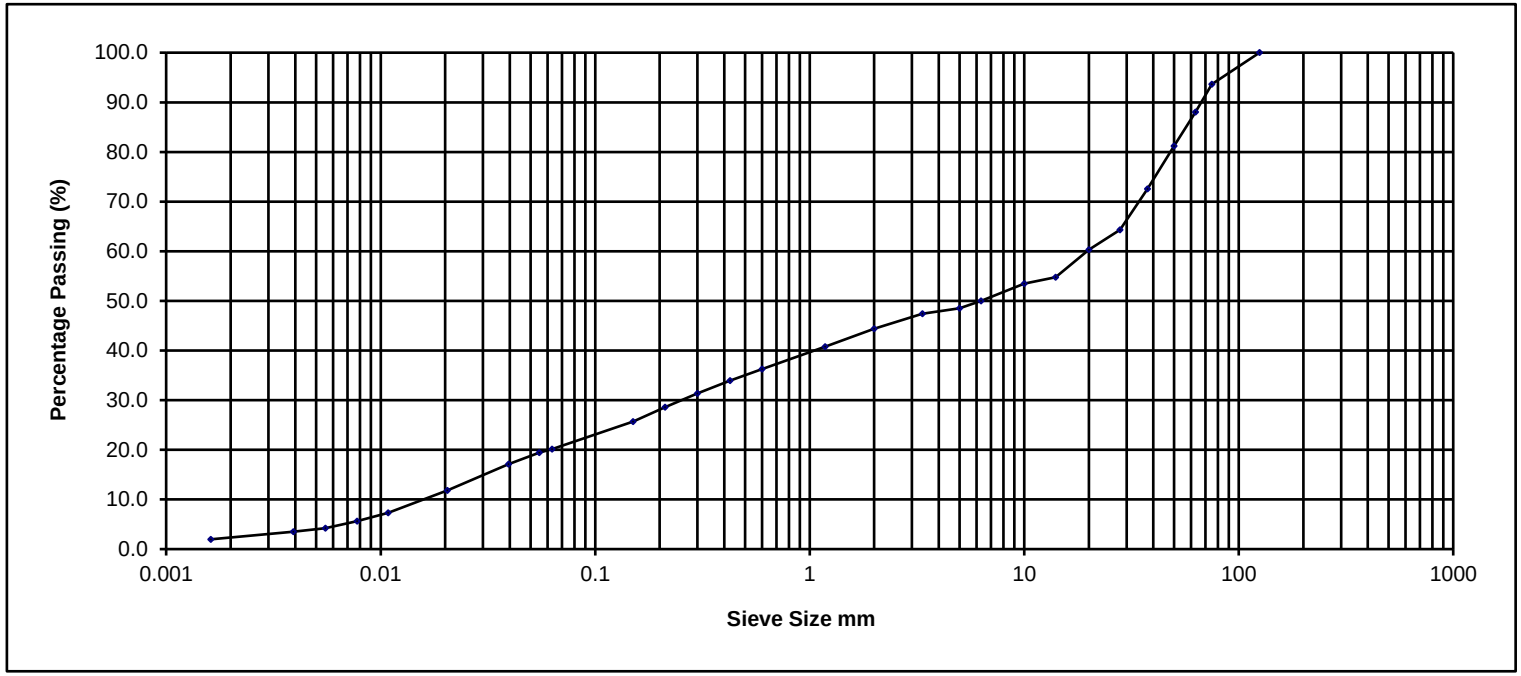
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Determination of Particle Size Distribution

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

Sieve Size mm	% Passing
125.000	100.0
75.000	93.7
63.000	88.1
50.000	81.2
37.500	72.6
28.000	64.3
20.000	60.3
14.000	54.8
10.000	53.5
6.300	50.0
5.000	48.5
3.350	47.4
2.000	44.4
1.180	40.8
0.600	36.3
0.425	34.0
0.300	31.4
0.212	28.6
0.150	25.7
0.063	20.2
0.055	19.4
0.039	17.1
0.020	11.8
0.011	7.3
0.008	5.6
0.006	4.2
0.004	3.5
0.002	2.0



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
2.0		18.2			24.2			43.7		11.9	0.0

Sample Description	Brown slghtly sandy gravelly clayey SILT.					Project No.	NMTL 3676
						BH/TP No.	TPT2
Project	Cunlaghfadda Wind Farm			GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Depth	1.50m

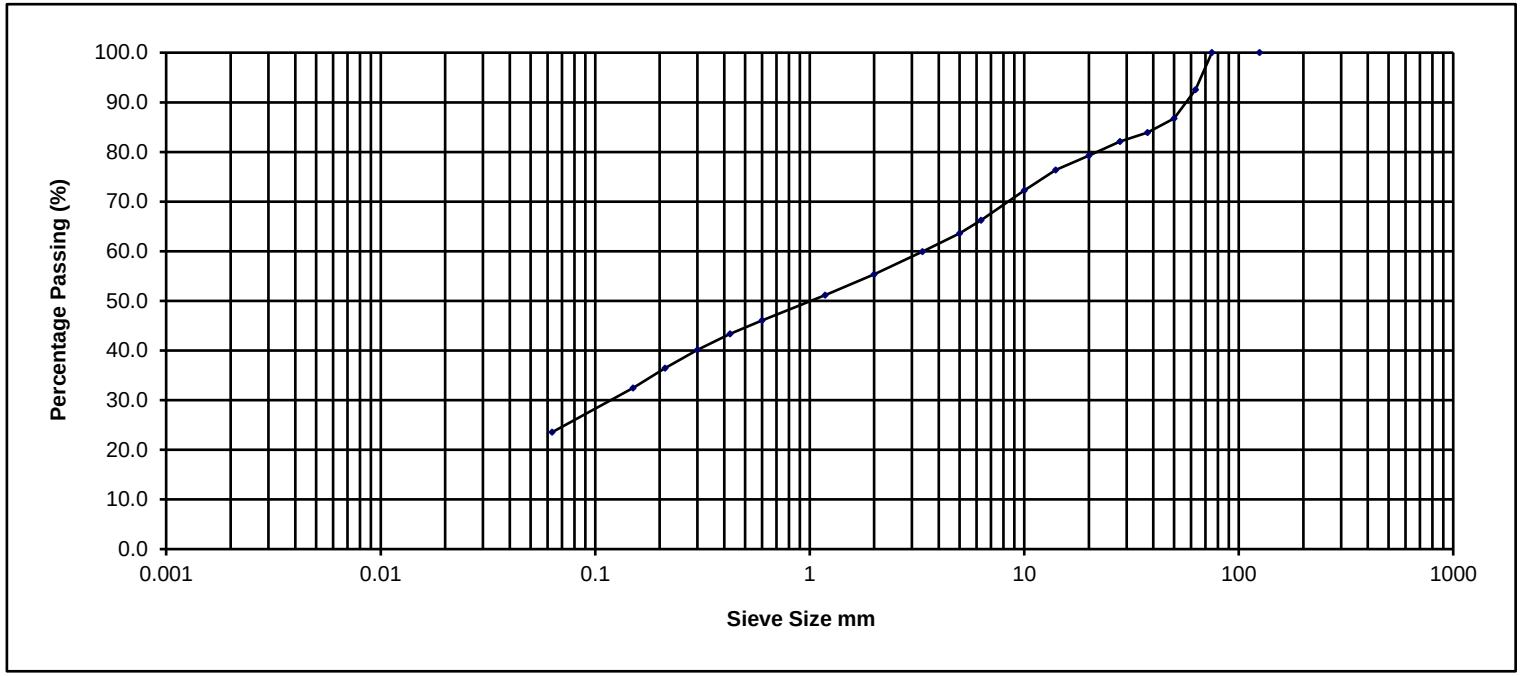
Date sample tested 21/11/2023

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	92.5
50.000	86.7
37.500	83.9
28.000	82.1
20.000	79.3
14.000	76.4
10.000	72.2
6.300	66.2
5.000	63.6
3.350	60.0
2.000	55.4
1.180	51.2
0.600	46.1
0.425	43.3
0.300	40.2
0.212	36.5
0.150	32.4
0.063	23.5



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		23.5			31.8			37.2		7.5	0.0

Sample Description	Brown slightly sandy gravelly CLAY/SILT.							Project No.	NMTL 3676
								BH/TP No.	TPT3
Project	Cunlaghfadda Wind Farm					GII PROJECT ID:13116-08-23		Sample No.	B
Operator	Js	Checked	Nc	Approved	Bc	Date sample tested	21/11/2023	Depth	1.50m

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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	98.5
5.000	92.8
3.350	89.3
2.000	82.5
1.180	73.9
0.600	62.9
0.425	58.0
0.300	53.8
0.212	50.6
0.150	48.5
0.063	45.7



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		45.7			36.8			17.5		0.0	0.0

Sample Description	Dark brown/black fiberous PEATwith decompsed wood fragments	Project No.	NMTL 3676
	Silts sands and gravels are fine medium coarse fibers and decomposed wood.	BH/TP No.	TPT4
Project	Cunlaghfadda Wind Farm GII PROJECT ID:13116-08-23	Sample No.	B
Operator Js	Checked Nc / Approved Bc / Date sample tested 21/11/2023	Depth	1.50m

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	97.1
10.000	93.2
6.300	86.4
5.000	83.5
3.350	79.6
2.000	74.5
1.180	69.9
0.600	65.1
0.425	63.0
0.300	61.2
0.212	59.6
0.150	57.9
0.063	52.8



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
		52.8			21.6			25.5		0.0	0.0

Sample Description: Grey slightly sandy slightly gravelly SILT/CLAY.

Project: Cunlaghfadda Wind Farm — GII PROJECT ID:13116-08-23

Operator	Checked	Approved	Date sample tested
Js	Nc	Bc	21/11/2023

Project No.	NMTL 3676
BH/TP No.	TPT5
Sample No.	B
Depth	1.50m

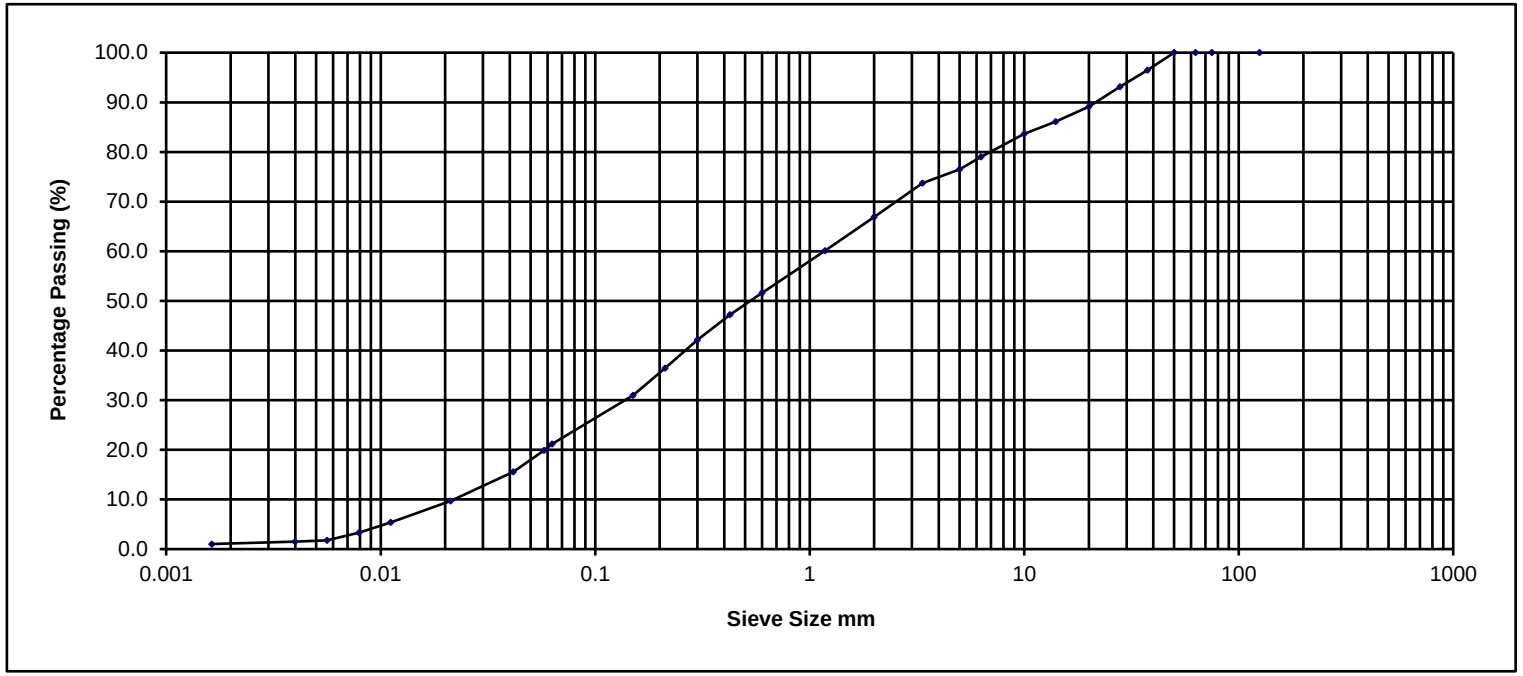
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Determination of Particle Size Distribution

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	96.5
28.000	93.1
20.000	89.1
14.000	86.1
10.000	83.7
6.300	79.0
5.000	76.5
3.350	73.7
2.000	66.9
1.180	60.1
0.600	51.6
0.425	47.2
0.300	42.1
0.212	36.5
0.150	31.0
0.063	21.2
0.058	19.9
0.042	15.6
0.021	9.7
0.011	5.4
0.008	3.3
0.006	1.8
0.004	1.5
0.002	1.0



Percentage Particle Size

Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder
		Silt			Sand			Gravel			
1.0		20.2			45.7			33.1		0.0	0.0

Sample Description: Grey brown slightly gravelly sandy slightly clayey SILT.

Project: Cunlaghfadda Wind Farm — GII PROJECT ID:13116-08-23

Operator	Checked	Approved	Date sample tested
Js	Nc	Bc	21/11/2023

Project No.	NMTL 3676
BH/TP No.	TPT7
Sample No.	B
Depth	1.50m

NMTL Ltd

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