FEHILY TIMONEY

CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

GEOTECHNICAL & PEAT STABILITY REPORT

GLENORA WIND FARM

Prepared for: **MKO Ltd**

MKO

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GEOTECHNICAL & PEAT STABILITY ASSESSMENT REPORT
GLENORA WIND FARM

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Abstract: Fehily Timoney and Company (FT) were engaged by McCarthy Keville O'Sullivan (MKO) to undertake a geotechnical assessment of the proposed Glenora wind farm site with respect to peat stability. As part of the geotechnical assessment of the proposed development, 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 wind farm development.

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1. NON-TECHNICAL SUMMARY

Fehily Timoney and Company (FT) was engaged by MKO (on behalf of Glenora Wind Farm DAC) to undertake a geotechnical and peat stability assessment of the proposed Glenora wind farm site (and associate grid connection route), located in north Co. Mayo. In accordance with planning guidelines compiled by the Department of the Environment, Heritage and Local Government (Wind Energy Development Guidelines, DoECLG, 2006), where peat >0.5m thickness is present on a proposed wind farm development, a peat stability assessment is required.

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

The findings, which involved a stability analysis of 420 locations, show that the site has an acceptable margin of safety and is suitable for the Proposed Development. Based on the findings, mitigation measures will be implemented for construction work in peat lands to ensure that all works adhere to an acceptable standard of safety. It is noted that there have been numerous wind farms successfully constructed on blanket bog site over the past 15 years with any issues relating to peat failure, such as Galway Wind Park, Arderroo (both Co. Galway), Slieve Callan (Co. Clare) and Slieve Bawn (Co. Roscommon), amongst others.

The Proposed Development comprises 22 no. wind turbines and associated infrastructure. A detailed description of the Proposed Development is included in Chapter 4 of the EIAR.

The site is undulating with drainage channels running typically north to southwest and west to east. The land use within the Proposed Development comprises commercial forestry.

Slope inclinations at the infrastructure locations range from 3 to 11 degrees. The relatively flat topography/nature of the terrain on site reflects the low risk of peat failure. Ground conditions comprised mainly of blanket peat overlying silt and gravel, overlying bedrock.

Between July 2021 and May 2022, 622 no. peat depth readings were taken within the Proposed Development. Peat depth recorded during the site walkovers and from the ground investigation ranged from 0.1 to 4.6m with an average peat depth of 1.8m. 63% of the probes recorded peat depths of less than 2.0m with 99% of peat depth probes recorded peat depths of less than 3.0m. A number of localised readings recorded peat depths from 3.0 to 4.6m. The deeper peat areas were generally avoided when optimising the wind farm layout of the site.

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. However, taking a precautionary approach, an acceptable FoS for slopes is generally taken as a minimum of 1.3. The stability analysis for this project, which analysed the turbine locations, access roads and substation, resulted in FoS above the minimum acceptable value of 1.3 and hence the site has a satisfactory margin of safety.

From the stability analysis for both the undrained and drained conditions, which analysed the turbine locations and other proposed infrastructure locations, the calculated values were above the minimum acceptable FoS of 1.3, with the exception of a single drained result of 1.26 in an area where no development is proposed, 250m from T21.

The risk assessment uses the results of the stability analysis in combination with qualitative factors, which cannot be reasonably included in a stability calculation but nevertheless may affect the occurrence of peat instability, to assess the risk of peat failure at the site. The results of the risk assessment are given in Appendix B. A construction buffer zone plan based on qualitative factors identified during the site walkover is included as Drawing P20-312-0600-GLEN-0002 at the end of the report text.

In summary, the Glenora Wind Farm site has an acceptable margin of safety and is considered to be at **low** risk of peat failure taking into account the proposed mitigation measures and construction controls set out in this report are implemented and is suitable for the Proposed 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 about 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 Principal Geotechnical Engineer, MSc. Geotechnical Engineering) and Alan Whelan (FT Project Engineer, BEng. Civil Engineering). Ian is a Technical Director with Fehily Timoney and has 25 years' experience in geotechnical engineering. Alan is a Project Engineer with Fehily Timoney and has two years' experience in geotechnical engineering. Site visits were undertaken by Ian Higgins, Alan Whelan, Emily Archer and Gary Lawlor. Emily is a Senior Project Engineer with FT and has five years' experience in geotechnical engineering. Gary is a Project Engineer with FT and has two years' experience.

2.2 Project Description

FT was engaged in February 2020 by McCarthy Keville O'Sullivan (MKO) (on behalf of Glenora Wind Farm DAC) to undertake a geotechnical & peat stability assessment of the proposed Glenora Wind Farm.

The proposed Glenora Wind Farm is located approximately 6km southwest of Ballycastle, Co. Mayo

The Glenora Wind Farm site comprises predominantly commercial forestry underlain by blanket peat. The surrounding landscape is undulating with land-use comprising forestry and blanket peatland.

The "Proposed Development" will comprise 22 no. wind turbines and associated hardstanding areas, 1 no. electricity substation, 3 no. borrow pits, 9 no. peat placement areas, 5 no. temporary construction compounds, upgrade of existing roads, construction of new site access roads, underground cabling connecting to the existing Tawnaghmore substation, road widening and accommodation works along the turbine delivery route, 1 no. permanent meteorological mast, site drainage and all associated work as described in Chapter 4 of the EIAR. The cable route will be located along existing public roads, and as such it is not considered as part of this stability assessment, as there is not considered to be a stability risk associated with the required excavations.

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 (PLHRAG, 2017, 2nd edition). 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 occurred during the construction of a section of floating road on sidelong ground in an area of weak peat. This construction technique is not proposed on areas of sidelong ground on the Glenora site. It is important that the existing site drainage is maintained during construction to avoid 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. It is also noted that there have been numerous wind farms successfully constructed on blanket bog site over the past 15 years with any issues relating to peat failure, such as Galway Wind Park, Arderroo (both Co. Galway), Slieve Callan (Co. Clare) and Slieve Bawn (Co. Roscommon), amongst others.

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 Eurocode 7 and PLHRAG (2nd Edition, 2017) to investigate peat slopes that have the potential to impact on the proposed development, as applicable. Sufficient peat depth data has been recorded during the site walkovers to enable the characterisation of the peat depth across the proposed development site, with additional detail at infrastructure locations. The peat stability assessment is undertaken to identify peat slopes at risk from the proposed development, and to identify peat slopes that may pose a risk to the proposed development.

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 a multidisciplinary constraints study (by the design team) to determine the proposed construction envelope within the site i.e. the area within the overall site where development is possible following multidisciplinary review and assessment of constraints (refer to Chapter 3 of the EIAR).

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

(4) Peat contour depth plan – compiled based on the peat depth probes carried out across the site by FT and MKO (2021-2022).

(5) Factor of safety plan – compiled for the short-term critical condition (undrained) for 420 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 and ensure they are kept within an acceptable range.

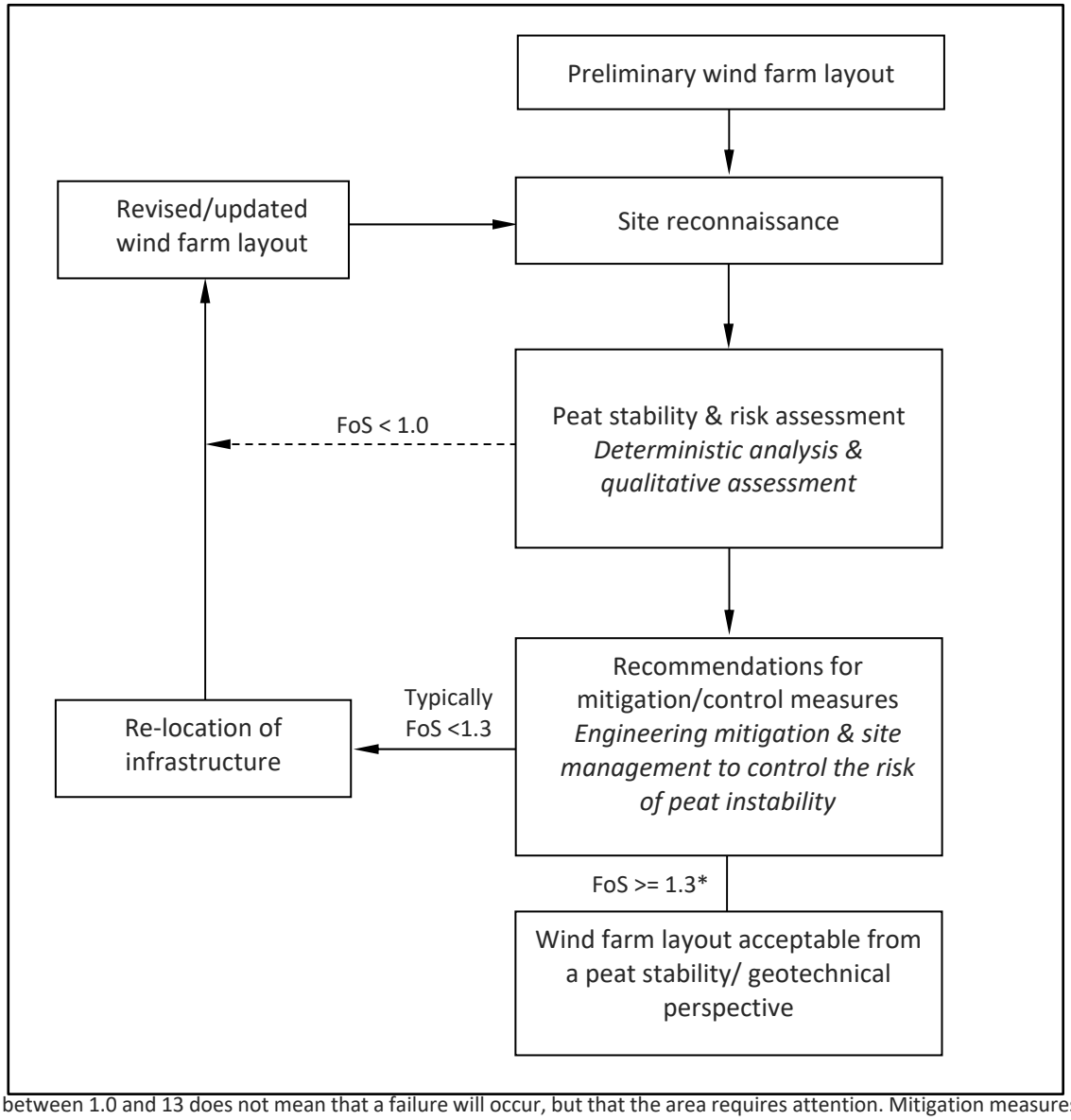
(7) A peat stability risk register was compiled to assess the potential design/construction risks at the infrastructure locations and determine adequate mitigation/control measures for each location to minimise the potential risks and ensure they are kept within an acceptable range, where necessary.

(8) Review of ground investigation carried out at the site by 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.

Figure 2.1: Methodology for Peat Stability Assessment



*An FoS of between 1.0 and 13 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 1.3 to reduce the risk of failure.

As for all construction projects, a detailed engineering construction design must be carried out by the appointed construction stage designer prior to any construction work commencing on 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 or the surrounding environment. Peat failure excludes localised movement of peat that would occur below an access road, creep movement or erosion type events.

The potential for peat failure at 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 (PLHRAG, 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.

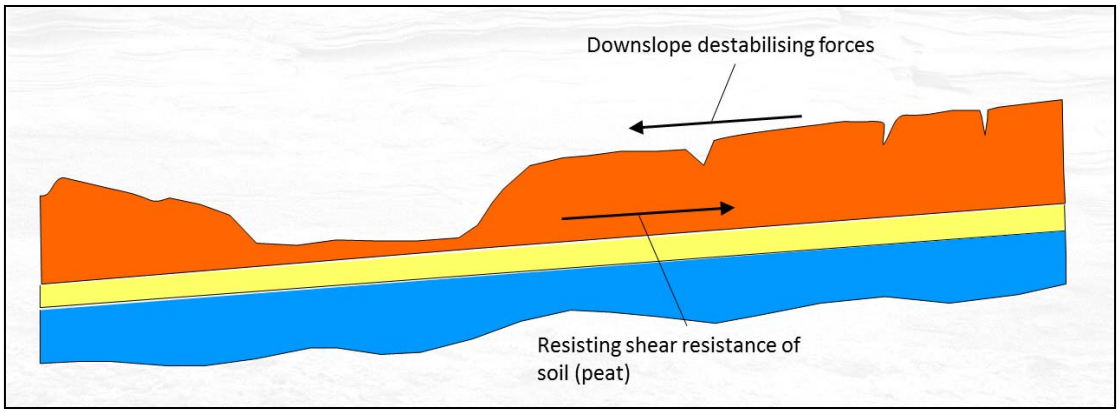
2.6 Peat Stability Assessment – Deterministic Approach

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 differentiate 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 factor of safety for assessment purposes is 1.3 (BS6031, 1981).

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 (PLHRAG, 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 an 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 interest with respect to the Proposed Development 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, 2023) and geological plans (GSI, 1992) for the Proposed Development site were used to verify the soil and bedrock conditions.

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

The desk study also includes a review of both published literature and GSI online dataset viewer (GSI, 2023) on peat failures/landslides in the vicinity of the Proposed Development site. Ther are no limitations associated with the desk study information.

3.2 Soils, Subsoil & Bedrock

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

The GSI subsoils maps indicates that the site is underlain by a combination of blanket peat, till derived from Devonian and Carboniferous sandstones and Alluvium.

In relation to bedrock, the Proposed Development site is underlain by the following formations:

- Downpatrick Formation, described as a cross bedded sandstone and siltstone
- Minnaun Sandstone Formation, described as a grey cross bedded sandstone and siltstone
- Kanfinalta Formation, described as quartzite, schist and marble
- Glencullin River Formation, described as a red pebbly sandstone with siltstone and mudstone
- Lugnalettin Black Schist Formation, described as a black graphitic pelitic schist
- Glenagh River Limestone Formation, described as a grey micaceous marble and calcareous schist

There are no quarries recorded within 10km of the proposed development. The nearest quarries are located in Bangor Erris and Kilalla.

No karst features were identified within 5km of the proposed development.

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

The landslide susceptibility of the Proposed Development site (refer to Figure 8-5 in Chapter 8 of the EIAR) was classified by the GSI (2023) as approximately “moderately low”, but ranges from “low” to “high” susceptibility, which is expected given the terrain present.

3.3 Previous Failures

There are no recorded peat failures within the Proposed Development site recorded on the GSI database (GSI, 2023). The nearest recorded failure is located in open peatland 1km to the southeast of the Proposed Development site (labelled as Keerglen on the GSI database), and is believed to have occurred during the 1950's. An additional three or four failures have been recorded approximately 3km to the southeast of the proposed development. One of these (Cluddaun) is believed to be over 100 years old, with another (Shanettra) occurring in 2000. A further five failures have been recorded approximately 2.5km to the west of the proposed development and are associated with an area of shallow bedrock on the northern flanks of Benmore.

The landslide susceptibility the site was classified by the GSI (2023) as low to high susceptibility, which is expected given the undulating terrain present. This susceptibility rating is a guide and is used as such. The peat stability assessment for the Proposed Development is site-specific, and as such would supersede the susceptibility rating.

The presence, or otherwise, of relict peat failures or clustering of relict failures within an area is an indicator that particular site conditions exist that pre-dispose a site to failure or not as the case may be.

3.3.1 Peat Failure November 2022

A small-scale peat failure was noted to have occurred within the Proposed Development site around the 10-11th November 2022. An inspection of this failure was undertaken by Engineers from FT (Ian Higgins and Emily Archer) during February 2023.

The main findings of the inspection were:

- The peat failure is located on the southeastern side of a forestry road, around 300m NE of the proposed location for T5. Slope angles range from <5 degrees at the base of the slope up to 14 degrees on the side slope. The GSI landslide susceptibility mapping indicates this area to have a "moderately high" landslide susceptibility rating.
- Mature forestry plantations are present to the south and north of the failure location. The forestry around the failure appears to have been recently replanted (pre-2006).
- The failure is entirely within the forestry plantation and does not extend out onto the open peatland upslope to the east of the failure.
- Forestry drains are present within the plantation parallel to the slope, with varying depths. The drains did not appear to be blocked.
- Overburden in the area comprises a soft slightly sandy slightly gravelly Clay with subangular cobbles.
- Peat depths around the failure location range from 1.0m to 1.5m.
- The base of the peat is highly humified (H7 and H8 on von Post scale) and saturated. The failure is classed as a peat slide, where the failure surface is at the interface between the peat and the underlying mineral soil.
- Peat strengths taken in the intact peat around the edge of the failure ranged from 16 to >30kPa, which would be considered typical for a peat deposit on a slope of this angle.
- The edges of the peat failure have, in places, been formed by the forestry drains. This is evident from the lighter colour of the upper peat and the presence of moss and pine needles on the exposed peat surface.

- The peat failure is approximately 20m in width and 150m in length. An estimated 3,750m^3 of material has moved due to the failure.
- A slight break in slope is present around 25m downslope of the head of the failure, where the slope changes from a 10-12 degree slope to a 14-15 degree slope.
- No evidence for the presence of peat pipes was noted during the inspection.
- No significant forestry drainage appears to be present upslope of the failure that would have focused any surface water flow into the failure area.
- Peat debris is present along the edge of the failure as well as at the toe of the failure.
- Peat debris has collected on the flatter ground at the base of the slope, around 300m from a nearby stream.

The likely cause of the peat failure is either a localised heavy/intense rainfall event, or a prolonged period of wetter than average weather, leading to a build-up of water pressure in the peat and a localised failure. The peat in this area may have been more humified or weaker than the surrounding areas. The failure appears to be a peat slide, with the failure surface at the interface between the peat and the underlying clay. There was no evidence of peat pipes at the head of the failure. There are no obvious deep drains feeding water into the head of the failure, nor is there a soft layer present below the peat that may have provided a failure surface.

The failure occurred on a slope that extends to the north and the east, with similar slope angles and drainage patterns across the wider slope. The area has previously been classified by the GSI as “Moderately High” and “High” risk of peat instability. Areas with more mature forestry are likely to be at lower risk of failure due to the effect of the root structure of the trees. Areas with no trees or sparsely planted areas with similar slopes may be at risk of peat failure, however this level of risk is difficult to quantify. The fact that the November 2022 failure was very localised in extent indicates that there is some feature specific to the immediate location of the failure, not observable during the site visit, that led to the failure, rather than the entire slope, or the entire site, being at elevated risk of failure. However, it should be noted that the area directly upslope of the failure would be considered to now be at higher risk of peat failure, due to the removal of toe support to this area. None of the infrastructure within the Proposed Development is within the failure area or in the higher risk area upslope of the failure.

4. FINDINGS OF SITE RECONNAISSANCE

4.1 Site Reconnaissance

As part of the assessment of potential peat failure at the Proposed Development site, FT carried out a site reconnaissance in conjunction with the desk study review described in Section 3. This comprised walkover inspections of the Proposed Development site with recording of salient geomorphological features with respect to the wind farm development which included peat depth and preliminary assessment of peat strength. General photographs of the Proposed Development 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 line
- 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 comprised a walkover inspection of the Proposed Development site from the 26th to the 29th July and the 11th to the 12th August 2021, as well as the February 2023 inspection (Section 3.3.1). Weather conditions for the site visits were mixed.

The findings from the site walkover have been used to optimise the layout of the infrastructure on site.

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

(1) The site is mainly 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. Mature forestry, young forestry, and open peatland are present across the site (see Appendix A).

(2) A total of 622 no. peat depth probes were carried out on site. Peat depths recorded across the site ranged from 0.1 to 4.6m with an average depth of 1.8m (Drawing P20-312-0600-GLEN-0001). Approximately 99 percent of peat depth probes recorded peat depths of less than 3.0m. A number of localised readings were recorded where peat depths were between 3.0 and 4.6m. The deeper peat areas were generally avoided, where possible, when optimising the wind farm site layout.

(3) The peat depths recorded at the turbine locations varied from 0.5 to 3.3m with an average depth of 1.9m.

(4) With respect to the new proposed access roads, peat depths are typically less than 2.0m (average 1.8m) with localised depths of up to 4.4m recorded to the west of T13.

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

(6) Slope angles at the turbine locations ranged from 2 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 typically reflects the slope within the footprint of each infrastructure location.

(8) No evidence of past failures or any significant signs of peat instability were noted on site at the time of the site walkovers. Section 3.3.1 describes the findings of an inspection of a small peat failure that occurred during November 2022, after the site walkover had been completed.

(9) A summary of the site walkover findings for the wind farm are as follows:

(a) The site is typically covered in a layer of peat with undulating terrain and widespread mature and young forestry. Peat depths recorded across the site ranged from 0.1 to 4.6m with an average depth of 1.8m.

(b) A construction buffer zone plan has been produced for the site (Drawing P20-312-0600-GLEN-0600-0002). This shows areas on the site where no development will be carried out and areas with an elevated or higher construction risk. The above identified buffer areas are based on qualitative factors identified during the walkover survey e.g. relatively deep peat, quaking peat, mechanically cut peat, recent peat landslide, etc.

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

5. GROUND INVESTIGATION

Ground investigations were carried out at the Glenora site by Irish Drilling Limited (IDL) under the supervision of FT in October 2021. Ground investigation in the form of trial pits were carried out on the following dates:

- 28th and 29th October 2021

The ground investigation by IDL comprised 13 no. trial pits with some laboratory testing. The trial pits were carried out at various locations across the Proposed Development to provide information on the ground conditions, and to investigate the potential to develop borrow pits within the site.

The laboratory testing included the following:

- Classification testing for overburden material

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 P20-312-0600-GLEN-0003 in this report.

5.1 Summary of Ground Conditions

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

Peat – Typically described as black & brown fibrous peat. Peat thicknesses from the trial pits ranged from 0.5 to 3.6m.

Glacial Till – Soft to Stiff brown sandy gravelly Silt with cobbles. The thickness of the layer is variable across the site. Occasional layers of silty subangular gravel.

Bedrock – Weathered bedrock, typically described as flat and angular cobble and boulder size clasts of schist and mudstone.

Groundwater records in the trial pits varied from none to seepages and inflows between 1.0 and 3.2m bgl.

5.2 Summary of Laboratory Tests

Laboratory testing comprising moisture, atterburg limit tests, particle size distribution (PSD), pH and Sulphate testing was undertaken on samples from the trial pits. Based on the results of the particle size distribution (PSD) tests, the descriptions on the final trial pit logs have been updated.

Atterberg limit tests carried out on the samples classify the material as Clay of low to high plasticity, or non-plastic (Silt). No elevated sulphate levels were detected in the samples tested.

Table 5-1: Summary of Laboratory testing

Test Type	Number of Tests	Range	
		Lower	Upper
Moisture Content	12	12	812 (peat)
Liquid Limit	8	27	51
Plastic Limit	8	16	26
Plasticity Index	8	NP	13
pH	2	6.15	6.62
Sulphate (Total) (mg/kg)	2	<48	<48
Water Soluble Sulphate (SO_4) (g/l)	2	<0.004	0.0064

5.3 Summary of Geotechnical Parameters

Table 5-2 contains characteristic geotechnical parameters for the main material types likely to be encountered on the Proposed Development 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. Values have been derived from both laboratory testing and in-situ (shear vane) measurements.

Table 5-2: Summary of Geotechnical Parameters

Material Type/Strata	Unit Weight	Geotechnical Parameters		
		Undrained Parameters	Drained Parameters	
	γ (kN/m^3)	c_u (kPa)	φ' (°)[4]	c' (kPa)
Peat	11	6 [3]	25	4
Till	20	40	30	0
Weathered Bedrock	20	-	36	-

Notes
Note (1) The above parameters are indicative only and have been derived based on experience and from a review of the ground investigation carried out at the site.
Note (2) Where direct measurement of parameters has not been carried out, established correlations with measured properties have been used to derive values.
Note (3) A lower bound undrained shear strength, c_u for the peat of 6kPa was selected. The lowest recorded value on the Glenora wind farm site was 5kPa, which was only recorded in one location, hence a value of 6kPa is 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 proposed turbine locations and along access roads and other main infrastructure elements. At turbine locations 5 probes were carried out around the turbine location, and an average peat depth was calculated.

6.2 Peat Strength

The strength testing was carried out in-situ using a Geonor H-60 Hand-Field Vane Tester. From FT's experience hand vanes give indicative results for in-situ strength of peat and would be considered best practice for the field assessment of peat strength.

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

6.4 Summary of Findings

Based on the peat depths recorded across the site by FT, the peat varied in depth from 0.1 to 4.6m with an average depth of 1.8m. All peat depth probes carried out on site have been utilised to produce a peat depth contour plan for the site (Drawing P20-312-0600-GLEN-0001).

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

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

Turbine	Easting	Northing	Peat Depth Range (m) (1)	Average Peat Depth (m)	Slope Angle (°) (2)
T01	502518	834923	1.8 - 2.4	2.12	5
T02	502047	834410	1.7 - 2.7	2.30	4
T03	502119	833745	2.1 - 2.7	2.38	4
T04	502069	833148	2.7 - 3.3	2.96	3
T05	504436	833410	2.2 - 3.0	2.50	4
T06	502673	834328	1.5 - 2.5	2.00	3
T07	503470	834687	0.9 - 1.5	1.12	7
T08	503379	834119	2.4 - 2.7	2.56	3
T09	503111	833456	0.9 – 2.1	1.54	5
T10	502887	832881	0.9 - 1.8	1.36	3
T11	504089	834197	1.5 - 2.1	1.82	8
T12	503894	833620	1.4 - 1.7	1.46	4
T13	503565	832645	1.6 - 2.0	1.58	4
T14	503732	832150	1.8 - 2.1	1.92	9
T15	504802	834370	0.6 - 0.9	0.72	6
T16	506225	833037	2.0 - 2.5	2.22	4
T17	504216	832709	1.6 - 2.4	1.92	6
T18	505141	834006	0.5 - 1.2	0.96	6
T19	505406	832947	1.8 - 3.1	2.36	3
T20	505036	833259	1.8 - 2.7	2.14	4
T21	505736	833494	1.8 - 1.9	1.86	9
T22	506474	833610	0.7 - 1.2	0.94	11
Met Mast	503515	832315	1.8 - 2.5	2.10	4
Substation	505146	834797	0.6 - 1.4	0.90	5
Construction Compound (1)	502430	834183	0.4 - 1.8	1.34	3
Construction Compound (2)	503395	834636	1.2 - 2.5	1.78	3
Construction Compound (3)	504987	834672	0.5 - 1.5	0.96	4
Construction Compound (4)	504180	833199	1.9 - 3.2	2.52	3

Turbine	Easting	Northing	Peat Depth Range (m) (1)	Average Peat Depth (m)	Slope Angle (°) (2)
Construction Compound (5)	505128	832881	2.6 - 3.1	2.74	3
Borrow Pit 1	503286	835059	0.6	0.6	10
Borrow Pit 2	505251	833102	1.3	1.3	6
Borrow Pit 3	506655	835876	1.6-2.1	1.8	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, where accessible.

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

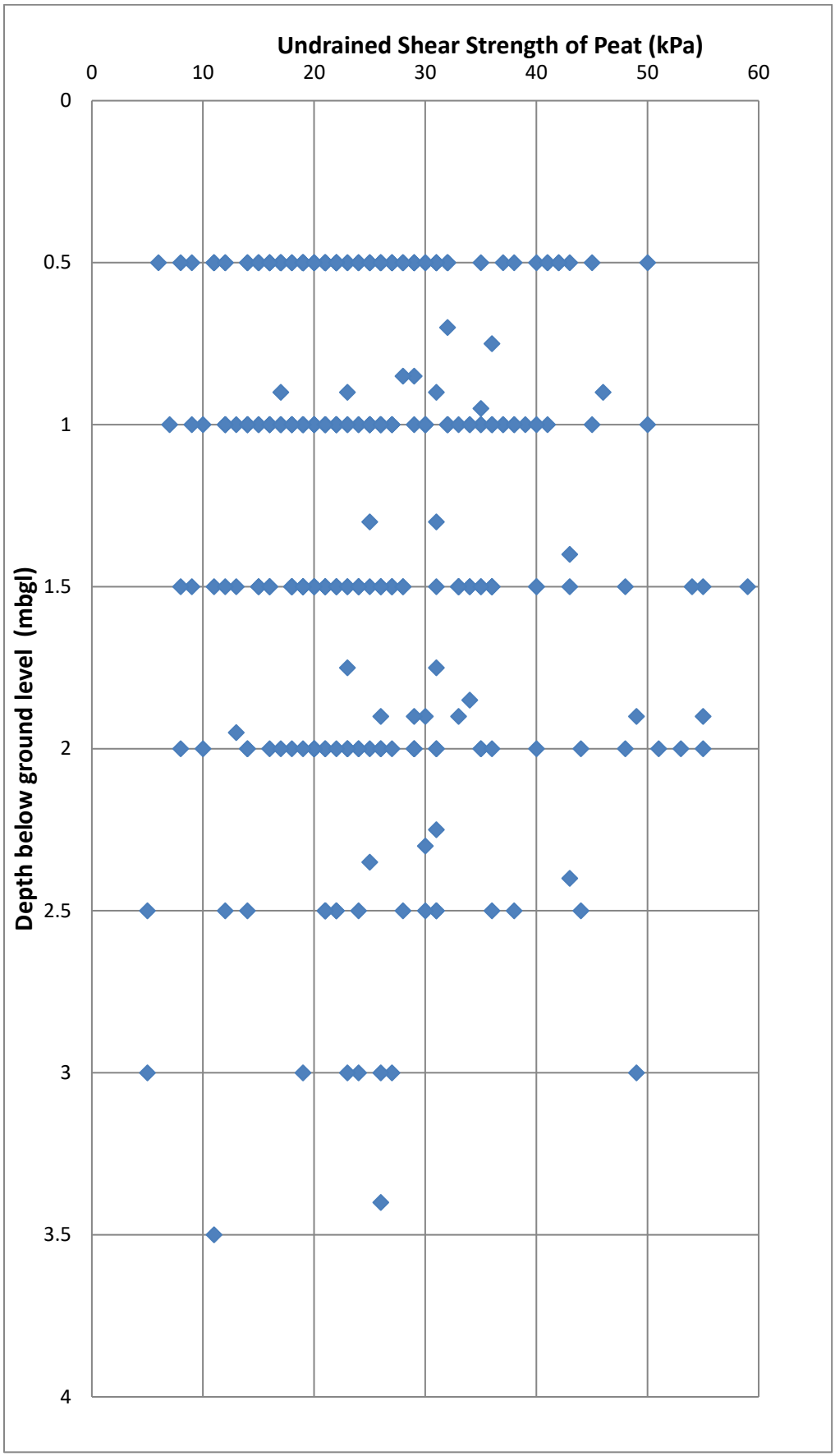
Note (3) The data presented in the Table above is used in the peat stability assessment of the site.

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

The hand vane results indicate undrained shear strengths in the range 5 to 75kPa, with an average value of about 26kPa. The strengths recorded would be typical of well drained peat as is present on the Proposed Development site. The lowest peat strength was recorded in an area of deep peat (4.6m) and as such is not considered representative of the peat strength across the Proposed Development site.

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

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 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 site.

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

The 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.

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

Table 7.2: Factor of Safety Limits for Slopes

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

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

As such, and in order to provide a direct measure of the level of safety on 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 along access tracks of 6kPa was selected for the assessment based on the c_u values recorded at the site. At turbine locations a shear strength of 8kPa was used, based on the c_u values recorded specifically at turbine locations. It should be noted that a c_u of 6/8kPa 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. The lowest peat strength of 5kPa was recorded in an area of deep peat (4.6m), in an area of the site where no development is proposed.

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

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

Where:

F = Factor of Safety
c_u = Undrained strength
γ = Bulk unit weight of material
z = Depth to failure plane assumed as depth of peat
α = Slope angle

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

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

Where:

F = Factor of Safety
c' = Effective cohesion
γ = Bulk unit weight of material
z = Depth to failure plane assumed as depth of peat
γ_w = Unit weight of water
h_w = Height of water table above failure plane
α = Slope angle
ϕ' = Effective friction angle

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

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

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

(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 along access tracks of 6kPa, and 8kPa for the peat at turbine locations, was selected for the assessment. The lowest recorded value on the Glenora wind farm site during the site walkover was 5kPa, however this was only recorded in one location, where no infrastructure is proposed. It should be noted that a c_u of 6/8kPa for the peat is considered a conservative value for the analysis and is not representative of all peat present across the site. In reality, the peat has a significantly higher undrained strength as a result of the artificial drainage present across the site.

For the stability analysis two load conditions were examined, namely

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

7.3 Results of Analysis

7.3.1 Undrained Analysis for the Peat

The results of the undrained analysis for the natural peat slopes are presented in Appendix C and the results of the undrained analysis for the most critical load case (load condition 2) are shown on Drawing P20-312-0600-GLEN-0004. The undrained analysis for load condition 2 is considered the most critical load case as most peat failures occur in the short term upon loading of the peat surface. The results from the main infrastructure locations, including along access roads and in areas of peat placement, are summarised in Table 7.3 to 7.5.

The calculated FoS for load condition 1 is in excess of 1.30 for each of the locations (420 no. locations) analysed with a range of FoS of 2.04 to 86.22, indicating a low risk of peat instability.

The calculated FoS for load condition 2 is in excess of 1.30 for each of the locations (420 no. locations), analysed with a range of FoS of 1.34 to 11.86, 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	502518	834923	**2.88**	**2.03**
T02	502047	834410	**3.19**	**2.33**
T03	502119	833745	**3.19**	**2.33**
T04	502069	833148	**3.48**	**2.67**
T05	504436	833410	**2.87**	**2.16**
T06	502673	834328	**4.59**	**3.28**
T07	503470	834687	**3.82**	**2.16**
T08	503379	834119	**4.25**	**3.10**
T09	503111	833456	**3.29**	**2.23**
T10	502887	832881	**6.38**	**4.10**
T11	504089	834197	**2.76**	**1.87**
T12	503894	833620	**5.07**	**3.19**
T13	503565	832645	**4.31**	**2.87**
T14	503732	832150	**2.47**	**1.67**
T15	504802	834370	**6.41**	**3.04**

Turbine No./Waypoint	Easting	Northing	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
T16	506225	833037	3.45	2.46
T17	504216	832709	2.40	1.70
T18	505141	834006	4.81	2.62
T19	505406	832947	3.70	2.80
T20	505036	833259	3.19	2.33
T21	505736	833494	2.73	1.79
T22	506474	833610	2.67	1.46
Met Mast	503515	832315	4.11	2.78
Substation	505146	834797	4.94	2.88
Construction Compound (1)	502430	834183	6.38	4.10
Construction Compound (2)	503395	834636	4.59	3.28
Construction Compound (3)	504987	834672	5.75	3.45
Construction Compound (4)	504180	833199	3.59	2.73
Construction Compound (5)	505128	832881	3.70	2.80
Borrow Pit 1	503286	835059	5.85	2.19
Borrow Pit 2	505251	833102	4.44	2.51
Borrow Pit 3	506655	835876	3.10	1.91
Peat Placement Area T01	502450	834910	2.88	2.03
Peat Placement Area T02	502018	834453	3.19	2.33
Peat Placement Area T03	502090	833783	3.19	2.33
Peat Placement Area T04	502045	833192	3.48	2.67
Peat Placement Area T06	502610	834340	4.59	3.28
Peat Placement Area T08	503342	834100	2.31	1.65
Peat Placement Area T12	503888	833670	3.14	2.10
Peat Placement Area T16	506180	833026	3.45	2.46
Peat Placement Area T19	505395	832999	3.70	2.80

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)
Site Entrance to Const. Comp. 3	Varies		3.82	2.08
Const. Comp. 3 to T11	Varies		3.51	1.75

Turbine No./Waypoint	Easting	Northing	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
Const. Comp. 3 to Const. Comp. 2	Varies		3.21	2.06
Const. Comp. 2 to T8	Varies		2.51	1.75
T8 to T9	Varies		2.51	1.75
T12 to T18	Varies		3.14	2.16
T18 to Const. Comp. 3	Varies		4.31	2.87
T12 to T5	Varies		2.89	1.92
T5 to T20	Varies		2.89	1.92
T20 to Borrow Pit 2	Varies		2.69	2.05
Borrow Pit 2 to T19	Varies		3.08	2.27
T19 to T21	Varies		2.04	1.34
T21 to T16	Varies		2.04	1.34
T16 to T22	Varies		2.67	1.46
T12 to T17	Varies		2.40	1.70
T17 to T14	Varies		2.47	1.67
Spur to Met. Mast	Varies		2.85	2.08
T17 to T10	Varies		2.40	1.70
T7 to BP1	Varies		5.01	2.06
BP1 to T6	Varies		5.01	2.06
Spur to T1 & T2	Varies		2.51	1.75
T2 to T3	Varies		3.19	2.33
T3 to T4	Varies		2.69	2.05

Table 7.5: Factor of Safety Results Settlement Ponds at Turbine Locations (Undrained Condition)

Location	Settlement Pond Number	Factor of Safety for Load Condition	
		Condition (1)	Condition (2)
T1	86	4.14	1.78
T2	84	5.22	3.59
T3	80	3.19	2.33
T4	78	3.48	2.67
T6	77	4.59	3.28
T7	71	3.21	2.06
T8	68	11.52	4.32

Location	Settlement Pond Number	Factor of Safety for Load Condition	
		Condition (1)	Condition (2)
T9	62	**5.07**	**3.19**
T11	52	**4.51**	**2.36**
T12	43	**4.79**	**3.08**
T13	2	**4.31**	**2.87**
T14	32	**2.47**	**1.67**
T15	55	**6.41**	**3.04**
T16	14	**3.45**	**2.46**
T18	49	**7.19**	**3.92**
T19	24	**3.70**	**2.80**
T20	29	**3.84**	**2.47**
T21	20	**2.04**	**1.34**
T22	19	**2.28**	**1.47**
MM	33	**4.11**	**2.78**
Construction Compound 1	82	**6.38**	**4.10**
Construction Compound 5	38	**3.70**	**2.80**
Borrow Pit 1	76	**14.37**	**5.39**
Borrow Pit 2	27	**6.75**	**4.25**

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 placement are summarised in Table 7.4. As stated previously, the drained loading condition examines the effect of rainfall and water on the existing stability of the natural peat slopes.

The calculated FoS for load condition 1 is in excess of 1.30 for each of the locations (approx. 420 no. locations), with the exception of one location where an FoS of 1.26 was recorded in an area of the site where no development is proposed (directly between T21 and T22, 250m from any proposed works). This marginally low FoS is due to a combination of a steeper slope angle with a relatively thick peat layer. As no development is proposed for this location, no mitigation of this marginally low FoS is proposed.

The calculated FoS for load condition 2 is in excess of 1.30 for each of the locations (approx. 420 no. locations) analysed with a range of FoS of 1.68 to 17.12, 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	502518	834923	**1.92**	**2.92**
T02	502047	834410	**2.13**	**3.36**
T03	502119	833745	**2.13**	**3.36**
T04	502069	833148	**2.32**	**3.85**
T05	504436	833410	**1.92**	**3.10**
T06	502673	834328	**3.06**	**4.73**
T07	503470	834687	**2.54**	**3.09**
T08	503379	834119	**2.83**	**4.47**
T09	503111	833456	**2.19**	**3.21**
T10	502887	832881	**4.25**	**5.91**
T11	504089	834197	**1.38**	**2.01**
T12	503894	833620	**3.38**	**4.60**
T13	503565	832645	**2.87**	**4.14**
T14	503732	832150	**1.30**	**1.89**
T15	504802	834370	**4.28**	**4.36**
T16	506225	833037	**2.30**	**3.55**
T17	504216	832709	**1.60**	**2.44**
T18	505141	834006	**3.21**	**3.77**
T19	505406	832947	**2.47**	**4.04**
T20	505036	833259	**2.13**	**3.36**
T21	505736	833494	**1.36**	**1.91**
T22	506474	833610	**1.78**	**2.06**
Met Mast	503515	832315	**2.74**	**4.01**
Substation	505146	834797	**3.29**	**4.24**
Construction Compound (1)	502430	834183	**4.25**	**6.21**
Construction Compound (2)	503395	834636	**3.06**	**5.09**
Construction Compound (3)	504987	834672	**3.83**	**5.47**
Construction Compound (4)	504180	833199	**2.39**	**4.55**
Construction Compound (5)	505128	832881	**2.47**	**4.77**
Borrow Pit 1	503286	835059	**3.90**	**3.11**
Borrow Pit 2	505251	833102	**2.96**	**3.60**

Turbine No./Waypoint	Easting	Northing	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
Borrow Pit 3	506655	835876	2.07	2.73
Peat Placement Area T01	502450	834910	7.49	6.93
Peat Placement Area T02	502018	834453	9.42	8.84
Peat Placement Area T03	502090	833783	9.73	9.16
Peat Placement Area T04	502045	833192	12.90	12.36
Peat Placement Area T06	502610	834340	14.08	13.20
Peat Placement Area T08	503342	834100	7.26	6.82
Peat Placement Area T12	503888	833670	8.59	7.89
Peat Placement Area T16	506180	833026	11.59	10.93
Peat Placement Area T19	505395	832999	15.34	14.74

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)
Site Entrance to Const. Comp. 3	Varies		2.55	2.98
Const. Comp. 3 to T11	Varies		1.38	2.01
Const. Comp. 3 to Const. Comp. 2	Varies		2.14	2.96
Const. Comp. 2 to T8	Varies		1.67	2.51
T8 to T9	Varies		1.67	2.51
T12 to T18	Varies		2.05	3.27
T18 to Const. Comp. 3	Varies		3.65	2.56
T12 to T5	Varies		1.92	2.76
T5 to T20	Varies		1.92	2.76
T20 to Borrow Pit 2	Varies		1.80	2.96
Borrow Pit 2 to T19	Varies		2.05	3.27
T19 to T21	Varies		1.36	1.91
T21 to T16	Varies		1.36	1.91
T16 to T22	Varies		1.52	2.09
T12 to T17	Varies		1.54	2.48

Turbine No./Waypoint	Easting	Northing	Factor of Safety for Load Condition	
			Condition (1)	Condition (2)
T17 to T14	Varies		1.30	1.89
Spur to Met. Mast	Varies		1.43	2.24
T17 to T10	Varies		1.48	2.30
T7 to BP1	Varies		3.34	2.93
BP1 to T6	Varies		3.34	2.93
Spur to T1 & T2	Varies		1.67	2.51
T2 to T3	Varies		2.13	3.36
T3 to T4	Varies		1.80	2.96

Table 7.8: Factor of Safety Results Settlement Ponds at Turbine Locations (Drained Condition)

Location	Settlement Pond Number	Factor of Safety for Load Condition	
		Condition (1)	Condition (2)
T1	86	2.01	1.79
T2	84	3.48	5.17
T3	80	2.13	3.36
T4	78	2.32	3.85
T6	77	3.06	4.73
T7	71	2.14	2.96
T8	68	7.68	6.21
T9	62	3.38	4.60
T11	52	3.01	3.38
T12	43	3.19	4.43
T13	2	2.87	4.14
T14	32	1.30	1.89
T15	55	4.28	4.36
T16	14	2.30	3.55
T18	49	4.79	5.64
T19	24	2.47	4.04
T20	29	2.56	3.55
T21	20	1.36	1.91
T22	19	1.52	2.09

Location	Settlement Pond Number	Factor of Safety for Load Condition	
		Condition (1)	Condition (2)
Met Mast	33	**2.74**	**4.01**
Construction Compound 1	82	**4.25**	**6.21**
Construction Compound 5	38	**2.47**	**4.77**
Borrow Pit 1	76	**11.50**	**8.28**
Borrow Pit 2	27	**4.50**	**6.13**

7.4 Stability of Borrow Pit Buttress

A stability check has been undertaken to demonstrate the stability of the proposed perimeter berms around Borrow Pit 1, taken as the worst case as it is the largest of the 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 Eurocode 7 (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 shear 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	-	45	0
Retained Peat within Borrow Pit (disturbed)	10.5	2	5	2
Granular Glacial	20	-	32	0
Weathered Bedrock	21	-	34	-

The berm along the southern side of the borrow pit will be up to 8m in height. Bedrock has been assessed at 2m below ground level based on the available ground investigation information, overlain by 0.75m of peat and 1.25m of Granular Glacial deposits. 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 till to create a level platform (not shown in stability output). The inside slope of the perimeter berm has been modelled as a 60 degree slope within the intact bedrock, and the outside slope as 40 degrees. Groundwater has been assumed at ground level on the downslope side of the berm.

The stability analysis has been undertaken using both undrained (short term) and drained (long term) strength parameters, and the results demonstrate the stability of the proposed berm.

Table 7.10: Borrow Pit Stability Analysis

Borrow Pit	ODR	
	DA1C1	DA1C2
Undrained Analysis	1.83	1.47
Drained Analysis	1.83	1.47

8. PEAT STABILITY RISK ASSESSMENT

A peat stability risk assessment was carried out for the infrastructure elements at the Proposed Development. This approach adheres to best practice guidance 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 infrastructure elements is presented as a Geotechnical Risk Register in Appendix B and summarised in Table 8.2.

The risk rating for each infrastructure element at the Proposed Development is designated Negligible or Low following some 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 infrastructure specific mitigation/control measures can be found in the Geotechnical Risk Register for each infrastructure element (Appendix B) and the general (not notable) infrastructure specific control measures are summarised below.

- Detailed ground investigation to confirm peat, mineral soil and bedrock condition and properties.
- Use of experienced geotechnical staff for confirmatory site investigation.
- Maintain hydrology of area as far as possible by maintaining the flow of water in existing drains to prevent the build-up of water pressures in the peat, leading to the peat becoming "buoyant".
- Use of contractors with experience in working peat and trained operators to carry out the work.

Table 8.2: Summary of Peat Stability Risk Register

Infrastructure	Pre-Control Measure Implementation Risk Rating	Pre-Control Measure Implementation Risk Rating Category	Notable Control Measures Required	Post-Control Measure Implementation Risk Rating	Post-Control Measure Implementation Risk Rating Category
T01	Low	5 to 10	No	Low	5 to 10
T02	Negligible	1 to 4	Yes	Negligible	1 to 4
T03	Negligible	1 to 4	Yes	Negligible	1 to 4
T04	Negligible	1 to 4	Yes	Negligible	1 to 4
T05	Negligible	1 to 4	Yes	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	Yes	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	Negligible	1 to 4	No	Negligible	1 to 4
T12	Negligible	1 to 4	No	Negligible	1 to 4
T13	Low	5 to 10	Yes	Low	5 to 10
T14	Negligible	1 to 4	No	Negligible	1 to 4
T15	Negligible	1 to 4	No	Negligible	1 to 4
T16	Negligible	1 to 4	No	Negligible	1 to 4
T17	Negligible	1 to 4	No	Negligible	1 to 4
T18	Negligible	1 to 4	No	Negligible	1 to 4
T19	Negligible	1 to 4	Yes	Negligible	1 to 4
T20	Negligible	1 to 4	No	Negligible	1 to 4
T21	Negligible	1 to 4	No	Negligible	1 to 4
T22	Negligible	1 to 4	No	Negligible	1 to 4
Met Mast	Negligible	1 to 4	Yes	Negligible	1 to 4
Substation	Negligible	1 to 4	No	Negligible	1 to 4
Construction Compound (1)	Negligible	1 to 4	No	Negligible	1 to 4
Construction Compound (2)	Negligible	1 to 4	Yes	Negligible	1 to 4
Construction Compound (3)	Negligible	1 to 4	No	Negligible	1 to 4

Construction Compound (4)	Low	5 to 10	Yes	Low	5 to 10
Construction Compound (5)	Low	5 to 10	Yes	Low	5 to 10
Borrow Pit 1	Low	5 to 10	No	Low	5 to 10
Borrow Pit 2	Low	5 to 10	No	Low	5 to 10
Borrow Pit 3	Negligible	1 to 4	No	Negligible	1 to 4
Site Entrance to Const. Comp. 3	Low	5 to 10	No	Low	5 to 10
Const. Comp. 3 to T11	Negligible	1 to 4	No	Negligible	1 to 4
Const. Comp. 3 to Const. Comp. 2	Low	5 to 10	No	Low	5 to 10
Const. Comp. 2 to T8	Low	5 to 10	No	Low	5 to 10
T8 to T9	Low	5 to 10	No	Low	5 to 10
T12 to T18	Medium	11 to 16	No	Low	5 to 10
T18 to Const. Comp. 3	Low	5 to 10	No	Low	5 to 10
T12 to T5	Medium	11 to 16	No	Low	5 to 10
T5 to T20	Negligible	1 to 4	No	Negligible	1 to 4
T20 to Borrow Pit 2	Medium	11 to 16	No	Low	5 to 10
Borrow Pit 2 to T19	Medium	11 to 16	No	Low	5 to 10
T19 to T21	Negligible	1 to 4	No	Negligible	1 to 4
T21 to T16	Medium	11 to 16	No	Low	5 to 10
T16 to T22	Low	5 to 10	No	Negligible	1 to 4
T12 to T17	Medium	11 to 16	No	Low	5 to 10
T17 to T14	Negligible	1 to 4	No	Negligible	1 to 4
Spur to Met. Mast	Low	5 to 10	No	Negligible	1 to 4
T17 to T10	Low	5 to 10	No	Low	5 to 10
T7 to BP1	Low	5 to 10	No	Low	5 to 10
BP1 to T6	Medium	11 to 16	No	Low	5 to 10
Spur to T1 & T2	Low	5 to 10	No	Low	5 to 10
T2 to T3	Negligible	1 to 4	No	Negligible	1 to 4
T3 to T4	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 information for 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 Proposed Turbine Foundation Type and Founding Depths

Turbine No.	Proposed Turbine Foundation Type	Relevant GI	Proposed founding depth (m bgl)	Ground Conditions
T1	Gravity foundation	Peat Probes	4.0m	
T2	Gravity foundation	Peat Probes	4.0m	
T3	Gravity foundation	Peat Probes	4.0m	
T4	Gravity foundation	Peat Probes	4.0m	
T5	Gravity foundation	Peat Probes	4.0m	
T6	Gravity foundation	Peat Probes	4.0m	
T7	Gravity foundation	Peat Probes / TP05	4.5m	Peat to 1.9m underlain by Boulders to 2.6m and soft to stiff Silt to 4.5m (base of trial pit).
T8	Gravity foundation	Peat Probes / TP09	3.0m	Peat to 1.3m underlain by stiff Silt to 2.7m and tabular Cobbles and Boulders to 4.3m.
T9	Gravity foundation	Peat Probes / TP12	3.0m	Peat to 1.98m underlain by Sand and stiff slightly sandy Silt to 4.1m (base of trial pit)
T10	Gravity foundation	Peat Probes	3.0m	
T11	Gravity foundation	Peat Probes	3.0m	
T12	Gravity foundation	Peat Probes / TP11	3.0m	Peat to 1.6m underlain by firm to stiff slightly gravelly sandy Silt to 4.5m (base of trial pit).
T13	Gravity foundation	Peat Probes	3.0m	
T14	Gravity foundation	Peat Probes	3.0m	
T15	Gravity foundation	Peat Probes	3.0m	
T16	Gravity foundation	Peat Probes	4.0m	
T17	Gravity foundation	Peat Probes	4.0m	
T18	Gravity foundation	Peat Probes	3.0m	

Turbine No.	Proposed Turbine Foundation Type	Relevant GI	Proposed founding depth (m bgl)	Ground Conditions
T19	Gravity foundation	Peat Probes / TP17	4.5m	Peat to 2.7m underlain by soft slightly sandy gravelly Silt to 4.5m (base of trial pit).
T20	Gravity foundation	Peat Probes	4.0m	
T21	Gravity foundation	Peat Probes	3.0m	
T22	Gravity foundation	Peat Probes	3.0m	

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 in the overburden and follow-on rotary core through bedrock to confirm the foundation types and founding stratums assumed in Table 9-1. Based on professional judgement it is likely that following the completion of confirmatory ground investigation prior to construction that the turbine bases will be deemed suitable for gravity type foundations. Alternatively, piled foundations will be used if gravity foundations are not suitable.

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) will be used to backfill the excavation to the required founding depth.

For piled turbine foundations, a piling type and configuration would be up to 16 no. 900mm rotary bored piles.

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 Development site. The detailed methodologies for the construction of these elements of the proposed development are included in Chapter 4 of the EIAR.

10.1 Access Roads

The access roads on site will mainly 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 be undertaken in limited areas within the Proposed Development, in locations where the slope angle is less than 3 degrees, where sidelong ground is not present.

The total length of new proposed access road to be constructed on site is 13.6km (see Drawing P20-312-0600-GLEN-0005 of the Peat and Spoil Management Plan – Appendix 8-2 of the EIAR).

The proposed make-up of the founded access roads is anticipated to be a minimum 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 Development for further details on the proposed access roads on site.

10.2 Crane Hardstands

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

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

The hardstands will 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 a minimum 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 be founded on competent material underlying the peat deposits.

Given the ground conditions present at the proposed substation, the foundations will 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 substation platforms is to be 1.0-1.5m.

The make-up of the substation platform will include up to 1000mm 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.

Founding depth for construction compound platforms will require excavations from 1.0m to 3.0m bgl.

The typical make-up of the construction compound platform will include up to 750mm of granular stone fill with possibly a layer of geotextile and/or geogrid.

10.5 Met Mast Foundations

The met mast foundation will comprise a gravity type foundation.

Given the ground conditions present at the proposed met mast, the foundation will be founded on glacial till, glacial granular material, or bedrock.

The founding depth for the met mast foundation will be 2.0 to 3.0m bgl. At the underside of the met mast foundation, a layer of structural up-fill (class 6N) will be required.

10.6 Peat Placement Areas

A number of peat storage/remediation locations were reviewed as part of the assessment of the Proposed Development. These are located within clear fell area around a number of the turbines in the Proposed Development. The placement of peat in these areas will be limited to a maximum of 1.3m 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 placement areas is provided in the Peat and Spoil Management Plan (FT, 2023) for the Proposed Development.

11. SUMMARY AND MEASURES

11.1 Summary

The following summary is given.

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

The findings of the peat assessment showed that the site has an acceptable margin of safety and is suitable for the Proposed Development. 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, which comprises undulating terrain consists predominantly of blanket peat, mature and forestry.

Peat thicknesses recorded during the site walkovers from 622 probes ranged from 0.1 to 4.6m with an average depth of 1.8m. 63% of the probes recorded peat depths of less than 2.0m. 99% of peat depth probes recorded peat depths of less than 3.0m. A number of localised readings were recorded where peat depths from 3.0 to 4.6m. The deeper peat areas were avoided, where possible, when optimising the wind farm layout for site.

A small-scale peat failure occurred on the Proposed Development site during November 2022. The cause of this failure is likely to be heavy rainfall. No infrastructure is proposed within 200m of this location. This failure was an isolated occurrence and does not indicate that the Proposed Development site has a high risk of peat instability.

Slope inclinations at the main infrastructure locations range from 2 to 12 degrees.

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

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

A drained analysis was also carried out, which examined the effect of in particular, rainfall on the existing stability of the natural peat slopes on 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 1.3, with the exception of a single result (1.26), located between T21 and T22 where no infrastructure is proposed.

The peat stability risk assessment at each infrastructure location, along access roads, in peat placement 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 Development 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 control measures, such as implementing and maintaining an appropriate drainage

system are implemented. The findings include 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 Measures

The following measures will be implemented in full.

Notwithstanding that the Proposed Development site has an acceptable margin of safety 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 wind farm is excavate and replace type construction. Floating road construction will be undertaken in limited areas within the Proposed Development, in locations where the slope angle is less than 3 degrees, where sidelong ground is not present.

The measures prescribed in FT's report 'Peat & Spoil Management Plan - Glenora Wind Farm, County Mayo' (FT 2023) will be implemented in full during the design and construction stage of the wind farm development.

To minimise the risk of construction activity causing potential peat instability the Construction Method Statements (CMSs) for the project will be implemented in full , but not be limited, to the measures 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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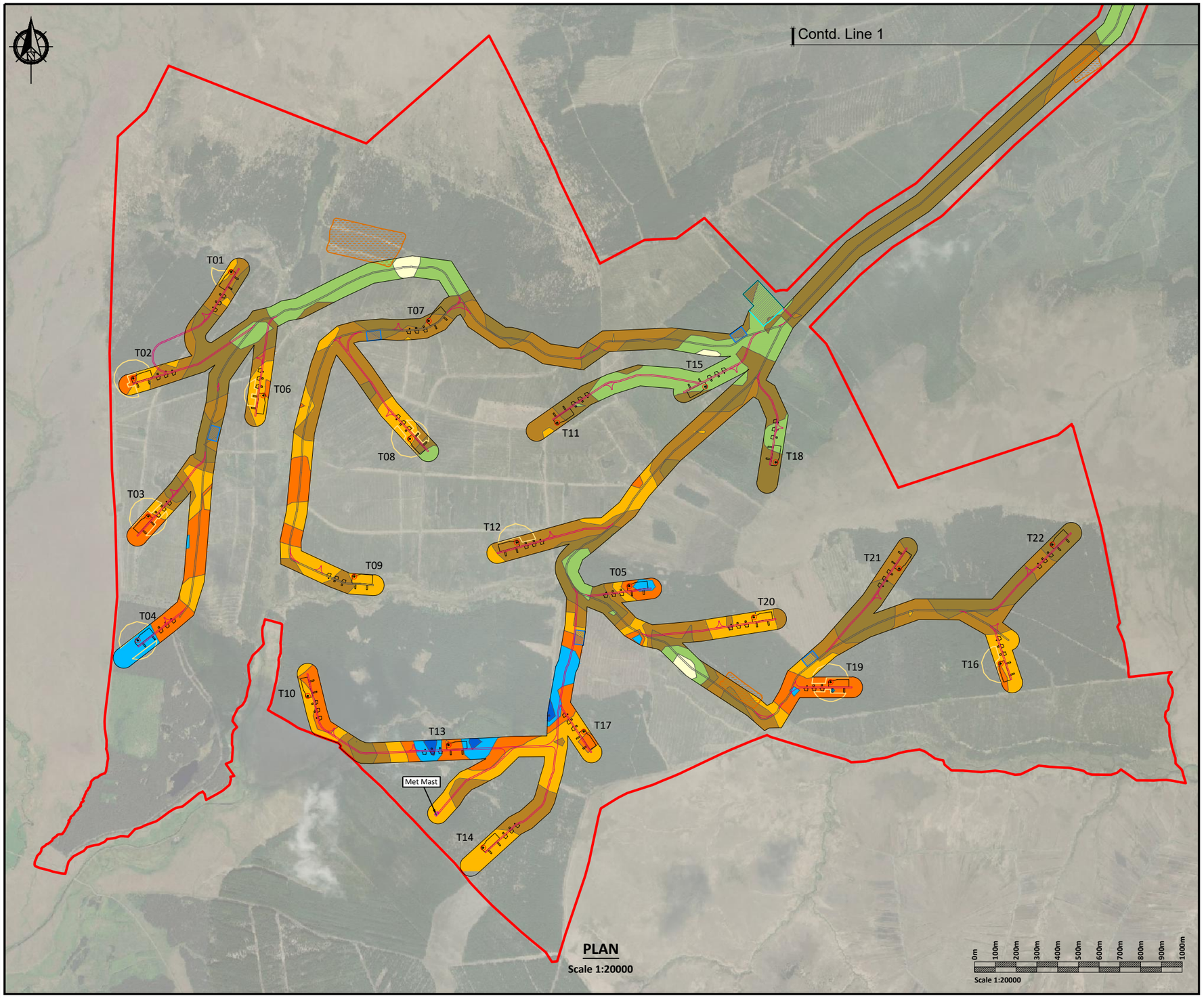
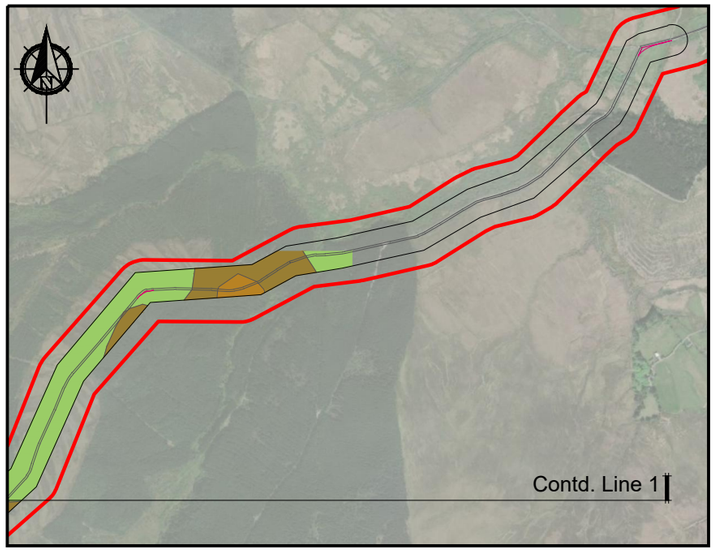
DRAWINGS





PLAN

Scale 1:20000

Peat Depth Legend:

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

Legend:

- EIAR Site Boundary
- Proposed Access Track
- Existing Access Track To Be Upgraded
- Existing Access Track
- Proposed Turbine
- Proposed Construction Compound
- Proposed Substation
- Proposed Met Mast
- Proposed Borrow Pit
- Proposed Peat Placement

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Rev.	Description	App By	Date
A	FOR INFORMATION	BDH	16.08.22
B	FOR INFORMATION	BDH	17.04.23
C	FOR INFORMATION	BDH	30.11.23

PROJECT: **GLENORA WINDFARM**

CLIENT: **MKO**

SHEET: **PEAT DEPTH CONTOUR PLAN**

Date: 30.11.23

Project number: P20-213

Scale (@ A3): As Shown

Drawn by: POR

Checked by: IH

Drawing Number: **P20-312-0600-GLEN-0001**

Rev: **C**

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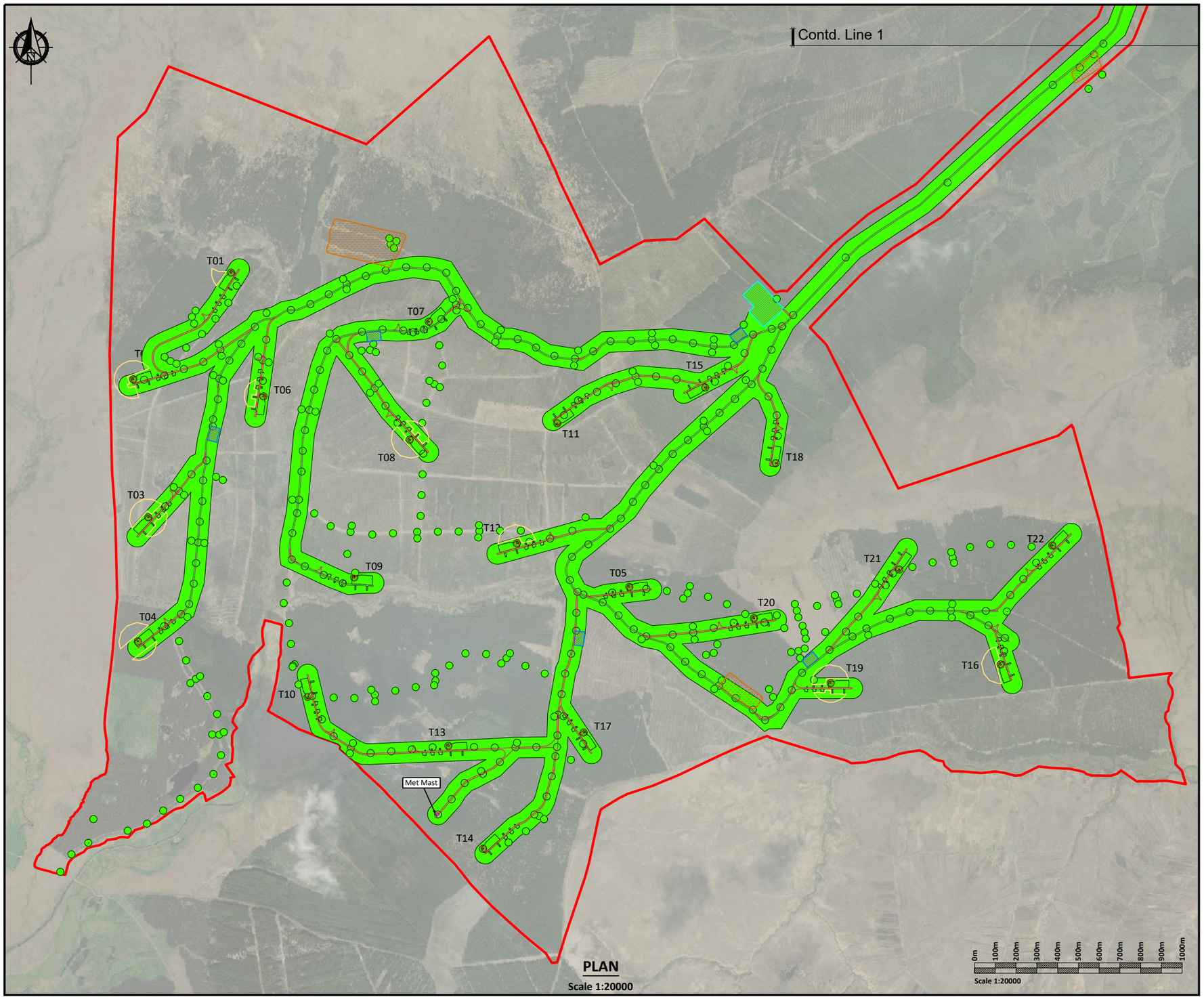
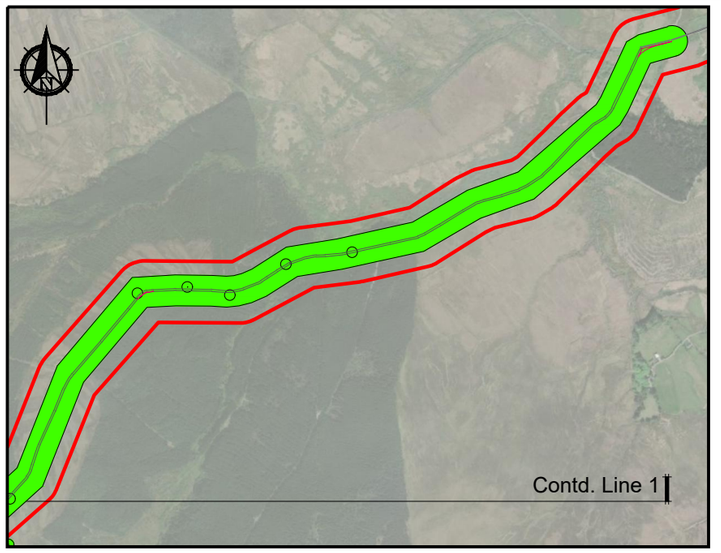
30 November 2023





PLAN

Scale 1:20000

Factor of Safety Legend:

0 < 1.0

≥ 1.0 < 1.3

≥ 1.3

Increasing Stability

No Peat Recorded
At This Location

Legend:

- EIAR Site Boundary
- Proposed Access Track
- Existing Access Track To Be Upgraded
- Existing Access Track
- Proposed Turbine
- Proposed Construction Compound
- Proposed Substation
- Proposed Met Mast
- Proposed Borrow Pit
- Proposed Peat Placement

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Rev.	Description	App By	Date
A	FOR INFORMATION	BDH	16.08.22
B	FOR INFORMATION	BDH	17.04.23
C	FOR INFORMATION	BDH	30.11.23

PROJECT: **GLENORA WINDFARM**

CLIENT: **MKO**

SHEET: **FACTOR OF SAFETY PLAN**

Date: 30.11.23

Project number: P20-213

Scale (@ A3):

Drawn by: POR

Checked by: IH

Drawing Number: **P20-312-0600-GLEN-0002**

Rev: **C**

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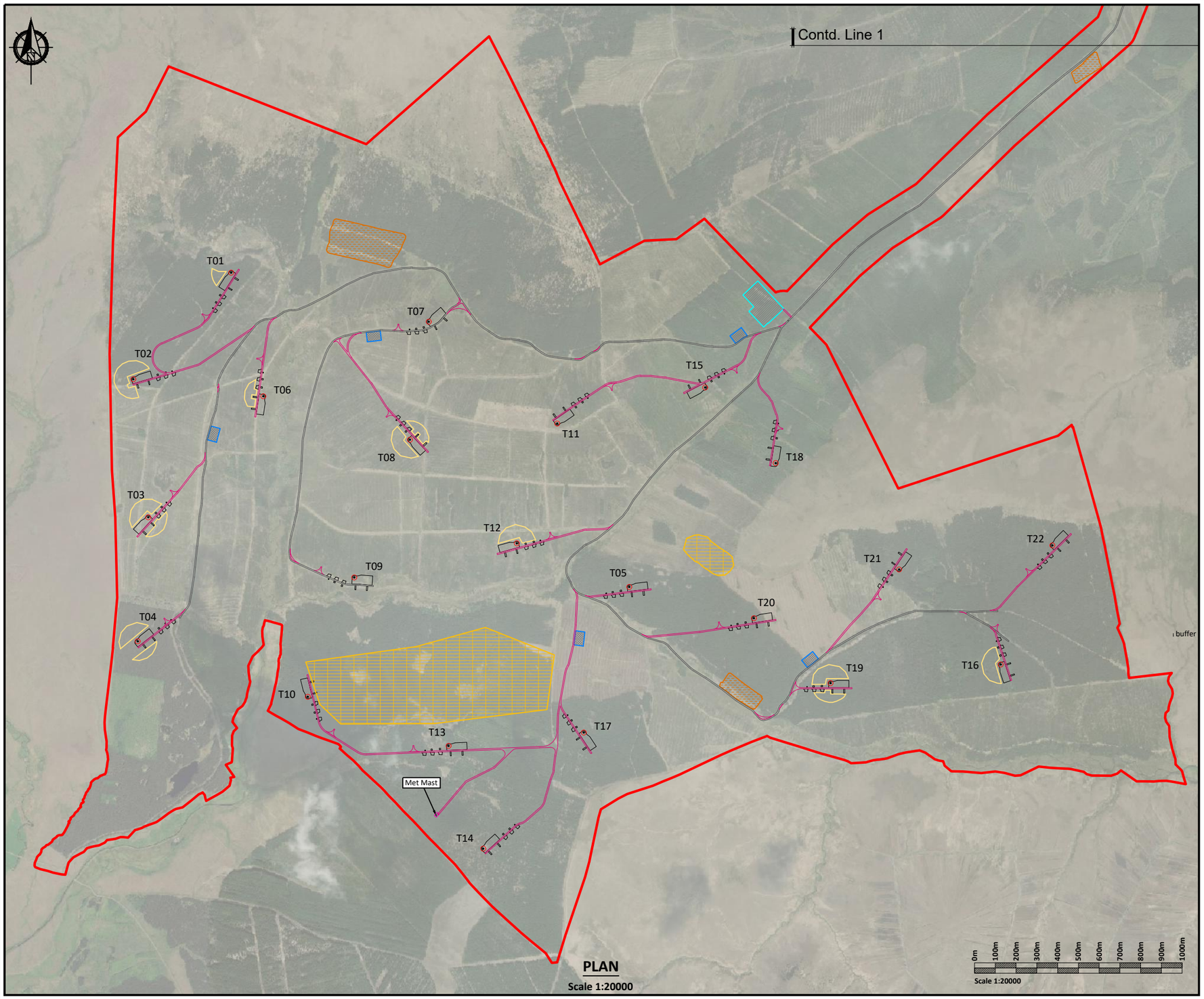
30 November 2023



PLAN

Scale 1:20000

PLAN

Scale 1:20000

Construction Buffer Zone Legend:

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

Legend:

- EIAR Site Boundary
- Proposed Access Track
- Existing Access Track To Be Upgraded
- Existing Access Track
- Proposed Turbine
- Proposed Construction Compound
- Proposed Substation
- Proposed Met Mast
- Proposed Borrow Pit
- Proposed Peat Placement

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Rev.	Description	App By	Date
A	FOR INFORMATION	BDH	16.08.22
B	FOR INFORMATION	BDH	17.04.23
C	FOR INFORMATION	BDH	14.08.23
D	FOR INFORMATION	BDH	30.11.23

PROJECT: **GLENORA WINDFARM**

CLIENT: **MKO**

SHEET: **CONSTRUCTION BUFFER ZONE PLAN**

Date: 30.11.23

Project number: P20-213

Scale (@ A3): As Shown

Drawn by: POR

Checked by: IH

Drawing Number: **P20-312-0600-GLEN-0003**

Rev: **D**

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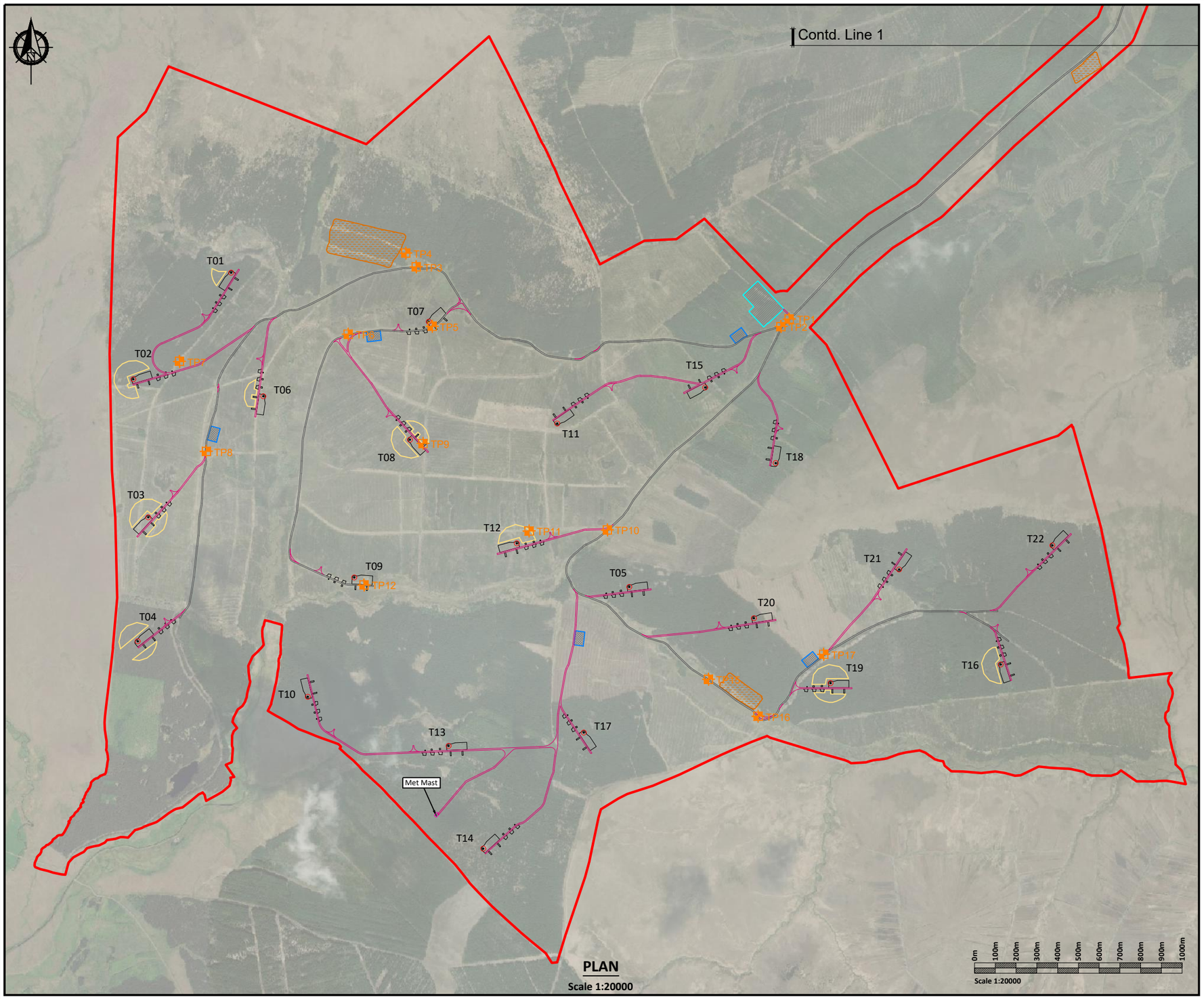
30 November 2023



PLAN

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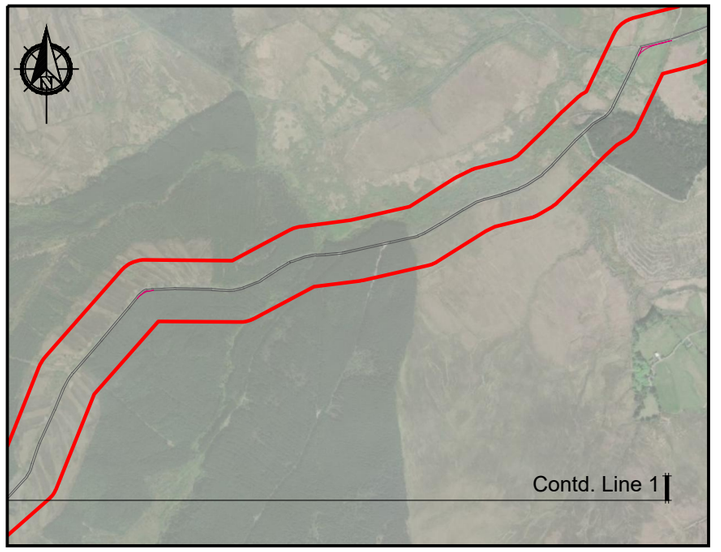

PLAN

Scale 1:20000

Ground Investigation Legend:

TP... Trial Pit Location

Legend:

- EIAR Site Boundary
- Proposed Access Track
- Existing Access Track To Be Upgraded
- Existing Access Track
- Proposed Turbine
- Proposed Construction Compound
- Proposed Substation
- Proposed Met Mast
- Proposed Borrow Pit
- Proposed Peat Placement

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Rev.	Description	App By	Date
A	FOR INFORMATION	BDH	16.08.22
B	FOR INFORMATION	BDH	17.04.23
C	FOR INFORMATION	BDH	30.11.23

PROJECT: **GLENORA WINDFARM**

CLIENT: **MKO**

SHEET: **GROUND INVESTIGATION LOCATION PLAN**

Date: 30.11.23

Project number: P20-213

Scale (@ A3): As Shown

Drawn by: POR

Checked by: IH

Drawing Number: **P20-312-0600-GLEN-0004**

Rev: **C**

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APPENDIX A

Photos from Site Walkover

Photo 1: Example of existing access track on site

Photo 2: Example of firebreak on site

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APPENDIX B

Peat Stability Risk Registers

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T1

Grid Reference (Eastings, Northings):	502518	834923
Distance to Watercourse (m)	50 - 100	
Min & Max Measured Peat Depth (m):	1.8 - 2.4	
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 = 2.03 (u), 1.92 (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	3	3	9	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	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	3	3	9	Low	No		2	3	6	Low
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 T1**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vi	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T2

Grid Reference (Eastings, Northings):	502047	834410
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.7 - 2.7	
Control Required:	Yes	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 2.33 (u), 2.13 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T2**
i	Due to relatively deep peat at this turbine location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
vi	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vii	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T3

Grid Reference (Eastings, Northings):	502119	833745
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	2.1 - 2.7	
Control Required:	Yes	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 2.33 (u), 2.13 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

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

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T4

Grid Reference (Eastings, Northings):	502069	833148
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	2.7 - 3.3	
Control Required:	Yes	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 2.67 (u), 2.32 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T4**
i	Due to relatively deep peat at this turbine location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
vi	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vii	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T5

Grid Reference (Eastings, Northings):	504436	833410
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	2.2 - 3.0	
Control Required:	Yes	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 2.16 (u), 1.92 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T5**
i	Due to relatively deep peat at this turbine location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
vi	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vii	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis
viii	No sidecasting of excavated peat or spoil on in-situ peat
ix	No machinery to track directly on the peat surface

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T6

Grid Reference (Eastings, Northings):	502673	834328
Distance to Watercourse (m)	50 - 100	
Min & Max Measured Peat Depth (m):	1.5 - 2.5	
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 = 3.28 (u), 3.06 (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		2	3	6	Low
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	2	3	6	Low	No	See Below	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.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vii	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T7

Grid Reference (Eastings, Northings):	503470	834687
Distance to Watercourse (m)	100 - 150	
Min & Max Measured Peat Depth (m):	0.9 - 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 = 2.16 (u), 2.54 (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		2	2	4	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	2	2	4	Negligible	No		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 T7**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T8

Grid Reference (Eastings, Northings):	503379	834119
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	2.4 - 2.7	
Control Required:	Yes	

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

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T8**
i	Due to relatively deep peat at this turbine location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
vi	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vii	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T9

Grid Reference (Eastings, Northings):	503111	833456
Distance to Watercourse (m)	100 - 150	
Min & Max Measured Peat Depth (m):	0.9 - 2.1	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 2.23 (u), 2.19 (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		2	2	4	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	2	2	4	Negligible	No		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.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	**Turbine T10**

Grid Reference (Eastings, Northings):	**502887**	**832881**
Distance to Watercourse (m)	**> 150**	
Min & Max Measured Peat Depth (m):	**0.9 - 1.8**	
Control Required:	**No**	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 4.10 (u), 4.25 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine 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.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T11

Grid Reference (Eastings, Northings):	504089	834197
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.5 - 2.1	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 1.87 (u), 1.38 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	3	1	3	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	3	1	3	Negligible	No		2	1	2	Negligible
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	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**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 peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.

Note

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T12

Grid Reference (Eastings, Northings):	503894	833620
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 = 3.19 (u), 3.38 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine 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.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.

Note

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T13

Grid Reference (Eastings, Northings):	503565	832645
Distance to Watercourse (m)	50 - 100	
Min & Max Measured Peat Depth (m):	1.2 - 2.0	
Control Required:	Yes	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 2.87 (u), 2.87 (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	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	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 T13**
i	Due to relatively deep peat close to this turbine location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
vi	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T14

Grid Reference (Eastings, Northings):	503732	832150
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.8 - 2.1	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 1.67 (u), 1.30 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine 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	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.

Note

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T15

Grid Reference (Eastings, Northings):	504802	834370
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.6 - 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 = 3.04 (u), 4.28 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T15**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.

Note

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T16

Grid Reference (Eastings, Northings):	506225	833037
Distance to Watercourse (m)	100 - 150	
Min & Max Measured Peat Depth (m):	2.0 - 2.5	
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 = 2.46 (u), 2.30 (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		2	2	4	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	2	2	4	Negligible	No		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 T16**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vi	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

Note

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T17

Grid Reference (Eastings, Northings):	504216	832709
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.6 - 2.4	
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 = 1.70 (u), 1.60 (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		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T17**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vi	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

Note

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T18

Grid Reference (Eastings, Northings):	505141	834006
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.5 - 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 = 2.62 (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		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T18**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vi	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis
vii	No sidecasting of excavated peat or spoil on in-situ peat
viii	No machinery to track directly on the peat surface

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T19

Grid Reference (Eastings, Northings):	505406	832947
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.8 - 3.1	
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 = 2.80 (u), 2.47 (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	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T19**
i	Due to relatively deep peat at this turbine location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
vi	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vii	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T20

Grid Reference (Eastings, Northings):	505036	833259
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.7 - 2.3	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 2.33 (u), 2.13 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T20**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vi	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis
vii	No sidecasting of excavated peat or spoil on in-situ peat
viii	No machinery to track directly on the peat surface

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T21

Grid Reference (Eastings, Northings):	505736	833494
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.8 - 1.9	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 1.79 (u), 1.36 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	3	1	3	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	3	1	3	Negligible	No		2	1	2	Negligible
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T21**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vi	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis
vii	No sidecasting of excavated peat or spoil on in-situ peat
viii	No machinery to track directly on the peat surface

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Turbine T22

Grid Reference (Eastings, Northings):	506474	833610
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.7 - 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 = 1.46 (u), 1.78 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Turbine T22**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vi	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis
vii	No sidecasting of excavated peat or spoil on in-situ peat
viii	No machinery to track directly on the peat surface

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Met Mast

Grid Reference (Eastings, Northings):	503515	832315
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	1.8 - 2.5	
Control Required:	Yes	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 2.78 (u), 2.74 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

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

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Substation

Grid Reference (Eastings, Northings):	**504225**	**833745**
Distance to Watercourse (m)	**> 150**	
Min & Max Measured Peat Depth (m):	**0.6 - 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 = 2.88 (u), 3.29 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

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

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Const. Comp. (1)

Grid Reference (Eastings, Northings):	**502430**	**834183**
Distance to Watercourse (m)	**> 150**	
Min & Max Measured Peat Depth (m):	**0.4 - 1.8**	
Control Required:	**No**	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 4.10 (u), 4.25 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Construction Compound (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 peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Const. Comp. (2)

Grid Reference (Eastings, Northings):	503395	834636
Distance to Watercourse (m)	100 - 150	
Min & Max Measured Peat Depth (m):	1.2 - 2.5	
Control Required:	Yes	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 3.28 (u), 3.06 (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		2	2	4	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	2	2	4	Negligible	No		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	Relatively deep peat	3	2	6	Low	No		2	2	4	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **Construction Compound (2)**
i	Due to relatively deep peat at this turbine location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
vi	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vii	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Const. Comp. (3)

Grid Reference (Eastings, Northings):	504987	834672
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	0.5 - 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 = 3.45 (u), 3.83 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Construction Compound (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.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	**Const. Comp. (4)**

Grid Reference (Eastings, Northings):	**504180**	**833199**
Distance to Watercourse (m)	**50 - 100**	
Min & Max Measured Peat Depth (m):	**1.9 - 3.2**	
Control Required:	**Yes**	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 2.73 (u), 2.39 (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	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	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	Relatively deep peat	3	3	9	Low	No		2	3	6	Low

	Control Measures to be Implemented Prior to/and During Construction for **Construction Compound (5)**
i	Due to relatively deep peat at this turbine location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
vi	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vii	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Const. Comp. (5)

Grid Reference (Eastings, Northings):	505128	832881
Distance to Watercourse (m)	> 150	
Min & Max Measured Peat Depth (m):	2.5 - 3.1	
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 = 2.80 (u), 2.47 (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	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **Construction Compound (6)**
i	Due to relatively deep peat at this turbine location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
vi	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vii	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	**Borrow Pit 1**

Grid Reference (Eastings, Northings):	**503286**	**835059**
Distance to Watercourse (m)	**> 150**	
Min & Max Measured Peat Depth (m):	**0.6 - 0.7**	
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 = 2.19 (u), 3.11 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Borrow Pit 1 (Formally BP2)**
i	Maintain hydrology of area as far as possible;
ii	Use of experienced geotechnical staff for site investigation;
iii	Use of experienced contractors and trained operators to carry out the work;
iv	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Borrow Pit 2

Grid Reference (Eastings, Northings):	505251	833102
Distance to Watercourse (m)	50 - 100	
Min & Max Measured Peat Depth (m):	1.3 - 3.1	
Control Required:	No	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 2.51 (u), 2.96 (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	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	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	Relatively deep peat	3	3	9	Low	No		2	3	6	Low

	Control Measures to be Implemented Prior to/and During Construction for **Borrow Pit 2 (Formally BP5)**
i	Due to relatively deep peat at this turbine location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.
vi	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.
vii	Movement monitoring posts to be installed upslope of the turbine/harsdtand excavation and monitored on a regular basis

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	**Borrow Pit 3**

Grid Reference (Eastings, Northings):	**506655**	**835876**
Distance to Watercourse (m)	**> 150**	
Min & Max Measured Peat Depth (m):	**1.6-2.1**	
Control Required:	**No**	

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 1.91 (u), 2.03 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	1	1	1	Negligible	No		2	1	2	Negligible

	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.
v	Inspection & approval of turbine base sub-formation by a competent person where a gravity type foundation base is constructed.

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

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Site Entrance to Const. Comp 3

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**50 - 100**
Min & Max Measured Peat Depth (m):	**0.3 - 1.8**
Control Required:	**No**

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 2.08 (u), 2.55 (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	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	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 **Site Entrance to Const. Comp. 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 D in PSA.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Const. Comp. 3 to T11

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.3 - 2.1**
Control Required:	**No**

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 1.75 (u), 1.38 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	3	1	3	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	3	1	3	Negligible	No		2	1	2	Negligible
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Other	0	1	0	Not Applicable	No		0	1	0	Not Applicable

	Control Measures to be Implemented Prior to/and During Construction for **Const. Comp. 3 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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Const. Comp. 3 to Const. Comp. 2

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**50 - 100**
Min & Max Measured Peat Depth (m):	**0.2 - 2.5**
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 = 2.06 (u), 2.14 (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	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	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	Relatively deep peat	3	3	9	Low	No		2	3	6	Low

	Control Measures to be Implemented Prior to/and During Construction for **Const. Comp. 3 to Const. Comp 2**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Const. Comp. 2 to T8

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**50 - 100**
Min & Max Measured Peat Depth (m):	**1.2 - 2.7**
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 = 1.75 (u), 1.67 (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	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	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	Relatively deep peat	3	3	9	Low	No		2	3	6	Low

	Control Measures to be Implemented Prior to/and During Construction for **Const. Comp. 2 to T8**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	T8 to T9

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**50 - 100**
Min & Max Measured Peat Depth (m):	**1.2 - 3.0**
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 = 1.75 (u), 1.67 (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		2	3	6	Low
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	2	3	6	Low	No	See Below	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	Relatively deep peat	3	3	9	Low	No		2	3	6	Low

	Control Measures to be Implemented Prior to/and During Construction for **T8 to T9**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	T12 to T18

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**< 50**
Min & Max Measured Peat Depth (m):	**0.6 - 2.8**
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 = 2.16 (u), 2.05 (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		2	4	8	Low
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		2	4	8	Low
6	General slope characteristics upslope/downslope from infrastructure location	2	4	8	Low	No		2	4	8	Low
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	Relatively deep peat	3	4	12	Medium	No		2	4	8	Low

	Control Measures to be Implemented Prior to/and During Construction for **T12 to T18**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	T18 to Const. Comp. 3

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**< 50**
Min & Max Measured Peat Depth (m):	**0.3 - 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 = 2.87 (u), 2.56 (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		2	4	8	Low
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		2	4	8	Low
6	General slope characteristics upslope/downslope from infrastructure location	2	4	8	Low	No		2	4	8	Low
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 **T18 to Const. Comp. 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 D in PSA.
(3) Impact based on distance of infrastructure element to nearest watercourse.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	T12 to T5

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**< 50**
Min & Max Measured Peat Depth (m):	**0.6 - 3.0**
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 = 1.92 (u), 1.92 (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		2	4	8	Low
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		2	4	8	Low
6	General slope characteristics upslope/downslope from infrastructure location	2	4	8	Low	No		2	4	8	Low
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	3	4	12	Medium	No		2	4	8	Low
10	Evidence of bog pools	0	4	0	Not Applicable	No		0	4	0	Not Applicable
11	Relatively deep peat	3	4	12	Medium	No		2	4	8	Low

	Control Measures to be Implemented Prior to/and During Construction for **T12 to T5**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	T5 to T20

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.6 - 3.5**
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 = 1.92 (u), 1.92 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **T5 to T20**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	T20 to Borrow Pit 2

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**< 50**
Min & Max Measured Peat Depth (m):	**0.1 - 3.5**
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 = 2.05 (u), 1.80 (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		2	4	8	Low
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		2	4	8	Low
6	General slope characteristics upslope/downslope from infrastructure location	2	4	8	Low	No		2	4	8	Low
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	Relatively deep peat	3	4	12	Medium	No		2	4	8	Low

	Control Measures to be Implemented Prior to/and During Construction for **T20 to Borrow Pit 2**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	**Borrow Pit 2 to T19**

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**< 50**
Min & Max Measured Peat Depth (m):	**1.5 - 3.1**
Control Required:	**No**

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 2.27 (u), 2.05 (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		2	4	8	Low
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		2	4	8	Low
6	General slope characteristics upslope/downslope from infrastructure location	2	4	8	Low	No		2	4	8	Low
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	Relatively deep peat	3	4	12	Medium	No		2	4	8	Low

	Control Measures to be Implemented Prior to/and During Construction for **Borrow Pit 2 to T19**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	T19 to T21

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.8 - 3.1**
Control Required:	**No**

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 1.34 (u), 1.36 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	3	1	3	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	3	1	3	Negligible	No		2	1	2	Negligible
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **T19 to T21**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	T21 to T16

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**< 50**
Min & Max Measured Peat Depth (m):	**0.8 - 2.5**
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 = 1.34 (u), 1.36 (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	3	4	12	Medium	No		2	4	8	Low
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		2	4	8	Low
6	General slope characteristics upslope/downslope from infrastructure location	2	4	8	Low	No	See Below	2	4	8	Low
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	3	4	12	Medium	No		2	4	8	Low
10	Evidence of bog pools	0	4	0	Not Applicable	No		0	4	0	Not Applicable
11	Relatively deep peat	3	4	12	Medium	No		2	4	8	Low

	Control Measures to be Implemented Prior to/and During Construction for **T21 to T16**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	T16 to T22

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**100 - 150**
Min & Max Measured Peat Depth (m):	**1.0 - 2.5**
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 = 1.46 (u), 1.52 (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	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	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	Relatively deep peat	3	2	6	Low	No		2	2	4	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **T16 to T22**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	T12 to T17

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**< 50**
Min & Max Measured Peat Depth (m):	**0.6 - 4.4**
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 = 1.70 (u), 1.54 (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		2	4	8	Low
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		2	4	8	Low
6	General slope characteristics upslope/downslope from infrastructure location	2	4	8	Low	No		2	4	8	Low
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	Relatively deep peat	3	4	12	Medium	No		2	4	8	Low

	Control Measures to be Implemented Prior to/and During Construction for **T12 to T17**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	T17 to T14

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**1.6 - 2.9**
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 = 1.67 (u), 1.30 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **T17 to T14**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Spur to Met. Mast

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**100 - 150**
Min & Max Measured Peat Depth (m):	**1.6 - 2.8**
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 = 2.08 (u), 1.30 (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		2	2	4	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	2	2	4	Negligible	No		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	Relatively deep peat	3	2	6	Low	No		2	2	4	Negligible

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

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	T17 to T10

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**50 - 100**
Min & Max Measured Peat Depth (m):	**1.7 - 4.0**
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 = 1.70 (u), 1.48 (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		2	3	6	Low
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	2	3	6	Low	No	See Below	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	Relatively deep peat	3	3	9	Low	No		2	3	6	Low

	Control Measures to be Implemented Prior to/and During Construction for **T17 to T10**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	T7 to BP1

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**< 50**
Min & Max Measured Peat Depth (m):	**0.1 - 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 = 2.06 (u), 2.93 (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		2	4	8	Low
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		2	4	8	Low
6	General slope characteristics upslope/downslope from infrastructure location	2	4	8	Low	No	See Below	2	4	8	Low
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 **T7 to BP1**
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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	**BP1 to T6**

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**< 50**
Min & Max Measured Peat Depth (m):	**0.4 - 2.5**
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 = 2.06 (u), 2.93 (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		2	4	8	Low
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		2	4	8	Low
6	General slope characteristics upslope/downslope from infrastructure location	2	4	8	Low	No		2	4	8	Low
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	Relatively deep peat	3	4	12	Medium	No		2	4	8	Low

	Control Measures to be Implemented Prior to/and During Construction for **BP1 to T6**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	Spur to T1 & T2

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**50 - 100**
Min & Max Measured Peat Depth (m):	**0.75 - 2.7**
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 = 1.75 (u), 1.67 (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	3	3	9	Low	No		2	3	6	Low
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	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	3	3	9	Low	No		2	3	6	Low
10	Evidence of bog pools	0	3	0	Not Applicable	No		0	3	0	Not Applicable
11	Relatively deep peat	3	3	9	Low	No		2	3	6	Low

	Control Measures to be Implemented Prior to/and During Construction for **Spur to T1 & T2**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	**T2 to T3**

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.8 - 2.7**
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 = 2.33 (u), 2.13 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **T2 to T3**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

Glenora Wind Farm - Peat Stability Risk Register (Rev 0)

Location:	**T3 to T4**

Grid Reference (Eastings, Northings):	**Varies**
Distance to Watercourse (m)	**> 150**
Min & Max Measured Peat Depth (m):	**0.8 - 3.3**
Control Required:	**No**

		Pre-Control Measure Implementation						Post-Control Measure Implementation			
Ref.	Contributory/Qualitative Factors to Potential Peat Failure	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating	Control Required	Control measures to be implemented during construction	Prob (Note 2)	Impact (Note 3)	Risk	Risk Rating
1	FOS = 2.05 (u), 1.80 (d)	1	1	1	Negligible	No	See Below	1	1	1	Negligible
2	Evidence of sub peat water flow	1	1	1	Negligible	No		1	1	1	Negligible
3	Evidence of surface water flow	2	1	2	Negligible	No		2	1	2	Negligible
4	Evidence of previous failures/slips	0	1	0	Not Applicable	No		0	1	0	Not Applicable
5	Type of vegetation	2	1	2	Negligible	No		2	1	2	Negligible
6	General slope characteristics upslope/downslope from infrastructure location	2	1	2	Negligible	No		2	1	2	Negligible
7	Evidence of very soft/soft clay at base of peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
8	Evidence of mechanically cut peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
9	Evidence of quaking or buoyant peat	0	1	0	Not Applicable	No		0	1	0	Not Applicable
10	Evidence of bog pools	0	1	0	Not Applicable	No		0	1	0	Not Applicable
11	Relatively deep peat	3	1	3	Negligible	No		2	1	2	Negligible

	Control Measures to be Implemented Prior to/and During Construction for **T3 to T4**
i	Due to relatively deep peat at this location, additional construction measures such as the following may be required: - excavation side walls to be supported (e.g. boulders, sheet piles) or excavation face battered to a shallow angle - temporary works designer may be required to provide excavation support design -daily detailed inspection of excavation faces -potential for greater water inflow into excavation requiring removal of water using pumping -increased exclusion zone around excavation to avoid accidental loading of crest of slope
ii	Maintain hydrology of area as far as possible;
iii	Use of experienced geotechnical staff for site investigation;
iv	Use of experienced contractors and trained operators to carry out the work;
v	Detailed ground investigation to determine peat, mineral soil and bedrock condition and properties.

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.

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APPENDIX C

Calculated FOS for Peat Slopes on Site

Calculated FoS of Natural Peat Slopes for Glenora Wind Farm - Undrained Analysis

Turbine No./Waypoint	Easting	Northing	Slope	Undrained shear strength	Bulk unit weight of Peat	Peat Depth	Surcharge Equivalent Placed Fill Depth (m)	Factor of Safety for Load Condition	
			β (deg)	c_u (kPa)	γ (kN/m^3)	(m)	Condition (2)	Condition (1)	Condition (2)
T01	502518	834923	5	6	10	2.4	3.4	**2.88**	**2.03**
T02	502047	834410	4	6	10	2.7	3.7	**3.19**	**2.33**
T03	502119	833745	4	6	10	2.7	3.7	**3.19**	**2.33**
T04	502069	833148	3	6	10	3.3	4.3	**3.48**	**2.67**
T05	504436	833410	4	6	10	3	4.0	**2.87**	**2.16**
T06	502673	834328	3	6	10	2.5	3.5	**4.59**	**3.28**
T07	503470	834687	7	6	10	1.3	2.3	**3.82**	**2.16**
T08	503379	834119	3	6	10	2.7	3.7	**4.25**	**3.10**
T09	503111	833456	5	6	10	2.1	3.1	**3.29**	**2.23**
T10	502887	832881	3	6	10	1.8	2.8	**6.38**	**4.10**
T11	504089	834197	8	8	10	2.1	3.1	**2.76**	**1.87**
T12	503894	833620	4	6	10	1.7	2.7	**5.07**	**3.19**
T13	503565	832645	4	6	10	2	3.0	**4.31**	**2.87**
T14	503732	832150	9	8	10	2.1	3.1	**2.47**	**1.67**
T15	504802	834370	6	6	10	0.9	1.9	**6.41**	**3.04**
T16	506225	833037	4	6	10	2.5	3.5	**3.45**	**2.46**
T17	504216	832709	6	6	10	2.4	3.4	**2.40**	**1.70**
T18	505141	834006	12	6	10	1.2	2.2	**2.46**	**1.34**
T19	505406	832947	3	6	10	3.1	4.1	**3.70**	**2.80**
T20	505036	833259	7	6	10	2.7	3.7	**1.84**	**1.34**
T21	505736	833494	9	8	10	1.9	2.9	**2.73**	**1.79**
T22	506474	833610	12	6	10	1.2	2.2	**2.46**	**1.34**
Met Mast	503515	832315	4	6	10	2.1	3.1	**4.11**	**2.78**
Substation (1)	501855	832293	3	6	10	3	4.0	**3.83**	**2.87**
Substation (2)	502479	833925	3	6	10	3.5	4.5	**3.28**	**2.55**
Substation (3)	504225	833745	4	6	10	2.6	3.6	**3.32**	**2.40**
Substation (4)	505146	834797	5	6	10	1.4	2.4	**4.94**	**2.88**
Construction Compound (1)	502430	834183	3	6	10	1.8	2.8	**6.38**	**4.10**
Construction Compound (2)	503395	834636	3	6	10	2.5	3.5	**4.59**	**3.28**
Construction Compound (3)	504987	834672	4	6	10	1.5	2.5	**5.75**	**3.45**
Construction Compound (4)	504180	833199	3	6	10	3.2	4.2	**3.59**	**2.73**
Construction Compound (5)	505128	832881	3	6	10	3.1	4.1	**3.70**	**2.80**
Construction Compound (4) (S/S)	504162	833681	3	6	10	1.9	2.9	**6.04**	**3.96**
Construction Compound (7) (S/S)	505259	833067	6	6	10	2.5	3.5	**2.31**	**1.65**
Borrow Pit 1	503286	835059	10	6	10	0.6	1.6	**5.85**	**2.19**
Borrow Pit 2	505251	833102	6	6	10	1.3	2.3	**4.44**	**2.51**
Borrow Pit 1 (S/S)	502329	834710	4	6	10	1.7	2.7	**5.07**	**3.19**
Borrow Pit 3 (S/S)	503187	834550	4	6	10	1.7	2.7	**5.07**	**3.19**
Borrow Pit 4 (S/S)	504843	833093	3	6	10	2.2	3.2	**5.22**	**3.59**
Borrow Pit 6 (S/S)	505109	832918	4	6	10	2.8	3.8	**3.08**	**2.27**
Peat Storage T01	502450	834910	5	6	10	2.4	3.4	**2.88**	**2.03**
Peat Storage T02	502018	834453	4	6	10	2.7	3.7	**3.19**	**2.33**
Peat Storage T03	502090	833783	4	6	10	2.7	3.7	**3.19**	**2.33**
Peat Storage T04	502045	833192	3	6	10	3.3	4.3	**3.48**	**2.67**
Peat Storage T06	802610	834340	3	6	10	2.5	3.5	**4.59**	**3.28**
Peat Storage T08	503342	834100	6	6	10	2.5	3.5	**2.31**	**1.65**
Peat Storage T12	503888	833670	6	6	10	2	3.0	**3.14**	**2.10**
Peat Storage T16	506180	833026	4	6	10	2.5	3.5	**3.45**	**2.46**
Peat Storage T19	505395	832999	3	6	10	3.1	4.1	**3.70**	**2.80**
R1	501696	832039	2	6	10	1.8	2.8	**9.56**	**6.14**
R2	501749	832123	2	6	10	1	2.0	**17.20**	**8.60**
R3	501830	832178	3	6	10	1.8	2.8	**6.38**	**4.10**
R5	502020	832237	3	6	10	1.6	2.6	**7.18**	**4.42**
R6	502113	832271	3	6	10	1.1	2.1	**10.44**	**5.47**
R7	502191	832333	4	6	10	1.6	2.6	**5.39**	**3.32**
R8	502273	832390	3	6	10	1.9	2.9	**6.04**	**3.96**
R9	502358	832443	3	6	10	1.1	2.1	**10.44**	**5.47**
R10	502433	832509	3	6	10	0.6	1.6	**19.13**	**7.18**
R11	502469	832600	3	6	10	1.9	2.9	**6.04**	**3.96**
R12	502461	832699	3	6	10	3.9	4.9	**2.94**	**2.34**
R13	502451	832798	3	6	10	3.3	4.3	**3.48**	**2.67**
R14	502403	832884	4	6	10	1.8	2.8	**4.79**	**3.08**
R15	502348	832967	3	6	10	3.5	4.5	**3.28**	**2.55**
R16	502301	833056	4	6	10	2.6	3.6	**3.32**	**2.40**
R17	502268	833149	3	6	10	2.7	3.7	**4.25**	**3.10**
R19	502316	833328	3	6	10	2.4	3.4	**4.78**	**3.38**
R20	502338	833426	4	6	10	2.2	3.2	**3.92**	**2.69**
R21	502349	833525	3	6	10	3	4.0	**3.83**	**2.87**
R22	502359	833624	4	6	10	2.3	3.3	**3.75**	**2.61**
R23	502367	833724	3	6	10	2.6	3.6	**4.42**	**3.19**
R24	502380	833823	3	6	10	2.7	3.7	**4.25**	**3.10**
R25	502383	833923	4	6	10	2.5	3.5	**3.45**	**2.46**
R28	502431	834217	4	6	10	1.8	2.8	**4.79**	**3.08**
R29	502455	834313	4	6	10	1.5	2.5	**5.75**	**3.45**
R30	502462	834412	6	6	10	1.3	2.3	**4.44**	**2.51**
R31	502510	834500	4	6	10	1.2	2.2	**7.19**	**3.92**
R32	502568	834581	5	6	10	0.8	1.8	**8.64**	**3.84**
R35	502806	834743	5	6	10	0.4	1.4	**17.28**	**4.94**
R36	502900	834771	5	6	10	1	2.0	**6.91**	**3.46**
R37	502988	834819	4	6	10	0.6	1.6	**14.37**	**5.39**
R38	503075	834868	4	6	10	1	2.0	**8.62**	**4.31**
R39	503167	834907	4	6	10	0.9	1.9	**9.58**	**4.54**
R40	503263	834933	4	6	10	0.7	1.7	**12.32**	**5.07**
R41	503361	834949	5	6	10	0.1	1.1	**69.11**	**6.28**
R42	503461	834948	4	6	10	0.7	1.7	**12.32**	**5.07**
R43	503554	834922	4	6	10	0.5	1.5	**17.24**	**5.75**
R44	503602	834835	4	6	10	0.5	1.5	**17.24**	**5.75**
R45	503658	834753	3	6	10	1.9	2.9	**6.04**	**3.96**
R46	503720	834675	3	6	10	1.6	2.6	**7.18**	**4.42**
R47	503801	834617	3	6	10	1.3	2.3	**8.83**	**4.99**
R48	503898	834603	4	6	10	1.3	2.3	**6.63**	**3.75**
R49	503986	834562	3	6	10	1.9	2.9	**6.04**	**3.96**

Calculated FoS of Natural Peat Slopes for Glenora Wind Farm - Undrained Analysis

Turbine No./Waypoint	Easting	Northing	Slope	Undrained shear strength	Bulk unit weight of Peat	Peat Depth	Surcharge Equivalent Placed Fill Depth (m)	Factor of Safety for Load Condition	
			β (deg)	c_u (kPa)	γ (kN/m^3)	(m)	Condition (2)	Condition (1)	Condition (2)
R50	504075	834522	3	6	10	1.6	2.6	**7.18**	**4.42**
R51	504174	834509	3	6	10	1.7	2.7	**6.75**	**4.25**
R52	504262	834544	4	6	10	1.1	2.1	**7.84**	**4.11**
R53	504345	834593	3	6	10	2.2	3.2	**5.22**	**3.59**
R54	504445	834595	4	6	10	1.3	2.3	**6.63**	**3.75**
R55	504545	834601	3	6	10	1.8	2.8	**6.38**	**4.10**
R56	504645	834602	3	6	10	1.5	2.5	**7.65**	**4.59**
R57	504743	834583	5	6	10	0.6	1.6	**11.52**	**4.32**
R58	504842	834571	5	6	10	0.2	1.2	**34.55**	**5.76**
R59	504940	834575	5	6	10	0.8	1.8	**8.64**	**3.84**
R61	505122	834652	4	6	10	1.1	2.1	**7.84**	**4.11**
R62	505172	834665	5	6	10	0.4	1.4	**17.28**	**4.94**
R63	505225	834719	3	6	10	1.7	2.7	**6.75**	**4.25**
R65	505121	834552	4	6	10	0.8	1.8	**10.78**	**4.79**
R66	505078	834461	3	6	10	1.2	2.2	**9.57**	**5.22**
R68	504945	834314	6	6	10	1.5	2.5	**3.85**	**2.31**
R69	504870	834248	5	6	10	1.5	2.5	**4.61**	**2.76**
R70	504795	834182	4	6	10	2.8	3.8	**3.08**	**2.27**
R71	504719	834117	3	6	10	1.8	2.8	**6.38**	**4.10**
R72	504645	834050	3	6	10	1.6	2.6	**7.18**	**4.42**
R73	504578	833976	5	6	10	1	2.0	**6.91**	**3.46**
R74	504513	833900	3	6	10	2.7	3.7	**4.25**	**3.10**
R75	504454	833820	3	6	10	2.1	3.1	**5.47**	**3.70**
R76	504395	833739	4	6	10	1.9	2.9	**4.54**	**2.97**
R78	504239	833615	4	6	10	1.1	2.1	**7.84**	**4.11**
R79	504160	833555	4	6	10	0.6	1.6	**14.37**	**5.39**
R91	503056	833428	4	6	10	1.7	2.7	**5.07**	**3.19**
R92	502964	833468	2	6	10	2.2	3.2	**7.82**	**5.38**
R93	502873	833509	2	6	10	2.4	3.4	**7.17**	**5.06**
R95	502813	833669	2	6	10	3	4.0	**5.73**	**4.30**
R96	502836	833766	4	6	10	1.4	2.4	**6.16**	**3.59**
R98	502857	833965	3	6	10	2.5	3.5	**4.59**	**3.28**
R99	502863	834065	3	6	10	2.6	3.6	**4.42**	**3.19**
R100	502874	834164	4	6	10	1.4	2.4	**6.16**	**3.59**
R101	502895	834262	3	6	10	2.2	3.2	**5.22**	**3.59**
R102	502918	834359	4	6	10	1.6	2.6	**5.39**	**3.32**
R103	502946	834455	3	6	10	1.9	2.9	**6.04**	**3.96**
R104	502981	834548	3	6	10	1.9	2.9	**6.04**	**3.96**
R106	503148	834638	4	6	10	1.6	2.6	**5.39**	**3.32**
R107	503247	834649	5	6	10	1.2	2.2	**5.76**	**3.14**
R108	503347	834644	5	6	10	1.4	2.4	**4.94**	**2.88**
R109	503447	834649	7	6	10	1.5	2.5	**3.31**	**1.98**
R110	503531	834699	6	6	10	1.8	2.8	**3.21**	**2.06**
R111	503602	834768	5	6	10	1.5	2.5	**4.61**	**2.76**
R114	503521	834573	5	6	10	1.6	2.6	**4.32**	**2.66**
R115	503535	834476	4	6	10	2.3	3.3	**3.75**	**2.61**
R116	503498	834386	5	6	10	2.4	3.4	**2.88**	**2.03**
R117	503459	834296	4	6	10	1.7	2.7	**5.07**	**3.19**
R118	503439	834199	4	6	10	1.8	2.8	**4.79**	**3.08**
R120	503444	834052	5	6	10	0.6	1.6	**11.52**	**4.32**
R121	503440	833952	7	6	10	0.6	1.6	**8.27**	**3.10**
R122	503435	833852	6	6	10	1.8	2.8	**3.21**	**2.06**
R123	503431	833752	6	6	10	1.8	2.8	**3.21**	**2.06**
R125	503298	833668	4	6	10	2	3.0	**4.31**	**2.87**
R126	503198	833662	4	6	10	1.9	2.9	**4.54**	**2.97**
R128	503078	833568	3	6	10	2.1	3.1	**5.47**	**3.70**
R129	503116	833479	4	6	10	2.1	3.1	**4.11**	**2.78**
R131	503025	834604	4	6	10	1.8	2.8	**4.79**	**3.08**
R132	503087	834525	4	6	10	1.5	2.5	**5.75**	**3.45**
R133	503149	834447	7	6	10	1.8	2.8	**2.76**	**1.77**
R134	503209	834367	5	6	10	1.4	2.4	**4.94**	**2.88**
R135	503262	834282	4	6	10	2.2	3.2	**3.92**	**2.69**
R136	503319	834200	6	6	10	2.3	3.3	**2.51**	**1.75**
R139	505033	834625	7	6	10	0.3	1.3	**16.53**	**3.82**
R140	504991	834535	5	6	10	1.3	2.3	**5.32**	**3.00**
R141	504912	834474	7	6	10	0.9	1.9	**5.51**	**2.61**
R142	504848	834398	5	6	10	0.8	1.8	**8.64**	**3.84**
R144	504664	834410	6	6	10	0.8	1.8	**7.21**	**3.21**
R145	504565	834423	7	6	10	0.5	1.5	**9.92**	**3.31**
R146	504466	834423	9	6	10	0.9	1.9	**4.31**	**2.04**
R147	504371	834390	11	6	10	0.6	1.6	**5.34**	**2.00**
R148	504280	834349	10	6	10	1	2.0	**3.51**	**1.75**
R149	504190	834308	10	6	10	0.9	1.9	**4.10**	**1.94**
R150	504122	834237	7	6	10	1.1	2.1	**4.51**	**2.36**
R152	505025	834385	4	6	10	2	3.0	**4.31**	**2.87**
R153	505106	834327	5	6	10	1	2.0	**6.91**	**3.46**
R154	505146	834236	4	6	10	1.2	2.2	**7.19**	**3.92**
R155	505151	834137	6	6	10	0.6	1.6	**9.62**	**3.61**
R158	504344	833690	4	6	10	1.6	2.6	**5.39**	**3.32**
R161	504054	833643	4	6	10	1.8	2.8	**4.79**	**3.08**
R162	503955	833627	3	6	10	2	3.0	**5.74**	**3.83**
R165	503414	833675	5	6	10	2.1	3.1	**3.29**	**2.23**
R166	503514	833676	3	6	10	1.9	2.9	**6.04**	**3.96**
R167	503614	833677	3	6	10	2.4	3.4	**4.78**	**3.38**
R168	503714	833679	3	6	10	2.1	3.1	**5.47**	**3.70**
R169	503814	833680	3	6	10	1.8	2.8	**6.38**	**4.10**
R170	503914	833681	3	6	10	1.4	2.4	**8.20**	**4.78**
R174	502844	833830	3	6	10	3	4.0	**3.83**	**2.87**
R175	502919	833764	3	6	10	2.3	3.3	**4.99**	**3.48**
R176	502998	833703	3	6	10	2.7	3.7	**4.25**	**3.10**
R177	503093	833675	4	6	10	2.6	3.6	**3.32**	**2.40**
R180	504150	833443	6	6	10	1	2.0	**5.77**	**2.89**
R181	504215	833373	8	6	10	0.6	1.6	**7.26**	**2.72**

Calculated FoS of Natural Peat Slopes for Glenora Wind Farm - Undrained Analysis

Turbine No./Waypoint	Easting	Northing	Slope	Undrained shear strength	Bulk unit weight of Peat	Peat Depth	Surcharge Equivalent Placed Fill Depth (m)	Factor of Safety for Load Condition	
			β (deg)	c_u (kPa)	γ (kN/m^3)	(m)	Condition (2)	Condition (1)	Condition (2)
R182	504308	833336	7	6	10	1.2	2.2	**4.13**	**2.25**
R183	504384	833273	7	6	10	0.6	1.6	**8.27**	**3.10**
R184	504457	833206	3	6	10	2.5	3.5	**4.59**	**3.28**
R186	504634	833121	5	6	10	0.6	1.6	**11.52**	**4.32**
R187	504705	833050	4	6	10	0.1	1.1	**86.22**	**7.84**
R188	504785	832990	5	6	10	0.2	1.2	**34.55**	**5.76**
R189	504867	832934	8	6	10	0.5	1.5	**8.71**	**2.90**
R190	504948	832875	7	6	10	1.2	2.2	**4.13**	**2.25**
R191	505031	832819	3	6	10	1.7	2.7	**6.75**	**4.25**
R199	505090	832769	5	6	10	1.5	2.5	**4.61**	**2.76**
R200	505164	832831	3	6	10	2.6	3.6	**4.42**	**3.19**
R201	505218	832913	3	6	10	3.2	4.2	**3.59**	**2.73**
R202	505268	832997	3	6	10	2.3	3.3	**4.99**	**3.48**
R205	505511	833171	4	6	10	1.3	2.3	**6.63**	**3.75**
R207	505691	833257	4	6	10	1.2	2.2	**7.19**	**3.92**
R208	505786	833290	3	6	10	2.1	3.1	**5.47**	**3.70**
R209	505885	833296	4	6	10	1.6	2.6	**5.39**	**3.32**
R210	505985	833296	4	6	10	1	2.0	**8.62**	**4.31**
R211	506079	833274	4	6	10	1.7	2.7	**5.07**	**3.19**
R212	506166	833225	4	6	10	1.8	2.8	**4.79**	**3.08**
R213	506245	833165	4	6	10	2	3.0	**4.31**	**2.87**
R220	506154	833295	6	6	10	1.2	2.2	**4.81**	**2.62**
R221	506254	833292	6	6	10	1.9	2.9	**3.04**	**1.99**
R230	506271	833371	9	6	10	1	2.0	**3.88**	**1.94**
R231	506334	833448	9	6	10	1.2	2.2	**3.24**	**1.77**
R232	506396	833527	9	6	10	1.8	2.8	**2.28**	**1.47**
R236	506374	833604	10	6	10	1.6	2.6	**2.19**	**1.35**
R237	506275	833612	9	6	10	1.7	2.7	**2.28**	**1.44**
R238	506175	833616	10	6	10	0.7	1.7	**5.01**	**2.06**
R239	506077	833601	11	6	10	0.6	1.6	**5.34**	**2.00**
R240	505994	833551	11	8	10	1.5	2.5	**2.85**	**1.71**
R241	505897	833528	12	6	10	0.4	1.4	**7.38**	**2.11**
R242	505800	833506	10	6	10	1.6	2.6	**2.30**	**1.42**
R243	505706	833475	9	6	10	1.9	2.9	**2.04**	**1.34**
R244	505620	833425	9	6	10	1.5	2.5	**2.59**	**1.55**
R245	505532	833378	9	6	10	1.5	2.5	**2.59**	**1.55**
R246	505436	833348	8	8	10	2	3.0	**3.09**	**2.06**
R247	505341	833319	7	6	10	1.9	2.9	**2.61**	**1.71**
R248	505243	833296	8	6	10	1.8	2.8	**2.42**	**1.55**
R249	505146	833274	6	6	10	1.8	2.8	**3.21**	**2.06**
R253	505671	833418	5	6	10	1.2	2.2	**5.76**	**3.14**
R255	505539	833267	4	6	10	1.2	2.2	**7.19**	**3.92**
R258	505400	833107	3	6	10	2	3.0	**5.74**	**3.83**
R259	505579	833210	3	6	10	1.2	2.2	**9.57**	**5.22**
R260	505480	833195	4	6	10	0.8	1.8	**10.78**	**4.79**
R261	505380	833193	4	6	10	1.9	2.9	**4.54**	**2.97**
R262	505280	833192	5	6	10	2	3.0	**3.46**	**2.30**
R263	505183	833212	4	6	10	1.9	2.9	**4.54**	**2.97**
R264	505087	833239	5	6	10	2.3	3.3	**3.00**	**2.09**
R265	504995	833280	4	6	10	2.3	3.3	**3.75**	**2.61**
R266	504907	833327	4	6	10	2	3.0	**4.31**	**2.87**
R267	504815	833363	6	6	10	2.3	3.3	**2.51**	**1.75**
R268	504717	833380	3	6	10	2.6	3.6	**4.42**	**3.19**
R269	504617	833391	3	6	10	2.5	3.5	**4.59**	**3.28**
R270	504518	833401	2	6	10	3.4	4.4	**5.06**	**3.91**
R273	504939	833237	5	6	10	1.8	2.8	**3.84**	**2.47**
R274	504842	833212	3	6	10	2.3	3.3	**4.99**	**3.48**
R275	504744	833191	3	6	10	1.7	2.7	**6.75**	**4.25**
R276	504645	833181	4	6	10	2.2	3.2	**3.92**	**2.69**
R278	504518	833172	3	6	10	1	2.0	**11.48**	**5.74**
R284	504186	833386	3	6	10	1	2.0	**11.48**	**5.74**
R285	504181	833286	5	6	10	2	3.0	**3.46**	**2.30**
R287	504156	833088	5	6	10	3	4.0	**2.30**	**1.73**
R288	504127	832993	2	6	10	3.6	4.6	**4.78**	**3.74**
R289	504110	832894	3	6	10	2.7	3.7	**4.25**	**3.10**
R290	504093	832795	2	6	10	3.5	4.5	**4.92**	**3.82**
R291	504090	832696	3	6	10	1.6	2.6	**7.18**	**4.42**
R293	504063	832498	3	6	10	2.3	3.3	**4.99**	**3.48**
R294	504038	832402	3	6	10	1.9	2.9	**6.04**	**3.96**
R295	504002	832308	4	6	10	1.6	2.6	**5.39**	**3.32**
R296	503938	832234	4	6	10	1.9	2.9	**4.54**	**2.97**
R297	503854	832180	3	6	10	2.2	3.2	**5.22**	**3.59**
R300	504080	832595	4	6	10	2.5	3.5	**3.45**	**2.46**
R301	504155	832578	5	6	10	1.9	2.9	**3.64**	**2.38**
R302	504213	832655	3	6	10	2.9	3.9	**3.96**	**2.94**
R304	504088	832640	3	6	10	2	3.0	**5.74**	**3.83**
R305	503988	832639	3	6	10	2.1	3.1	**5.47**	**3.70**
R306	503888	832638	2	6	10	2.3	3.3	**7.48**	**5.21**
R307	503788	832637	2	6	10	2.8	3.8	**6.14**	**4.53**
R308	503688	832640	2	6	10	4	5.0	**4.30**	**3.44**
R310	503489	832638	2	6	10	4.4	5.4	**3.91**	**3.19**
R311	503389	832628	2	6	10	2.6	3.6	**6.62**	**4.78**
R312	503290	832619	2	6	10	2.2	3.2	**7.82**	**5.38**
R313	503190	832610	3	6	10	1.1	2.1	**10.44**	**5.47**
R314	503095	832635	4	6	10	1.5	2.5	**5.75**	**3.45**
R315	503012	832691	3	6	10	2.5	3.5	**4.59**	**3.28**
R316	502955	832773	3	6	10	2.8	3.8	**4.10**	**3.02**
R320	503813	832568	3	6	10	2.5	3.5	**4.59**	**3.28**
R321	503731	832511	3	6	10	2.2	3.2	**5.22**	**3.59**
R322	503643	832466	3	6	10	1.7	2.7	**6.75**	**4.25**
R323	503580	832388	3	6	10	1.9	2.9	**6.04**	**3.96**
R326	504029	832993	2	6	10	3.3	4.3	**5.21**	**4.00**
R327	503936	833030	2	6	10	3.5	4.5	**4.92**	**3.82**

Calculated FoS of Natural Peat Slopes for Glenora Wind Farm - Undrained Analysis

Turbine No./Waypoint	Easting	Northing	Slope	Undrained shear strength	Bulk unit weight of Peat	Peat Depth	Surcharge Equivalent Placed Fill Depth (m)	Factor of Safety for Load Condition	
			β (deg)	c_u (kPa)	γ (kN/m^3)	(m)	Condition (2)	Condition (1)	Condition (2)
R328	503845	833068	2	6	10	4.6	5.6	**3.74**	**3.07**
R329	503747	833087	2	6	10	2.3	3.3	**7.48**	**5.21**
R330	503647	833090	4	6	10	2.2	3.2	**3.92**	**2.69**
R331	503569	833032	4	6	10	3.2	4.2	**2.69**	**2.05**
R332	503502	832958	3	6	10	1.7	2.7	**6.75**	**4.25**
R333	503407	832928	2	6	10	2.8	3.8	**6.14**	**4.53**
R334	503309	832911	3	6	10	2.4	3.4	**4.78**	**3.38**
R335	503210	832892	2	6	10	3.5	4.5	**4.92**	**3.82**
R336	503112	832875	2	6	10	4.1	5.1	**4.20**	**3.37**
R337	503012	832878	4	6	10	2.7	3.7	**3.19**	**2.33**
R339	502843	832940	3	6	10	2.9	3.9	**3.96**	**2.94**
R340	502823	833038	1	6	10	1.9	2.9	**18.10**	**11.86**
R341	502806	833136	2	6	10	2.2	3.2	**7.82**	**5.38**
R342	502797	833236	2	6	10	3.2	4.2	**5.38**	**4.10**
R343	502772	833332	4	6	10	0.7	1.7	**12.32**	**5.07**
R344	502786	833431	4	6	10	1.3	2.3	**6.63**	**3.75**
R346	502810	833542	3	6	10	1.9	2.9	**6.04**	**3.96**
R347	502277	833279	3	6	10	2.6	3.6	**4.42**	**3.19**
R348	502196	833221	3	6	10	2.8	3.8	**4.10**	**3.02**
R351	502400	834019	4	6	10	0.9	1.9	**9.58**	**4.54**
R352	502327	833952	3	6	10	2.6	3.6	**4.42**	**3.19**
R353	502266	833872	4	6	10	1	2.0	**8.62**	**4.31**
R354	502200	833797	4	6	10	2	3.0	**4.31**	**2.87**
R356	502633	834662	4	6	10	0.9	1.9	**9.58**	**4.54**
R358	502467	834551	7	6	10	1.1	2.1	**4.51**	**2.36**
R359	502385	834494	6	6	10	1	2.0	**5.77**	**2.89**
R360	502291	834459	5	6	10	1.6	2.6	**4.32**	**2.66**
R361	502197	834427	5	6	10	1.6	2.6	**4.32**	**2.66**
R362	502099	834407	3	6	10	2.2	3.2	**5.22**	**3.59**
R365	502226	834497	3	6	10	2.1	3.1	**5.47**	**3.70**
R366	502302	834561	5	6	10	2	3.0	**3.46**	**2.30**
R367	502378	834627	4	6	10	1.2	2.2	**7.19**	**3.92**
R368	502443	834701	5	6	10	1.4	2.4	**4.94**	**2.88**
R369	502505	834778	6	6	10	2.3	3.3	**2.51**	**1.75**
R370	502545	834860	16	8	10	0.75	1.8	**4.14**	**1.78**
R373	502687	834600	4	6	10	1	2.0	**8.62**	**4.31**
R374	502671	834501	3	6	10	2.1	3.1	**5.47**	**3.70**
R375	502671	834402	3	6	10	2.5	3.5	**4.59**	**3.28**
R377	502446	833940	3	6	10	2.2	3.2	**5.22**	**3.59**
R378	504354	833383	6	6	10	2	3.0	**2.89**	**1.92**
R379	505326	832963	3	6	10	2.4	3.4	**4.78**	**3.38**
R380	506241	833102	3	6	10	2.4	3.4	**4.78**	**3.38**
WP3	505987	833578	11	8	10	1.7	2.7	**2.51**	**1.58**
WP4	506000	833526	9	8	10	1.2	2.2	**4.31**	**2.35**
WP5	505426	833370	8	8	10	1.8	2.8	**3.22**	**2.07**
WP6	505443	833327	8	8	10	1.8	2.8	**3.22**	**2.07**
WP7	504119	832788	2	6	10	2.7	3.7	**6.37**	**4.65**
WP8	504075	832786	2	6	10	4.4	5.4	**3.91**	**3.19**
WP9	504025	832292	4	6	10	2	3.0	**4.31**	**2.87**
WP10	503979	832315	4	6	10	1.6	2.6	**5.39**	**3.32**
WP11	502909	832885	6	6	10	2.6	3.6	**2.22**	**1.60**
WP12	503722	832524	6	8	10	2.7	3.7	**2.85**	**2.08**
WP13	503895	832660	2	6	10	2.8	3.8	**6.14**	**4.53**
WP14	503105	832658	4	6	10	0.8	1.8	**10.78**	**4.79**
WP15	503090	832609	4	6	10	1.7	2.7	**5.07**	**3.19**
WP16	502816	833032	2	6	10	1.8	2.8	**9.56**	**6.14**
WP17	502814	833026	2	6	10	1.9	2.9	**9.05**	**5.93**
WP18	504835	834539	5	6	10	0.2	1.2	**34.55**	**5.76**
WP19	504843	834601	5	6	10	1.5	2.5	**4.61**	**2.76**
WP20	504545	834632	3	6	10	1.9	2.9	**6.04**	**3.96**
WP21	504560	834573	3	6	10	1.1	2.1	**10.44**	**5.47**
WP22	504190	834549	3	6	10	1.6	2.6	**7.18**	**4.42**
WP23	504170	834476	3	6	10	1.8	2.8	**6.38**	**4.10**
WP24	503817	834647	3	6	10	1.1	2.1	**10.44**	**5.47**
WP25	503791	834589	3	6	10	1.8	2.8	**6.38**	**4.10**
WP26	503585	834797	5	6	10	1.2	2.2	**5.76**	**3.14**
WP27	503604	834741	5	6	10	0.9	1.9	**7.68**	**3.64**
WP28	502993	834630	4	6	10	2.8	3.8	**3.08**	**2.27**
WP29	502925	834254	3	6	10	1.9	2.9	**6.04**	**3.96**
WP30	502857	834265	3	6	10	2.8	3.8	**4.10**	**3.02**
WP32	502813	833830	3	6	10	2.9	3.9	**3.96**	**2.94**
WP33	505992	833328	4	6	10	1.3	2.3	**6.63**	**3.75**
WP34	505989	833263	4	6	10	1.6	2.6	**5.39**	**3.32**
WP35	505587	833178	3	6	10	1.3	2.3	**8.83**	**4.99**
WP36	505281	833114	6	6	10	2.5	3.5	**2.31**	**1.65**
WP37	505216	833096	6	6	10	1.7	2.7	**3.40**	**2.14**
WP38	502427	832700	3	6	10	3.7	4.7	**3.10**	**2.44**
WP39	502483	832711	3	6	10	1.5	2.5	**7.65**	**4.59**
WP40	502322	832947	3	6	10	3.6	4.6	**3.19**	**2.50**
WP41	502369	832980	3	6	10	2.8	3.8	**4.10**	**3.02**
WP42	502308	833265	3	6	10	2.7	3.7	**4.25**	**3.10**
WP43	502327	833633	4	6	10	3.2	4.2	**2.69**	**2.05**
WP44	502389	833622	4	6	10	3	4.0	**2.87**	**2.16**
WP45	502242	833891	4	6	10	1	2.0	**8.62**	**4.31**
WP46	502292	833853	4	6	10	0.8	1.8	**10.78**	**4.79**
WP47	502433	834429	6	6	10	1	2.0	**5.77**	**2.89**
WP48	502479	834403	6	6	10	1.1	2.1	**5.25**	**2.75**
WP49	502689	834729	4	6	10	1.1	2.1	**7.84**	**4.11**
WP50	503058	834892	4	6	10	0.5	1.5	**17.24**	**5.75**
WP51	503075	834842	4	6	10	0.6	1.6	**14.37**	**5.39**
WP52	503302	835041	10	6	10	0.7	1.7	**5.01**	**2.06**
WP53	503280	835088	10	6	10	0.7	1.7	**5.01**	**2.06**
WP54	503314	835075	10	6	10	0.6	1.6	**5.85**	**2.19**

Calculated FoS of Natural Peat Slopes for Glenora Wind Farm - Undrained Analysis

Turbine No./Waypoint	Easting	Northing	Slope	Undrained shear strength	Bulk unit weight of Peat	Peat Depth	Surcharge Equivalent Placed Fill Depth (m)	Factor of Safety for Load Condition	
			β (deg)	c_u (kPa)	γ (kN/m^3)	(m)	Condition (2)	Condition (1)	Condition (2)
WP56	504846	832919	4	6	10	3.2	4.2	**2.69**	**2.05**
WP57	504846	832919	3	6	10	2.3	3.3	**4.99**	**3.48**
WP58	504882	832960	5	6	10	1.8	2.8	**3.84**	**2.47**
WP59	504495	833159	3	6	10	3.5	4.5	**3.28**	**2.55**
WP60	504742	833220	3	6	10	1.4	2.4	**8.20**	**4.78**
WP61	504751	833157	3	6	10	1.5	2.5	**7.65**	**4.59**
WP62	504806	833083	3	6	10	2	3.0	**5.74**	**3.83**
WP63	504860	833134	4	6	10	2	3.0	**4.31**	**2.87**
WP64	505271	833223	5	6	10	2	3.0	**3.46**	**2.30**
WP65	505286	833161	5	6	10	1.7	2.7	**4.07**	**2.56**
WP66	505250	833264	8	6	10	1.9	2.9	**2.29**	**1.50**
WP67	505233	833328	8	6	10	1.9	2.9	**2.29**	**1.50**
WP68	504728	833414	3	6	10	2.3	3.3	**4.99**	**3.48**
WP69	504696	833354	3	6	10	2.1	3.1	**5.47**	**3.70**
WP70	503861	833091	2	6	10	3.9	4.9	**4.41**	**3.51**
WP71	503820	833042	2	6	10	3.9	4.9	**4.41**	**3.51**
WP72	503496	832937	3	6	10	2.1	3.1	**5.47**	**3.70**
WP73	503501	832995	3	6	10	2.8	3.8	**4.10**	**3.02**
WP74	503193	832915	2	6	10	3.3	4.3	**5.21**	**4.00**
WP75	503212	832859	2	6	10	3.8	4.8	**4.53**	**3.58**
WP76	504553	833995	5	6	10	2.2	3.2	**3.14**	**2.16**
WP77	504794	834210	4	6	10	1.7	2.7	**5.07**	**3.19**
WP78	504811	834160	4	6	10	1.8	2.8	**4.79**	**3.08**
WP79	504997	834406	13	6	10	0.5	1.5	**5.47**	**1.82**
WP80	503712	833707	3	6	10	1.8	2.8	**6.38**	**4.10**
WP81	503709	833648	3	6	10	2.1	3.1	**5.47**	**3.70**
WP82	503415	833644	5	6	10	2.3	3.3	**3.00**	**2.09**
WP83	503229	834389	5	6	10	1.6	2.6	**4.32**	**2.66**
WP84	503187	834345	5	6	10	1.2	2.2	**5.76**	**3.14**
WP85	503147	834548	4	6	10	1.7	2.7	**5.07**	**3.19**
WP86	503215	834540	4	6	10	1.5	2.5	**5.75**	**3.45**
WP87	503203	834580	4	6	10	1.7	2.7	**5.07**	**3.19**
WP88	503473	834402	5	6	10	2.1	3.1	**3.29**	**2.23**
WP89	503523	834372	5	6	10	2	3.0	**3.46**	**2.30**
WP90	503099	833705	4	6	10	2.2	3.2	**3.92**	**2.69**
WP91	502649	834517	3	6	10	1.4	2.4	**8.20**	**4.78**
WP92	502699	834491	3	6	10	2.1	3.1	**5.47**	**3.70**
WP93	502472	834522	7	6	10	1	2.0	**4.96**	**2.48**
WP94	502458	834578	7	6	10	1.1	2.1	**4.51**	**2.36**
WP95	502255	834484	3	6	10	2.3	3.3	**4.99**	**3.48**
WP96	502198	834517	3	6	10	2.2	3.2	**5.22**	**3.59**
WP97	502340	834677	4	6	10	1.3	2.3	**6.63**	**3.75**
WP98	502347	834740	4	6	10	1.2	2.2	**7.19**	**3.92**
WP99	504478	834397	9	6	10	0.6	1.6	**6.47**	**2.43**
WP100	504452	834448	8	6	10	1.3	2.3	**3.35**	**1.89**
101	507834	836828	4	6	10	0.6	1.6	**13.59**	**5.10**
102	507618	836789	5	6	10	1.2	2.2	**6.30**	**3.43**
103	507435	836688	3	6	10	1.8	2.8	**6.02**	**3.87**
104	507296	836715	3	6	10	0.8	1.8	**13.93**	**6.19**
105	507134	836694	3	6	10	1	2.0	**12.04**	**6.02**
106	506719	836025	5	6	10	0.8	1.8	**9.44**	**4.20**
107	506476	835826	1	6	10	1.5	2.5	**23.63**	**14.18**
108	505969	835357	4	6	10	1	2.0	**8.73**	**4.37**
109	505478	834996	8	6	10	1.2	2.2	**3.82**	**2.08**
P001	506674	835973	5	6	10	2.1	3.1	**3.29**	**2.23**
P002	506714	835876	5	6	10	1.7	2.7	**4.07**	**2.56**
P003	506606	835910	7	6	10	1.6	2.6	**3.10**	**1.91**
P004	506648	835807	6	6	10	1.9	2.9	**3.04**	**1.99**
							Minimum =	**1.84**	**1.34**
							Maximum =	**86.22**	**14.18**
							Average =	**6.23**	**3.36**

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

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

(6) For load conditions see report text.

Calculated FoS of Natural Peat Slopes for Glenora Wind Farm - 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	5	4	10.0	10.0	2.4	25	1.0	3.4	**1.92**	**2.92**
T02	4	4	10.0	10.0	2.7	25	1.0	3.7	**2.13**	**3.36**
T03	4	4	10.0	10.0	2.7	25	1.0	3.7	**2.13**	**3.36**
T04	3	4	10.0	10.0	3.3	25	1.0	4.3	**2.32**	**3.85**
T05	4	4	10.0	10.0	3	25	1.0	4.0	**1.92**	**3.10**
T06	3	4	10.0	10.0	2.5	25	1.0	3.5	**3.06**	**4.73**
T07	7	4	10.0	10.0	1.3	25	1.0	2.3	**2.54**	**3.09**
T08	3	4	10.0	10.0	2.7	25	1.0	3.7	**2.83**	**4.47**
T09	5	4	10.0	10.0	2.1	25	1.0	3.1	**2.19**	**3.21**
T10	3	4	10.0	10.0	1.8	25	1.0	2.8	**4.25**	**5.91**
T11	8	4	10.0	10.0	2.1	25	1.0	3.1	**1.38**	**2.01**
T12	4	4	10.0	10.0	1.7	25	1.0	2.7	**3.38**	**4.60**
T13	4	4	10.0	10.0	2	25	1.0	3.0	**2.87**	**4.14**
T14	9	4	10.0	10.0	2.1	25	1.0	3.1	**1.30**	**1.89**
T15	6	4	10.0	10.0	0.9	25	1.0	1.9	**4.28**	**4.36**
T16	4	4	10.0	10.0	2.5	25	1.0	3.5	**2.30**	**3.55**
T17	6	4	10.0	10.0	2.4	25	1.0	3.4	**1.60**	**2.44**
T18	12	4	10.0	10.0	1.2	25	1.0	2.2	**1.64**	**1.89**
T19	3	4	10.0	10.0	3.1	25	1.0	4.1	**2.47**	**4.04**
T20	7	4	10.0	10.0	2.5	25	1.0	3.5	**1.32**	**2.03**
T21	9	4	10.0	10.0	1.9	25	1.0	2.9	**1.36**	**1.91**
T22	12	4	10.0	10.0	1.2	25	1.0	2.2	**1.64**	**1.89**
Met Mast	4	4	10.0	10.0	2.1	25	1.0	3.1	**2.74**	**4.01**
Substation (1)	3	4	10.0	10.0	3	25	1.0	4.0	**2.55**	**4.14**
Substation (2)	3	4	10.0	10.0	3.5	25	1.0	4.5	**2.19**	**3.68**
Substation (3)	4	4	10.0	10.0	2.6	25	1.0	3.6	**2.21**	**3.45**
Substation (4)	5	4	10.0	10.0	1.4	26	1.0	2.4	**3.29**	**4.24**
Construction Compound (1)	3	4	10.0	10.0	1.8	27	1.0	2.8	**4.25**	**6.21**
Construction Compound (2)	3	4	10.0	10.0	2.5	28	1.0	3.5	**3.06**	**5.09**
Construction Compound (3)	4	4	10.0	10.0	1.5	29	1.0	2.5	**3.83**	**5.47**
Construction Compound (4)	3	4	10.0	10.0	3.2	31	1.0	4.2	**2.39**	**4.55**
Construction Compound (5)	3	4	10.0	10.0	3.1	32	1.0	4.1	**2.47**	**4.77**
Construction Compound (4) (S/S)	3	4	10.0	10.0	1.9	30	1.0	2.9	**4.03**	**6.44**
Construction Compound (7) (S/S)	6	4	10.0	10.0	2.5	33	1.0	3.5	**1.54**	**2.86**
Borrow Pit 1	10	4	10.0	10.0	0.6	25	1.0	1.6	**3.90**	**3.11**
Borrow Pit 2	6	4	10.0	10.0	1.3	25	1.0	2.3	**2.96**	**3.60**
Borrow Pit 1 (S/S)	4	4	10.0	10.0	1.7	34	1.0	2.7	**3.38**	**5.70**
Borrow Pit 3 (S/S)	4	4	10.0	10.0	1.7	25	1.0	2.7	**3.38**	**4.60**
Borrow Pit 4 (S/S)	3	4	10.0	10.0	2.2	25	1.0	3.2	**3.48**	**5.17**
Borrow Pit 6 (S/S)	4	4	10.0	10.0	2.8	25	1.0	3.8	**2.05**	**3.27**
Peat Storage T01	5	4	10.0	10.0	2.4	26	1.0	3.4	**7.49**	**6.93**
Peat Storage T02	4	4	10.0	10.0	2.7	27	1.0	3.7	**9.42**	**8.84**
Peat Storage T03	4	4	10.0	10.0	2.7	28	1.0	3.7	**9.73**	**9.16**
Peat Storage T04	3	4	10.0	10.0	3.3	29	1.0	4.3	**12.90**	**12.36**
Peat Storage T06	3	4	10.0	10.0	2.5	30	1.0	3.5	**14.08**	**13.20**
Peat Storage T08	6	4	10.0	10.0	2.5	31	1.0	3.5	**7.26**	**6.82**
Peat Storage T12	6	4	10.0	10.0	2	32	1.0	3.0	**8.59**	**7.89**
Peat Storage T16	4	4	10.0	10.0	2.5	33	1.0	3.5	**11.59**	**10.93**
Peat Storage T19	3	4	10.0	10.0	3.1	34	1.0	4.1	**15.34**	**14.74**
R1	2	4	10.0	10.0	1.8	25	1.0	2.8	**6.37**	**8.86**
R2	2	4	10.0	10.0	1	25	1.0	2.0	**11.47**	**12.41**
R3	3	4	10.0	10.0	1.8	25	1.0	2.8	**4.25**	**5.91**
R5	3	4	10.0	10.0	1.6	25	1.0	2.6	**4.78**	**6.37**
R6	3	4	10.0	10.0	1.1	25	1.0	2.1	**6.96**	**7.88**
R7	4	4	10.0	10.0	1.6	25	1.0	2.6	**3.59**	**4.78**
R8	3	4	10.0	10.0	1.9	25	1.0	2.9	**4.03**	**5.71**
R9	3	4	10.0	10.0	1.1	25	1.0	2.1	**6.96**	**7.88**
R10	3	4	10.0	10.0	0.6	25	1.0	1.6	**12.76**	**10.34**
R11	3	4	10.0	10.0	1.9	25	1.0	2.9	**4.03**	**5.71**
R12	3	4	10.0	10.0	3.9	25	1.0	4.9	**1.96**	**3.38**
R13	3	4	10.0	10.0	3.3	25	1.0	4.3	**2.32**	**3.85**
R14	4	4	10.0	10.0	1.8	25	1.0	2.8	**3.19**	**4.43**
R15	3	4	10.0	10.0	3.5	25	1.0	4.5	**2.19**	**3.68**
R16	4	4	10.0	10.0	2.6	25	1.0	3.6	**2.21**	**3.45**
R17	3	4	10.0	10.0	2.7	25	1.0	3.7	**2.83**	**4.47**
R19	3	4	10.0	10.0	2.4	25	1.0	3.4	**3.19**	**4.87**
R20	4	4	10.0	10.0	2.2	25	1.0	3.2	**2.61**	**3.88**
R21	3	4	10.0	10.0	3	25	1.0	4.0	**2.55**	**4.14**
R22	4	4	10.0	10.0	2.3	25	1.0	3.3	**2.50**	**3.76**
R23	3	4	10.0	10.0	2.6	25	1.0	3.6	**2.94**	**4.60**
R24	3	4	10.0	10.0	2.7	25	1.0	3.7	**2.83**	**4.47**
R25	4	4	10.0	10.0	2.5	25	1.0	3.5	**2.30**	**3.55**
R28	4	4	10.0	10.0	1.8	25	1.0	2.8	**3.19**	**4.43**
R29	4	4	10.0	10.0	1.5	25	1.0	2.5	**3.83**	**4.97**
R30	6	4	10.0	10.0	1.3	25	1.0	2.3	**2.96**	**3.60**
R31	4	4	10.0	10.0	1.2	25	1.0	2.2	**4.79**	**5.64**
R32	5	4	10.0	10.0	0.8	25	1.0	1.8	**5.76**	**5.52**
R35	5	4	10.0	10.0	0.4	25	1.0	1.4	**11.52**	**7.10**
R36	5	4	10.0	10.0	1	25	1.0	2.0	**4.61**	**4.97**
R37	4	4	10.0	10.0	0.6	25	1.0	1.6	**9.58**	**7.76**
R38	4	4	10.0	10.0	1	25	1.0	2.0	**5.75**	**6.21**
R39	4	4	10.0	10.0	0.9	25	1.0	1.9	**6.39**	**6.54**
R40	4	4	10.0	10.0	0.7	25	1.0	1.7	**8.21**	**7.30**
R41	5	4	10.0	10.0	0.1	25	1.0	1.1	**46.07**	**9.03**
R42	4	4	10.0	10.0	0.7	25	1.0	1.7	**8.21**	**7.30**
R43	4	4	10.0	10.0	0.5	25	1.0	1.5	**11.50**	**8.28**
R44	4	4	10.0	10.0	0.5	25	1.0	1.5	**11.50**	**8.28**
R45	3	4	10.0	10.0	1.9	25	1.0	2.9	**4.03**	**5.71**
R46	3	4	10.0	10.0	1.6	25	1.0	2.6	**4.78**	**6.37**
R47	3	4	10.0	10.0	1.3	25	1.0	2.3	**5.89**	**7.20**
R48	4	4	10.0	10.0	1.3	25	1.0	2.3	**4.42**	**5.40**

Calculated FoS of Natural Peat Slopes for Glenora Wind Farm - 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
R49	3	4	10.0	10.0	1.9	25	1.0	2.9	**4.03**	**5.71**
R50	3	4	10.0	10.0	1.6	25	1.0	2.6	**4.78**	**6.37**
R51	3	4	10.0	10.0	1.7	25	1.0	2.7	**4.50**	**6.13**
R52	4	4	10.0	10.0	1.1	25	1.0	2.1	**5.23**	**5.91**
R53	3	4	10.0	10.0	2.2	25	1.0	3.2	**3.48**	**5.17**
R54	4	4	10.0	10.0	1.3	25	1.0	2.3	**4.42**	**5.40**
R55	3	4	10.0	10.0	1.8	25	1.0	2.8	**4.25**	**5.91**
R56	3	4	10.0	10.0	1.5	25	1.0	2.5	**5.10**	**6.62**
R57	5	4	10.0	10.0	0.6	25	1.0	1.6	**7.68**	**6.21**
R58	5	4	10.0	10.0	0.2	25	1.0	1.2	**23.04**	**8.28**
R59	5	4	10.0	10.0	0.8	25	1.0	1.8	**5.76**	**5.52**
R61	4	4	10.0	10.0	1.1	25	1.0	2.1	**5.23**	**5.91**
R62	5	4	10.0	10.0	0.4	25	1.0	1.4	**11.52**	**7.10**
R63	3	4	10.0	10.0	1.7	25	1.0	2.7	**4.50**	**6.13**
R65	4	4	10.0	10.0	0.8	25	1.0	1.8	**7.19**	**6.90**
R66	3	4	10.0	10.0	1.2	25	1.0	2.2	**6.38**	**7.52**
R68	6	4	10.0	10.0	1.5	25	1.0	2.5	**2.57**	**3.31**
R69	5	4	10.0	10.0	1.5	25	1.0	2.5	**3.07**	**3.97**
R70	4	4	10.0	10.0	2.8	25	1.0	3.8	**2.05**	**3.27**
R71	3	4	10.0	10.0	1.8	25	1.0	2.8	**4.25**	**5.91**
R72	3	4	10.0	10.0	1.6	25	1.0	2.6	**4.78**	**6.37**
R73	5	4	10.0	10.0	1	25	1.0	2.0	**4.61**	**4.97**
R74	3	4	10.0	10.0	2.7	25	1.0	3.7	**2.83**	**4.47**
R75	3	4	10.0	10.0	2.1	25	1.0	3.1	**3.64**	**5.34**
R76	4	4	10.0	10.0	1.9	25	1.0	2.9	**3.03**	**4.28**
R78	4	4	10.0	10.0	1.1	25	1.0	2.1	**5.23**	**5.91**
R79	4	4	10.0	10.0	0.6	25	1.0	1.6	**9.58**	**7.76**
R91	4	4	10.0	10.0	1.7	25	1.0	2.7	**3.38**	**4.60**
R92	2	4	10.0	10.0	2.2	25	1.0	3.2	**5.21**	**7.76**
R93	2	4	10.0	10.0	2.4	25	1.0	3.4	**4.78**	**7.30**
R95	2	4	10.0	10.0	3	25	1.0	4.0	**3.82**	**6.21**
R96	4	4	10.0	10.0	1.4	25	1.0	2.4	**4.11**	**5.17**
R98	3	4	10.0	10.0	2.5	25	1.0	3.5	**3.06**	**4.73**
R99	3	4	10.0	10.0	2.6	25	1.0	3.6	**2.94**	**4.60**
R100	4	4	10.0	10.0	1.4	25	1.0	2.4	**4.11**	**5.17**
R101	3	4	10.0	10.0	2.2	25	1.0	3.2	**3.48**	**5.17**
R102	4	4	10.0	10.0	1.6	25	1.0	2.6	**3.59**	**4.78**
R103	3	4	10.0	10.0	1.9	25	1.0	2.9	**4.03**	**5.71**
R104	3	4	10.0	10.0	1.9	25	1.0	2.9	**4.03**	**5.71**
R106	4	4	10.0	10.0	1.6	25	1.0	2.6	**3.59**	**4.78**
R107	5	4	10.0	10.0	1.2	25	1.0	2.2	**3.84**	**4.52**
R108	5	4	10.0	10.0	1.4	25	1.0	2.4	**3.29**	**4.14**
R109	7	4	10.0	10.0	1.5	25	1.0	2.5	**2.20**	**2.84**
R110	6	4	10.0	10.0	1.8	25	1.0	2.8	**2.14**	**2.96**
R111	5	4	10.0	10.0	1.5	25	1.0	2.5	**3.07**	**3.97**
R114	5	4	10.0	10.0	1.6	25	1.0	2.6	**2.88**	**3.82**
R115	4	4	10.0	10.0	2.3	25	1.0	3.3	**2.50**	**3.76**
R116	5	4	10.0	10.0	2.4	25	1.0	3.4	**1.92**	**2.92**
R117	4	4	10.0	10.0	1.7	25	1.0	2.7	**3.38**	**4.60**
R118	4	4	10.0	10.0	1.8	25	1.0	2.8	**3.19**	**4.43**
R120	5	4	10.0	10.0	0.6	25	1.0	1.6	**7.68**	**6.21**
R121	7	4	10.0	10.0	0.6	25	1.0	1.6	**5.51**	**4.44**
R122	6	4	10.0	10.0	1.8	25	1.0	2.8	**2.14**	**2.96**
R123	6	4	10.0	10.0	1.8	25	1.0	2.8	**2.14**	**2.96**
R125	4	4	10.0	10.0	2	25	1.0	3.0	**2.87**	**4.14**
R126	4	4	10.0	10.0	1.9	25	1.0	2.9	**3.03**	**4.28**
R128	3	4	10.0	10.0	2.1	25	1.0	3.1	**3.64**	**5.34**
R129	4	4	10.0	10.0	2.1	25	1.0	3.1	**2.74**	**4.01**
R131	4	4	10.0	10.0	1.8	25	1.0	2.8	**3.19**	**4.43**
R132	4	4	10.0	10.0	1.5	25	1.0	2.5	**3.83**	**4.97**
R133	7	4	10.0	10.0	1.8	25	1.0	2.8	**1.84**	**2.54**
R134	5	4	10.0	10.0	1.4	25	1.0	2.4	**3.29**	**4.14**
R135	4	4	10.0	10.0	2.2	25	1.0	3.2	**2.61**	**3.88**
R136	6	4	10.0	10.0	2.3	25	1.0	3.3	**1.67**	**2.51**
R139	7	4	10.0	10.0	0.3	25	1.0	1.3	**11.02**	**5.47**
R140	5	4	10.0	10.0	1.3	25	1.0	2.3	**3.54**	**4.32**
R141	7	4	10.0	10.0	0.9	25	1.0	1.9	**3.67**	**3.74**
R142	5	4	10.0	10.0	0.8	25	1.0	1.8	**5.76**	**5.52**
R144	6	4	10.0	10.0	0.8	25	1.0	1.8	**4.81**	**4.60**
R145	7	4	10.0	10.0	0.5	25	1.0	1.5	**6.61**	**4.74**
R146	9	4	10.0	10.0	0.9	25	1.0	1.9	**2.88**	**2.91**
R147	11	4	10.0	10.0	0.6	25	1.0	1.6	**3.56**	**2.83**
R148	10	4	10.0	10.0	1	25	1.0	2.0	**2.34**	**2.49**
R149	12	4	10.0	10.0	0.9	25	1.0	1.9	**2.19**	**2.19**
R150	7	4	10.0	10.0	1.1	25	1.0	2.1	**3.01**	**3.38**
R152	4	4	10.0	10.0	2	25	1.0	3.0	**2.87**	**4.14**
R153	5	4	10.0	10.0	1	25	1.0	2.0	**4.61**	**4.97**
R154	4	4	10.0	10.0	1.2	25	1.0	2.2	**4.79**	**5.64**
R155	6	4	10.0	10.0	0.6	25	1.0	1.6	**6.41**	**5.18**
R158	4	4	10.0	10.0	1.6	25	1.0	2.6	**3.59**	**4.78**
R161	4	4	10.0	10.0	1.8	25	1.0	2.8	**3.19**	**4.43**
R162	3	4	10.0	10.0	2	25	1.0	3.0	**3.83**	**5.52**
R165	5	4	10.0	10.0	2.1	25	1.0	3.1	**2.19**	**3.21**
R166	3	4	10.0	10.0	1.9	25	1.0	2.9	**4.03**	**5.71**
R167	3	4	10.0	10.0	2.4	25	1.0	3.4	**3.19**	**4.87**
R168	3	4	10.0	10.0	2.1	25	1.0	3.1	**3.64**	**5.34**
R169	3	4	10.0	10.0	1.8	25	1.0	2.8	**4.25**	**5.91**
R170	3	4	10.0	10.0	1.4	25	1.0	2.4	**5.47**	**6.90**
R174	3	4	10.0	10.0	3	25	1.0	4.0	**2.55**	**4.14**
R175	3	4	10.0	10.0	2.3	25	1.0	3.3	**3.33**	**5.02**
R176	3	4	10.0	10.0	2.7	25	1.0	3.7	**2.83**	**4.47**
R177	4	4	10.0	10.0	2.6	25	1.0	3.6	**2.21**	**3.45**
R180	6	4	10.0	10.0	1	25	1.0	2.0	**3.85**	**4.14**

Calculated FoS of Natural Peat Slopes for Glenora Wind Farm - 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
R181	8	4	10.0	10.0	0.6	25	1.0	1.6	**4.84**	**3.89**
R182	7	4	10.0	10.0	1.2	25	1.0	2.2	**2.76**	**3.23**
R183	7	4	10.0	10.0	0.6	25	1.0	1.6	**5.51**	**4.44**
R184	3	4	10.0	10.0	2.5	25	1.0	3.5	**3.06**	**4.73**
R186	5	4	10.0	10.0	0.6	25	1.0	1.6	**7.68**	**6.21**
R187	4	4	10.0	10.0	0.1	25	1.0	1.1	**57.48**	**11.29**
R188	5	4	10.0	10.0	0.2	25	1.0	1.2	**23.04**	**8.28**
R189	8	4	10.0	10.0	0.5	25	1.0	1.5	**5.80**	**4.15**
R190	7	4	10.0	10.0	1.2	25	1.0	2.2	**2.76**	**3.23**
R191	3	4	10.0	10.0	1.7	25	1.0	2.7	**4.50**	**6.13**
R199	5	4	10.0	10.0	1.5	25	1.0	2.5	**3.07**	**3.97**
R200	3	4	10.0	10.0	2.6	25	1.0	3.6	**2.94**	**4.60**
R201	3	4	10.0	10.0	3.2	25	1.0	4.2	**2.39**	**3.94**
R202	3	4	10.0	10.0	2.3	25	1.0	3.3	**3.33**	**5.02**
R205	4	4	10.0	10.0	1.3	25	1.0	2.3	**4.42**	**5.40**
R207	4	4	10.0	10.0	1.2	25	1.0	2.2	**4.79**	**5.64**
R208	3	4	10.0	10.0	2.1	25	1.0	3.1	**3.64**	**5.34**
R209	4	4	10.0	10.0	1.6	25	1.0	2.6	**3.59**	**4.78**
R210	4	4	10.0	10.0	1	25	1.0	2.0	**5.75**	**6.21**
R211	4	4	10.0	10.0	1.7	25	1.0	2.7	**3.38**	**4.60**
R212	4	4	10.0	10.0	1.8	25	1.0	2.8	**3.19**	**4.43**
R213	4	4	10.0	10.0	2	25	1.0	3.0	**2.87**	**4.14**
R220	6	4	10.0	10.0	1.2	25	1.0	2.2	**3.21**	**3.77**
R221	6	4	10.0	10.0	1.9	25	1.0	2.9	**2.03**	**2.86**
R230	9	4	10.0	10.0	1	25	1.0	2.0	**2.59**	**2.77**
R231	9	4	10.0	10.0	1.2	25	1.0	2.2	**2.16**	**2.52**
R232	9	4	10.0	10.0	1.8	25	1.0	2.8	**1.52**	**2.09**
R236	10	4	10.0	10.0	1.6	25	1.0	2.6	**1.46**	**1.92**
R237	9	4	10.0	10.0	1.7	25	1.0	2.7	**1.52**	**2.05**
R238	10	4	10.0	10.0	0.7	25	1.0	1.7	**3.34**	**2.93**
R239	11	4	10.0	10.0	0.6	25	1.0	1.6	**3.56**	**2.83**
R240	11	4	10.0	10.0	1.5	25	1.0	2.5	**1.42**	**1.81**
R241	12	4	10.0	10.0	0.4	25	1.0	1.4	**4.92**	**2.97**
R242	10	4	10.0	10.0	1.6	25	1.0	2.6	**1.54**	**2.02**
R243	9	4	10.0	10.0	1.9	25	1.0	2.9	**1.36**	**1.91**
R244	9	4	10.0	10.0	1.5	25	1.0	2.5	**1.73**	**2.21**
R245	9	4	10.0	10.0	1.5	25	1.0	2.5	**1.73**	**2.21**
R246	8	4	10.0	10.0	2	25	1.0	3.0	**1.45**	**2.07**
R247	7	4	10.0	10.0	1.9	25	1.0	2.9	**1.74**	**2.45**
R248	8	4	10.0	10.0	1.8	25	1.0	2.8	**1.61**	**2.22**
R249	6	4	10.0	10.0	1.8	25	1.0	2.8	**2.14**	**2.96**
R253	5	4	10.0	10.0	1.2	25	1.0	2.2	**3.84**	**4.52**
R255	4	4	10.0	10.0	1.2	25	1.0	2.2	**4.79**	**5.64**
R258	3	4	10.0	10.0	2	25	1.0	3.0	**3.83**	**5.52**
R259	3	4	10.0	10.0	1.2	25	1.0	2.2	**6.38**	**7.52**
R260	4	4	10.0	10.0	0.8	25	1.0	1.8	**7.19**	**6.90**
R261	4	4	10.0	10.0	1.9	25	1.0	2.9	**3.03**	**4.28**
R262	5	4	10.0	10.0	2	25	1.0	3.0	**2.30**	**3.31**
R263	4	4	10.0	10.0	1.9	25	1.0	2.9	**3.03**	**4.28**
R264	5	4	10.0	10.0	2.3	25	1.0	3.3	**2.00**	**3.01**
R265	4	4	10.0	10.0	2.3	25	1.0	3.3	**2.50**	**3.76**
R266	4	4	10.0	10.0	2	25	1.0	3.0	**2.87**	**4.14**
R267	6	4	10.0	10.0	2.3	25	1.0	3.3	**1.67**	**2.51**
R268	3	4	10.0	10.0	2.6	25	1.0	3.6	**2.94**	**4.60**
R269	3	4	10.0	10.0	2.5	25	1.0	3.5	**3.06**	**4.73**
R270	2	4	10.0	10.0	3.4	25	1.0	4.4	**3.37**	**5.64**
R273	5	4	10.0	10.0	1.8	25	1.0	2.8	**2.56**	**3.55**
R274	3	4	10.0	10.0	2.3	25	1.0	3.3	**3.33**	**5.02**
R275	3	4	10.0	10.0	1.7	25	1.0	2.7	**4.50**	**6.13**
R276	4	4	10.0	10.0	2.2	25	1.0	3.2	**2.61**	**3.88**
R278	3	4	10.0	10.0	1	25	1.0	2.0	**7.65**	**8.28**
R284	3	4	10.0	10.0	1	25	1.0	2.0	**7.65**	**8.28**
R285	5	4	10.0	10.0	2	25	1.0	3.0	**2.30**	**3.31**
R287	5	4	10.0	10.0	3	25	1.0	4.0	**1.54**	**2.48**
R288	2	4	10.0	10.0	3.6	25	1.0	4.6	**3.19**	**5.40**
R289	3	4	10.0	10.0	2.7	25	1.0	3.7	**2.83**	**4.47**
R290	2	4	10.0	10.0	3.5	25	1.0	4.5	**3.28**	**5.52**
R291	3	4	10.0	10.0	1.6	25	1.0	2.6	**4.78**	**6.37**
R293	3	4	10.0	10.0	2.3	25	1.0	3.3	**3.33**	**5.02**
R294	3	4	10.0	10.0	1.9	25	1.0	2.9	**4.03**	**5.71**
R295	4	4	10.0	10.0	1.6	25	1.0	2.6	**3.59**	**4.78**
R296	4	4	10.0	10.0	1.9	25	1.0	2.9	**3.03**	**4.28**
R297	3	4	10.0	10.0	2.2	25	1.0	3.2	**3.48**	**5.17**
R300	4	4	10.0	10.0	2.5	25	1.0	3.5	**2.30**	**3.55**
R301	5	4	10.0	10.0	1.9	25	1.0	2.9	**2.42**	**3.43**
R302	3	4	10.0	10.0	2.9	25	1.0	3.9	**2.64**	**4.24**
R304	3	4	10.0	10.0	2	25	1.0	3.0	**3.83**	**5.52**
R305	3	4	10.0	10.0	2.1	25	1.0	3.1	**3.64**	**5.34**
R306	2	4	10.0	10.0	2.3	25	1.0	3.3	**4.99**	**7.52**
R307	2	4	10.0	10.0	2.8	25	1.0	3.8	**4.10**	**6.53**
R308	2	4	10.0	10.0	4	25	1.0	5.0	**2.87**	**4.96**
R310	2	4	10.0	10.0	4.4	25	1.0	5.4	**2.61**	**4.60**
R311	2	4	10.0	10.0	2.6	25	1.0	3.6	**4.41**	**6.89**
R312	2	4	10.0	10.0	2.2	25	1.0	3.2	**5.21**	**7.76**
R313	3	4	10.0	10.0	1.1	25	1.0	2.1	**6.96**	**7.88**
R314	4	4	10.0	10.0	1.5	25	1.0	2.5	**3.83**	**4.97**
R315	3	4	10.0	10.0	2.5	25	1.0	3.5	**3.06**	**4.73**
R316	3	4	10.0	10.0	2.8	25	1.0	3.8	**2.73**	**4.36**
R320	3	4	10.0	10.0	2.5	25	1.0	3.5	**3.06**	**4.73**
R321	3	4	10.0	10.0	2.2	25	1.0	3.2	**3.48**	**5.17**
R322	3	4	10.0	10.0	1.7	25	1.0	2.7	**4.50**	**6.13**
R323	3	4	10.0	10.0	1.9	25	1.0	2.9	**4.03**	**5.71**
R326	2	4	10.0	10.0	3.3	25	1.0	4.3	**3.48**	**5.77**

Calculated FoS of Natural Peat Slopes for Glenora Wind Farm - 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
R327	2	4	10.0	10.0	3.5	25	1.0	4.5	**3.28**	**5.52**
R328	2	4	10.0	10.0	4.6	25	1.0	5.6	**2.49**	**4.43**
R329	2	4	10.0	10.0	2.3	25	1.0	3.3	**4.99**	**7.52**
R330	4	4	10.0	10.0	2.2	25	1.0	3.2	**2.61**	**3.88**
R331	4	4	10.0	10.0	3.2	25	1.0	4.2	**1.80**	**2.96**
R332	3	4	10.0	10.0	1.7	25	1.0	2.7	**4.50**	**6.13**
R333	2	4	10.0	10.0	2.8	25	1.0	3.8	**4.10**	**6.53**
R334	3	4	10.0	10.0	2.4	25	1.0	3.4	**3.19**	**4.87**
R335	2	4	10.0	10.0	3.5	25	1.0	4.5	**3.28**	**5.52**
R336	2	4	10.0	10.0	4.1	25	1.0	5.1	**2.80**	**4.87**
R337	4	4	10.0	10.0	2.7	25	1.0	3.7	**2.13**	**3.36**
R339	3	4	10.0	10.0	2.9	25	1.0	3.9	**2.64**	**4.24**
R340	1	4	10.0	10.0	1.9	25	1.0	2.9	**12.06**	**17.12**
R341	2	4	10.0	10.0	2.2	25	1.0	3.2	**5.21**	**7.76**
R342	2	4	10.0	10.0	3.2	25	1.0	4.2	**3.58**	**5.91**
R343	4	4	10.0	10.0	0.7	25	1.0	1.7	**8.21**	**7.30**
R344	4	4	10.0	10.0	1.3	25	1.0	2.3	**4.42**	**5.40**
R346	3	4	10.0	10.0	1.9	25	1.0	2.9	**4.03**	**5.71**
R347	3	4	10.0	10.0	2.6	25	1.0	3.6	**2.94**	**4.60**
R348	3	4	10.0	10.0	2.8	25	1.0	3.8	**2.73**	**4.36**
R351	4	4	10.0	10.0	0.9	25	1.0	1.9	**6.39**	**6.54**
R352	3	4	10.0	10.0	2.6	25	1.0	3.6	**2.94**	**4.60**
R353	4	4	10.0	10.0	1	25	1.0	2.0	**5.75**	**6.21**
R354	4	4	10.0	10.0	2	25	1.0	3.0	**2.87**	**4.14**
R356	4	4	10.0	10.0	0.9	25	1.0	1.9	**6.39**	**6.54**
R358	7	4	10.0	10.0	1.1	25	1.0	2.1	**3.01**	**3.38**
R359	6	4	10.0	10.0	1	25	1.0	2.0	**3.85**	**4.14**
R360	5	4	10.0	10.0	1.6	25	1.0	2.6	**2.88**	**3.82**
R361	5	4	10.0	10.0	1.6	25	1.0	2.6	**2.88**	**3.82**
R362	3	4	10.0	10.0	2.2	25	1.0	3.2	**3.48**	**5.17**
R365	3	4	10.0	10.0	2.1	25	1.0	3.1	**3.64**	**5.34**
R366	5	4	10.0	10.0	2	25	1.0	3.0	**2.30**	**3.31**
R367	4	4	10.0	10.0	1.2	25	1.0	2.2	**4.79**	**5.64**
R368	5	4	10.0	10.0	1.4	25	1.0	2.4	**3.29**	**4.14**
R369	6	4	10.0	10.0	2.3	25	1.0	3.3	**1.67**	**2.51**
R370	16	4	10.0	10.0	0.75	25	1.0	1.8	**2.01**	**1.79**
R373	4	4	10.0	10.0	1	25	1.0	2.0	**5.75**	**6.21**
R374	3	4	10.0	10.0	2.1	25	1.0	3.1	**3.64**	**5.34**
R375	3	4	10.0	10.0	2.5	25	1.0	3.5	**3.06**	**4.73**
R377	3	4	10.0	10.0	2.2	25	1.0	3.2	**3.48**	**5.17**
R378	6	4	10.0	10.0	2	25	1.0	3.0	**1.92**	**2.76**
R379	3	4	10.0	10.0	2.4	25	1.0	3.4	**3.19**	**4.87**
R380	3	4	10.0	10.0	2.4	25	1.0	3.4	**3.19**	**4.87**
WP3	11	4	10.0	10.0	1.7	25	1.0	2.7	**1.26**	**1.68**
WP4	9	4	10.0	10.0	1.2	25	1.0	2.2	**2.16**	**2.52**
WP5	8	4	10.0	10.0	1.8	25	1.0	2.8	**1.61**	**2.22**
WP6	8	4	10.0	10.0	1.8	25	1.0	2.8	**1.61**	**2.22**
WP7	2	4	10.0	10.0	2.7	25	1.0	3.7	**4.25**	**6.71**
WP8	2	4	10.0	10.0	4.4	25	1.0	5.4	**2.61**	**4.60**
WP9	4	4	10.0	10.0	2	25	1.0	3.0	**2.87**	**4.14**
WP10	4	4	10.0	10.0	1.6	25	1.0	2.6	**3.59**	**4.78**
WP11	6	4	10.0	10.0	2.6	25	1.0	3.6	**1.48**	**2.30**
WP12	6	4	10.0	10.0	2.7	25	1.0	3.7	**1.43**	**2.24**
WP13	2	4	10.0	10.0	2.8	25	1.0	3.8	**4.10**	**6.53**
WP14	4	4	10.0	10.0	0.8	25	1.0	1.8	**7.19**	**6.90**
WP15	4	4	10.0	10.0	1.7	25	1.0	2.7	**3.38**	**4.60**
WP16	2	4	10.0	10.0	1.8	25	1.0	2.8	**6.37**	**8.86**
WP17	2	4	10.0	10.0	1.9	25	1.0	2.9	**6.04**	**8.56**
WP18	5	4	10.0	10.0	0.2	25	1.0	1.2	**23.04**	**8.28**
WP19	5	4	10.0	10.0	1.5	25	1.0	2.5	**3.07**	**3.97**
WP20	3	4	10.0	10.0	1.9	25	1.0	2.9	**4.03**	**5.71**
WP21	3	4	10.0	10.0	1.1	25	1.0	2.1	**6.96**	**7.88**
WP22	3	4	10.0	10.0	1.6	25	1.0	2.6	**4.78**	**6.37**
WP23	3	4	10.0	10.0	1.8	25	1.0	2.8	**4.25**	**5.91**
WP24	3	4	10.0	10.0	1.1	25	1.0	2.1	**6.96**	**7.88**
WP25	3	4	10.0	10.0	1.8	25	1.0	2.8	**4.25**	**5.91**
WP26	5	4	10.0	10.0	1.2	25	1.0	2.2	**3.84**	**4.52**
WP27	5	4	10.0	10.0	0.9	25	1.0	1.9	**5.12**	**5.23**
WP28	4	4	10.0	10.0	2.8	25	1.0	3.8	**2.05**	**3.27**
WP29	3	4	10.0	10.0	1.9	25	1.0	2.9	**4.03**	**5.71**
WP30	3	4	10.0	10.0	2.8	25	1.0	3.8	**2.73**	**4.36**
WP32	3	4	10.0	10.0	2.9	25	1.0	3.9	**2.64**	**4.24**
WP33	4	4	10.0	10.0	1.3	25	1.0	2.3	**4.42**	**5.40**
WP34	4	4	10.0	10.0	1.6	25	1.0	2.6	**3.59**	**4.78**
WP35	3	4	10.0	10.0	1.3	25	1.0	2.3	**5.89**	**7.20**
WP36	6	4	10.0	10.0	2.5	25	1.0	3.5	**1.54**	**2.37**
WP37	6	4	10.0	10.0	1.7	25	1.0	2.7	**2.26**	**3.07**
WP38	3	4	10.0	10.0	3.7	25	1.0	4.7	**2.07**	**3.52**
WP39	3	4	10.0	10.0	1.5	25	1.0	2.5	**5.10**	**6.62**
WP40	3	4	10.0	10.0	3.6	25	1.0	4.6	**2.13**	**3.60**
WP41	3	4	10.0	10.0	2.8	25	1.0	3.8	**2.73**	**4.36**
WP42	3	4	10.0	10.0	2.7	25	1.0	3.7	**2.83**	**4.47**
WP43	4	4	10.0	10.0	3.2	25	1.0	4.2	**1.80**	**2.96**
WP44	4	4	10.0	10.0	3	25	1.0	4.0	**1.92**	**3.10**
WP45	4	4	10.0	10.0	1	25	1.0	2.0	**5.75**	**6.21**
WP46	4	4	10.0	10.0	0.8	25	1.0	1.8	**7.19**	**6.90**
WP47	6	4	10.0	10.0	1	25	1.0	2.0	**3.85**	**4.14**
WP48	6	4	10.0	10.0	1.1	25	1.0	2.1	**3.50**	**3.94**
WP49	4	4	10.0	10.0	1.1	25	1.0	2.1	**5.23**	**5.91**
WP50	4	4	10.0	10.0	0.5	25	1.0	1.5	**11.50**	**8.28**
WP51	4	4	10.0	10.0	0.6	25	1.0	1.6	**9.58**	**7.76**
WP52	10	4	10.0	10.0	0.7	25	1.0	1.7	**3.34**	**2.93**
WP53	10	4	10.0	10.0	0.7	25	1.0	1.7	**3.34**	**2.93**

Calculated FoS of Natural Peat Slopes for Glenora Wind Farm - 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
WP54	10	4	10.0	10.0	0.6	25	1.0	1.6	**3.90**	**3.11**
WP56	4	4	10.0	10.0	3.2	25	1.0	4.2	**1.80**	**2.96**
WP57	3	4	10.0	10.0	2.3	25	1.0	3.3	**3.33**	**5.02**
WP58	5	4	10.0	10.0	1.8	25	1.0	2.8	**2.56**	**3.55**
WP59	3	4	10.0	10.0	3.5	25	1.0	4.5	**2.19**	**3.68**
WP60	3	4	10.0	10.0	1.4	25	1.0	2.4	**5.47**	**6.90**
WP61	3	4	10.0	10.0	1.5	25	1.0	2.5	**5.10**	**6.62**
WP62	3	4	10.0	10.0	2	25	1.0	3.0	**3.83**	**5.52**
WP63	4	4	10.0	10.0	2	25	1.0	3.0	**2.87**	**4.14**
WP64	5	4	10.0	10.0	2	25	1.0	3.0	**2.30**	**3.31**
WP65	5	4	10.0	10.0	1.7	25	1.0	2.7	**2.71**	**3.68**
WP66	8	4	10.0	10.0	1.9	25	1.0	2.9	**1.53**	**2.14**
WP67	8	4	10.0	10.0	1.9	25	1.0	2.9	**1.53**	**2.14**
WP68	3	4	10.0	10.0	2.3	25	1.0	3.3	**3.33**	**5.02**
WP69	3	4	10.0	10.0	2.1	25	1.0	3.1	**3.64**	**5.34**
WP70	2	4	10.0	10.0	3.9	25	1.0	4.9	**2.94**	**5.07**
WP71	2	4	10.0	10.0	3.9	25	1.0	4.9	**2.94**	**5.07**
WP72	3	4	10.0	10.0	2.1	25	1.0	3.1	**3.64**	**5.34**
WP73	3	4	10.0	10.0	2.8	25	1.0	3.8	**2.73**	**4.36**
WP74	2	4	10.0	10.0	3.3	25	1.0	4.3	**3.48**	**5.77**
WP75	2	4	10.0	10.0	3.8	25	1.0	4.8	**3.02**	**5.17**
WP76	5	4	10.0	10.0	2.2	25	1.0	3.2	**2.09**	**3.11**
WP77	4	4	10.0	10.0	1.7	25	1.0	2.7	**3.38**	**4.60**
WP78	4	4	10.0	10.0	1.8	25	1.0	2.8	**3.19**	**4.43**
WP79	13	4	10.0	10.0	0.5	25	1.0	1.5	**3.65**	**2.56**
WP80	3	4	10.0	10.0	1.8	25	1.0	2.8	**4.25**	**5.91**
WP81	3	4	10.0	10.0	2.1	25	1.0	3.1	**3.64**	**5.34**
WP82	5	4	10.0	10.0	2.3	25	1.0	3.3	**2.00**	**3.01**
WP83	5	4	10.0	10.0	1.6	25	1.0	2.6	**2.88**	**3.82**
WP84	5	4	10.0	10.0	1.2	25	1.0	2.2	**3.84**	**4.52**
WP85	4	4	10.0	10.0	1.7	25	1.0	2.7	**3.38**	**4.60**
WP86	4	4	10.0	10.0	1.5	25	1.0	2.5	**3.83**	**4.97**
WP87	4	4	10.0	10.0	1.7	25	1.0	2.7	**3.38**	**4.60**
WP88	5	4	10.0	10.0	2.1	25	1.0	3.1	**2.19**	**3.21**
WP89	5	4	10.0	10.0	2	25	1.0	3.0	**2.30**	**3.31**
WP90	4	4	10.0	10.0	2.2	25	1.0	3.2	**2.61**	**3.88**
WP91	3	4	10.0	10.0	1.4	25	1.0	2.4	**5.47**	**6.90**
WP92	3	4	10.0	10.0	2.1	25	1.0	3.1	**3.64**	**5.34**
WP93	7	4	10.0	10.0	1	25	1.0	2.0	**3.31**	**3.55**
WP94	7	4	10.0	10.0	1.1	25	1.0	2.1	**3.01**	**3.38**
WP95	3	4	10.0	10.0	2.3	25	1.0	3.3	**3.33**	**5.02**
WP96	3	4	10.0	10.0	2.2	25	1.0	3.2	**3.48**	**5.17**
WP97	4	4	10.0	10.0	1.3	25	1.0	2.3	**4.42**	**5.40**
WP98	4	4	10.0	10.0	1.2	25	1.0	2.2	**4.79**	**5.64**
WP99	9	4	10.0	10.0	0.6	25	1.0	1.6	**4.31**	**3.46**
WP100	8	4	10.0	10.0	1.3	25	1.0	2.3	**2.23**	**2.70**
101	4	4	10.0	10.0	0.6	25	1.0	1.6	**9.06**	**7.34**
102	5	4	10.0	10.0	1.2	25	1.0	2.2	**4.20**	**4.94**
103	3	4	10.0	10.0	1.8	25	1.0	2.8	**4.01**	**5.58**
104	3	4	10.0	10.0	0.8	25	1.0	1.8	**9.29**	**8.93**
105	3	4	10.0	10.0	1	25	1.0	2.0	**8.03**	**8.68**
106	5	4	10.0	10.0	0.8	25	1.0	1.8	**6.30**	**6.04**
107	1	4	10.0	10.0	1.5	25	1.0	2.5	**15.75**	**20.47**
108	4	4	10.0	10.0	1	25	1.0	2.0	**5.82**	**6.29**
109	8	4	10.0	10.0	1.2	25	1.0	2.2	**2.55**	**2.98**
P001	5	4	10.0	10.0	2.1	25	1.0	3.1	**2.19**	**3.21**
P002	5	4	10.0	10.0	1.7	25	1.0	2.7	**2.71**	**3.68**
P003	7	4	10.0	10.0	1.6	25	1.0	2.6	**2.07**	**2.73**
P004	6	4	10.0	10.0	1.9	25	1.0	2.9	**2.03**	**2.86**
							Minimum =		**1.26**	**1.68**
							Maximum =		**57.48**	**20.47**
							Average =		**4.32**	**4.97**

Notes:

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

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APPENDIX D

Methodology for Peat Stability Risk Assessment

Methodology for Peat Stability Risk Assessment

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

The main approaches for assessing peat stability include the following:

(a) Geomorphological

(b) Qualitative (judgement)

(c) Index/Probabilistic (probability)

(d) Deterministic (factor of safety)

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

Probability

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

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

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

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

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

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

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

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

Table B: Probability Scale

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

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

Impact

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

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

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

IRISH DRILLING LIMITED

LOUGHREA, CO. GALWAY, IRELAND

CONTRACT DRILLING
SITE INVESTIGATION

Phone: (091) 841 274
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GLENORA WIND FARM

SITE INVESTIGATION CONTRACT FACTUAL REPORT

MKO,
Tuam Road,
Galway,
H91 VW84.

Fehily Timoney & Company,
Consulting Engineers,
Unit 6,
Bagenalstown Industrial Park,
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R21 XW81.

	Prepared by	Approved by	Rev. Issue Date:	Revision No.
	Ronan Killeen	Declan Joyce	23rd May 2022	21 _MO_111/02
Signature				

FOREWORD

The 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 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 trial pits.

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

Contents:

1.0 Introduction.

Irish Drilling Ltd. (IDL) was instructed by Fehiliy Timoney & Partners, Consulting Engineers, on behalf of MKO, to carry out a site investigation at the site of the proposed Glenora Wind Farm Project.

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

The fieldwork commenced on October 28th 2021 and was completed on October 29th 2021.

2.0 Site & Geology

The site is located near Bellacorrick, County Mayo.

The site is agricultural in nature and the fieldwork was carried out predominantly on Coillte lands with dense forestation and/or fallen trees in place.

Weather conditions in general were quite variable with the majority of the fieldwork carried out over a typical winter period in Ireland.

Geological Survey maps of the area indicate that the site is underlain by Siltstone, Sandstone and Limestone Rock Formations.

A Site Plan, prepared by the client's representatives to show approximate fieldwork locations, is included with this report.

3.0 Fieldwork.

The following plant was mobilised to site to carry out fieldwork operations:

1nr Hitachi 120 Wide-Tracked Excavator.

Fieldwork carried out to date has included the following:

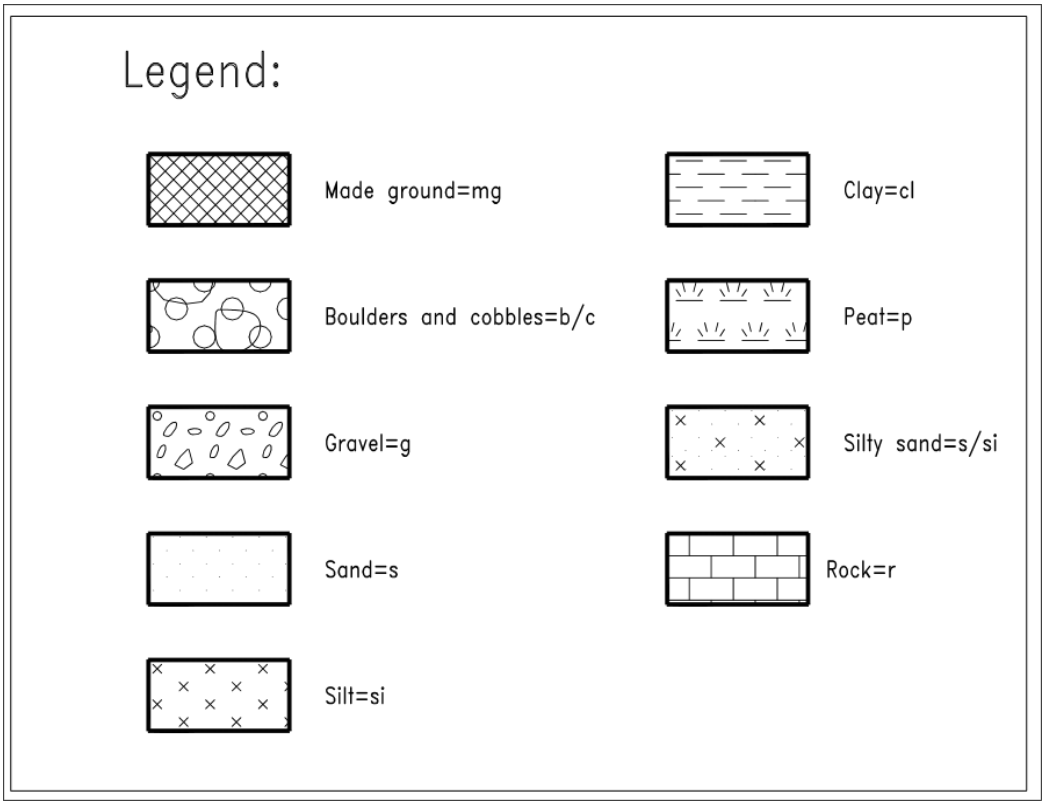
Thirteen trial pits were excavated on site using a tracked excavator.

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

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

The pits were excavated to depths ranging from 2.20m to 4.80m below ground level.

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



Ground conditions encountered during the completion of the fieldwork were typical and as expected for this region and predominantly consisted of Peat and/or organic silts overlying Glacial Tills.

The Glacial Tills in general consisted of silty sands and gravels and/or slightly gravelly sandy silt with cobbles and boulders.

Soft brown peat and/or organic silts were also encountered in many of the trial pits at depths ranging from 0.90m to 4.00m below ground level.

Made ground was also encountered in a number of pits at depths ranging from 0.50m to 1.00m below ground level.

For detailed descriptions of the ground conditions encountered please refer to the engineering logs included as Appendix 1 to this report.

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

The trial pit locations were set out on site using a Garmin Handheld GPS Surveying Unit and using co-ordinates as received from the client's representatives.

All fieldwork co-ordinates are reported to Irish National Grid (ING).

4.0 Laboratory Testing

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

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

* Moisture Content.
* Atterberg Limits.
* Particle Size Distribution.
* Organic Content.
* Chemical (pH, Sulphate).

The records of these laboratory tests are included as Appendix 2 of this factual report.

The soil descriptions as noted on the 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 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.

Where laboratory classification tests have been carried out on soil 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
May 23rd 2022

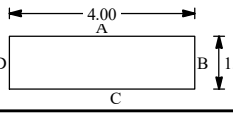
Appendix 01
Trial Pit Records

PROJECT: Glenora Wind Farm		**TRIALPIT: TP-01**
LOCATION: Co Mayo		**Sheet 1 of 1**
CLIENT: SSE	**Co-ordinates:**	**Rig: Hitachi 130 LCN**
ENGINEER: FTCO	**E 505,207.0 N 834,700.0**	**Rev: FINAL**
Ground level: m O.D.		**DATE: 28.10.21**

GROUNDWATER

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

PIT DIRECTION: 090-270
PIT DIMENSION: 1.50 * 4.00m
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION
0								0.50	Grass over soft spongy black pseudo fibrous PEAT. H6.
								0.90	Soft brown organic SILT with rootlets.
1			B 1 D 2	0.90-1.10 0.90-1.10				1.80	Firm brownish bluish grey slightly gravelly sandy SILT with high cobble content. Cobbles are angular.
2			B 3	1.90-2.10				2.70	Damp orangish brown silty sandy GRAVEL with high cobble content and high boulder content. Cobbles are angular to subangular and flat. Boulders are tabular.
3								3.20	Probable weathered rock. Recovered as angular cobble and boulder sized clasts. Boulders are up to 500mm in length.
									END TP terminated at 3.20m bgl. Obstruction as probable rock.
4									
5									

Remarks: TP dry on excavation. TP backfilled with arisings.
Co-ordinates provided by client representatives.

Scale: 1:25

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Fax

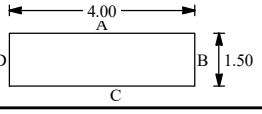
TRIAL PIT VANE & WL RISES GLENORA TPS FILE 1 NOV 9 2021.GPJ IRISHDRL.GDT 23/5/22

PROJECT: Glenora Wind Farm	**TRIALPIT: TP-02**
LOCATION: Co Mayo	**Sheet 1 of 1**
CLIENT: SSE	**Co-ordinates:** **Rig: Hitachi 130 LCN**
ENGINEER: FTCO	**E 505,167.0 N 834,664.0** **Rev: FINAL**
Ground level: m O.D.	**DATE: 28.10.21**

GROUNDWATER

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

PIT DIRECTION: 090-270
PIT DIMENSION: 1.50 * 4.00m
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION
0									
								1.20	Soft brown peaty SILT with tree trunks and branches.
1			B 1	1.20-1.40				1.80	Soft orangish brown fibrous PEAT. H3.
2			B 2	2.00-2.20				2.70	Orangish brown and grey silty sandy COBBLES and BOULDERS. Boulders are up to 600mm in length.
3								3.70	Grey SAND and GRAVEL with high cobble content.
						END			TP terminated at 3.70m bgl. Obstruction as probable rock.
4									
5									

Remarks: TP dry on excavation. TP backfilled with arisings.
Co-ordinates provided by client representatives.

Scale: 1:25

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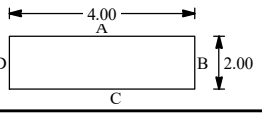
TRIAL PIT VANE & WL RISES GLENORA TPS FILE 1 NOV 9 2021.GPJ IRISHDRL.GDT 23/5/22

PROJECT: Glenora Wind Farm	**TRIALPIT: TP-03**
LOCATION: Co Mayo	**Sheet 1 of 1**
CLIENT: SSE	**Co-ordinates:** **Rig: Hitachi 130 LCN**
ENGINEER: FTCO	**E 503,410.0 N 834,951.0** **Rev: FINAL**
Ground level: m O.D.	**DATE: 29.10.21**

GROUNDWATER
Water strikes: Rose to after:
1st: 2.10m
2nd:
3rd:

PIT DIRECTION: 000-180
PIT DIMENSION: 2.00 * 4.00m
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION
0								0.15	MADE GROUND: Reeds over firm brown fibrous PEAT.
			B 1	0.40-0.60				0.90	MADE GROUND: Firm black fibrous PEAT mixed with brown sandy gravelly SILT with high cobble content.
1			B 2	1.30-1.50				1.90	Light brown very silty very gravelly fine SAND with medium cobble content. Gravel is subangular to subrounded medium. Cobbles are subangular.
2		1	B 3	2.30-2.50				3.00	Probable weathered rock. Recovered as flat and angular gravel and cobble sized clasts of schist and mudstone with a silt infill.
3								3.80	Probable weathered rock. Recovered as angular and tabular boulder sized clasts. Boulders are up to 600mm in size.
						END			TP terminated at 3.80m bgl. Obstruction as probable rock.
4									
5									

Remarks: Ingress of water at 2.10m bgl. TP backfilled with arisings.
Co-ordinates provided by client representatives.

Scale: 1:25

Irish drilling LTD

Ph.
Fax

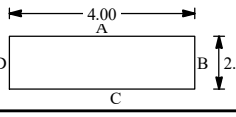
TRIAL PIT VANE & WL RISES GLENORA TPS FILE 1 NOV 9 2021.GPJ IRISHDRL.GDT 23/5/22

PROJECT: Glenora Wind Farm	**TRIALPIT: TP-05**
LOCATION: Co Mayo	**Sheet 1 of 1**
CLIENT: SSE	**Co-ordinates:** **Rig: Hitachi 130 LCN**
ENGINEER: FTCO	**E 503,487.0 N 834,665.0** **Rev: FINAL**
Ground level: m O.D.	**DATE: 29.10.21**

GROUNDWATER

Water strikes: **Rose to after:**
1st: 2.60m
2nd:
3rd:

PIT DIRECTION: 090-270
PIT DIMENSION: 2.00 * 4.00m
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit unstable. Sidewall collapse from 2.60m to 4.10m bgl.

Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION
0								0.50	MADE GROUND: Angular COBBLE fill.
								1.70	Soft orangish brown fibrous PEAT. H2.
								1.90	Soft spongy black pseudo fibrous PEAT. H6.
2								2.60	BOULDERS with stiff brown silt infill. Boulders are up to 500mm in length.
		1	B 2 D 3	2.60-2.80 2.60-2.80				2.80	Grey silty gravelly SAND with high cobble content. Gravel is angular to subangular fine to coarse. Cobbles are angular.
3								4.10	Soft wet bluish grey sandy gravelly SILT with high cobble content. Gravel is angular to subangular fine to coarse. Cobbles are angular.
4			B 4 D 5	4.10-4.30 4.10-4.30				4.50	Stiff grey slightly gravelly SILT with high cobble content. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to rounded.
						END			TP terminated at 4.50m bgl on REs instruction.
5									

Remarks: Ingress of water at 2.60m bgl. TP backfilled with arisings.
Co-ordinates provided by client representatives.

Scale: 1:25

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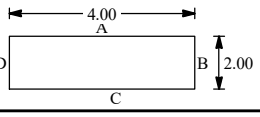
TRIAL PIT VANE & WL RISES GLENORA TPS FILE 1 NOV 9 2021.GPJ IRISHDRL.GDT 23/5/22

PROJECT: Glenora Wind Farm	**TRIALPIT: TP-06**
LOCATION: Co Mayo	**Sheet 1 of 1**
CLIENT: SSE	**Co-ordinates:** **Rig: Hitachi 130 LCN**
ENGINEER: FTCO	**E 503,083.0 N 834,627.0** **Rev: FINAL**
Ground level: m O.D.	**DATE: 29.10.21**

GROUNDWATER

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

PIT DIRECTION: 090-270
PIT DIMENSION: 2.00 * 4.00m
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION
0									Heather over soft brown fibrous PEAT. H2.
1			B 1	1.00-1.20					
2			B 2	2.50-2.70					
3								3.60	
			B 3 D 4	3.60-3.80 3.60-3.80				4.00	Stiff brownish grey organic SILT with rootlets.
4			D 5	4.20-4.40				4.80	Firm bluish grey slightly gravelly SILT. Gravel is subrounded coarse. 4.40m to 4.80m: soft wet.
						END			TP terminated at 4.50m bgl on REs instruction.
5									

Remarks: TP dry on excavation. TP backfilled with arisings.
Co-ordinates provided by client representatives.

Scale: 1:25

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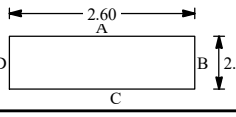
PROJECT: Glenora Wind Farm	**TRIALPIT: TP-08**
LOCATION: Co Mayo	**Sheet 1 of 1**
CLIENT: SSE	**Co-ordinates:** E 502,399.0 N 834,101.0
ENGINEER: FTCO	**Rig: Hitachi 130 LCN**
Ground level: m O.D.	**Rev: FINAL**
GROUNDWATER	**DATE: 29.10.21**

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

PIT DIRECTION: 090-270
PIT DIMENSION: 2.00 * 2.60m
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION
0									
								0.90	Reeds over soft brown fibrous PEAT. H2.
1			B 1 D 2	0.90-1.10 0.90-1.10				1.10	Stiff dark brown slightly sandy peaty SILT.
									Stiff bluish grey slightly sandy slightly gravelly SILT with high cobble content. Gravel is subangular to rounded fine to coarse. Cobbles are subangular to rounded.
									1.50m to 2.10m: soft.
2			B 3 D 4	1.90-2.10 1.90-2.10				2.10	
									Firm grey sandy SILT. Sand is fine.
3								3.10	
			B 5	3.10-3.30					Angular to rounded COBBLES and angular to rounded BOULDERS with grey silt infill.
								3.70	
						END			TP terminated at 3.70m bgl. Unable to keep TP open - sidewall collapse.
4									
5									

Remarks: TP dry on excavation. TP backfilled with arisings.
Co-ordinates provided by client representatives.

Scale: 1:25

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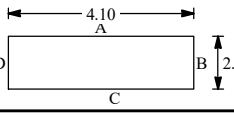
TRIAL PIT VANE & WL RISES GLENORA TPS FILE 1 NOV 9 2021.GPJ IRISHDRL.GDT 23/5/22

PROJECT: Glenora Wind Farm	**TRIALPIT: TP-09**
LOCATION: Co Mayo	**Sheet 1 of 1**
CLIENT: SSE	**Co-ordinates:** E 503,443.0 N 834,101.0
ENGINEER: FTCO	**Rig: Hitachi 130 LCN**
Ground level: m O.D.	**Rev: FINAL**
GROUNDWATER	**DATE: 29.10.21**

Water strikes: **Rose to after:**
1st: 1.30m
2nd: 3.00m
3rd:

PIT DIRECTION: 090-270
PIT DIMENSION: 2.00 * 4.10m
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit unstable. Sidewall collapse from 2.00m to 2.70m bgl.

Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION
0									
								1.30	Heather over soft brown fibrous PEAT. H2.
1		1	B 1 D 2	1.30-1.50 1.30-1.50				1.50	Stiff light brown slightly sandy organic SILT with rootlets.
								2.70	Stiff grey slightly sandy slightly gravelly SILT with high cobble content. Gravel is angular to subangular medium to coarse. Cobbles are angular to subangular.
2			B 3 D 4	2.00-2.20 2.00-2.20					2.00m to 2.70m: soft wet.
		2						4.30	Tabular and elongate shale COBBLES and tabular and elongate shale BOULDERS with greenish grey silt infill. Boulders are up to 400mm in length.
3									
4									END — TP terminated at 4.30m bgl on REs instruction.
5									

Remarks: Ingress of water at 1.30m bgl. Ingress of water at 3.00m bgl. TP backfilled with arisings. Co-ordinates provided by client representatives.

Scale: 1:25

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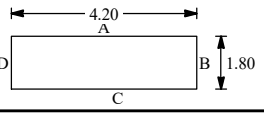
TRIAL PIT VANE & WL RISES GLENORA TPS FILE 1 NOV 9 2021.GPJ IRISHDRL.GDT 23/5/22

PROJECT: Glenora Wind Farm		**TRIALPIT: TP-10**
LOCATION: Co Mayo		**Sheet 1 of 1**
CLIENT: SSE	**Co-ordinates:**	**Rig: Hitachi 130 LCN**
ENGINEER: FTCO	**E 504,331.0 N 833,685.0**	**Rev: FINAL**
Ground level: m O.D.		**DATE: 28.10.21**

GROUNDWATER

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

PIT DIRECTION: 090-270
PIT DIMENSION: 1.80 * 4.20m
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION
0								0.65	Heather over soft spongy black fibrous PEAT. H7.
								2.00	Soft orangish brown fibrous PEAT. H3.
2			B 1	2.00-2.20				2.25	Stiff brown peaty sandy SILT.
			B 2 D 3	2.50-2.70 2.50-2.70					Firm bluish grey slightly gravelly sandy SILT with low cobble content. Gravel is subangular to subrounded fine to coarse. Cobbles are subrounded. Sand is fine. 2.90m to 4.40m: soft wet.
								4.40	**END** TP terminated at 4.40m bgl on REs instruction.

Remarks: TP dry on excavation. TP backfilled with arisings.
Co-ordinates provided by client representatives.

Scale: 1:25

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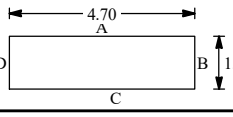
TRIAL PIT VANE & WL RISES GLENORA TPS FILE 1 NOV 9 2021.GPJ IRISHDRL.GDT 23/5/22

PROJECT: Glenora Wind Farm	**TRIALPIT: TP-11**
LOCATION: Co Mayo	**Sheet 1 of 1**
CLIENT: SSE	**Co-ordinates:** E 503,954.0 N 833,680.0
ENGINEER: FTCO	**Rig: Hitachi 130 LCN**
Ground level: m O.D.	**Rev: FINAL**
GROUNDWATER	**DATE: 28.10.21**

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

PIT DIRECTION: 000-180
PIT DIMENSION: 1.80 * 4.70m
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION
0								0.80	Grass over spongy black fibrous PEAT. H7.
1			B 1	1.20-1.40				1.60	Soft dark brown fibrous PEAT. H3.
			B 2	1.60-1.80				1.85	Stiff brown slightly sandy peaty SILT.
2								2.90	Firm grey slightly gravelly sandy SILT with high cobble content. Cobbles are subangular.
			B 3	2.70-2.90					
3								3.50	Blue silty angular to subangular fine to medium GRAVEL.
			D 4	3.80-4.00				4.50	Stiff greenish brown gravelly SILT. Gravel is angular to subangular coarse.
4									
						END			TP terminated at 4.50m bgl on REs instruction.
5									

Remarks: TP dry on excavation. TP backfilled with arisings.
Co-ordinates provided by client representatives.

Scale: 1:25

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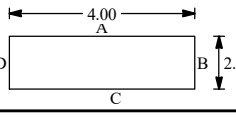
TRIAL PIT VANE & WL RISES GLENORA TPS FILE 1 NOV 9 2021.GPJ IRISHDRL.GDT 23/5/22

PROJECT: Glenora Wind Farm	**TRIALPIT: TP-12**
LOCATION: Co Mayo	**Sheet 1 of 1**
CLIENT: SSE	**Co-ordinates:** **Rig: Hitachi 130 LCN**
ENGINEER: FTCO	**E 503,159.0 N 833,420.0** **Rev: FINAL**
Ground level: m O.D.	**DATE: 28.10.21**

GROUNDWATER

Water strikes: **Rose to after:**
1st: 2.30m
2nd:
3rd:

PIT DIRECTION: 090-270
PIT DIMENSION: 2.00 * 4.00m
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION
0									
									Heather over soft brownish black fibrous PEAT. H3.
			B 1	0.60-0.80					
1									
								1.80	
								1.90	Firm brown slightly sandy SILT.
2			B 2	2.00-2.10					Grey fine to medium SAND.
		▼						2.30	
									Stiff grey slightly sandy SILT.
3			B 3 D 4	3.00-3.20 3.00-3.20					
4								4.10	
									TP terminated at 4.10m bgl. Unable to keep TP open - sidewall collapse.
5									

Remarks: Ingress of water at 2.30m bgl. TP backfilled with arisings.
Co-ordinates provided by client representatives.

Scale: 1:25

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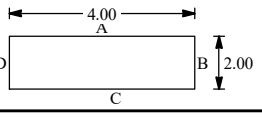
TRIAL PIT VANE & WL RISES GLENORA TPS FILE 1 NOV 9 2021.GPJ IRISHDRL.GDT 23/5/22

PROJECT: Glenora Wind Farm		**TRIALPIT: TP-15**
LOCATION: Co Mayo		**Sheet 1 of 1**
CLIENT: SSE	**Co-ordinates:**	**Rig: Hitachi 130 LCN**
ENGINEER: FTCO	**E 504,818.0 N 832,966.0**	**Rev: FINAL**
Ground level: m O.D.		**DATE: 28.10.21**

GROUNDWATER

Water strikes: **Rose to after:**
1st: 1.00m
2nd: 4.20m
3rd:

PIT DIRECTION: 000-180
PIT DIMENSION: 2.00 * 4.00m
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION
0								0.40	MADE GROUND: Grass over stiff brown gravelly SILT with high cobble content. Cobbles are angular.
								1.00	MADE GROUND: Firm dark grey slightly gravelly SILT with decaying trees. Gravel is angular to subangular fine to coarse.
1		1						1.50	Soft black fibrous PEAT. H3.
			B 1 D 2	1.80-2.00 1.80-2.00				2.40	Firm brownish grey slightly sandy gravelly organic SILT with rootlets. Sand is fine. 1.80m to 2.40m: stiff.
2									
			B 3 D 4	2.80-3.00 2.80-3.00				4.50	Firm grey gravelly SILT with medium cobble content. Gravel is subangular to rounded fine to coarse. Cobbles are subrounded.
3									
4		2							
						END			TP terminated at 4.50m bgl on REs instruction.
5									

Remarks: Ingress of water at 1.00m bgl. Ingress of water at 4.20m bgl. TP backfilled with arisings.
Co-ordinates provided by client representatives.

Scale: 1:25

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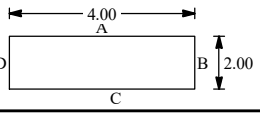
TRIAL PIT VANE & WL RISES GLENORA TPS FILE 1 NOV 9 2021.GPJ IRISHDRL.GDT 23/5/22

PROJECT: Glenora Wind Farm	**TRIALPIT: TP-16**
LOCATION: Co Mayo	**Sheet 1 of 1**
CLIENT: SSE	**Co-ordinates:** **Rig: Hitachi 130 LCN**
ENGINEER: FTCO	**E 505,057.0 N 832,788.0** **Rev: FINAL**
Ground level: m O.D.	**DATE: 28.10.21**

GROUNDWATER

Water strikes: **Rose to after:**
1st: 1.00m
2nd:
3rd:

PIT DIRECTION: 090-270
PIT DIMENSION: 2.00 * 4.00m
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION
0								0.20	Soft brown fibrous PEAT.
			B 1	0.80-1.00				1.00	Stiff light brown gravelly CLAY. Gravel is angular to subangular.
1									
			B 2	1.60-1.80				2.20	Brown sandy silty angular to subrounded fine to coarse GRAVEL with high cobble content. Cobbles are angular.
2						END			TP terminated at 2.20m bgl. Obstruction as probable rock.
3									
4									
5									

Remarks: Ingress of water at 1.00m bgl. TP backfilled with arisings.
Co-ordinates provided by client representatives.

Scale: 1:25

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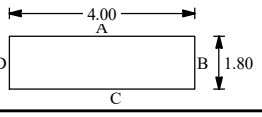
TRIAL PIT VANE & WL RISES GLENORA TPS FILE 1 NOV 9 2021.GPJ IRISHDRL.GDT 23/5/22

PROJECT: Glenora Wind Farm	**TRIALPIT: TP-17**
LOCATION: Co Mayo	**Sheet 1 of 1**
CLIENT: SSE	**Co-ordinates:** **Rig: Hitachi 130 LCN**
ENGINEER: FTCO	**E 505,373.0 N 833,086.0** **Rev: FINAL**
Ground level: m O.D.	**DATE: 28.10.21**

GROUNDWATER

Water strikes: Rose to after:
1st: 3.20m
2nd:
3rd:

PIT DIRECTION: 000-180
PIT DIMENSION: 1.80 * 4.00m
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION
0									Heather over soft brown fibrous PEAT. H2.
								2.70	
			B 1 D 2	2.70-2.90 2.70-2.90					Stiff brown organic slightly gravelly sandy SILT. Gravel is subangular to rounded fine to coarse. Sand is fine.
		▼1						3.20	
									Soft wet grey slightly sandy gravelly SILT with high cobble content. Gravel is subangular to subrounded fine to coarse.
			B 3	4.00-4.20					
								4.50	
						END			TP terminated at 4.50m bgl on REs instruction.

Remarks: Ingress of water at 3.20m bgl. TP backfilled with arisings.
Co-ordinates provided by client representatives.

Scale: 1:25

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TRIAL PIT VANE & WL RISES GLENORA TPS FILE 1 NOV 9 2021.GPJ IRISHDRL.GDT 23/5/22

Appendix 02
Laboratory Test Results

Project ID	2021MO112		Client	Coillte		Remarks					
Project Name	Glenora Wind Farm		Due Date	11/11/2021 09:37							
Schedule ID	2021MO112_1		Scheduled Date	11/11/2021 09:38							

Sample Details							Classification						Chemical / Concrete								Compaction						Compressibility				Strength (Total)							Shear Stregth (Effective Stress)			Rock		
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 Multistage	Rock Uniaxial compression	Point Load	
TP-01	0.90	1.10	B	1	28/10/21						1																													
TP-01	0.90	1.10	D	2	28/10/21		1	1																																
TP-01	1.90	2.10	B	3	28/10/21																																			
TP-02	1.20	1.40	B	1	28/10/21																																			
TP-02	2.00	2.20	B	2	28/10/21																																			
TP-03	0.40	0.60	B	1	29/10/21																																			
TP-03	1.30	1.50	B	2	29/10/21		1				1																													
TP-03	2.30	2.50	B	3	29/10/21																																			
TP-05	1.00	1.20	B	1	29/10/21																																			
TP-05	2.60	2.80	D	3	29/10/21										1	1		1																						ALS 211130-84
TP-05	2.60	2.80	B	2	29/10/21		1	1																															
TP-05	4.10	4.30	B	4	29/10/21																																			
TP-05	4.10	4.30	D	5	29/10/21																																			
TP-06	1.00	1.20	B	1	29/10/21																																			
TP-06	2.50	2.70	B	2	29/10/21																																			
TP-06	3.60	3.80	B	3	29/10/21																																			
TP-06	3.60	3.80	D	4	29/10/21																																			
TP-06	4.20	4.40	D	5	29/10/21																																			
TP-08	0.90	1.10	B	1	29/10/21																																			
TP-08	0.90	1.10	D	2	29/10/21																																			
TP-08	1.90	2.10	D	4	29/10/21						1																													
TP-08	1.90	2.10	B	3	29/10/21		1	1																															
TP-08	3.10	3.30	B	5	29/10/21																																			
TP-09	1.30	1.50	B	1	29/10/21																																			
TP-09	1.30	1.50	D	2	29/10/21																																			
TP-09	2.00	2.20	D	4	29/10/21						1				1	1		1																						ALS 211130-84

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

Project ID	2021MO112	Client	Coillte	Remarks	
Project Name	Glenora Wind Farm	Due Date	11/11/2021 09:37		
Schedule ID	2021MO112_1	Scheduled Date	11/11/2021 09:38		

Sample Details							Classification						Chemical / Concrete								Compaction						Compressibility				Strength (Total)						Shear Stregth (Effective Stress)			Rock		
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 Multistage	Rock Uniaxial compression	Point Load	
TP-09	2.00	2.20	B	3	29/10/21		1	1																																
TP-10	2.00	2.20	B	1	28/10/21			1																																
TP-10	2.50	2.70	B	2	28/10/21						1																														
TP-10	2.50	2.70	D	3	28/10/21		1	1																																
TP-11	1.20	1.40	B	1	28/10/21		1																																	
TP-11	1.60	1.80	B	2	28/10/21																																			
TP-11	2.70	2.90	B	3	28/10/21		1	1																																
TP-11	3.80	4.00	D	4	28/10/21																																			
TP-12	0.60	0.80	B	1	28/10/21																																			
TP-12	2.00	2.10	B	2	28/10/21																																			
TP-12	3.00	3.20	B	3	28/10/21						1																														
TP-12	3.00	3.20	D	4	28/10/21		1	1																																
TP-15	1.80	2.00	D	2	28/10/21		1	1			1		1																											ALS 211130-84
TP-15	1.80	2.00	B	1	28/10/21																																			
TP-15	2.80	3.00	B	3	28/10/21																																			
TP-15	2.80	3.00	D	4	28/10/21																																			
TP-16	0.80	1.00	B	1	28/10/21																																			
TP-16	1.60	1.80	B	2	28/10/21		1				1																														
TP-17	2.70	2.90	D	2	28/10/21		1	1					1																											ALS 211130-84
TP-17	2.70	2.90	B	1	28/10/21																																			
TP-17	4.00	4.20	B	3	28/10/21						1																														
Scheduled							12	9	0	0	9	0	2	0	2	2	0	2	0																					
Completed							12	9	0	0	9	0	2	0	2	2	0	2	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
2021MO112	Glenora 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-01	2	0.90	1.10	D		Brown slightly gravelly sandy SILT. Sand is fine.			20.0						NP
TP-03	2	1.30	1.50	B		Orange-brown very silty very gravelly fine SAND.			12.0	54					
TP-05	2	2.60	2.80	B		Grey silty gravelly SAND.			15.0	42					NP
TP-08	3	1.90	2.10	B		Grey slightly gravelly sandy SILT.			17.0		28	16	12		CL
TP-09	3	2.00	2.20	B		Grey slightly gravelly slightly sandy SILT.			18.0		29	18	11		CL
TP-10	3	2.50	2.70	D		Grey slightly gravelly sandy SILT. Sand is fine.			16.0						NP
TP-11	1	1.20	1.40	B		Black PEAT.			812.0						
TP-11	3	2.70	2.90	B		Grey slightly gravelly sandy SILT.			19.0	72	27	19	8		CL
TP-12	4	3.00	3.20	D		Grey slightly sandy SILT.			26.0		32	19	13		CL
TP-15	2	1.80	2.00	D		Dark brown slightly gravelly sandy SILT. Sand is fine.			32.0	80					NP
TP-16	2	1.60	1.80	B		Brown silty sandy coarse and medium GRAVEL.			17.0	20					
TP-17	2	2.70	2.90	D		Dark brown slightly gravelly sandy SILT. Sand is fine.			36.0	59	51	26	25		CH

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 | Liquid Limit | Particle density

Linear measurement unless : | 4pt cone unless : | sp - small pyknometer

wd - water displacement | 1pt - single point test | gj - gas jar

wi - immersion in water | NP - Non Plastic

Date Printed 14/01/2022

QC From No: R1

Approved By Administrator

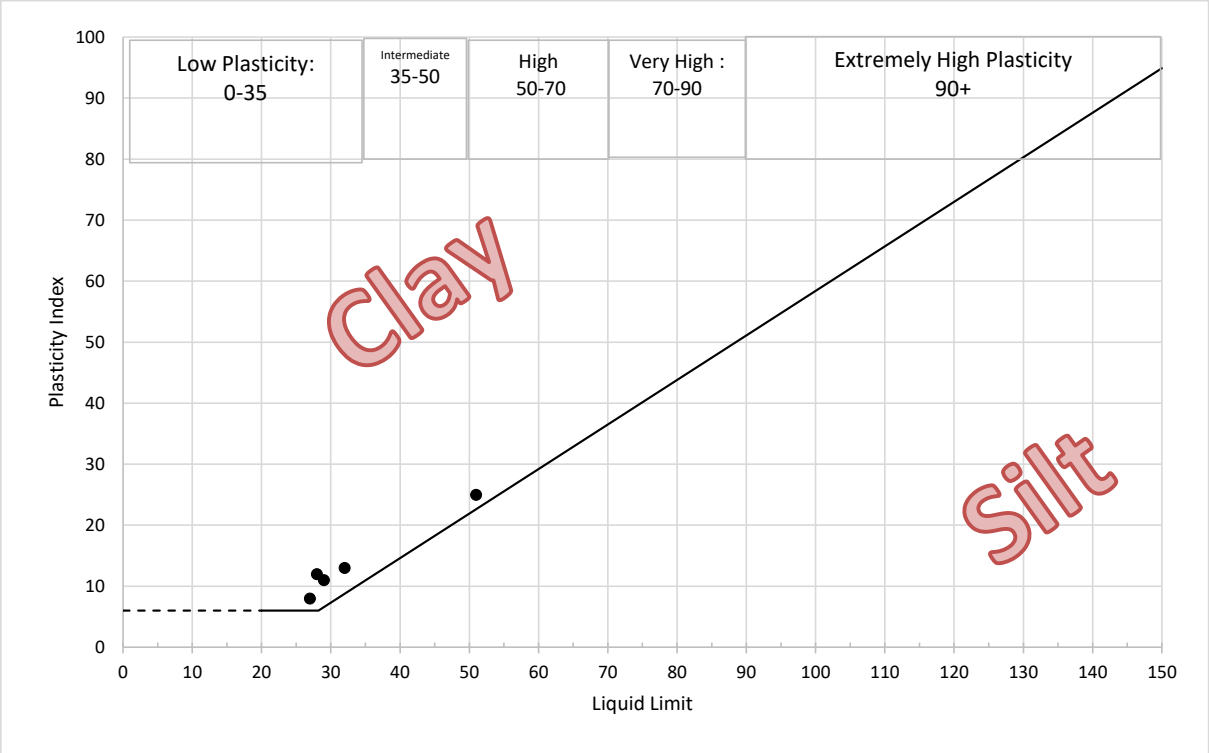
Table 1

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.

	Plasticity (A-Line) Chart	Project Number
Project Name:	**Glenora Wind Farm**	
Location:		2021MO112



Abreviations in the remarks column of the Classification Summary Sheet: C = Clay, M = Silt

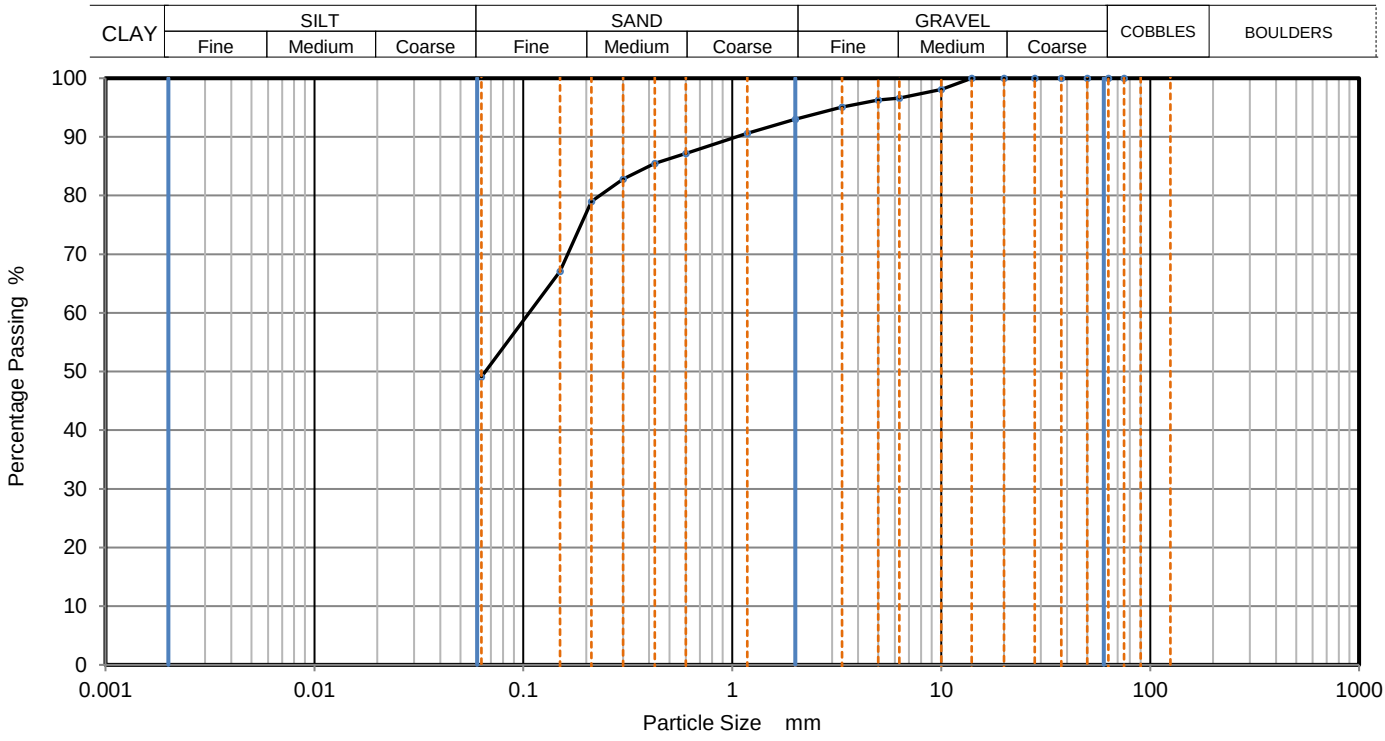
Plasticity abeviations: L = Low, I = Intermediate = H = High, V = Very High, E = Extremely High.

The letter O is added to the symbol of any material containing a significant proportion of organic material.

Chart taken from BS5930: 2010

QC Form: R1

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2021MO112**
				Borehole/Pit No.	TP-01
Site Name	Glenora Wind Farm			Sample No.	1
Soil Description	Brown slightly gravelly sandy SILT. Sand is fine.			Depth, m	0.90
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL1202111110



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	98		
6.3	97		
5	96		
3.35	95		
2	93		
1.18	91		
0.6	87		
0.425	86		
0.3	83		
0.212	79		
0.15	67		
0.063	49		

Dry Mass of sample, g	487

Sample Proportions	% dry mass
Very coarse	0
Gravel	7
Sand	44
Fines <0.063mm	49

Grading Analysis		
D100	mm	
D60	mm	0.106
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

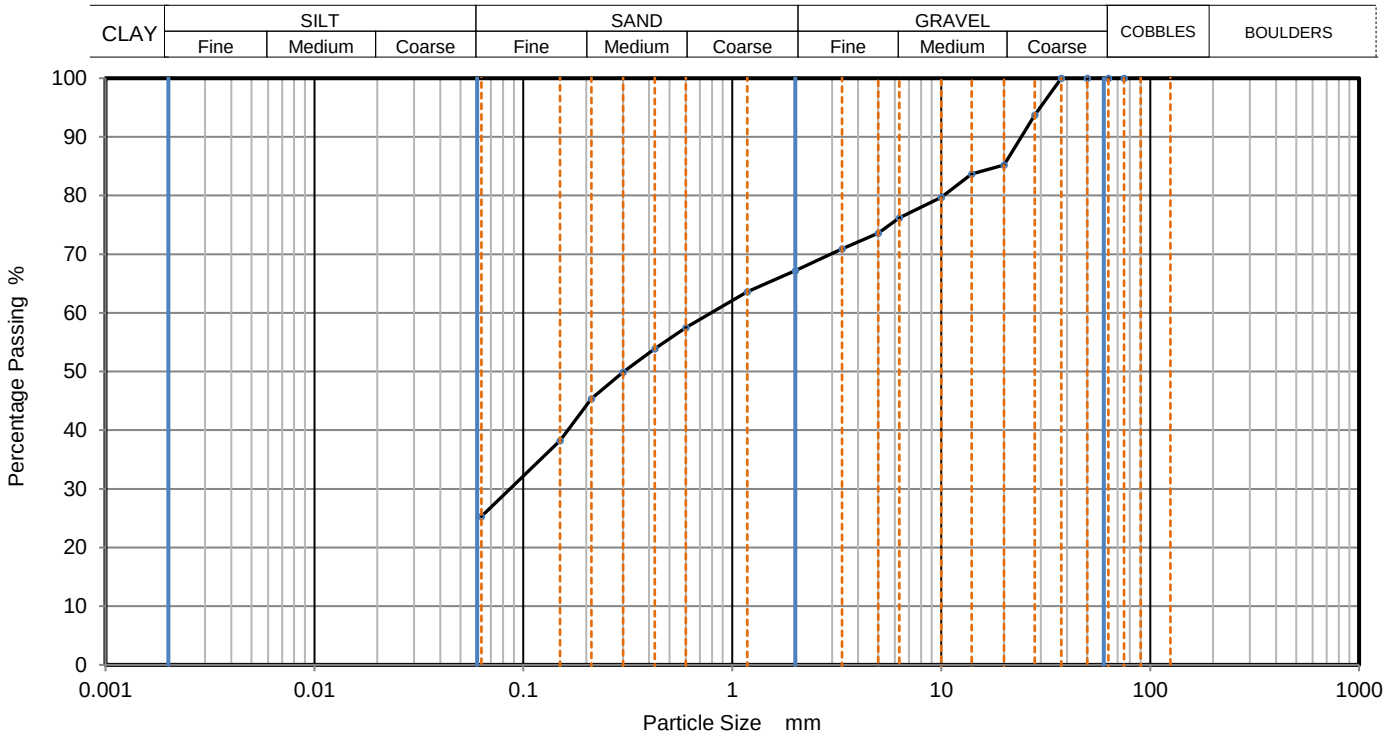
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	
		Dympna Darcy B.Sc.	14/01/2022 10:26	**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	**2021MO112**
				Borehole/Pit No.	TP-03
Site Name	Glenora Wind Farm			Sample No.	2
Soil Description	Orange-brown very silty very gravelly fine SAND.			Depth, m	1.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL1202111116



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	94		
20	85		
14	84		
10	80		
6.3	76		
5	74		
3.35	71		
2	67		
1.18	64		
0.6	58		
0.425	54		
0.3	50		
0.212	45		
0.15	38		
0.063	25		

Dry Mass of sample, g	555

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	42
Fines <0.063mm	25

Grading Analysis		
D100	mm	
D60	mm	0.793
D30	mm	0.0866
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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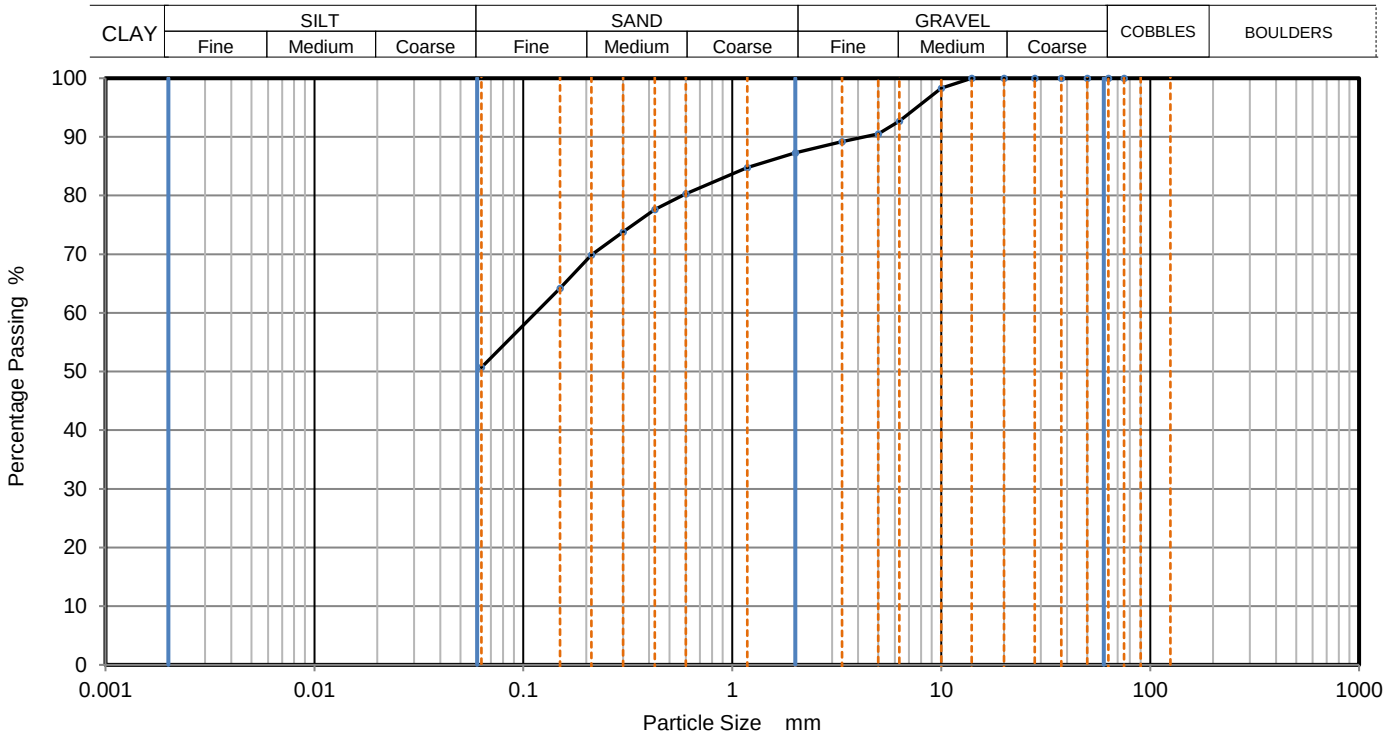
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2021MO112**
				Borehole/Pit No.	TP-08
Site Name	Glenora Wind Farm			Sample No.	4
Soil Description	Grey slightly gravelly sandy SILT.			Depth, m	1.90
Specimen Reference		Specimen Depth	m	Sample Type	D
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12021111121



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	98		
6.3	93		
5	91		
3.35	89		
2	87		
1.18	85		
0.6	80		
0.425	78		
0.3	74		
0.212	70		
0.15	64		
0.063	51		

Dry Mass of sample, g	354

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	37
Fines <0.063mm	51

Grading Analysis		
D100	mm	
D60	mm	0.115
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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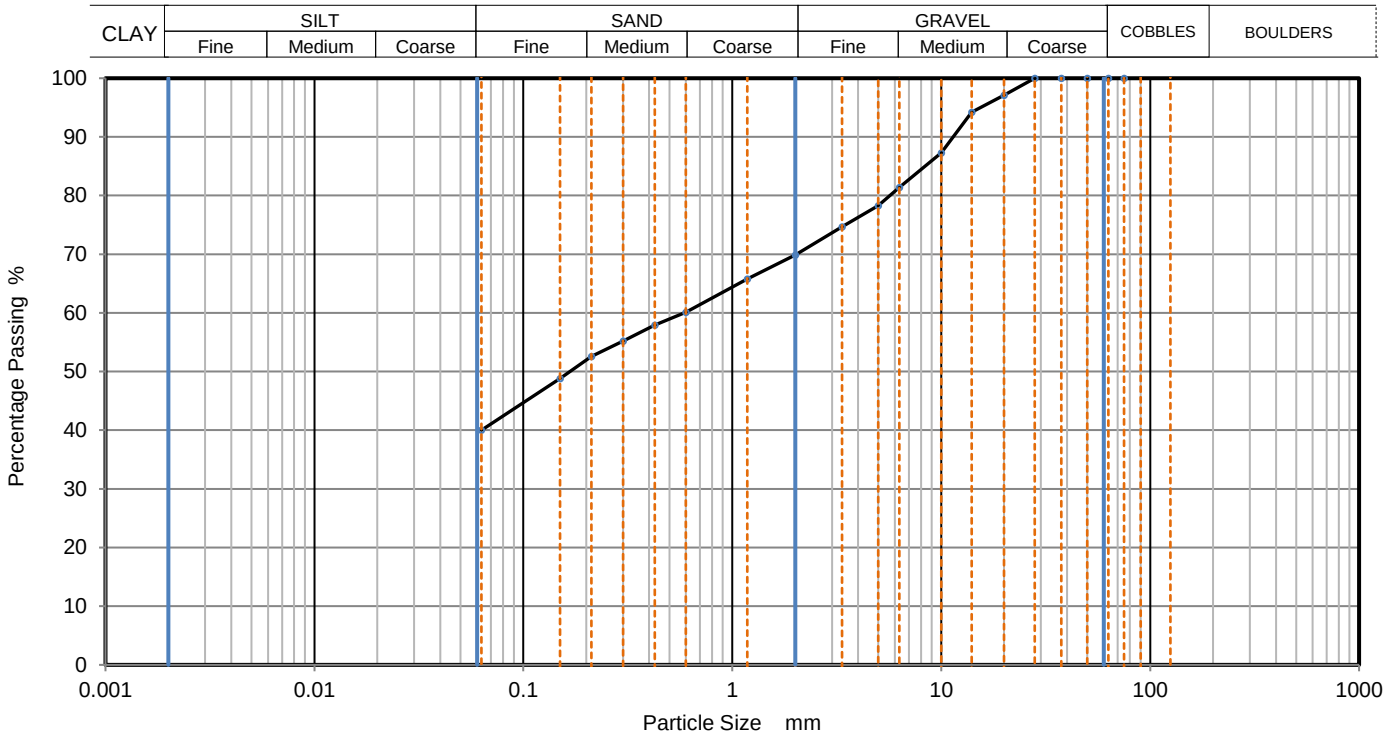
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2021MO112**
				Borehole/Pit No.	TP-09
Site Name	Glenora Wind Farm			Sample No.	4
Soil Description	Grey slightly gravelly slightly sandy SILT.			Depth, m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	D
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12021111126



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	94		
10	87		
6.3	81		
5	78		
3.35	75		
2	70		
1.18	66		
0.6	60		
0.425	58		
0.3	55		
0.212	53		
0.15	49		
0.063	40		

Dry Mass of sample, g	473

Sample Proportions	% dry mass
Very coarse	0
Gravel	30
Sand	30
Fines <0.063mm	40

Grading Analysis		
D100	mm	
D60	mm	0.589
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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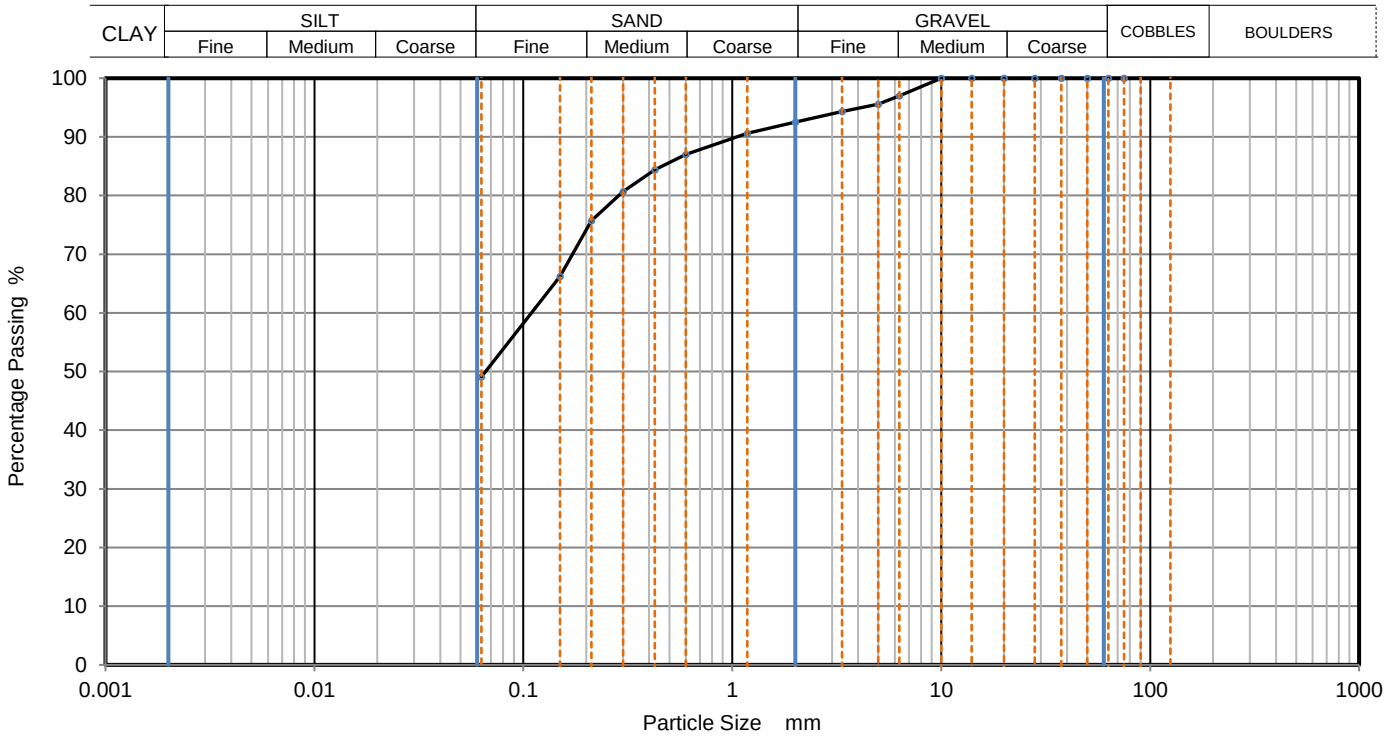
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

PARTICLE SIZE DISTRIBUTION

				Job Ref	**2021MO112**
				Borehole/Pit No.	TP-10
Site Name	Glenora Wind Farm			Sample No.	2
Soil Description	Grey slightly gravelly sandy SILT. Sand is fine.			Depth, m	2.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12021111128



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	97		
5	96		
3.35	94		
2	93		
1.18	91		
0.6	87		
0.425	84		
0.3	81		
0.212	76		
0.15	66		
0.063	49		

Dry Mass of sample, g	499

Sample Proportions	% dry mass
Very coarse	0
Gravel	8
Sand	43
Fines <0.063mm	49

Grading Analysis		
D100	mm	
D60	mm	0.109
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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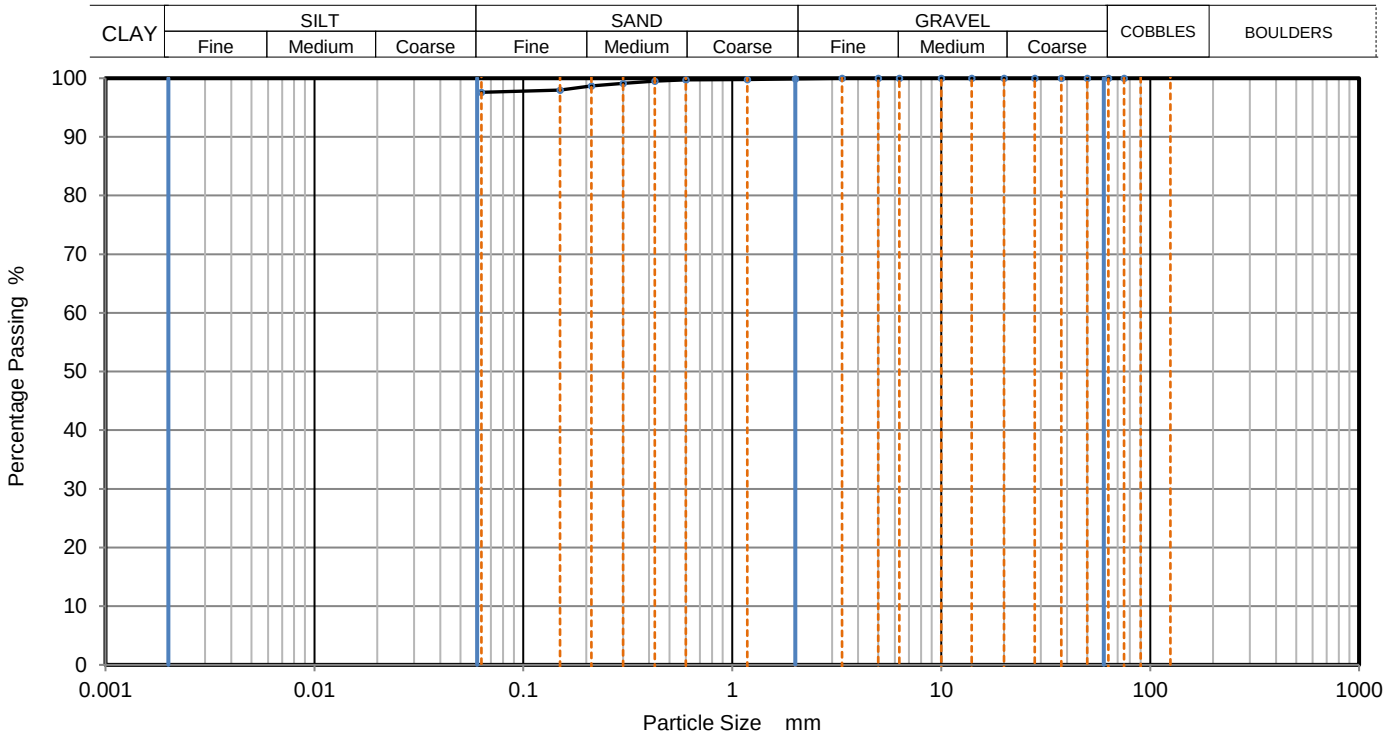
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2021MO112**
				Borehole/Pit No.	TP-12
Site Name	Glenora Wind Farm			Sample No.	3
Soil Description	Grey slightly sandy SILT.			Depth, m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12021111136



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.212	99		
0.15	98		
0.063	98		

Dry Mass of sample, g	313

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	2
Fines <0.063mm	98

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

Remarks

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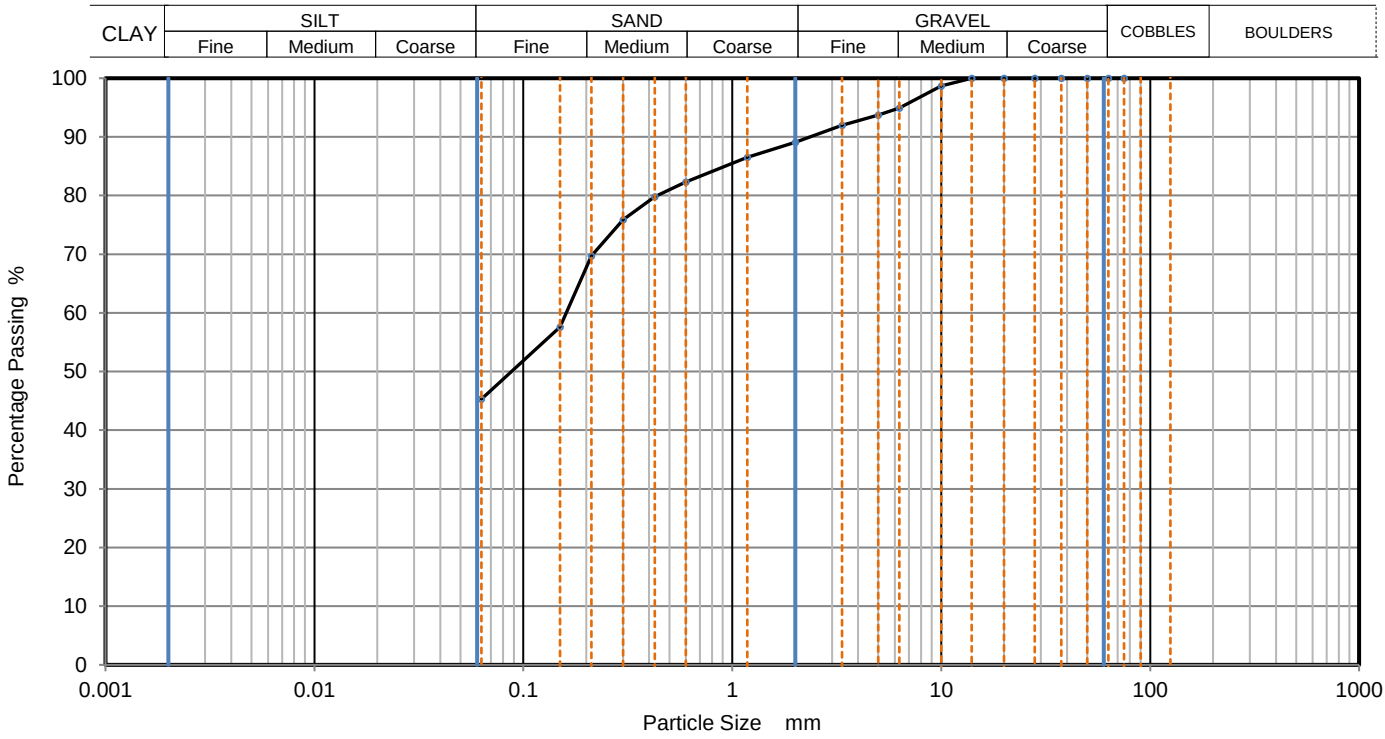
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2021MO112**
				Borehole/Pit No.	TP-15
Site Name	Glenora Wind Farm			Sample No.	2
Soil Description	Dark brown slightly gravelly sandy SILT. Sand is fine.			Depth, m	1.80
Specimen Reference		Specimen Depth	m	Sample Type	D
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12021111139



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	95		
5	94		
3.35	92		
2	89		
1.18	87		
0.6	82		
0.425	80		
0.3	76		
0.212	70		
0.15	58		
0.063	45		

Dry Mass of sample, g	315

Sample Proportions	% dry mass
Very coarse	0
Gravel	11
Sand	44
Fines <0.063mm	45

Grading Analysis		
D100	mm	
D60	mm	0.161
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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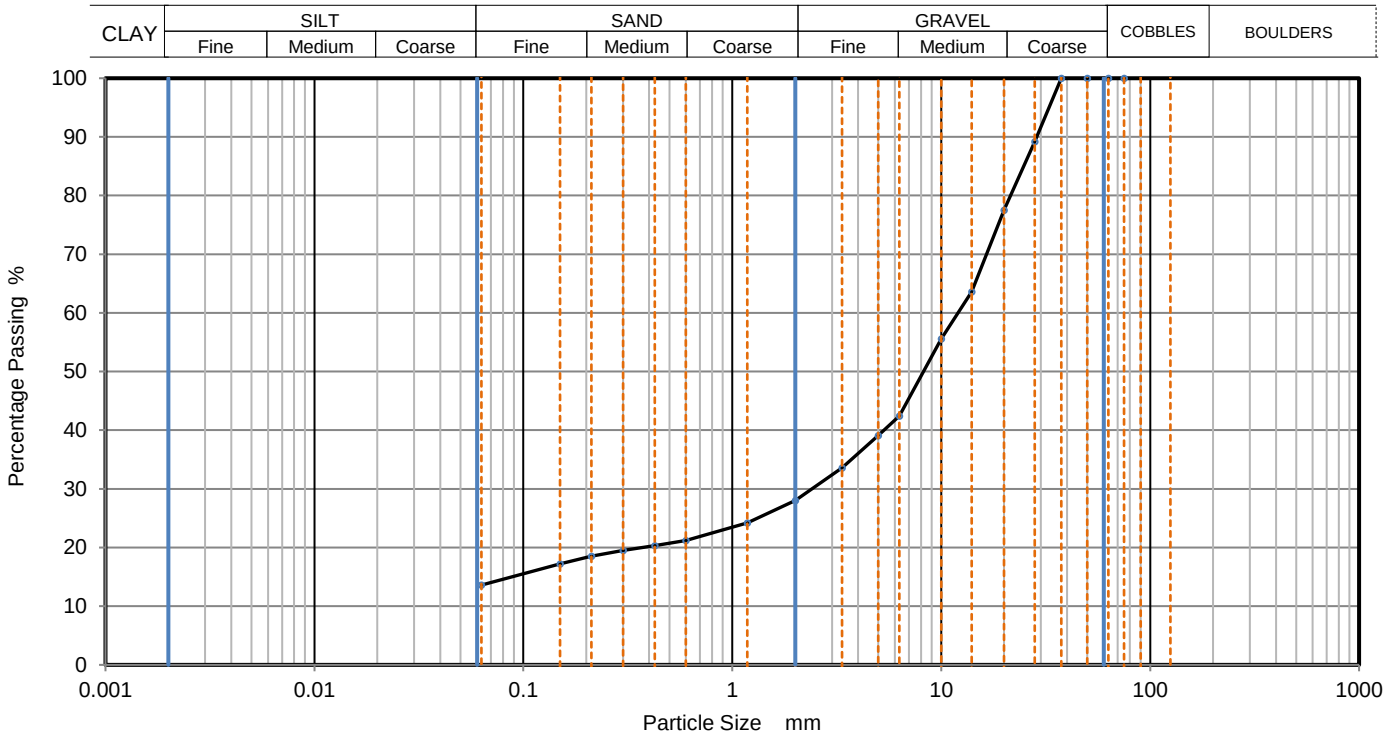
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2021MO112**
				Borehole/Pit No.	TP-16
Site Name	Glenora Wind Farm			Sample No.	2
Soil Description	Brown silty sandy coarse and medium GRAVEL.			Depth, m	1.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12021111143



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	89		
20	78		
14	64		
10	56		
6.3	42		
5	39		
3.35	34		
2	28		
1.18	24		
0.6	21		
0.425	20		
0.3	20		
0.212	19		
0.15	17		
0.063	14		

Dry Mass of sample, g	732

Sample Proportions	% dry mass
Very coarse	0
Gravel	72
Sand	14
Fines <0.063mm	14

Grading Analysis		
D100	mm	
D60	mm	12
D30	mm	2.4
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

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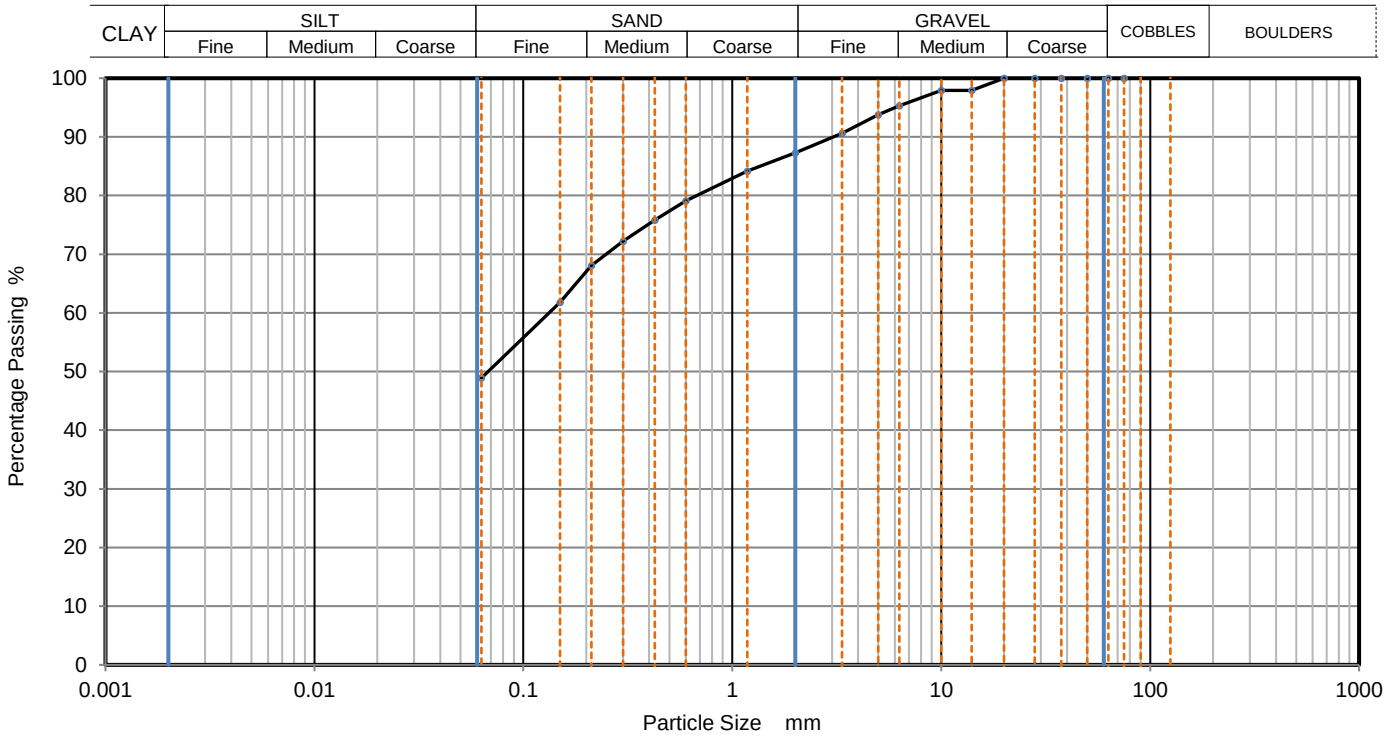
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

IRISH DRILLING LIMITED	**PARTICLE SIZE DISTRIBUTION**			Job Ref	**2021MO112**
				Borehole/Pit No.	TP-17
Site Name	Glenora Wind Farm			Sample No.	3
Soil Description	Grey slightly gravelly sandy SILT.			Depth, m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12021111146



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	98		
6.3	95		
5	94		
3.35	91		
2	87		
1.18	84		
0.6	79		
0.425	76		
0.3	72		
0.212	68		
0.15	62		
0.063	49		

Dry Mass of sample, g	415

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	38
Fines <0.063mm	49

Grading Analysis		
D100	mm	
D60	mm	0.133
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.	14/01/2022 10:27	**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.

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Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	07 December 2021
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	211130-84
Your Reference:	2021MO112
Location:	Glenora Wind Farm
Report No:	624795
Order Number:	10554

We received 4 samples on Tuesday November 30, 2021 and 4 of these samples were scheduled for analysis which was completed on Tuesday December 07, 2021. 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 Life Sciences Ltd 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.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG: 211130-84 **Report Number:** 624795 **Superseded Report:**
Client Ref.: 2021MO112 **Location:** Glenora Wind Farm

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25431031	TP-05	D3	2.60 - 2.80	28/10/2021
25431034	TP-09	D4	2.00 - 2.20	28/10/2021
25431025	TP-15	D2	1.80 - 2.00	28/10/2021
25431027	TP-17	D2	2.70 - 2.90	28/10/2021

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

Validated

CERTIFICATE OF ANALYSIS

SDG: 211130-84 **Report Number:** 624795 **Superseded Report:**
Client Ref.: 2021MO112 **Location:** Glenora 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)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			25431031	TP-05	D3	2.60 - 2.80	250g Amber Jar (ALE210)	S
			25431034	TP-09	D4	2.00 - 2.20	250g Amber Jar (ALE210)	S
			25431025	TP-15	D2	1.80 - 2.00	250g Amber Jar (ALE210)	S
			25431027	TP-17	D2	2.70 - 2.90	250g Amber Jar (ALE210)	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: 4	X	X	X	X		
Total Organic Carbon	All	NDPs: 0 Tests: 2			X	X		
Total Sulphate	All	NDPs: 0 Tests: 2	X	X				

CERTIFICATE OF ANALYSIS

SDG: 211130-84 **Report Number:** 624795 **Superseded Report:**
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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
25431031	TP-05	2.60 - 2.80	Light Brown	Loamy Sand	Stones	None
25431034	TP-09	2.00 - 2.20	Light Brown	Sandy Clay Loam	Stones	None
25431025	TP-15	1.80 - 2.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
25431027	TP-17	2.70 - 2.90	Dark Brown	Sandy Loam	Stones	Vegetation

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: 211130-84 **Report Number:** 624795 **Superseded Report:**
Client Ref.: 2021MO112 **Location:** Glenora 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
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP-05	TP-09	TP-15	TP-17		
			Depth (m)	2.60 - 2.80	2.00 - 2.20	1.80 - 2.00	2.70 - 2.90		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	28/10/2021	28/10/2021	28/10/2021	28/10/2021		
			Sample Time	.	.	.	.		
			Date Received	30/11/2021	30/11/2021	30/11/2021	30/11/2021		
			SDG Ref	211130-84	211130-84	211130-84	211130-84		
			Lab Sample No.(s)	25431031	25431034	25431025	25431027		
			AGS Reference	D3	D4	D2	D2		
Moisture Content Ratio (% of as received sample)	%	PM024		11	15	20	24		
Soil Organic Matter (SOM)	<0.35 %	TM132				1.22 @ #	2.52 @ #		
pH	1 pH Units	TM133		6.15 @ M	6.62 @ M				
Sulphate, Total	<48 mg/kg	TM221		<48 M	<48 M				
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0064 @ M	<0.004 @ M				

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Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Inductively Coupled Plasma - Atomic Emission Spectroscopy. An Atlas of Spectral Information: Winge, Fassel, Peterson and Floyd	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 Life Sciences Ltd Hawarden.

CERTIFICATE OF ANALYSIS

SDG: 211130-84 **Report Number:** 624795 **Superseded Report:**
Client Ref.: 2021MO112 **Location:** Glenora Wind Farm

Test Completion Dates

Lab Sample No(s)	25431031	25431034	25431025	25431027
Customer Sample Ref.	TP-05	TP-09	TP-15	TP-17
AGS Ref.	D3	D4	D2	D2
Depth	2.60 - 2.80	2.00 - 2.20	1.80 - 2.00	2.70 - 2.90
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	07-Dec-2021	07-Dec-2021		
pH	02-Dec-2021	02-Dec-2021		
Sample description	01-Dec-2021	01-Dec-2021	01-Dec-2021	01-Dec-2021
Total Organic Carbon			07-Dec-2021	07-Dec-2021
Total Sulphate	07-Dec-2021	07-Dec-2021		

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 30 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 one month 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 (2005), 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.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials 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 (2005).

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.

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.

Appendix 03
Trial Pit Photographs

Figure 1 H:\21MO112_Glenora\Tp1...jpg

Figure 3 H:\21MO112_Glenora\Tp1.jpg

Figure 2 H:\21MO112_Glenora\Tp1..jpg

Figure 4 H:\21MO112_Glenora\Tp2...jpg

Figure 5 H:\21MO112_Glenora\Tp2..jpg

Figure 7 H:\21MO112_Glenora\Tp3...jpg

Figure 6 H:\21MO112_Glenora\Tp2.jpg

Figure 8 H:\21MO112_Glenora\Tp3..jpg

Figure 9 H:\21MO112_Glenora\Tp3.jpg

Figure 11 H:\21MO112_Glenora\Tp5..jpg

Figure 10 H:\21MO112_Glenora\Tp5...jpg

Figure 12 H:\21MO112_Glenora\Tp5.jpg

Figure 13 H:\21MO112_Glenora\Tp6...jpg

Figure 15 H:\21MO112_Glenora\Tp6.jpg

Figure 14 H:\21MO112_Glenora\Tp6..jpg

Figure 16 H:\21MO112_Glenora\Tp9...jpg

Figure 17 H:\21MO112_Glenora\Tp9..jpg

Figure 19 H:\21MO112_Glenora\Tp10...jpg

Figure 18 H:\21MO112_Glenora\Tp9.jpg

Figure 20 H:\21MO112_Glenora\Tp10..jpg

Figure 21 H:\21MO112_Glenora\Tp10.jpg

Figure 23 H:\21MO112_Glenora\Tp11..jpg

Figure 22 H:\21MO112_Glenora\Tp11...jpg

Figure 24 H:\21MO112_Glenora\Tp11.jpg

Figure 25 H:\21MO112_Glenora\Tp12...jpg

Figure 27 H:\21MO112_Glenora\Tp12.jpg

Figure 26 H:\21MO112_Glenora\Tp12..jpg

Figure 28 H:\21MO112_Glenora\Tp15...jpg

Figure 29 H:\21MO112_Glenora\Tp15..jpg

Figure 31 H:\21MO112_Glenora\Tp17...jpg

Figure 30 H:\21MO112_Glenora\Tp15.jpg

Figure 32 H:\21MO112_Glenora\Tp17..jpg

Figure 33 H:\21MO112_Glenora\Tp17.jpg

Appendix 04
Site Plan

TP4
TP3
TP7
TP1
TP2
TP5
TP6
TP8
TP9
TP10
TP11
TP12
TP15
TP17
site access from Ballycastle

Map Legend

- Glenora Site Boundary
- Indicative Turbine Layout
- Indicative Met Mast Location
- Indicative Substation Location Options
- Indicative Construction Compound Locations
- Indicative Borrow Pit Locations
- Proposed New Roads
- Potential Alternative Roads
- Existing Roads Upgrade Proposed
- Existing Roads/Tracks
- Trial Pit

N

Drawing Title
Glenora Site Layout

Project Title
201120 - SSE Glenora Wind Farm

Drawn By	Checked By
DOS	EM
Project No.	Drawing No.
201120	Fig 1a
Scale	Date
1:20000	08.06.21

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Appendix 05
AGS Data

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