APPENDIX 8-1

GEOTECHNICAL AND PEAT STABILITY ASSESSMENT REPORT

FEHILY TIMONEY

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

GEOTECHNICAL & PEAT STABILITY REPORT

MAUGHANACLEA RENEWABLE ENERGY DEVELOPMENT

Prepared for: **MKO Ltd**

Date: **March 2026**

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GEOTECHNICAL & PEAT STABILITY ASSESSMENT REPORT
MAUGHANACLEA RENEWABLE ENERGY DEVELOPMENT

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Abstract: Fehily Timoney and Company (FT) were engaged by MKO to undertake a geotechnical assessment of the proposed Maughanaclea Renewable Energy Development site with respect to peat stability. As part of the geotechnical assessment of the Proposed Project, FT completed walkover surveys at the Site. 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) was engaged by MKO Ltd to undertake a geotechnical and peat stability assessment of the proposed Maughanaclea Renewable Energy Development site (the 'Proposed Project'), located in west Co. Cork. In accordance with Wind Energy Guidelines compiled by the Department of the Environment, Heritage and Local Government (Wind Energy Development Guidelines, DoEHLG, 2006), where peat >0.5m thickness is present on a proposed wind farm development, a peat stability assessment is required.

A walkover survey including intrusive peat depth probing, trial pits, 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 209 locations, show that the Proposed Project site has an acceptable margin of safety, a low risk of peat failure 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 Proposed Project comprises 14 no. wind turbines and associated infrastructure. A detailed description of the Proposed Project is included in Chapter 4 of the EIAR.

The area of the southern turbine cluster within the Proposed Wind Farm site slopes steadily from the south to the north towards the Owvane River, ranging in elevation from 134 to 390mOD. The northern turbine cluster area of the Proposed Wind Farm site generally slopes to the south, except for the area around T01 and T02 which slopes north, and T04 which slopes west. Land use within the Proposed Wind Farm site comprises predominantly commercial forestry, with agricultural pastures and rough grazing also present.

Slope inclinations at the main infrastructure locations range from 3 to 12 degrees. The undulating topography with relatively steep slopes has resulted in relatively thin peat deposits across the site. Ground conditions comprised mainly of thin blanket peat overlying clay and gravel overlying bedrock.

Between July 2024 and September 2025, 640 no. peat depth readings were taken within the Site by MKO, HES, FT and Enerco. Peat depth recorded during the site walkovers and from the ground investigation ranged from 0.0 to 4.5m with an average peat depth of 0.65m. 78% of the probes recorded peat depths of less than 1.0m with 95% of peat depth probes recorded peat depths of less than 2.0m. A number of localised readings recorded peat depths from 2.0 to 4.5m. The average peat depth at the proposed turbine locations is 0.8m.

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 the Proposed Project, which analysed the turbine locations, access roads and related infrastructure, resulted in FoS above the minimum acceptable value of 1.3 and hence the Proposed Project 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 Proposed Project 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 P24-118-0600-0002.

In summary, the Proposed Project site has an acceptable margin of safety and therefore is considered to be at **low** risk of peat failure subject to the specified mitigation measures 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, MSc in Geotechnical Engineering). Ian is a Technical Director with Fehily Timoney and has 25 years' experience in geotechnical engineering.

2.2 Project Description

FT was engaged in June 2024 by MKO to undertake a geotechnical and peat stability assessment of the Proposed Project which comprises the Proposed Wind Farm site and the Proposed Grid Connection.

The Proposed Wind Farm site is located approximately 2.5km east of Kealkill, Co. Cork.

The Proposed Wind Farm site comprises predominantly blanket peatland and commercial forestry. The surrounding landscape to the south and north is rolling hillsides with land-use comprising forestry, agricultural land and blanket peatland.

The Proposed Project will comprise 14 no. wind turbines and associated hardstanding areas, 1 no. electricity substation, 4 no. borrow pits, 3 no. temporary construction compounds, upgrade of existing roads, construction of new site access roads, underground cabling connecting to the existing Dunmanway 110kV substation, road widening and accommodation works along the turbine delivery route, 1 no. meteorological mast, site drainage and all associated work as described in Chapter 4 of the EIAR.

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 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 the presence of a large area of deep, soft peat, the presence of 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. There are only localised areas of deep peat on the Proposed Wind Farm Site, and there are no works proposed close to concave breaks in slope in areas of deep peat.

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. The existing drainage, in conjunction with the Proposed Development drainage, will be maintained during construction to avoid the potential for a similar failure to that on Shass Mountain, which occurred following heavy rainfall, and this is referenced in the Risk Assessments for the turbines/access roads. However, it should be noted that the peat depth at Shass Mountain was significantly deeper (up to 5m) than the majority of the peat depths recorded across the Proposed Wind Farm 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.

It is also noted that there have been numerous wind farms successfully constructed on blanket bog sites over the past 15 years with any issues relating to peat failure, such as Galway Wind Park and Arderroo Wind Farm (both Co. Galway) and Slievecallan Wind Farm (Co. Clare).

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 and depth of ground investigation and peat stability analysis by FT have been undertaken in accordance with guidance within PLHRAG (2nd Edition, Scottish Government, 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 as shown in Drawing 24-118-600-0001, with additional detail at infrastructure locations. The peat stability assessment is undertaken to identify peat slopes 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, involving the review of publicly available soils and geology maps, records of historical peat failures, aerial photography.

(2) Site reconnaissance including shear strength and peat depth measurements undertaken following initial multidisciplinary constraints study (by the design team) to determine the proposed construction areas within the Proposed Wind Farm 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 site using a deterministic and qualitative approach.

(4) Peat contour depth plan – compiled based on the peat depth probes carried out across the Proposed Project site by FT (2024/2025), MKO and HES (2024/2025).

(5) Factor of safety plan – compiled for the short-term critical condition (undrained) for 209 no. FoS points analysed along the proposed infrastructure envelope on site.

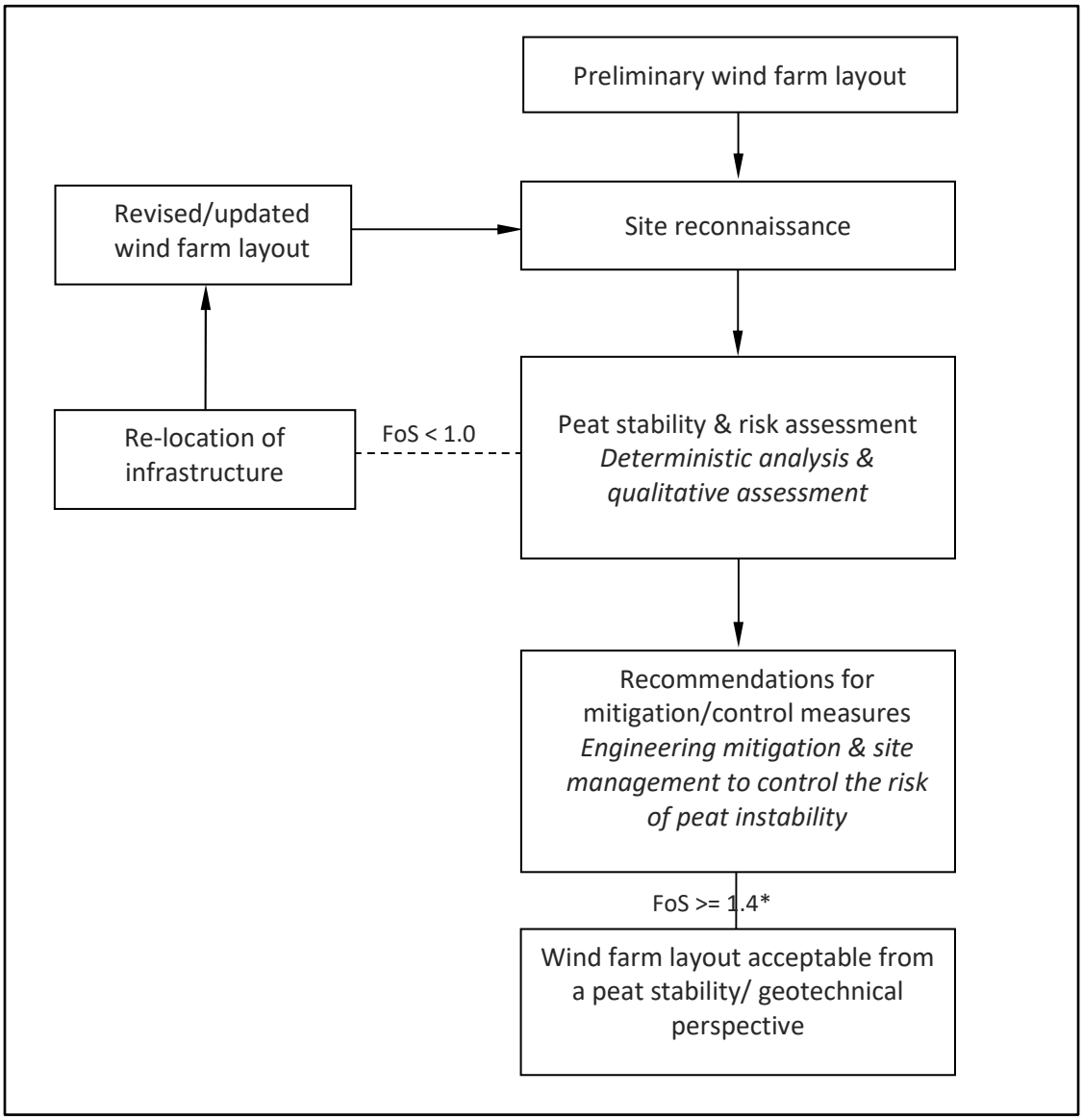
(6) Construction buffer zone plan – identifies areas with an elevated or higher construction risk where mitigation/control measures will need to be implemented during construction to minimise the potential risks, as well as areas where construction works should be avoided.

(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 Irish Drilling Ltd. (IDL).

(9) Commentary of founding details for other infrastructure elements such as access roads, crane hardstands, 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 wind farm layout based on the findings from the site reconnaissance and stability analysis and subsequent feedback.



*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.

Figure 2.1: Methodology for Peat Stability Assessment

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 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.

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 and 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 this site is examined with respect to wind farm construction and associated activity.

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 peat land 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 roads 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.

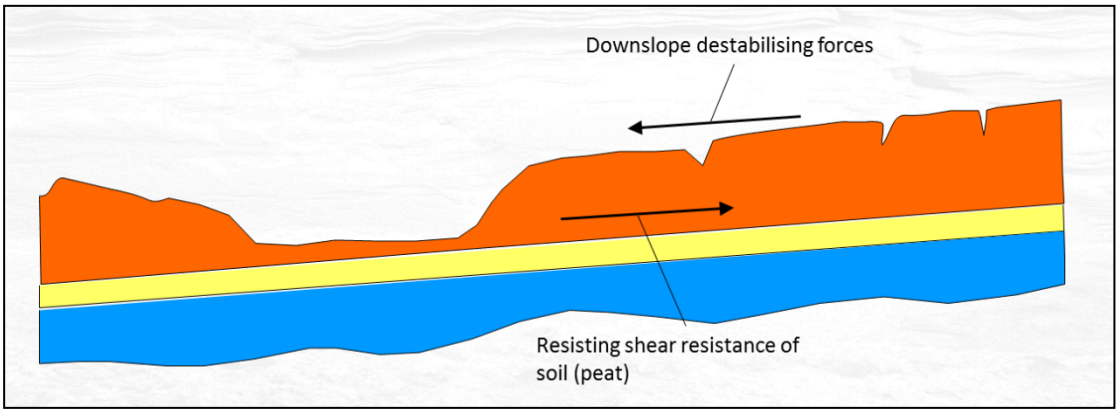


Figure 2.2: Peat Slope Showing Balance of Forces to Maintain Stability

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 the 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 Intense Rainfall and Extreme Dry Events on the Peat Slope

The deterministic approach carried out by FT examines intense rainfall and extreme dry events. The deterministic approach 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 intense rainfall and extreme dry events are considered and analysed. The results of which are presented in Section 7 of this report.

3. DESK STUDY

3.1 Desk Study

The main relevant sources of information with respect to the Proposed Project 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) was 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 the GSI was carried out.

The GSI subsoils maps indicates that the Proposed Wind Farm site is underlain predominantly of bedrock outcrop or subcrop, with areas of blanket peat, and pockets of till derived from Devonian and Carboniferous sandstones and Alluvium, associated with the Owvane river channel. The Proposed Grid Connection is underlain by Till derived from limestone, Till derived from Sandstones, Alluvium and bedrock outcrop/subcrop with one isolated area identified as blanket peat.

In relation to bedrock, the following formations are present:

- Ardaturrish Member, described as a black mudstone and silt lensed mudstone.
- Old Head Sandstone Member, described as a flaser bedded sandstone and minor mudstone
- Reenagough Member, described as a massive and flaser bedded sandstone

The nearest quarry is located approximately 17km east of the Proposed Wind Farm in Kilmichael, Co. Cork. No karst features were identified within 5km of the Proposed Project.

No geological heritage sites are noted within the Proposed Project site, the closest geological heritage site is located approximately 2km west of the Proposed Project and is described as Bantry Drumlins, a field of subglacial bedforms, which are features formed under the base of an ice sheet, and includes a small, discrete cluster of hill features occupying the wide coastal embayment which hosts the town of Bantry. The field covers an area of 15 by 5km and includes approximately 75 hills.

The landslide susceptibility of the area around the Proposed Project was classified by the GSI (2024) as generally “moderately high” but ranges from “low” to “high” susceptibility, with the higher risk areas corresponding to

the river channel running through the Proposed Wind Farm site. This is to be expected due to the steeper slopes present along the river channel. There are no recorded peat failures within 5km of the Site.

4. FINDINGS OF SITE RECONNAISSANCE

4.1 Site Reconnaissance

As part of the assessment of potential peat failure at the Proposed Wind Farm site, FT carried out a site reconnaissance in conjunction with the desk study review described in Section 3. This comprised walkover inspections with recording of salient geomorphological features with respect to the Proposed Wind Farm site which included peat depth and preliminary assessment of peat strength. General photographs of the Proposed Wind Farm site are included at the end of the main text.

The following salient geomorphological features were considered:

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

The survey covered the proposed locations for the turbine bases 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 undertaken by FT comprised a walkover inspection of the Site from the 15th to the 17th October 2024, with additional peat probing undertaken on 29th January and 19th March 2025. Weather conditions for the site visits were predominately dry.

The findings from the site walkover have been used to optimise the layout of the infrastructure on the Proposed Wind Farm site. A single localised area of peat is indicated to be present along the Proposed Grid Connection route.

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

(1) The Proposed Wind Farm site is typically covered in a layer of peat and has an undulating terrain. 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 surrounding slopes. The site comprises open peatland, agricultural land and commercial forestry (see Appendix A).

(2) A total of 640 no. peat depth probes were carried out on the Proposed Wind Farm site during the various site visits by HES, MKO, FT and Enerco. Peat depths recorded across the site ranged from 0 to 4.1m with an average depth of 0.65m (Drawing P24-118-0600-0001). Approximately 95% of peat depth probes recorded peat depths of less than 2.0 m. A number of localised readings were recorded where peat depths were between 2.0 and 4.5m.

(3) The peat depths recorded at the turbine locations varied from 0.1 to 2.1m with an average depth of 0.8m.

(4) With respect to the proposed new access roads, peat depths are typically less than 1.0m (average 0.6m) with localised depths of up to 3.0m recorded.

(5) The Proposed Project will comprise both the upgrade of existing tracks and the construction of new proposed access roads, as well as widening of the local public road. The construction of new proposed access roads will be carried out using an excavate and replace construction technique which involves the removal and replacement of peat or soft ground where encountered, and replacement with granular fill.

(6) Slope angles at the turbine locations ranged from 3 to 12 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 reflects the slope within the footprint of each infrastructure location.

(8) Peat strengths recorded across the site vary from 10 to 55kPa with an average of 25kPa. The lowest shear strength was recorded in the southwest of the Site, in the deepest area of peat.

(9) A summary of the site walkover findings for the Proposed Wind Farm site are as follows:

(a) The Site is covered in a thin layer of peat with undulating terrain open peatland and commercial forestry. Peat depths recorded across the site ranged from 0 to 4.5m with an average depth of 0.6m.

(b) A construction buffer zone plan has been produced for the site (Drawing P24-118-0600-0002). This shows areas on the Proposed Wind Farm site with an elevated or higher construction risk. No development is proposed in these areas. The above identified buffer areas are based on qualitative factors identified during the walkover survey e.g. relatively deep peat, quaking peat, bog pools, mechanically cut peat, historical peat landslide, etc. Where no significant qualitative factors have been identified, hydrological buffers have been included.

(c) The results of the peat depth probing, shear strength testing of the peat and qualitative factors identified on 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 Wind Farm site is considered to have a **low** risk of peat failure.

5. GROUND INVESTIGATION

A ground investigation was carried out at the Proposed Wind Farm site by Irish Drilling Limited (IDL) under the supervision of FT during January and February 2025. Ground investigation in the form of trial pits were carried out on the 29th and 30th of January and the 4th and 5th February 2025, and rotary coring at three borrow pit locations was undertaken from the 19th to the 26th March 2025.

The ground investigations by IDL comprised 16 no. trial pits and three rotary coreholes with associated laboratory testing. The trial pits were carried out at various locations across the Proposed Wind Farm site to provide information on the ground conditions at turbine locations, and to investigate the potential to develop borrow pits within the site.

The laboratory testing included the following:

- Classification testing for overburden material
- Determination of dry density/moisture content relationship

The trial pits logs, photographs and associated laboratory testing are included within Appendix E of this report. A ground investigation location plan is included as Drawing P24-118-0600-0003 in this report.

5.1 Summary of Ground Conditions

The ground conditions at the Proposed Wind Farm site can be categorised into the following deposits:

Peat – Typically described as light brown & brown pseudofibrous Peat. Peat thicknesses in the trial pits ranged from 0.3 to 1.3m.

Glacial Sands and Gravels – Brown slightly sandy slightly silty peaty angular to subangular fine to coarse psammite Gravel with occasional cobbles.

Bedrock – Strong to very strong thinly laminated grey fine grained Siltstone and a string to very strong brownish grey fine grained Sandstone.

Groundwater recorded in the trial pits varied from none to seepages and inflows between 0.2 and 1.9m bgl.

5.2 Summary of Laboratory Tests

Based on the results of the particle size distribution (PSD) tests, the descriptions on the final trial pit logs have been updated.

5.3 Summary of Geotechnical Parameters

Table 5-1 contains characteristic geotechnical parameters for the main material types likely to be encountered on the Proposed Wind Farm 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 5-1: Summary of Geotechnical Parameters

Material Type/Strata	Unit Weight	Geotechnical Parameters		
		Undrained Parameters	Drained Parameters	
	γ (kN/m^3)	c_u (kPa)	ϕ' (°)[4]	c' (kPa)
Peat	10.5	8 [3]	25	4
Glacial Sand and Gravel	20	-	34	0
Sandstone/Siltstone bedrock	22	-	30	100

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 8kPa was selected. The lowest recorded value within the development boundary on the Proposed Wind Farm Site was 10kPa, recorded in one location within the site where no development is proposed, hence a value of 8kPa is considered to be a conservative value.

Note (4) ϕ' (°) – internal angle of shearing resistance.

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 roads and other main infrastructure elements. At turbine locations a minimum of 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.

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 site.

The slope angle quoted 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, MKO, HES and Enerco, the peat varied in depth from 0 to 4.5m with an average depth of 0.65m. All peat depth probes carried out on the Proposed Wind Farm site have been utilised to produce a peat depth contour plan (Drawing P24-118-0600-0001).

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.

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

Turbine	Easting	Northing	Peat Depth Range (m) (1)	Average Peat Depth (m)	Slope Angle (°) (2)
T01	512234	559029	0.2-0.7	0.3	4
T02	511718	558777	0.5-1.7	1.0	4
T03	511969	558466	0.2-0.6	0.3	12
T04	510753	558366	0.5-1.0	0.75	5
T05	511153	558170	0.4-0.9	0.5	6
T06	511548	557969	0.1-0.6	0.25	6
T07	510300	555783	0.4-2.1	1.9	4
T08	509807	555268	0.2-0.9	0.7	8
T09	509359	555344	1.2-1.8	1.5	3
T10	508872	555280	0.2-1.2	0.5	4
T11	508449	555395	1.4-1.6	1.5	4
T12	508113	555660	0.1-0.2	0.15	6
T13	507799	555873	0.1-0.2	0.15	6
T14	507383	555284	0.1-0.4	0.1	4
Substation	510076	556273	0.8-1.2	1.0	6
Temporary Construction Compound (N)	510357	557719	0.4-0.6	0.5	10
Temporary Construction Compound (S)	509023	555341	1.6-2.2	1.9	3
Borrow Pit 1	511972	558682	0.2-0.4	0.3	8
Borrow Pit 2	510624	557850	0.2-1.2	0.6	7
Borrow Pit 3	509982	555993	0.2-0.5	0.35	7
Borrow Pit 4	508637	555285	0.1-1.5	0.9.	6

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.

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.

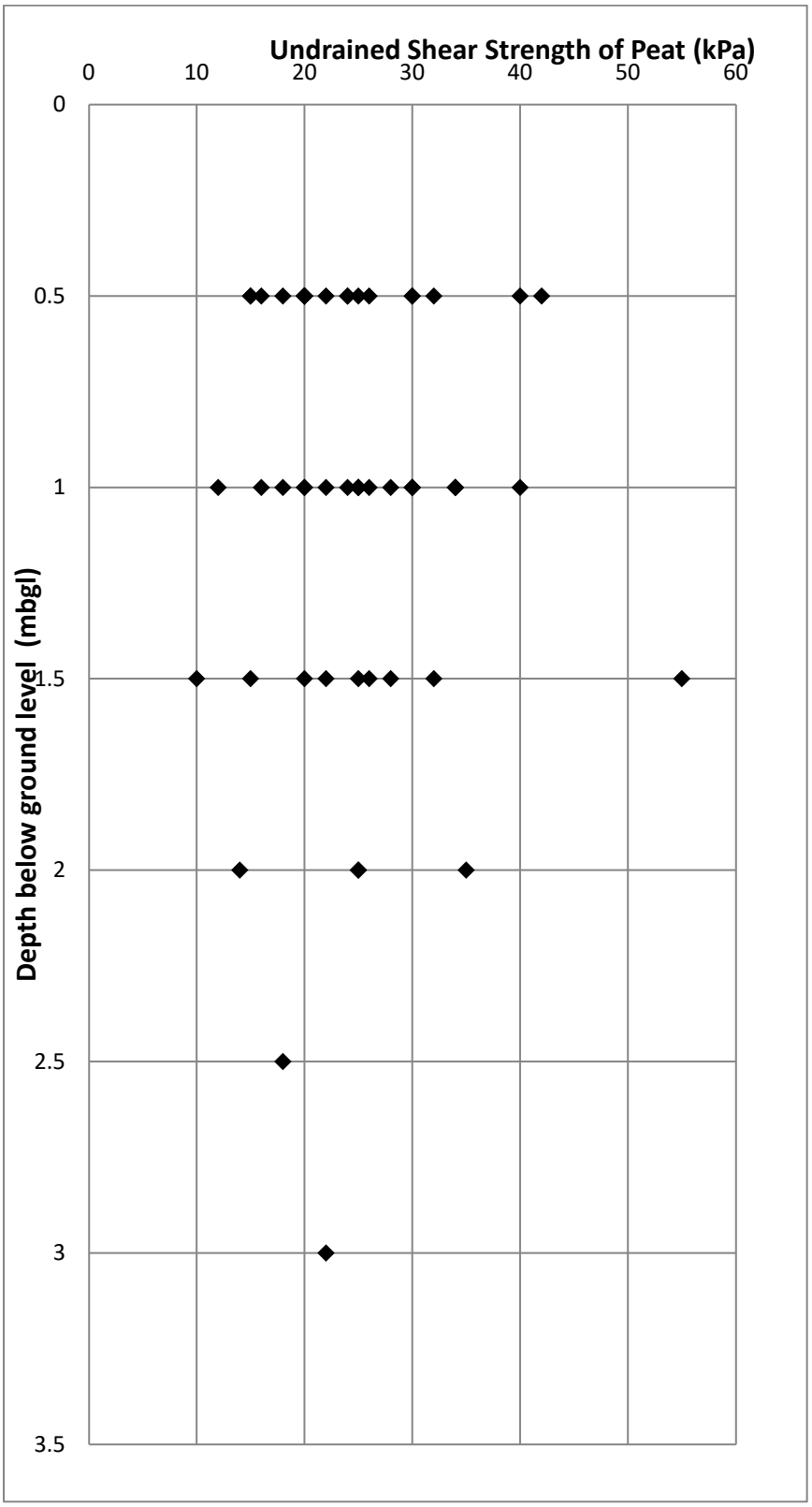
Note (3) The data presented in the Table above is used in the peat stability assessment of the site.

In addition to probing, in-situ shear vane testing was carried out as part of the ground investigation. Strength testing was carried out at turbine and other 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 10 to 55kPa, with an average value of about 25kPa. The majority of the strengths recorded would be typical of drained peat as is present on the Proposed Wind Farm site. The lowest strength was recorded in the area of deepest peat, where no development is proposed.

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 Maughanaclea is 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 less likelihood of failure on the Proposed Project 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 roads. 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. As the presence of peat was only indicated at one isolated location along the Proposed Grid Connection route (with only 0.2m of peaty topsoil recorded during probing), where the Proposed Grid Connection will be constructed in the public road, no peat stability analysis was undertaken for this part of the Proposed Project.

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 Proposed Wind Farm 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 roads and at various locations across the Proposed Wind Farm site.

The FoS provides a direct measure of the degree of stability of the 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.

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 1.4	Marginally stable (yellow)
1.4 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 a 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 8kPa was selected for the assessment based on the c_u values recorded within the Proposed Wind Farm site. It should be noted that a c_u 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 generally has a higher undrained strength, with only localised area of low strength peat (10kPa) recorded.

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 (Peat)
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.

(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 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 8kPa, was selected for the assessment. The lowest recorded value on the Proposed Wind Farm site during the site walkover was 10kPa, recorded in the area of deepest peat, where no development is proposed. It should be noted that a c_u 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 majority of the shear strength values recorded in the peat have a higher undrained strength.

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 at all locations analysed are presented in Appendix C and the results of the undrained analysis for the most critical load case (load condition 2) are shown on Figure 7.1. 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, including along access roads and in areas of peat and spoil management, are summarised in Table 7.3 to 7.5.

The calculated FoS for load condition 1 is in excess of 1.40 for each of the 209 locations analysed with a range of FoS of 3.87 to 114.96, indicating a low risk of peat instability.

The calculated FoS for load condition 2 is in excess of 1.40 for each of the 209 locations analysed with a range of FoS of 2.32 to 19.11, again indicating a low risk of peat instability.

Table 7.3: Factor of Safety Results (Undrained Condition)

Turbine No./Waypoint	Easting	Northing	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
T01	512234	559029	**28.74**	**8.21**
T02	511718	558777	**38.32**	**8.84**
T03	511969	558466	**9.83**	**2.81**
T04	510753	558366	**6.61**	**3.31**
T05	511153	558170	**9.62**	**4.28**
T06	511548	557969	**19.24**	**5.50**
T07	510300	555783	**5.47**	**3.71**
T08	509807	555268	**6.45**	**3.06**
T09	509359	555344	**8.50**	**5.47**
T10	508872	555280	**12.77**	**6.05**
T11	508449	555395	**7.19**	**4.42**
T12	508113	555660	**38.48**	**6.41**
T13	507799	555873	**38.48**	**6.41**
T14	507383	555284	**114.96**	**10.45**

Turbine No./Waypoint	Easting	Northing	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
Substation	510164	556288	6.41	3.50
Met Mast	509109	555194	6.41	3.50
Temporary Construction Compound (N)	510357	557719	3.12	9.36
Temporary Construction Compound (S)	509023	555341	5.89	9.27
Borrow Pit 1	511972	558682	14.51	4.15
Borrow Pit 2	510624	557850	6.41	3.32
Borrow Pit 3	509982	555993	19.35	4.47
Borrow Pit 4	508637	555285	5.13	3.08

Table 7.4: Factor of Safety Results along Access Roads (Undrained Condition)

Turbine No./Waypoint	Easting	Northing	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
Entrance Road to T09 (PP009)	Varies		13.11	3.03
T08 to T09 (PP030)	Varies		5.92	3.35
T07 to T08 (PP037)	Varies		6.47	2.88
T10 to T11 (PP047)	Varies		5.13	3.08
T11 to T12 (APP001)	Varies		4.84	2.64
T12 to T13 (APP03)	Varies		7.65	5.10
T13 to T14 (8)	Varies		3.82	3.13
Entrance Road to T06 (PP105)	Varies		7.26	3.22
Spur to T04 (PP110)	Varies		4.84	2.64
Spur to T05 (PP107)	Varies		23.39	3.90
T05 to T03 (PP118	Varies		19.67	3.28
Spur to T02 (PP134)	Varies		12.83	4.81
Spur to T01 (PP129)	Varies		9.67	3.63

Table 7.5: Factor of Safety Results Peat & Spoil Management Areas (Undrained Condition)

Location	Easting	Northing	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
PS01	509129	555310	**6.41**	**2.85**
PS02	509039	555231	**10.93**	**5.83**
PS03	509358	555381	**8.50**	**4.64**
PS04	508819	555270	**5.50**	**2.65**
PS05	508850	555223	**5.50**	**2.65**
PS06	509810	555218	**5.20**	**1.95**
PS07	509753	555282	**14.51**	**3.06**
PS08	510343	555751	**3.15**	**1.84**
PS09	509081	555406	**9.57**	**4.94**

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, including along access roads and in areas of peat and spoil management, are summarised in Table 7.6 to 7.8. As stated previously, the drained loading condition examines the effect of in particular, rainfall on the existing stability of the natural peat slopes and represents the post construction phase of the development.

The calculated FoS for load condition 1 is in excess of 1.40 for each of the 209 locations analysed with a range of FoS of 1.93 to 57.48, indicating a relatively low risk of peat instability.

The calculated FoS for load condition 2 is in excess of 1.40 for each of the 209 locations analysed with a range of FoS of 2.49 to 20.68, indicating a low risk of peat instability.

Table 7.6: Factor of Safety Results (Drained Conditions)

Turbine No./Waypoint	Easting	Northing	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
T01	512234	559029	**14.37**	**8.87**
T02	511718	558777	**19.16**	**9.55**
T03	511969	558466	**4.92**	**2.97**
T04	510753	558366	**3.31**	**3.55**
T05	511153	558170	**4.81**	**4.60**
T06	511548	557969	**9.62**	**5.92**
T07	510300	555783	**2.74**	**4.01**
T08	509807	555268	**3.22**	**3.27**

Turbine No./Waypoint	Easting	Northing	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
T09	509359	555344	4.25	5.91
T10	508872	555280	6.39	6.54
T11	508449	555395	3.59	4.78
T12	508113	555660	19.24	6.90
T13	507799	555873	19.24	6.90
T14	507383	555284	57.48	11.29
Substation	510164	556288	3.21	3.77
Met Mast	509109	555194	3.21	3.77
Temporary Construction Compound (N)	510357	557719	4.20	7.32
Temporary Construction Compound (S)	509023	555341	6.37	4.78
Borrow Pit 1	511972	558682	7.26	4.44
Borrow Pit 2	510624	557850	3.21	3.46
Borrow Pit 3	509982	555993	9.67	4.78
Borrow Pit 4	508637	555285	2.57	3.31

Table 7.7: Factor of Safety Results along access roads (Drained Condition)

Turbine No./Waypoint	Easting	Northing	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
Entrance Road to T09 (PP009)	Varies		6.56	3.20
T08 to T09 (PP030)	Varies		2.96	3.60
T07 to T08 (PP037)	Varies		3.24	3.07
T10 to T11 (PP047)	Varies		2.57	3.31
T11 to T12 (APP001)	Varies		2.42	2.83
T12 to T13 (APP003)	Varies		3.83	5.52
T13 to T14 (8, APP007)	Varies		2.55	3.71
Entrance Road to T06 (PP105)	Varies		3.63	3.46
Spur to T04 (PP110)	Varies		2.42	2.83
Spur to T05 (PP107)	Varies		11.70	4.15

Turbine No./Waypoint	Easting	Northing	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
T05 to T03 (PP118)	Varies		9.83	3.47
Spur to T02 (PP134)	Varies		6.41	5.18
Spur to T01 (PP129)	Varies		4.84	3.89

Table 7.8: Factor of Safety Results Peat & Spoil Management Areas (Drained Condition)

Location	Easting	Northing	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
PS01	509129	555310	3.21	3.89
PS02	509039	555231	5.47	7.24
PS03	509358	555381	4.25	6.36
PS04	508819	555270	2.75	3.62
PS05	508850	555223	2.75	3.62
PS06	509810	555218	2.60	2.63
PS07	509753	555282	7.26	4.15
PS08	510343	555751	1.57	2.50
PS09	509081	555406	4.78	6.77

7.4 Stability of Borrow Pit Berms

A stability check has been undertaken to demonstrate the stability of the perimeter berms around the proposed borrow pits. The perimeter berm is considered to be more critical than any internal buttresses, as peat is only present on one side of the buttress. Slope stability has been checked using SlopeW© slope stability software. The analysis was carried out to EC7 design standards. 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. Rather, it provides a result in terms of an overdesign ratio (ODR), where an ODR of >1 is stable, and an ODR of <1 is unstable.

The following material properties have been used in the stability assessment. A low strength for the peat retained within the borrow pit/repositories has been used to model the effect of disturbance on the saturated peat mass. For the purposes of the assessment shallow failures in the surface of the berm have not been considered.

Table 7.9: Material Properties

Material	Unit Weight (kN/m^3)	Undrained Shear Strength, c_u (kPa)	Angle of Shearing Resistance, ϕ (degrees)	Effective Cohesive, c' (kPa)
Intact Peat	10.5	8	25	4
Granular fill (berm)	21	-	40	0
Retained Peat within Borrow Pit (disturbed)	10.5	2	5	2
Granular Glacial Material	20	-	34	0
Bedrock	22	-	30	100

This assessment considers the northern face of Borrow Pit 4, on the southern side of the Proposed Wind Farm site as the 'worst case' in terms of berm height. The berm along the southern side of the borrow pit will be up to 6m in height. Bedrock has been assessed at 2m below ground level based on the available ground investigation information, overlain by 0.3m of peat and 1.5m of granular glacial material. All peat and any soft clay that may be present will be excavated from below the perimeter berm. The base of the rock berm will be benched into the glacial overburden to create a level platform. The inside slope of the perimeter berm has been modelled as a 60-degree slope (1V:0.6H) in intact bedrock, and the outside slope as 35 degrees (1V:1.4H). A construction loading of 20kPa has been included for the undrained (short-term analysis). Groundwater has been assumed at ground level on the downslope side of the berm, with the groundwater on the upslope side of the berm draining through the berm. The analysis assumes that all of the material contained within the borrow pit is a low strength peat, which is conservative as it is likely that excavated overburden (which will have a higher strength) will form the majority of the material stored in the borrow pits.

The stability analysis has been undertaken using both undrained (short term) and drained (long term) strength parameters and shows that the berm is stable in both cases.

Table 7.10: Borrow Pit Stability Analysis

Borrow Pit	Over Design Ratio (ODR)	
	DA1C1	DA1C2
Undrained Analysis	1.29	1.03
Drained Analysis	1.29	1.03

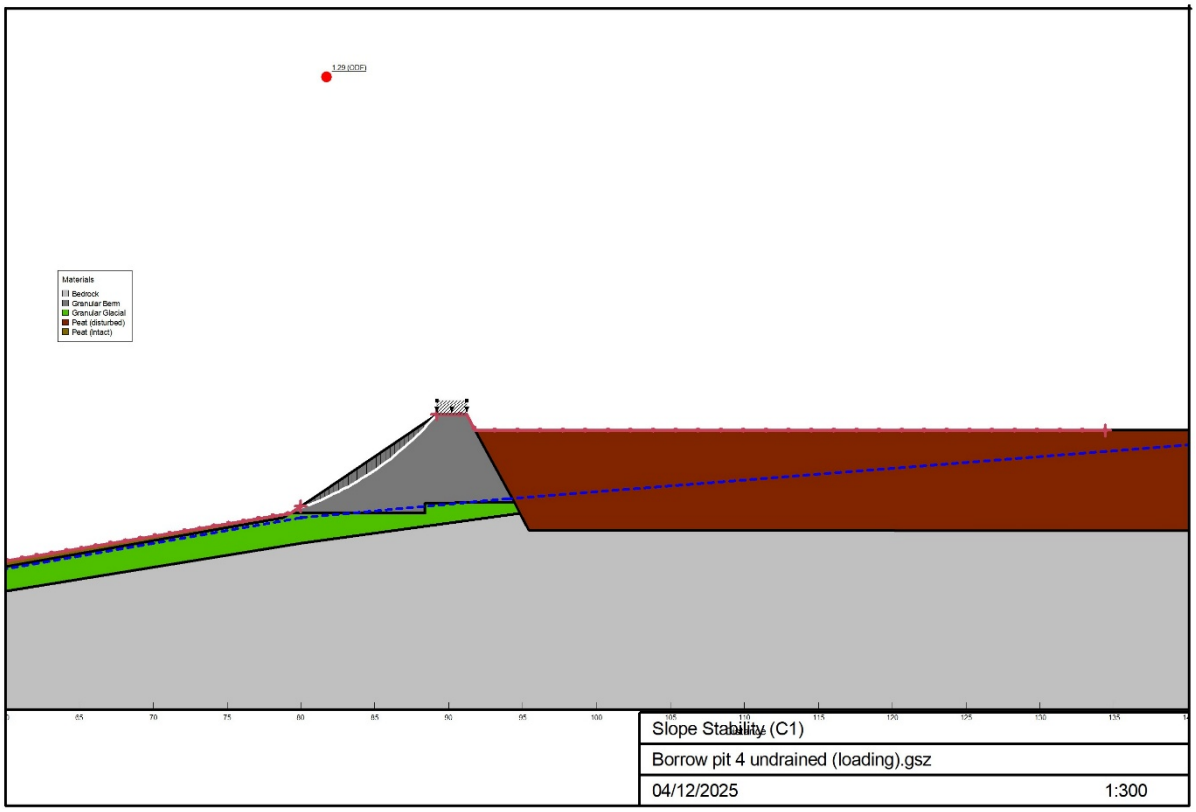


Figure 7.1: Borrow Pit Stability Check, Undrained DA1C1

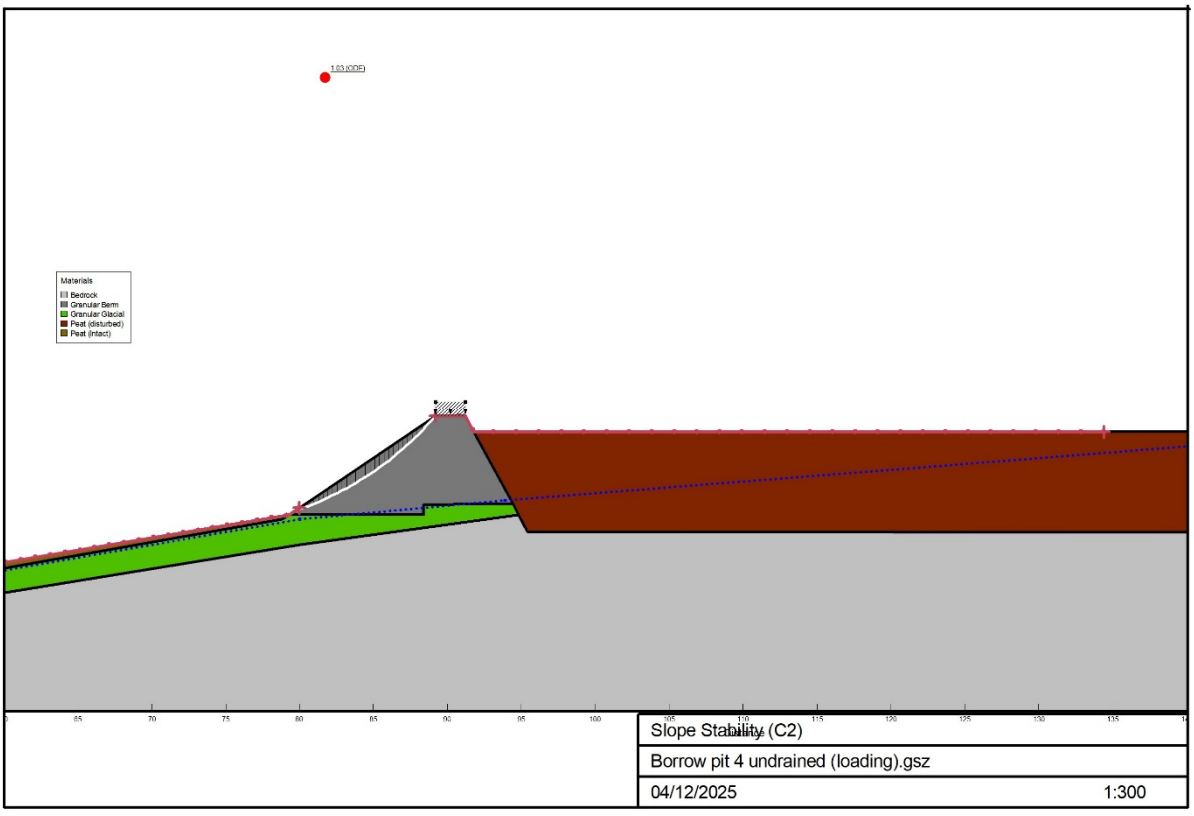


Figure 7.2: Borrow Pit Stability Check, Undrained DA1C2

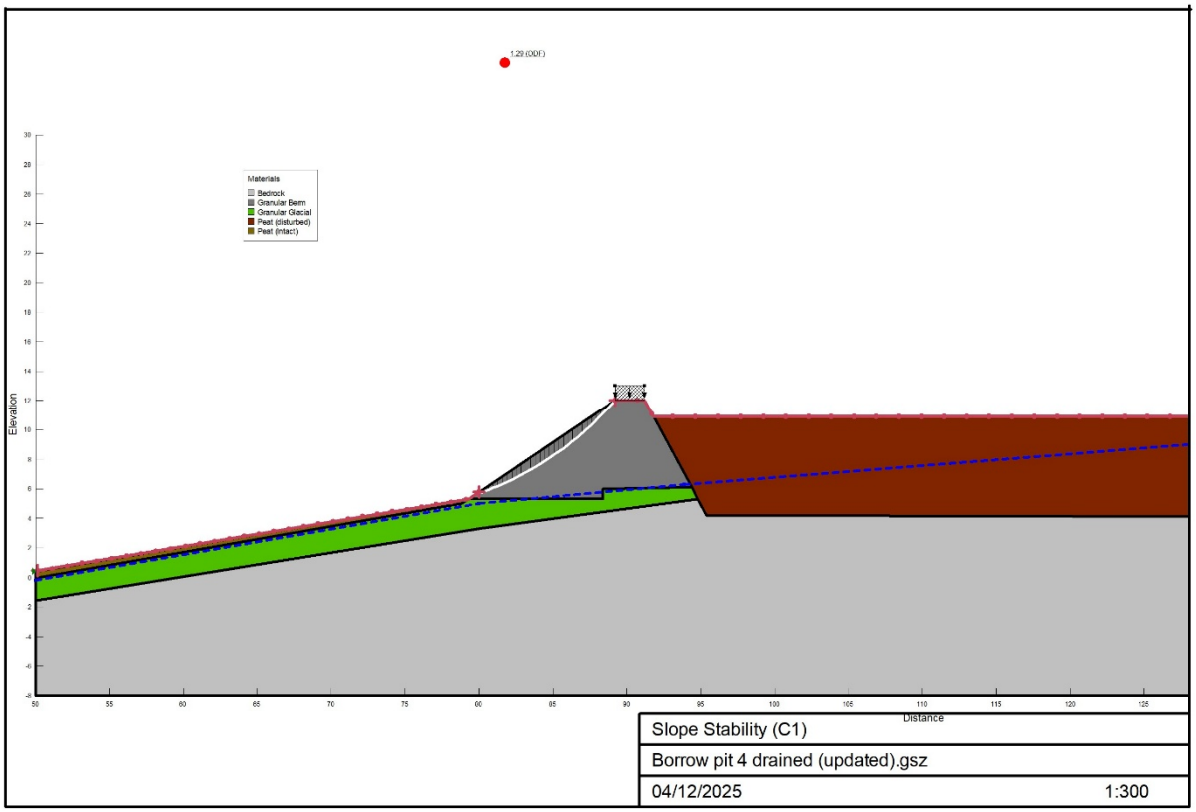


Figure 7.3: Borrow Pit Stability Check, Drained DA1C1

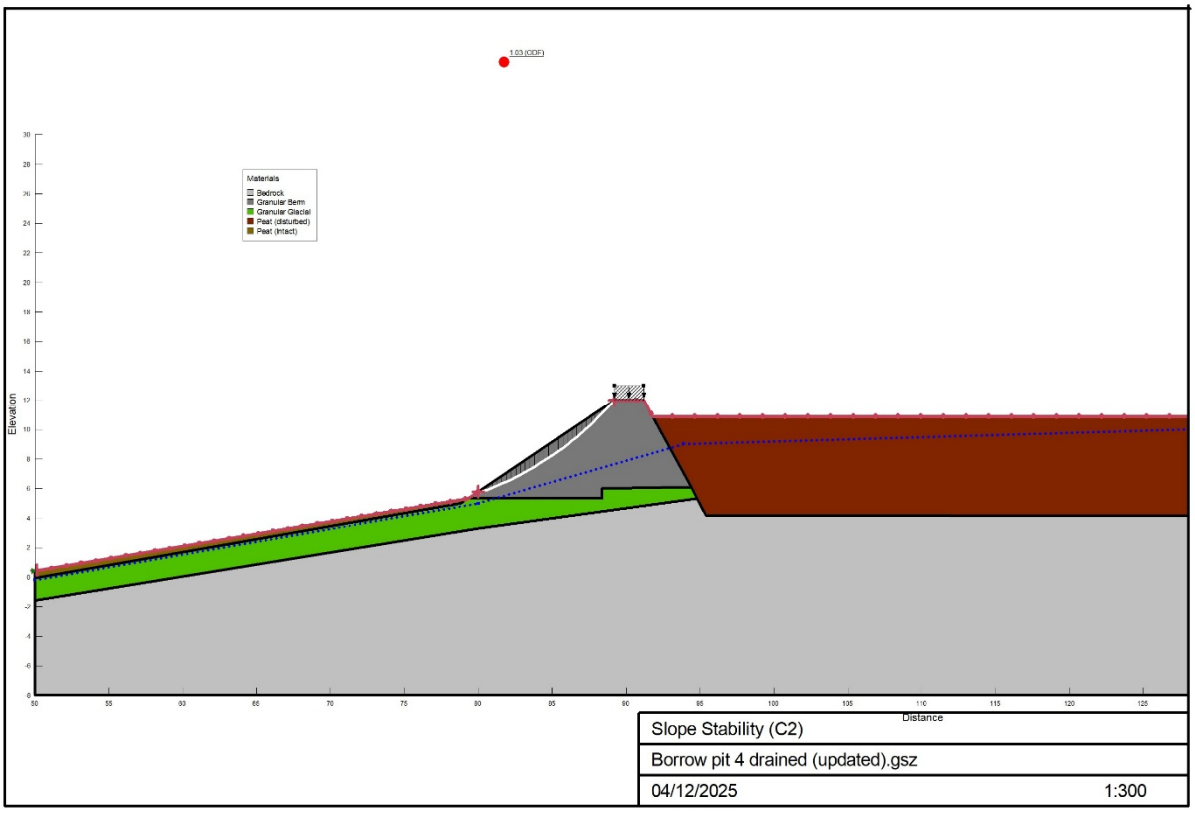


Figure 7.4: Borrow Pit Stability Check, Drained DA1C2

8. PEAT STABILITY RISK ASSESSMENT

A peat stability risk assessment was carried out for the main infrastructure elements at the Proposed Wind Farm site. This approach takes into account guidelines for geotechnical/peat stability risk assessments as given in PLHRA (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 of the Proposed Wind Farm is designated Negligible or Low following some general mitigation/control measures being implemented. Sections of access roads 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) and are summarised below:

- Detailed ground investigation to confirm peat, mineral soil and bedrock condition and properties.
- Use of experienced geotechnical staff for site investigation.
- Excavations will require temporary support and regular inspection.
- Side casting of excavated material only in designated areas.
- No sidecasting of peat on area of open deep peatland to the east of T14.
- No temporary stockpiling of materials on in-situ peat.
- Maintain hydrology of area as far as possible by maintaining existing drains to prevent the build-up of water pressures in the peat, leading to the peat becoming "buoyant".

- Use of experienced contractors and trained operators to carry out the work.
- Monitoring upslope and downslope of open excavations.
- Limits on the length of excavation (10m) left open before backfilling.
- Movement monitoring upslope and downslope of section of floating road to the east of T14
- Limits on machinery tracking on any areas of open deep peat

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-General Control Measure Implementation Risk Rating	Post-General Control Measure Implementation Risk Rating Category
T01	Negligible	1 to 4	No	Negligible	1 to 4
T02	Negligible	1 to 4	No	Negligible	1 to 4
T03	Negligible	1 to 4	No	Negligible	1 to 4
T04	Negligible	1 to 4	No	Negligible	1 to 4
T05	Negligible	1 to 4	No	Negligible	1 to 4
T06	Low	5 to 10	No	Low	5 to 10
T07	Negligible	1 to 4	No	Negligible	1 to 4
T08	Negligible	1 to 4	No	Negligible	1 to 4
T09	Negligible	1 to 4	No	Negligible	1 to 4
T10	Negligible	1 to 4	No	Negligible	1 to 4
T11	Low	5 to 10	No	Negligible	1 to 4
T12	Negligible	1 to 4	No	Negligible	1 to 4
T13	Negligible	1 to 4	No	Negligible	1 to 4
T14	Negligible	1 to 4	No	Negligible	1 to 4
Substation	Negligible	1 to 4	No	Negligible	1 to 4
Met Mast	Negligible	1 to 4	No	Negligible	1 to 4
Temporary Construction Compound (1)	Negligible	1 to 4	No	Negligible	1 to 4
Temporary Construction Compound (2)	Negligible	1 to 4	No	Negligible	1 to 4
Borrow Pit 1	Negligible	1 to 4	No	Negligible	1 to 4
Borrow Pit 2	Negligible	1 to 4	No	Negligible	1 to 4
Borrow Pit 3	Negligible	1 to 4	No	Negligible	1 to 4

Borrow Pit 4	Negligible	1 to 4	No	Negligible	1 to 4
PS01	Negligible	1 to 4	No	Negligible	1 to 4
PS02	Negligible	1 to 4	No	Negligible	1 to 4
PS03	Negligible	1 to 4	No	Negligible	1 to 4
PS04	Negligible	1 to 4	No	Negligible	1 to 4
PS05	Negligible	1 to 4	No	Negligible	1 to 4
PS06	Negligible	1 to 4	No	Negligible	1 to 4
PS07	Negligible	1 to 4	No	Negligible	1 to 4
PS08	Negligible	1 to 4	No	Negligible	1 to 4
PS09	Negligible	1 to 4	No	Negligible	1 to 4
Entrance Road to T09 (PP009)	Low	5 to 10	No	Negligible	1 to 4
T08 to T09 (PP030)	Negligible	1 to 4	No	Negligible	1 to 4
T07 to T08 (PP037)	Negligible	1 to 4	No	Negligible	1 to 4
T10 to T11 (PP047)	Negligible	1 to 4	No	Negligible	1 to 4
T11 to T12 (APP001)	Low	5 to 10	No	Negligible	1 to 4
T12 to T13 (APP003)	Low	5 to 10	No	Negligible	1 to 4
T13 to T14 (APP007)	Low	5 to 10	Yes	Low	5 to 10
Entrance Road to T06 (PP105)	Low	5 to 10	No	Negligible	1 to 4
Spur to T04 (PP110)	Negligible	1 to 4	No	Negligible	1 to 4
Spur to T05 (PP107)	Negligible	1 to 4	No	Negligible	1 to 4
T05 to T03 (PP118)	Low	5 to 10	No	Negligible	1 to 4
Spur to T02 (PP134)	Negligible	1 to 4	No	Negligible	1 to 4
Spur to T01 (PP129)	Negligible	1 to 4	No	Negligible	1 to 4

9. INDICATIVE FOUNDATION TYPE AND FOUNDATION DEPTH FOR TURBINES

9.1 Summary

Based on a review of the ground investigation and walkover information for the Proposed Wind Farm site, an 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
T01	Gravity foundation	Peat probes	3.0m	Ground investigation findings indicate that a gravity foundation will be suitable.
T02	Gravity foundation	Peat probes	3.0m	Ground investigation findings indicate that a gravity foundation will be suitable.
T03	Gravity foundation	Trial pit/ Peat probes	2.0m	Found on weathered bedrock at 2.0m bgl.
T04	Gravity foundation	Trial pit/ Peat probes	3.0m	Found on subangular Gravel at 3.0m bgl. Weathered bedrock present at 3.5m bgl.
T05	Gravity foundation	Trial pit/ Peat probes	2.0m	Found on weathered bedrock at 2.0m bgl.
T06	Gravity foundation	Trial pit/ Peat probes	2.0m	Found on weathered bedrock at 2.0m bgl.
T07	Gravity foundation	Peat probes	3.0m	Ground investigation findings indicate that a gravity foundation will be suitable.
T08	Gravity foundation	Peat probes	3.0m	Ground investigation findings indicate that a gravity foundation will be suitable.
T09	Gravity foundation	Peat probes	3.0m	Ground investigation findings indicate that a gravity foundation will be suitable.
T10	Gravity foundation	Peat probes	3.0m	Ground investigation findings indicate that a gravity foundation will be suitable.

Turbine No.	Turbine Foundation Type	Relevant GI	Indicative founding depth (m bgl)	Comment
T11	Gravity foundation	Peat probes	3.0m	Ground investigation findings indicate that a gravity foundation will be suitable.
T12	Gravity foundation	Trial pit/ Peat probes	2.0m	Found on weathered bedrock at 2.0m bgl.
T13	Gravity foundation	Trial pit/ Peat probes	2.0m	Found on weathered bedrock at 2.0m bgl.
T14	Gravity foundation	Peat probes	3.0m	Ground investigation findings indicate that a gravity foundation will be suitable.

It should be noted that confirmatory 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 indicated 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 INFRASTRUCTURE ELEMENTS (EXCEPT TURBINES)

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

10.1 Access Roads

The access roads on site will be constructed as excavate and replace (founded) type construction, which, given the ground conditions and type of terrain present, is deemed the most appropriate construction approach. Floating road construction will only be undertaken at one location (85m in length) to the east of T14 as part of the Proposed Project.

The total length of new proposed access road to be constructed on site is 12.1km (see Drawing P24-118-0600-0005 of the Peat and Spoil Management Plan – Appendix 4-2 of the EIAR).

The proposed make-up of the founded access roads is an average stone thickness of 500mm. The requirement for a layer of geotextile and geogrid and the necessary stone thickness will be confirmed at pre-construction stage.

See the Peat & Spoil Management Plan for the Proposed Project for further details on the proposed access roads on the Site.

10.2 Crane Hardstands

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

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 confirmed at pre-construction stage.

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

10.3 Substation Foundations & Platforms

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

Substation platforms are constructed using compacted Class 1/6F material 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 substation, the foundations will require to be founded on firm glacial till or medium dense granular material. The peat will not be a be a suitable founding stratum for the substation foundations. The founding depth for the substation platform is to be 0.5-1.5m.

The make-up of the substation platform will include an average of 2000mm of granular stone fill with a layer of geotextile and/or geogrid if deemed necessary by the Designer. At the underside of the substation foundations, a layer of structural up-fill (class 6N) will be required.

10.4 Construction Compound Platforms

The construction compound platforms will be constructed using the founded technique (i.e. not floated technique).

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

The construction compound platforms will 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 an average of 750mm of granular stone fill with possibly a layer of geotextile and/or geogrid.

10.5 Peat and Spoil Management Areas

A number of peat and spoil management areas were reviewed as part of the assessment of the Proposed Project. These are located within clear fell area around a number of the turbines (6 no.) and close to the southern temporary construction compound within the Proposed Wind Farm site. The placement of peat in these areas will be limited to a maximum of 1.5m in height, and the stability of these areas is covered under load condition 2 as reported in Section 7 of this report.

Additional discussion of the peat and spoil management areas is provided in the Peat and Spoil Management Plan (FT, 2025) for the Proposed Project.

11. SUMMARY AND RECOMMENDATIONS

11.1 Summary

The following summary is given.

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

The findings of the peat assessment showed that the Proposed Wind Farm site has a low risk of peat failure and is suitable for the Proposed Project. The findings include recommendations and control measures for construction work in peat lands, all of which will be implemented in full to ensure that all works adhere to an acceptable standard of safety.

The site is typically covered in blanket peat with undulating terrain of open peatland and forestry.

Peat thicknesses recorded during the site walkovers from 640 probes ranged from 0.0 to 4.5m with an average depth of 0.65m. 70% of the probes recorded peat depths of less than 1.0m, with 90% of peat depth probes recorded peat depths of less than 1.5m. The average peat depth at the proposed turbine locations is 0.8m.

Slope inclinations at the main infrastructure locations range from 3 to 12 degrees.

An analysis of peat sliding was carried out at the main infrastructure locations across the Proposed Wind Farm site 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 1.4, indicating a low risk of peat failure. The undrained analysis is 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 site. For the drained condition, the calculated FoS for load conditions (1) & (2) for the locations analysed, showed that all locations have an acceptable FoS of greater than 1.4.

The peat stability risk assessment at each infrastructure location, along access roads, in peat and spoil management areas and at settlement pond locations identified a number of mitigation/control measures to reduce the potential risk of peat failure. See Appendix B for details of the required mitigation/control measures for each infrastructure element.

In summary, the findings of the peat assessment showed that the Proposed Project site has an acceptable margin of safety, is suitable for the proposed wind farm development and is considered to be at **low** risk of peat failure provided appropriate mitigation measures, such as using founded roads, and implementing and maintaining an appropriate drainage system are implemented. The findings include recommendations and mitigation/control measures for construction work in peat lands, all of which will be implemented in full to ensure that all works adhere to an acceptable standard of safety.

11.2 Recommendations

The following recommendations are given, all of which will be implemented in full.

Notwithstanding that the Proposed Project has a low risk of peat failure a number of mitigation/control measures are prescribed 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 implemented throughout design and construction works (Appendix B).

The proposed construction method for the majority of the new proposed access roads at the Proposed Project is excavate and replace type construction. One section of floating road is proposed to the east of T14, and specific mitigation/control measures are noted in the peat stability risk assessment for this area.

The measures prescribed given in FT's report 'Peat & Spoil Management Plan - Maughanaclea Renewable Energy Development, County Cork' (FT, 2025) will be implemented in full during the design and construction stage of the Proposed Project.

To minimise the risk of construction activity causing potential peat instability the Construction Method Statements (CMS's) for the project will implement in full, 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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FEHILY TIMONEY

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

DRAWINGS

FEHILY TIMONEY

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

APPENDIX A

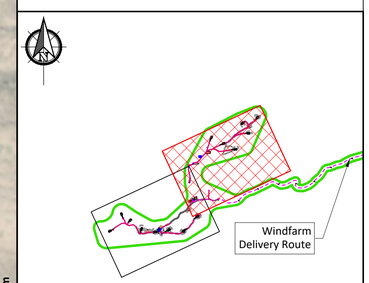
Photos from Site Walkover

Legend:

- EIAR Study Boundary
- Proposed Access Tracks
- Proposed Peat & Spoil Management Areas
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Turbine & Hardstanding
- BMEP Habitat Enhancement Areas
- Forestry Felling
- Peat Depth Probe Location

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



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KEYPLAN
Scale 1:100000

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Rev.	Description	App By	Date
P01	FOR INFORMATION	BDH	07.07.25
P02	FOR INFORMATION	BDH	26.11.25
P03	FOR INFORMATION	BDH	16.02.26

PROJECT
MAUGHANACLEA RENEWABLE ENERGY DEVELOPMENT

CLIENT
MKO

SHEET
PEAT DEPTH CONTOUR PLAN
SHEET 1 OF 2

Date 16.02.26	Project number P24-118	Scale (@ A1) 1:5000	
Drawn by POR	Drawing Number P24-118-0600-0001 (Sheet set subset 0600)		Rev P03
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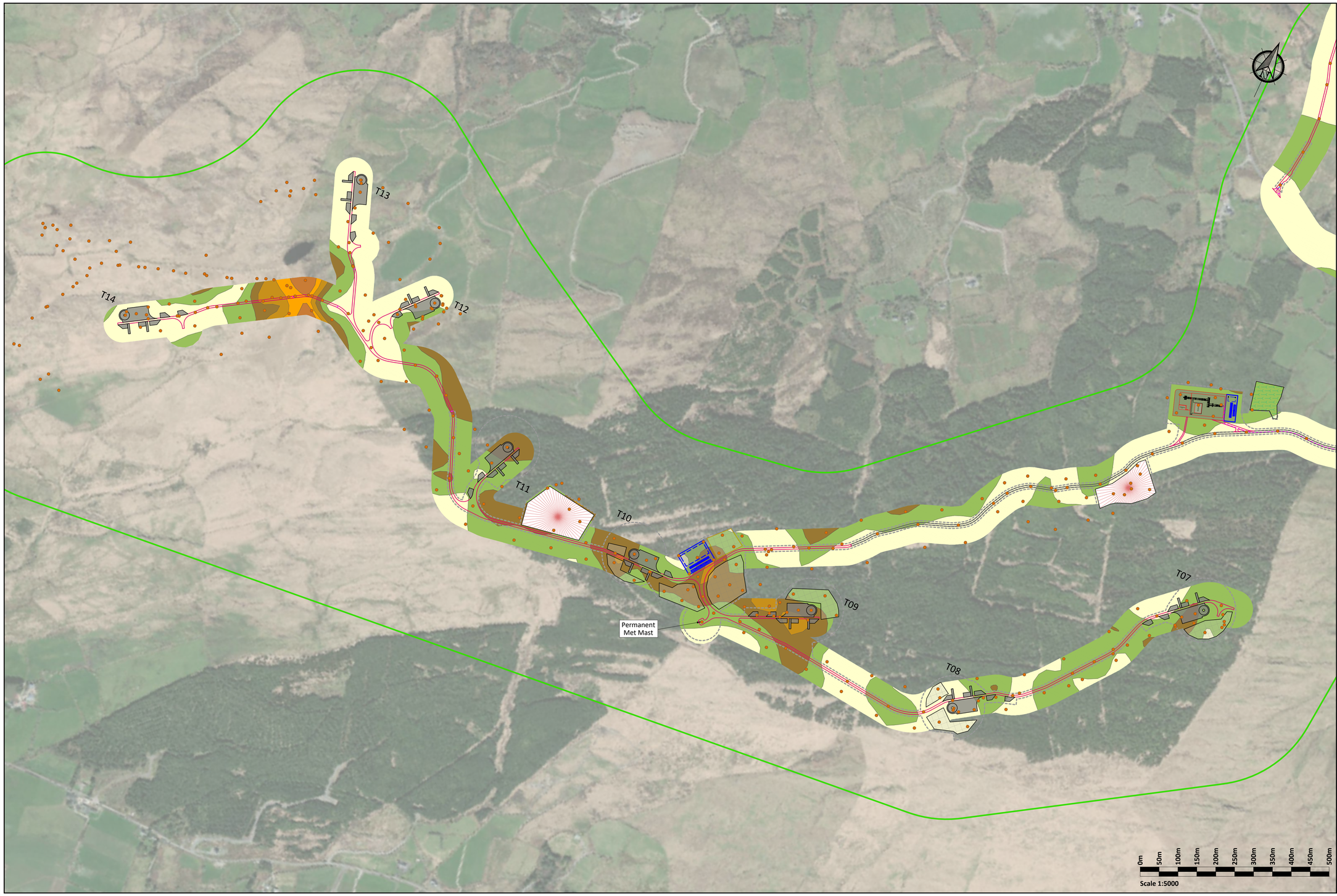
27 February 2026



Legend:

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- ≥ 0 < 0.5
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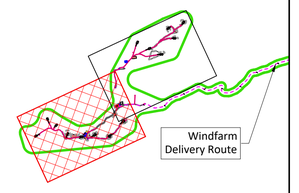
- ≥ 1 < 1.5
- ≥ 1.5 < 2
- ≥ 2 < 2.5
- ≥ 2.5 < 3
- ≥ 3 < 3.5
- ≥ 3.5 ≤ 4



PLAN
Scale 1:5000

KEYPLAN
Scale 1:100000

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Rev.	Description	App By	Date
P01	FOR INFORMATION	BDH	07.07.25
P02	FOR INFORMATION	BDH	26.11.25
P03	FOR INFORMATION	BDH	16.02.26

PROJECT
MAUGHANACLEA RENEWABLE ENERGY DEVELOPMENT

CLIENT
MKO

SHEET
PEAT DEPTH CONTOUR PLAN
SHEET 2 OF 2

Date 16.02.26	Project number P24-118	Scale (@ A1) 1:5000	
Drawn by POR	Drawing Number P24-118-0600-0002 (Sheet set subset 0600)		Rev P03
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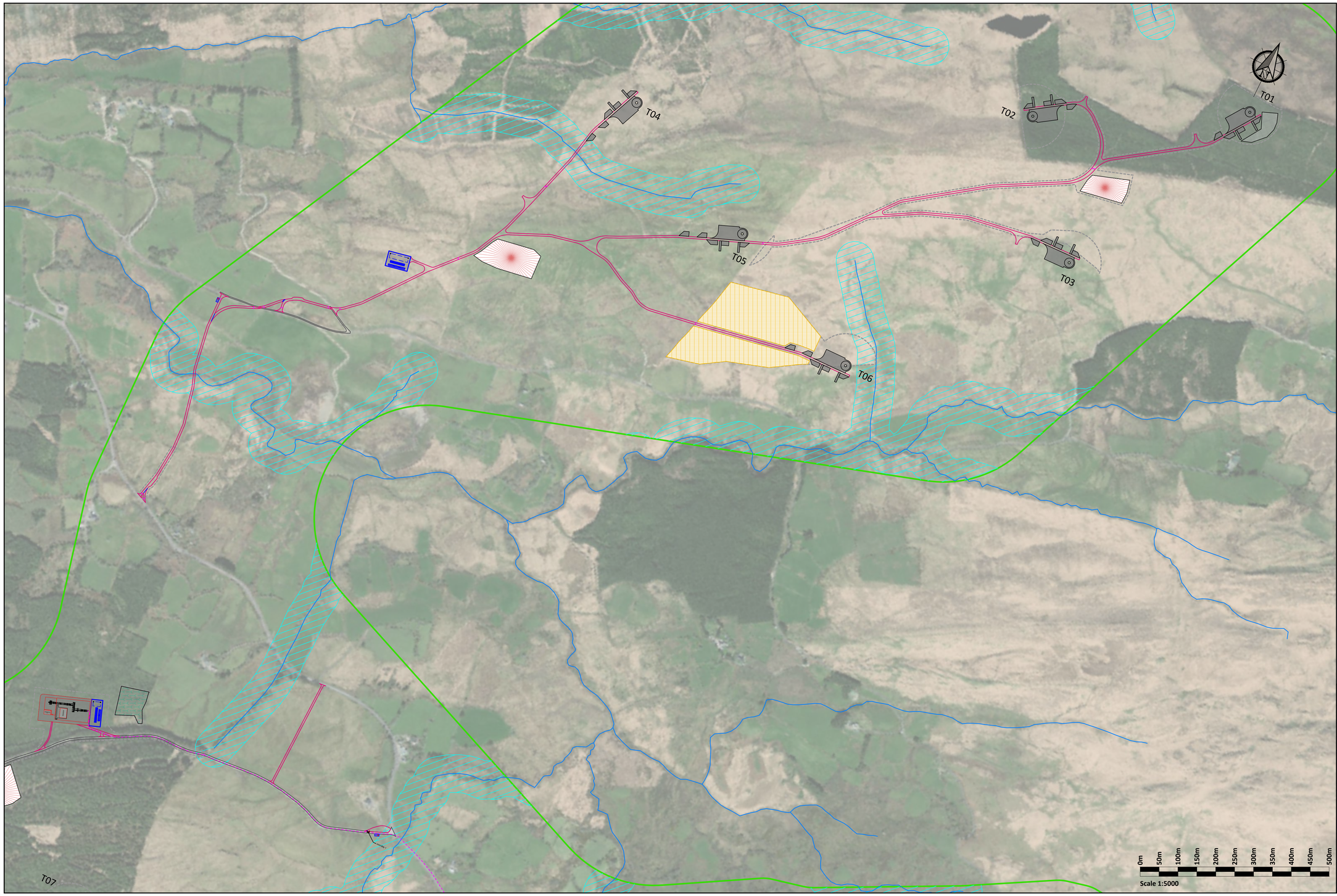
27 February 2026

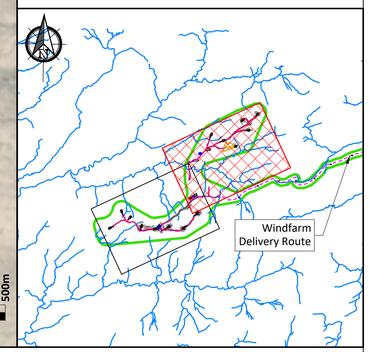


Legend:

- EIAR Study Boundary
- Proposed Access Tracks
- Proposed Peat & Spoil Management Areas
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Turbine & Hardstanding
- BMEP Habitat Enhancement Areas
- Area Forestry Felling
- Peat Depth Probe Location

Construction Buffer Zone Legend:

- Watercourses / Lakes with 50m Buffer
- Buffer zone to areas where no construction will be undertaken.



PLAN
Scale 1:5000

KEYPLAN
Scale 1:100000

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Rev.	Description	App By	Date
P01	FOR INFORMATION	BDH	07.07.25
P02	FOR INFORMATION	BDH	26.11.25
P03	FOR INFORMATION	BDH	16.02.26
P04	FOR INFORMATION	BDH	12.03.26

PROJECT
MAUGHANACLEA RENEWABLE ENERGY DEVELOPMENT

CLIENT
MKO

SHEET
CONSTRUCTION BUFFER ZONE SHEET 1 OF 2

Date 12.03.26	Project number P24-118	Scale (@ A1) 1:5000	
Drawn by POR	Drawing Number P24-118-0600-0003		Rev P04
Checked by IH	*(Sheet set subset 0600)*		

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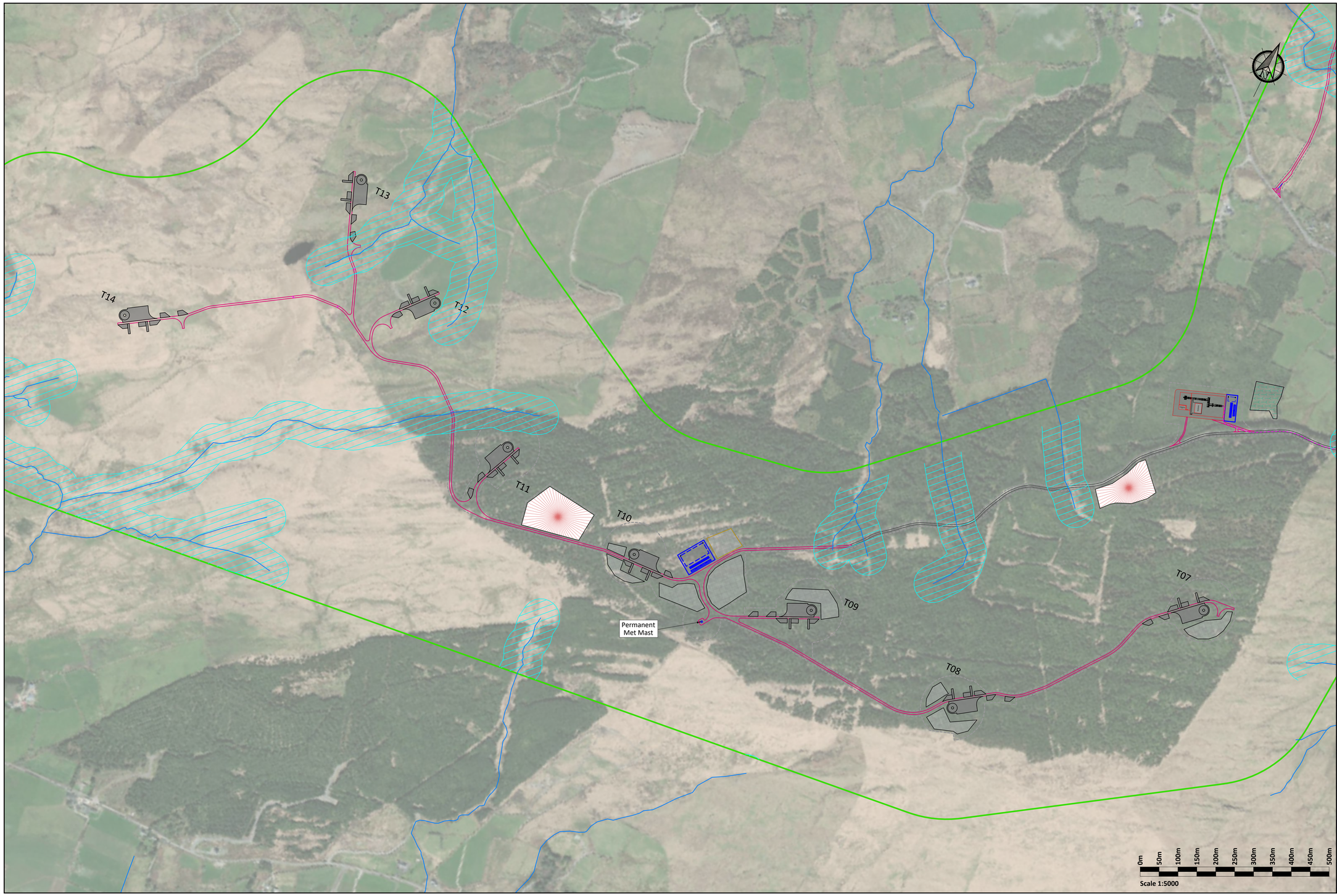
12 March 2026

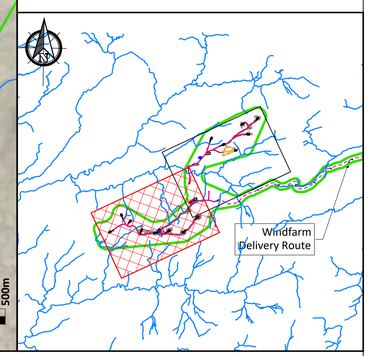


Legend:

- EIAR Study Boundary
- Proposed Access Tracks
- Proposed Peat & Spoil Management Areas
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Turbine & Hardstanding
- BMEP Habitat Enhancement Areas
- Forestry Felling
- Peat Depth Probe Location

Construction Buffer Zone Legend:

- Watercourses / Lakes with 50m Buffer
- Buffer zone to areas where no construction will be undertaken.



PLAN
Scale 1:5000

KEYPLAN
Scale 1:100000

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Rev.	Description	App By	Date
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P03	FOR INFORMATION	BDH	16.02.26
P04	FOR INFORMATION	BDH	12.03.26

PROJECT
MAUGHANACLEA RENEWABLE ENERGY DEVELOPMENT

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SHEET
CONSTRUCTION BUFFER ZONE SHEET 2 OF 2

Date 12.03.26	Project number P24-118	Scale (@ A1) 1:5000	
Drawn by POR	Drawing Number P24-118-0600-0004 (Sheet set subset 0600)		Rev P04
Checked by IH			

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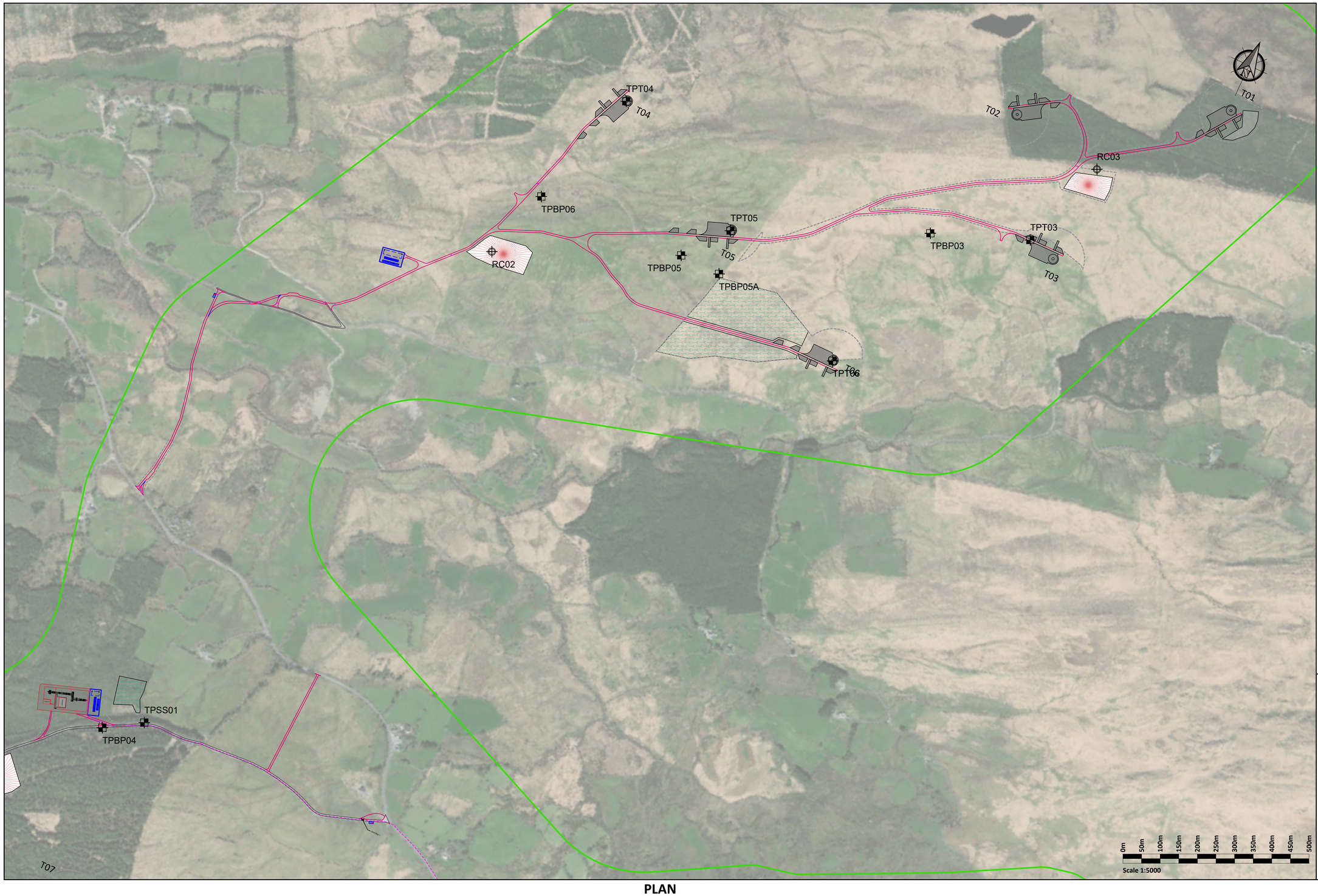
12 March 2026

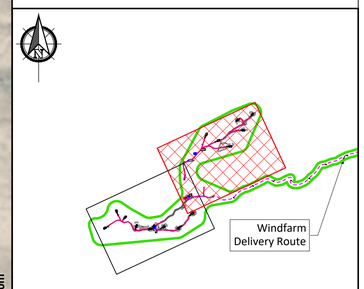


Legend:

- EIAR Study Boundary
- Proposed Access Tracks
- Proposed Peat & Spoil Management Areas
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Turbine & Hardstanding
- BMEP Habitat Enhancement Areas
- Forestry Felling

TPxx — Proposed Trial Pit

RCxx — Proposed Rotary Core



PLAN

Scale 1:5000

KEYPLAN

Scale 1:100000

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P03	FOR INFORMATION	BDH	16.02.26

PROJECT

MAUGHANACLEA RENEWABLE ENERGY DEVELOPMENT

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SHEET

GROUND INVESTIGATION LOCATION PLAN SHEET 1 OF 2

Date 16.02.26	Project number P24-118	Scale (@ A1) 1:5000	
Drawn by POR	Drawing Number P24-118-0600-0005 (Sheet set subset 0600)		Rev P03
Checked by IH			

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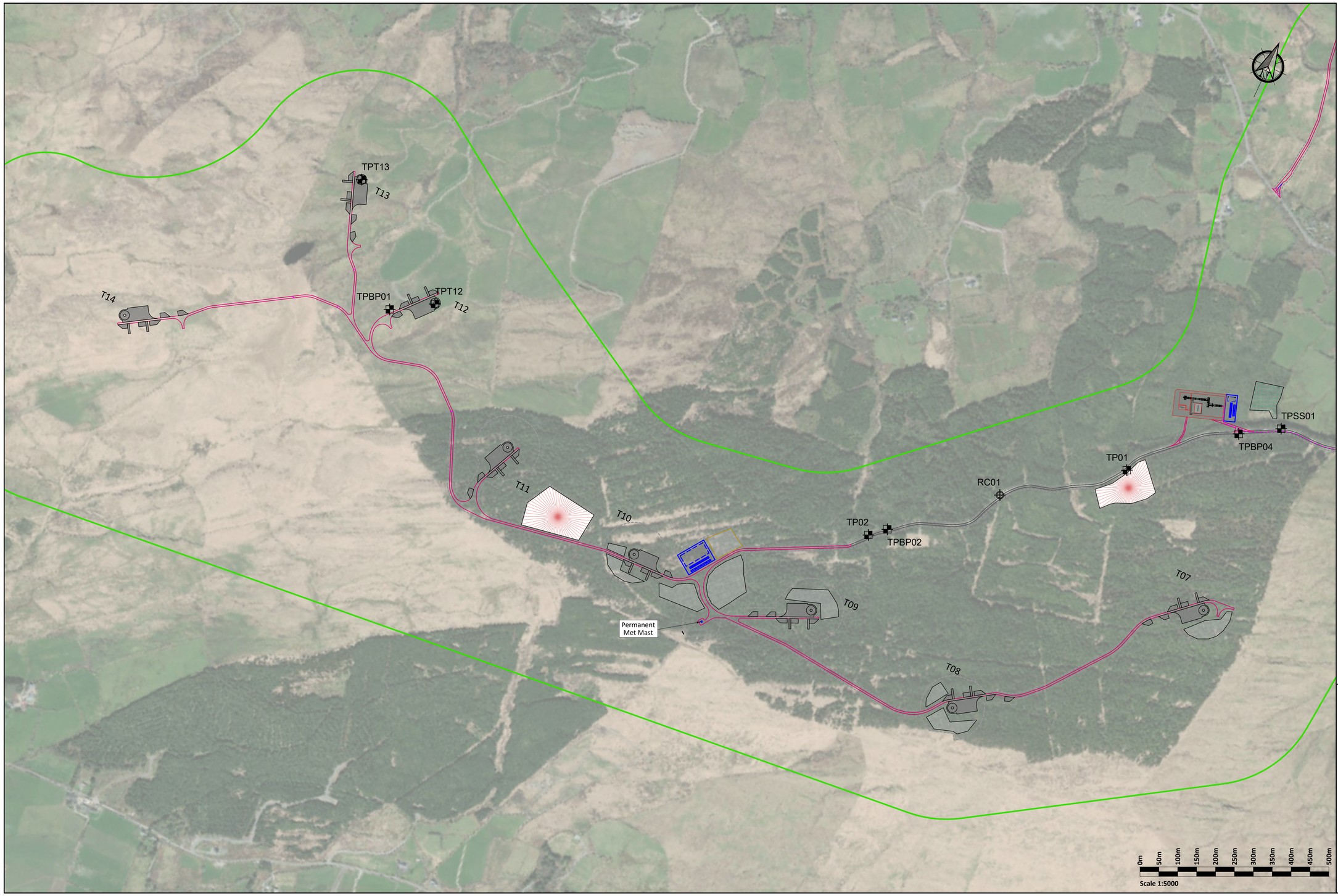
25 February 2026

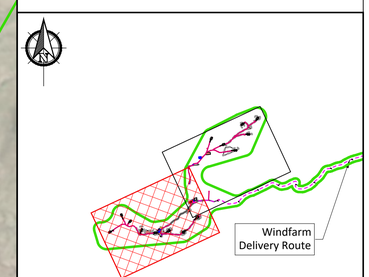


Legend:

- EIAR Study Boundary
- Proposed Access Tracks
- Proposed Peat & Spoil Management Areas
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Turbine & Hardstanding
- BMEP Habitat Enhancement Areas
- Forestry Felling

TPxx — Proposed Trial Pit

RCxx — Proposed Rotary Core



PLAN

Scale 1:5000

KEYPLAN

Scale 1:100000

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Rev.	Description	App By	Date
P01	FOR INFORMATION	BDH	07.07.25
P02	FOR INFORMATION	BDH	26.11.25
P03	FOR INFORMATION	BDH	16.02.26

PROJECT

MAUGHANACLEA RENEWABLE ENERGY DEVELOPMENT

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SHEET

GROUND INVESTIGATION
LOCATION PLAN SHEET 2 OF 2

Date 16.02.26	Project number P24-118	Scale (@ A1) 1:5000	
Drawn by POR	Drawing Number P24-118-0600-0006		Rev P03
Checked by IH	(Sheet set subset 0600)		

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25 February 2026

T01
T02
T03
T04
T05
T06
T07

Legend:

- EIAR Study Boundary
- Proposed Access Tracks
- Proposed Peat & Spoil Management Areas
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Turbine & Hardstanding
- BMEP Habitat Enhancement Areas
- Forestry Felling

Factor of Safety Legend:

- 0 < 1.0
- ≥ 1.0 < 1.3
- ≥ 1.3

Increasing Stability

No Peat Recorded
At This Location

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

Scale 1:5000

Windfarm
Delivery Route

PLAN

Scale 1:5000

KEYPLAN

Scale 1:100000

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Rev.	Description	App By	Date
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P03	FOR INFORMATION	BDH	16.02.26

PROJECT

MAUGHANACLEA RENEWABLE ENERGY DEVELOPMENT

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SHEET

FACTOR OF SAFETY PLAN SHORT TERM CRITICAL CONDITION (UNDRAINED) SHEET 1 OF 2

Date 16.02.26	Project number P24-118	Scale (@ A1) 1:5000	
Drawn by POR	Drawing Number P24-118-0600-0007 (Sheet set subset 0600)		Rev P03
Checked by IH			

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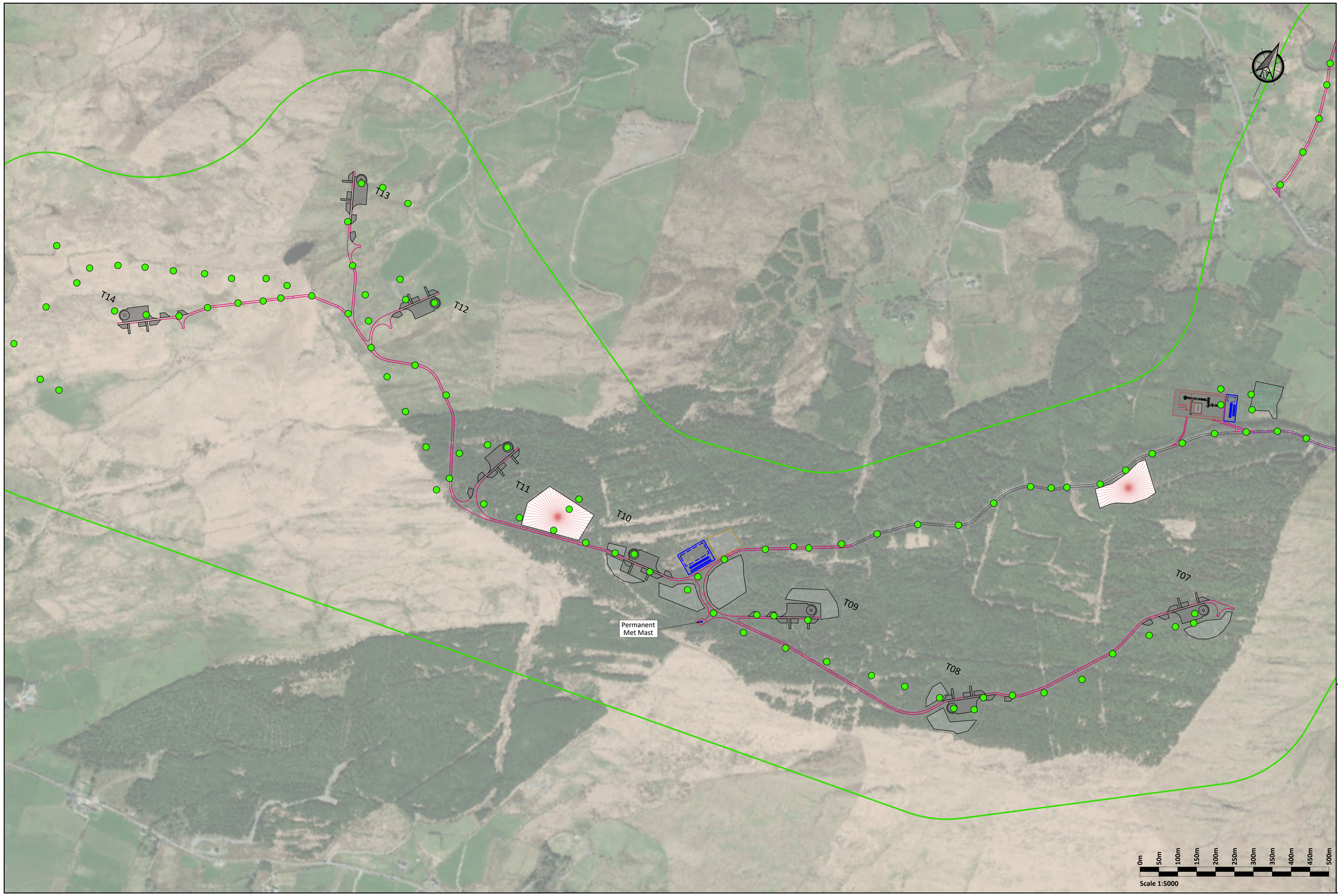
25 February 2026



Legend:

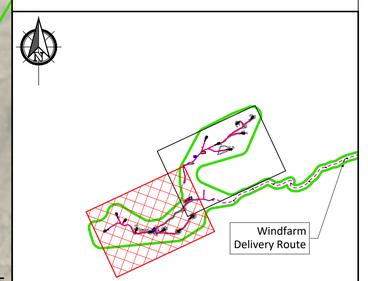
- EIAR Study Boundary
- Proposed Access Tracks
- Proposed Peat & Spoil Management Areas
- Proposed Temporary Construction Compound
- Proposed Borrow Pit
- Proposed Turbine & Hardstanding
- BMEP Habitat Enhancement Areas
- Forestry Felling

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

KEYPLAN
Scale 1:100000

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Rev.	Description	App By	Date
P01	FOR INFORMATION	BDH	07.07.25
P02	FOR INFORMATION	BDH	26.11.25
P03	FOR INFORMATION	BDH	16.02.26

PROJECT
MAUGHANACLEA RENEWABLE ENERGY DEVELOPMENT

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SHEET
FACTOR OF SAFETY PLAN SHORT TERM CRITICAL CONDITION (UNDRAINED) SHEET 2 OF 2

Date 16.02.26	Project number P24-118	Scale (@ A1) 1:5000	
Drawn by POR	Drawing Number P24-118-0600-0008 (Sheet set subset 0600)		Rev P03
Checked by IH			

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25 February 2026

Photo 1: Existing section of access road

Photo 2: Open hillside close to T03

Photo 3: Forestry in southern portion of site

Photo 4: Open hillside near T12

FEHILY TIMONEY

DESIGNING AND DELIVERING
A SUSTAINABLE FUTURE

APPENDIX B

Peat Stability Risk Registers

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Turbine T1

Grid Reference (Eastings, Northings):	512234	559209
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.2-0.4	
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 = 8.21 (u), 8.87 (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	2	1	2	Negligible	No		2	1	2	Negligible
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	3	1	3	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	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	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.

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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Turbine T2

Grid Reference (Eastings, Northings):	511718	558777
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 = 8.84 (u), 9.55 (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	2	1	2	Negligible	No		2	1	2	Negligible
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	3	1	3	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.

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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Turbine T3

Grid Reference (Eastings, Northings):	**511969**	**558466**
Distance to Watercourse (m)	**> 150**	
Min & Max Measured Peat Depth (m):	**0.2-0.4**	
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 = 2.81 (u), 2.97 (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	2	1	2	Negligible	No		2	1	2	Negligible
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	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T3**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Turbine T4

Grid Reference (Eastings, Northings):	510753	558366
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.5-1.0	
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 = 3.31 (u), 3.31 (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	2	1	2	Negligible	No		2	1	2	Negligible
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	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.

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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Turbine T5

Grid Reference (Eastings, Northings):	511153	558170
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.4-0.8	
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 = 4.28 (u), 4.60 (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	2	1	2	Negligible	No		2	1	2	Negligible
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	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.

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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Turbine T6

Grid Reference (Eastings, Northings):	511548	557969
Distance to Watercourse (m)	50 - 100	
Min & Max Measured Peat Depth (m):	0.1-0.4	
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 = 1.38 (u), 1.65 (d)	1	3	3	Negligible	No	See Below	1	3	3	Negligible
2	Evidence of sub peat water flow	1	3	3	Negligible	No		1	3	3	Negligible
3	Evidence of surface water flow	2	3	6	Low	No		2	3	6	Low
4	Evidence of previous failures/slips	2	3	6	Low	No		2	3	6	Low
5	Type of vegetation	2	3	6	Low	No		2	3	6	Low
6	General slope characteristics upslope/downslope from infrastructure location	2	3	6	Low	No		2	3	6	Low
7	Evidence of very soft/soft clay at base of peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
8	Evidence of mechanically cut peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
10	Evidence of bog pools	0	3	0	Not Applicable	No		0	3	0	Not Applicable
11	Other	0	3	0	Not Applicable	No		0	3	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T6**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Turbine T7

Grid Reference (Eastings, Northings):	510300	555783
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.5-2.1	
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 = 3.06(u), 2.74 (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	2	1	2	Negligible	No		2	1	2	Negligible
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		2	1	2	Negligible
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		2	1	2	Negligible
10	Evidence of bog pools	2	1	2	Negligible	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.

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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Turbine T8

Grid Reference (Eastings, Northings):	509807	555268
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.4-0.9	
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 = 3.71 (u), 3.22 (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	2	1	2	Negligible	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		2	1	2	Negligible
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 T8**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Turbine T9

Grid Reference (Eastings, Northings):	509359	555344
Distance to Watercourse (m)	100 - 150	
Min & Max Measured Peat Depth (m):	1.2-1.8	
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 = 5.47 (u), 4.25 (d)	1	2	2	Negligible	No		1	2	2	Negligible
2	Evidence of sub peat water flow	1	2	2	Negligible	No		1	2	2	Negligible
3	Evidence of surface water flow	2	2	4	Negligible	No		2	2	4	Negligible
4	Evidence of previous failures/slips	2	2	4	Negligible	No		0	2	0	Not Applicable
5	Type of vegetation	2	2	4	Negligible	No		2	2	4	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	2	4	Negligible	No	See Below	2	2	4	Negligible
7	Evidence of very soft/soft clay at base of peat	0	2	0	Not Applicable	No		0	2	0	Not Applicable
8	Evidence of mechanically cut peat	0	2	0	Not Applicable	No		0	2	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	2	0	Not Applicable	No		0	2	0	Not Applicable
10	Evidence of bog pools	0	2	0	Not Applicable	No		0	2	0	Not Applicable
11	Other	0	2	0	Not Applicable	No		0	2	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T9**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Turbine T10

Grid Reference (Eastings, Northings):	508872	555280
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.2-0.9	
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 = 6.05 (u), 6.39 (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	2	1	2	Negligible	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	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T10**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Turbine T11

Grid Reference (Eastings, Northings):	508449	555395
Distance to Watercourse (m)	50 - 100	
Min & Max Measured Peat Depth (m):	1.4-1.6	
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 = 4.42 (u), 3.59 (d)	1	3	3	Negligible	No	See Below	1	3	3	Negligible
2	Evidence of sub peat water flow	1	3	3	Negligible	No		1	3	3	Negligible
3	Evidence of surface water flow	2	3	6	Low	No		2	3	6	Low
4	Evidence of previous failures/slips	2	3	6	Low	No		2	3	6	Low
5	Type of vegetation	2	3	6	Low	No		2	3	6	Low
6	General slope characteristics upslope/downslope from infrastructure location	2	3	6	Low	No		2	3	6	Low
7	Evidence of very soft/soft clay at base of peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
8	Evidence of mechanically cut peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
10	Evidence of bog pools	0	3	0	Not Applicable	No		0	3	0	Not Applicable
11	Other	0	3	0	Not Applicable	No		0	3	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T11**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Turbine T12

Grid Reference (Eastings, Northings):	**508113**	**555660**
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 = 6.41 (u), 6.90 (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	2	1	2	Negligible	No		2	1	2	Negligible
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	3	1	3	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	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T12**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Turbine T13

Grid Reference (Eastings, Northings):	507799	555873
Distance to Watercourse (m)	100 - 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 = 6.41 (u), 6.90 (d)	1	2	2	Negligible	No		1	2	2	Negligible
2	Evidence of sub peat water flow	1	2	2	Negligible	No		1	2	2	Negligible
3	Evidence of surface water flow	2	2	4	Negligible	No		2	2	4	Negligible
4	Evidence of previous failures/slips	2	2	4	Negligible	No		2	2	4	Negligible
5	Type of vegetation	2	2	4	Negligible	No		2	2	4	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	2	4	Negligible	No	See Below	2	2	4	Negligible
7	Evidence of very soft/soft clay at base of peat	0	2	0	Not Applicable	No		0	2	0	Not Applicable
8	Evidence of mechanically cut peat	0	2	0	Not Applicable	No		0	2	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	2	0	Not Applicable	No		0	2	0	Not Applicable
10	Evidence of bog pools	0	2	0	Not Applicable	No		0	2	0	Not Applicable
11	Other	0	2	0	Not Applicable	No		0	2	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T13**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Turbine T14

Grid Reference (Eastings, Northings):	507383	555284
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 = 10.45 (u), 11.29 (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	2	1	2	Negligible	No		2	1	2	Negligible
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	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T14**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Substation

Grid Reference (Eastings, Northings):	510164	556288
Distance to Watercourse (m)	100 - 150	
Min & Max Measured Peat Depth (m):	0.8-1.2	
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 = 3.22 (u), 3.21 (d)	1	2	2	Negligible	No		1	2	2	Negligible
2	Evidence of sub peat water flow	1	2	2	Negligible	No		1	2	2	Negligible
3	Evidence of surface water flow	1	2	2	Negligible	No		1	2	2	Negligible
4	Evidence of previous failures/slips	2	2	4	Negligible	No		2	2	4	Negligible
5	Type of vegetation	2	2	4	Negligible	No		2	2	4	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	2	4	Negligible	No	See Below	2	2	4	Negligible
7	Evidence of very soft/soft clay at base of peat	0	2	0	Not Applicable	No		0	2	0	Not Applicable
8	Evidence of mechanically cut peat	0	2	0	Not Applicable	No		0	2	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	2	0	Not Applicable	No		0	2	0	Not Applicable
10	Evidence of bog pools	0	2	0	Not Applicable	No		0	2	0	Not Applicable
11	Other	0	2	0	Not Applicable	No		0	2	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.

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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Met. Mast

Grid Reference (Eastings, Northings):	509109	555194
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.2	
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 = 3.50 (u), 3.21 (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	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 **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.

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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Const. Comp. (N)

Grid Reference (Eastings, Northings):	**510358**	**557718**
Distance to Watercourse (m)	**> 150**	
Min & Max Measured Peat Depth (m):	**0.4-0.6**	
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 = 3.12 (u), 4.20(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		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 (North)**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Const. Comp. (S)

Grid Reference (Eastings, Northings):	509026	555346
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.4-2.2	
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 = 7.17 (u), 5.21 (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		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 (S)**
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 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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Borrow Pit 1

Grid Reference (Eastings, Northings):	511972	558682
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.2-0.4	
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 = 4.15 (u), 4.44 (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 **Borrow Pit 1**
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 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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Borrow Pit 2

Grid Reference (Eastings, Northings):	510624	557850
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.2-1.2	
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 = 3.50 (u), 3.21 (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		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 **Borrow Pit 2**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Borrow Pit 3

Grid Reference (Eastings, Northings):	509732	557850
Distance to Watercourse (m)	50 - 100	
Min & Max Measured Peat Depth (m):	0.2-0.5	
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 = 4.84 (u), 5.18 (d)	1	3	3	Negligible	No		1	3	3	Negligible
2	Evidence of sub peat water flow	1	3	3	Negligible	No		1	3	3	Negligible
3	Evidence of surface water flow	2	3	6	Low	No		1	3	3	Negligible
4	Evidence of previous failures/slips	0	3	0	Not Applicable	No		0	3	0	Not Applicable
5	Type of vegetation	2	3	6	Low	No		2	3	6	Low
6	General slope characteristics upslope/downslope from infrastructure location	1	3	3	Negligible	No	See Below	1	3	3	Negligible
7	Evidence of very soft/soft clay at base of peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
8	Evidence of mechanically cut peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
10	Evidence of bog pools	0	3	0	Not Applicable	No		0	3	0	Not Applicable
11	Other	0	3	0	Not Applicable	No		0	3	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Borrow Pit 3**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Borrow Pit 4

Grid Reference (Eastings, Northings):	508637	555285
Distance to Watercourse (m)	100 - 150	
Min & Max Measured Peat Depth (m):	0.1-1.5	
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 = 2.75 (u), 4.74 (d)	1	3	3	Negligible	No	See Below	1	3	3	Negligible
2	Evidence of sub peat water flow	1	3	3	Negligible	No		1	3	3	Negligible
3	Evidence of surface water flow	2	3	6	Low	No		1	3	3	Negligible
4	Evidence of previous failures/slips	0	3	0	Not Applicable	No		0	3	0	Not Applicable
5	Type of vegetation	2	3	6	Low	No		2	3	6	Low
6	General slope characteristics upslope/downslope from infrastructure location	1	3	3	Negligible	No		1	3	3	Negligible
7	Evidence of very soft/soft clay at base of peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
8	Evidence of mechanically cut peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
10	Evidence of bog pools	0	3	0	Not Applicable	No		0	3	0	Not Applicable
11	Other	0	3	0	Not Applicable	No		0	3	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Borrow Pit 4**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Entrance Road to T09

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**< 50**
Min & Max Measured Peat Depth (m):	**0-1.8**
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 = 3.03 (u), 3.20 (d)	1	4	4	Negligible	No		1	4	4	Negligible
2	Evidence of sub peat water flow	1	4	4	Negligible	No		1	4	4	Negligible
3	Evidence of surface water flow	2	4	8	Low	No		1	4	4	Negligible
4	Evidence of previous failures/slips	2	4	8	Low	No		1	4	4	Negligible
5	Type of vegetation	2	4	8	Low	No		1	4	4	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	4	8	Low	No	See Below	1	4	4	Negligible
7	Evidence of very soft/soft clay at base of peat	0	4	0	Not Applicable	No		0	4	0	Not Applicable
8	Evidence of mechanically cut peat	0	4	0	Not Applicable	No		0	4	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	4	0	Not Applicable	No		0	4	0	Not Applicable
10	Evidence of bog pools	0	4	0	Not Applicable	No		0	4	0	Not Applicable
11	Other	0	4	0	Not Applicable	No		0	4	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Entrance Road to T09**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	T08 to T09

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.1-1.3**
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 = 3.35 (u), 2.96 (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		1	1	1	Negligible
4	Evidence of previous failures/slips	2	1	2	Negligible	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	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		2	1	2	Negligible
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		2	1	2	Negligible
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Deep peat	0	1	0	Not Applicable	No		3	1	3	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **T08 to T09**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	T07 to T08

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.2-1.5**
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 = 2.88 (u), 3.07 (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		1	1	1	Negligible
4	Evidence of previous failures/slips	2	1	2	Negligible	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	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	Deep Peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **T07 to T08**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	T10 to T11

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**1.0-1.8**
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 = 3.08 (u), 2.57 (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	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 **T10 to T11**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	T11 to T12

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**< 50**
Min & Max Measured Peat Depth (m):	**0.3-1.2**
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 = 2.64 (u), 2.42 (d)	2	4	8	Low	No		1	4	4	Negligible
2	Evidence of sub peat water flow	1	4	4	Negligible	No		1	4	4	Negligible
3	Evidence of surface water flow	2	4	8	Low	No		1	4	4	Negligible
4	Evidence of previous failures/slips	2	4	8	Low	No		1	4	4	Negligible
5	Type of vegetation	2	4	8	Low	No		1	4	4	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	4	8	Low	No	See Below	1	4	4	Negligible
7	Evidence of very soft/soft clay at base of peat	0	4	0	Not Applicable	No		0	4	0	Not Applicable
8	Evidence of mechanically cut peat	0	4	0	Not Applicable	No		0	4	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	4	0	Not Applicable	No		0	4	0	Not Applicable
10	Evidence of bog pools	0	4	0	Not Applicable	No		0	4	0	Not Applicable
11	Other	0	4	0	Not Applicable	No		0	4	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **T11 to T12**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	T12 to T13

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**< 50**
Min & Max Measured Peat Depth (m):	**0-0.6**
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 = 5.10 (u), 3.83 (d)	1	4	4	Negligible	No	See Below	1	4	4	Negligible
2	Evidence of sub peat water flow	1	4	4	Negligible	No		1	4	4	Negligible
3	Evidence of surface water flow	2	4	8	Low	No		1	4	4	Negligible
4	Evidence of previous failures/slips	0	4	0	Not Applicable	No		0	4	0	Not Applicable
5	Type of vegetation	2	4	8	Low	No		1	4	4	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	4	8	Low	No		1	4	4	Negligible
7	Evidence of very soft/soft clay at base of peat	0	4	0	Not Applicable	No		0	4	0	Not Applicable
8	Evidence of mechanically cut peat	0	4	0	Not Applicable	No		0	4	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	4	0	Not Applicable	No		0	4	0	Not Applicable
10	Evidence of bog pools	0	4	0	Not Applicable	No		0	4	0	Not Applicable
11	Other	0	4	0	Not Applicable	No		0	4	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **T12 to T13**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	T13 to T14

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**50 - 100**
Min & Max Measured Peat Depth (m):	**0.15-4.5**
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 = 3.50 (u), 2.74 (d)	1	3	3	Negligible	No	See Below	1	3	3	Negligible
2	Evidence of sub peat water flow	1	3	3	Negligible	No		1	3	3	Negligible
3	Evidence of surface water flow	2	3	6	Low	No		1	3	3	Negligible
4	Evidence of previous failures/slips	0	3	0	Not Applicable	No		0	3	0	Not Applicable
5	Type of vegetation	2	3	6	Low	No		1	3	3	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	3	6	Low	No		1	3	3	Negligible
7	Evidence of very soft/soft clay at base of peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
8	Evidence of mechanically cut peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
10	Evidence of bog pools	0	3	0	Not Applicable	No		0	3	0	Not Applicable
11	Deep peat	3	3	9	Low	Yes		2	3	6	Low

	Control Measures to be Implemented Prior to/and During Construction for **T13 to T14**
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	No stockpiling or sidecasting on material along section of floating road
vi	No tracking of plant on open area of deep peat
vii	Monitoring required upslope and downslope of floating road

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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	**Entrance Road to T06**

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**< 50**
Min & Max Measured Peat Depth (m):	**0.2-0.8**
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 = 3.22 (u), 3.21 (d)	1	4	4	Negligible	No		1	4	4	Negligible
2	Evidence of sub peat water flow	1	4	4	Negligible	No		1	4	4	Negligible
3	Evidence of surface water flow	2	4	8	Low	No		1	4	4	Negligible
4	Evidence of previous failures/slips	2	4	8	Low	No		1	4	4	Negligible
5	Type of vegetation	2	4	8	Low	No		1	4	4	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	4	8	Low	No	See Below	1	4	4	Negligible
7	Evidence of very soft/soft clay at base of peat	0	4	0	Not Applicable	No		0	4	0	Not Applicable
8	Evidence of mechanically cut peat	0	4	0	Not Applicable	No		0	4	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	4	0	Not Applicable	No		0	4	0	Not Applicable
10	Evidence of bog pools	0	4	0	Not Applicable	No		0	4	0	Not Applicable
11	Other	0	4	0	Not Applicable	No		0	4	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Entrance Road to T06**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Spur to T04

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.8-1.2**
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 = 2.64 (u), 2.42 (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		1	1	1	Negligible
4	Evidence of previous failures/slips	2	1	2	Negligible	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	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		2	1	2	Negligible
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		2	1	2	Negligible
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Deep peat	0	1	0	Not Applicable	No		3	1	3	Negligible

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

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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Spur to T05

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.2-0.8**
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 = 3.90 (u), 4.15 (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		1	1	1	Negligible
4	Evidence of previous failures/slips	2	1	2	Negligible	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	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	Deep Peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable

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

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	T05 to T03

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**50 - 100**
Min & Max Measured Peat Depth (m):	**0.2-0.4**
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 = 3.28 (u), 3.47 (d)	1	3	3	Negligible	No	See Below	1	3	3	Negligible
2	Evidence of sub peat water flow	1	3	3	Negligible	No		1	3	3	Negligible
3	Evidence of surface water flow	2	3	6	Low	No		1	3	3	Negligible
4	Evidence of previous failures/slips	0	3	0	Not Applicable	No		0	3	0	Not Applicable
5	Type of vegetation	2	3	6	Low	No		1	3	3	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	3	6	Low	No		1	3	3	Negligible
7	Evidence of very soft/soft clay at base of peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
8	Evidence of mechanically cut peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	3	0	Not Applicable	No		0	3	0	Not Applicable
10	Evidence of bog pools	0	3	0	Not Applicable	No		0	3	0	Not Applicable
11	Other	0	3	0	Not Applicable	No		0	3	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **T05 to T03**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Spur to T02

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0-0.6**
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), 6.41 (d)	2	1	2	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		1	1	1	Negligible
4	Evidence of previous failures/slips	2	1	2	Negligible	No		2	1	2	Negligible
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	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Spur to T02**
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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	Spur to T01

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.3-1.2**
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 = 3.63 (u), 3.89 (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		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	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 **Spur 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.

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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	PS01

Grid Reference (Eastings, Northings):	509129	555310
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.2-1.6	
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 = 2.85 (u), 3.21 (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	2	1	2	Negligible	No		2	1	2	Negligible
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	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	PS02

Grid Reference (Eastings, Northings):	509039	555231
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.4-1.7	
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 = 5.28 (u), 5.47 (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 **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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	PS03

Grid Reference (Eastings, Northings):	509358	555381
Distance to Watercourse (m)	100 - 150	
Min & Max Measured Peat Depth (m):	1.2-2.0	
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 = 4.64 (u), 4.25 (d)	1	2	2	Negligible	No	See Below	1	2	2	Negligible
2	Evidence of sub peat water flow	1	2	2	Negligible	No		1	2	2	Negligible
3	Evidence of surface water flow	2	2	4	Negligible	No		1	2	2	Negligible
4	Evidence of previous failures/slips	0	2	0	Not Applicable	No		0	2	0	Not Applicable
5	Type of vegetation	2	2	4	Negligible	No		2	2	4	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	1	2	2	Negligible	No		1	2	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	2	0	Not Applicable	No		0	2	0	Not Applicable
8	Evidence of mechanically cut peat	0	2	0	Not Applicable	No		0	2	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	2	0	Not Applicable	No		0	2	0	Not Applicable
10	Evidence of bog pools	0	2	0	Not Applicable	No		0	2	0	Not Applicable
11	Other	0	2	0	Not Applicable	No		0	2	0	Not Applicable

	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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	PS04

Grid Reference (Eastings, Northings):	508819	555270
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.4	
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 = 2.65 (u), 2.75 (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		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 **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 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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	PS05

Grid Reference (Eastings, Northings):	508850	555223
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.4	
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 = 2.65 (u), 2.75 (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		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 **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 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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	PS06

Grid Reference (Eastings, Northings):	509810	555218
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.2-0.9	
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 = 1.95 (u), 2.60 (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 **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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	PS07

Grid Reference (Eastings, Northings):	509753	555282
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.4-0.9	
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 = 3.06 (u), 4.15 (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 **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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	PS08

Grid Reference (Eastings, Northings):	510343	555751
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.1-1.7	
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 = 1.84 (u), 1.57 (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 **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.

Maughnaclea Renewable Energy Development - Peat Stability Risk Register (Rev 0)

Location:	PS09

Grid Reference (Eastings, Northings):	**509081**	**555406**
Distance to Watercourse (m)	**> 150**	
Min & Max Measured Peat Depth (m):	**1.6**	
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 = 4.94 (u), 4.78 (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		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 **PS09**
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.

FEHILY TIMONEY

DESIGNING AND DELIVERING
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APPENDIX C

Calculated FOS for Peat Slopes on Site

alculated FoS of Natural Peat Slopes for Maughnaclea Renewable Energy Development - Undrained Analys

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)
T01	512214	559047	4	8	10	0.4	1.4	**28.74**	**8.21**
T02	511673	558839	4	8	10	0.3	1.3	**38.32**	**8.84**
T03	511946	558485	12	8	10	0.4	1.4	**9.83**	**2.81**
T04	510672	558318	7	8	10	1.0	2.0	**6.61**	**3.31**
T05	511204	558189	6	8	10	0.8	1.8	**9.62**	**4.28**
T06	511786	558072	6	8	10	0.4	1.4	**19.24**	**5.50**
T07	510283	555765	7	8	10	2.1	3.1	**3.15**	**2.13**
T08	509811	555268	10	8	10	0.9	1.9	**5.20**	**2.46**
T09	509362	555317	3	8	10	1.8	2.8	**8.50**	**5.47**
T10	508872	555281	4	8	10	0.9	1.9	**12.77**	**6.05**
T11	508448	555395	4	8	10	1.6	2.6	**7.19**	**4.42**
T12	508112	555660	6	8	10	0.2	1.2	**38.48**	**6.41**
T13	507803	555865	6	8	10	0.2	1.2	**38.48**	**6.41**
T14	507354	555283	4	8	10	0.1	1.1	**114.96**	**10.45**
PPSS01	510173	556354	6	8	10	1.0	2.0	**7.70**	**3.85**
PPSS02	510094	556333	6	8	10	1.2	2.2	**6.41**	**3.50**
PPSS03	510192	556318	8	8	10	0.8	1.8	**7.26**	**3.22**
PPSS04	510112	556295	6	8	10	0.9	1.9	**8.55**	**4.05**
T15 (S/S)	507309	555031	6	8	10	0.3	1.3	**25.65**	**5.92**
PP001	510940	556342	4	8	10	0.1	1.1	**114.96**	**10.45**
PP002	510898	556307	4	8	10	0.2	1.2	**57.48**	**9.58**
PP003	510802	556282	4	8	10	0.2	1.2	**57.48**	**9.58**
PP004	510717	556311	6	8	10	0.3	1.3	**25.65**	**5.92**
PP005	510606	556328	8	8	10	0.3	1.3	**19.35**	**4.47**
PP006	510464	556320	10	8	10	0.2	1.2	**23.39**	**3.90**
PP007	510354	556310	8	8	10	0.3	1.3	**19.35**	**4.47**
PP008	510277	556295	10	8	10	0.2	1.2	**23.39**	**3.90**
PP009	510203	556258	12	8	10	0.3	1.3	**13.11**	**3.03**
PP010	510129	556219	10	8	10	0.3	1.3	**15.59**	**3.60**
PP011	510062	556160	10	8	10	0.2	1.2	**23.39**	**3.90**
PP012	510002	556101	10	8	10	0.2	1.2	**23.39**	**3.90**
PP013	509957	556032	8	8	10	0.1	1.1	**58.05**	**5.28**
PP014	509911	555970	8	8	10	0.2	1.2	**29.02**	**4.84**
PP015	509835	555925	6	8	10	0.4	1.4	**19.24**	**5.50**
PP016	509747	555886	8	8	10	0.3	1.3	**19.35**	**4.47**
PP017	509677	555805	6	8	10	0.2	1.2	**38.48**	**6.41**
PP018	509617	555713	8	8	10	0.2	1.2	**29.02**	**4.84**
PP019	509519	555669	6	8	10	0.2	1.2	**38.48**	**6.41**
PP020	509432	555601	4	8	10	0.3	1.3	**38.32**	**8.84**
PP021	509358	555537	2	8	10	0.2	1.2	**114.68**	**19.11**
PP022	509284	555491	4	8	10	1.0	2.0	**11.50**	**5.75**
PP023	509181	555439	8	8	10	0.1	1.1	**58.05**	**5.28**
PP024	509094	555369	3	8	10	1.6	2.6	**9.57**	**5.89**
PP025	509050	555298	2	8	10	2.2	3.2	**10.43**	**7.17**
PP026	509040	555255	3	8	10	1.4	2.4	**10.93**	**6.38**
PP027	509128	555228	6	8	10	1.2	2.2	**6.41**	**3.50**
PP028	509222	555215	6	8	10	0.2	1.2	**38.48**	**6.41**
PP029	509276	555289	6	8	10	0.8	1.8	**9.62**	**4.28**
PP030	509340	555225	6	8	10	1.3	2.3	**5.92**	**3.35**
PP031	509454	555238	10	8	10	0.1	1.1	**46.78**	**4.25**
PP032	509577	555255	8	8	10	0.5	1.5	**11.61**	**3.87**
PP033	509669	555266	8	8	10	0.2	1.2	**29.02**	**4.84**
PP034	509765	555278	8	8	10	0.4	1.4	**14.51**	**4.15**
PP035	509870	555327	10	8	10	0.5	1.5	**9.36**	**3.12**
PP036	509937	555365	9	8	10	0.3	1.3	**17.26**	**3.98**
PP037	510010	555407	9	8	10	0.8	1.8	**6.47**	**2.88**
PP038	510086	555481	8	8	10	0.3	1.3	**19.35**	**4.47**
PP039	510198	555662	4	8	10	1.3	2.3	**8.84**	**5.00**
PP040	510251	555712	4	8	10	1.2	2.2	**9.58**	**5.23**
PP041	508929	555256	6	8	10	1.2	2.2	**6.41**	**3.50**
PP042	508825	555262	6	8	10	1.4	2.4	**5.50**	**3.21**
PP043	508340	555327	6	8	10	1.0	2.0	**7.70**	**3.85**
PP044	508398	555379	4	8	10	1.2	2.2	**9.58**	**5.23**
PP045	508743	555254	6	8	10	1.0	2.0	**7.70**	**3.85**
PP046	508652	555248	6	8	10	1.4	2.4	**5.50**	**3.21**
PP047	508556	555240	6	8	10	1.5	2.5	**5.13**	**3.08**
PP048	508455	555233	4	8	10	1.8	2.8	**6.39**	**4.11**
PP049	508344	555256	5	8	10	1.2	2.2	**7.68**	**4.19**
PP050	508253	555305	6	8	10	1.5	2.5	**5.13**	**3.08**
PP051	508164	555367	8	8	10	1.5	2.5	**3.87**	**2.32**
PP052	508081	555430	8	8	10	1.4	2.4	**4.15**	**2.42**
PP053	507974	555543	6	8	10	0.1	1.1	**76.96**	**7.00**
PP054	508039	555636	4	8	10	0.4	1.4	**28.74**	**8.21**
PP055	507937	555602	4	8	10	0.2	1.2	**57.48**	**9.58**
PP056	508003	555678	6	8	10	0.1	1.1	**76.96**	**7.00**
PP057	507937	555869	10	8	10	0.1	1.1	**46.78**	**4.25**
PP058	507859	555879	6	8	10	0.1	1.1	**76.96**	**7.00**
PP059	507917	555538	6	8	10	0.6	1.6	**12.83**	**4.81**
PP060	507810	555540	3	8	10	0.8	1.8	**19.13**	**8.50**
PP061	507739	555537	4	8	10	1.0	2.0	**11.50**	**5.75**
PP062	507681	555530	6	8	10	1.2	2.2	**6.41**	**3.50**
PP063	510131	555577	8	8	10	0.2	1.2	**29.02**	**4.84**
PP064	507598	555492	5	8	10	0.1	1.1	**92.14**	**8.38**
PP065	507528	555473	2	8	10	4.1	5.1	**5.59**	**4.50**
PP066	507450	555445	4	8	10	0.1	1.1	**114.96**	**10.45**
PP067	507378	555422	3	8	10	0.2	1.2	**76.53**	**12.76**
PP068	507311	555396	2	8	10	0.2	1.2	**114.68**	**19.11**
PP069	507246	555358	2	8	10	1.5	2.5	**15.29**	**9.17**

alculated FoS of Natural Peat Slopes for Maughnaclea Renewable Energy Development - Undrained Analys

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)
PP070	507142	555375	2	8	10	1.5	2.5	**15.29**	**9.17**
PP071	507232	555308	3	8	10	1.8	2.8	**8.50**	**5.47**
PP072	507185	555216	4	8	10	0.1	1.1	**114.96**	**10.45**
PP073	507149	555092	10	8	10	0.3	1.3	**15.59**	**3.60**
PP074	507252	555036	4	8	10	0.3	1.3	**38.32**	**8.84**
PP100	510259	557535	8	8	10	0.2	1.2	**29.02**	**4.84**
PP101	510330	557617	6	8	10	0.8	1.8	**9.62**	**4.28**
PP102	510408	557702	8	8	10	0.4	1.4	**14.51**	**4.15**
PP103	510490	557774	6	8	10	0.6	1.6	**12.83**	**4.81**
PP104	510577	557855	6	8	10	1.2	2.2	**6.41**	**3.50**
PP105	510670	557910	8	8	10	0.8	1.8	**7.26**	**3.22**
PP106	510758	557953	5	8	10	0.2	1.2	**46.07**	**7.68**
PP107	510858	557984	10	8	10	0.2	1.2	**23.39**	**3.90**
PP108	510530	557860	8	8	10	1.0	2.0	**5.80**	**2.90**
PP109	510581	557947	8	8	10	0.8	1.8	**7.26**	**3.22**
PP110	510653	558019	8	8	10	1.2	2.2	**4.84**	**2.64**
PP111	510701	558118	4	8	10	0.6	1.6	**19.16**	**7.19**
PP112	510721	558206	4	8	10	0.8	1.8	**14.37**	**6.39**
PP113	510722	558310	4	8	10	1.0	2.0	**11.50**	**5.75**
PP114	510983	558056	8	8	10	0.2	1.2	**29.02**	**4.84**
PP115	511083	558119	5	8	10	0.3	1.3	**30.71**	**7.09**
PP116	511163	558179	4	8	10	0.4	1.4	**28.74**	**8.21**
PP117	511243	558222	5	8	10	0.3	1.3	**30.71**	**7.09**
PP118	511350	558253	12	8	10	0.2	1.2	**19.67**	**3.28**
PP119	511429	558326	10	8	10	0.2	1.2	**23.39**	**3.90**
PP120	511531	558379	6	8	10	0.4	1.4	**19.24**	**5.50**
PP121	511631	558398	8	8	10	0.4	1.4	**14.51**	**4.15**
PP122	511732	558427	8	8	10	0.4	1.4	**14.51**	**4.15**
PP123	511829	558451	10	8	10	0.2	1.2	**23.39**	**3.90**
PP124	511787	558482	10	8	10	0.2	1.2	**23.39**	**3.90**
PP125	511865	558541	8	8	10	0.2	1.2	**29.02**	**4.84**
PP126	511950	558600	8	8	10	0.2	1.2	**29.02**	**4.84**
PP127	512032	558673	8	8	10	0.4	1.4	**14.51**	**4.15**
PP128	512092	558752	2	8	10	0.2	1.2	**114.68**	**19.11**
PP129	512086	558830	8	8	10	0.6	1.6	**9.67**	**3.63**
PP130	512136	558914	4	8	10	0.3	1.3	**38.32**	**8.84**
PP131	512166	558993	4	8	10	0.6	1.6	**19.16**	**7.19**
PP132	512021	558854	4	8	10	0.7	1.7	**16.42**	**6.76**
PP133	511933	558845	4	8	10	0.8	1.8	**14.37**	**6.39**
PP134	511826	558851	6	8	10	0.6	1.6	**12.83**	**4.81**
PP135	511736	558856	3	8	10	1.2	2.2	**12.76**	**6.96**
PP136	510954	557988	8	8	10	0.5	1.5	**11.61**	**3.87**
PP137	511059	557991	10	8	10	0.4	1.4	**11.70**	**3.34**
PP138	511170	557991	10	8	10	0.2	1.2	**23.39**	**3.90**
PP139	511270	557994	8	8	10	0.3	1.3	**19.35**	**4.47**
PP140	511370	557989	8	8	10	0.2	1.2	**29.02**	**4.84**
PP141	511463	557980	6	8	10	0.4	1.4	**19.24**	**5.50**
PP142	511557	557971	4	8	10	0.8	1.8	**14.37**	**6.39**
PP143	511659	558001	4	8	10	0.3	1.3	**38.32**	**8.84**
PP144	511760	558039	4	8	10	0.4	1.4	**28.74**	**8.21**
PP145	511707	557962	6	8	10	0.2	1.2	**38.48**	**6.41**
PP146	511694	557884	6	8	10	0.1	1.1	**76.96**	**7.00**
PP147	511604	557841	6	8	10	0.2	1.2	**38.48**	**6.41**
PP148	511511	557794	6	8	10	0.3	1.3	**25.65**	**5.92**
PP149	511391	557781	6	8	10	0.2	1.2	**38.48**	**6.41**
PP150	511281	557746	6	8	10	0.2	1.2	**38.48**	**6.41**
PP151	511184	557708	8	8	10	0.3	1.3	**19.35**	**4.47**
PP152	511074	557695	6	8	10	0.2	1.2	**38.48**	**6.41**
PP153	510968	557678	8	8	10	0.2	1.2	**29.02**	**4.84**
PP154	510871	557641	6	8	10	0.2	1.2	**38.48**	**6.41**
PP155	510766	557592	6	8	10	0.1	1.1	**76.96**	**7.00**
PP156	510643	557569	6	8	10	0.2	1.2	**38.48**	**6.41**
PP157	510517	557555	8	8	10	0.1	1.1	**58.05**	**5.28**
PP158	510395	557533	8	8	10	0.3	1.3	**19.35**	**4.47**
PP159	510275	557476	6	8	10	0.2	1.2	**38.48**	**6.41**
PP160	510113	557461	6	8	10	0.1	1.1	**76.96**	**7.00**
PP161	510059	557388	6	8	10	0.2	1.2	**38.48**	**6.41**
PP162	510029	557323	8	8	10	0.1	1.1	**58.05**	**5.28**
PP163	509992	557236	6	8	10	0.1	1.1	**76.96**	**7.00**
PP164	510008	557181	5	8	10	0.2	1.2	**46.07**	**7.68**
PP165	510027	557091	4	8	10	0.4	1.4	**28.74**	**8.21**
PP166	510026	556993	4	8	10	1.2	2.2	**9.58**	**5.23**
PP167	510008	556889	4	8	10	0.2	1.2	**57.48**	**9.58**
APP001	508243	555452	8	8	10	1.2	2.2	**4.84**	**2.64**
APP002	508135	555489	8	8	10	1.0	2.0	**5.80**	**2.90**
APP003	507874	555658	3	8	10	2.0	3.0	**7.65**	**5.10**
APP004	507813	555758	6	8	10	0.3	1.3	**25.65**	**5.92**
APP005	507738	555500	3	8	10	1.1	2.1	**13.92**	**7.29**
APP006	507699	555473	4	8	10	2.1	3.1	**5.47**	**3.71**
APP007	507641	555440	6	8	10	1.2	2.2	**6.41**	**3.50**
APP008	507573	555395	6	8	10	0.2	1.2	**38.48**	**6.41**
APP009	507514	555343	8	8	10	0.1	1.1	**58.05**	**5.28**
APP010	507434	555309	6	8	10	0.1	1.1	**76.96**	**7.00**
APP011	510889	557941	6	8	10	0.2	1.2	**38.48**	**6.41**
APP012	511004	557884	8	8	10	0.2	1.2	**29.02**	**4.84**
APP013	511167	557905	10	8	10	0.2	1.2	**23.39**	**3.90**
APP014	511306	557928	8	8	10	0.2	1.2	**29.02**	**4.84**
APP015	511462	557948	6	8	10	0.3	1.3	**25.65**	**5.92**
APP016	510915	558051	8	8	10	0.2	1.2	**29.02**	**4.84**
APP017	511509	558432	5	8	10	0.4	1.4	**23.04**	**6.58**

alculated FoS of Natural Peat Slopes for Maughnaclea Renewable Energy Development - Undrained Analys

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)
APP018	511633	558517	6	8	10	0.3	1.3	**25.65**	**5.92**
APP019	511765	558596	8	8	10	0.5	1.5	**11.61**	**3.87**
APP020	511908	558681	4	8	10	0.2	1.2	**57.48**	**9.58**
APP021	511621	558441	8	8	10	0.3	1.3	**19.35**	**4.47**
BP PP01	510610	557828	6	8	10	0.5	1.5	**15.39**	**5.13**
BP PP02	510680	557860	8	8	10	0.6	1.6	**9.67**	**3.63**
BP PP03	510640	557880	10	8	10	0.4	1.4	**11.70**	**3.34**
BP PP01	510304	557732	8	8	10	0.6	1.6	**9.67**	**3.63**
BP PP02	510322	557699	10	8	10	0.4	1.4	**11.70**	**3.34**
BP PP03	510383	557722	10	8	10	0.5	1.5	**9.36**	**3.12**
BP PP04	510386	557757	10	8	10	0.5	1.5	**9.36**	**3.12**
BP PP05	511027	557917	12	8	10	0.3	1.3	**13.11**	**3.03**
BP PP06	511111	557928	12	8	10	0.2	1.2	**19.67**	**3.28**
BP PP07	511041	557957	10	8	10	0.2	1.2	**23.39**	**3.90**
MKO probes									
S02	508010	555482	5	8	10	0.4	1.4	**23.04**	**6.58**
S54	509798	555906	7	8	10	0.8	1.8	**8.27**	**3.67**
S57	509246	555477	6	8	10	0.2	1.2	**38.48**	**6.41**
S64	509234	555272	6	8	10	1.4	2.4	**5.50**	**3.21**
S72	508666	555316	5	8	10	0.6	1.6	**15.36**	**5.76**
S73	508678	555351	3	8	10	2.7	3.7	**5.67**	**4.14**
S89	508326	555214	5	8	10	0.4	1.4	**23.04**	**6.58**
S95	509861	555288	8	8	10	0.4	1.4	**14.51**	**4.15**
S103	510291	555741	4	8	10	1.7	2.7	**6.76**	**4.26**
S110	510658	556319	7	8	10	0.2	1.2	**33.07**	**5.51**
N67	511026	558043	9	8	10	0.2	1.2	**34.52**	**4.50**
N73	510841	558116	8	8	10	0.8	1.8	**7.26**	**3.22**
N74	510800	558164	8	8	10	0.7	1.7	**8.29**	**3.41**
N75	510795	558315	14	8	10	0.4	1.4	**8.52**	**2.43**
N83	510849	558369	14	8	10	0.5	1.5	**7.57**	**2.35**
N95	511652	558569	12	8	10	0.5	1.5	**7.87**	**2.62**
N100	511898	558650	12	8	10	0.2	1.2	**19.67**	**3.28**
8	507756	555511	2	6	10	4.5	5.5	**3.82**	**3.13**
							Minimum =	**3.15**	**2.13**
							Maximum =	**114.96**	**19.11**
							Average =	**26.67**	**5.47**

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 8kPa 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 majority of 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 Maughnaclea Renewable Energy Development - 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
T01	4	4	10.0	10.0	0.4	25	1.0	1.4	14.37	8.87
T02	4	4	10.0	10.0	0.3	25	1.0	1.3	19.16	9.55
T03	12	4	10.0	10.0	0.4	25	1.0	1.4	4.92	2.97
T04	7	4	10.0	10.0	1.0	25	1.0	2.0	3.31	3.55
T05	6	4	10.0	10.0	0.8	25	1.0	1.8	4.81	4.60
T06	6	4	10.0	10.0	0.4	25	1.0	1.4	9.62	5.92
T07	7	4	10.0	10.0	2.1	25	1.0	3.1	1.57	2.29
T08	10	4	10.0	10.0	0.9	25	1.0	1.9	2.60	2.62
T09	3	4	10.0	10.0	1.8	25	1.0	2.8	4.25	5.91
T10	4	4	10.0	10.0	0.9	25	1.0	1.9	6.39	6.54
T11	4	4	10.0	10.0	1.6	25	1.0	2.6	3.59	4.78
T12	6	4	10.0	10.0	0.2	25	1.0	1.2	19.24	6.90
T13	6	4	10.0	10.0	0.2	25	1.0	1.2	19.24	6.90
T14	4	4	10.0	10.0	0.1	25	1.0	1.1	57.48	11.29
PPSS01	6	4	10.0	10.0	1.0	25	1.0	2.0	3.85	4.14
PPSS02	6	4	10.0	10.0	1.2	25	1.0	2.2	3.21	3.77
PPSS03	8	4	10.0	10.0	0.8	25	1.0	1.8	3.63	3.46
PPSS04	6	4	10.0	10.0	0.9	25	1.0	1.9	4.28	4.36
T15 (S/S)	6	4	10.0	10.0	0.3	25	1.0	1.3	12.83	6.37
PP001	4	4	10.0	10.0	0.1	25	1.0	1.1	57.48	11.29
PP002	4	4	10.0	10.0	0.2	25	1.0	1.2	28.74	10.35
PP003	4	4	10.0	10.0	0.2	25	1.0	1.2	28.74	10.35
PP004	6	4	10.0	10.0	0.3	25	1.0	1.3	12.83	6.37
PP005	8	4	10.0	10.0	0.3	25	1.0	1.3	9.67	4.78
PP006	10	4	10.0	10.0	0.2	25	1.0	1.2	11.70	4.15
PP007	8	4	10.0	10.0	0.3	25	1.0	1.3	9.67	4.78
PP008	10	4	10.0	10.0	0.2	25	1.0	1.2	11.70	4.15
PP009	12	4	10.0	10.0	0.3	25	1.0	1.3	6.56	3.20
PP010	10	4	10.0	10.0	0.3	25	1.0	1.3	7.80	3.83
PP011	10	4	10.0	10.0	0.2	25	1.0	1.2	11.70	4.15
PP012	10	4	10.0	10.0	0.2	25	1.0	1.2	11.70	4.15
PP013	8	4	10.0	10.0	0.1	25	1.0	1.1	29.02	5.65
PP014	8	4	10.0	10.0	0.2	25	1.0	1.2	14.51	5.18
PP015	6	4	10.0	10.0	0.4	25	1.0	1.4	9.62	5.92
PP016	8	4	10.0	10.0	0.3	25	1.0	1.3	9.67	4.78
PP017	6	4	10.0	10.0	0.2	25	1.0	1.2	19.24	6.90
PP018	8	4	10.0	10.0	0.2	25	1.0	1.2	14.51	5.18
PP019	6	4	10.0	10.0	0.2	25	1.0	1.2	19.24	6.90
PP020	4	4	10.0	10.0	0.3	25	1.0	1.3	19.16	9.55
PP021	2	4	10.0	10.0	0.2	25	1.0	1.2	57.34	20.68
PP022	4	4	10.0	10.0	1.0	25	1.0	2.0	5.75	6.21
PP023	8	4	10.0	10.0	0.1	25	1.0	1.1	29.02	5.65
PP024	3	4	10.0	10.0	1.6	25	1.0	2.6	4.78	6.37
PP025	2	4	10.0	10.0	2.2	25	1.0	3.2	5.21	7.76
PP026	3	4	10.0	10.0	1.4	25	1.0	2.4	5.47	6.90
PP027	6	4	10.0	10.0	1.2	25	1.0	2.2	3.21	3.77
PP028	6	4	10.0	10.0	0.2	25	1.0	1.2	19.24	6.90
PP029	6	4	10.0	10.0	0.8	25	1.0	1.8	4.81	4.60
PP030	6	4	10.0	10.0	1.3	25	1.0	2.3	2.96	3.60
PP031	10	4	10.0	10.0	0.1	25	1.0	1.1	23.39	4.53
PP032	8	4	10.0	10.0	0.5	25	1.0	1.5	5.80	4.15
PP033	8	4	10.0	10.0	0.2	25	1.0	1.2	14.51	5.18
PP034	8	4	10.0	10.0	0.4	25	1.0	1.4	7.26	4.44
PP035	10	4	10.0	10.0	0.5	25	1.0	1.5	4.68	3.32
PP036	9	4	10.0	10.0	0.3	25	1.0	1.3	8.63	4.26
PP037	9	4	10.0	10.0	0.8	25	1.0	1.8	3.24	3.07
PP038	8	4	10.0	10.0	0.3	25	1.0	1.3	9.67	4.78
PP039	4	4	10.0	10.0	1.3	25	1.0	2.3	4.42	5.40
PP040	4	4	10.0	10.0	1.2	25	1.0	2.2	4.79	5.64
PP041	6	4	10.0	10.0	1.2	25	1.0	2.2	3.21	3.77
PP042	6	4	10.0	10.0	1.4	25	1.0	2.4	2.75	3.45
PP043	6	4	10.0	10.0	1.0	25	1.0	2.0	3.85	4.14
PP044	4	4	10.0	10.0	1.2	25	1.0	2.2	4.79	5.64
PP045	6	4	10.0	10.0	1.0	25	1.0	2.0	3.85	4.14
PP046	6	4	10.0	10.0	1.4	25	1.0	2.4	2.75	3.45
PP047	6	4	10.0	10.0	1.5	25	1.0	2.5	2.57	3.31
PP048	4	4	10.0	10.0	1.8	25	1.0	2.8	3.19	4.43
PP049	5	4	10.0	10.0	1.2	25	1.0	2.2	3.84	4.52
PP050	6	4	10.0	10.0	1.5	25	1.0	2.5	2.57	3.31
PP051	8	4	10.0	10.0	1.5	25	1.0	2.5	1.93	2.49
PP052	8	4	10.0	10.0	1.4	25	1.0	2.4	2.07	2.59
PP053	6	4	10.0	10.0	0.1	25	1.0	1.1	38.48	7.53
PP054	4	4	10.0	10.0	0.4	25	1.0	1.4	14.37	8.87
PP055	4	4	10.0	10.0	0.2	25	1.0	1.2	28.74	10.35
PP056	6	4	10.0	10.0	0.1	25	1.0	1.1	38.48	7.53
PP057	10	4	10.0	10.0	0.1	25	1.0	1.1	23.39	4.53
PP058	6	4	10.0	10.0	0.1	25	1.0	1.1	38.48	7.53
PP059	6	4	10.0	10.0	0.6	25	1.0	1.6	6.41	5.18
PP060	3	4	10.0	10.0	0.8	25	1.0	1.8	9.57	9.20
PP061	4	4	10.0	10.0	1.0	25	1.0	2.0	5.75	6.21
PP062	6	4	10.0	10.0	1.2	25	1.0	2.2	3.21	3.77
PP063	8	4	10.0	10.0	0.2	25	1.0	1.2	14.51	5.18
PP064	5	4	10.0	10.0	0.1	25	1.0	1.1	46.07	9.03
PP065	2	4	10.0	10.0	4.1	26	1.0	5.1	2.80	4.99
PP066	4	4	10.0	10.0	0.1	25	1.0	1.1	57.48	11.29
PP067	3	4	10.0	10.0	0.2	25	1.0	1.2	38.27	13.79
PP068	2	4	10.0	10.0	0.2	25	1.0	1.2	57.34	20.68
PP069	2	4	10.0	10.0	1.5	25	1.0	2.5	7.65	9.93
PP070	2	4	10.0	10.0	1.5	25	1.0	2.5	7.65	9.93
PP071	3	4	10.0	10.0	1.8	25	1.0	2.8	4.25	5.91

Calculated FoS of Natural Peat Slopes for Maughnaclea Renewable Energy Development - 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
PP072	4	4	10.0	10.0	0.1	25	1.0	1.1	57.48	11.29
PP073	10	4	10.0	10.0	0.3	25	1.0	1.3	7.80	3.83
PP074	4	4	10.0	10.0	0.3	25	1.0	1.3	19.16	9.55
PP100	8	4	10.0	10.0	0.2	25	1.0	1.2	14.51	5.18
PP101	6	4	10.0	10.0	0.8	25	1.0	1.8	4.81	4.60
PP102	8	4	10.0	10.0	0.4	25	1.0	1.4	7.26	4.44
PP103	6	4	10.0	10.0	0.6	25	1.0	1.6	6.41	5.18
PP104	6	4	10.0	10.0	1.2	25	1.0	2.2	3.21	3.77
PP105	8	4	10.0	10.0	0.8	25	1.0	1.8	3.63	3.46
PP106	5	4	10.0	10.0	0.2	25	1.0	1.2	23.04	8.28
PP107	10	4	10.0	10.0	0.2	25	1.0	1.2	11.70	4.15
PP108	8	4	10.0	10.0	1.0	25	1.0	2.0	2.90	3.11
PP109	8	4	10.0	10.0	0.8	25	1.0	1.8	3.63	3.46
PP110	8	4	10.0	10.0	1.2	25	1.0	2.2	2.42	2.83
PP111	4	4	10.0	10.0	0.6	25	1.0	1.6	9.58	7.76
PP112	4	4	10.0	10.0	0.8	25	1.0	1.8	7.19	6.90
PP113	4	4	10.0	10.0	1.0	25	1.0	2.0	5.75	6.21
PP114	8	4	10.0	10.0	0.2	25	1.0	1.2	14.51	5.18
PP115	5	4	10.0	10.0	0.3	25	1.0	1.3	15.36	7.64
PP116	4	4	10.0	10.0	0.4	25	1.0	1.4	14.37	8.87
PP117	5	4	10.0	10.0	0.3	25	1.0	1.3	15.36	7.64
PP118	12	4	10.0	10.0	0.2	25	1.0	1.2	9.83	3.47
PP119	10	4	10.0	10.0	0.2	25	1.0	1.2	11.70	4.15
PP120	6	4	10.0	10.0	0.4	25	1.0	1.4	9.62	5.92
PP121	8	4	10.0	10.0	0.4	25	1.0	1.4	7.26	4.44
PP122	8	4	10.0	10.0	0.4	25	1.0	1.4	7.26	4.44
PP123	10	4	10.0	10.0	0.2	25	1.0	1.2	11.70	4.15
PP124	10	4	10.0	10.0	0.2	25	1.0	1.2	11.70	4.15
PP125	8	4	10.0	10.0	0.2	25	1.0	1.2	14.51	5.18
PP126	8	4	10.0	10.0	0.2	25	1.0	1.2	14.51	5.18
PP127	8	4	10.0	10.0	0.4	25	1.0	1.4	7.26	4.44
PP128	2	4	10.0	10.0	0.2	25	1.0	1.2	57.34	20.68
PP129	8	4	10.0	10.0	0.6	25	1.0	1.6	4.84	3.89
PP130	4	4	10.0	10.0	0.3	25	1.0	1.3	19.16	9.55
PP131	4	4	10.0	10.0	0.6	25	1.0	1.6	9.58	7.76
PP132	4	4	10.0	10.0	0.7	25	1.0	1.7	8.21	7.30
PP133	4	4	10.0	10.0	0.8	25	1.0	1.8	7.19	6.90
PP134	6	4	10.0	10.0	0.6	25	1.0	1.6	6.41	5.18
PP135	3	4	10.0	10.0	1.2	25	1.0	2.2	6.38	7.52
PP136	8	4	10.0	10.0	0.5	25	1.0	1.5	5.80	4.15
PP137	10	4	10.0	10.0	0.4	25	1.0	1.4	5.85	3.56
PP138	10	4	10.0	10.0	0.2	25	1.0	1.2	11.70	4.15
PP139	8	4	10.0	10.0	0.3	25	1.0	1.3	9.67	4.78
PP140	8	4	10.0	10.0	0.2	25	1.0	1.2	14.51	5.18
PP141	6	4	10.0	10.0	0.4	25	1.0	1.4	9.62	5.92
PP142	4	4	10.0	10.0	0.8	25	1.0	1.8	7.19	6.90
PP143	4	4	10.0	10.0	0.3	25	1.0	1.3	19.16	9.55
PP144	4	4	10.0	10.0	0.4	25	1.0	1.4	14.37	8.87
PP145	6	4	10.0	10.0	0.2	25	1.0	1.2	19.24	6.90
PP146	6	4	10.0	10.0	0.1	25	1.0	1.1	38.48	7.53
PP147	6	4	10.0	10.0	0.2	25	1.0	1.2	19.24	6.90
PP148	6	4	10.0	10.0	0.3	25	1.0	1.3	12.83	6.37
PP149	6	4	10.0	10.0	0.2	25	1.0	1.2	19.24	6.90
PP150	6	4	10.0	10.0	0.2	25	1.0	1.2	19.24	6.90
PP151	8	4	10.0	10.0	0.3	25	1.0	1.3	9.67	4.78
PP152	6	4	10.0	10.0	0.2	25	1.0	1.2	19.24	6.90
PP153	8	4	10.0	10.0	0.2	25	1.0	1.2	14.51	5.18
PP154	6	4	10.0	10.0	0.2	25	1.0	1.2	19.24	6.90
PP155	6	4	10.0	10.0	0.1	25	1.0	1.1	38.48	7.53
PP156	6	4	10.0	10.0	0.2	25	1.0	1.2	19.24	6.90
PP157	8	4	10.0	10.0	0.1	25	1.0	1.1	29.02	5.65
PP158	8	4	10.0	10.0	0.3	25	1.0	1.3	9.67	4.78
PP159	6	4	10.0	10.0	0.2	25	1.0	1.2	19.24	6.90
PP160	6	4	10.0	10.0	0.1	25	1.0	1.1	38.48	7.53
PP161	6	4	10.0	10.0	0.2	25	1.0	1.2	19.24	6.90
PP162	8	4	10.0	10.0	0.1	25	1.0	1.1	29.02	5.65
PP163	6	4	10.0	10.0	0.1	25	1.0	1.1	38.48	7.53
PP164	5	4	10.0	10.0	0.2	25	1.0	1.2	23.04	8.28
PP165	4	4	10.0	10.0	0.4	25	1.0	1.4	14.37	8.87
PP166	4	4	10.0	10.0	1.2	25	1.0	2.2	4.79	5.64
PP167	4	4	10.0	10.0	0.2	25	1.0	1.2	28.74	10.35
APP001	8	4	10.0	10.0	1.2	25	1.0	2.2	2.42	2.83
APP002	8	4	10.0	10.0	1.0	25	1.0	2.0	2.90	3.11
APP003	3	4	10.0	10.0	2.0	25	1.0	3.0	3.83	5.52
APP004	6	4	10.0	10.0	0.3	25	1.0	1.3	12.83	6.37
APP005	3	4	10.0	10.0	1.1	25	1.0	2.1	6.96	7.88
APP006	4	4	10.0	10.0	2.1	25	1.0	3.1	2.74	4.01
APP007	6	4	10.0	10.0	1.2	25	1.0	2.2	3.21	3.77
APP008	6	4	10.0	10.0	0.2	25	1.0	1.2	19.24	6.90
APP009	8	4	10.0	10.0	0.1	25	1.0	1.1	29.02	5.65
APP010	6	4	10.0	10.0	0.1	25	1.0	1.1	38.48	7.53
APP011	6	4	10.0	10.0	0.2	25	1.0	1.2	19.24	6.90
APP012	8	4	10.0	10.0	0.2	25	1.0	1.2	14.51	5.18
APP013	10	4	10.0	10.0	0.2	25	1.0	1.2	11.70	4.15
APP014	8	4	10.0	10.0	0.2	25	1.0	1.2	14.51	5.18
APP015	6	4	10.0	10.0	0.3	25	1.0	1.3	12.83	6.37
APP016	8	4	10.0	10.0	0.2	25	1.0	1.2	14.51	5.18
APP017	5	4	10.0	10.0	0.4	25	1.0	1.4	11.52	7.10
APP018	6	4	10.0	10.0	0.3	25	1.0	1.3	12.83	6.37
APP019	8	4	10.0	10.0	0.5	25	1.0	1.5	5.80	4.15
APP020	4	4	10.0	10.0	0.2	25	1.0	1.2	28.74	10.35
APP021	8	4	10.0	10.0	0.3	25	1.0	1.3	9.67	4.78
BP PP01	6	4	10.0	10.0	0.5	25	1.0	1.5	7.70	5.52

Calculated FoS of Natural Peat Slopes for Maughnaclea Renewable Energy Development - 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
BP PP02	8	4	10.0	10.0	0.6	25	1.0	1.6	**4.84**	**3.89**
BP PP03	10	4	10.0	10.0	0.4	25	1.0	1.4	**5.85**	**3.56**
BP PP01	8	4	10.0	10.0	0.6	25	1.0	1.6	**8.16**	**5.13**
BP PP02	10	4	10.0	10.0	0.4	25	1.0	1.4	**8.49**	**4.32**
BP PP03	10	4	10.0	10.0	0.5	25	1.0	1.5	**7.32**	**4.20**
BP PP04	10	4	10.0	10.0	0.5	25	1.0	1.5	**7.32**	**4.20**
BP PP05	12	4	10.0	10.0	0.3	25	1.0	1.3	**8.75**	**3.71**
BP PP06	12	4	10.0	10.0	0.2	25	1.0	1.2	**12.03**	**3.83**
BP PP07	10	4	10.0	10.0	0.2	25	1.0	1.2	**14.34**	**4.59**
MKO Probes										
S02	5	4	10.0	10.0	0.4	25	1.0	1.4	**11.52**	**7.10**
S54	7	4	10.0	10.0	0.8	25	1.0	1.8	**4.13**	**3.95**
S57	6	4	10.0	10.0	0.2	25	1.0	1.2	**19.24**	**6.90**
S64	6	4	10.0	10.0	1.4	25	1.0	2.4	**2.75**	**3.45**
S72	5	4	10.0	10.0	0.6	25	1.0	1.6	**7.68**	**6.21**
S73	3	4	10.0	10.0	2.7	25	1.0	3.7	**2.83**	**4.47**
S89	5	4	10.0	10.0	0.4	25	1.0	1.4	**11.52**	**7.10**
S95	8	4	10.0	10.0	0.4	25	1.0	1.4	**7.26**	**4.44**
S103	4	4	10.0	10.0	1.7	25	1.0	2.7	**3.38**	**4.60**
S110	7	4	10.0	10.0	0.2	25	1.0	1.2	**16.53**	**5.92**
N67	9	4	10.0	10.0	0.2	25	1.0	1.2	**17.26**	**4.81**
N73	8	4	10.0	10.0	0.8	25	1.0	1.8	**3.63**	**3.46**
N74	8	4	10.0	10.0	0.7	25	1.0	1.7	**4.15**	**3.66**
N75	14	4	10.0	10.0	0.4	25	1.0	1.4	**4.26**	**2.55**
N83	14	4	10.0	10.0	0.5	25	1.0	1.5	**3.79**	**2.47**
N95	12	4	10.0	10.0	0.5	25	1.0	1.5	**3.93**	**2.77**
N100	12	4	10.0	10.0	0.2	25	1.0	1.2	**9.83**	**3.47**
8	2	4	10.0	10.0	4.5	25	1.0	5.5	**2.55**	**4.51**
								Minimum =	**1.57**	**2.29**
								Maximum =	**57.48**	**20.68**
								Average =	**13.43**	**5.92**

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 1.4 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 Project. This approach takes into account guidelines for geotechnical/peat stability risk assessments as given in PLHRAG (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	1.40 or greater	Negligible/None
2	1.49 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 watercourses 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

		Probability				
		1	**2**	**3**	**4**	**5**
Impact	**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 'Tolerable' risk rating

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APPENDIX E

Ground Investigation Information (IDL)

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LOUGHREA, CO. GALWAY, IRELAND

CONTRACT DRILLING
SITE INVESTIGATION

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MAUGHNACLEA WIND FARM

GROUND INVESTIGATION FACTUAL REPORT

Enerco Energy Ltd.,
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Bagenalstown,
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R21 XW81.

	Prepared by	Approved by	Rev. Issue Date:	Revision No.
	Ronan Killeen	Declan Joyce	28th April 2025	24 _C _110/01
Signature				

FOREWORD

The borehole and trial pit records have been compiled from an examination of the samples by a Geotechnical Engineer and from the Drillers' descriptions.

The report presents an opinion on the configuration of the strata within the site based on the borehole and trial pit results. The assumptions, though reasonable, are given for guidance only and no liability can be accepted for changes in conditions not revealed by the boreholes and trial pits.

The fieldwork was carried out in accordance with IS EN 1997-2 and BS5930:2015+A1:2020 Code of Practice for Ground Investigations with precedence given to IS EN 1997-2 where applicable.

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2.0	The Site & Geology	Page 1
3.0	Fieldwork	Page 1
4.0	Laboratory Testing	Page 4

Book 1 of 1

Appendix 1	Borehole Records (Rotary Core)
Appendix 2	Trial Pit Records
Appendix 3	Laboratory Test Results
Appendix 4	Trial Pit Photographs
Appendix 5	Rotary Core Photographs
Appendix 6	Site Plans
Appendix 7	Digital Data (AGS)

1 Introduction.

Irish Drilling Ltd. (IDL) was instructed by FTCO Consulting Engineers, on behalf of Enerco Energy Ltd., to carry out a site investigation at the site of the proposed Maughnaclea Wind Farm.

This site investigation was carried out to provide detailed factual geotechnical information of the underlying ground conditions at the site.

The fieldwork commenced on January 29th 2025 and was completed on March 26th 2025.

2 Site & Geology

The site is located at Maughnaclea, east of Kealkill, County Cork.

The fieldwork was carried out predominantly on agricultural lands, forested lands and/or boglands. Weather conditions in general were quite variable with the majority of the fieldwork carried out over a typical winter/spring period in Ireland.

Site Plans, prepared by the client's representatives to show approximate fieldwork locations, are included with this report as Appendix 6.

The following were the main published information sources used:
Geological Map of Ireland: 1:500,000 scale map series.

Site investigation data is available as point source data along the proposed route, and the majority of the ground in between the points can only be assumed to follow the characteristics of the nearest available data.

Overview of Subsoil Geology

Peat:

The deposition of peat occurred in post-glacial periods and is generally associated with the start of warmer and wetter climatic conditions. Peat is an unconsolidated usually dark brown to black organic material comprising a mixture of decomposed and undecomposed plant matter that accumulated in an acidic waterlogged environment. Peat has an extremely high-water content generally averaging over 90% by volume.

Glacial Till:

Glacial Till is what was often referred to as Boulder Clay. It is a diverse material that is largely deposited sub-glacially and has a wide range of characteristics due to the variety of parent materials and different processes of deposition. Tills are tightly packed, unsorted, heterogeneous, unbedded, and can have a wide range of particle sizes and types, which are often but not exclusively angular or sub-angular.

The type of parent material plays a critical role in providing the particles that create different subsoil permeability with sandstones giving rise to a high proportion of sand sized grains in the till matrix.

Made Ground:

Made Ground is material which has been purposefully emplaced by humans.

Solid Geology

The Geological Map of Ireland: (GSI 1:500,000 scale map series) indicate that the site is predominantly underlain by mudstone and silt-lensed mudstone of the Ardaturrish Member Formation and/or flaser-bedded sandstone and minor mudstone of the Old Head Sandstone Formation..

3 Fieldwork.

3.1 Fieldwork Plant:

The following plant was mobilised to site by IDL to carry out fieldwork operations:
1nr. Case CX130D 12T Tracked Excavator.
1nr. GT1100 GoTract Rotary Core Drilling Rig.
1nr. Yanmarr All-Terrain Support Vehicle.
1nr. HQ Rotary Core Drill String.
1nr. Honda Water Supply Pump.
1nr. Drilling Water Recirculation Tank Syatem.

Fieldwork carried out to date has included the following:

3.2 Fieldwork Operations:

A general summary of fieldwork operations carried out to date includes the following:

- Completion of 3nr Rotary Core Boreholes.
- Excavation of 16nr Trial Pits.
- Installation of 2nr 50mm diameter standpipes at borehole locations.

3.3 Rotary Core Boreholes:

Three rotary core boreholes were carried out to establish overburden conditions and rockhead and to establish the nature and integrity of the underlying rock.

HQ drill strings ((64mm core diameter, 96mm hole diameter), using wireline drilling techniques, were then used to recover soil and rock core samples at the borehole locations.

The borehole depths ranged from 6.00m to 10.40m below ground level. The boreholes were carried out to target depths as instructed by the client representatives. Target depths were established by the client's representatives based on bedrock quality and bedrock depths encountered.

A water based flush system was used as the drilling medium while a biodegradable polymer gel was also used where necessary to aid the drilling and soil / rock recovery process.

The samples were stored in wooden boxes and returned to the laboratory where there were logged and photographed by a Geotechnical Engineer and presented for testing.

A 50mm diameter standpipe was installed in the following rotary core boreholes and as instructed by the Client's Engineer, to allow for monitoring of groundwater levels over a prolonged period of time:
RC-02
RC-03

Detailed engineering logs for the rotary core boreholes completed are included with this report in Appendix 1.

3.4 Trial Pits:

Sixteen trial pits were excavated on site using a 12T tracked excavator.

The pits were logged and photographed by an Engineer with observations made on ground conditions, pit stability, water ingress and services encountered.

The pits were excavated to depths ranging from 0.20m to 3.50m below ground level. Trial pits were terminated in general once target depths were achieved and/or due to pit stability issues encountered and for further details on pit terminations please refer to the trial pit logs included as Appendix 2.

Small and bulk disturbed soil samples were recovered at each change in strata and returned to the laboratory and presented for testing.

In-Situ testing consisting of hand shear vane tests were also carried out where possible in cohesive soils. The tests were carried out using a Edeco Pilcon DR5118 Hand Shear Vane Unit with a 33mm vane and a conversion factor of 1.0. Records of the shear vane test results are included on the engineering logs included as appendix 1 of this factual report.

Detailed engineering logs for the trial pits completed are included with this report in Appendix 2.

3.5 General Summary:

The borehole and trial pit locations were set out using a Trimble CU Bluetooth GPS Surveying Unit and the co-ordinates are included on the logs presented in the appendices.

All fieldwork co-ordinates were recorded by the client's representatives and are reported to Irish Transverse Mercator (ITM).

Ground conditions encountered during the completion of the fieldwork were typical and as expected for this region and predominantly consisted of Glacial Tills overlying bedrock.

The Glacial Tills in general consisted of loose, medium dense and very dense brown silty very sandy gravel with cobbles and boulders and/or soft, firm and stiff brown slightly gravelly sandy silt with cobbles and boulders.

Peat was encountered in many of the fieldwork locations at depths ranging from 0.30m to 1.30m below ground level.

Made ground was encountered at trial pit TP SS01 to a depth of 1.10m below ground level.

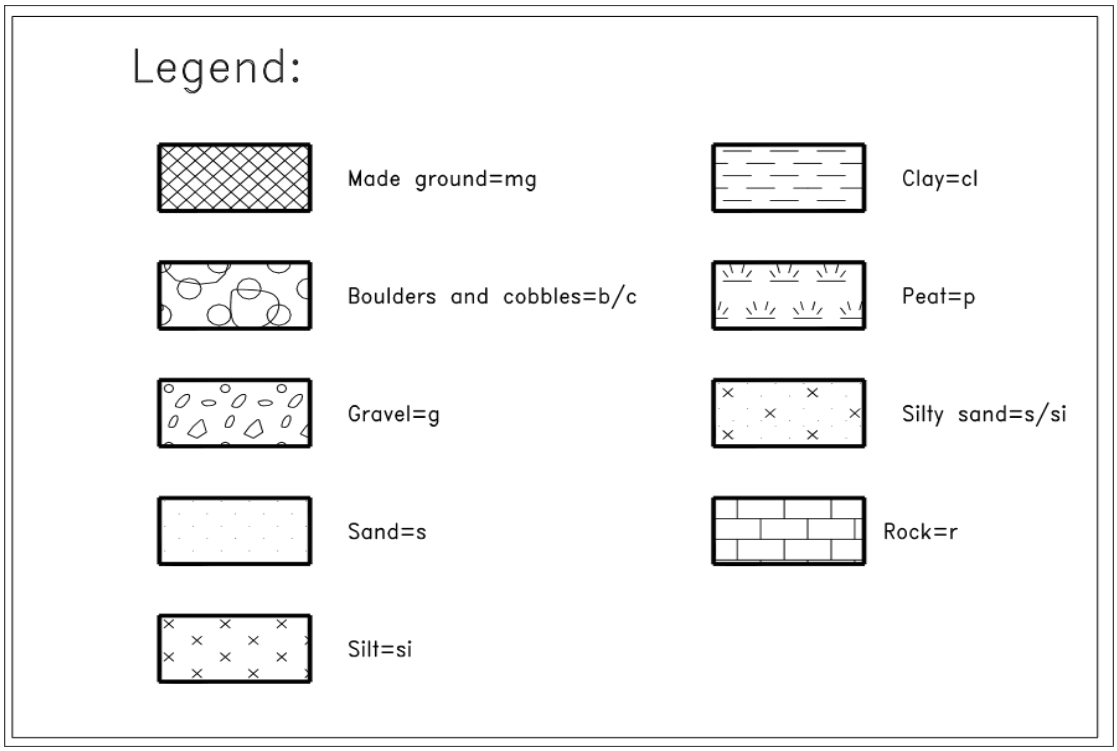
Intact bedrock was encountered in the boreholes at depths ranging from 5.10m to 5.40m below ground level. Weathered bedrock was also encountered in a number of the borehole at shallower depths.

Bedrock was not encountered in borehole RC 01 to a depth of 6.00m below ground level before borehole termination.

Bedrock is predominantly described as very strong locally strong thinly laminated fine-grained sandstone and/or siltstone.

For detailed descriptions of bedrock and ground conditions encountered please refer to the engineering logs included in the appendices of this report.

The following Key Legend Table details the symbology used on the engineering logs to describe ground conditions encountered:



The fieldwork was carried out in accordance with IS EN 1997-2 and BS5930:2015+A1:2020 Code of Practice for Site Investigations with precedence given to IS EN 1997-2 where applicable.

6.4 Laboratory Testing

Representative samples recovered from the boreholes and trial pits were scheduled for testing in the laboratory.

The test schedules were prepared by the Client's Engineer and included the following tests on bulk disturbed soil samples:

Test Type:	Number
Moisture Content	09
Particle Size Distribution	09
Chemical (pH, Sulphate Water Gravimetric)	02
Chemical (Total Sulphur)	02

The test schedules were carried out predominantly at the IDL Laboratory located at Loughrea, County Galway.

A number of specialist tests not available at the IDL laboratory were carried out by designated laboratories on a subcontract basis as follows:

Laboratory chemical tests were carried out by ALS Ltd., Hawarden, UK.

Soil samples in general were recovered from the excavation of trial pits. Rock core samples were recovered from the completion of rotary core boreholes and the records of all laboratory test results are included with this report as Appendix 3.

The soil and rock descriptions as noted on the borehole and trial pit logs are in general visual descriptions as observed and logged by our Engineers and are described in accordance with IS EN 1997-2 and BS5930:2015+A1:2020 Code of Practice for Site Investigations.

Soils descriptions (cohesive or otherwise) are also initially assessed based on the texture and 'feel' of the soil materials as witnessed by our Geotechnical Engineers and in accordance with IS EN 1997-2 and BS5930:2015+A1:2020.

Where laboratory classification tests have been carried out on soil and/or rock samples then these visual descriptions have been amended accordingly to take into account the results of these classification tests.

The records of all fieldwork, laboratory test results and photographs are included in the appendices of this Factual Report.

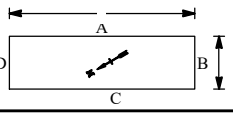
Ronan Killeen
Chartered Engineer
Irish Drilling Limited
April 28th 2025

Appendix 1
Trial Pit Records

PROJECT: Maughnaclea Wind Farm		**TRIALPIT: TP 01**
LOCATION: Co Cork		**Sheet 1 of 1**
CLIENT: MCEL	**Co-ordinates:**	**Rig: Case CX 130 D**
ENGINEER: FTCO	**E 509,959.5 N 556,033.2**	**Rev:**
Ground level: 286.26m O.D.		**DATE: 30.1.25**

GROUNDWATER
Water strikes: **Rose to after:**
1st: 0.20m **20min** **0.15m**
2nd:
3rd:

PIT DIRECTION: 210°
PIT DIMENSION: 4.00m * 1.10
LOGGED BY: PC



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0		1	B 1	0.10-0.20			286.21	0.05	TOPSOIL: Grass and moss over very soft damp brown clayey SILT.	
							286.06	0.20	Brown and grey mottled slightly sandy slightly silty angular to subangular fine to coarse shale GRAVEL with rare cobbles. Sand is fine to coarse. Cobbles are angular to subangular of shale.	
						END				
1										
2										
3										
4										
5										

Remarks: Seepage of water at g/l. Ingress of water at 0.20m bgl. TP terminated at 0.20m bgl. Obstruction as probable rock. TP backfilled with arisings.

Scale: 1:25

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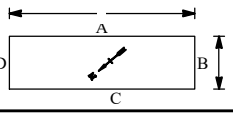
TRIALPIT MAUGHNACLEA WF TPS FILE 1 FEB 12 2025.GPJ ID GINT AGS 4_0_4.GDT 25/4/25

PROJECT: Maughnaclea Wind Farm		**TRIALPIT: TP 02**
LOCATION: Co Cork		**Sheet 1 of 1**
CLIENT: MCEL	**Co-ordinates:**	**Rig: Case CX 130 D**
ENGINEER: FTCO	**E 509,412.2 N 555,588.8**	**Rev:**
Ground level: 285.43m O.D.		**DATE: 30.1.25**

GROUNDWATER
Water strikes: **Rose to after:**
1st: **dry**
2nd:
3rd:

PIT DIRECTION: 220°
PIT DIMENSION: 4.00m * 1.30
LOGGED BY: PC



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0									Briars and grass over spongy dark blackish brown pseudo fibrous PEAT. H5 B1 F2 R1 W0 TV1 TH1 A1.	
					33mm vane 17 kN/m² 16 kN/m²					
1					33mm vane 22 kN/m² 24 kN/m² 26 kN/m²				1.10-1.30: with rare large boulders. Boulders are of granite. Boulders are up to 800mm in length.	
							284.13	1.30		
						END				
2										
3										
4										
5										

Remarks: Hand vane at 0.50m bgl. Hand vane at 1.00m bgl. TP dry on excavation. TP terminated at 1.30m bgl. Obstruction as probable rock. TP backfilled with arisings.

Scale: 1:25

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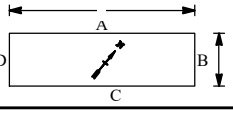
TRIALPIT MAUGHNACLEA WF TPS FILE 1 FEB 12 2025.GPJ ID GINT AGS 4_0_4.GDT 25/4/25

PROJECT: Maughnaclea Wind Farm	**TRIALPIT: TP BP01**
LOCATION: Co Cork	**Sheet 1 of 1**
CLIENT: MCEL	**Co-ordinates: E 508,012.0 N 555,594.5**
ENGINEER: FTCO	**Rig: Case CX 130 D**
	Rev:
Ground level: 248.42m O.D.	**DATE: 29.1.25**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 50°
PIT DIMENSION: 3.00m * 1.10
LOGGED BY: PC



Shoring/Support: N/A
Stability: Pit slightly unstable from g/l.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0									Grass over spongy black pseudo fibrous clayey PEAT. H6 B2 F1 R0 W0 TV1 TH1 A1.	
			B 1	0.50-0.60			247.92	0.50		
									Brown and bluish grey mottled slightly sandy silty angular to subangular fine to coarse shale GRAVEL with occasional cobbles and rare boulders. Sand is fine to coarse. Cobbles are angular to subangular of shale. Boulders are angular to subangular of shale. Boulders are up to 350mm in length.	
1							247.42	1.00		
									END	
2										
3										
4										
5										

Remarks: Seepage of water at g/l. TP terminated at 1.00m bgl. Obstruction as probable rock. TP backfilled with arisings.

Scale: 1:25

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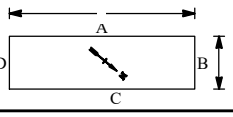
TRIALPIT MAUGHNACLEA WF TPS FILE 1 FEB 12 2025.GPJ ID GINT AGS 4_0_4.GDT 25/4/25

PROJECT: Maughnaclea Wind Farm		**TRIALPIT: TP BP02**
LOCATION: Co Cork		**Sheet 1 of 1**
CLIENT: MCEL	**Co-ordinates:**	**Rig: Case CX 130 D**
ENGINEER: FTCO	**E 509,451.3 N 555,623.6**	**Rev:**
Ground level: 284.25m O.D.		**DATE: 30.1.25**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 320°
PIT DIMENSION: 4.00m * 1.10
LOGGED BY: PC



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							284.05	0.20	TOPSOIL: Grass over soft dark brown slightly peaty clayey SILT.	
			B 1	0.40-0.50			283.75	0.50	Light bluish brown sandy very silty angular to subangular fine to coarse phyllite and shale GRAVEL with occasional cobbles. Sand is fine to coarse. Cobbles are angular to subangular of phyllite and shale.	
									END	
1										
2										
3										
4										
5										

Remarks: TP dry on excavation. TP terminated at 0.50m bgl. Obstruction as probable rock. TP backfilled with arisings.

Scale: 1:25

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TRIALPIT MAUGHNACLEA WF TPS FILE 1 FEB 12 2025.GPJ ID GINT AGS 4_0_4.GDT 25/4/25

PROJECT: Maughnaclea Wind Farm			**TRIALPIT: TP BP03**
LOCATION: Co Cork			**Sheet 1 of 1**
CLIENT: MCEL	**Co-ordinates:**		**Rig: Case CX 130 D**
ENGINEER: FTCO	**E 511,641.5 N 558,389.2**		**Rev:**
Ground level: 250.53m O.D.			**DATE: 5.2.25**

GROUNDWATER

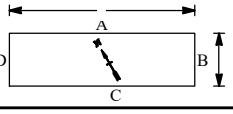
Water strikes: **Rose to after:**

1st:	**0.70m**	**20min**	**0.70m**
2nd:	**1.80m**	**20min**	**1.70m**
3rd:			

PIT DIRECTION: 120°

PIT DIMENSION: 4.00m * 1.10

LOGGED BY: PC



Shoring/Support: N/A
Stability: Pit slightly unstable.
Sidewall collapse from g/l to 0.70m bgl.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							250.43	0.10	TOPSOIL: Ferns and grass over soft damp black very peaty CLAY.	
									Black slightly peaty subangular to subrounded psammite BOULDER with occasional cobbles. Cobbles are subangular to subrounded of psammite. Boulders are up to 600mm in length.	
		1					249.83	0.70		
1			B 1	1.20-1.30					Light brown silty very sandy angular to subrounded fine to coarse psammite GRAVEL with occasional cobbles and rare boulders. Sand is fine to coarse. Cobbles are subangular to subrounded of psammite. Boulders are subangular to subrounded of psammite. Boulders are up to 500mm in length.	
		2					248.73	1.80		
2									**END**	
3										
4										
5										

Remarks: Ingress of water at 0.70m bgl. Ingress of water at 1.80m bgl. TP terminated at 1.80m bgl. Obstruction as probable rock. TP backfilled with arisings.

Scale: 1:25

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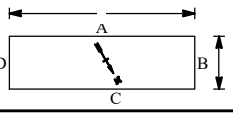
TRIALPIT MAUGHNACLEA WF TPS FILE 1 FEB 12 2025.GPJ ID GINT AGS 4_0_4.GDT 25/4/25

PROJECT: Maughnaclea Wind Farm	**TRIALPIT: TP BP04**
LOCATION: Co Cork	**Sheet 1 of 1**
CLIENT: MCEL	**Co-ordinates: E 510,187.1 N 556,245.3**
ENGINEER: FTCO	**Rig: Case CX 130 D**
	Rev:
Ground level: 263.92m O.D.	**DATE: 30.1.25**

GROUNDWATER
Water strikes:
1st: 1.10m **Rose to after:** **20min** **0.90m**
2nd:
3rd:

PIT DIRECTION: 300°
PIT DIMENSION: 4.00m * 1.10
LOGGED BY: PC



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							263.87	0.05	TOPSOIL: Heather and moss over soft brown clayey SILT.	
									Brownish grey silty very sandy angular to subangular fine to coarse shale GRAVEL with rare cobbles. Sand is fine to coarse. Cobbles are angular to subangular of shale.	
			B 1 B 2	0.50-0.60 0.50-0.60						
		1								
1							262.82	1.10		
									Blue orange and grey mottled angular to subangular fine to coarse shale GRAVEL with occasional cobbles. Cobbles are angular to subangular of shale.	
							262.22	1.70		
									END	
2										
3										
4										
5										

Remarks: Ingress of water at 1.10m bgl. TP terminated at 1.70m bgl. Obstruction as probable rock. TP backfilled with arisings.

Scale: 1:25

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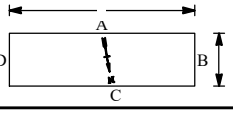
TRIALPIT MAUGHNACLEA WF TPS FILE 1 FEB 12 2025.GPJ ID GINT AGS 4_0_4.GDT 25/4/25

PROJECT: Maughnaclea Wind Farm	**TRIALPIT:** TP BP05
LOCATION: Co Cork	**Sheet** 1 of 1
CLIENT: MCEL	**Co-ordinates:** E 511,059.9 N 558,052.5
ENGINEER: FTCO	**Rig:** Case CX 130 D
	Rev:
Ground level: 262.16m O.D.	**DATE:** 4.2.25

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 280°
PIT DIMENSION: 4.00m * 1.10
LOGGED BY: PC



Shoring/Support: N/A
Stability: Pit unstable. Sidewall collapse from g/l.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0					33mm vane 20 kN/m² 18 kN/m² 24 kN/m²		261.46	0.70	Rushes and grass over spongy dark brown pseudo fibrous PEAT. H4 B2 F3 R1 W0 TV1 TH1 A1.	
1			B 1	1.20-1.30			260.56	1.60	Dark brown sandy slightly very silty angular to subangular fine to coarse psammite GRAVEL with occasional cobbles and rare boulders. Sand is fine to coarse. Cobbles are angular to subangular of psammite. Boulders are angular to subangular of psammite. Boulders are up to 400mm in length.	
									END	
2										
3										
4										
5										

Remarks: Hand vane at 0.50m bgl. Seepage of water at g/l. TP terminated at 1.60m bgl. Obstruction as probable rock. TP backfilled with arisings.

Scale: 1:25

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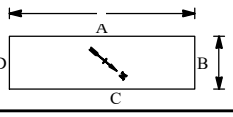
TRIALPIT MAUGHNACLEA WF TPS FILE 1 FEB 12 2025.GPJ ID GINT AGS 4_0_4.GDT 25/4/25

PROJECT: Maughnaclea Wind Farm	**TRIALPIT: TP BP05A**
LOCATION: Co Cork	**Sheet 1 of 1**
CLIENT: MCEL	**Co-ordinates: E 511,173.3 N 558,050.3**
ENGINEER: FTCO	**Rig: Case CX 130 D**
Ground level: 261.58m O.D.	**Rev:**
GROUNDWATER	**DATE: 4.2.25**

Water strikes:
1st: 0.30m **Rose to after: 20min** **0.30m**
2nd:
3rd:

PIT DIRECTION: 320°
PIT DIMENSION: 4.00m * 1.10
LOGGED BY: PC



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0										
		11					261.28	0.30	Sedge and moss over spongy dark blackish brown pseudo fibrous PEAT. H6 B2 F2 R0 W0 TV1 TH1 A0.	
			B 1	0.50-0.60			260.98	0.60	Greyish brown slightly sandy slightly silty angular to subangular fine to coarse psammite GRAVEL with rare cobbles. Sand is fine to coarse. Cobbles are angular to subangular of psammite.	
									END	
1										
2										
3										
4										
5										

Remarks: Seepage of water at 0.30m bgl. TP terminated at 0.60m bgl. Obstruction as probable rock. TP backfilled with arisings.

Scale: 1:25

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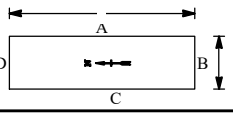
TRIALPIT MAUGHNACLEA WF TPS FILE 1 FEB 12 2025.GPJ ID GINT AGS 4_0_4.GDT 25/4/25

PROJECT: Maughnaclea Wind Farm	**TRIALPIT: TP BP06**
LOCATION: Co Cork	**Sheet 1 of 1**
CLIENT: MCEL	**Co-ordinates: E 510,652.7 N 558,037.1**
ENGINEER: FTCO	**Rig: Case CX 130 D**
Ground level: 226.81m O.D.	**Rev:**
	DATE: 4.2.25

GROUNDWATER
Water strikes: **Rose to after:**
1st: 1.90m **20min** **1.85m**
2nd:
3rd:

PIT DIRECTION: 180°
PIT DIMENSION: 4.00m * 1.10
LOGGED BY: PC



Shoring/Support: N/A
Stability: Pit unstable. Sidewall collapse from g/l.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0					33mm vane 21 kN/m² 22 kN/m² 20 kN/m²				Rushes and moss over spongy dark brown pseudo fibrous PEAT. H4 B3 F3 R1 W0 TV1 TH1 A2.	
1					33mm vane 18 kN/m² 20 kN/m² 18 kN/m²		225.51	1.30		
			B 1 D 2	1.30-1.40 1.30-1.40					Very soft light greyish brown slightly sandy gravelly clayey SILT with rare cobbles. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of shale and phyllite. Cobbles are angular to subrounded of shale and phyllite.	
2		1					224.91	1.90		
			B 3	2.30-2.40					Light bluish grey silty sandy angular to subangular fine to coarse shale and phyllite GRAVEL with occasional cobbles. Cobbles are angular to subangular of shale and phyllite.	
3							223.81	3.00		
									END	
4										
5										

Remarks: Hand vane at 0.50m bgl. Hand vane at 1.00m bgl. Seepage of water at g/l. Ingress of water at 1.90m bgl. TP terminated at 3.00m bgl. Obstruction as probable rock. TP backfilled with arisings.

Scale: 1:25

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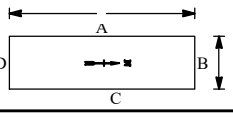
TRIALPIT MAUGHNACLEA WF TPS FILE 1 FEB 12 2025.GPJ ID GINT AGS 4_0_4.GDT 25/4/25

PROJECT: Maughnaclea Wind Farm	**TRIALPIT: TP SS01**
LOCATION: Co Cork	**Sheet 1 of 1**
CLIENT: MCEL	**Co-ordinates: E 510,283.4 N 556,305.4**
ENGINEER: FTCO	**Rig: Case CX 130 D**
Ground level: 255.91m O.D.	**Rev:**
GROUNDWATER	**DATE: 30.1.25**
Water strikes: Rose to after:	**PIT DIRECTION: 0°**
1st: dry	**PIT DIMENSION: 4.00m * 1.10**
2nd:	**LOGGED BY: PC**
3rd:	Shoring/Support: N/A
	Stability: Pit stable.



Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							255.61	0.30	MADE GROUND: Adjacent to forest track. Firm brown gravelly clayey SILT with occasional cobbles and occasional boulders. Gravel is angular to subangular fine to coarse of shale. Cobbles are angular to subangular of shale. Boulders are angular to subangular of shale.	
			B 1	0.50-0.60			254.81	1.10	MADE GROUND: Dark brown black and orangish brown slightly clayey slightly silty slightly sandy angular to subangular fine to coarse shale GRAVEL with occasional cobbles rare boulders with some tree roots. Sand is fine to coarse. Cobbles are subangular to rounded of shale. Boulders are subangular to subrounded of shale. Boulders are up to 450mm in length.	
1										
			B 2	1.50-1.60			253.41	2.50	Brown and bluish grey mottled silty very sandy angular to subangular fine to coarse phyllite and shale GRAVEL with occasional cobbles rare boulders and rare large boulders. Sand is fine to coarse. Cobbles are angular to subangular of phyllite and shale. Boulders are subangular of phyllite and shale. Large boulders are subangular of phyllite and shale. Boulders are up to 800mm in length.	
2										
			B 3	2.30-2.40						
						END				
3										
4										
5										

Remarks: TP dry on excavation. TP terminated at 2.50m bgl. Obstruction as probable rock. TP backfilled with arisings.

Scale: 1:25

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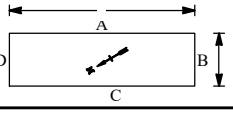
TRIALPIT MAUGHNACLEA WF TPS FILE 1 FEB 12 2025.GPJ ID GINT AGS 4_0_4.GDT 25/4/25

PROJECT: Maughnaclea Wind Farm	**TRIALPIT: TP T03**
LOCATION: Co Cork	**Sheet 1 of 1**
CLIENT: MCEL	**Co-ordinates:** **Rig: Case CX 130 D**
ENGINEER: FTCO	**E 511,892.3 N 558,486.1** **Rev:**
Ground level: 260.53m O.D.	**DATE: 5.2.25**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 210°
PIT DIMENSION: 4.00m * 1.10
LOGGED BY: PC



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							260.23	0.30	TOPSOIL: Grass and moss over soft damp dark blackish brown silty very peaty CLAY.	
			B 1	0.50-0.60			259.63	0.90	Dark brown slightly sandy slightly silty slightly peaty angular to subangular fine to coarse shale and psammite GRAVEL with rare cobbles. Sand is fine to coarse. Cobbles are subangular to subrounded of shale and psammite.	
1			B 2	1.20-1.30			259.03	1.50	Light brown very silty very sandy angular to subangular fine to coarse psammite GRAVEL with rare cobbles and rare boulders. Sand is fine to coarse. Cobbles are subangular of psammite. Boulders are subangular of psammite. Boulders are up to 500mm in length.	
									END	
2										
3										
4										
5										

Remarks: TP dry on excavation. TP terminated at 1.50m bgl. Obstruction as probable rock. TP backfilled with arisings.

Scale: 1:25

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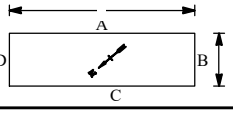
Fax

TRIALPIT MAUGHNACLEA WF TPS FILE 1 FEB 12 2025.GPJ ID GINT AGS 4_0_4.GDT 25/4/25

PROJECT: Maughnaclea Wind Farm	**TRIALPIT: TP T04**
LOCATION: Co Cork	**Sheet 1 of 1**
CLIENT: MCEL	**Co-ordinates:** E 510,751.3 N 558,365.4 — **Rig: Case CX 130 D**
ENGINEER: FTCO	**Rev:**
Ground level: 211.22m O.D.	**DATE: 5.2.25**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 220°
PIT DIMENSION: 4.00m * 1.10
LOGGED BY: PC



Shoring/Support: N/A
Stability: Pit unstable. Sidewall collapse from g/l.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0										
									Sedge over spongy dark brown pseudo fibrous PEAT. H5 B2 F2 R1 W0 TV1 TH1 A1.	
					33mm vane 30 kN/m² 25 kN/m² 22 kN/m²		210.72	0.50		
			B 1 D 2	0.50-0.60 0.50-0.60					Stiff brownish grey slightly sandy gravelly SILT with rare cobbles. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of psammite. Cobbles are subangular to subrounded of psammite.	
							210.32	0.90		
1									Light grey silty very sandy subangular to subrounded fine to coarse phyllite and psammite GRAVEL with occasional cobbles and rare boulders. Sand is fine to coarse. Cobbles are subangular to subrounded of phyllite and psammite. Boulders are subangular to subrounded of phyllite and psammite. Boulders are up to 450mm in length.	
			B 3	1.50-1.60						
2										
			B 4	2.50-2.60						
3										
							207.72	3.50		
						END				
4										
5										

Remarks: Hand vane at 0.40m bgl. Seepage of water at g/l. TP terminated at 3.50m bgl. Obstruction as possible rock. TP backfilled with arisings.

Scale: 1:25

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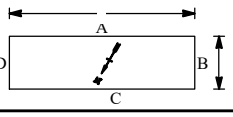
TRIALPIT MAUGHNACLEA WF TPS FILE 1 FEB 12 2025.GPJ ID GINT AGS 4_0_4.GDT 25/4/25

PROJECT: Maughnaclea Wind Farm		**TRIALPIT: TP T05**
LOCATION: Co Cork		**Sheet 1 of 1**
CLIENT: MCEL	**Co-ordinates:**	**Rig: Case CX 130 D**
ENGINEER: FTCO	**E 511,151.9 N 558,168.7**	**Rev:**
Ground level: 277.24m O.D.		**DATE: 4.2.25**

GROUNDWATER
Water strikes: **Rose to after:**
1st: dry
2nd:
3rd:

PIT DIRECTION: 240°
PIT DIMENSION: 4.00m * 1.10
LOGGED BY: PC



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0										
					33mm vane 25 kN/m² 22 kN/m²		276.84	0.40	Rushes and moss over spongy dark brown pseudo fibrous PEAT. H4 B2 F3 R1 W0 TV1 TH1 A2.	
			B 1	0.60-0.70					Brown slightly sandy slightly silty peaty angular to subangular fine to coarse psammite GRAVEL with occasional cobbles. Sand is fine to coarse. Cobbles are angular to subangular of psammite.	
1							276.04	1.20	**END**	
2										
3										
4										
5										

Remarks: Hand vane at 0.40m bgl. Seepage of water at g/l. TP terminated at 1.20m bgl. Obstruction as probable rock. TP backfilled with arisings.

Scale: 1:25

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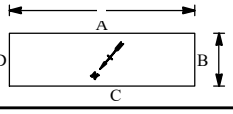
TRIALPIT MAUGHNACLEA WF TPS FILE 1 FEB 12 2025.GPJ ID GINT AGS 4_0_4.GDT 25/4/25

PROJECT: Maughnaclea Wind Farm	**TRIALPIT: TP T06**
LOCATION: Co Cork	**Sheet 1 of 1**
CLIENT: MCEL	**Co-ordinates: E 511,548.5 N 557,967.7**
ENGINEER: FTCO	**Rig: Case CX 130 D**
	Rev:
Ground level: 217.49m O.D.	**DATE: 5.2.25**

GROUNDWATER
Water strikes: **Rose to after:**
1st: **dry**
2nd:
3rd:

PIT DIRECTION: 230°
PIT DIMENSION: 4.00m * 1.10
LOGGED BY: PC



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							217.19	0.30	Grass over plastic dark blackish brown amorphous clayey PEAT. H8 B1 F1 R0 TV1 TH1 A0.	
			B 1	0.50-0.60			216.79	0.70	Orangish brown gravelly fine to coarse SAND with rare cobbles. Gravel is angular to subrounded fine to coarse of psammite. Cobbles are subangular to subrounded of psammite.	
1			B 2	1.00-1.10			216.19	1.30	Light brown gravelly fine to coarse SAND with rare cobbles and rare boulders. Gravel is angular to subangular fine to coarse of psammite. Cobbles are angular to subangular of psammite. Boulders are angular to subangular of psammite. Boulders are up to 500mm in length.	
									END	
2										
3										
4										
5										

Remarks: TP dry on excavation. TP terminated at 1.30m bgl. Obstruction as probable rock. TP backfilled with arisings.

Scale: 1:25

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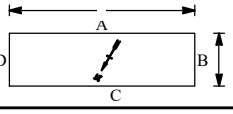
TRIALPIT MAUGHNACLEA WF TPS FILE 1 FEB 12 2025.GPJ ID GINT AGS 4_0_4.GDT 25/4/25

PROJECT: Maughnaclea Wind Farm	**TRIALPIT: TP T12**
LOCATION: Co Cork	**Sheet 1 of 1**
CLIENT: MCEL	**Co-ordinates: E 508,114.6 N 555,658.1**
ENGINEER: FTCO	**Rig: Case CX 130 D**
Ground level: 247.39m O.D.	**Rev:**
GROUNDWATER	**DATE: 29.1.25**
Water strikes: **1st: 3.80m** **Rose to after: 20min 3.75m** **2nd:** **3rd:**	**PIT DIRECTION: 240°** **PIT DIMENSION: 3.00m * 1.10** **LOGGED BY: PC**



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							247.19	0.20	TOPSOIL: Dark brown clayey silty angular to subangular fine to coarse shale GRAVEL.	
			B 1	0.50-0.60			246.79	0.60	Dark brown and orange mottled slightly sandy slightly clayey silty angular fine to coarse shale GRAVEL with occasional cobbles and rare boulders. Sand is fine to coarse. Cobbles are angular of shale. Boulders are angular of shale. Boulders are up to 400mm in length.	
									END	
1										
2										
3		1								
4										
5										

Remarks: TP dry on excavation. TP terminated at 0.60m bgl. Obstruction as probable rock. TP backfilled with arisings.

Scale: 1:25

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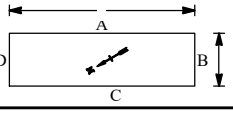
TRIALPIT MAUGHNACLEA WF TPS FILE 1 FEB 12 2025.GPJ ID GINT AGS 4_0_4.GDT 25/4/25

PROJECT: Maughnaclea Wind Farm		**TRIALPIT: TP T13**
LOCATION: Co Cork		**Sheet 1 of 1**
CLIENT: MCEL	**Co-ordinates:**	**Rig: Case CX 130 D**
ENGINEER: FTCO	**E 507,799.6 N 555,874.6**	**Rev:**
Ground level: 229.25m O.D.		**DATE: 29.1.25**

GROUNDWATER
Water strikes: **Rose to after:**
1st: **dry**
2nd:
3rd:

PIT DIRECTION: 210°
PIT DIMENSION: 4.00m * 1.10
LOGGED BY: PC



Shoring/Support: N/A
Stability: Pit stable.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							229.15	0.10	TOPSOIL: Firm dark brown clayey very gravelly SILT. Gravel is angular to subangular fine to coarse of shale.	
			B 1	0.30-0.40					Orange and brown mottled silty very sandy angular to subangular fine to coarse siltstone and shale GRAVEL with occasional cobbles and rare boulders. Sand is fine to coarse. Cobbles are angular to subangular of siltstone and shale. Boulders are subangular of siltstone and shale. Boulders are up to 550mm in length.	
1							228.15	1.10	**END**	
2										
3										
4										
5										

Remarks: TP dry on excavation. TP terminated at 1.10m bgl. Obstruction as probable rock. TP backfilled with arisings.

Scale: 1:25

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TRIALPIT MAUGHNACLEA WF TPS FILE 1 FEB 12 2025.GPJ ID GINT AGS 4_0_4.GDT 25/4/25

Appendix 2
Borehole Records
(Rotary Core)

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Maughnaclea Wind Farm	Co Cork	**RC-01**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2024C110	26-03-25 26-03-25	284.30	E 509,683.0 N 555,831.7

Engineer	Sheet	Status
FTCO	1 of 1	FINAL

RUN DETAILS					STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
0.00	- - -				(1.50)	0.00 - 6.00 : overburden.		Open hole drilling. No recovery.	
1.50	67 - -		282.80		1.50			Subrounded to subangular fine to coarse assorted grey siltstone and assorted grey sandstone GRAVEL with cobbles and some light grey silt. Cobbles are of light grey siltstone.	
3.00	53 - -				(4.50)	6.00 - 6.00 light orangish brown clay.			
4.50	60 - -					6.00 - 6.00 with surficial orangish brown iron stain and powder.			
26.03 6.00			278.30		6.00				

Drilling Progress and Water Observations							
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
26/03/25	12.00	6.00	1.50	96			

Rotary Flush			
From (m)	To (m)	Type	Return (%)
0	6	Water	100

GENERAL REMARKS

BH terminated at 6.00m bgl on REs instruction. BH backfilled.

All dimensions in metres Scale 1:50	Client: MCEL	Method/ Plant Used CS-14	Drill Bit HQ	Driller IP	Logged By EAT

IDL AGS4 UK DH (SPTS) MAUGHNACLEA WF RC FILE 1 APRIL 15 2025.GPJ ID GINT AGS 4_0_4.GDT 28/4/25

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Maughnaclea Wind Farm	Co Cork	**RC-02**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2024C110	19-03-25 19-03-25	229.48	E 510,594.8 N 557,846.7

Engineer	Sheet	Status
FTCO	1 of 2	FINAL

RUN DETAILS

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)
0.00	27 (9) -		228.18		(1.30) 1.30
1.50	100 (26) -				
2.60	100 (53) 13	NI			(3.80)
4.20	100 (55) -		224.38		5.10
5.80	100 (90) 43	10			
		6			
7.40		15			(5.30)

STRATA DESCRIPTION

Discontinuities / Detail	Main
0.00 - 1.30 : overburden.	Subrounded to subangular fine to coarse assorted greenish brown siltstone and assorted greenish grey sandstone GRAVEL.
1.30 - 5.10 Non-intact as weathered rock.	Weathered rock. Strong very strong and medium strong thinly laminated greyish green fine grained sandstone recovered as angular fine to coarse gravel and cobble sized clasts with some orangish brown silt and surficial dark orangish brown iron stain.
5.10 - 10.40 DISC, medium spaced, locally closely and very closely spaced, dipping 10 to 12 and 80 to 84°, stepped, rough, with 0.5 to 10mm thick greenish grey silt smear and surficial orangish brown iron stain and powder.	Very strong locally strong thinly laminated brownish green silty fine grained SANDSTONE.

Instrument/ Backfill

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing

Rotary Flush

From (m)	To (m)	Type	Return (%)
0	10.4	Water	100

GENERAL REMARKS

BH terminated at 10.40m bgl on REs instruction.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: MCEL	Method/ Plant Used CS-14	Drill Bit HQ	Driller IP	Logged By EAT

IDL AGS4 UK DH (SPTS) MAUGHNACLEA WF RC FILE 1 APRIL 15 2025.GPJ IDL GINT AGS 4_0_4.GDT 28/4/25

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Maughnaclea Wind Farm	Co Cork	**RC-02**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2024C110	19-03-25 19-03-25	229.48	E 510,594.8 N 557,846.7

Engineer	Sheet	Status
FTCO	2 of 2	FINAL

RUN DETAILS					STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
	100 (76) 10	13						Very strong locally strong thinly laminated brownish green silty fine grained SANDSTONE. *(continued)*	
8.80									
	100 (94) 43	11							
19.03 10.40		8	219.08		10.40				

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
19/03/25	17.30	10.40										BH terminated at 10.40m bgl on REs instruction. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: MCEL	Method/ Plant Used CS-14	Drill Bit HQ	Driller IP	Logged By EAT

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Maughnaclea Wind Farm	Co Cork	**RC-03**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2024C110	25-03-25 25-03-25	318.04	E 511,974.5 N 558,734.1

Engineer	Sheet	Status
FTCO	1 of 2	FINAL

RUN DETAILS					STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION Discontinuities	Detail	Main
0.00	-				(1.50)	0.00 - 1.50 : overburden.		Open hole drilling. No recovery.
1.50			316.54		1.50			
	100	NI				1.50 - 5.40 Non-intact as weathered rock.		Weathered rock. Medium strong and weak thinly laminated orangish brown fine grained siltstone recovered as angular fine to coarse gravel sized clasts with much light orangish brown silt and surficial orange and light orangish brown iron stain and powder.
2.80								
	100				(3.90)			
4.40								
	100 (12)		312.64		5.40			
5.80						5.40 - 10.30 DISC, Non-intact as extremely and very closely spaced, dipping 84 to 88°, stepped, smooth, with 0.5 to 2mm thick grey silt smear and surficial dark orangish brown iron stain and powder.		Very strong locally strong thinly laminated grey slightly sandy fine grained SILTSTONE.
	100 (51) 9							
7.10								
	100 (30)				(4.90)			

Instrument/ Backfill

Drilling Progress and Water Observations							
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
			1.50	96			

Rotary Flush			
From (m)	To (m)	Type	Return (%)
0	10.3	Water	100

GENERAL REMARKS

BH terminated at 10.30m bgl on REs instruction.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: MCEL	Method/ Plant Used: CS-14	Drill Bit: HQ	Driller: IP	Logged By: EAT

IDL AGS4 UK DH (SPTS) MAUGHNACLEA WF RC FILE 1 APRIL 15 2025.GPJ ID GINT AGS 4_0_4.GDT 28/4/25

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Maughnaclea Wind Farm	Co Cork	**RC-03**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2024C110	25-03-25 25-03-25	318.04	E 511,974.5 N 558,734.1

Engineer	Sheet	Status
FTCO	2 of 2	FINAL

RUN DETAILS					STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
	-	NI						Very strong locally strong thinly laminated grey slightly sandy fine grained SILTSTONE. *(continued)*	
8.70									
	100 (10) -								
25.03 10.30			307.74		10.30				

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
25/03/25	16.00	10.30					

Rotary Flush

From (m)	To (m)	Type	Return (%)

GENERAL REMARKS

BH terminated at 10.30m bgl on REs instruction.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: MCEL	Method/ Plant Used CS-14	Drill Bit HQ	Driller IP	Logged By EAT

IDL AGS4 UK DH (SPTS) MAUGHNACLEA WF RC FILE 1 APRIL 15 2025.GPJ ID GINT AGS 4_0_4.GDT 28/4/25

Appendix 3
Laboratory Test Results

Project ID	2024C110	Client	MCEL
Project Name	Maughnaclea Wind Farm	Due Date	13/02/2025 15:52
Schedule ID	2024C110_1	Scheduled Date	13/02/2025 15:53

Remarks

Sample Details							Classification						Chemical / Concrete								Compaction					Compressibility				Strength (Total)							Shear Strength (Effective Stress)			Rock		Other
Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Moisture Content	Atterberg 4 Point	Particle Density by Gas Jar	Particle Density by Small Pyknometer	Particle Size Distribution	Hydrometer	Organic Content	Loss On Ignition	Sulphate Total	Sulphate Water Gravimetric	Carbonate Titration	ph	Chloride Content	Chloride Content Acid	Compaction Light	Compaction Heavy	Compaction Vibrating Hammer	Moisture Condition Value	Moisture Condition Relationship	CBR	Consolidation	Pressures	Swelling Pressure Test	Laboratory Vane test	Small Direct Shearbox	Ring shear Test	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxial Test	Consolidated Undrained Triaxial Test	Consolidated Undrained Triaxial Multis	Rock Uniaxial compression	Point Load	
TP 01	0.10	0.20	B	1	30/01/25																																					
TP BP01	0.50	0.60	B	1	29/01/25																																					
TP BP02	0.40	0.50	B	1	30/01/25		1				1																															
TP BP03	1.20	1.30	B	1	05/02/25		1				1																															
TP BP04	0.50	0.60	B	1	30/01/25		1				1																															
TP BP04	0.50	0.60	B	2	30/01/25																																					
TP BP05	1.20	1.30	B	1	04/02/25		1				1																															
TP BP05A	0.50	0.60	B	1	04/02/25																																					
TP BP06	1.30	1.40	B	1	04/02/25																																					
TP BP06	1.30	1.40	D	2	04/02/25																																					
TP BP06	2.30	2.40	B	3	04/02/25		1				1																															
TP SS01	0.50	0.60	B	1	30/01/25																																					
TP SS01	1.50	1.60	B	2	30/01/25		1				1																															
TP SS01	2.30	2.40	B	3	30/01/25																																					
TP T03	0.50	0.60	B	1	05/02/25																																					
TP T03	1.20	1.30	B	2	05/02/25		1				1				1	1		1																								ALS 250312-73
TP T04	0.50	0.60	B	1	05/02/25																																					
TP T04	0.50	0.60	D	2	05/02/25																																					
TP T04	1.50	1.60	B	3	05/02/25		1				1																															
TP T04	2.50	2.60	B	4	05/02/25										1	1		1																								ALS 250312-73
TP T05	0.60	0.70	B	1	04/02/25																																					
TP T06	0.50	0.60	B	1	05/02/25																																					
TP T06	1.00	1.10	B	2	05/02/25																																					
TP T12	0.50	0.60	B	1	29/01/25																																					
TP T13	0.30	0.40	B	1	29/01/25		1				1																															
Tests completed							9	0	0	0	9	0	0	0	2	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

0 = test scheduled,
1 = test completed as scheduled,
0* = sample not suitable for scheduled test

Summary of Classification Test Results

Project No.	Project Name
2024C110	Maughnaclea Wind Farm

Hole No.	Sample Ref	Top	Base	Type		Soil Description	Density bulk Mg/m3	Density dry Mg/m3	*w* %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
TP BP02	1	0.40	0.50	B		Greyish-brown very sandy very silty medium GRAVEL.			30.0	39					
TP BP03	1	1.20	1.30	B		Light brown silty very sandy medium GRAVEL.			20.0	32					
TP BP04	1	0.50	0.60	B		Light brown silty very sandy medium and fine GRAVEL.			12.0	21					
TP BP05	1	1.20	1.30	B		Black sandy very silty (peaty) medium and coarse GRAVEL.			93.0	28					
TP BP06	3	2.30	2.40	B		Light brown silty sandy medium GRAVEL.			16.0	15					
TP SS01	2	1.50	1.60	B		Brown silty very sandy fine and medium GRAVEL.			19.0	25					
TP T03	2	1.20	1.30	B		Light brown very silty very sandy medium GRAVEL.			12.0	40					
TP T04	3	1.50	1.60	B		Greenish-grey very sandy very silty medium and fine GRAVEL.			9.6	45					
TP T13	1	0.30	0.40	B		Brown silty very sandy fine and medium GRAVEL.			31.0	28					

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key w = water content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index

Density test: Linear measurement unless : wd - water displacement; wi - immersion in water

Liquid Limit: 4pt cone unless : 1pt - single point test; NP - Non Plastic

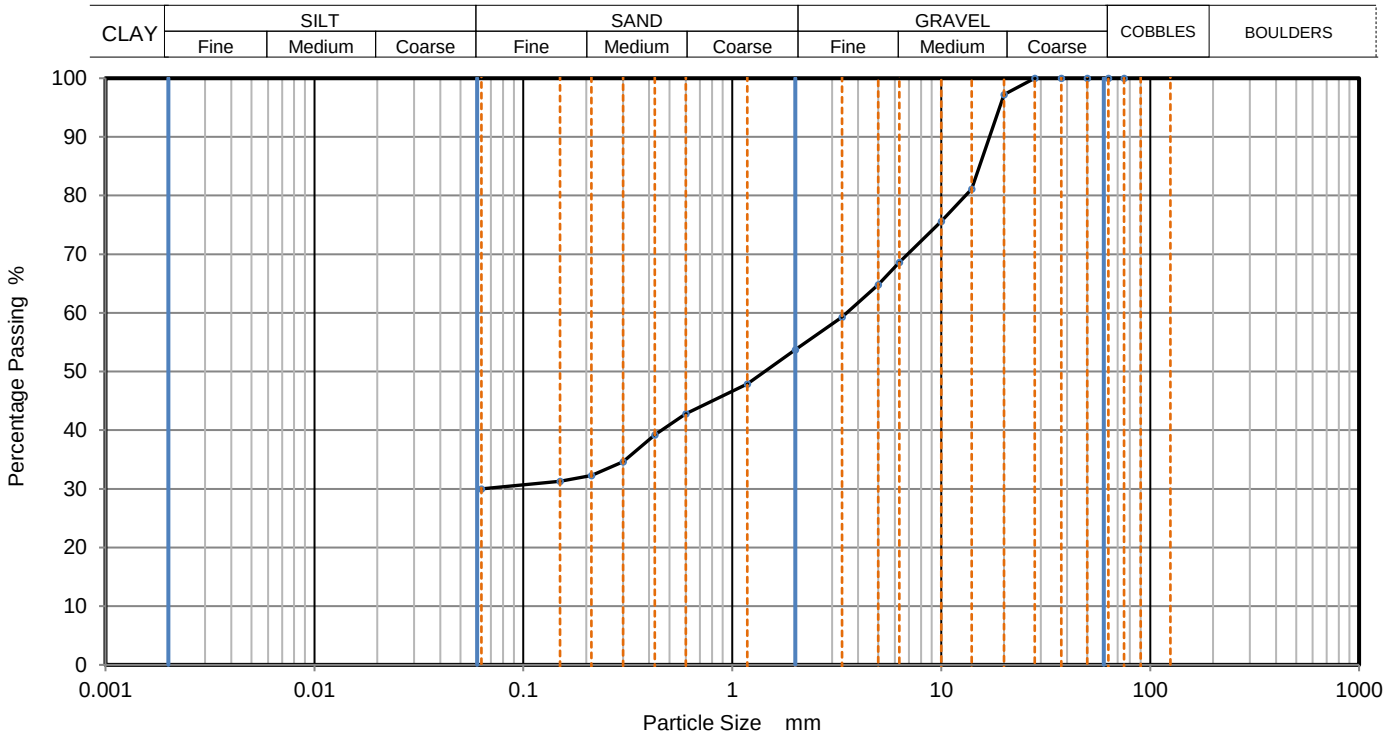
Particle density: sp - small pyknometer; gj - gas jar

Date Printed	Approved By	Table
03/04/2025 15:55	DCD	1
QC From No: R1		sheet 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2024C110**
				Borehole/Pit No.	TP BP02
Site Name	Maughnaclea Wind Farm			Sample No.	1
Soil Description	Greyish-brown very sandy very silty medium GRAVEL.			Depth, m	0.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120250213128



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	81		
10	76		
6.3	69		
5	65		
3.35	59		
2	54		
1.18	48		
0.6	43		
0.425	39		
0.3	35		
0.212	32		
0.15	31		
0.063	30		

Dry Mass of sample, g	802

Sample Proportions	% dry mass
Very coarse	0
Gravel	46
Sand	24
Fines <0.063mm	30

Grading Analysis		
D100	mm	
D60	mm	3.52
D30	mm	0.0648
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

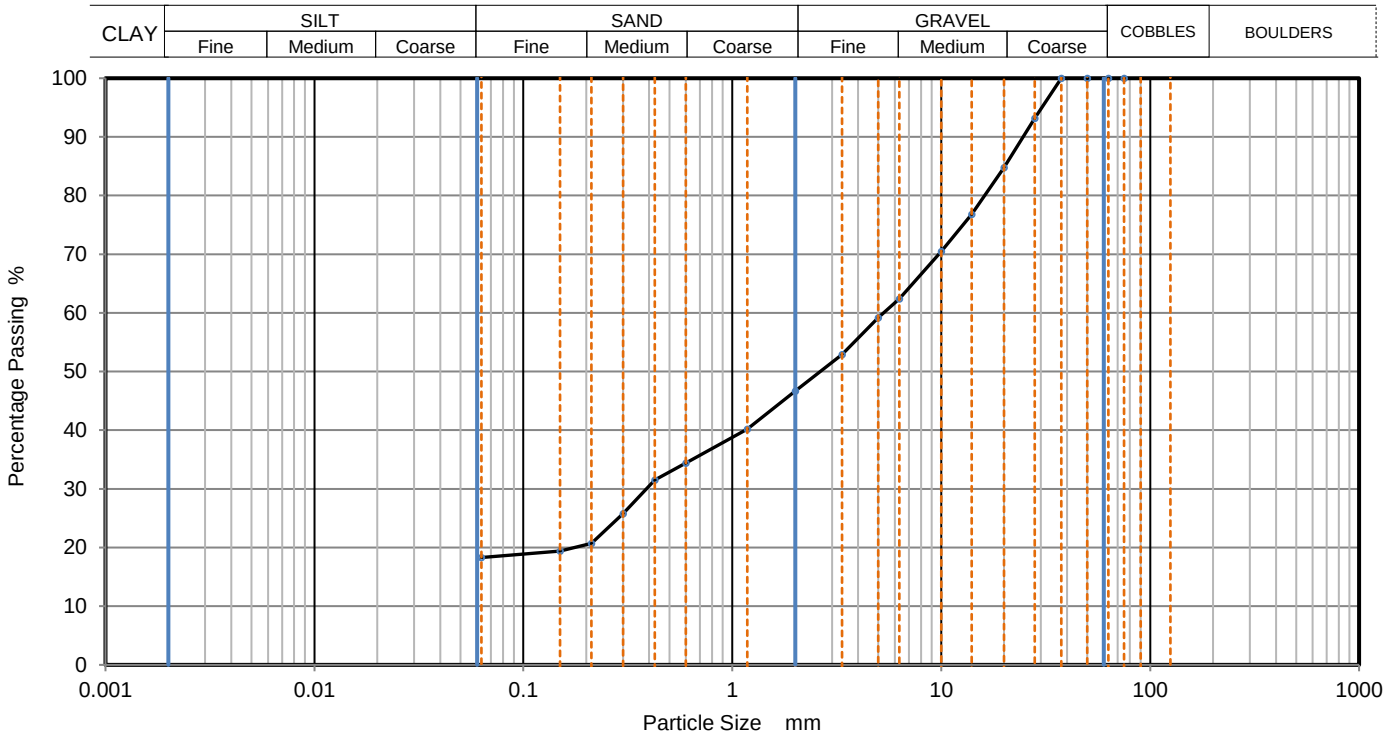
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	03/04/2025 15:55	**1** QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2024C110**
				Borehole/Pit No.	TP BP03
Site Name	Maughnaclea Wind Farm			Sample No.	1
Soil Description	Light brown silty very sandy medium GRAVEL.			Depth, m	1.20
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120250213129



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	93		
20	85		
14	77		
10	71		
6.3	62		
5	59		
3.35	53		
2	47		
1.18	40		
0.6	34		
0.425	32		
0.3	26		
0.212	21		
0.15	19		
0.063	18		

Dry Mass of sample, g	912

Sample Proportions	% dry mass
Very coarse	0
Gravel	53
Sand	29
Fines <0.063mm	18

Grading Analysis		
D100	mm	
D60	mm	5.3
D30	mm	0.387
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

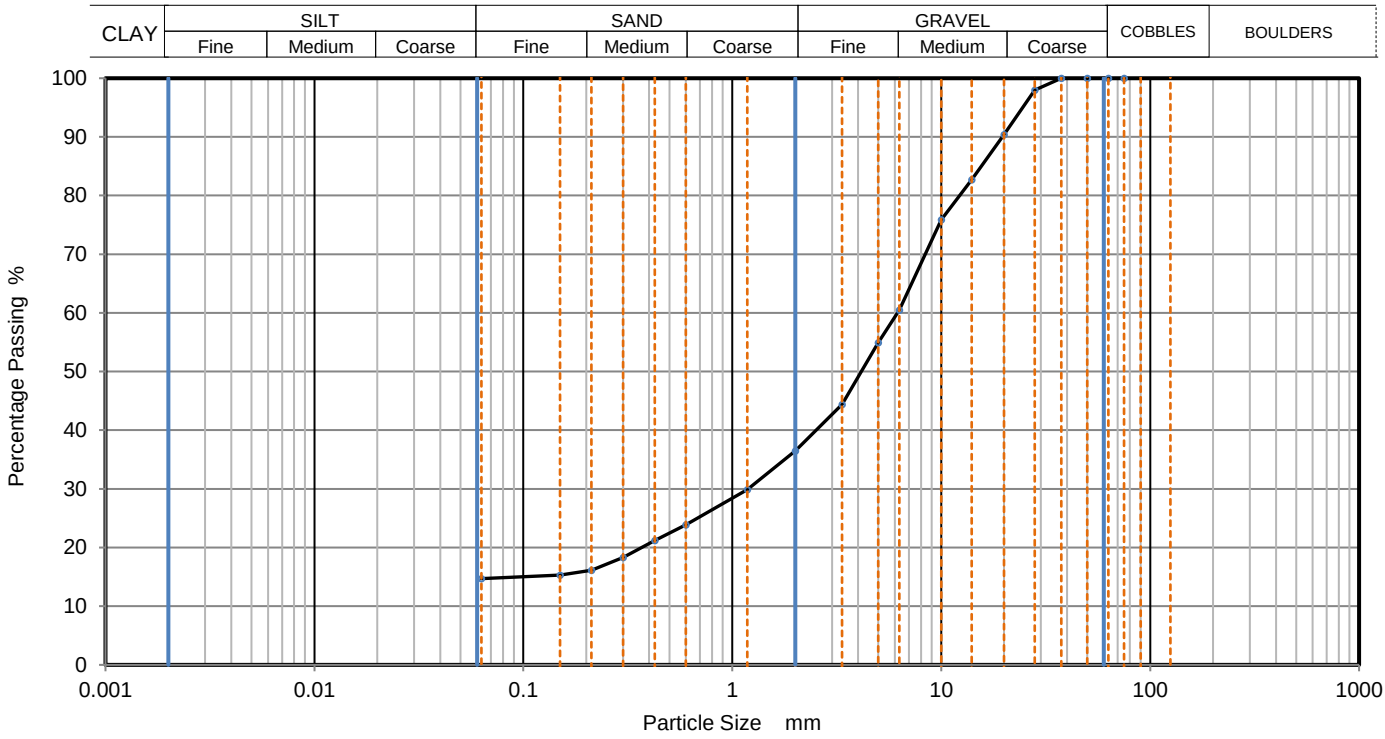
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	03/04/2025 15:55	**1** QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2024C110**
				Borehole/Pit No.	TP BP04
Site Name	Maughnaclea Wind Farm			Sample No.	1
Soil Description	Light brown silty very sandy medium and fine GRAVEL.			Depth, m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120250213130



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	98		
20	90		
14	83		
10	76		
6.3	61		
5	55		
3.35	44		
2	37		
1.18	30		
0.6	24		
0.425	21		
0.3	18		
0.212	16		
0.15	15		
0.063	15		

Dry Mass of sample, g	996

Sample Proportions	% dry mass
Very coarse	0
Gravel	64
Sand	22
Fines <0.063mm	15

Grading Analysis		
D100	mm	
D60	mm	6.18
D30	mm	1.19
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

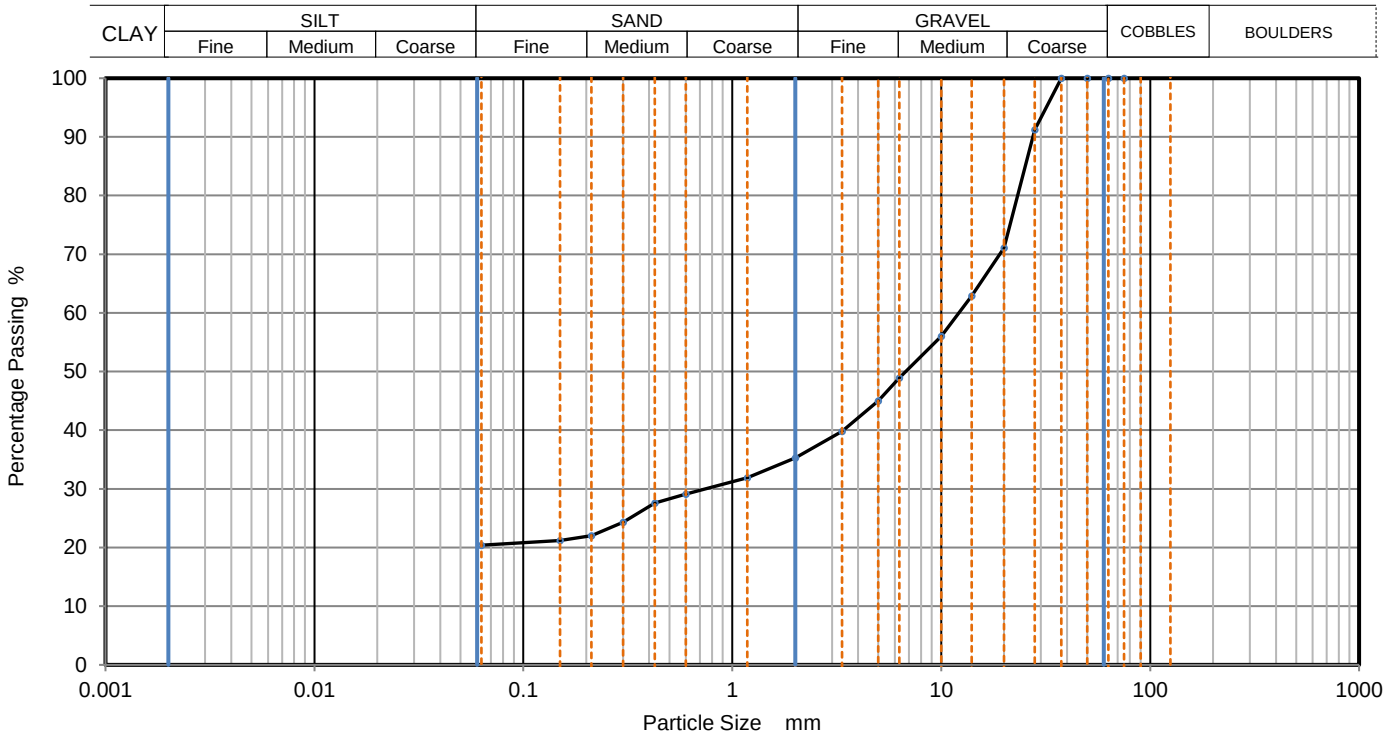
Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	03/04/2025 15:56	**1** QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

PARTICLE SIZE DISTRIBUTION

				Job Ref	**2024C110**
				Borehole/Pit No.	TP BP05
Site Name	Maughnaclea Wind Farm			Sample No.	1
Soil Description	Black sandy very silty (peaty) medium and coarse GRAVEL.			Depth, m	1.20
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120250213132



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	91		
20	71		
14	63		
10	56		
6.3	49		
5	45		
3.35	40		
2	35		
1.18	32		
0.6	29		
0.425	28		
0.3	24		
0.212	22		
0.15	21		
0.063	20		

Dry Mass of sample, g	362

Sample Proportions	% dry mass
Very coarse	0
Gravel	65
Sand	15
Fines <0.063mm	20

Grading Analysis		
D100	mm	
D60	mm	12.2
D30	mm	0.748
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

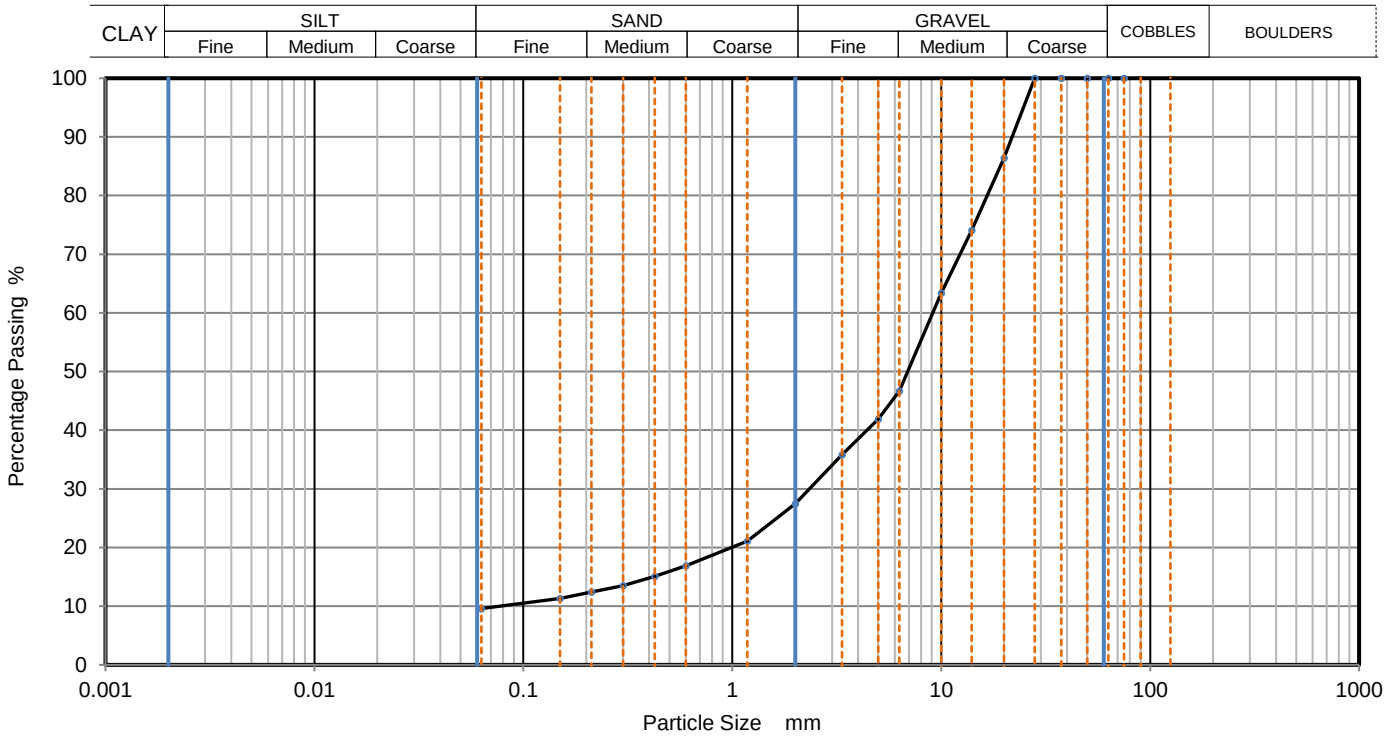
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	03/04/2025 15:56	**1**
				QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2024C110**
				Borehole/Pit No.	TP BP06
Site Name	Maughnaclea Wind Farm			Sample No.	3
Soil Description	Light brown silty sandy medium GRAVEL.			Depth, m	2.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120250213136



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	86		
14	74		
10	63		
6.3	47		
5	42		
3.35	36		
2	28		
1.18	21		
0.6	17		
0.425	15		
0.3	14		
0.212	12		
0.15	11		
0.063	10		

Dry Mass of sample, g	770

Sample Proportions	% dry mass
Very coarse	0
Gravel	73
Sand	18
Fines <0.063mm	10

Grading Analysis		
D100	mm	
D60	mm	9.1
D30	mm	2.34
D10	mm	0.077
Uniformity Coefficient		120
Curvature Coefficient		7.8

Remarks

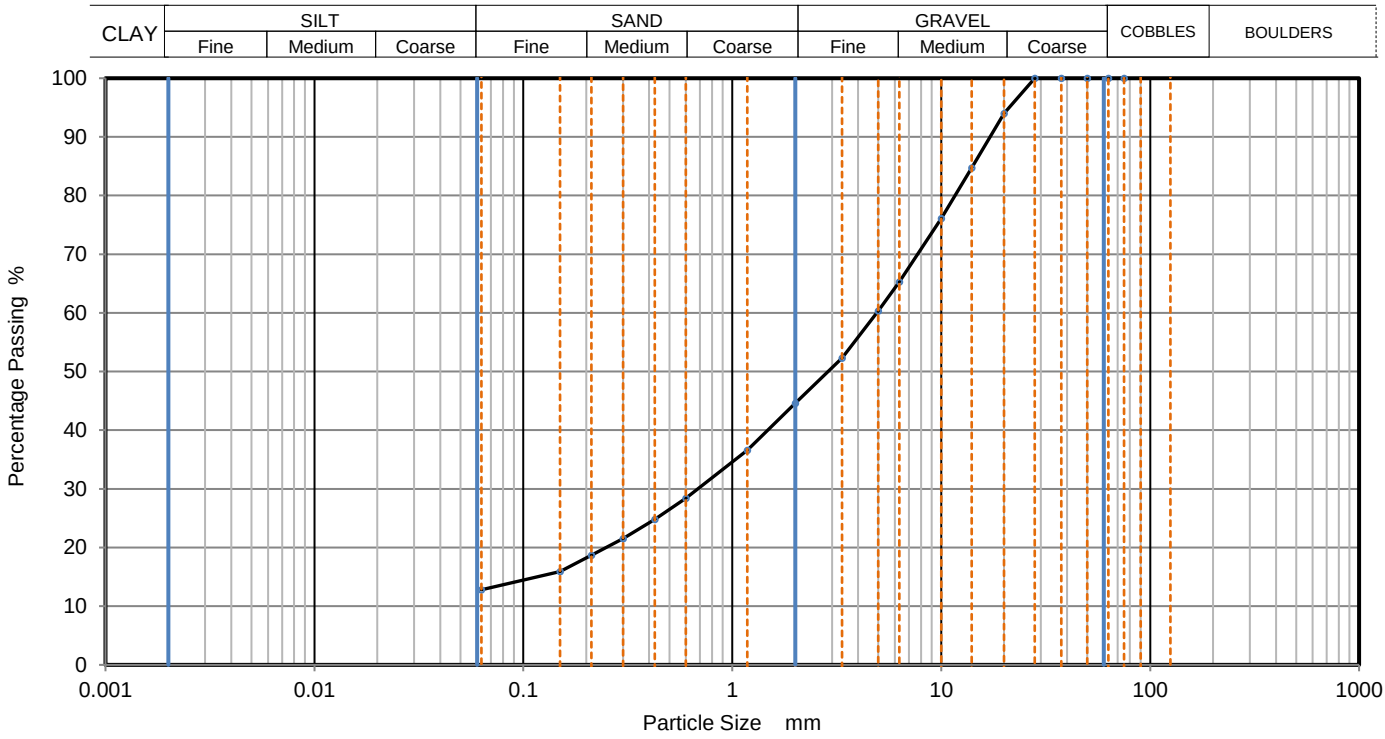
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	03/04/2025 15:56	**1** QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2024C110**
				Borehole/Pit No.	TP SS01
Site Name	Maughnaclea Wind Farm			Sample No.	2
Soil Description	Brown silty very sandy fine and medium GRAVEL.			Depth, m	1.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120250213138



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	94		
14	85		
10	76		
6.3	65		
5	60		
3.35	52		
2	45		
1.18	37		
0.6	28		
0.425	25		
0.3	22		
0.212	19		
0.15	16		
0.063	13		

Dry Mass of sample, g	740

Sample Proportions	% dry mass
Very coarse	0
Gravel	55
Sand	32
Fines <0.063mm	13

Grading Analysis		
D100	mm	
D60	mm	4.93
D30	mm	0.686
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

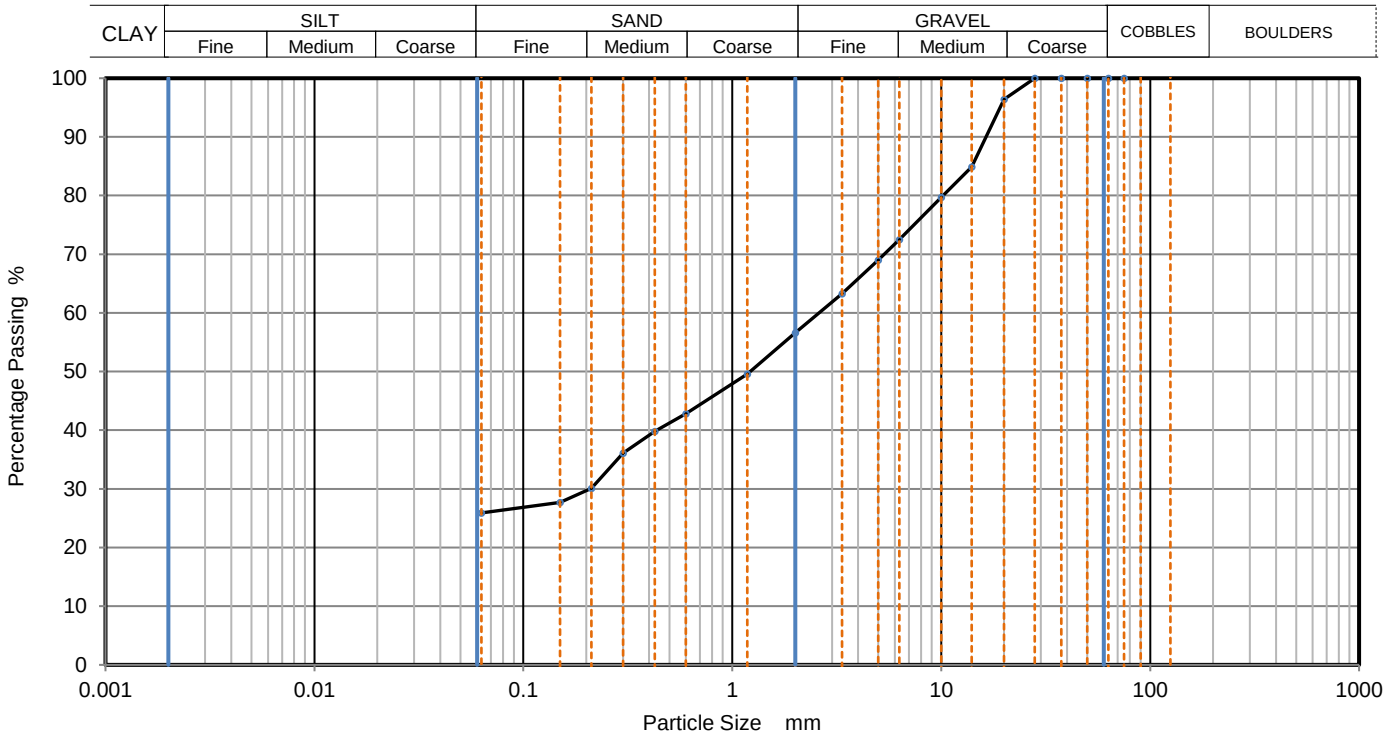
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	03/04/2025 15:56	**1** QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2024C110**
				Borehole/Pit No.	TP T03
Site Name	Maughnaclea Wind Farm			Sample No.	2
Soil Description	Light brown very silty very sandy medium GRAVEL.			Depth, m	1.20
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120250213141



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	85		
10	80		
6.3	73		
5	69		
3.35	63		
2	57		
1.18	50		
0.6	43		
0.425	40		
0.3	36		
0.212	30		
0.15	28		
0.063	26		

Dry Mass of sample, g	852

Sample Proportions	% dry mass
Very coarse	0
Gravel	43
Sand	31
Fines <0.063mm	26

Grading Analysis		
D100	mm	
D60	mm	2.6
D30	mm	0.21
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

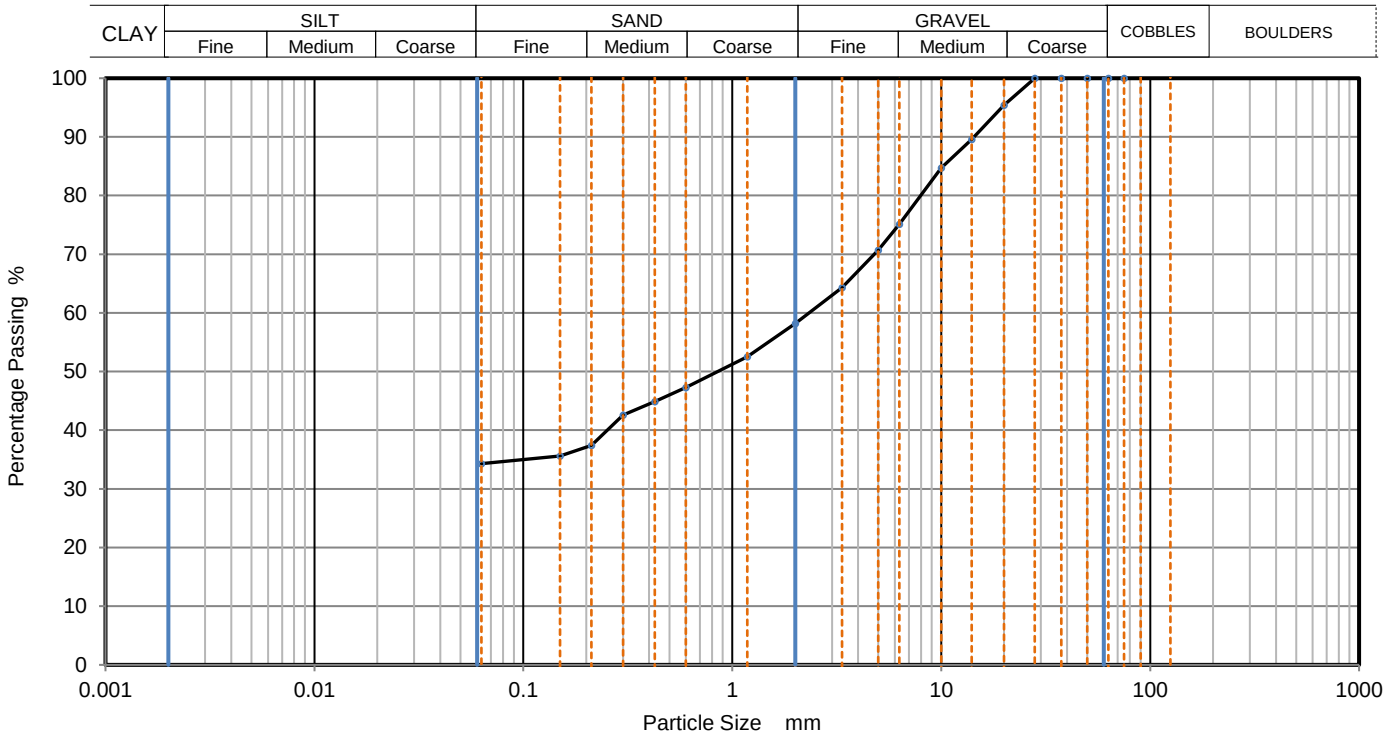
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	03/04/2025 15:56	**1** QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2024C110**
				Borehole/Pit No.	TP T04
Site Name	Maughnaclea Wind Farm			Sample No.	3
Soil Description	Greenish-grey very sandy very silty medium and fine GRAVEL.			Depth, m	1.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120250213144



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	95		
14	90		
10	85		
6.3	75		
5	71		
3.35	64		
2	58		
1.18	53		
0.6	47		
0.425	45		
0.3	43		
0.212	37		
0.15	36		
0.063	34		

Dry Mass of sample, g	995

Sample Proportions	% dry mass
Very coarse	0
Gravel	42
Sand	24
Fines <0.063mm	34

Grading Analysis		
D100	mm	
D60	mm	2.33
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

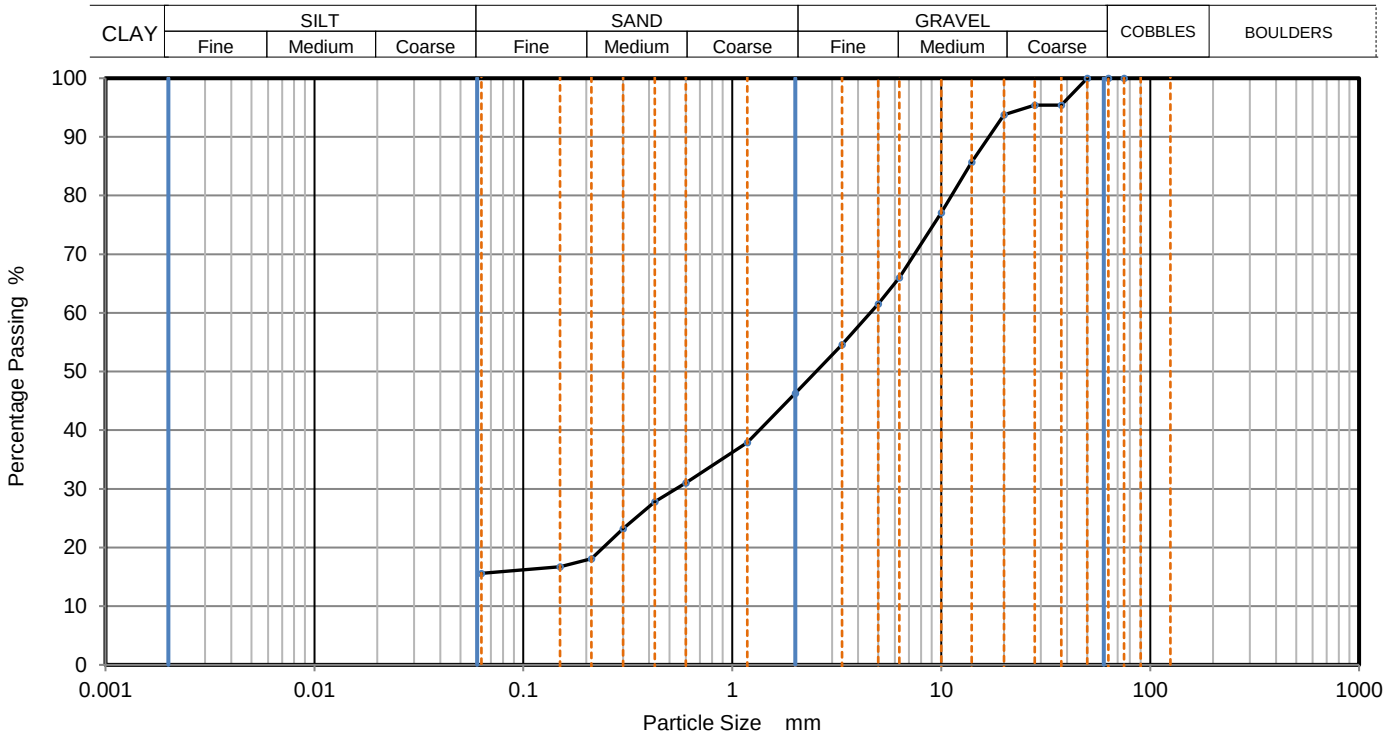
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	03/04/2025 15:56	**1** QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2024C110**
				Borehole/Pit No.	TP T13
Site Name	Maughnaclea Wind Farm			Sample No.	1
Soil Description	Brown silty very sandy fine and medium GRAVEL.			Depth, m	0.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120250213150



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	95		
28	95		
20	94		
14	86		
10	77		
6.3	66		
5	62		
3.35	55		
2	46		
1.18	38		
0.6	31		
0.425	28		
0.3	23		
0.212	18		
0.15	17		
0.063	16		

Dry Mass of sample, g	815

Sample Proportions	% dry mass
Very coarse	0
Gravel	54
Sand	31
Fines <0.063mm	16

Grading Analysis		
D100	mm	
D60	mm	4.58
D30	mm	0.54
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	03/04/2025 15:56	**1** QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	19 March 2025
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	250312-73
Your Reference:	2024C110
Location:	Maughnaclea Wind Farm
Report No:	759531
Order Number:	PKB21294

We received 2 samples on Wednesday March 12, 2025 and 2 of these samples were scheduled for analysis which was completed on Wednesday March 19, 2025. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Justin Keeton
Business Unit Leader - Land

CERTIFICATE OF ANALYSIS

SDG: 250312-73 **Report Number:** 759531 **Superseded Report:**
Client Ref.: 2024C110 **Location:** Maughnaclea Wind Farm

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
31203883	TPT03	B2	1.20 - 1.30	05/02/2025
31203887	TPT04	B4	2.50 - 2.60	05/02/2025

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 250312-73 **Report Number:** 759531 **Superseded Report:**
Client Ref.: 2024C110 **Location:** Maughnaclea Wind Farm

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			31203883	31203887
Customer Sample Reference			TPT03	TPT04
AGS Reference			B2	B4
Depth (m)			1.20 - 1.30	2.50 - 2.60
Container			250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
Sample Type			S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 2	X	X
pH	All	NDPs: 0 Tests: 2	X	X
Sample description	All	NDPs: 0 Tests: 2	X	X
Total Sulphate	All	NDPs: 0 Tests: 2	X	X

CERTIFICATE OF ANALYSIS

SDG: 250312-73 **Report Number:** 759531 **Superseded Report:**
Client Ref.: 2024C110 **Location:** Maughnaclea Wind Farm

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
31203883	TPT03	1.20 - 1.30	Light Brown	Loamy Sand	Stones	None
31203887	TPT04	2.50 - 2.60	Grey	Sandy Clay	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 250312-73 **Report Number:** 759531 **Superseded Report:**
Client Ref.: 2024C110 **Location:** Maughnaclea Wind Farm

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
***	6:2 FTAB (see appendix)
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TPT03	TPT04				
			Depth (m)	1.20 - 1.30	2.50 - 2.60				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	05/02/2025	05/02/2025				
			Sample Time	.	.				
			Date Received	12/03/2025	12/03/2025				
			SDG Ref	250312-73	250312-73				
			Lab Sample No.(s)	31203883	31203887				
			AGS Reference	B2	B4				
Moisture Content Ratio (% of as received sample)	%	PM024		8.8	5.9				
pH	1 pH Units	TM133		5.71 @ M	6.13 @ M				
Sulphate, Total	<48 mg/kg	TM221		51.1 M	63.5 M				
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.012 @ M	0.0225 @ M				

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture, screens of soils for Asbestos Containing Material
TM133	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Determination of Acid Extractable Sulphate in Soils by ICP OES
TM243	Mixed Anions In Soils By Kone

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

CERTIFICATE OF ANALYSIS

SDG: 250312-73 **Report Number:** 759531 **Superseded Report:**
Client Ref.: 2024C110 **Location:** Maughnaclea Wind Farm

Test Completion Dates

Lab Sample No(s)	31203883	31203887
Customer Sample Ref.	TPT03	TPT04
AGS Ref.	B2	B4
Depth	1.20 - 1.30	2.50 - 2.60
Type	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	17-Mar-2025	18-Mar-2025
pH	19-Mar-2025	18-Mar-2025
Sample description	13-Mar-2025	13-Mar-2025
Total Sulphate	17-Mar-2025	17-Mar-2025

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised.
This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur -
e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis.
The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l.
Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only.
It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

If during the search of the two ‘pinch’ samples by PLM only 1 or 2 fibres or fibre bundles are seen and identified as asbestos, the term ‘trace asbestos identified’ is reported.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Potentially respirable fibres are identified by using a Phase Contrast Microscope.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.
The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

21. 6:2 FTAB

Recovery of 6:2 FTAB in the quality control samples has been observed to be <50% of the target value. Please note the 6:2 FTAB result is supplied as indicative only.

Appendix 4
Photographs
(Trial Pits)

Figure 1 H:\2024\24C110_MaughnacleaWF\TP01 Maughnaclea (1).jpg

Figure 3 H:\2024\24C110_MaughnacleaWF\TP01 Maughnaclea (3).jpg

Figure 2 H:\2024\24C110_MaughnacleaWF\TP01 Maughnaclea (2).jpg

Figure 4 H:\2024\24C110_MaughnacleaWF\TP01 Maughnaclea (4).jpg

Figure 5 H:\2024\24C110_MaughnacleaWF\TP02 Maughnaclea (1).jpg

Figure 7 H:\2024\24C110_MaughnacleaWF\TP02 Maughnaclea (3).jpg

Figure 6 H:\2024\24C110_MaughnacleaWF\TP02 Maughnaclea (2).jpg

Figure 8 H:\2024\24C110_MaughnacleaWF\TP02 Maughnaclea (4).jpg

Figure 9 H:\2024\24C110_MaughnacleaWF\TPBP01 (1).jpg

Figure 11 H:\2024\24C110_MaughnacleaWF\TPBP01 (4).jpg

Figure 10 H:\2024\24C110_MaughnacleaWF\TPBP01 (3).jpg

Figure 12 H:\2024\24C110_MaughnacleaWF\TPBP01 (5).jpg

Figure 13 H:\2024\24C110_MaughnacleaWF\TPBP02 (1).jpg

Figure 15 H:\2024\24C110_MaughnacleaWF\TPBP02 (4).jpg

Figure 14 H:\2024\24C110_MaughnacleaWF\TPBP02 (3).jpg

Figure 16 H:\2024\24C110_MaughnacleaWF\TPBP02 (5).jpg

Figure 17 H:\2024\24C110_MaughnacleaWF\TPBP03 (1).jpg

Figure 19 H:\2024\24C110_MaughnacleaWF\TPBP03 (4).jpg

Figure 18 H:\2024\24C110_MaughnacleaWF\TPBP03 (2).jpg

Figure 20 H:\2024\24C110_MaughnacleaWF\TPBP03 (5).jpg

Figure 21 H:\2024\24C110_MaughnacleaWF\TPBP03 (6).jpg

Figure 23 H:\2024\24C110_MaughnacleaWF\TPBP04 (3).jpg

Figure 22 H:\2024\24C110_MaughnacleaWF\TPBP04 (1).jpg

Figure 24 H:\2024\24C110_MaughnacleaWF\TPBP04 (4).jpg

Figure 25 H:\2024\24C110_MaughnacleaWF\TPBP04 (5).jpg

Figure 27 H:\2024\24C110_MaughnacleaWF\TPBP05 (1).jpg

Figure 26 H:\2024\24C110_MaughnacleaWF\TPBP04 (6).jpg

Figure 28 H:\2024\24C110_MaughnacleaWF\TPBP05 (3).jpg

Figure 29 H:\2024\24C110_MaughnacleaWF\TPBP05 (4).jpg

Figure 31 H:\2024\24C110_MaughnacleaWF\TPBP05A (1).jpg

Figure 30 H:\2024\24C110_MaughnacleaWF\TPBP05 (5).jpg

Figure 32 H:\2024\24C110_MaughnacleaWF\TPBP05A (3).jpg

Figure 33 H:\2024\24C110_MaughnacleaWF\TPBP05A (4).jpg

Figure 35 H:\2024\24C110_MaughnacleaWF\TPBP06 (1).jpg

Figure 34 H:\2024\24C110_MaughnacleaWF\TPBP05A (5).jpg

Figure 36 H:\2024\24C110_MaughnacleaWF\TPBP06 (2).jpg

Figure 37 H:\2024\24C110_MaughnacleaWF\TPBP06 (4).jpg

Figure 39 H:\2024\24C110_MaughnacleaWF\TPSS01 (1).jpg

Figure 38 H:\2024\24C110_MaughnacleaWF\TPBP06 (5).jpg

Figure 40 H:\2024\24C110_MaughnacleaWF\TPSS01 (3).jpg

Figure 41 H:\2024\24C110_MaughnacleaWF\TPSS01 (4).jpg

Figure 43 H:\2024\24C110_MaughnacleaWF\TPT03 Maughnaclea (2).jpg

Figure 42 H:\2024\24C110_MaughnacleaWF\TPT03 Maughnaclea (1).jpg

Figure 44 H:\2024\24C110_MaughnacleaWF\TPT03 Maughnaclea (3).jpg

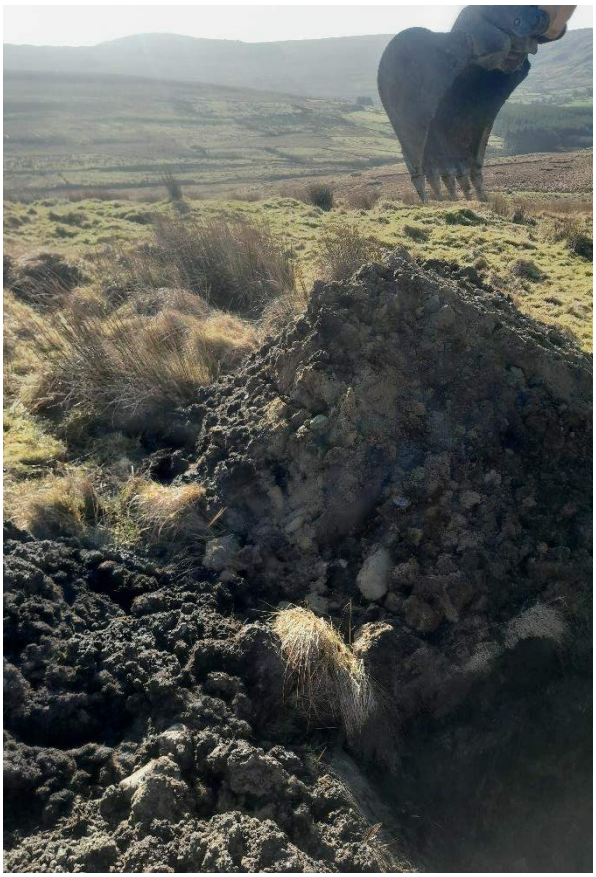


Figure 45 H:\2024\24C110_MaughnacleaWF\TPT03 Maughnaclea (4).jpg

Figure 47 H:\2024\24C110_MaughnacleaWF\TPT04 (2).jpg

Figure 46 H:\2024\24C110_MaughnacleaWF\TPT04 (1).jpg

Figure 48 H:\2024\24C110_MaughnacleaWF\TPT04 (4).jpg

Figure 49 H:\2024\24C110_MaughnacleaWF\TPT04 (5).jpg

Figure 51 H:\2024\24C110_MaughnacleaWF\TPT05 (3).jpg

Figure 50 H:\2024\24C110_MaughnacleaWF\TPT05 (1).jpg

Figure 52 H:\2024\24C110_MaughnacleaWF\TPT05 (4).jpg

Figure 53 H:\2024\24C110_MaughnacleaWF\TPT05 (5).jpg

Figure 55 H:\2024\24C110_MaughnacleaWF\TPT06 (3).jpg

Figure 54 H:\2024\24C110_MaughnacleaWF\TPT06 (1).jpg

Figure 56 H:\2024\24C110_MaughnacleaWF\TPT06 (4).jpg

Figure 57 H:\2024\24C110_MaughnacleaWF\TPT06.jpg

Figure 59 H:\2024\24C110_MaughnacleaWF\TPT12 (2).jpg

Figure 58 H:\2024\24C110_MaughnacleaWF\TPT12 (1).jpg

Figure 60 H:\2024\24C110_MaughnacleaWF\TPT12 (3).jpg

Figure 61 H:\2024\24C110_MaughnacleaWF\TPT12 (4) (1).jpg

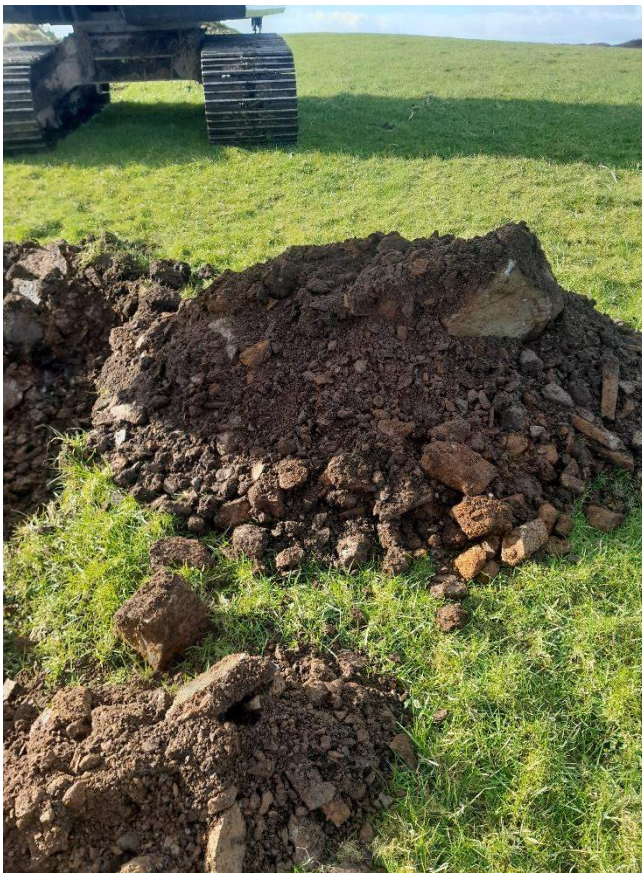


Figure 63 H:\2024\24C110_MaughnacleaWF\TPT12 (5) (1).jpg

Figure 62 H:\2024\24C110_MaughnacleaWF\TPT12 (4).jpg

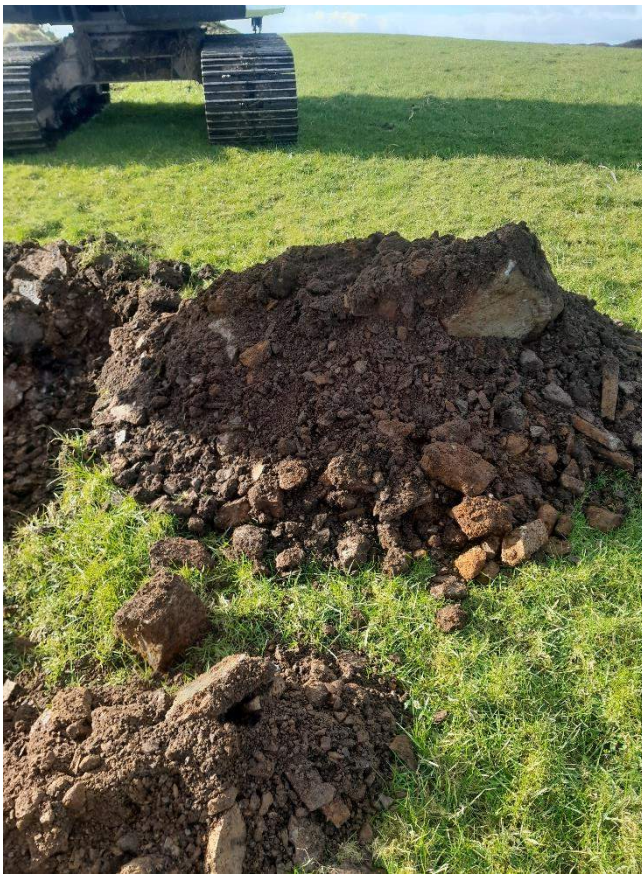


Figure 64 H:\2024\24C110_MaughnacleaWF\TPT12 (5).jpg

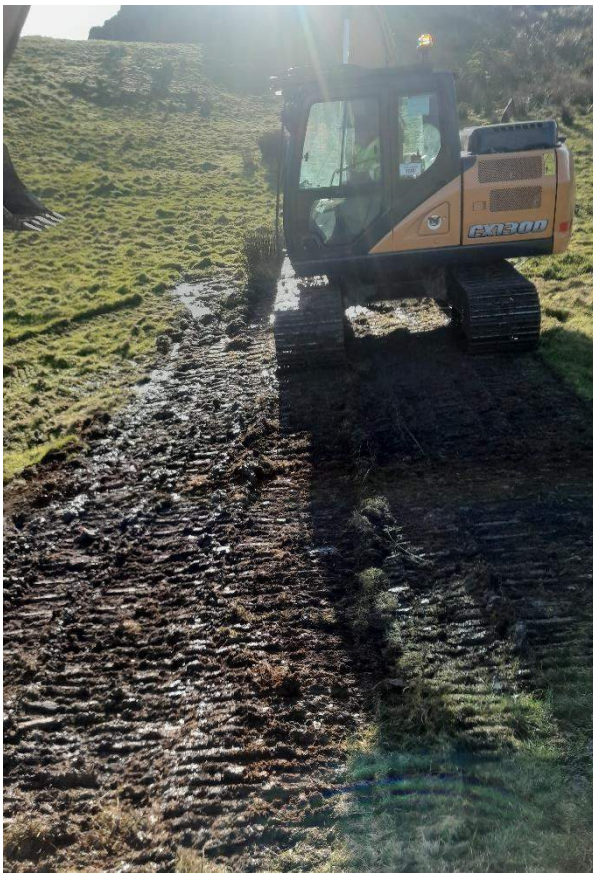


Figure 65 H:\2024\24C110_MaughnacleaWF\TPT13 (1) (1).jpg

Figure 67 H:\2024\24C110_MaughnacleaWF\TPT13 (2).jpg

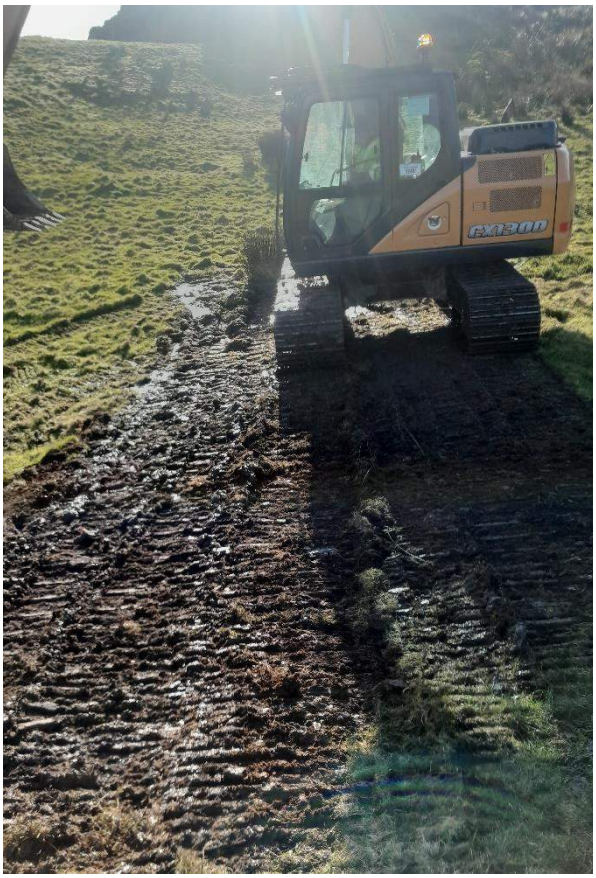


Figure 66 H:\2024\24C110_MaughnacleaWF\TPT13 (1).jpg

Figure 68 H:\2024\24C110_MaughnacleaWF\TPT13 (3).jpg

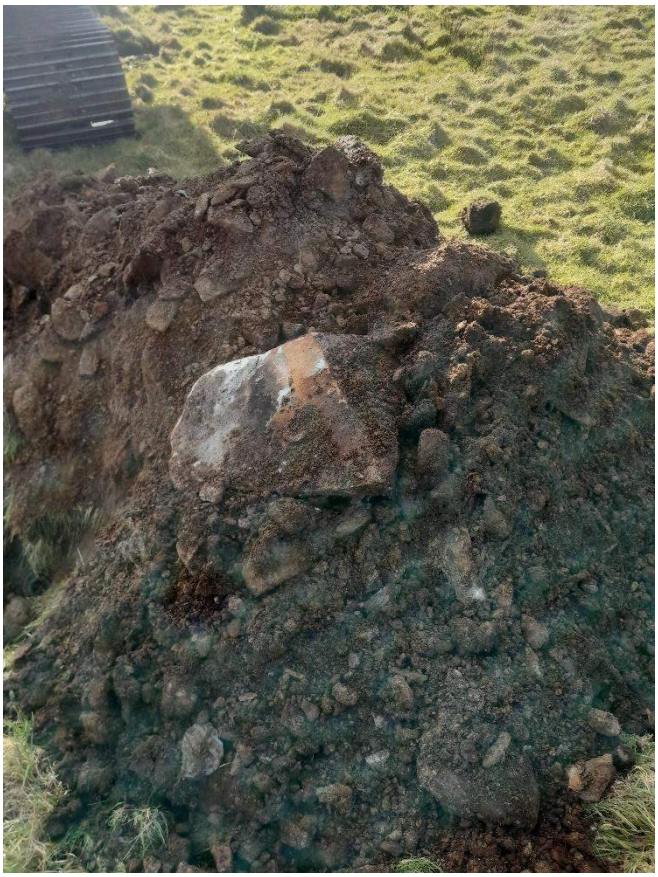
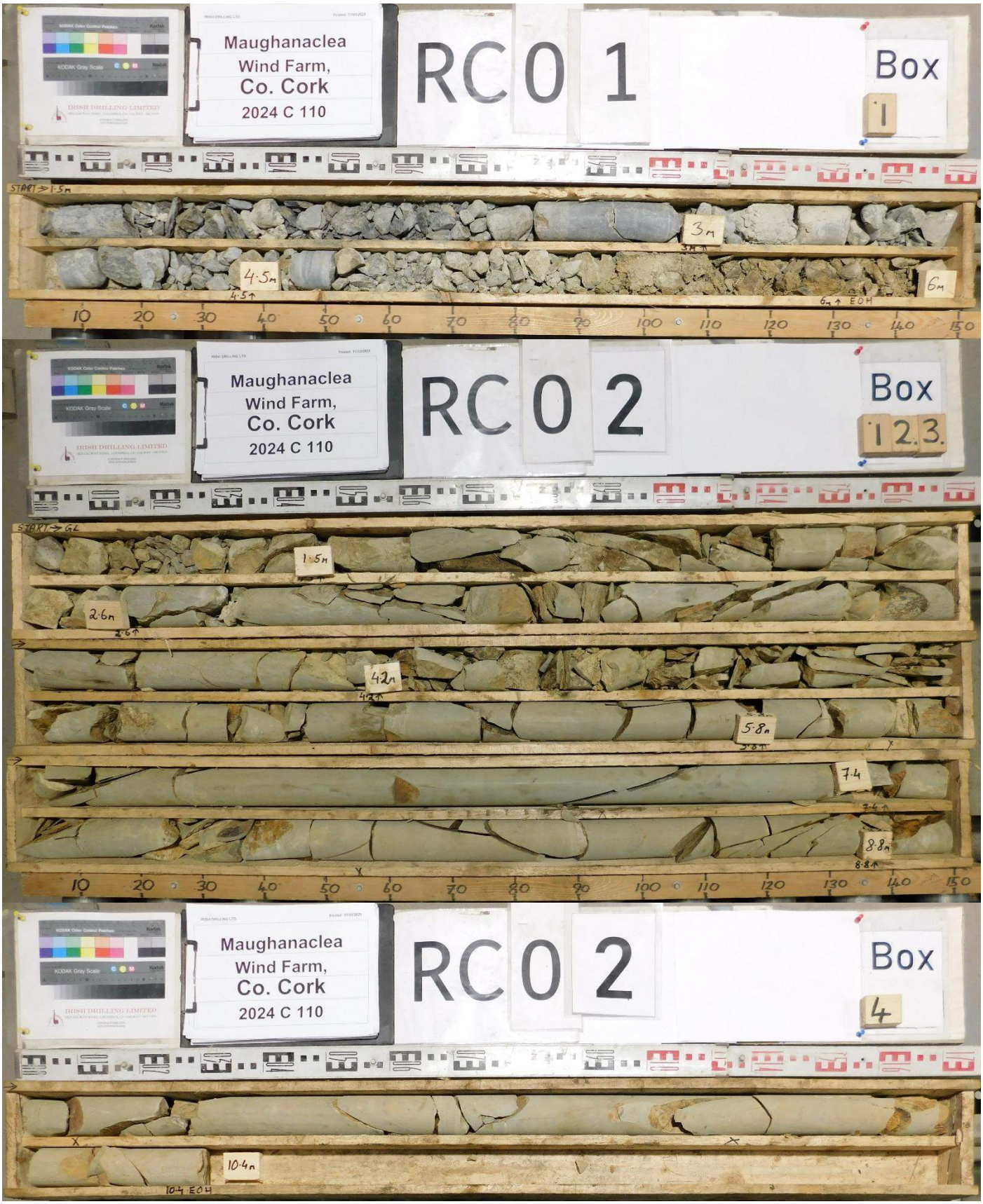


Figure 69 H:\2024\24C110_MaughnacleaWF\TPT13 (4).jpg

Appendix 5
Photographs
(Rotary Core)


Maughanaclea
Wind Farm,
Co. Cork
2024 C 110
RC0 1
Box
1
START 1.5m
3m
4.5m
6m
6m EOH
Maughanaclea
Wind Farm,
Co. Cork
2024 C 110
RC0 2
Box
1 2 3
START GL
1.5m
2.6m
4.2m
5.8m
7.4
8.8m
Maughanaclea
Wind Farm,
Co. Cork
2024 C 110
RC0 2
Box
4
10.4m
10.4 EOH


Maughanaclea
Wind Farm,
Co. Cork
2024 C 110
RC 0 3
Box
1 2 3
Maughanaclea
Wind Farm,
Co. Cork
2024 C 110
RC 0 3
Box
4

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