

Client: Inchamore Wind DAC
Project Title: Inchamore Wind Farm
Document Title: Construction Environmental Management Plan

Date: May 2023
Project No: 6226
Document Issue: Final



Kerry Planning Authority - Inspection Purposes Only!

MANAGEMENT PLAN 4 – PEAT AND SPOIL MANAGEMENT PLAN



INCHAMORE WIND DAC

INCHAMORE WIND FARM CO. CORK

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

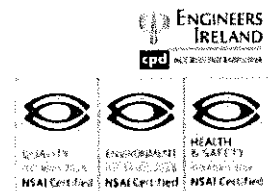
MANAGEMENT PLAN 4 PEAT AND SPOIL MANAGEMENT PLAN

MAY 2023

Inchamore Wind DAC,
C/O FuturEnergy Ireland,
27/28 Herbert Place,
Dublin 2,
D02DC97,
Ireland.



Jennings O'Donovan & Partners Limited,
Consulting Engineers,
Finisklin Business Park,
Sligo.
Tel.: 071 9161416
Fax: 071 9161080
email: info@jodireland.com



Kerry Planning Authority Inspection Purposes Only!

CONTENTS

1	INTRODUCTION.....	1
1.1	General.....	1
1.2	Site Investigations.....	1
1.3	General Aims and Principals of the Peat and Spoil Management Plan	1
1.4	Management of Excavated Material.....	2
1.5	Reinstatement.....	3
2	ESTIMATED EXCAVATION QUANTITIES.....	4
2.1	Road Construction	4
2.2	Wind Turbine Foundations	6
2.3	Turbine Hardstands	9
2.5	Electrical Sub-Station and Site Compound	10
2.6	Grid Connection.....	11
2.7	Drainage.....	14
2.8	Total Estimated Excavation Volume Summary.....	14
3	RE-USE OF EXCAVATED MATERIAL.....	17
3.1	Road Construction	17
3.2	Turbine and Met Mast Foundation Excavations	17
3.3	Storage Areas to the perimeter of Hardstands	17
3.4	Grid Connection.....	17
3.5	Bedrock	18
3.6	Summary of Re-Use of Excavated Material	19
4	RECOMMENDATION	22

Appendix A – Site Investigations Report



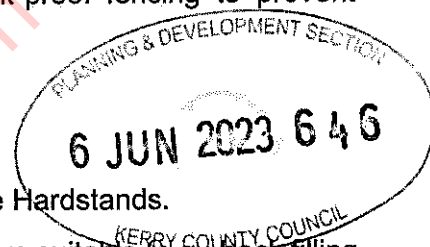
Topsoil and surface vegetation excavated during the construction of the wind farm infrastructure will be used to finish reinstated surfaces around Turbine Foundations and Turbine Hardstands. Reinstatement and reprofiling of, and around, infrastructure will be carried out during the construction phase.

Landscaping will allow for sympathetic restoration of the ground surface and ground profile to reduce the visual impact of new infrastructure, facilitate vegetation regrowth and reduce scour and erosion of bare surfaces prior to vegetation establishment. Reinstatement will be undertaken as work progresses. This work will be completed only by experienced personnel under guidance from the appointed Ecological Clerk of Works, and they will conduct regular inspections of the work to ensure it is completed in an appropriate manner.

All areas subjected to reinstatement will be fenced with stock-proof fencing to prevent livestock disturbance until vegetation has become established.

Excavated material is used in several ways:

- Excavated rock is used for Site Access Roads and Turbine Hardstands.
- Excavated sub-soil material will be used as fill material where suitable (e.g., back filling around and on top of Turbine Foundations) with any other sub-soil material to be placed in shallow deposition areas around the WTG foundations (always avoiding sensitive habitats).
- Excavated topsoil will be used to vegetate edges of Turbine Hardstands and Turbine Foundations.
- All surplus material will be used to reinstate the proposed borrow pits.



1.4 Management of Excavated Material

The excess excavated material will be permanently stored in the borrow pit. Excavated materials during the construction phase required for reinstatement, shall in the first instance be stored on site, in an environmentally safe manner that will not result in the pollution of waters, until it is required for re-use.

A buffer of 25 m from watercourses will be implemented for storage areas of excavated materials to be re-used for reinstatement works.

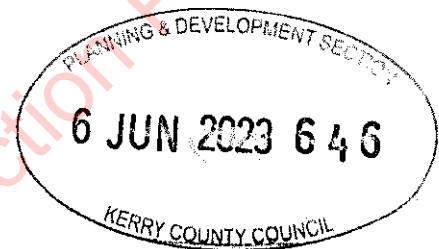
Excavated material will not be stored adjacent to slopes (>15 degrees gradient). This will be subject to evaluation and approval by the Civil Contractors' geotechnical engineer and will accommodate the Site stockpiling requirements based on earthwork calculations.

2 ESTIMATED EXCAVATION QUANTITIES

The environs of the Site are characterised by relatively complex (hilly) topography with associated elevations ranging between c. 350 to 460 metres above datum (m AOD) throughout the Development. Geotechnical drawings prepared by Minerex Environmental Limited were used in conjunction with the peat depth probes and geotechnical trial pit logs as seen in **Appendix I – Site Investigations Report** to calculate the spoil volumes generated by the Development, as can be seen in **Tables 2.1 to 2.6**.

2.1 Road Construction

The minimum useful road width required for delivery of turbine components is 4.5 m. **Table 2.1** tabulates the volumes of topsoil and sub-soil to be excavated for the Site access roads.



Kerry Planning Authority - Inspection Purposes Only!

Trial Pit data is available in the Site Investigation Report (**Appendix A**). Average peat depth from this data was calculated to be 0.6 m. Excavation for roads is required to 0.6 m only. From this, the volume of peat, soil and rock to be extracted was extrapolated and can be seen in **Table 2.1**.

2.2 Wind Turbine Foundations

The depth of excavation required for each wind turbine foundation will vary depending on peat depths. The diameter of the gravity Turbine Foundations will range from 22 m to 25.5 m. Each Turbine Foundation excavation will be 2.8 m to 3.2 m deep. **Tables 2.2a (i and ii) and b (i and ii)** provide a breakdown of the estimated total excavation volume for the Turbine Foundations.



Table 2.2b (i) Estimated Excavation for WTG Foundations (25.5 m Diameter and 2.8 m depth)

25.5 m diameter										
Turbine No.	Area of Foundation Excavation (m ²)	Foundation Depth (m)	Max Peat Depth (m)	Mineral Soil (m)	Depth to suitable formation (m)	Rock depth (m)	Total Excavation (m ³)	Total Peat (m ³)	Total Soil (m ³)	Total Rock (m ³)
T1	511	2.80	1.40	0.10	1.50	1.30	1,430	715	51	664
T2	511	2.80	0.30	0.70	1.00	1.80	1,430	153	357	919
T3	511	2.80	0.20	2.40	2.60	0.20	1,430	102	1,226	102
T4	511	2.80	0.40	2.40	2.80	0.00	1,430	204	1,226	0
T5	511	2.80	0.70	0.30	1.00	1.80	1,430	357	153	919
Met Mast	100.0	1.0	0.3	0.7	1.0	0.0	100.0	30.0	70.0	0.0
Totals							7,250	1,562	3,083	2,605

Table 2.2b (ii) Estimated Excavation for WTG Foundations (25.5 m Diameter and 3.2 m depth)

25.5 m diameter										
Turbine No.	Area of Foundation Excavation (m ²)	Foundation Depth (m)	Max Peat Depth (m)	Mineral Soil (m)	Depth to suitable formation (m)	Rock depth (m)	Total Excavation (m ³)	Total Peat (m ³)	Total Soil (m ³)	Total Rock (m ³)
T1	511	3.20	1.40	0.10	1.50	1.70	1,634	715	51	868
T2	511	3.20	0.30	0.70	1.00	2.20	1,634	153	357	1,124
T3	511	3.20	0.20	2.40	2.60	0.60	1,634	102	1,226	306
T4	511	3.20	0.40	2.45	2.85	0.35	1,634	204	1,251	179
T5	511	3.20	0.70	0.30	1.00	2.20	1,634	357	153	1,124
Met Mast	100.0	1.0	0.3	0.7	1.0	0.0	100.0	30.0	70.0	0.0
Totals							8,271	1,562	3,109	3,601

6 JUN 2023 646

PLANNING & DEVELOPMENT SECTION

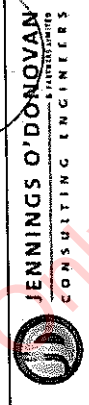
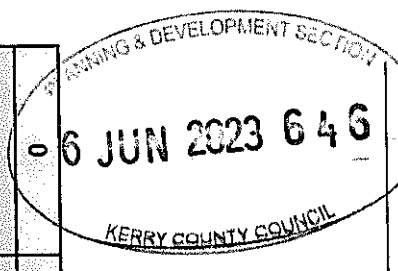
2.5 Electrical Sub-Station and Site Compound

Table 2.4a Dimensions of Sub-Station and Site Compound

Description	Length	Width	No.	Area (m ²)
Electrical Substation	-	-	1	1,314
Site Compound	70	52	1	3,640
Total				4,954

Table 2.4b Estimated Excavation from Sub-Stations and Site Compounds

Infrastructure	Area (m ²)	Depth to Formation (m)	Average Peat Depth (m)	Mineral Soil (m)	Relevant Trial Pits/Bore Holes	Total Excavation (m ³)	Total Peat (m ³)	Total Soil (m ³)	Total Rock (m ³)
Electrical Substation	1,314	2.0	0.5	1.5	TP010	2,627	657	1,970	0
Site Compound	3,640	2.0	0.2	1.8	TP006	7,280	728	6,552	0
Total						9,907	1,385	8,522	0



Authority Purposes Only!

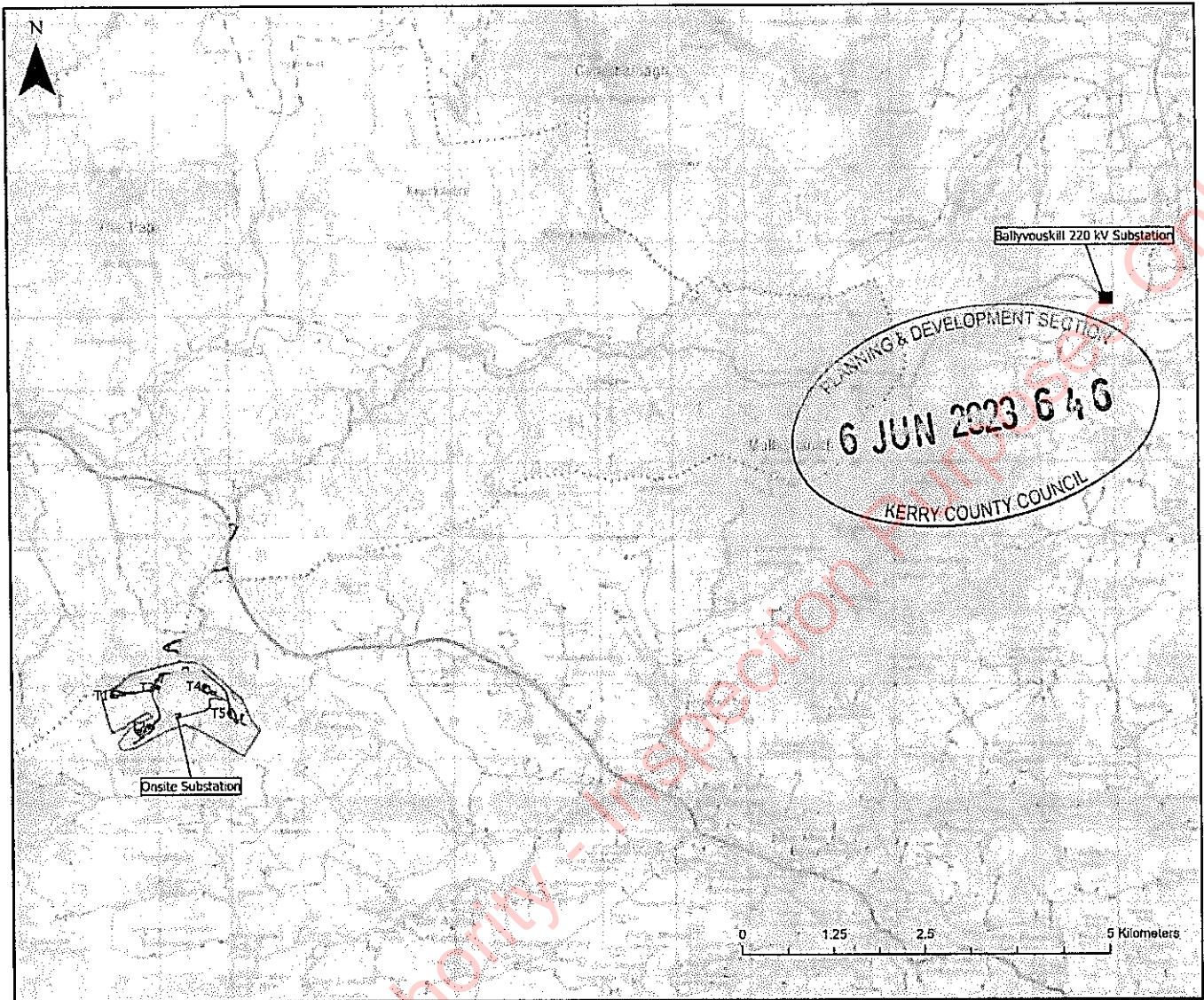


Figure 2.1 Inchamore Wind Farm Grid Connection Route

The cable network will be installed in trenches approximately 0.6 m wide by 1.3 m in depth. There will be 18 No. pre-cast concrete jointing bays measuring 6 m by 2.5 m buried approximately 2 m deep along the grid connection route and at varying intervals from c. 500-820 m intervals (See **EIAR Appendix 2.4**).

Excavated material from the installation of the Grid Connection Route will be used to backfill the trenches once the cable has been laid. Any surplus material will be disposed of at a licensed facility according to **Management Plan 5: Waste Management Plan** due to the presence of bituminous material and hydrocarbons.

In addition, **Table 2.5** provides a breakdown of the estimated total excavation volume for the Grid Connection Route.

2.7 Drainage

There are 28 No. stilling ponds at the Site with a combined area of 2,280 m² and a combined volume of 2,280 m³. Please see **CEMP 3: Surface Water Management Plan** of the CEMP for further details of drainage for the Project.

2.8 Total Estimated Excavation Volume Summary

As detailed in Sections 2.1 to 2.5, the total estimated excavation volume is 84,116 m³, of which 31,856 m³ is peat soil and 50,271 m³ is mineral subsoil. These quantities are detailed in **Table 2.6**.



Excavated Material Type	Excavated Material Volume (m ³)	Proposed Re-Use Volume	Comments
		8,522 m ³ subsoil	Subsoil will be dried and used to reinstate the borrow pits after extraction
		0 m ³ rock	
Grid Connection*	6,854	0 m ³ peat 6,557 m ³ subsoil 297 m ³ rock	To be disposed of at a licensed facility (LoW 17 05 03*, 17 05 04) Please see Waste Management Plan for more details
Drainage	2,280	2,280 m ³ peat	Peat is to be temporarily stored and re-used to reinstate the Temporary Compound Areas.

PLANNING & DEVELOPMENT SECTION
 6 JUN 2023 6 46
 KERRY COUNTY COUNCIL

As the excavated materials arising from the construction of the Grid Connection Route will be disposed of at a licensed facility, and rock won onsite will be used before using the on-site borrow pit, 77,262 m³ of peat and soil will need to be re-used within the Site as per Table 2.6.

3.5 Bedrock

Rock encountered in the excavations such as cobbles or boulders will be crushed and used for hardcore in the Site Access Roads and Turbine Hardstands. When this resource has been used up, the onsite borrow pits will be used to provide rock. The onsite borrow pit will provide 50,276 m³ excavated material to provide for the Site Access Roads, Turbine Hardstands, upfill to foundations and temporary compounds. However, a volume of 5,070 m³ of imported stone will be imported as a finish to these elements of infrastructure.

Table 3.1a Rock required from Borrow Pit

Volume of imported rock required (m ³)	Rock required for Road Construction / Upgrade (m ³)	Rock required for Turbine Hardstand Construction (m ³)	Total Rock required for Construction (m ³)	Volume of Rock to be Extracted from Excavations (m ³)	Rock required from Borrow Pit (m ³)
5,070	13,741	39,105	52,846	2,902	49,945

Table 3.1b Volume of Rock to be Extracted from Borrow Pits

Length (m)	Width (m)	Area (m ²)	Depth (m)	Volume to be extracted from Borrow Pits (m ³)
-	-	38,674	1.30	50,276
Total Volume of Rock to be Extracted from Borrow Pits				50,276

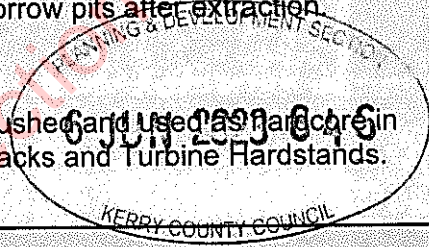
Table 3.1c Volume of Excavated Material to be Re-used On-Site

Total Volume (m ³) of Excavated Material to be stored	Volume of Borrow Pits (m ³)	Volume used to top borrow pits (m ³)	Total Volume of material to be stored in Borrow Pits (m ³)	Volume to be used in berms (Turbine Foundations and Hardstands) (m ³)
77,262	50,276	30,939	81,215	504

The borrow pit will provide 50,276 m³ of material to be used on-site. It also has the capacity to be filled to 81,215 m³ and to be topped by up to 0.7 m (30,939 m³). The total volume of fill to reinstate the borrow pit will be 81,215 m³. A volume of 504 m³ will be reused in berms around Turbine Foundations and Turbine Hardstands. See **Table 3.2b** for detailed volumes.

Table 3.2a Summary of Estimated Excavation Quantities (m³)

Excavated Material Type	Excavated Material Volume (m ³)	Proposed Re-Use Volume	Comments
Roads	15,876	13,321 m ³ peat 2,556 m ³ subsoil	Peat and subsoil will reinstate the onsite borrow pit.
Turbine Foundations	7,250	1,562 m ³ peat	Peat will be used as backfill to foundations. Any surplus will be used to reinstate the borrow pit after extraction.
		3,083 m ³ subsoil	Subsoil will be deposited locally adjacent to Turbine Bases. 144 m ³ will be used as berms around Turbines. Any surplus will be used to reinstate the borrow pits after extraction.
		2,605 m ³ rock	Rock will be crushed and used as hardcore in Site Access Tracks and Turbine Hardstands.
Turbine Hardstands	41,949	14,220 m ³ peat 27,729 m ³ subsoil	Peat and subsoil are to be deposited locally at hardstand edges. 360 m ³ will be used as berms around Turbine Hardstands. Any outstanding peat will be naturally air dried and used to fill borrow pits.
Electrical Sub-Stations & temporary Compounds.	9,907	1,385 m ³ peat	Peat is to be temporarily stored and re-used to reinstate the Temporary Compound Areas.
		8,522 m ³ subsoil	Subsoil will be dried naturally with air and used to reinstate the borrow pits after extraction
		0 m ³ rock	Rock will be crushed and used as hardcore in Site Access Tracks and Crane Hardstands.
Grid Connection*	6,854	0 m ³ peat 6,557 m ³ subsoil	Subsoil and rock will be used to backfill tranches as part of the Grid Connection Route construction. The remaining material is to be disposed of at a licensed facility (LoW 17 05 03*, 17 05 04)



4 RECOMMENDATION

Based on the available information, Jennings O'Donovan make the following recommendations:

- The estimated potential total volume of excavated material is 77,262 m³.
- Excavated material along the Grid Connection Route will be used to backfill the trenches once the cable has been laid. Any surplus material will be disposed of at a licensed facility according to **Management Plan 5: Waste Management Plan** due to the presence of bituminous material and hydrocarbons. All other excavated material can be re-used on the Site.
- A minimum of 5,070 m³ of imported stone is required for finishing of road construction/upgrade and Turbine Hardstands if the rock onsite is determined to be insufficient quality.



Kerry Planning Authority - Inspection Purposes Only!



APPENDIX A

Site Investigations Report





Prepared for;

Jennings O'Donovan
Inchamore Windfarm (IWF)



Site Investigation Report & Peat &
Subsoil Stability Risk Assessment



JENNINGS O'DONOVAN
& PARTNERS LIMITED
CONSULTING ENGINEERS

603679 IWF EIAR App. 6.1 SI & PSSRA (02)



INVESTORS
IN PEOPLE



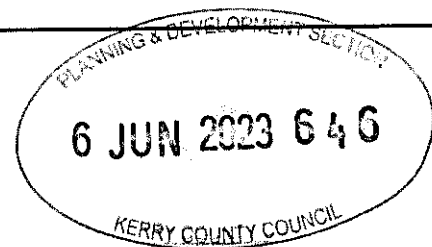
MARCH 2023

Contents

1. Introduction	5
1.1 Background	5
1.2 Purpose	5
1.3 Scope of Works – Tender	5
1.4 Statement of Authority	5
2. Site Investigation Works & Methods	6
2.1 Scope of Works – Completed	6
2.2 Peat & Slope Stability Risk Assessment Methodology	6
2.3 Subsoil & Slope Stability Risk Assessment Methodology	12
3. Baseline Conditions	15
3.1 Site Description & History	15
3.2 Site Geology	15
3.3 Site Soils & Subsoils	15
3.4 Topography & Substrate Topology	15
3.5 Hydrology & Climate	16
3.6 Receptors	16
4. Site Investigation Data & Results	17
4.1 Peat Depth Data	17
4.2 Trial Pit Data	17
4.3 Borehole Data	17
4.4 Peat Stability Risk Assessment Results	18
4.5 Peat Stability Risk Assessment Interpretation	25
4.6 Subsoil Stability Risk Assessment Results	27
4.7 Subsoil Stability Risk Assessment Interpretation	28
5. Conclusions	30
6. Caveats & Recommendations	32
7. References	33

List of Figures

Figure 1: Correlation Between Moisture Content and Shear Strength of Peat (N. Boylan, P. Jennings & M. Long, 2008).....	10
Figure 2: Correlation Between Factor of Safety, Cohesive Strength and Depth of Subsoils	28





1. Introduction

1.1 Background

RSK Ireland was commissioned by Jennings O'Donovan & Partners (JOD, the Client) on behalf of Inchamore Wind DAC (the Developer/s) to assess the geological site characteristics in relation to the planning application for the Inchamore Wind Farm (IWF, the Development) in Co. Cork.

1.2 Purpose

Site Investigation for the purposes of assessing ground conditions at EIA design phase of a proposed wind farm development, Inchamore Wind Farm, Co. Cork. Assessing ground conditions in terms of peat and slope stability risk, subsoil and geological characterisation and classification.

1.3 Scope of Works – Tender

The scope of works was initially specified by the Developer at tender phase. The scope of works for ground investigations at tender included the following works;

- Peat probing (50 m grid), 50 ha
- Trial pits, 35 no.
- Number of groundwater monitoring wells, 4 no.
- SI report with detailed findings, records and interpretation

Provisional works included;

- Gouge auger samples
- Boreholes up to 15 m, 5 no.
- Ground penetrating radar surveys (5 days)

In consultation with the Client and Developer the scope of works was adapted to the site based on observations made by desk study and initial site walk overs and assessments. The actual completed scope of works is detailed in **Section 2**.

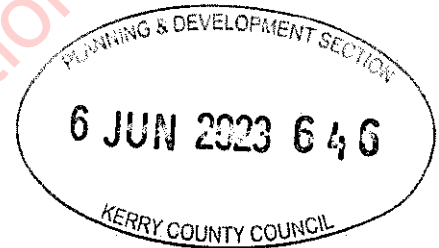
This work has been carried out in unison with the EIAR for the Project. Therefore, this report will be appended to **EIAR Chapter 8 - Soils & Geology** as part of the planning application for the Project. The EIAR tender scope includes for a stand-alone Peat Stability Report as well as stand alone Site Investigation report, however the two will be merged in this Site Investigation report. This is done with a view streamlining the site geological assessment.

Further to the above, the geological or environmental setting of the site will be described in detail in **EIAR Chapter 8 – Soil & Geology** with appended maps and graphics for reference. This report will refer and summarise the EIAR chapter/s to avoid duplication of information or graphics. This report will also reference **EIAR Chapter 9 – Hydrology & Hydrogeology** in relation to groundwater.

1.4 Statement of Authority

RSK (Ireland) Ltd. (RSK), part of RSK Group, is a consultancy providing environmental services in the hydrological, hydrogeological and other environmental disciplines. The company and group provide consultancy to clients in both the public & private sectors. More information can be found at www.rskgroup.com. The principal members of the RSK EIA team involved in this assessment include the following persons;

- Sven Klinkenbergh – B.Sc. (Environmental Science), P.G.Dip. (Environmental Protection) – Associate, Project Manager and EIA Lead Author with c. 10 years industry experience in the preparation of hydrological, hydrogeological and geological reports..
- Project Scientist: Lissa Colleen McClung - B.Sc. (Hons.) Environmental Studies, M.Sc. (Hons.) Environmental Science. Current Role: Graduate Project Scientist
- Project Scientist: Mairéad Duffy – B.Sc. (Environmental Science), M.Sc. (Climate Change). Current Role: Graduate Project Scientist



hazard and risk in peatland areas, particularly in relation to proposed electricity generation developments. The document is published and written in context of Scottish peatlands, however in the absence of relevant guidance, it is widely accepted as relevant guidance in Ireland.

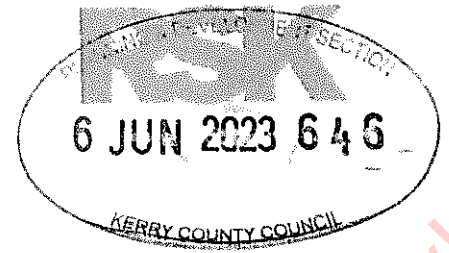
The guide emphasizes the need for a comprehensive assessment of landslide hazard and risk in peatland areas, which is particularly important due to the unique characteristics of these environments. Peatlands are often found in areas of high rainfall, and the accumulation of peat can result in unstable ground conditions, which can increase the risk of landslides.

The guide provides a step-by-step approach to landslide hazard and risk assessment, including the identification of potential landslide triggers, the characterization of the peatland environment, the assessment of landslide susceptibility, and the estimation of landslide hazard and risk. The guide also provides guidance on the selection of appropriate methods for landslide hazard and risk assessment, such as field mapping, remote sensing, and numerical modelling. The guide emphasizes the importance of stakeholder engagement and communication in the landslide hazard and risk assessment process, particularly in relation to proposed electricity generation developments, which can potentially have significant impacts on the surrounding environmental receptors and communities. The guide covers the following aspects which should be included in the site risk assessment;

- **Sampling Regime:** The guide recommends a sampling regime that includes both surface and subsurface surveys, using techniques such as; depth probing, gouge coring, trialpitting, drilling, and geophysical surveys. The aim is to obtain a comprehensive understanding of the geology and hydrogeology of the site, as well as the depth and condition of the peat layer.
- **Assessment of Desk Top Data:** The guide recommends an assessment of desktop data to identify potential sources of instability, such as steep slopes, drainage features, and areas of peat degradation. This assessment should be based on available data sources such as geological maps, aerial photographs, and LIDAR data.
- **Degree of Geomorphological Assessment:** The guide recommends a high degree of geomorphological assessment, using methods such as aerial photography interpretation and field mapping to identify potential instability features such as landslides and erosion channels. Many sources of data can input to the interpretation of stability risk at any particular location, and field reconnaissance is also a valuable tool in this respect.
- **Interpretation of Data:** The guide recommends a detailed interpretation of all data collected, including the results of field surveys and laboratory testing. This should involve the identification of key parameters such as peat depth, soil properties, and groundwater levels or saturation, as well as the integration of all available data to develop a comprehensive understanding of the potential for instability. This can result in screening out peat stability risk, for example; in areas of extensive shallow bedrock or bedrock outcrops, or areas with very minor inclines. Conversely, high risk areas can potentially be identified by desk top assessment alone, for example; steep slopes in excess 15 degrees, or areas with historical stability issues or historic landslides.
- **The development of numerical models for peat stability risk assessments** has been driven by advances in computer technology (e.g. QGIS) and modeling techniques, as well as an increased awareness of the risks associated with peat instability. The use of numerical modeling in peat stability risk assessments typically involves the following steps:
 - **Development of a conceptual model:** This involves the development of a conceptual model of the site based on the results of field investigations and laboratory testing. The conceptual model should include information on the geometry and properties of the peat layer, as well hydrogeological characteristics such as pore water pressure or bul unit weight (saturation).
 - **Selection of appropriate modeling techniques:** There are a variety of modeling techniques that can be used to simulate peat stability, including finite element and finite difference methods. The selection of an appropriate modeling technique will depend on the specific characteristics of the site and the goals of the assessment.
 - **Calibration and validation of the model:** The model is calibrated and validated using data collected during field investigations and laboratory testing. This involves adjusting model parameters to improve the match between simulated and observed data.

Overall, the guide emphasizes the importance of a comprehensive and integrated approach to peat landslide hazard and risk assessments, which includes a thorough sampling regime, an assessment of desktop data, a high degree of geomorphological assessment, and a detailed interpretation of all data collected. By following these guidelines potential hazards and risks associated with peat instability can be identified and managed effectively.

$$FoS = \frac{c_u}{yz \sin \alpha \cos \alpha}$$



For the purpose of this assessment, the above formula will be referred to as the *FoS Formula*.

Qualifying peat stability at all peat survey points and trial pit locations was done using the following parameters;

Table 1: Formula Parameters & Symbols

Symbol	Description	Unit
FoS	Factor of Safety	FoS
c_u	Effective cohesion or Undrained Shear Strength	kPa
y	Bulk Unit Weight of Peat	kN/m ³
z	Depth to failure plain	m
α	Slope Angle	Degrees

The Factor of Safety (FoS) result will range from 0 to infinity, however the following ranges are prescribed ratings as follows;

Table 2: Factor of Safety (FoS) Classifications (Scottish Gov., 2017)

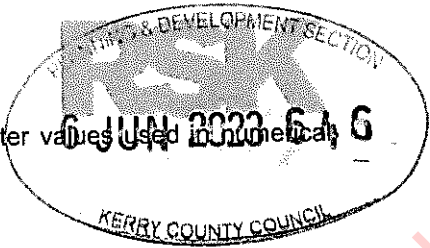
Description	FoS Value Range	Classification
Stable	>1.3	Acceptable
Marginally Stable	1.0 > < 1.3	Acceptable
Unstable	<1.0	Unacceptable

As per the guidance listed in Section 2 of this report, FoS values of 1.0 or greater are considered acceptable in terms of peat stability (Scottish Gov., 2017).

The assessment has been completed on the basis of 2 no. scenarios, which are as follows;

1. Scenario A – Peat stability in terms of the receiving environment as is, that is using the depth of peat observed and recorded during site surveys.
2. Scenario B – Peat stability in terms of the in-situ peat with 1m fill (presumed peat) placed on top, that is using the depth of peat observed and recorded during site surveys plus 1 metre fill (depth + 1.0m). This is the assessment worst case scenario, and this will be used to assess stability at proposed infrastructure locations.

Undrained shear strength (effective cohesion) (c_u) has been derived by means of assessing moisture content results, which is; there is a correlation between peat moisture content and shear strength (effective cohesion). Shear vane testing has been carried out on the site however, shear vane test, or in situ barrel shear tests are not considered representative of shear strength characteristics of the peat being assessed in terms of stability assessment given numerous flaws with the test itself, namely; the shear vane test evaluates the shear strength where by the force is exerted in a vertical and cylindrical plane, which is not indicative of forces at play with respect slope stability or mass movement; and fibres and roots within the peat will effect the test itself, potentially exaggerating, or giving misleading data. The following graph presents conceptual shear strength values for peat (Boylan N, Jennings P & Long M., 2008).



The following table lists parameter values, including inferred conservative parameter values used in numerical assessments.

Table 4: Formula Parameters, Symbols & Inferred Conservative Values

Symbol	Description	Value	Unit
c_u	Effective cohesion	3.5	kPa
γ	Bulk Unit Weight of Peat	11	kN/m ³
z	Depth to failure plain	Depth of Peat	m
α	Slope Angle	Surface Topography	Degrees

2.2.8 Risk Matrices & Ranking

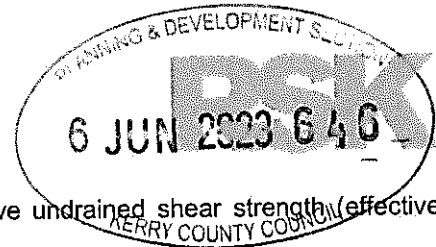
In assessing the risk in relation to peat stability on site it is important to rate the risk in terms of the hazard, the likelihood and the consequences if any such issue should arise. Therefore, the slope stability risk assessment considers the following parameters, which are assessed by means of a series of risk matrices (Scottish Gov., 2017).

Table 5: Parameters Included in Risk Matrices and Assessed

Category	Description
Landslide History	Considers the likelihood of landslide events occurring based on the history of the site, including the current site use.
Factor of Safety	As described above, includes the following; <ul style="list-style-type: none"> • Peat depth • Peat quality / condition • Moisture content • Incline (surface topography) • Shear strength • Bulk unit weight of peat
Substrate Topology	Identifying and qualifying variance in substrate topology and qualifying variance from theory underlining the stability formula used i.e., Infinite Slope (Parallel and no foot and head forces)
Significance of Receptor	Qualifying potential receptors in terms of significance.
Distance to Receptor	Qualifying localised proposed development areas in terms of distance to nearest receptor.

Considering the above parameters, the stability assessment follows the following steps;

1. **FoS_{RAW}** - Assess the site in terms of soil stability using the FoS Formula and calculate a Factor of Safety (FoS) using the raw data. This step is considered as preparation of the data obtained for the site i.e., translating the data to a value related to stability, and is not considered the final output of the stability assessment.
2. **FoS_{ADJUSTED}** - Assess the FoS_{RAW} values in terms of suitability of the application of FoS Formula by considering the history of landslides in relation to the proposed site, and the topology of the substrate compared to the surface topology of the site. This is done by means of a risk matrix which qualifies the point, and also applies a coefficient for the next risk assessment step.
3. **Risk Ranking RR_{SF}** - The FoS_{ADJUSTED} data is assessed in terms of significance of associated receptor. This is done by means of a risk matrix which qualifies the point, and also applies a coefficient for the next risk assessment step.
4. **Risk Ranking RR_D** - The RR_{SF} data is assessed in terms of distance to associated receptor. This is done by means of a risk matrix which qualifies the point.



For the purpose of assessing subsoil stability for the Site a conservative undrained shear strength (effective cohesion) value will be used in numerical assessments, i.e., 40 kPa.

In situ bulk density (kg/m^3), or bulk unit weight (kN/m^3) of soils/subsoils (γ), namely silty sandy subsoils, is typically within the range of 2500 to 2700 kg/m^3 , or 24.5 to 26.5 kN/m^3 . For the purpose of assessing subsoil stability for the Site a conservative bulk unit weight value will be used in numerical assessments i.e., 27.0 kN/m^3 .

The depth to failure plane (z) is presumed to be thickness or depth of subsoils at any given sampling point being assessed. However, subsoil depths will be inferred in areas of the site with limited data. It should be noted that the failure plane can potentially be within subsoils (subsoil on subsoil movement), or the substrate i.e., weathered bedrock. In relation to the Site specifically, it is important to note the presence of iron pan. Iron pan is a layer of oxidised iron within the subsoil. The iron pan layer is relatively impermeable which can impede or significantly alter groundwater movement in the subsoils. Under the right circumstances the iron pan layer can therefore become a slip or failure plane. In such instances the failure plane has the potential to parallel to the overlying topography.

Slope angle (α) is presumed to be topographical incline measured on site / evaluated using high resolution elevation data at any given sampling point being assessed, however it should be noted that the slope angle (α) relates to the failure plane angle, which is presumed to be the peat and substrate interface, and which is presumed to be parallel to the surface when using FoS Formula (Infinite Slope Formula). In reality the underlying substrate (bedrock) is unlikely to be parallel to the surface topology. However, considering the presence of iron pan in subsoils at the site it is important to consider the potential for parallel failure planes when assessing stability at the site.

It should be noted that FoS Formula does not account for forces related to the toe and head of an area or mass of soil with the potential for mass movement, which is in reality the Infinite Slope formula will likely exaggerate stability conditions negatively.

The following table lists parameter values, including inferred conservative parameter values used in numerical assessments.

Table 6: Formula Parameters, Symbols & Inferred Conservative Values

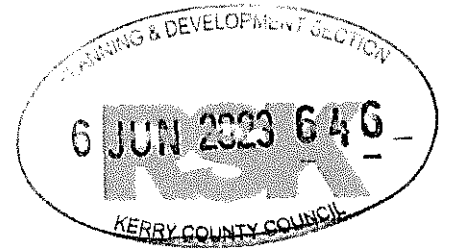
Symbol	Description	Value	Unit
c_u	Effective cohesion	40	kPa
γ	Bulk Unit Weight of Peat	27.0	kN/m^3
z	Depth to failure plain	Depth of subsoil to bedrock	m
α	Slope Angle	Surface Topography	Degrees

2.3.2 Risk Matrices & Ranking

In assessing the risk in relation to subsoil stability on site it is important to rate the risk in terms of the hazard, the likelihood and the consequences if any such issue should arise. Therefore, the slope stability risk assessment considers the following parameters, which are assessed by means of a series of risk matrices (Scottish Gov., 2017)

Table 7: Parameters Included in Risk Matrices and Assessed

Category	Description
Landslide History	Considers the likelihood of landslide events occurring based on the history of the site, including the current site use.
Factor of Safety	As described above, includes the following; <ul style="list-style-type: none"> Subsoil depth (to failure plain)



3. Baseline Conditions

3.1 Site Description & History

There are no recorded landslide events in close proximity to the Site (GSI, Accessed 2021).

There were no indications of stability issues or mass movement observed on the Site during site surveys.

The Site is mapped as having areas ranging from Low Risk to High Risk in terms of Landslide Stability, that is; full spectrum of slope stability risk categories (GSI, ND). Larger areas of High-Risk landslide susceptibility are associated with relatively expansive steep slopes.

Refer to EIAR baseline section for further information (**Chapter 8: Soils and Geology**).

3.2 Site Geology

Consultation with Geological Survey Ireland Spatial Resources (GSI) indicates that the bedrock at 1:1,000,000 scale the Site is underlain by;

- Gun Point Formation (GP) – Green-grey to purple medium to fine-grained sandstones, interbedded with green and red to purple siltstones to fine sandstones.

The region contains a multitude of complex geological features however, there are no mapped faults or other significant features underlying the area of the Site.

Rocky outcrops are common within the Site Boundary.

Refer to EIAR baseline section for further information (**Chapter 8: Soils and Geology**).

3.3 Site Soils & Subsoils

Consultation with available maps (GSI) indicate that the soil type across the entire area of the Site, and the general area in the region is mostly Blanket Peat and Till derived from Devonian sandstones with several significant areas mapped as being Bedrock at Surface.

Peat depths observed on the Site are generally 'Rock' to 'shallow' with isolated pockets of moderately deep peat, however depths at most sampling points are within the range of 0.0-0.5 m and areas with deeper, particularly extremely deep peat have been avoided in terms of the Project footprint. Peat depths are mapped and presented in **Appendix A**.

Peat quality assessment (by gouge coring / trial pitting / observations at cut locations) indicate relatively moderate to high Von Post values (generally H5 to H8) across the Site.

Refer to EIAR baseline section for further information (**Chapter 8: Soils and Geology**).

3.4 Topography & Substrate Topology

The topography at and in the immediate area surrounding the Site is highly variable with multiple peaks, ridges with variable elevations and inclines. At lower elevations the topography is relatively flat or comprising of low magnitude inclines, however at mid and high elevation relative to the Site, steep high magnitude inclines are commonplace.



4. Site Investigation Data & Results

4.1 Peat Depth Data

Approximately 150 no. peat depth probe locations were assessed at the Site. Georeferenced and categorized peat depth locations are presented in **Appendix A**. Peat depth data is presented in **Appendix B**. Number of probe locations by Depth Category are presented in **Table 8**.

Table 8: Peat Depth Probe Points per Depth Category

Peat Depth Category	No.
A – Rock (0.00-0.01 m)	16
B – Very Shallow (0.01-0.5 m)	92
C – Shallow (0.5-2.0 m)	66
D – Moderately Deep (2.0-3.5m)	12
E – Deep (3.5-5.0 m)	1
F – Very Deep (>5.0 m)	0
TOTAL	187 (21 Inferred)

4.2 Trial Pit Data

A total of 16 no. Trial Pits were completed, logged and sampled at the Site. Trial Pit and Borehole locations are presented in **Appendix C**. Trial Pit Logs are presented in **Appendix D**. Trial Pit and Site Investigation Photos are presented in **Appendix E**. A total of 3 no. subsoil samples were obtained from the Site and tested for particle size distribution (PSD). Subsoil laboratory certificates are presented in **Appendix G**.

Particle Size Distribution (PSD) Soil Description results for subsoils (BS 1377: Part 2: 1990: Clause 9) at the site are presented in **Table 9**. Note: cobble size particles observed on trial pit log sheets and have likely been screened out to a degree at the time of sampling.

Table 9: Reported Subsoil Description (PSD)

Sample ID	Cobbles (%)	Gravel (%)	Sand (%)	Silt & Clay (%)	Description
TP03-A2 (SS1)	0.0	43.0	32.0	25.0	Very clayey very sandy GRAVEL
TP08-A2 (SS1)	0.0	50.0	19.0	31.0	Slightly sandy gravelly CLAY
TP11-A2 (SS1)	0.0	51.0	26.0	22.0	Very clayey very sandy GRAVEL

Cobbles were observed on site and were likely screened out at the time of sampling. Further details are presented in **Appendix D**. Iron pan was observed in several trial pits as listed in **Appendix H**, and presented in **Appendix C**, **Appendix D** and **Appendix E**.

4.3 Borehole Data

A total of 1 no. rotary core borehole was completed, logged, and sampled at the Site. Borehole logs are presented in **Appendix F**. Drill logs indicate that;

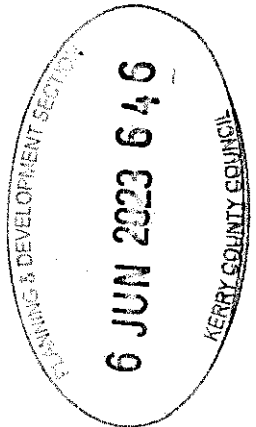
- Bedrock underlying the site is described as SILTSTONE (BH011)
- Bedrock shows minor signs of weathering.
- Driller notes water strike at BH011 at ~2.50m bGL likely perched groundwater on top of unweathered bedrock. .

SI Appendix B - Peat & Subsoil Survey Database
Inchamore WF, Co. Cork

Prepared by: SK 07/02/2023
RSK File Ref.: 603679-001-02

Sample / Test Category	Sample ID No.	Association	ITM Easting	ITM Northing	Thickness of Peat	Classification of Thickness / Depth of peat	Slope (Extracted from SIFM)	Scenario A		Scenario B		Scenario A		Scenario B		Scenario A		Scenario B	
								FOSRAW	FOSADJ	FOSRAW	FOSADJ	RR _{1P}	RR _{1A}	RR _{2P}	RR _{2A}	RR _{3P}	RR _{3A}	RR _{4P}	RR _{4A}
Depth Probe (DP15)	518926	15			0.5	C - Shallow (0.5-2.0m)	0.03	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Depth Probe (DP15)	518927	15			0.5	C - Shallow (0.5-2.0m)	0.03	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Depth Probe (DP15)	518928	15			0.5	C - Shallow (0.5-2.0m)	0.03	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Depth Probe (DP17)	518929	15			0.5	C - Shallow (0.5-2.0m)	0.03	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Depth Probe (DP17)	518930	15			0.5	C - Shallow (0.5-2.0m)	0.03	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Depth Probe (DP17)	518931	15			0.5	C - Shallow (0.5-2.0m)	0.03	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Depth Probe (DP17)	518932	15			0.5	C - Shallow (0.5-2.0m)	0.03	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Depth Probe (DP17)	518933	15			0.5	C - Shallow (0.5-2.0m)	0.03	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Depth Probe (DP17)	518934	15			0.5	C - Shallow (0.5-2.0m)	0.03	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Plate 5: Peat Data & Risk Assessment Results - T5



4.5 Peat Stability Risk Assessment Interpretation

Table 13: Peat Stability Risk Assessment – Factor of Safety (Adjusted) (Scenario B) at Main Infrastructure Units presents the interpretation of stability risk assessment data in the context of stability, or factor of safety (FoS) (Adjusted, Scenario B) at each significant development infrastructure unit.

Table 13: Peat Stability Risk Assessment – Factor of Safety (Adjusted) (Scenario B) at Main Infrastructure Units

Turbine No. / Unit	FoS _{ADJ} (Factor of Safety adjusted according considering site specific conditions)	Geo-Hazard / Comment (Important to consider when carrying out detailed design and preconstruction planning)
T1	<p>Generally acceptable.</p> <p>Data indicates peat stability is primarily acceptable, with the exception of * pockets of moderately deeper peat (marginally acceptable / unstable at localised scale north of proposed turbine locality).</p>	<p>Localised steep inclines and potential for pockets of deep peat. Residual risk = localised stability issues.</p> <p>Relatively extensive area of deep peat to north / northwest of development footprint at T1. Development footprint avoids this area however vehicular movements must be managed, and this area avoided completely.</p>
T2	<p>Generally acceptable with localised areas of marginally stable FoS, localised areas of unstable peat.</p> <p>Data indicates that peat depth in the area is generally shallow with relatively extensive rock outcrops. Steep inclines in the area are a key driver of unfavourable results.</p>	<p>Localised steep inclines and potential for pockets of deep peat. Residual risk = localised stability issues.</p> <p>Proximity to receptor (river).</p>
T3	<p>Data indicates peat stability is primarily acceptable, marginally acceptable.</p> <p>Some locations on approach (access tracks) possess locally unstable data due to relatively higher localized slope angles, and/or deeper peat however peat depths are shallow.</p>	<p>Localised steep inclines and potential for pockets of deep peat. Residual risk = localised stability issues.</p>
T4	<p>Generally acceptable.</p> <p>Data indicates peat stability is primarily acceptable, with isolated pockets Marginally acceptable.</p>	<p>Localised steep inclines and potential for pockets of deep peat. Residual risk = localised stability issues.</p>
T5	<p>Generally acceptable.</p> <p>Data indicates peat stability is primarily acceptable, with isolated pockets Marginally acceptable.</p>	<p>Localised steep inclines and potential for pockets of deep peat. Residual risk = localised stability issues.</p>

Turbine No. / Unit	RR(D) (Ranked Risk considering Distance to Sensitive Receptors)	Geo-Hazard / Comment (Important to consider when carrying out detailed design and preconstruction planning)
Borrow Pit	Very Low to Moderate Risk	Localised stability and drainage network.
Substation	Very Low to Low Risk	Localised stability and drainage network.

4.6 Subsoil Stability Risk Assessment Results

Review of subsoil stability assessment result data and maps as presented in **Appendix I** indicate that the factor of safety is generally acceptable and very low to low stability risk across the site (areas assessed / trial pit locations*) with the exception of minor isolated areas of steeper inclines and deeper till deposits (inferred*).

Summary of risk at the site under varying conditions and scenarios is presented in the following tables.

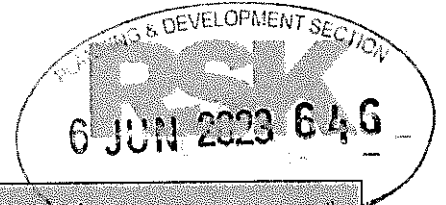
Table 15: Factor of Safety (Adjusted) at Trial Pit Locations

	Acceptable	Marginally Stable	Unstable
FoS (Adj.) Scenario A	16	0	0
FoS (Adj.) Scenario B	14	2	0

Table 16: Risk Ranking (Distance) at Trial Pit Locations

	Very Low	Low	Moderate	High
RR (Dist.) Scenario A	14	1	1	0
RR (Dist.) Scenario B	13	1	2	0

Based on the inferred conservative values applied to the above stability risk assessment, the factor of safety is highly dependent on cohesive strength, which in turn is highly dependent on hydrogeological characteristics including pore water pressure. **Figure 2** presents potential varying Factors of Safety for subsoils at the Site depending on varying cohesive strength and depths to failure plane.



Turbine No. / Unit	RR ₀ (Ranked Risk considering Distance to Sensitive Receptors)	Geo-Hazard / Comment
Met Mast	Low	Localised stability and drainage network.
Borrow Pit	Low	Localised stability and drainage network.
Substation	Low	Localised stability and drainage network.

Kerry Planning Authority - Inspection Purposes Only!



Geo-Hazards

A register of Geo-Hazards is mapped and presented in **Appendix H**.

Kerry Planning Authority - Inspection Purposes Only!

7. References

Scottish Government (2017) Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments

N. Boylan, P. Jennings & M. Long (2008) Peat slope failure in Ireland. Quarterly Journal of Engineering Geology and Hydrogeology. Available at https://www.researchgate.net/publication/245379146_Peat_slope_failure_in_Ireland Accessed: 20/08/19.

R. Munro (2004) Dealing with bearing capacity problems on low volume roads constructed on peat. Roadex, Northern Periphery.

GSI Map Viewer. Available at: <http://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228> Accessed: 20/08/19.

EPA Map Viewer. Available at: <https://gis.epa.ie/EPAMaps/> Accessed: 20/08/19.

EANI River Basin Viewer. Available at <https://apps.d.era-ni.gov.uk/RiverBasinViewer/>. Accessed: 20/08/19.

D. L. Fitzgerald (2007) Estimation of point rainfall frequencies. Irish Meteorological Service Technical Note 61

R. A. Lindsay (2005) Wind Farms and Blanket Peat - The Bog Slide of 16th October 2003 at Derrybrien, Co. Galway, Ireland. University of East London and The Derrybrien Development Cooperative Ltd.

Farrell, E.R., Long, M., Gavin, K. Henry, T.; (2006) 'Chapter 4: Geotechnics of Landslides' In: Creighton, R (eds). Landslides in Ireland. Dublin: Geological Survey of Ireland., pp.23-31

Met Eireann (MET) (2018) 2018, A summer of Heat Waves and Droughts

Met Eireann (MET) (2018) Available Data. Available: <https://www.met.ie> Accessed: 06/08/19

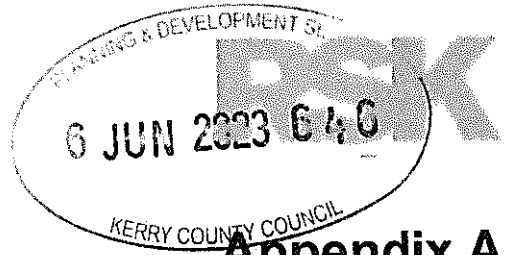
Boylan, N. and Long, M. (2012) Evaluation of peat strength for stability assessments. Geotechnical Engineering Volume 167 Issue GE5, Institution of Civil Engineers (ICE)

Agus F., Hairiah K., Mulyani A. (2011) *Practical Guidelines – Measuring Carbon Stock in Peat Soils*. Bogor, Indonesia: World Agroforestry Centre (ICRAF) Southeast Asia Regional Program, Indonesian Centre for Agricultural Land Resources Research and Development.

Kiley G., Leahy P., McVeigh P., Lewis C., Sottocornola M., Laine A. and Koehler A. (2012) PeatGHG – Survey of GHG Emission and Sink - Potential of Blanket Peatlands. EPA Report No. 228, Environmental Protection Agency (EPA), Ireland.

Renou-Wilson F. and Wilson D. (2014) *Vulnerability Assessment of Peatlands: Exploration of Impacts and Adaptation Options in Relation to Climate Change and Extreme Events (VAPOR)*. EPA Report No. 250, Environmental Protection Agency (EPA), Ireland.

Wilson, S; Bray, R; Cooper, P (CIRIA, 2004) Sustainable Drainage Systems – Hydraulic, structural and water quality advice. CIRIA C609, London, UK.



Appendix A

Kerry Planning Authority - Inspection Purposes Only!

ind

Development Layout

WF

- Red Line 23
- 230313 Site Layout
- Turbine Locations
- △ Site Entrances
- △ Proposed Met Mast
- ◇ Watercourse Crossings
- ◇ Proposed Borrow Pits
- ◇ Borrow Pit
- ◇ Proposed Temporary Construction Compound
- ◇ Proposed On-Site Substation

- UGC
- Inchamore Grid Connection Route
- HDD Crossings
- Delivery
- Redline-250 Haul Road - 256-Polyline
- Turbine Delivery Route
- Redline-250 Haul Road - 256-Polyline
- urbine Delivery Route

- Geology
- 3188-A2-1WF Peat Depth Probe Data
- 0.0 - 0.1m
- 0.1 - 0.5m
- 0.5 - 2.0m
- 2.0 - 3.5m
- Geological Linework (100k GSI)

- Base Maps
- Bing Aerial
- OpenStreetMap

Project ID: 604162 Inchamore Wind Farm
 Projection: ITM
 Drawn by: Sven K.
 Reviewed by: Sven K.
 Version: 21/09/2022

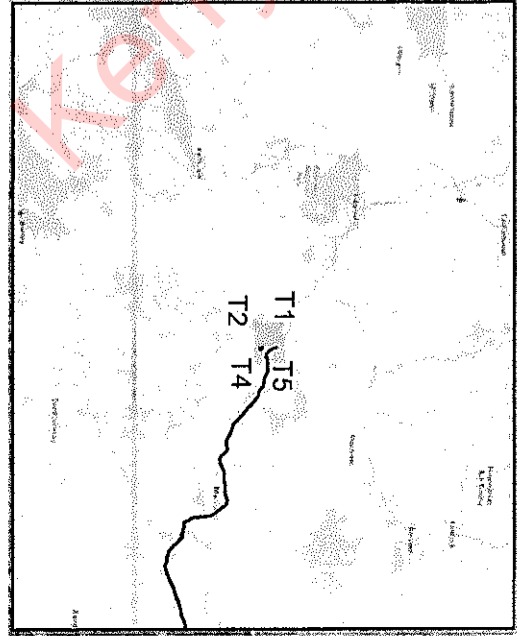
References/Sources:
 Environmental Protection Agency (EPA)
 Geological Services Ireland (GSI)
 Bing Aerial / Geohive / Open Street Map / Google Roads
 GDEM Elevation Contours
 Phase 1 (250m Grid Peat Depth - Greensource

Note: Data points presented are generated using open source data and/or a handheld GPS. This drawing / map is considered a final model with reasonable accuracy for the purposes of environmental assessment. This drawing should not be relied upon for detailed design purposes.

Scale: 0 0.27 0.54 km



6 JUN 2023 6:45
 KERRY COUNTY COUNCIL



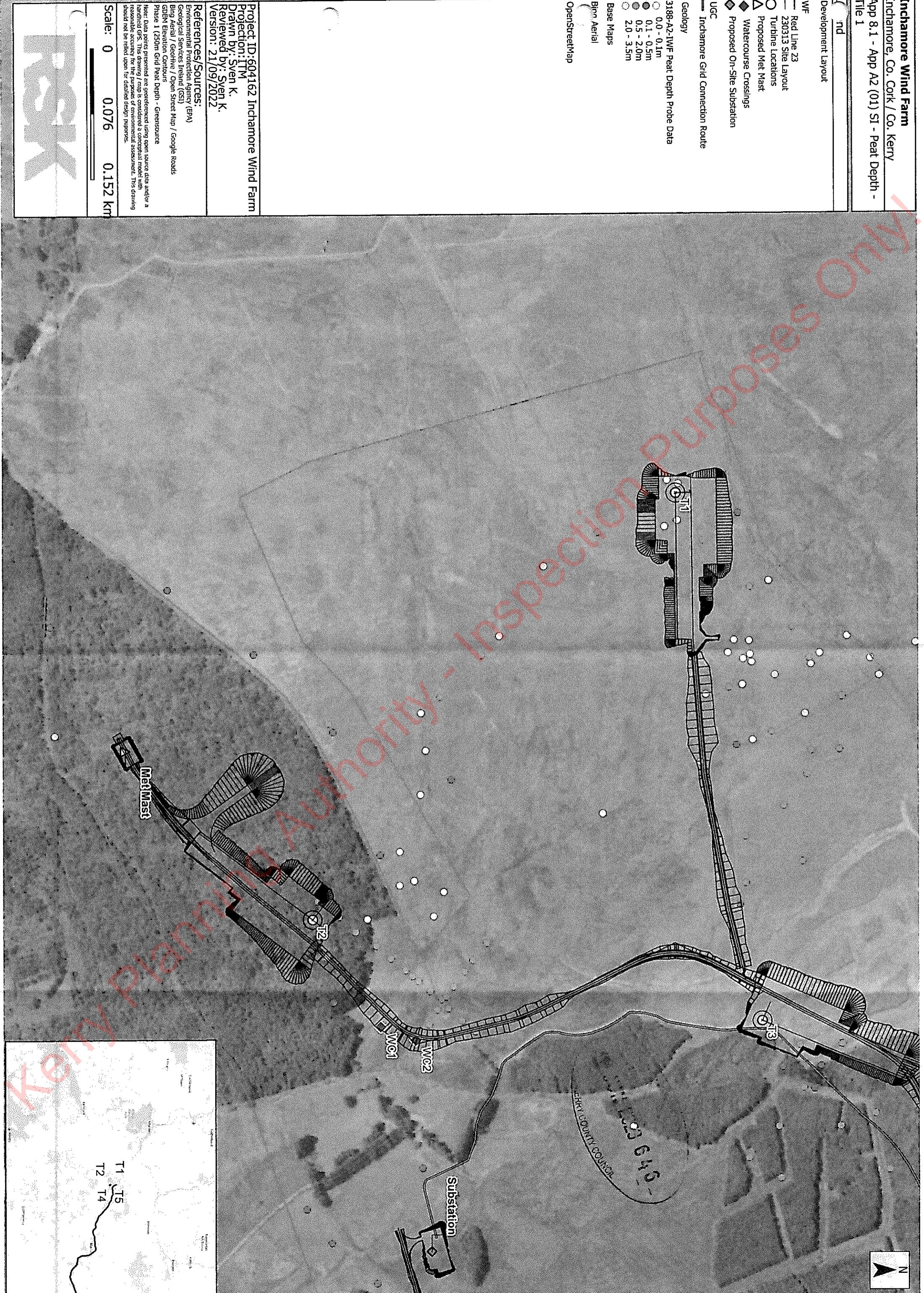
- nd
- Development Layout
- WF
 - Red Line 23
 - 230313 Site Layout
 - Turbine Locations
 - Proposed Met Mast
 - Watercourse Crossings
 - Proposed On-Site Substation
- UGC
 - Inchamore Grid Connection Route
- Geology
 - 3188-A2-1WF Peat Depth Probe Data
 - 0.0 - 0.1m
 - 0.1 - 0.5m
 - 0.5 - 2.0m
 - 2.0 - 3.5m
- Base Maps
 - Binn Aerial
 - OpenStreetMap

Project ID: 604162 Inchamore Wind Farm
 Projection: ITM
 Drawn by: Sven K.
 Reviewed by: Sven K.
 Version: 21/09/2022

References/Sources:
 Environmental Protection Agency (EPA)
 Geological Services Ireland (GSI)
 Bing Aerial / Geohive / Open Street Map / Google Roads
 GDEM Elevation Contours
 Phase 1 (250m Grid Peat Depth - Greensource

Note: Data points presented are georeferenced using open source data and/or a handheld GPS. This drawing / map is considered a conceptual model with reasonable accuracy for the purposes of environmental assessment. This drawing should not be relied upon for detailed design purposes.

Scale: 0 0.076 0.152 km



Inchamore Wind Farm

Inchamore, Co. Cork / Co. Kerry

App 8.1 - App A2 (01) SI - Peat Depth -

Tile 2

nd
Development Layout

- WF Red Line Z3
- 230313 Site Layout
- Turbine Locations
- Watercourse Crossings
- Proposed Borrow Pits
- Borrow Pit
- Proposed On-Site Substation

UIG
Inchamore Grid Connection Route

- Geology
- 3188-A2-1WF Peat Depth Probe Data
- 0.0 - 0.1m
- 0.1 - 0.5m
- 0.5 - 2.0m

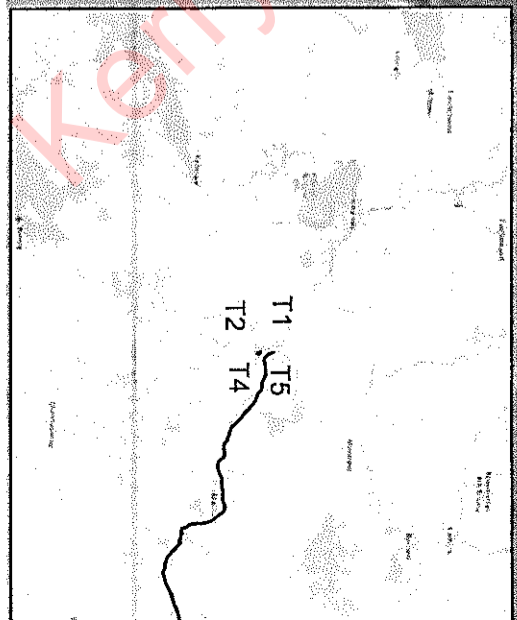
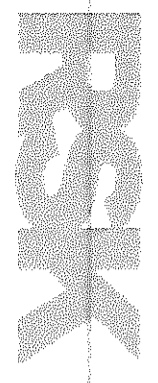
Base Maps
Binn Aerial
OpenStreetMap

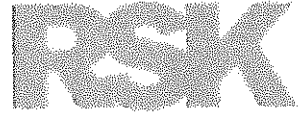
Project ID: 604162 Inchamore Wind Farm
Projection: ITM
Drawn by: Sven K.
Reviewed by: Sven K.
Version: 21/09/2022

References/Sources:
Environmental Protection Agency (EPA)
Geological Services Ireland (GSI)
Binn Aerial / Geohive / Open Street Map / Google Roads
GDEM Elevation Contours
Phase: 1 (250m Grid Peat Depth) - Greensource

Note: Data points presented are georeferenced using open source data and/or a handheld GPS. This drawing / map is considered a conceptual model with reasonable accuracy for the purposes of environmental assessment. This drawing should not be relied upon for detailed design purposes.

Scale: 0 0.076 0.152 km

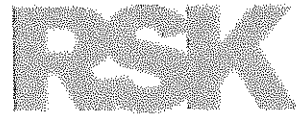




Appendix B



Kerry Planning Authority - Inspection Purposes Only!



Appendix C



Kerry Planning Authority - Inspection Purposes Only!

Inchamore Wind Farm

Inchamore, Co. Cork / Co. Kerry

App 8.1 - App C- 3188-A2 (01) IWF SI -
TP BH Locations

rd
Development Layout

- WF
- Red Line 23
- 230313 Site Layout
- Turbine Locations
- Site Entrances
- Proposed Met Mast
- Watercourse Crossings
- Proposed Borrow Pits
- Borrow Pit
- Proposed Temporary Construction Compound
- Proposed On-Site Substation

- UGC
- Inchamore Grid Connection Route
- HDD Crossings
- Delivery
- Redline-250 Haul Road - 256-Polyline
- Turbine Delivery Route
- Redline-250 Haul Road - 256-Polyline
- urbine Delivery Route

- Geology
- 3188-A2-IWF SI Trial Pit Data
- Yes, Iron Pan Present

- Base Maps
- Bing Aerial
- OpenStreetMap

Project ID: 604162 Inchamore Wind Farm
Projection: ITM
Drawn by: Sven K.
Reviewed by: Sven K.
Version: 21/09/2022

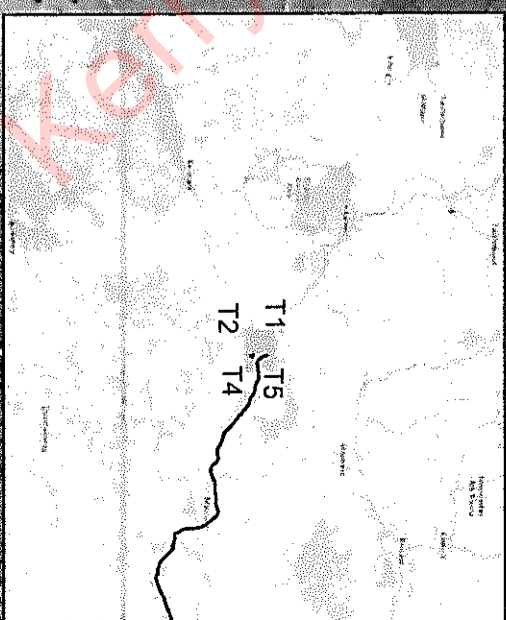
References/Sources:
Environmental Protection Agency (EPA)
Geological Services Ireland (GSI)
Bing Aerial / Geotiff / Open Street Map / Google Roads
GDEM Elevation Contours
Phase 1 (250m Grid Peat Depth) - Greensource

Note: Data points presented are georeferenced using open source data and/or a
reliable source. This drawing is a visual representation of the data and should not be
relied upon for detailed design purposes.

Scale: 0 0.27 0.54 Km



6 JUN 2023 6:15
KERRY COUNTY COUNCIL





Appendix D



Kerry Planning Authority - Inspection Purposes Only!

Appendix D – IWF Trial Pit Logs

(File Ref. 3188-A2-024; 603679 App D)



Inchamore WF, Co. Cork

SI Trial Pit Logs

Kerry Planning Authority - Inspection Purposes Only!

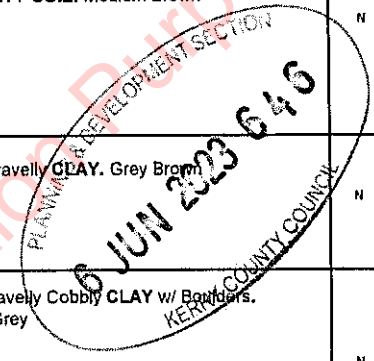
Borehole/ Trial Pit Design & Completion	Soil (S) / Water (W) / Vapour (V) Sampling					Depth in metres below ground level, also (mODM) & (Thickness)	Geology (graphical log)	INVESTIGATION POINT LOG NUMBER	
	Sample number & interval (mbGL) (Sample 10 kg minimum) <small>Red line = Single sample taken from borehole Blue line = Composite sample (generated in office or lab) Green line = Sample accepted for analysis in lab</small>	Non-Natural Ground Percentage (see * below)	PID (ppm) <small>Bagged sample (BS), Trial Pit Wall (TPW), Soil Core (SC), BH Analysis (BHA), Trial Pit Clumps (TPC)</small>	Odour strength & description (none, weak, moderate, strong)	Groundwater occurrence (See legend for symbols used for dry, damp and wet)			Client, Project, Location	TP002	Minerex work Item	Page No.
N/A		N/A	N/A					JOD (Coillte), Inchamore WF, Cork A2 02/06/2021 SK Excavator 51397B, 578679 Geological description	Natural / Made

* **Non-natural material %s with total % in ()**
NON-DEGRADABLE % (ND): 1 = Brick, 2 = Concrete, 3 = Glass, 4 = Ceramic tiles, 5 = ACMs (asbestos containing materials such as roof tiles, piping), 6 = Blue Bangor slate.
DEGRADABLE % (D): 7 = Plastic, 8 = Metal, 9 = Wood / Organic / Leaves / Twigs / Peat, 10 = Ash & Clinker, 11 = Charcoal, 12 = Tarmacadam, 13 = Leather, 14 = Coal Tar

** 1-From hand held GPS, 2-Estimated from google maps or 3-Surveyed with theodolite.

A	B	C	D	E	F
DOMINANT GEOLOGICAL COMPONENT Clay, Silt, Sand, Gravel, Cobble, Boulder deposit	NON-DOMINANT GEOLOGICAL COMPONENT Clay - Silt - Sand, Gravel - Cobble - Boulder	COLOUR (LB, MB, DB) - Brown - Grey (LC, MC, DG) - Mustard - Beige (tan) - Olive - Mottled - Orange	STIFFNESS VST = V. Soft ST = Soft F = Firm S = Stiff VS = V. Stiff	LAYER ID, RECOVERY & STONE % recovery % >10mm stone	FN or N
F Interpretation NN = Non-natural ground (NB: mark up ground if disturbed natural), N = Natural ground					

Write additional help notes on macropores, mottling etc as space allows




Kerry Planning Authority - Inspection Purposes Only!

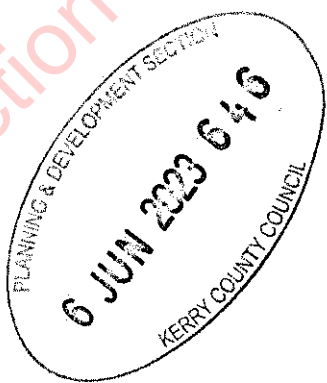
Borehole/ Trial Pit Design & Completion	Soil (S) / Water (W) / Vapour (V) Sampling					Depth in metres below ground level, also (mCDM) & (Thickness)	Geology (graphical log)	INVESTIGATION POINT LOG NUMBER	
	Sample number & interval (mbGL) (Sample 10 kg minimum) <small>Red line = Single sample taken from logs Blue line = Composite sample (generated in office or lab) Green line = Core sample extracted in lab</small>	Non-Natural Ground Percentage	PHD (ppm) <small>Bagged sample (BS); Trial Pit Wall (TPW); Soil Core (SC); BH Analysis (BHA); Trial Pit Clumps (TPC)</small>	Odour strength & description (none, weak, moderate, strong)	Groundwater occurrence (See legend for symbols used for dry, damp and wet)			Client, Project, Location	Minerex work item
N/A		N/A	N/A			0.5	PEAT/PEATY SOIL. Dark Brown		TP004
						1.0	Sandy CLAY. Medium Brown	N	JOD (Coillta), Inchamore WF, Cork
						1.5	Sandy CLAY. Grey	N	A2
						2.0			1 of 1
						2.5			02/06/2021
						3.0			SK
						3.5			Excavator
						4.0			(File Ref. 3188-A2-024, 603679 App D)
							EOH - Big Boulders		Irish Transverse Mercator (ITM)** 0513750, 0578906
									Geological description
									Natural / Made

PLANNING & DEVELOPMENT SECTION
6 JUN 2023 6:46
 KERRY COUNTY COUNCIL

* Unreliable data. Indication only.
 ** From hand held GPS

A DOMINANT GEOLOGICAL COMPONENT Clay, Silt, Sand, Gravel, Cobble, Boulder deposit	B NON-DOMINANT GEOLOGICAL COMPONENT Clay - Silt - Sand Gravel - Cobble - Boulder	C COLOUR (LB, HR, DB) - Grey (LG, MG, DG) - Mustard - Beige (tan) - Olive - Mottled - Orange	D STIFFNESS VST = V. Soft ST = Soft F = Firm S = Stiff VS = V. Stiff	E LAYER ID, RECOVERY & STONE % recovery % >10mm stone	F NN or N
					F Interpretation NN = Non-natural ground (fill / made up ground / disturbed natural) N = Natural ground

Borehole/ Trial Pit Design & Completion	Soil (S) / Water (W) / Vapour (V) Sampling					Geology (graphical log)	INVESTIGATION POINT LOG NUMBER	
	Sample number & interval (mbGL) (Sample 10 kg minimum)	Non-Natural Ground Percentage	PID (ppm)	Odour strength & description (none, weak, moderate, strong)	Groundwater occurrence (See legend for symbols used for dry, damp and wet)		Client, Project, Location	TP006
N/A		N/A	N/A				JOD (Coillte), Inchamore WF, Cork A2 1 of 1 02/06/2021 SK Excavator 513543, 579269	
						PEAT/PEATY SOIL, Dark Brown Clayey, Sandy GRAVEL / TILL w/ Cobbles EOH End of turning point, ground level below baseline. Cut side +2m. Peat 0.2mbGL, Brown till 0.3, grey as logged to existing GL.	Natural / Made N N	



* Unreliable data. Indication only.
 ** From hand held GPS

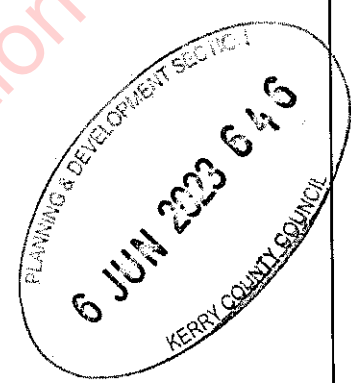
A DOMINANT GEOLOGICAL COMPONENT Clay, Silt, Sand, Gravel, Cobble, Boulder deposit	B NON-DOMINANT GEOLOGICAL COMPONENT Clay - Silt - Sand Gravel - Cobble - Boulder	C COLOUR - Brown (LB, MB, DB) - Grey (LG, MG, DG) - Mustard - Beige (tan) - Olive - Mottled - Orange	D STIFFNESS VST - V, Soft ST = Soft F = Firm S = Stiff VS = V, Stiff	E LAYER ID, RECOVERY & STONE % recovery % > 10mm stone	F NN or N
--	--	---	---	--	---------------------

Write additional help notes on macropores, mottling etc as space allows

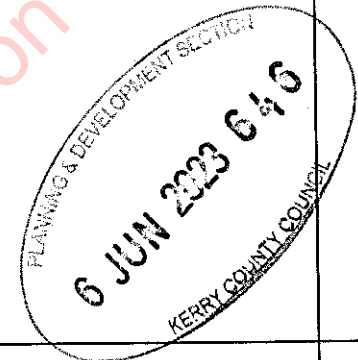
F Interpretation
 NN = non-natural ground (made up ground / disturbed natural)
 N = Natural ground

Borehole/ Trial Pit Design & Completion	Soil (S) / Water (W) / Vapour (V) Sampling					Depth in metres below ground level also (mQDDM) & [Thickness]	Geology (graphical log)	INVESTIGATION POINT LOG NUMBER	TP008																														
	Sample number & interval (mbGL) (Sample 10 kg minimum) <small>Red line = Single laboratory sample from field</small> <small>Blue line = Composite sample generated in office or lab</small> <small>Green line = Other samples generated in office</small>	Non-Natural Ground Percentage	PID (ppm)	Odour strength & description (none, weak, moderate, strong)	Groundwater occurrence (See legend for symbols used for dry, damp and wet)			Client, Project, Location	JOD (Coillta), Inchmaree WF, Cork																														
N/A		N/A	N/A				<table border="1"> <tr> <td>Minerex work item</td> <td>A2</td> </tr> <tr> <td>Page No.</td> <td>1 of 1</td> </tr> <tr> <td>Date & time drilled / formed:</td> <td>03/06/2021</td> </tr> <tr> <td>Logged by (drawn by) [checked by]</td> <td>SK</td> </tr> <tr> <td>Drilling / Trial pitting co. & equipment</td> <td>Excavator</td> </tr> <tr> <td>Doc. Ref.</td> <td>(File Ref. 3188-A2-024; 603679 App D)</td> </tr> <tr> <td>Irish Transverse Mercator (ITM)</td> <td>612974, 579057</td> </tr> </table>	Minerex work item	A2	Page No.	1 of 1	Date & time drilled / formed:	03/06/2021	Logged by (drawn by) [checked by]	SK	Drilling / Trial pitting co. & equipment	Excavator	Doc. Ref.	(File Ref. 3188-A2-024; 603679 App D)	Irish Transverse Mercator (ITM)	612974, 579057	Natural / Made	N																
Minerex work item	A2																																						
Page No.	1 of 1																																						
Date & time drilled / formed:	03/06/2021																																						
Logged by (drawn by) [checked by]	SK																																						
Drilling / Trial pitting co. & equipment	Excavator																																						
Doc. Ref.	(File Ref. 3188-A2-024; 603679 App D)																																						
Irish Transverse Mercator (ITM)	612974, 579057																																						
<p>PEAT/PEATY SOIL. Dark Brown</p> <p>Sandy Gravelly CLAY w/ cobbles.</p> <p>EOH - Weathered Bedrock / Boulders</p>									N																														
<p>* Unreliable data. Indication only.</p> <p>** From hand held GPS</p>								<table border="1"> <tr> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th>F</th> </tr> <tr> <td>DOMINANT GEOLOGICAL COMPONENT</td> <td>NON-DOMINANT GEOLOGICAL COMPONENT</td> <td>COLOUR</td> <td>STIFFNESS</td> <td>LAYER ID, RECOVERY & STONE</td> <td>NN or N</td> </tr> <tr> <td>Clay, Silt, Sand, Gravel, Cobble, Boulder deposit</td> <td>Clay - Silt - Sand Gravel - Cobble - Boulder</td> <td>- Brown (LB, MB, OB) - Gray (LG, MG, DG) - Mustard - Beige (tan) - Olive - Mottled - Orange</td> <td>VST - V. Soft ST = Soft F = Firm S = Stiff VS = V. Stiff</td> <td>% recovery % >10mm stone</td> <td></td> </tr> <tr> <td colspan="5"> <p>Write additional help notes on macropores, mottling etc as space allows</p> </td> <td>F Interpretation</td> </tr> <tr> <td colspan="5"> <p>REK</p> </td> <td>NN = Non-natural ground (NE = made up ground / disturbed natural), N = Natural ground</td> </tr> </table>		A	B	C	D	E	F	DOMINANT GEOLOGICAL COMPONENT	NON-DOMINANT GEOLOGICAL COMPONENT	COLOUR	STIFFNESS	LAYER ID, RECOVERY & STONE	NN or N	Clay, Silt, Sand, Gravel, Cobble, Boulder deposit	Clay - Silt - Sand Gravel - Cobble - Boulder	- Brown (LB, MB, OB) - Gray (LG, MG, DG) - Mustard - Beige (tan) - Olive - Mottled - Orange	VST - V. Soft ST = Soft F = Firm S = Stiff VS = V. Stiff	% recovery % >10mm stone		<p>Write additional help notes on macropores, mottling etc as space allows</p>					F Interpretation	<p>REK</p>					NN = Non-natural ground (NE = made up ground / disturbed natural), N = Natural ground
A	B	C	D	E	F																																		
DOMINANT GEOLOGICAL COMPONENT	NON-DOMINANT GEOLOGICAL COMPONENT	COLOUR	STIFFNESS	LAYER ID, RECOVERY & STONE	NN or N																																		
Clay, Silt, Sand, Gravel, Cobble, Boulder deposit	Clay - Silt - Sand Gravel - Cobble - Boulder	- Brown (LB, MB, OB) - Gray (LG, MG, DG) - Mustard - Beige (tan) - Olive - Mottled - Orange	VST - V. Soft ST = Soft F = Firm S = Stiff VS = V. Stiff	% recovery % >10mm stone																																			
<p>Write additional help notes on macropores, mottling etc as space allows</p>					F Interpretation																																		
<p>REK</p>					NN = Non-natural ground (NE = made up ground / disturbed natural), N = Natural ground																																		

Kerry Planning Authority - Inspection Purposes Only!



Borehole/ Trial Pit Design & Completion	Soil (S) / Water (W) / Vapour (V) Sampling					Geology (graphical log)	INVESTIGATION POINT LOG NUMBER	
	Sample number & interval (mbGL) (Sample 10 kg minimum) <small>Red line = Single element sample (from field) Blue line = Composite sample (generated in office or lab) Green line = Core Ashrae or equivalent code.</small>	Non-Natural Ground Percentage	PID (ppm) <small>Bagged sample (BS), Trial Pit Wall (TPW), Soil Core (SC), BH Airspg (BHA), Trial Pit Clumps (TPC)</small>	Odour strength & description <small>(none, weak, moderate, strong)</small>	Groundwater occurrence <small>(See legend for symbols used for dry, damp and wet)</small>		Depth in metres below ground level, also (mODM) & [Thickness]	TP010	Client, Project, Location JOD (Coillte), Inchamore WF, Cork
N/A		N/A	N/A			<p>TOPSOIL</p> <p>Sandy Gravelly CLAY. Brown</p> <p>PEAT/PEATY SOIL. Dark Brown</p> <p>Sandy Gravelly CLAY. Brown</p> <p>Sandy Gravelly CLAY. Blue Grey</p> <p>Big Boulder</p> <p>EOH</p>	<p>Minerex work item: A2</p> <p>Page No: 1 of 1</p> <p>Date & time drilled / formed: 03/06/2021</p> <p>Logged by (drawn by) [checked by]: SK</p> <p>Drilling / Trial pitting co. & equipment: Excavator</p> <p>Doc. Ref.: [File Ref. 3188-A2-024, 603679 App D]</p> <p>Irish Transverse Mercator (ITM)**: 0513253, 0578571</p>	<p>Geological description</p> <p>Natural / Made</p>
<p>* Unreliable data. Indication only.</p> <p>** From hand held GPS</p>							<p>A DOMINANT GEOLOGICAL COMPONENT Clay, Silt, Sand, Gravel, Cobble, Boulder deposit</p> <p>B NON-DOMINANT GEOLOGICAL COMPONENT Clay - Silt - Sand Gravel - Cobble - Boulder</p> <p>C COLOUR - Brown (LB, MB, DB) - Grey (LG, MG, DG) - Mustard - Beige (tan) - Olive - Mottled - Orange</p> <p>D STIFFNESS VS1 - V, Soft ST - Silt F = Firm S = Stiff VS = V, Stiff</p> <p>E LAYER ID, RECOVERY & STONE % recovery % > 10mm stone</p> <p>F NN or N</p> <p>F Interpretation NN = Non-natural ground (fill / made up ground / disturbed natural) N = Natural ground</p>	



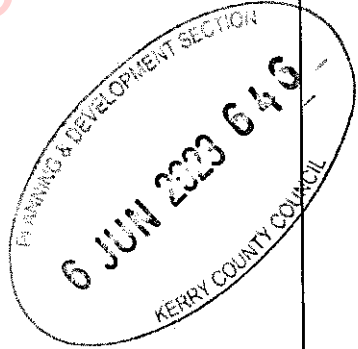
Kerry Planning Authority - Inspection Purposes Only!

Borehole/ Trial Pit Design & Completion	Soil (S) / Water (W) / Vapour (V) Sampling					Depth in metres below ground level, also (mCODM) & (Thickness)	Geology (graphical log)	INVESTIGATION POINT LOG NUMBER	
	Sample number & interval (mbGL) (Sample 10 kg minimum) <small>Red line = Single chamber sample (from 50kg)</small> <small>Blue line = Composite sample (generated in office or lab)</small> <small>Green line = Other sample (appropriate to S16)</small>	Non-Natural Ground Percentage	PID (ppm) <small>Bagged sample (BS); Trial Pit Wall (TPW); Soil Core (SC); BH Arising (BHA); Trial Pit Clumps (TPC)</small>	Odour strength & description (none, weak, moderate, strong)	Groundwater occurrence (See legend for symbols used for dry, damp and wet)			Client, Project, Location	TP012	Minerex work item	JOD (Coillto, Inchamore WF, Cork)
N/A		N/A	N/A			0.5	PEAT/PEATY SOIL. Dark Brown		N
							Weathered Bedrock		N
							EOH – Weathered Bedrock		
						1.0			
						1.5			
						2.0			
						2.5			
						3.0			
						3.5			
						4.0			

PLANNING & DEVELOPMENT SECTION
6 JUN 2023 6:46
 KERRY COUNTY COUNCIL

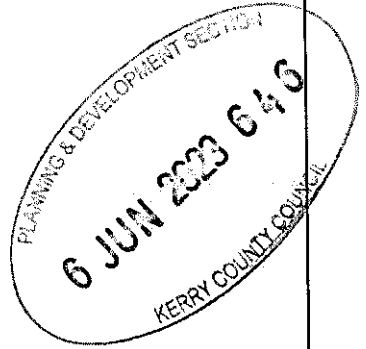
* Unreliable data. Indication only.	A	B	C	D	E	F
** From hand held GPS	DOMINANT GEOLOGICAL COMPONENT Clay, Silt, Sand, Gravel, Cobble, Boulder deposit	NON-DOMINANT GEOLOGICAL COMPONENT Clay - Silt - Sand Gravel - Cobble - Boulder	COLOUR (LB, MB, DB) - Brown - Grey (LG, MG, DG) - Mustard - Beige (tan) - Olive - Mottled - Orange	STIFFNESS VST = V. Soft ST = Soft F = Firm S = Stiff VS = V. Stiff	LAYER ID, RECOVERY & STONE % recovery % >10mm stone	NN or N
						F Interpretation
	Write additional help notes on macropores, mottling etc as space allows					NN = Non-natural ground (B / made up ground / disturbed natural) N = Natural ground

Borehole/ Trial Pit Design & Completion	Soil (S) / Water (W) / Vapour (V) Sampling					Geology (graphical log)	INVESTIGATION POINT LOG NUMBER					
	Sample number & interval (mbGL) (Sample 10 kg minimum) <small>Red line = Single standard sample (10kg min)</small> <small>Blue line = Composite sample (generated in office or lab)</small> <small>Green line = Composite sample (generated on site)</small>	Non-Natural Ground Percentage	PID (ppm) <small>Bagged sample (BS), Trial Pit Wall (TPW), Soil Core (SC), BH Analysis (BHA), Trial Pit Clumps (TPC)</small>	Odour strength & description <small>(none, weak, moderate, strong)</small>	Groundwater occurrence <small>(See legend for symbols used for dry, damp and wet)</small>		Depth in metres below ground level, also (macODM) & [Thickness]	TP014	Client, Project, Location			
N/A		N/A	N/A				PEAT/PEATY SOIL, Dark Brown TP abandoned, deep peat encountered, probe point <5m from TP = 2.0mbGL. See peat probing data for area.	N				
* Unreliable data. Indication only. ** From hand held GPS							A DOMINANT GEOLOGICAL COMPONENT Clay, Silt, Sand, Gravel, Cobble, Boulder deposit 	B NON-DOMINANT GEOLOGICAL COMPONENT Clay - Silt - Sand Gravel - Cobble - Boulder	C COLOUR - Brown (LB, MB, DB) - Grey (LG, MG, DG) - Mustard - Beige (tan) - Olive - Mottled - Orange	D STIFFNESS VST = V. Soft ST = Soft F = Firm S = Stiff VS = V. Stiff	E LAYER ID, RECOVERY & STONE % recovery % > 10mm stone	F NN or N NN = non-natural ground (SB = made up ground / disturbed natural) N = Natural ground



Kerry Planning Authority - Inspection Purposes Only!

Borehole/ Trial Pit Design & Completion	Soil (S) / Water (W) / Vapour (V) Sampling					Depth in metres below ground level, also (mODM) & [Thickness]	Geology (graphical log)	INVESTIGATION POINT LOG NUMBER	TP016
	Sample number & interval (mbGL) (Sample 10 kg minimum) <small>Red line = Single shaker sample (200m hole) Blue line = Composite sample (generated in office or lab) Green line = In situ sample (dry or wet)</small>	Non-Natural Ground Percentage	PLD (ppm) <small>Bagged sample (BS): Trial Pit Vial (TPV); Soil Core (SC); BH Airings (BHA); Trial Pit Clumps (TPC)</small>	Odour strength & description <small>(none, weak, moderate, strong)</small>	Groundwater occurrence <small>(See legend for symbols used for dry, damp and wet)</small>			Client, Project, Location	JOD (Coillte), Inchamore WF, Cork
N/A	N/A	N/A	N/A	.....	.....	0.5	PEAT/PEATY SOIL, Dark Brown	N
				.....	.....	0.5	Sandy Gravelly Cobbly CLAY, Brown	N
				.....	.....	1.0	EOH, Bedrock.	
				.....	.....	1.5		
				.....	.....	2.0		
				.....	.....	2.5		
				.....	.....	3.0		
				.....	.....	3.5		
				.....	.....	4.0		



* Unreliable data. Indication only.
** From hand held GPS

A DOMINANT GEOLOGICAL COMPONENT Clay, Silt, Sand, Gravel, Cobble, Boulder deposit	B NON-DOMINANT GEOLOGICAL COMPONENT Clay - Silt - Sand Gravel - Cobble - Boulder	C COLOUR (LB, MB, DB) - Grey (LG, MG, DG) - Mustard - Beige (tan) - Olive - Mottled - Orange	D STIFFNESS VST = V. Soft ST = Soft F = Firm S = Stiff VS = V. Stiff	E LAYER ID, RECOVERY & STONE 1/4 recovery 1/2 > 10mm stone	F NN or N
<p>Write additional help notes on macropores, mottling etc as space allows</p>					F Interpretation NN = Non-natural ground (fill / made up ground / disturbed natural), N = Natural ground



Appendix E

Kerry Planning Authority - Inspection Purposes Only!

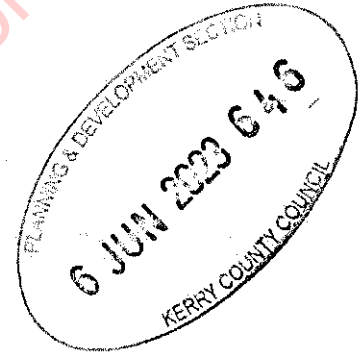


Appendix E – IWF Trial Pit and Site Photos

(File Ref. 3188-A2-008; 603679 App E)

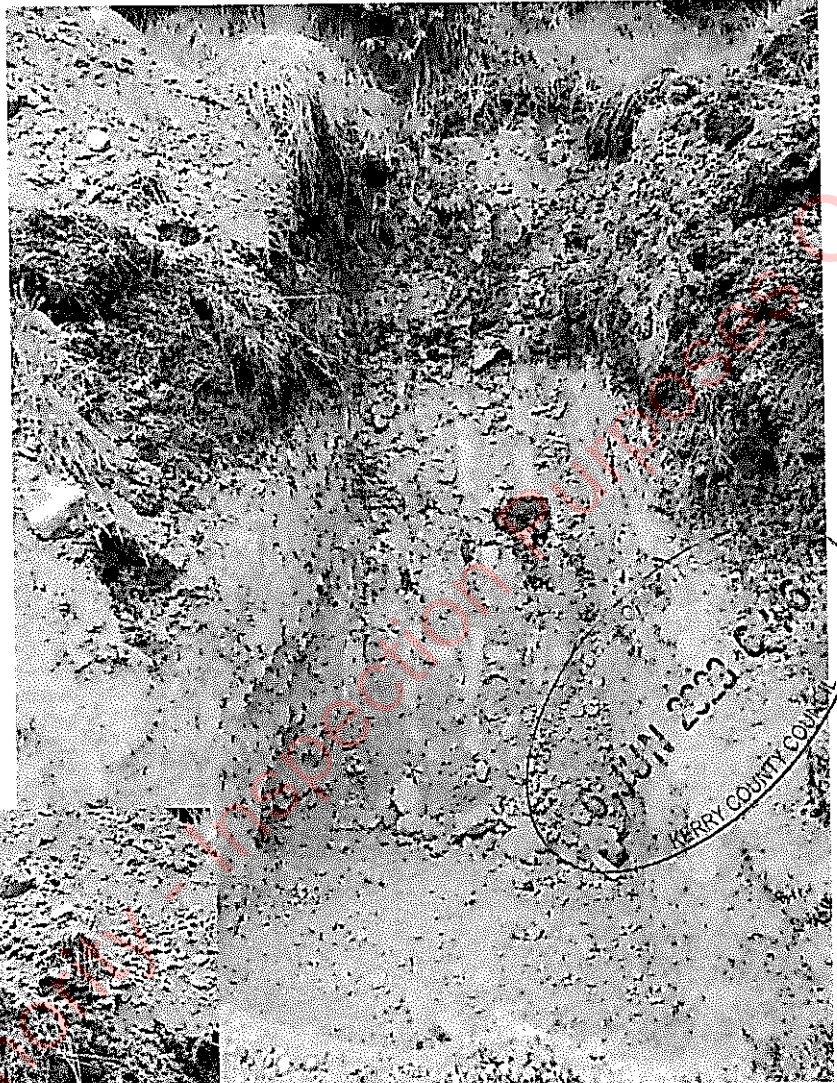
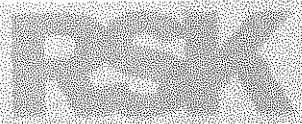
Inchamore WF, Co. Cork

SI Trial Pit Photos



Appendix E – IWF Trial Pit and Site Photos
TP002

(File Ref. 3188-A2-008; 603679 App E)



File Ref. 3188-A2-008; 603679 App E

Appendix E – IWF Trial Pit and Site Photos

TP004

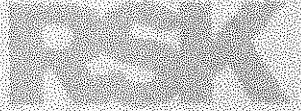
(File Ref. 3188-A2-008; 603679 App E)



Appendix E – IWF Trial Pit and Site Photos

TP005

(File Ref. 3188-A2-008; 603679 App E)



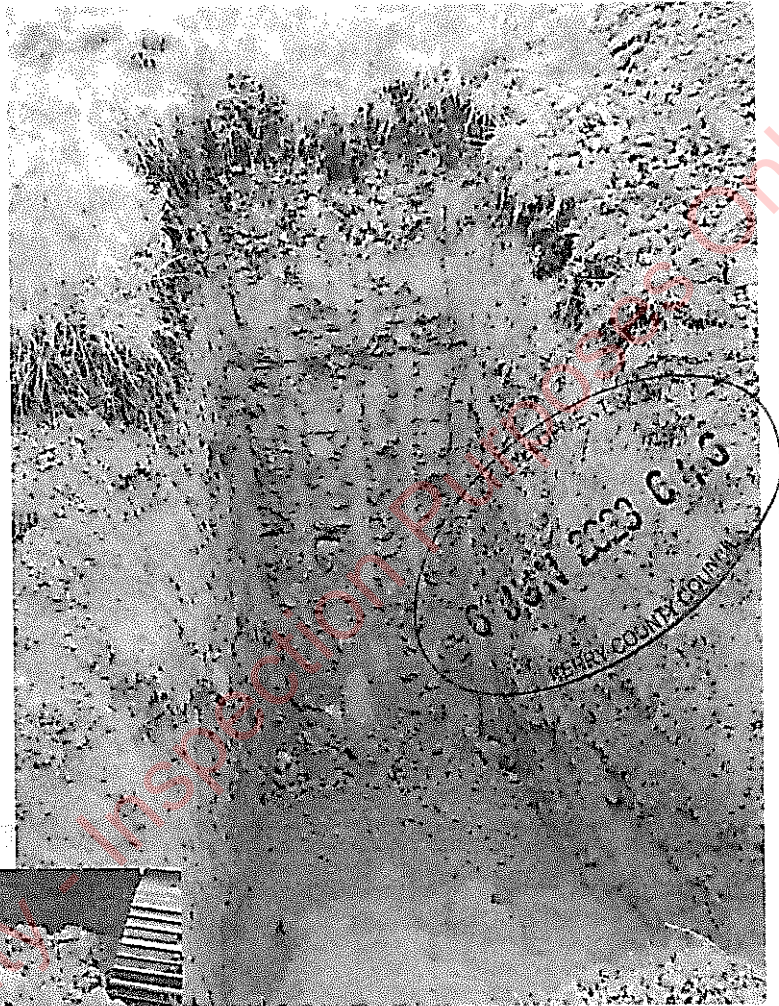
PLANNING & DEVELOPMENT SECTION
6 JUN 2023 046
KERRY COUNTY COUNCIL

Kerry Planning Authority - For Opposition Purposes Only!

Appendix E – IWF Trial Pit and Site Photos

TP007

(File Ref. 3188-A2-008; 603679 App E)



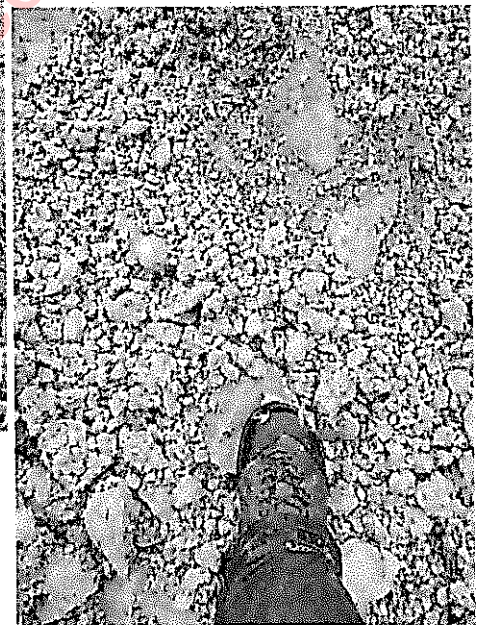
Appendix E – IWF Trial Pit and Site Photos

TP008

(File Ref. 3188-A2-008; 603679 App E)



Planning & Development Section
6 JUN 2023 6:46
KERRY COUNTY COUNCIL



Appendix E – IWF Trial Pit and Site Photos

TP010

(File Ref. 3188-A2-008; 603679 App E)



PLANNING & DEVELOPMENT SECTION
6 JUN 2023 6:46
KERRY COUNTY COUNCIL



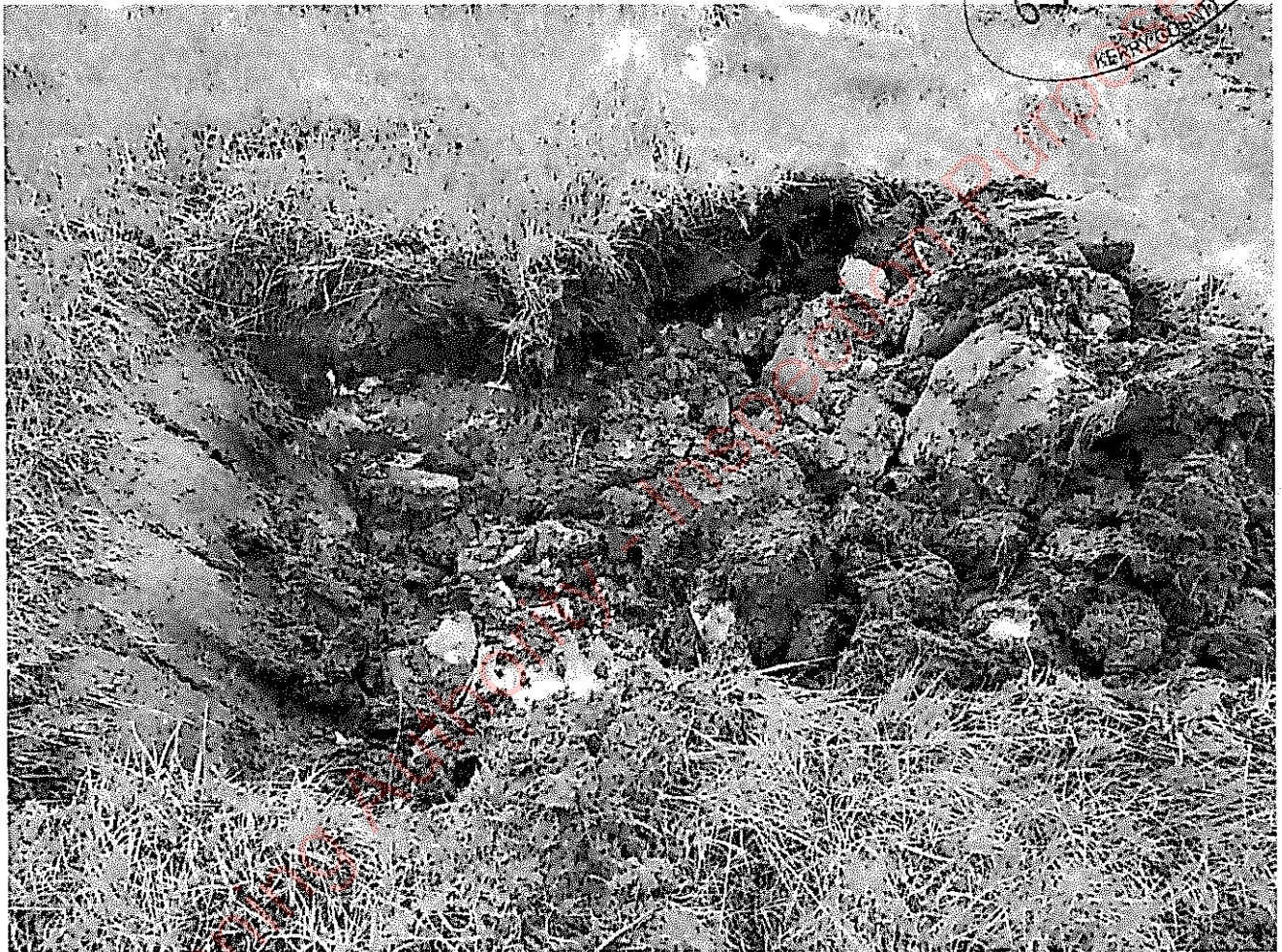
File Ref. 3188-A2-008; 603679 App E

Appendix E – IWF Trial Pit and Site Photos

TP012

(File Ref. 3188-A2-008; 603679 App E)

PLANNING & DEVELOPMENT SECTION
6 JUN 2023 6:46
KERRY COUNTY COUNCIL



Appendix E – IWF Trial Pit and Site Photos

TP014

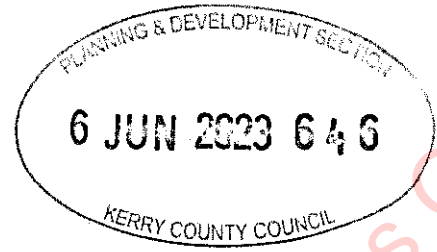
(File Ref. 3188-A2-008; 603679 App E)

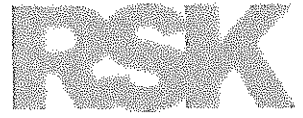
PLANNING & DEVELOPMENT
6 JUN 2023 11:40
KERRY COUNTY COUNCIL



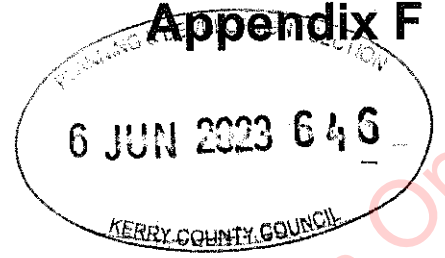
Appendix E – IWF Trial Pit and Site Photos
TP016

(File Ref. 3188-A2-008; 603679 App E)





Appendix F



Kerry Planning Authority - Inspection Purposes Only!

KEY TO SYMBOLS ON EXPLORATORY HOLE RECORDS

All linear dimensions are in metres or millimetres

DESCRIPTIONS

** Drillers Description
Friable Easily crumbled

SAMPLES

U() Undisturbed 102mm diameter sample, () denotes number of blows to drive sampler
U()F, U()P F- not recovered, P-partially recovered
U38 Undisturbed 38mm diameter sample
P(F), (P) Piston sample - disturbed
B Bulk sample - disturbed
D Jar Sample - disturbed
W Water Sample
CBR California Bearing Ratio mould sample
ES Chemical Sample for Contamination Analysis
SPTLS Standard Penetration Test S lump sample from split sampler

CORE RECOVERY AND ROCK QUALITY

TCR Total Core Recovery (% of Core Run)
SCR Solid Core Recovery (length of core having at least one full diameter as % of core run)
RQD Rock Quality Designation (length of solid core greater than 100mm as % of core run)
Where there is insufficient space for the TCR, SCR and RQD, the results may be found in the remarks column
lf Fracture Spacing in mm (Minimum/Average/Maximum) NI - non intact, NR - no recovery
AZCL Assumed Zone of Core Loss
NI Non intact

GROUNDWATER

▽ Groundwater strike
▼ Groundwater level after standing period
Date/Water Date of shift (day/month)/Depth to water at end of previous shift shown above the date and depth to water at beginning of shift given below the date

INSITU TESTING

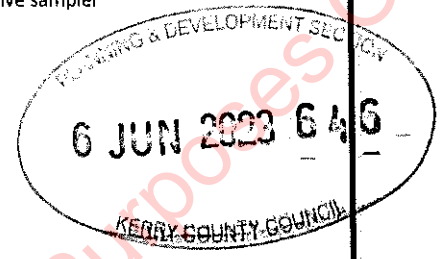
S Standard Penetration Test - split barrel sampler
C Standard Penetration Test - solid 60° cone
SW Self Weight Penetration
Ivp, HVp (R) In Situ Vane Test, Hand Vane Test (R) demonstrates remoulded strength
K(F), (C), (R), (P) Permeability Test
HP Hand Penetrometer Test

MEASURED PROPERTIES

N Standard Penetration Test - blows required to drive 300mm after seating drive
x/y Denotes x blows for y mm within the Standard Penetration Test
x*/y Denotes x blows for y mm within the seating drive
c_u Undrained Shear Strength (kN/m²)
CBR California Bearing Ratio

ROTARY DRILLING SIZES

Index Letter	Nominal Diameter (mm)	
	Borehole	Core
N	75	54
H	99	76
P	120	92
S	146	113



Key Sheet



Priority Geotechnical Ltd.
 Tel: 021 4631600
 Fax: 021 4638690
 www.prioritygeotechnical.ie

Drilled By:

GW

Logged By:

EK

Borehole No.

BH011

Sheet 2 of 2

Project Name: Gortyrally and Inchamore Wind Farms

Project No.: P21139

Co-ords:

Hole Type: RC

Location: Gortyrally, Co.Cork. Inchamore, Co.Cork

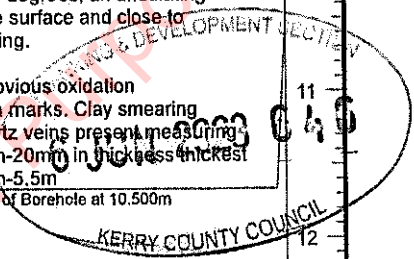
Level: m OD

Scale: 1:50

Client: Minerex Environmental

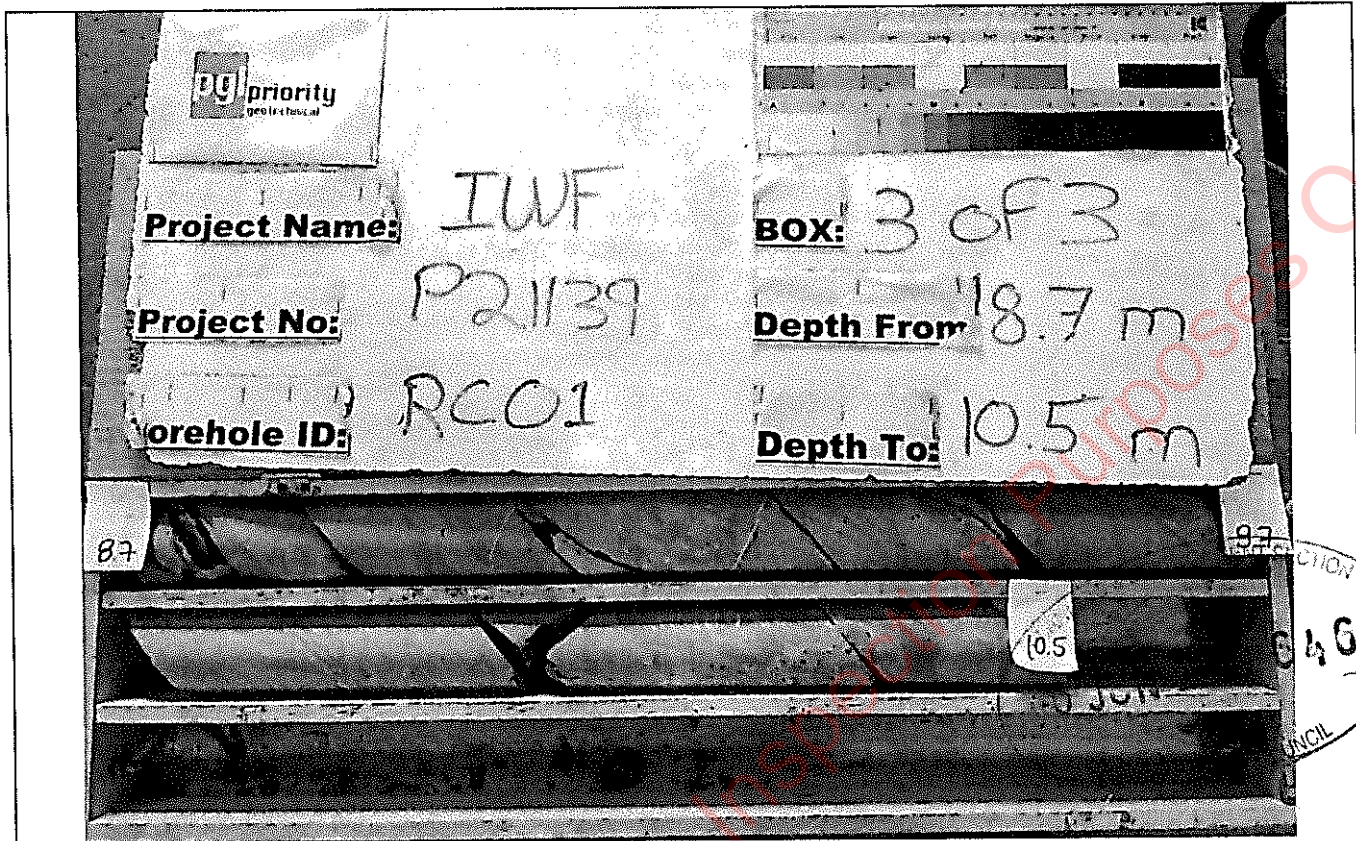
Dates: 04/06/2021 04/06/2021

Well	Water Strike (m)	Depth (m)	Type /Fs (min, max, avg)	Coring (%)			Depth (m) / FI (/m)	Level (mOD)	Legend	Stratum Description	
				TCR	SCR	RQD					
		8.70 - 9.70	10mm 180mm 150mm	100	76	24	8/m		Lithology: Red moderately weak SILTSTONE. Weathering: Core is showing minor signs of weathering. Sections 2.8m-3.5m and 5.7m-6.4m are highly fragmented. Fractures: One set identified. Set one has a dip of 60-70 degrees, an undulating rough fracture surface and close to medium spacing. Details: No obvious oxidation discolouration marks. Clay smearing present. Quartz veins present measuring between 2mm-20mm in thickness thickest between 3.5m-5.5m End of Borehole at 10.500m		
		9.70 - 10.50	60mm 290mm 160mm	100	81	54	3/m			10	
							10.50				11
											12
											13
											14
											15
											16
											17
											18



Groundwater:				Hole Information:			Equipment: Soilmec PSM
Struck (m bgl)	Level (m bgl)	After (min)	Sealed	Comment	Hole Depth (m bgl)	Hole Dia (mm)	Casing Dia (mm)
2.50				See shift data for detail.	10.50	76	131
Remarks: Borehole terminated at 10.5m bgl.				Shift Data:		Method:	
				Groundwater (m bgl)	Shift	Hole Depth (m bgl)	Remarks
				1.85	04/06/2021 08:00 04/06/2021 18:00	0.00 10.50	Start of shift End of borehole.

Photographic Record



Number: RC01

Project Inchamore Wind Farm
Project No P21139
Engineer Minerex



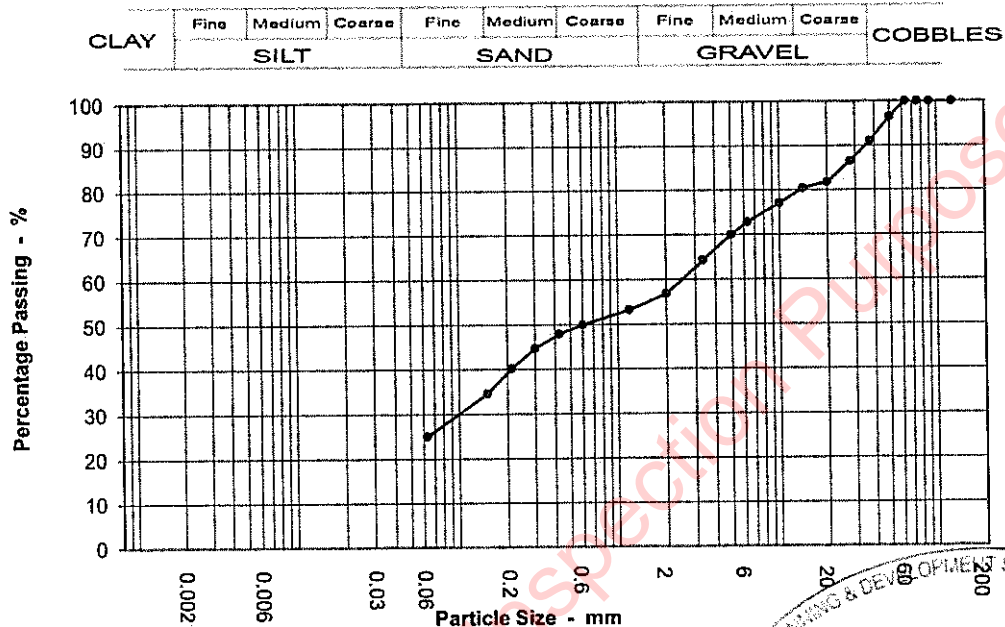
PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref	P21139
Borehole / Pit No	TP03A2
Sample No	
Depth	0.00 m
Sample type	B

Location: Gortyrhilly and Inchamore W.F

Soil Description: Very clayey very sandy GRAVEL



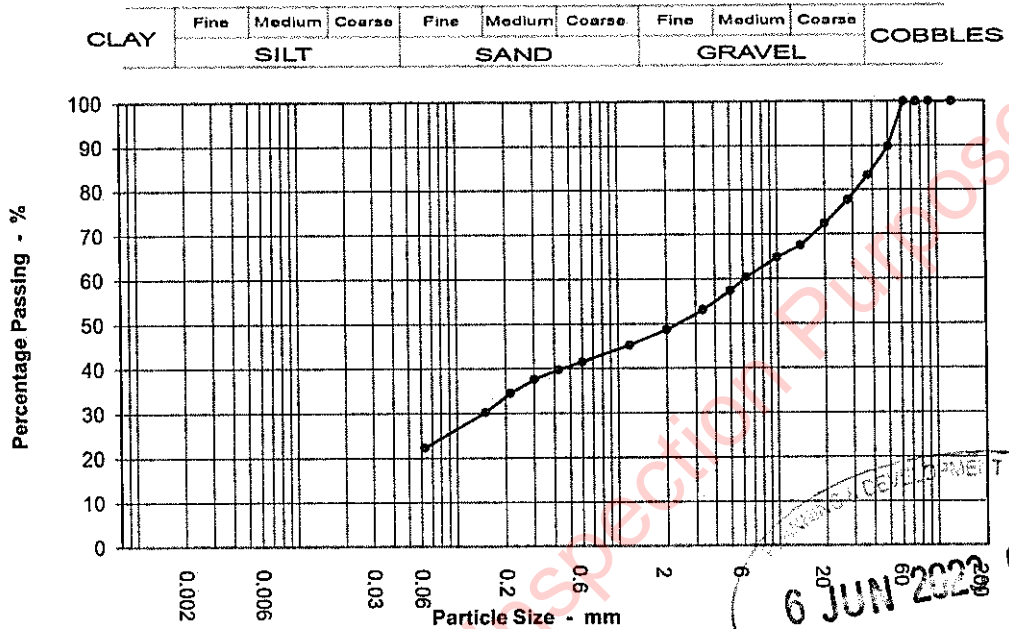


PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref	P21139
Borehole / Pit No	TP11A2
Sample No	
Depth	0.00 m
Sample type	B

Location	Gortyrhilly and Inchamore W.F
Soil Description	Very clayey very sandy GRAVEL



6 JUN 2022 6 46
KERRY COUNTY COUNCIL

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	90		
37.5	83		
28	78		
20	72		
14	67		
10	65		
6.3	60		
5	57		
3.35	53		
2	49		
1.18	45		
0.6	41		
0.425	40		
0.3	38		
0.212	34		
0.15	30		
0.063	22		

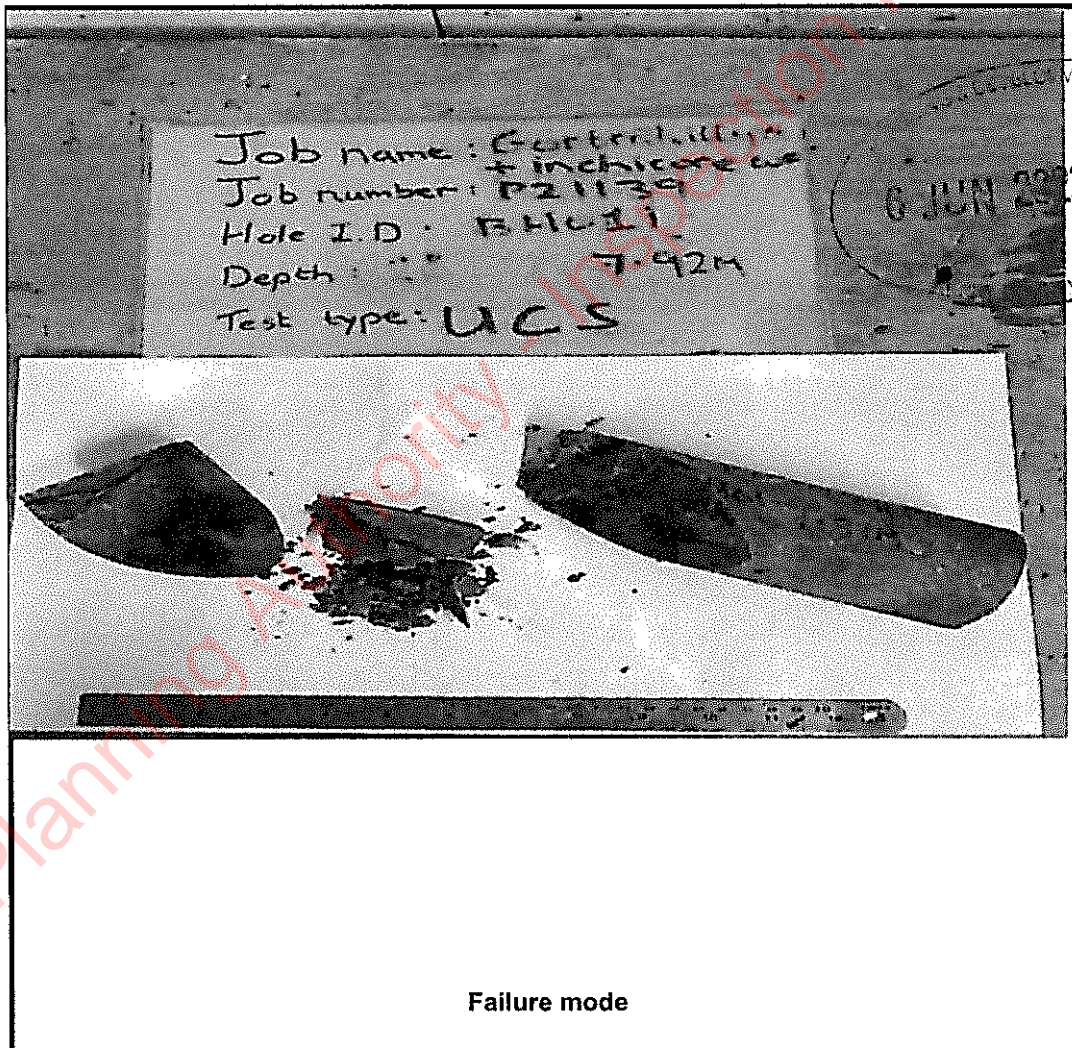
Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

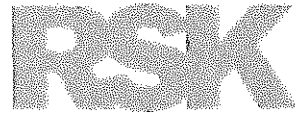
Sample Proportions	
Cobbles	0.0
Gravel	51.0
Sand	26.0
Silt & Clay	22.0

Grading Analysis	
D100	63.00
D60	6.08
D10	
Uniformity Coefficient	

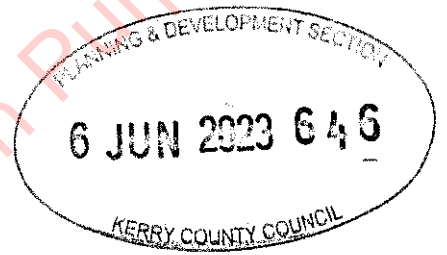
Unconfined Compressive Strength, UCS

Job Name	Inchamore W.F
Job Number	P21139
Borehole:	BH01i
Depth:	7.92 m
Rock Type	PURPLE SILTSTONE
Bulk Density	2.73 Mg/m ³
Load at Failure, P	23.3 kN
Stress at Failure	5.17 MPa





Appendix G



Kerry Planning Authority - Inspection Purposes Only!



PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

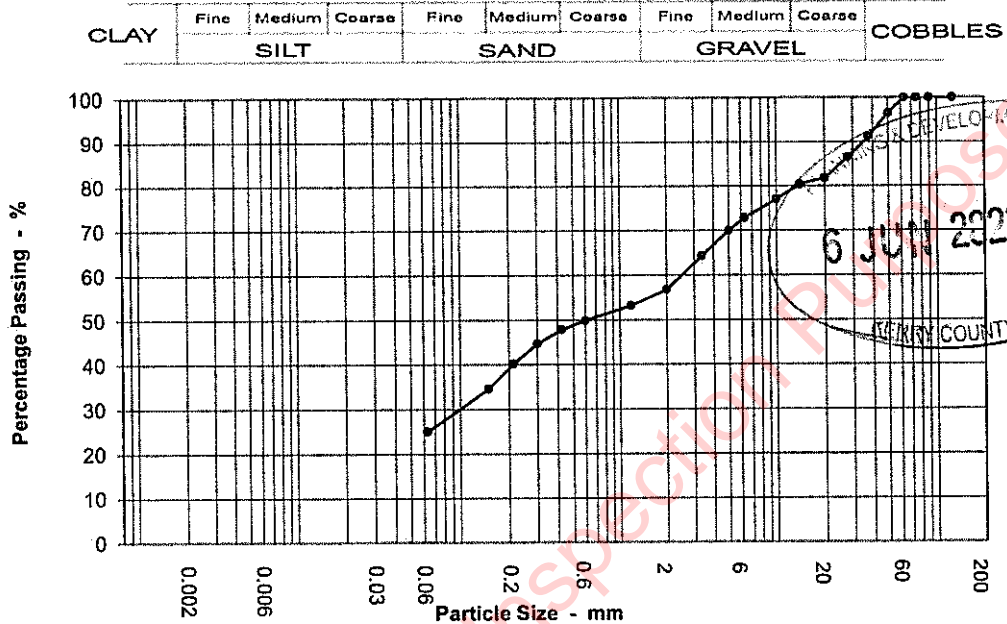
Job Ref	P21139
Borehole / Pit No	TP03A2
Sample No	
Depth	0.00 m
Sample type	B

Location

Gortyrähilly and Inchamore W.F

Soil Description

Very clayey very sandy GRAVEL



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	97		
37.5	91		
28	87		
20	82		
14	80		
10	77		
6.3	73		
5	70		
3.35	64		
2	57		
1.18	53		
0.6	50		
0.425	48		
0.3	45		
0.212	40		
0.15	35		
0.063	25		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	43.0
Sand	32.0
Silt & Clay	25.0

Grading Analysis	
D100	63.00
D60	2.49
D10	
Uniformity Coefficient	



PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

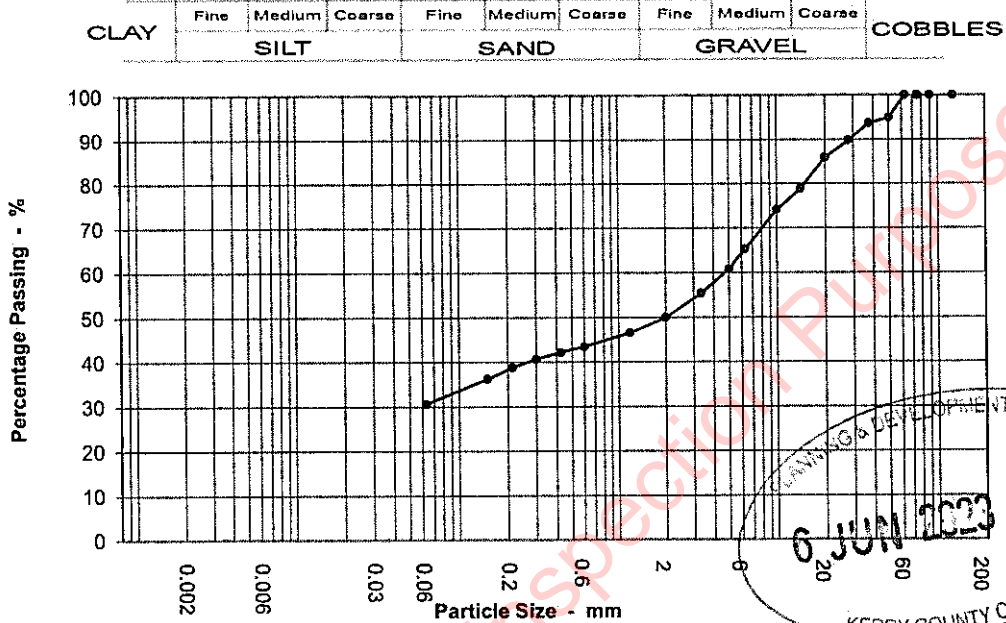
Job Ref	P21139
Borehole / Pit No	TP08A2
Sample No	
Depth	0.00 m
Sample type	B

Location

Gortyrahilly and Inchamore W.F

Soil Description

Slightly sandy gravelly CLAY



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	95		
37.5	94		
28	90		
20	86		
14	79		
10	74		
6.3	65		
5	61		
3.35	55		
2	50		
1.18	47		
0.6	43		
0.425	42		
0.3	41		
0.212	39		
0.15	36		
0.063	31		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	50.0
Sand	19.0
Silt & Clay	31.0

Grading Analysis	
D100	63.00
D60	4.68
D10	
Uniformity Coefficient	



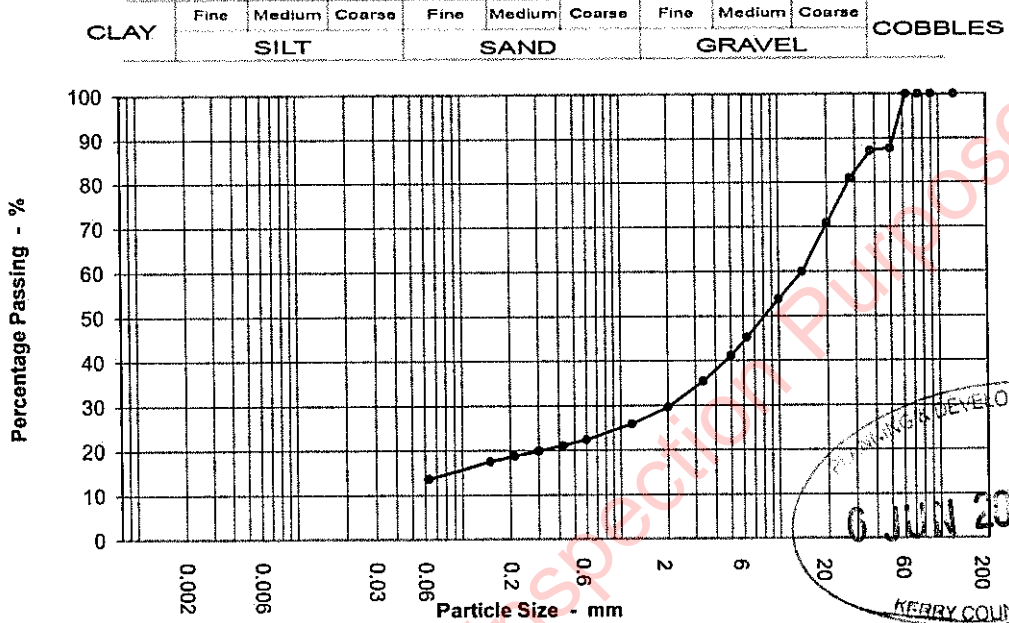
PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref	P21139
Borehole / Pit No	TP13A1
Sample No	
Depth	0.00 m
Sample type	B

Location: Gortyrhilly and Inchamore W.F

Soil Description: Clayey sandy GRAVEL



PLANNING & DEVELOPMENT SECTION
 6 JUN 2023 6 46
 KERRY COUNTY COUNCIL

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	88		
37.5	87		
28	81		
20	71		
14	60		
10	54		
6.3	45		
5	41		
3.35	35		
2	30		
1.18	26		
0.6	22		
0.425	21		
0.3	20		
0.212	19		
0.15	18		
0.063	14		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	70.0
Sand	16.0
Silt & Clay	14.0

Grading Analysis	
D100	63.00
D60	14.00
D10	
Uniformity Coefficient	



PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

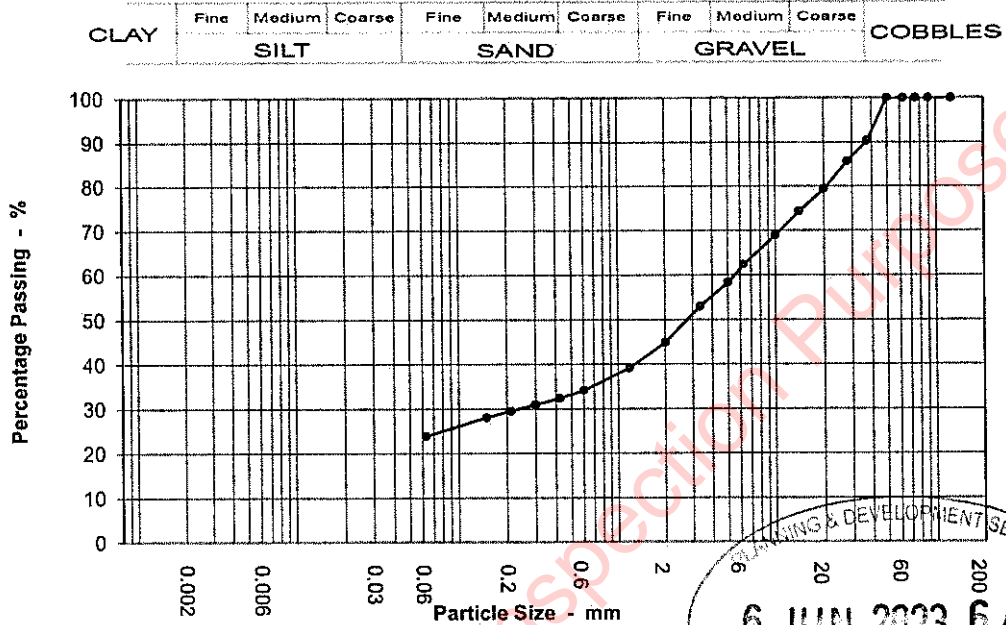
Job Ref	P21139
Borehole / Pit No	TP30A1
Sample No	
Depth	0.00 m
Sample type	B

Location

Gortyrhilly and Inchamore W.F

Soil Description

Very clayey very sandy GRAVEL



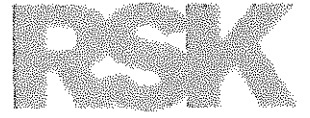
PLANNING & DEVELOPMENT SECTION
 6 JUN 2023 6 46

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	90		
28	86		
20	79		
14	74		
10	69		
6.3	62		
5	58		
3.35	53		
2	45		
1.18	39		
0.6	34		
0.425	32		
0.3	31		
0.212	30		
0.15	28		
0.063	24		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	55.0
Sand	21.0
Silt & Clay	24.0

Grading Analysis	
D100	50.00
D60	5.51
D10	
Uniformity Coefficient	



Appendix H

Kerry Planning Authority - Inspection Purposes Only!

