

Ballyfeeny Green Energy Project



Environmental Impact Assessment Report Volume III

Appendix 7.2 – Preliminary Ground Investigations

September 2025

This page is left intentionally blank

RECEIVED: 15/09/2025

RECEIVED: 15/09/2025



Ballyfeeny Green Energy Project, Strokestown, Co. Roscommon, Ireland

Preliminary Ground Investigation

Report No: 2273-24A Rev02

30th April 2025

*This document has been prepared by Whiteford Geoservices Ltd
on behalf of*

***Ballyfeeny Green Energy Ltd
&
Rowan Engineering Consultants***



Whiteford Geoservices Ltd, 2 Main Street, Straid, Co. Antrim, BT39 9NE

Tel: 0044 (0) 28 93349351 Fax: 0044 (0) 28 93349352

www.whitefordgeoservices.com

Ballyfeeny Green Energy Project, Co. Roscommon

[SOILS AND GEOLOGY STUDY – PRELIMINARY GROUND INVESTIGATION]

Document Control

SIGN OFF		
Name (Role)	Signature	Date
John Whiteford (Technical Director)		30 th April 2025
Joy McNeill (Quality Manager)		30 th April 2025

DOCUMENT CONTROL					
Document Number		2273-24A			
Document Title		2273-24A Ballyfeeny Green Energy Project, Co. Roscommon - Site Investigation Report (Rev2)			
Rev.	Date [dd mmm yyyy]	Description	Prepared	Checked	Approved
0	8 July 2024	First Draft for Rowan Engineering Consultant & Ballyfeeny Green Energy Ltd review	JW	JaW	JM
1	14 July 2024	Updated Report	JW	JaW	JM
2	30 April 2025	Final Version	JW	JaW	JM

RECEIVED: 15/09/2025

CONTENTS

1	INTRODUCTION	2
2	SITE AND GEOLOGY	4
	2.1 The Site	
	2.2 Published Geology	
3	FIELDWORK	8
	3.1 General	
	3.2 Exploratory Holes	
	3.3 In-situ Testing	
	3.4 Topographical Survey	
4	LABORATORY TESTING	11
	4.1 Geotechnical Testing	
5	SURVEY RESULTS	12
6	SUMMARY OF SITE INVESTIGATION FINDINGS	17
7	REFERENCES	19

APPENDICES

A	DRAWINGS
B	PEAT DEPTHS ENCOUNTERED AT WIND TURBINE GENERATOR BASES ENGINEERING LOGS OF TRIAL HOLES
C	INTERPRETED GEOPHYSICAL SURVEY DATA
D	SOILS LABORATORY TESTING
E	SLOPE STABILITY ANALYSIS
F	PHOTOGRAPHIC RECORD

1 INTRODUCTION

This report should be read in conjunction with the Ballyfeeny Green Energy Project – Appendix 7.1 “Soils and Geology Technical Assessment Report”, Report 2273-24A.

In May 2024 Whiteford Geoservices Ltd was commissioned by Rowan Engineering Consultants to undertake investigation works at Ballyfeeny Green Energy Project near Strokestown, County Roscommon, Ireland, on behalf of their client Ballyfeeny Green Energy Ltd.

This preliminary investigation was required to obtain information for the civil design of access tracks and other infrastructure; primarily with respect to the assessment of soils and geology in relation to an application for planning permission: -

A total of 6nr new wind turbine generators, substation, associated infrastructure and turbine hardstands, as well as new and upgraded site access tracks.

The results of this site investigation have been employed to determine the nature of, and condition of, the soils and geology underlying the proposed wind farm infrastructure.

Prior to carrying out these investigation works a desktop study and walkover survey had been undertaken for the site to provide a broad understanding of the prevailing ground conditions along with a screening assessment for the hazard of peat instability. As part of the walkover survey, preliminary peat / organic soil thickness was recorded and Peat Landslide Hazard screening undertaken.

This analysis determined that peat / sensitive organic soils are either not present within the zone likely to be affected by wind farm construction works or of sufficient depth to cause peat instability.

The site investigation works, detailed within this report, consist of the following elements;

The scope of these works was as follows: -

Ref	SI Component	Remarks
A	Peat probing	In-situ assessment of peat thickness at wind turbine generators and substation. (7nr).
B	Trial pitting to determine the underlying soil type, its thickness overlying rock and the relative competence of each stratum.	A total of 7nr Trial pit exploratory holes to assess ground conditions. Each trial pit was excavated to a maximum depth of 3.5 – 4.0m depending on specific ground conditions. These exploratory holes were undertaken at the following locations: 1. T1

		2. T2 3. T3 4. T4 5. T5 6. T6 7. SUBSTATION
	In-situ Soakaway Testing at the Substation	Single Soakaway test undertaken to determine permeability of superficial soils.
C	Geophysical Profiles at T2, T4 and T6	Where infrastructure is located closest to the existing quarry face.
D	Laboratory testing of soils	To determine preliminary geotechnical parameters for foundation design
E	Detailed Slope Stability Analysis at T2, T4 and T6	Where infrastructure is located closest to the existing quarry face.

Table 1 – Scope of SI Works

The investigation was performed in accordance with the relevant standards (see References) and data presented within the relevant appendix to this report.

This report presents the factual records of the investigations undertaken.

2 SITE AND GEOLOGY

2.1 The Site

Ballyfeeny Green Energy Project is situated approximately 4.0km east of Strokestown, County Roscommon where it lies to the south and west of the existing Tully Quarry.

Ground surface elevations within the Site vary between approximately 76m to 122m above Ordnance Datum (Malin Head).

The land usage across the number of land holdings which make up the Ballyfeeny Green Energy Project development area consists of agricultural grazing land for cattle and pockets of coniferous forestry.

The closest active quarrying operation to the site, is Tully Quarry, immediately bordering the western boundary of the site, operated by Ward Brothers.

2.2 Published Geology

A study was made of available geological information for the area (GSI Online Database). This study indicated that the following natural geology is present across the site of Ballyfeeny Green Energy Project;

- Predominantly blue grey greywacke and black argillite, with pale conglomerate and sandstone to the east and jasper rich feldspathic sandstone in the west.
- Till (derived from Lower Palaeozoic and Carboniferous sandstones and shales)
- Alluvium (associated with a watercourse to the eastern edge of the Site)
- Cutover Raised Bog (isolated discrete locations well outside the Development boundary)

2.2.1 Solid Geology

According to the GSI online database, the majority of the proposed development area for Ballyfeeny Green Energy Project site is immediately underlain by the Finnlaghta Formation which consists of black grey greywacke and black argillite.

Also present just outside the development area, at the eastern site of the Site, is the Fearnaght Formation which consists of, pale conglomerate and red sandstone. At the western side of the wind farm site the Lackan Formation, Jasper rich feldspathic sandstone, is the upper most rock strata.

Two faults bisect the proposed development area trending in an approximately north west – south east direction and potentially impact the subsurface rock formation at T01 and T02, where they have the potential to have caused highly fractured and deeply weathered bedrock and / or the channelling of groundwater flow.

Close to the eastern boundary and trending north north east to south south west a thrust fault can also be seen to impact the subsurface in the vicinity of T06.

Such conditions can have significance for foundation design of structures such as wind turbines. Analysis of exploratory holes undertaken as part of this site investigation campaign confirm this hazard is not significant.

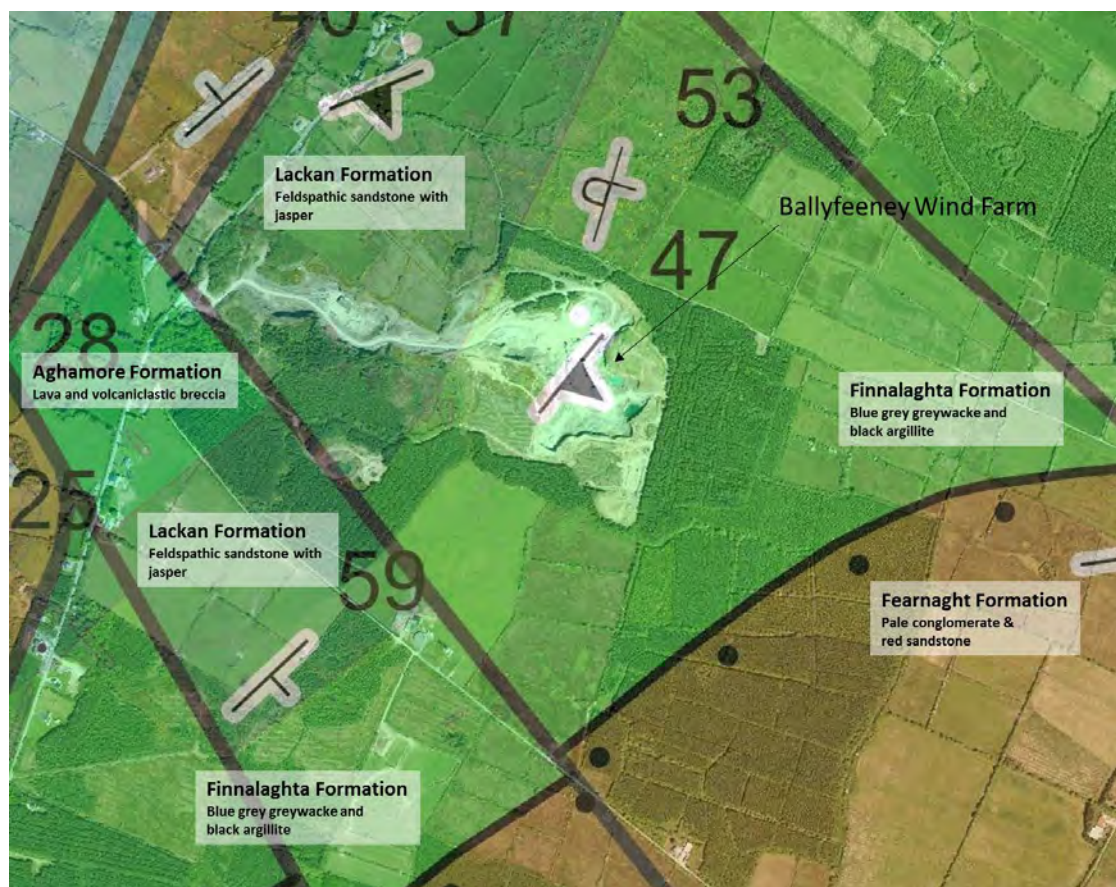


Figure 1 – Bedrock Solid Geology
Reproduced courtesy of GSI Datasets Public Viewer

Internationally, faults can often be associated with an increased hazard of ground movement. That notwithstanding, Ireland is currently located within a region of extremely low tectonic activity and well removed from regions of significant seismic activity.

The most significant event recorded in Ireland by the British Geological Survey was a low energy seismic event that occurred on 7th April 2019 more than 100km from the wind farm

site. Details held for the largest and closest recorded events are contained within the table below.

yyyy-mm-dd	hh:mm:ss.ss	Lat	Lon	Depth	ML	Nsta	RMS	Intensity	Locality
27/07/1970	02:45:13.1	53.5	-5	5	2.7			.	ANGLESEY
16/09/1982	03:31:00.0	53.4	-5.8		0.5			2	W OF CANNICH
24/09/1982	16:28:26.1	53.31	-5.67	2.3	1.4				CELTIC SEA
16/10/1982	03:31:00.0	53.4	-5.8		0.5				KISH BASIN
24/10/1982	16:28:27.0	53.38	-5.75		1.5				KISH BASIN
11/09/1983	21:46:29.0	53.41	-6.93		0.8			3	ENFIELD
19/12/1989	21:50:07.3	53.54	-4.93	9.5	0.1				IRISH SEA
15/05/1990	20:14:11.1	53.041	-5.441	11.1	1.4	17	0.4		IRISH SEA
28/04/1992	21:34:05.6	52.931	-6.177	11	1.3	12	0.2	2	WICKLOW
10/11/2004	23:35:15.2	53.175	-5.241	7.5	2.1	17	0.3		IRISH SEA
14/12/2005	03:30:25.4	53.005	-5.644	8.8	2.8	19	0.4	3	IRISH SEA
01/12/2012	10:24:16.0	53.13	-5.253	9.6	1.1	7	0.2		IRISH SEA
21/12/2013	10:37:37.7	53.15	-5.385	12.2	1	5	0.3		IRISH SEA
07/09/2015	12:15:53.3	54.521	-5.986	3.3	0.8	3	0.4		DRUMBEG
19/09/2015	20:08:28.6	53.944	-5.037	5	0.5	8	0.4		IRISH SEA
10/03/2017	05:06:26.7	53.046	-5.509	8.9	0.7	6	0.3		IRISH SEA
18/05/2017	23:04:14.6	53.042	-5.43	13.9	0.9	8	0.3		IRISH SEA
17/11/2019	14:56:09.2	53.537	-5.441	7.5	0.7	6	0.2		IRISH SEA
15/12/2019	21:19:52.9	53.636	-4.931	7.5	2.1	21	0.4		IRISH SEA
20/12/2019	09:53:44.2	53.634	-4.932	6.5	1.1	10	0.4		IRISH SEA
13/02/2020	19:13:03.3	53.017	-5.561	10.4	1	5	0.1		IRISH SEA
06/06/2020	14:19:36.0	53.636	-4.925	5.6	1	7	0.4		IRISH SEA
17/09/2020	17:31:42.2	53.585	-6.13	17.8	1.1	10	0.2		SKERRIES
17/05/2022	23:00:56.9	53.04	-5.451	6.7	1.1	6	0.4		IRISH SEA

Table 2 – Schedule of Selected Historic Earthquakes of Significance
Reproduced courtesy of BGS Earthquake Database

	Nearest largest seismic event
	Largest recorded seismic event (within 100km)

In light of the above an assessment has been made with regard to seismic activity. This has determined that any ground movement recorded can be expected to be negligible with respect to the project proposed; where Peak Ground Accelerations can be expected to be in the order of 0.02g¹.

¹ Source: British Geological Survey – Search of Earthquake Database centred on Ballyfeeny Wind Farm – search radius of 100km; time period 1st Jan 1000 to 23/12/2022.

2.2.2 Superficial Geology

Superficial soils present within the wind farm consist of thin glacial till soils overlying often shallow, greywacke rock at T01, T02, T06 and the Substation. Thicker glacial tills derived from Lower Palaeozoic sandstones are present in the vicinity of T03, T04 and T05, where the rock formation was not observed.

Alluvium is present at the eastern edge of the site where it is associated with a minor watercourse. These alluvial soils could have the potential to impact construction at T06, although no such soils were identified by the Site Investigation.

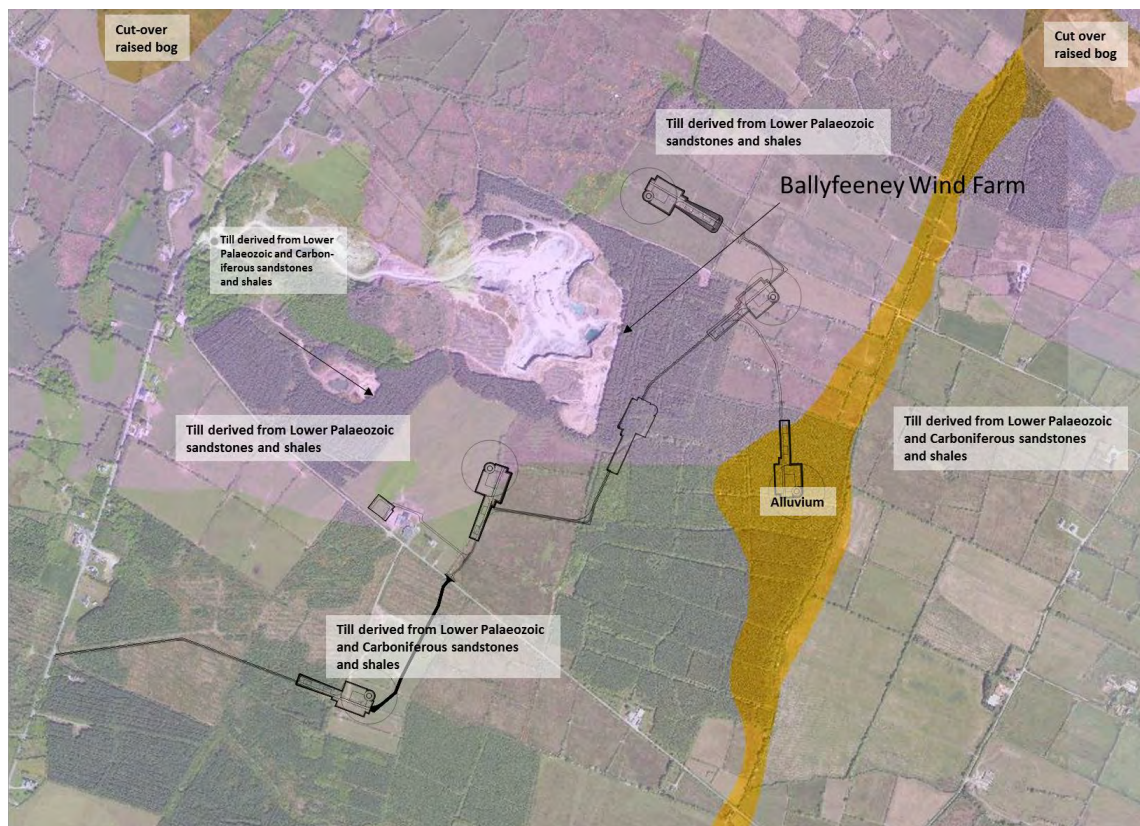


Figure 2 – Superficial Geology
Reproduced courtesy of GSI Datasets Public Viewer

3 FIELDWORK

3.1 General

All fieldwork was carried out in general accordance with BS 5930:2015+A1:2020 and other related standards.

Please refer to Appendix A for the location of all geotechnical investigations undertaken.

3.2 Exploratory Holes

The exploratory holes are detailed within the following table.

METHOD	QUANTITY	MAXIMUM DEPTH (m)	EQUIPMENT
Trial Pit	7 Nr.	4.00	Trial pits were carried out with the use of a 13T Tracked Excavator

Table 3 – Schedule of Exploratory Holes

Refer to Appendix B for engineering logs of trial holes

3.3 In-situ Testing

The in-situ testing works carried out are detailed within the following table.

TYPE	QUANTITY	MAX. DEPTH (M)	EQUIPMENT
Peat Probing	5 ²	None present within Site	Rigid "depthing rods"
In-Situ Shear Strength	7	0.90	At centre of T1, T2, T3, T4, T5, T6 and Substation
Von Post (Decomposition Assessment)	7	0.90	At centre of T1, T2, T3, T4, T5, T6 and Substation
Soakaway Testing	1	0.90	Undertaken at Substation

Table 4 – Schedule of In-Situ Tests

Refer to Appendix B for details

² Peat probing was undertaken at the centre-point for each wind turbine generator and at the Substation

3.4 Geophysical Surveys

The geophysical survey involved the following non-destructive testing techniques.

METHOD	LOCATION	MAXIMUM DEPTH (m)	EQUIPMENT
2D Electrical Resistivity Tomography	2 Nr. profile at *wind turbine generators T02, T04 and T06.	approx. 15m	Campus Tigre Electrical Resistivity Imaging System.

Table 4 – GPR and Geophysical Methods Deployed

2D Electrical Resistivity

A Campus Tigre Electrical Resistivity System employing a 32 electrode Wenner Array was used to conduct the geophysical 2D resistivity survey, with the intention of analysing the sub-surface to a depth of approximately 15m below existing ground level.

Field quality-controlled data processing was carried out using Imager Pro 2006.

Two electrodes input a controlled electrical current into the ground, where the lines of current flow adapt to the sub-surface resistivity pattern. In this way the potential difference between the equipotential surfaces can be measured, where they meet the ground surface, using a second pair of electrodes. Comparison of the input current to the measured potential difference enables the resistance to be calculated.

Imager Pro 2006, a Windows acquisition program allows real time colour pseudo-sections to be generated on the laptop computer used to collect and store data in the field. Such real time presentation offers instant confirmation of data quality.

Res2DinV software was applied to the field data to provide the modelled sections which were then interpreted, in terms of resistivity, by an experienced Geologist.

Refer to Appendix C for the annotated 2D Electrical Resistivity profiles collected.

3.4 Topographical Survey

A topographical survey of exploratory hole locations was undertaken post-completion of all associated investigation works and is detailed in the table below.

EQUIPMENT	COORDINATE SYSTEM
Leica RTK / GNSS DGPS System	Irish Transverse Mercator (ITM) / Malin Hean (Ordnance Datum)

Table 5 – Topographic Surveying

3.5 Slope Stability Assessment

Turbines T02, T04 and T06 are located in the vicinity of the existing quarry face at Tully Quarry.

To confirm ground stability at these locations topographic and geophysical survey data was employed for the purposes of providing inputs for slope stability analysis.

A computer based slope stability program, Geostru Slope 2015 v 25.6.1217, was employed for this purpose.

4 LABORATORY TESTING

4.1 Geotechnical Testing

Following detailed analysis soils laboratory testing was undertaken on samples collected from the site.

This testing was scheduled and carried out in accordance with BS 1377 (1990) and other standards by Whiteford Geoservices Ltd.

A schedule of this testing is summarised in the table below and the results are presented within Appendix C.

TYPE	QUANTITY	REMARKS
Bulk Density	7	BS1377:1990 Part 2
Natural Moisture Content	7	BS1377:1990 Part 2
Partial size Distribution	7	BS1377:1990 Part 2
Sulphate Content of Water Extract	7	BS 1377- Part 3 (2018)
Chloride Content of Water Extract	7	BS 1377- Part 3 (2018)
Sulphide Content of Water Extract	7	BS 1377- Part 3 (2018)
Organic Matter Content	7	BS 1377- Part 3 (2018)
pH	7	BS 1377- Part 3 (2018)

Table 6 – Schedule of Laboratory Test of Recovered Samples

5 SURVEY RESULTS

5.1 Introduction

The investigation has provided geophysical information on the sub-surface conditions within the zones identified on the Geophysical Layout Plans in Appendix A.

Refer to Appendix C for annotated findings for the 2D Electrical Resistivity Surveys.

5.2 Soil Stratigraphy At Turbines

The following Table details the findings of preliminary exploratory holes undertaken at proposed Wind Turbine positions. Refer to Appendix B for individual engineering logs of exploratory holes.

TURBINE NO.	TOPSOIL THICKNESS (M)	DEPTH TO FIRM MINERAL SOIL (M)	SOIL TYPE	WEAK ROCK DEPTH (M)
T1	0.30	0.30	Firm, orange brown, sandy, gravelly CLAY / SILT with low cobble and boulder content below 1.00m depth.	2.10
T2	0.60	0.50	Firm to stiff, grey, sandy, gravelly CLAY / SILT. Becoming stiff with low cobble and boulder content.	2.00
T3	0.25	0.25	Firm, orange grey, sandy, gravelly CLAY / SILT. Becoming stiff, grey with low cobble and boulder content below 1.75m depth.	>4.00
T4	0.30	0.30	Firm, orange brown, sandy, gravelly CLAY / SILT. Becoming stiff, grey with low cobble and boulder content below 1.60m depth.	>3.50
T5	0.30	0.30	Firm, orange brown, sandy, gravelly CLAY / SILT. Becoming stiff, grey with low cobble and boulder content below 0.50m depth. No rock encountered before 3.70m	>3.70
T6	0.30	0.30	Firm to stiff, grey, sandy, gravelly CLAY / SILT. Extremely weak rock encountered at 1.20m depth.	1.70
SUB	0.80	0.80	Firm, orange grey, sandy, gravelly CLAY / SILT. Extremely weak rock encountered at 1.50m depth.	1.80

Table 7 – Summary of Stratigraphy at Main Infrastructure

In light of the findings from the preliminary trial hole works the following schedule of foundations is recommended for the main infrastructure.

TURBINE NO.	TURBINE / BUILDING	HARDSTAND / TRANSFORMER BASE	ACCESS TRACKS
T1	Gravity Base Foundation in rock (c. 3.50m depth)	Place at 0.50m depth within firm mineral soils	Remove all soft or very weak soils and commence road construction within firm CLAY/SILT mineral soils
T2	Gravity Base Foundation in rock (c. 3.50m depth)	0.80 m depth within firm mineral soils	
T3	Gravity Base Foundation in rock (c. 5.50m depth)	0.45 m depth within firm mineral soils	
T4	Gravity Base Foundation in rock (c. 5.50m depth)	0.50 m depth within firm mineral soils	
T5	Gravity Base Foundation in rock (c. 5.50m depth)	0.50 m depth within firm mineral soils	
T6	Gravity Base Foundation in rock (c. 3.50m depth)	0.50 m depth within firm mineral soils	
SUB	Raft Footing for Building on rock (c. 1.60m depth)	0.75 m depth within firm mineral soils	

Table 8 – Recommendations for Infrastructure Foundations

5.2 Geophysical Survey

5.2.1 2D Electrical Resistivity Survey (Turbines T02, T04 and T06)

- Profile ER-01 at Turbine T02, indicates that approximately 0.5m to 4.5m of firm to still sandy gravelly SILT/CLAY containing cobbles and boulders, overlies weathered GREYWACKE rock. No lateral inconsistencies in rock formation competence were recorded.
- Profile ER-02 at Turbine T04, indicates that approximately 0.4m to 3.9m of firm to still sandy gravelly SILT/CLAY containing cobbles and boulders, overlies weathered GREYWACKE rock. No lateral inconsistencies in rock formation competence were recorded.
- Profiles ER-03 at Turbine T06, indicates that approximately 0.5m to 3.8m of firm to still sandy gravelly SILT/CLAY containing cobbles and boulders, overlies weathered GREYWACKE rock. No lateral inconsistencies in rock formation competence were recorded.

5.3 Slope Stability

5.3.1 Turbine T02 – Assessment of Stability

Slope Stability Analysis undertaken for Turbine T02 indicates competent rock is present 2.00m below existing ground level.

Existing slopes at this location are at their steepest 2.1 degrees to the horizontal.

An analysis undertaken for the natural mineral soils suggests an internal angle of friction of 35 degrees is appropriate.

The internal angle of friction for the underlying rock formation has been estimated to be ≥ 45 degrees. A worst-case value of 45 degrees has been employed for rock slope stability analysis.

Computer based analysis was undertaken using Geostru Slope 2-015 software for the worst-case section. Eurocode 7 and the Bishop (1995) approach, with the following parameters were applied in this case to the drained case only.

Slope stability computation for a load of 300kPa (equivalent to the average pressure exerted by the wind turbine) indicates that both the soils and rock, beneath the point of loading, exist in **STABLE EQUILIBRIUM**. Slope stability analysis was completed for both the Soil Slope and Rock Slope cases yielding a lowest minimum factor of safety of 2.23 in the drained condition for the rock slope scenario.

Risk of slope failure at this position is **ACCEPTABLE**.

5.3.2 Turbine T04 – Assessment of Stability

Slope Stability Analysis undertaken for Turbine T04 indicates competent rock is present >3.50m below existing ground level. For the purpose of this analysis weak greywacke rock is predicted at a depth of 5.5m b.g.l.

Existing slopes at this location are at their steepest 2.7 degrees to the horizontal.

An analysis undertaken for the natural mineral soils suggests an internal angle of friction of 35 degrees is appropriate.

The internal angle of friction for the underlying rock formation has been estimated to be ≥ 45 degrees. A worst-case value of 45 degrees has been employed for rock slope stability analysis.

Computer based analysis was undertaken using Geostru Slope 2-015 software for the worst-case section (A-A'). Eurocode 7 and the Bishop (1955) approach, with the following parameters were applied in this case to the drained case only.

Slope stability computation for a load of 300kPa (equivalent to the average pressure exerted by the wind turbine) indicates that both the soils and rock, beneath the point of loading, exist in **STABLE EQUILIBRIUM**. Slope stability analysis was completed for both the Soil Slope and Rock Slope cases yielding a lowest minimum factor of safety of 1.26 in the drained condition for the rock slope scenario.

Risk of slope failure at this position is **ACCEPTABLE**.

5.3.3 Turbine T06 – Assessment of Stability

Slope Stability Analysis undertaken for Turbine T06 indicates competent rock is present 1.70m below existing ground level.

Existing slopes at this location are at their steepest 3.9 degrees to the horizontal.

An analysis undertaken for the natural mineral soils suggests an internal angle of friction of 35 degrees is appropriate.

The internal angle of friction for the underlying rock formation has been estimated to be ≥ 45 degrees. A worst-case value of 45 degrees has been employed for rock slope stability analysis.

Computer based analysis was undertaken using Geostru Slope 2-015 software for the worst-case section (A-A'). Eurocode 7 and the Bishop (1955) approach, with the following parameters were applied in this case to the drained case only.

Slope stability computation for a load of 300kPa (equivalent to the average pressure exerted by the wind turbine) indicates that both the soils and rock, beneath the point of loading, exist in **STABLE EQUILIBRIUM**. Slope stability analysis was completed for both the Soil Slope and Rock Slope cases yielding a lowest minimum factor of safety of >2.00 (at the wind turbine) in the drained condition for the soil slope scenario.

Risk of slope failure at this position is ACCEPTABLE.

5.4 Soakaway Testing

5.4.1 Soakaway Testing at the Substation

Soakaway testing undertaken at the Substation encountered extremely low soil permeability.

Test 1 was undertaken on 30/05/2024, but was abandoned after 240 minutes (4hrs) at which time only 4.008% of the water volume had percolated away.

Soil permeability at the Substation is classified as **POOR to PRACTICALLY IMPERMEABLE** Permeability ($k = 10^{-6}$ to 10^{-10} m/s).

6 SUMMARY OF SITE INVESTIGATION FINDINGS

The following table summarises the main additional findings from the Site Investigation campaign in respect to Soils and Geology.

REF.	ITEM	DETAIL
1	Typical Soil Overburden	A. Topsoil overlying thin sequence of firm to stiff sandy gravelly CLAY / SILT with low cobble and boulder content. 0.20 to 0.40m of extremely weak rock overlying weak rock. (T01, T02, T06 and Substation). B. Topsoil overlying thick sequence of firm to stiff sandy gravelly CLAY / SILT with low cobble and boulder content. Rock not encountered in trial holes although ERT predicts rock depth at turbine to be 3.90m. (T03, T04 and T05).
2	Typical Overburden ³ Thickness (m)	T01 = 2.10m T02 = 2.00m T03 = 5.50m T04 = 5.50m T05 = 5.50m T06 = 1.70m SUBSTATION = > 1.80m
2	Rock Type	Blue grey GREYWACKE and black ARGILLITE pertaining to the Finnalaghta Formation. SANDSTONE pertaining to the Lacken Formation may to present within the northern part of the site. Shallow greywacke strata were found to be often extremely to weak and initially easily rippable by the excavation plant deployed for the SI campaign.
4	Rock Competence	Rippable⁴ greywacke, highly decomposed, is generally EXTREMELY WEAK (i.e. 0.6 – 1 MPa or VERY WEAK (i.e. 1 to 5 MPa) <u>Marginally rippable, highly weathered, greywacke is generally VERY WEAK to WEAK (i.e. 1 to 5 MPa)</u> MODERATELY WEAK or stronger greywacke was not encountered.
5	Typical Depth to Non Rippable Rock ⁵	T01 = 2.10m T02 = 2.00m T03 = >4.00m (Est. 5.50m) T04 = >3.50m (Est. 5.50m) T05 = > 3.50m (Est. 5.50m) T06 = 1.70 SUBSTATION = > 1.80m

³ Extremely weak rock is considered to be overburden, as are soils. Weak rock is not considered to be overburden and is anticipated to be the limit of straightforward conventional excavation.

⁴ Rippability is based on potential rippability by 13T machine resting on top of the rock formation. Extraction of non-rippable rock with require the use of heavy breakers.

⁵ Using 9T tracked excavator

REF.	ITEM	DETAIL
6	Anticipated Wind Turbine Foundation Type	WTG01 = Gravity Base within weathered rock WTG02 = Gravity Base within weathered rock / Piled Foundation WTG03 = Gravity Base within weathered rock WTG04 = Gravity Base within weathered rock / Piled Foundation WTG05 = Gravity Base within weathered rock WTG06 = Gravity Base within weathered rock / Piled Foundation SUBSTATION = Raft, strip or pad foundations on weathered rock
6	Groundwater Regime	Seepage at 1.90m (T01 – Mobile Seepage at 1.90m (T02) – Mobile Seepage at 1.70m (T03) – Mobile Seepage at 1.70m (Substation) - Mobile No groundwater encountered at T04, T05 and T06 within the weakly permeable cohesive soils. Permeability of mineral soils have been determined to be POOR to PRACTICALLY IMPERMEABLE for the purpose drainage design
7	GSI – Crushed Rock Aggregate Potential	According to Geological Survey Ireland, the Aggregate Potential for the Borrow Pit site can be summarised as follows: - Very High – Majority of development area, including T01, T02, T04, T06, the Substation and majority of access track network. High – Turbine T05 Low – Turbine T03
8	Predicted Performance as a construction fill material	Suitable. Greywacke (Finnalaghta Formation) is generally suitable for use as construction fill. The extremely weak to weak shallow soils are highly weathered and although suitable as fill, its crushed aggregate may degrade rapidly to fine material where left exposed to weather and traffic. Deeper unweathered greywacke is anticipated to produce a better-quality aggregate.
9	Predicted Performance as a construction aggregate	Only Medium Strong GREYWACKE rock strata (or better) has potential. This material was not encountered during the SI campaign but believed to be present at depths > 3.50m below existing ground level. This material can be expected to produce significantly less fine content than the weathered strata that has been identified in most of the trial holes.

Table 7 - Summary of Findings

7 REFERENCES

1. Geological Survey of Ireland Spatial Resources Viewer <https://gsi.ie>
2. Environmental Protection Agency, Ireland. EPA Online Data Portal <https://gis.epa.ie/EPAMaps/>
3. Ordnance Survey of Ireland. <https://osi.ie>
4. Geological Map of Ireland, 1:750,000 3rd Edition 1962.
5. Craig, R F. 1997. Soil Mechanics. Sixth Edition. E & FN Spon, London
6. Daly, D, And Warren, W. 1994. Mapping Of Groundwater Vulnerability To Pollution. Geological Survey Of Ireland (Dublin) Guidelines.
7. Site Investigation Steering Group. 1993. Site Investigation In Construction – Without Site Investigation Ground Is A Hazard, Thomas Telford, London
8. Skinner, B J, And Porter S C. 1987. Physical Geology, John Wiley & Sons, Inc.
9. BS 1377: 1990 : Methods of test for soils for civil engineering purposes. British Standards Institution.
10. BS 5930: 2015 : Code of practice for site investigations (Amendment 2). British Standards Institution.
11. BS EN 1997-2: 2007 : Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing. British Standards Institution.
12. BS EN ISO 14688-1: 2002 : Geotechnical investigation and testing - Identification and classification of soil - Part 1 Identification and description. British Standards Institution.
13. "Peat Slide Hazard and Risk Assessment – Best Practice Guide for Proposed Electricity Generation Developments", Second edition April 2017.
14. BS 1377: 1990 : Methods of test for soils for civil engineering purposes. British Standards Institution.
15. BS 5930:2015 + A1:2020 Code of practice for ground investigations. British Standards Institution.
16. BS EN 1997-2: 2007 : Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing. British Standards Institution.
17. BS EN ISO 14688-1: 2002 : Geotechnical investigation and testing - Identification and classification of soil - Part 1 Identification and description. British Standards Institution.
18. BS EN ISO 14689-1: 2003 : Geotechnical investigation and testing - Identification and classification of rock - Part 1 Identification and description. British Standards Institution.
19. BS EN ISO 22475-1: 2006 : Geotechnical investigation and testing – Sampling methods and groundwater measurements - Part 1 Technical principles for execution. British Standards Institution.
20. BS EN ISO 22476-2: 2005 : Geotechnical investigation and testing - Field testing - Part 2 Dynamic probing. British Standards Institution.
21. BS EN ISO 22476-3: 2005 : Geotechnical investigation and testing - Field testing - Part 3 Standard penetration test. British Standards Institution.
22. ISRM: 2007: The Complete ISRM Suggested Methods for Rock Characterisation, Testing and Monitoring (1974-2006). Commission on Testing Methods, International Society for Rock Mechanics (Editors Ulusay R & Hudson JA).
23. ASTM D5731-08: Standard test method for determination of the point load strength index of rock and application to rock strength
24. ASTM C215-08: Standard Test Method for Fundamental Transverse, Longitudinal, and Torsional Frequencies of Concrete Specimens
25. Construction Code of Practice for the Sustainable Use of Soils on Construction Sites, published by the Department for Environment, Food and Rural Affairs (DEFRA), London, 2009.

RECEIVED: 15/09/2025

APPENDICES

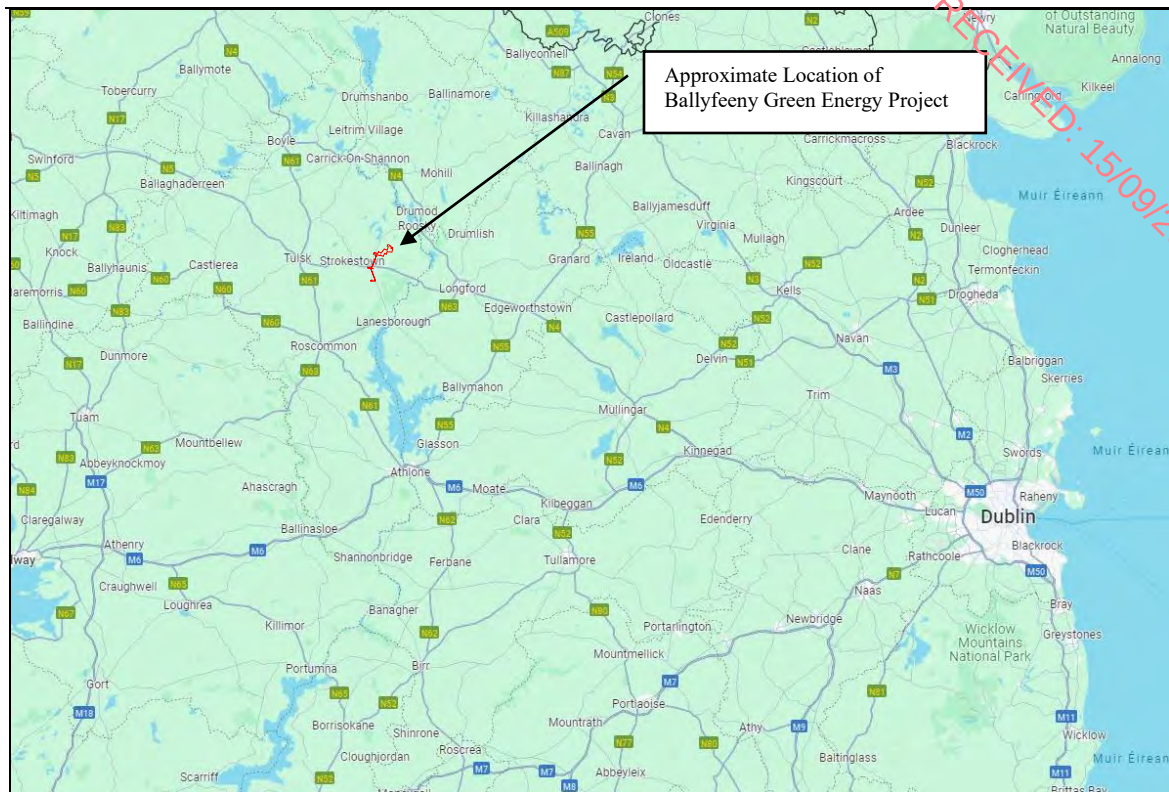
Appendix A	DRAWINGS
Appendix B	PEAT DEPTHS ENCOUNTERED AT WIND TURBINE GENERATOR BASES ENGINEERING LOGS OF TRIAL HOLES
Appendix C	INTERPRETED GEOPHYSICAL SURVEY DATA
Appendix D	SOILS LABORATORY TESTING
Appendix E	SLOPE STABILITY ANALYSIS
Appendix F	PHOTOGRAPHIC RECORD

RECEIVED: 15/09/2025

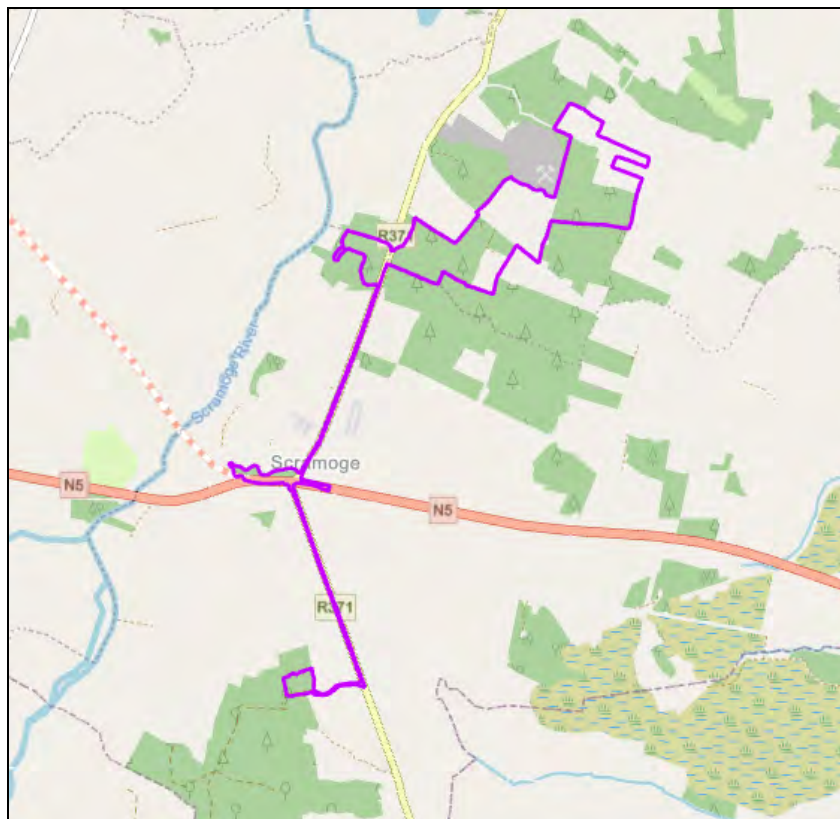
APPENDIX A

DRAWINGS

General Site Location Plan Solid Geology Figures P1 & P2	1 x A4
Walkover Study Areas Figure A1	1 x A3
Solid Geology Figure A2	1 x A3
Superficial Geology Figure A3	1 x A3
Groundwater Features, Karst, Springs and Abstraction Figure A4	1 x A3
Landslide Susceptibility and Recorded Events Figure A5	1 x A3
Minerals and Active Quarrying Figure A6	1 x A3
Geological Audited and Unaudited Sites Figure A7	1 x A3
Groundwater Vulnerability Figure A8	1 x A3
Crushed Aggregate Potential Figure A9	1 x A3
Site Layout Plan and Location of Exploratory Trial Holes and In-situ Tests Figure L1	1 x A3

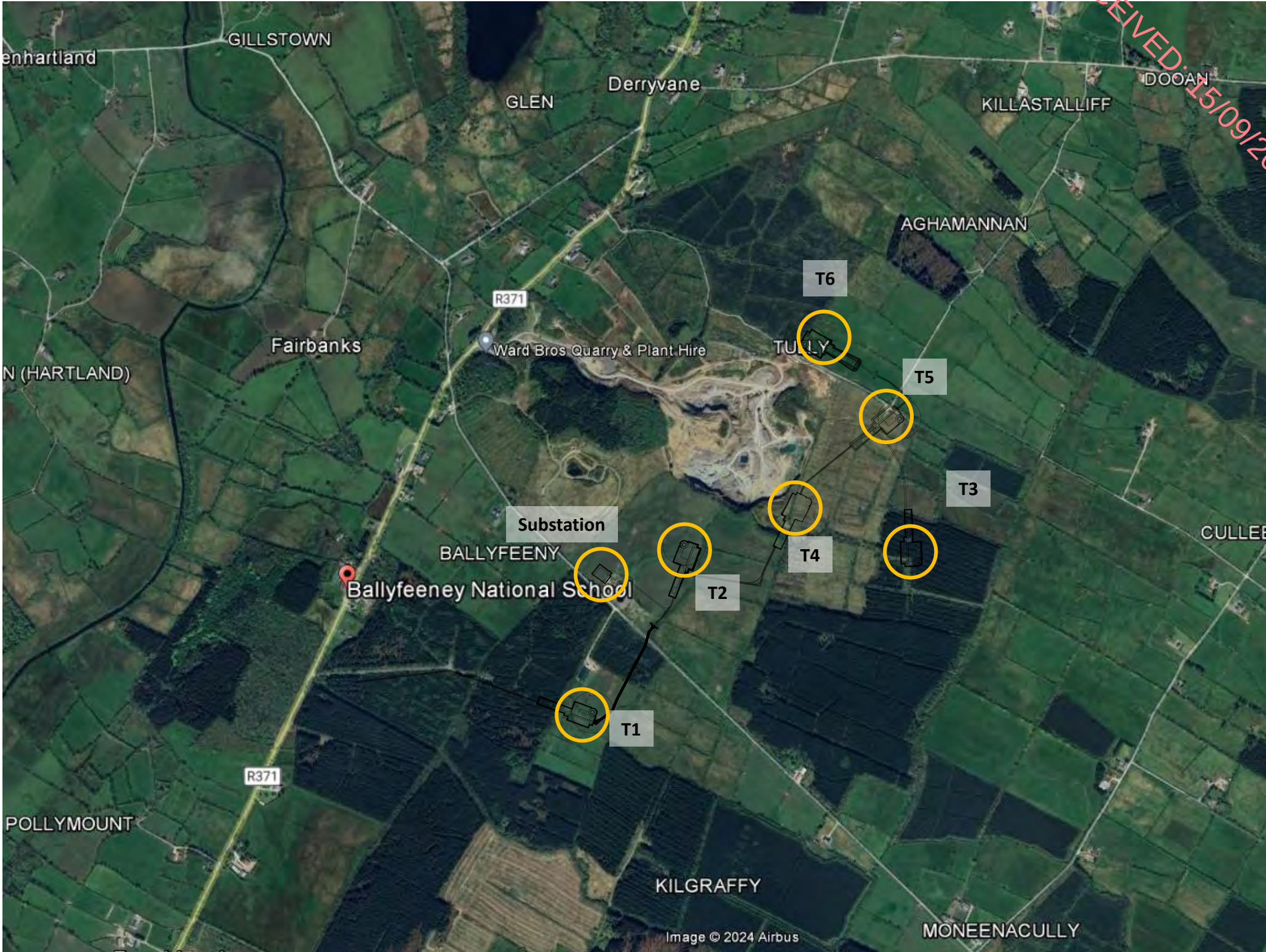


P1 - General Location Plan (Aerial view)
(© Google Maps 2025)



P2 - Local Location Plan (Aerial view)
(© Tailte Eireann 2025)

Walkover Survey Study Areas & Preliminary Trial Holes at Proposed Turbines and Borrow Pits



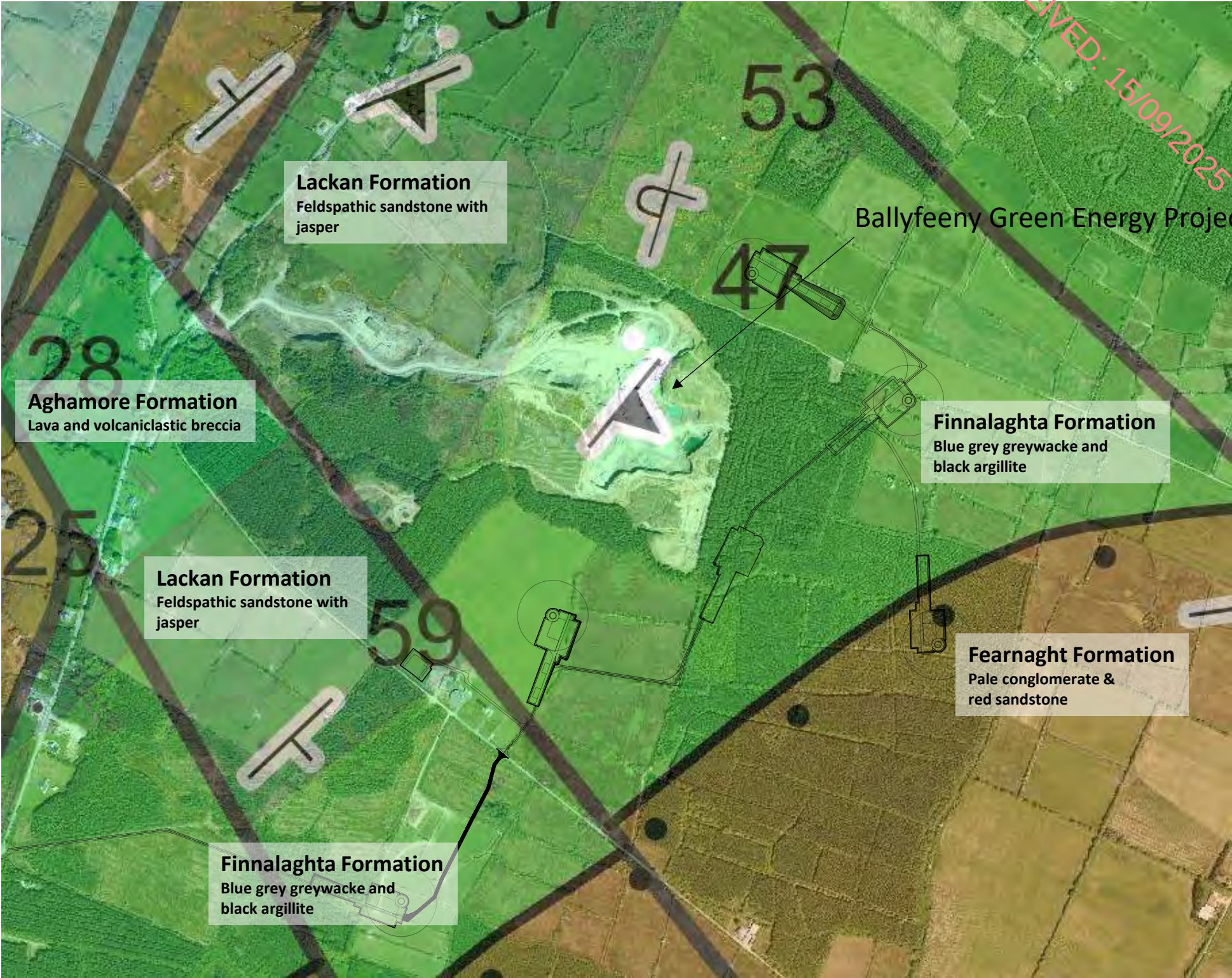
Key
 Walkover Study Areas

Notes:

- 1. GSI Copyright Google Earth
- 2. Where indicated all elevation relate to Main Head Datum
- 3. Background Mapping Source: OSI Digital Globe.

Designed by J.W.	Checked by J.M.	Approved by - date J.W. 24/06/2024	Drawing No. Figure A1	Date 24/06/2024	Scale NTS
Whiteford Geoservices Ltd Straid House 2 Main Street, Straid, BALLYCLARE, Co. Antrim, UK BT39 9 NE			Wind Farm Layout Plan and Study Areas		
Ballyfeeny Green Energy Project			Soils and Geology Assessment	Edition 1	Sheet

GSI – Solid Geology

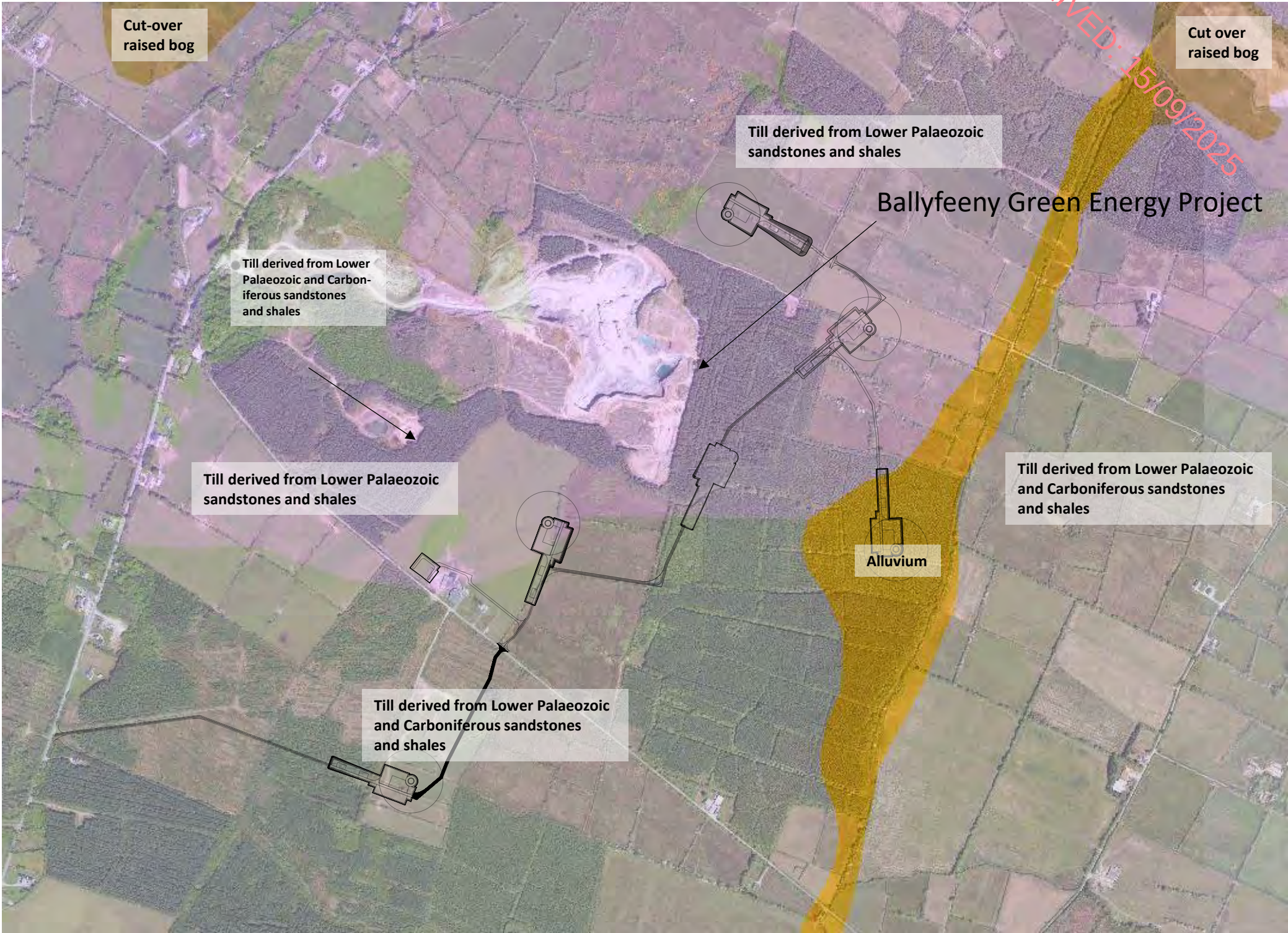


Notes:

- 1. GSI Copyright Reserved, Geological Survey Ireland DECC
- 2. Where indicated all elevation relate to Main Head Datum
- 3. Background Mapping Source: OSI Digital Globe.

Designed by J.W.	Checked by J.W.	Approved by - date J.W. 24/06/2024	Drawing No. Figure A2	Date 24/06/2024	Scale NTS
Whiteford Geoservices Ltd Strait House 2 Main Street, Strait, BALLYCLARE, Co. Antrim, UK BT39 9 NE			Geological Survey of Ireland Online Mapping Database Solid Geology		
Ballyfeeny Green Energy Project				Edition 1	Sheet
Soils and Geology Assessment				16	

GSI – Superficial Soils



Notes:

- 1. GSI Copyright Reserved, Geological Survey Ireland DECC
- 2. Where indicated all elevation relate to Main Head Datum
- 3. Background Mapping Source: OSI Digital Globe.

Designed by J.W.	Checked by J.M.	Approved by - date J.W. 24/06/2024	Drawing No. Figure A3	Date 24/06/2024	Scale NTS
Whiteford Geoservices Ltd Straid House 2 Main Street, Straid, BALLYCLARE, Co. Antrim, UK BT39 9 NE			Geological Survey of Ireland Online Mapping Database Superficial Soils		
Ballyfeeny Green Energy Project				Edition 1	Sheet
Soils and Geology Assessment					

GSI – Groundwater Features, Karst Features, Springs and Abstraction Points

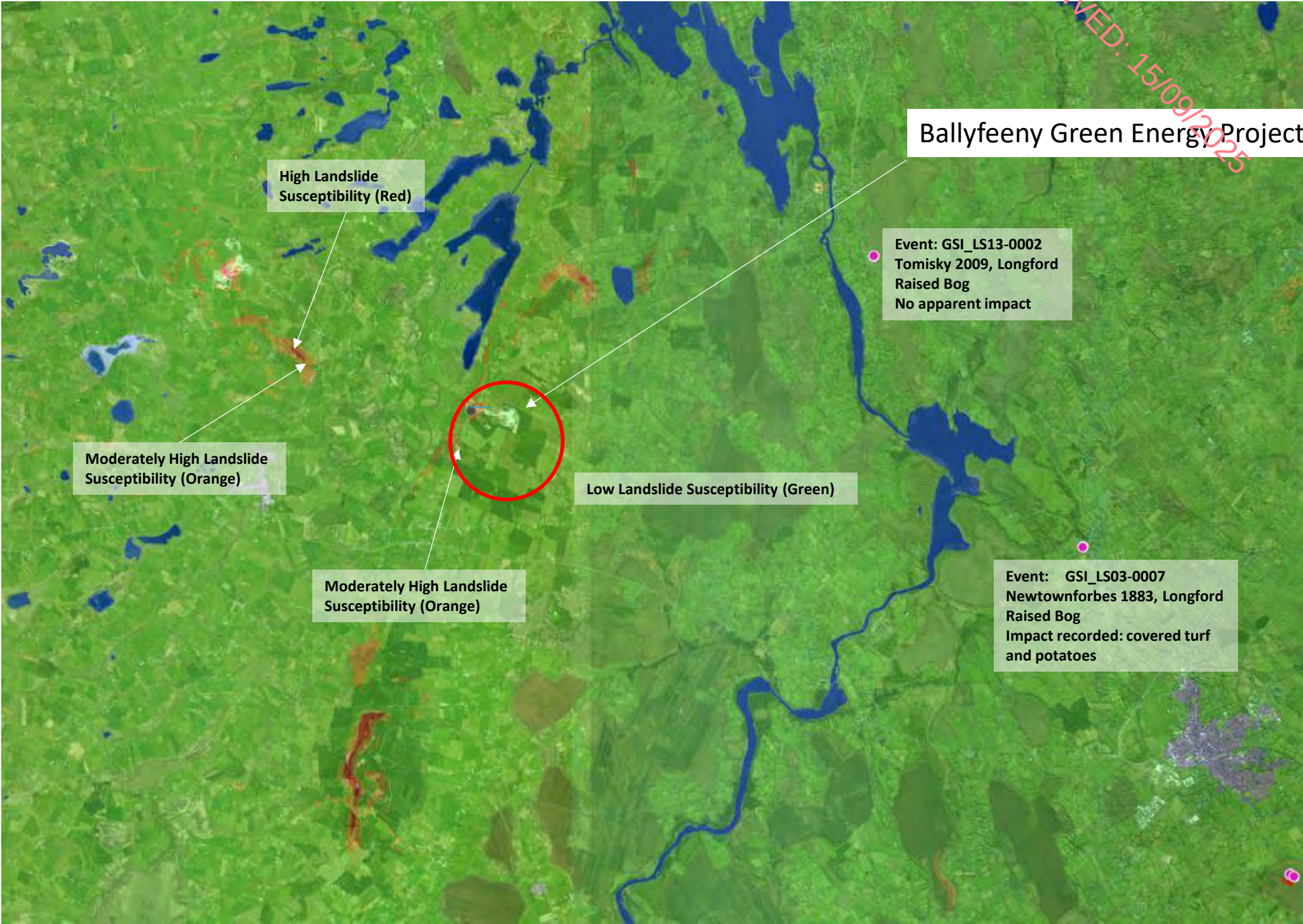


Notes:

- 1. GSI Copyright Reserved, Geological Survey Ireland DECC
- 2. Where indicated all elevation relate to Main Head Datum
- 3. Background Mapping Source: OSI Digital Globe.

Designed by J.W.	Checked by J.M.	Approved by - date J.W. 24/06/2024	Drawing No. Figure A4	Date 24/06/2024	Scale NTS
Whiteford Geoservices Ltd Straid House 2 Main Street, Straid, BALLYCLARE, Co. Antrim, UK BT39 9 NE			Geological Survey of Ireland Online mapping Database Groundwater Features, Karst, Springs and Abstraction Ballyfeeny Green Energy Project Soils and Geology Assessment		
			Edition 1		Sheet 16

GSI – Landslide Susceptibility and Recorded Events

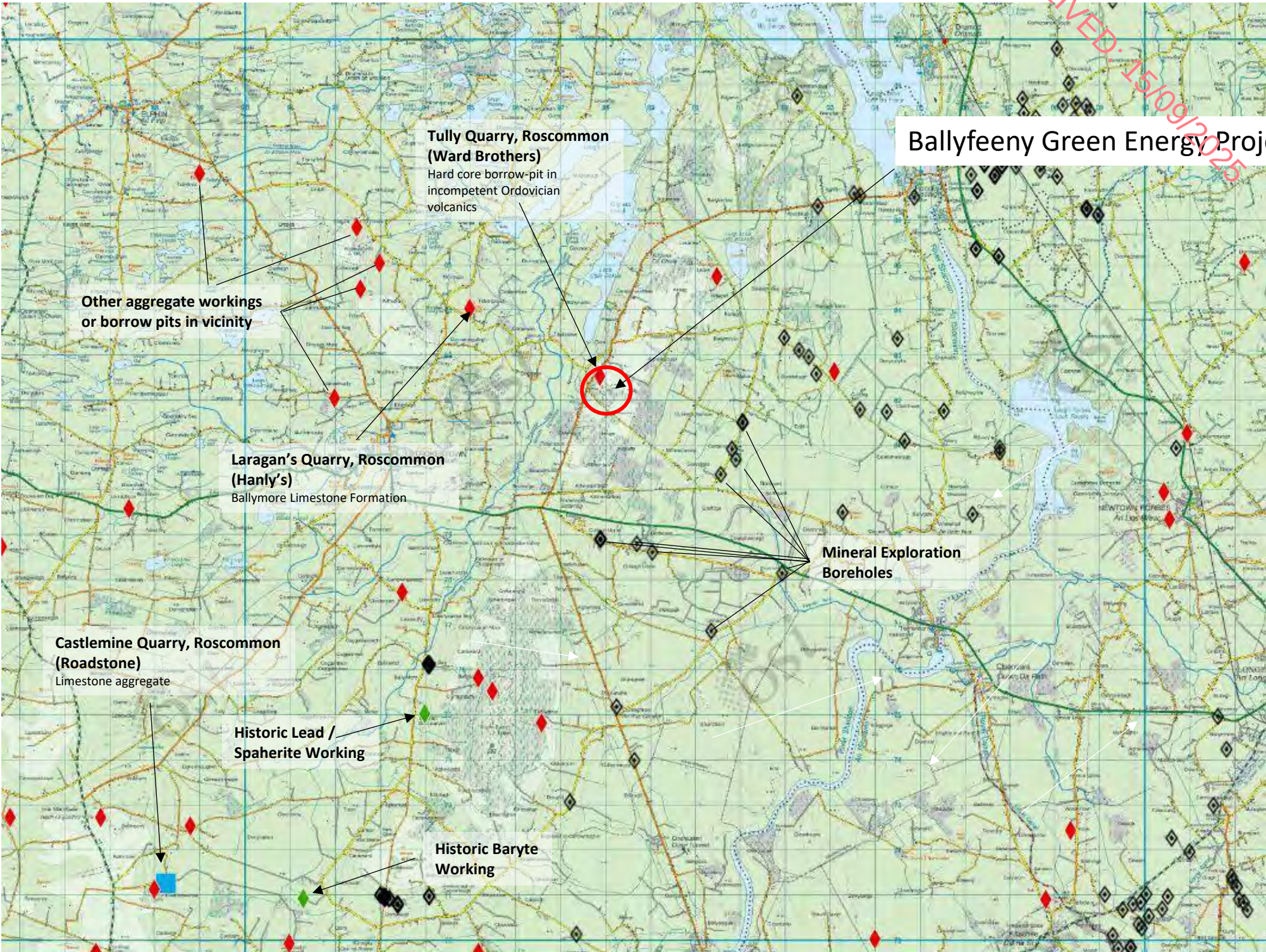


Notes:

- 1. GSI Copyright Reserved, Geological Survey Ireland DECC
- 2. Where indicated all elevation relate to Main Head Datum
- 3. Background Mapping Source: OSI Digital Globe.

Designed by J.W.	Checked by J.M.	Approved by - date J.W. 24/06/2024	Drawing No. Figure A5	Date 24/06/2024	Scale NTS
Whiteford Geoservices Ltd Strait House, 2 Main Street, Strait, BALLYCLARE, Co. Antrim, UK BT39 9 NE			Geological Survey of Ireland Online Mapping Database Landslide Susceptibility and Recorded Events		
Ballyfeeny Green Energy Project				Edition 1	Sheet
Soils and Geology Assessment					

GSI – Minerals and Active Quarrying



Notes:

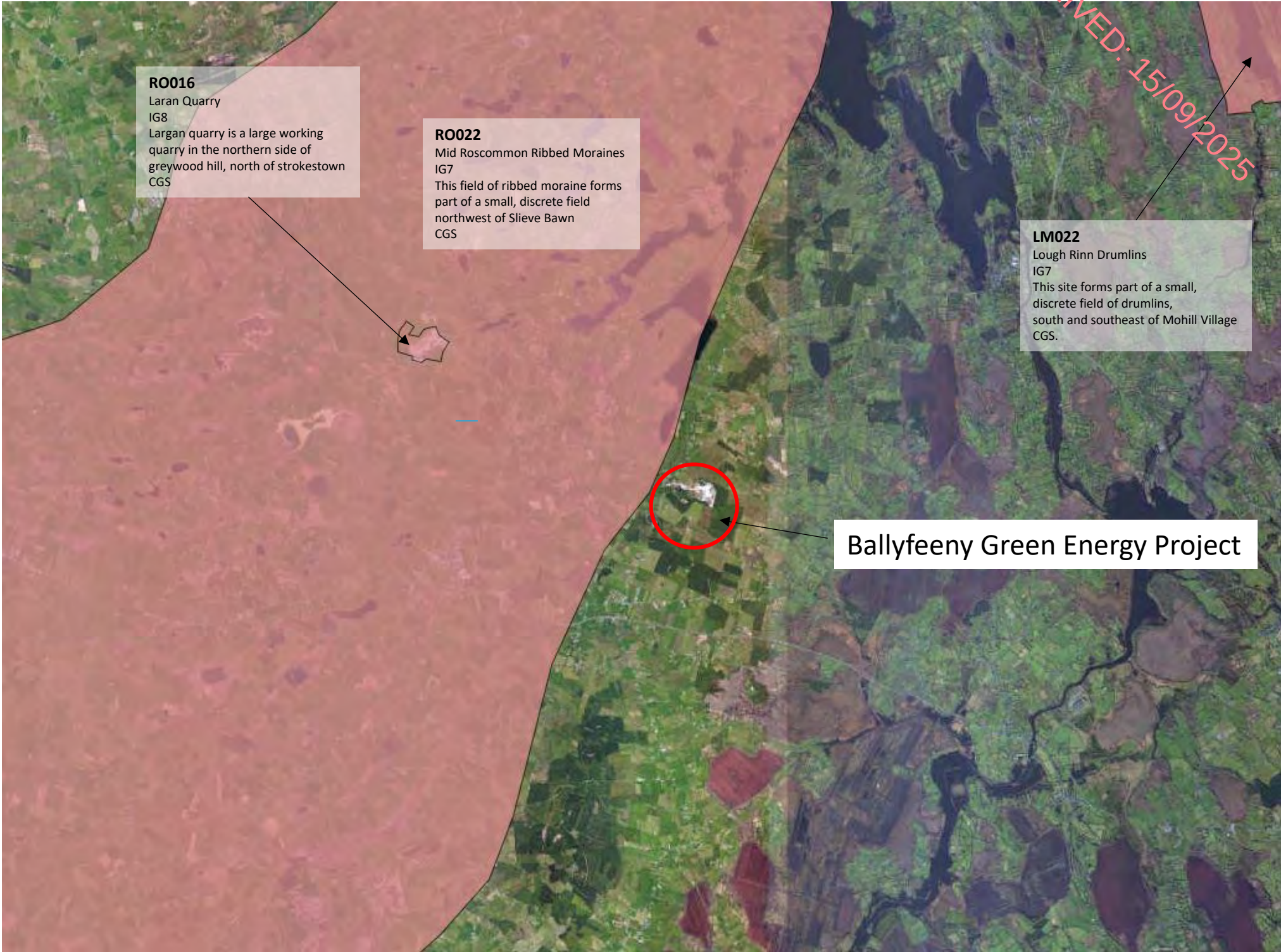
1. GSI Copyright Reserved, Geological Survey Ireland DECC
2. Where indicated all elevation relate to Main Head Datum
3. Background Mapping Source: OSI Digital Globe.

Designed by J.W.	Checked by J.M.	Approved by - date J.W. 24/06/2024	Drawing No. Figure A6	Date 24/06/2024	Scale NTS
Whiteford Geoservices Ltd Straid House 2 Main Street, Straid, BALLYCLARE, Co. Antrim, UK BT39 9 NE			Geological Survey of Ireland Online Mapping Database Minerals and Active Quarrying Ballyfeeny Green Energy Project		
			Edition 1		
			Sheet 16		

2273-24 Ballyfeeny Green Energy Project, Co. Roscommon
Soils and Geology Constraints



GSI – Geological Audited and Unaudited Sites

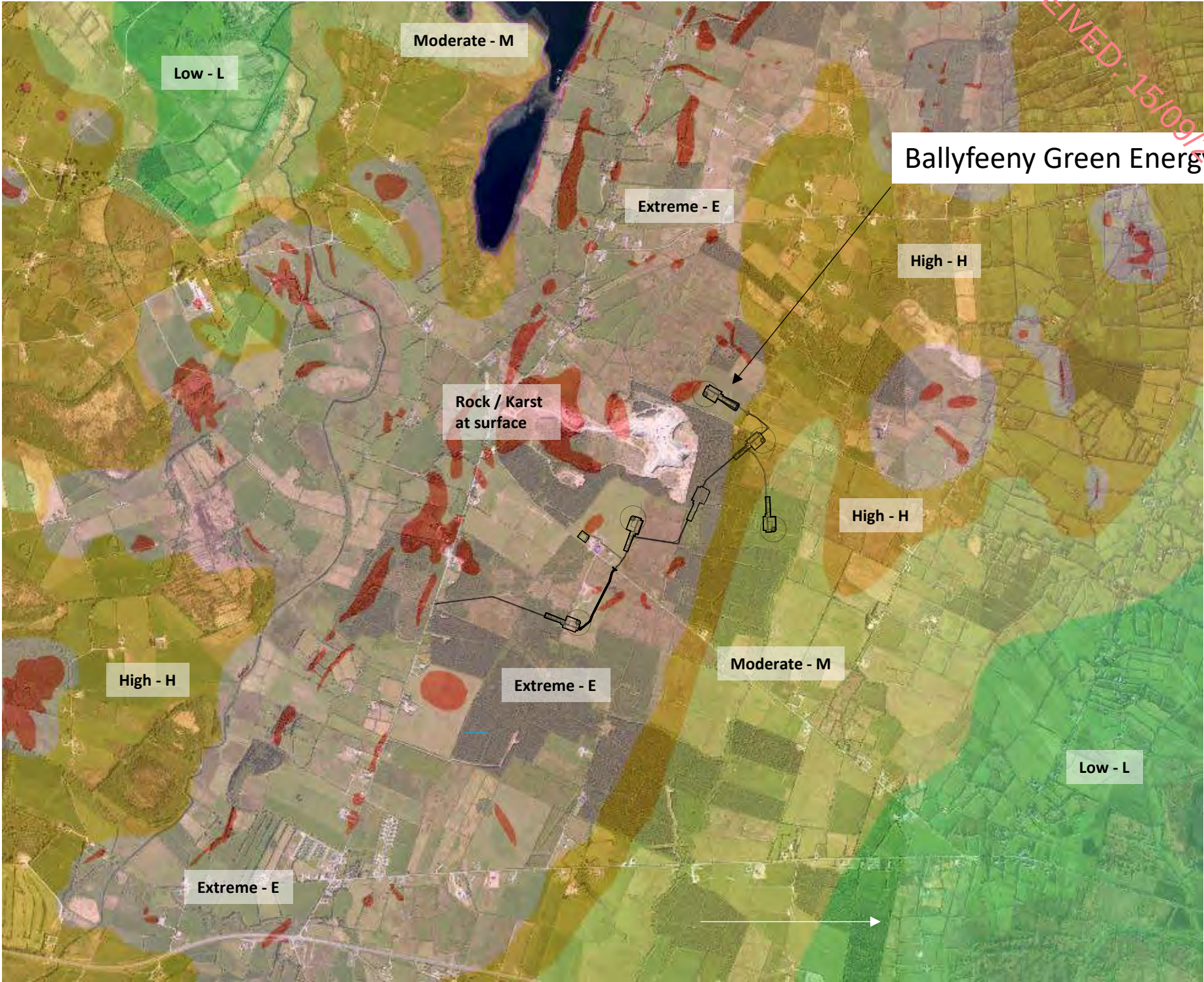


Notes:

- 1. GSI Copyright Reserved, Geological Survey Ireland DECC
- 2. Where indicated all elevation relate to Main Head Datum
- 3. Background Mapping Source: OSI Digital Globe.

Designed by J.W.	Checked by J.W.	Approved by - date J.W. 24/06/2024	Drawing No. Figure A7	Date 24/06/2024	Scale NTS
Whiteford Geoservices Ltd Straid House 2 Main Street, Straid, BALLYCLARE, Co. Antrim, UK BT39 9 NE			Geological Survey of Ireland Online Mapping Database Geological Audited and Unaudited Sites		
Ballyfeeny Green Energy Project				Edition 1	Sheet
Soils and Geology Assessment				16	

GSI – Groundwater Vulnerability



Notes:

- 1. GSI Copyright Reserved, Geological Survey Ireland DECC
- 2. Where indicated all elevation relate to Main Head Datum
- 3. Background Mapping Source: OSI Digital Globe.

Designed by J.W.	Checked by J.M.	Approved by - date J.W. 24/06/2024	Drawing No. Figure A8	Date 24/06/2024	Scale NTS
Whiteford Geoservices Ltd Straid House 2 Main Street, Straid, BALLYCLARE, Co. Antrim, UK BT39 9 NE			Geological Survey of Ireland Online Mapping Database Groundwater Vulnerability		
Ballyfeeny Green Energy Project				Edition 1	Sheet
Soils and Geology Assessment					

GSI – Aggregate Potential



Notes:

- 1. GSI Copyright Reserved, Geological Survey Ireland DECC
- 2. Where indicated all elevation relate to Main Head Datum
- 3. Background Mapping Source: OSI Digital Globe.

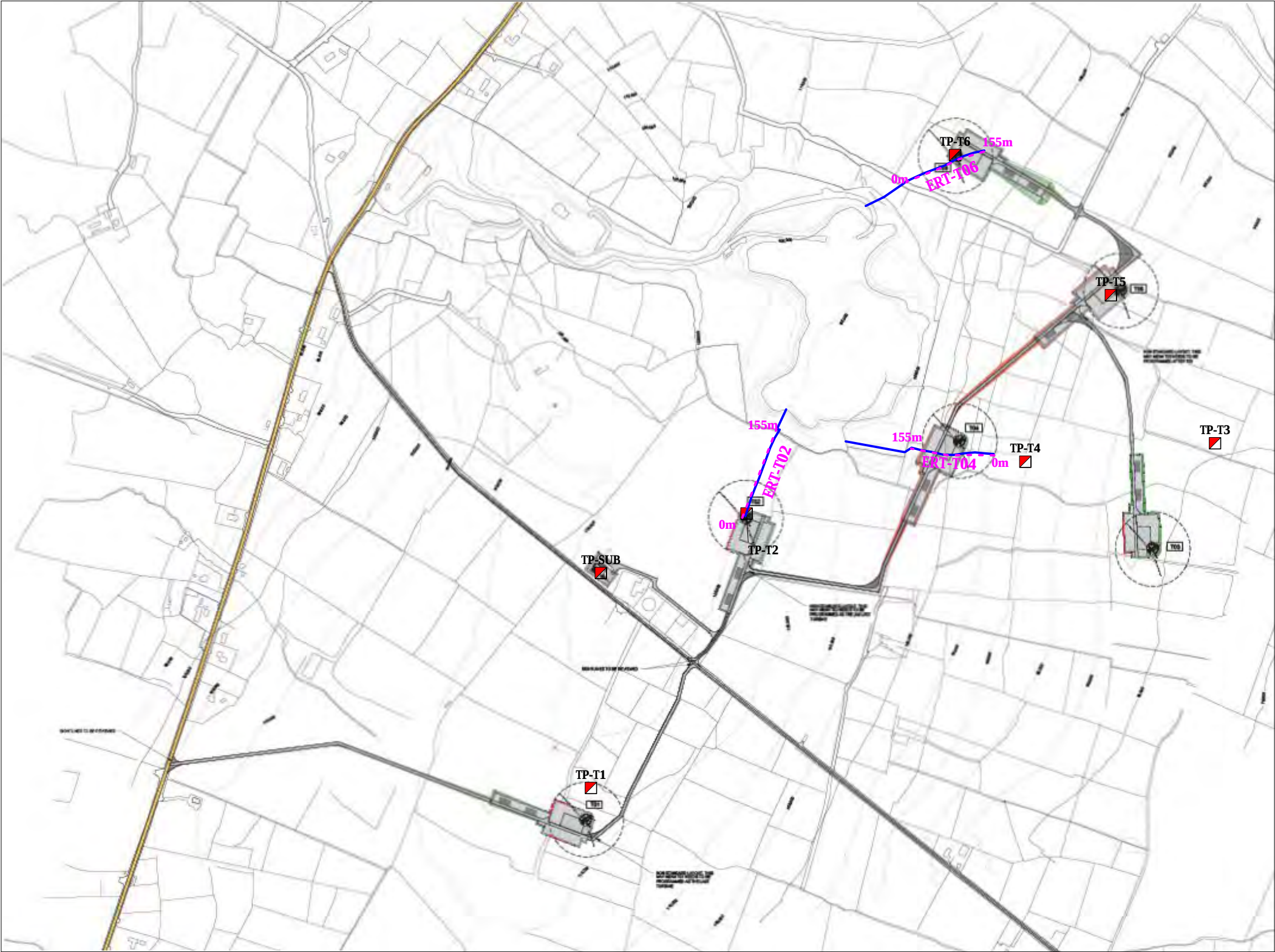
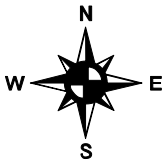
Designed by J.W.	Checked by J.M.	Approved by - date J.W. 24/06/2024	Drawing No. Figure A9	Date 24/06/2024	Scale NTS
Whiteford Geoservices Ltd Straid House 2 Main Street, Straid, BALLYCLARE, Co. Antrim, UK BT39 9 NE			Geological Survey of Ireland Online Mapping Database Crushed Aggregate Potential		
Ballyfeeny Green Energy Project				Edition 1	Sheet
Soils and Geology Assessment				16	

2273-24 Ballyfeeny Green Energy Project - Soils and Geology Assessment

Turbine Layout: Dated 10-05-2024

As-Built SI Layout Plan

8th July 2024



RECEIVED: 15/09/2025

KEY

- Trial Hole
- Profile for Slope Stability Assessment (ERT-T06)
- Profile for Slope Stability Assessment
- Landholding Boundary
- Red Line Boundary

Turbine Coordinates	
Turbine	Coordinates (ITM)
T01	598030E 781311N
T02	598323E 781869N
T03	599075N 781813N
T04	598719E 782011N
T05	599018E 782289N
T06	598713E 782537N

Substation Coordinates	
(ITM)	
598059E 781765N	

- Notes:
1. Depths on Classed plot maps are only representative of peat depth at probe location
 2. All depths are relative to ground level existing at the time of the survey / investigation.
 3. All positions relate to the Irish National Grid coordinate system.
 4. Any elevations are provided relative to Ordnance Datum Malin Head

Designed by	Checked by	Approved by - date	Drawing No.	Date	Scale
JW	JW	JM 30/04/2025	2273-24 L1	30/04/2025	1 : 15,000
Whiteford Geoservices Ltd					
Ballyfeeny Green Energy Project - As Built SI Layout Plan					
Location of Exploratory Holes and In-situ Tests					
				Sheet	Drawn
				1	A3



RECEIVED: 15/09/2025

APPENDIX B

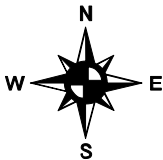
IN-SITU TEST RESULTS AND LOGS OF EXPLORATORY HOLES

Plot of Peat Thickness at Turbine Locations (<i>PLH screening</i>)	1 x A3
Trial Pit Logs	7 x A4
Soakaway Test	1 x A4

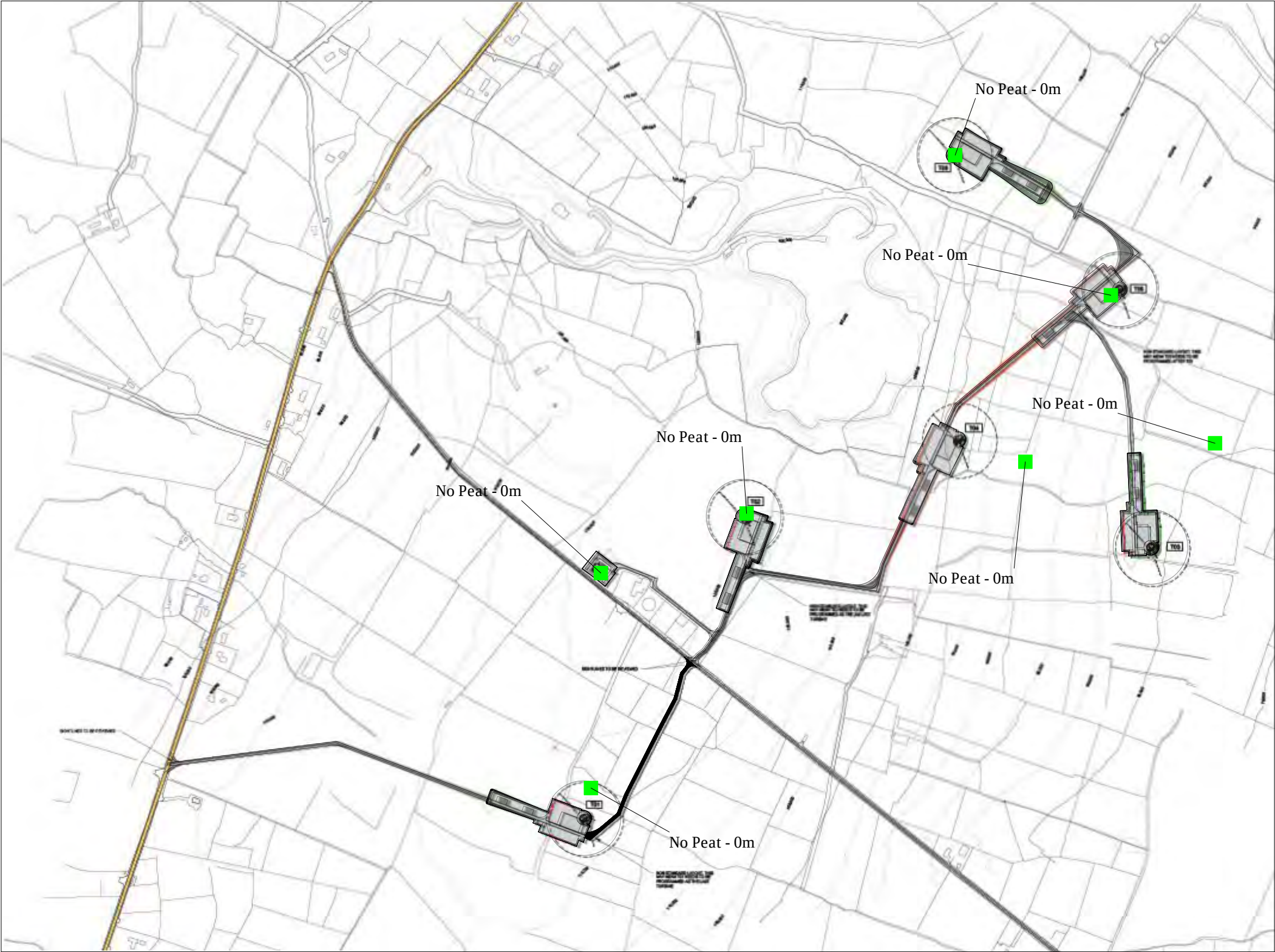
2273-24 Ballyfeeny Green Energy Project - Soils and Geology Assessment

Turbine Layout: Dated 10-05-2024

Classed Plot of Peat Depth
24th June 2024



RECEIVED: 15/09/2025



KEY

Peat Depth (m)

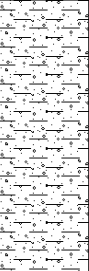
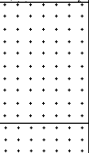
- 0 to 0.5
- 0.5 to 1
- 1 to 2
- 2 to 3
- 3 to 4
- 4 to 5

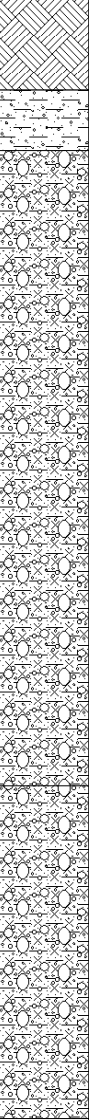
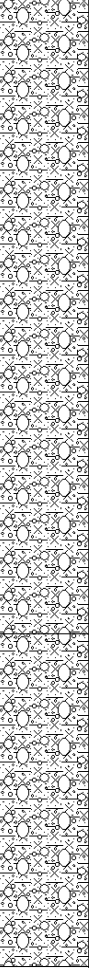
Turbine Coordinates	
Turbine	Coordinates (ITM)
T01	598030E 781311N
T02	598323E 781869N
T03	599075N 781813N
T04	598719E 782011N
T05	599018E 782289N
T06	598713E 782537N

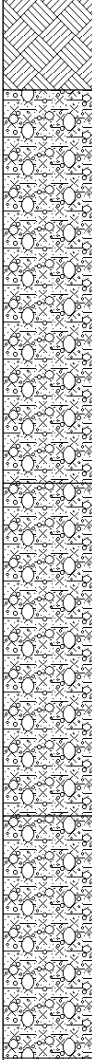
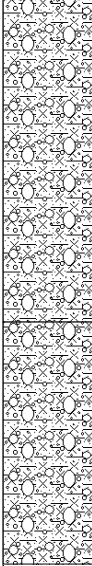
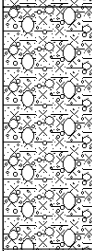
Substation Coordinates	
(ITM)	
598059E 781765N	

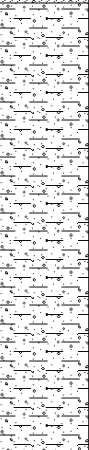
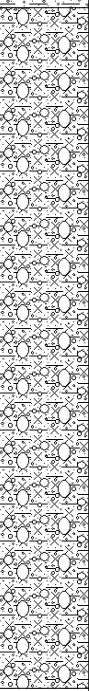
- Notes:
1. Depths on Classed plot maps are only representative of peat depth at probe location
 2. All depths are relative to ground level existing at the time of the survey / investigation.
 3. All positions relate to the Irish National Grid coordinate system.
 4. Any elevations are provided relative to Ordnance Datum Malin Head

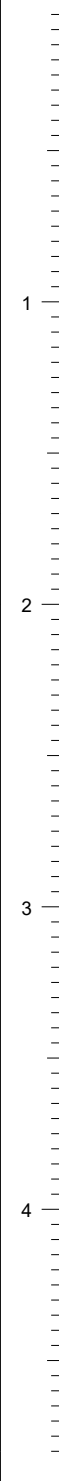
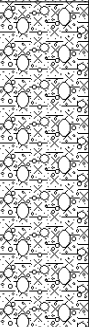
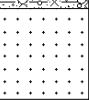
Designed by	Checked by	Approved by - date	Drawing No.	Date	Scale
JW	JW	JM 30/04/2025	2273-24 D1	30/04/2025	1 : 15,000
Whiteford Geoservices Ltd					
Ballyfeeny Green Energy Project - Classed Plot of Peat Depth					
Classed Plot of Peat Depth				Sheet	A3
				1	

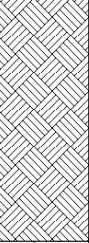
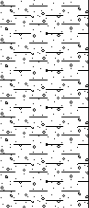
 whiteford explore the possibilities				Address: 2 Main Street, Straid, Ballyclare BT39 9NE, UK Tel: (028) 9334 9351 Email: Info@whitefordgeoservices.com Website: www.whitefordgeoservices.com				Trial Pit Log					
Project Name: Ballyfeeney Wind Farm				Project No: 2273-24		Client:				Date: 29/05/2024			
						Contractor:				Co-ords: E598714.43 N782536.93			
Location:				Sub Contractor: SBPH				Equipment: Zaxis 130LCN					
Location Number TP-T06		Location Type TP		Level 105.80m AoD		Logged By J.Stothers		Scale 1:25		Page Number Sheet 1 of 1			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description					
		Depth (m)	Type	Results									
		0.50	B		0.30	105.50		Soft, brown, sandy, clayey TOPSOIL				1	
								Firm becoming stiff, grey, sandy, gravelly CLAY/ SILT					
		1.50	B		1.20	104.60		Probable, Extremely weak, grey stained orange, distinctly weathered GREYWACKE					
					1.60	104.20		Probable, Weak, grey, partially weathered GREYWACKE					
					1.70	104.10		End of Pit at 1.700m					
												2	
												3	
												4	
Dimensions				Trench Comments				Backfill Details					
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks				Top	Base	Description			
3.50	0.90	Sides stable upon completion	None					0.00	1.70	Arisings			
Remarks													
No groundwater encountered.													

 whiteford <i>explore the possibilities</i>				Address: 2 Main Street, Straid, Ballyclare BT39 9NE, UK Tel: (028) 9334 9351 Email: Info@whitefordgeoservices.com Website: www.whitefordgeoservices.com				Trial Pit Log					
Project Name: Ballyfeeney Wind Farm				Project No: 2273-24		Client:				Date: 29/05/2024			
						Contractor:				Co-ords: E599002.40 N782277.87			
Location:						Sub Contractor: SBPH				Equipment: Zaxis 130LCN			
Location Number TP-T05			Location Type TP			Level 86.21m AoD		Logged By J.Stothers		Scale 1:25		Page Number Sheet 1 of 1	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description					
		Depth (m)	Type	Results									
		0.50	B		0.30	85.91		Soft, brown, sandy, clayey TOPSOIL				1	
					0.50	85.71		Firm, orangish brown, sandy, gravelly CLAY/SILT					
								Firm becoming stiff, grey, sandy, gravelly CLAY/ SILT with a low cobble and boulder content					
		1.50	B		2.60	83.61		Stiff becoming hard, grey, sandy, gravelly CLAY/ SILT with a low cobble and boulder content					2
3.50	B		3.70	82.51	End of Pit at 3.700m				3				
												4	
Dimensions				Trench Comments				Backfill Details					
Pit Length		Pit Width		Pit Stability	Shoring Used	Remarks		Top	Base	Description			
3.50		0.90		Sides unstable upon completion	None			0.00	3.70	Arisings			
Remarks													
No groundwater encountered.													

 whiteford <i>explore the possibilities</i>					Address: 2 Main Street, Straid, Ballyclare BT39 9NE, UK Tel: (028) 9334 9351 Email: Info@whitefordgeoservices.com Website: www.whitefordgeoservices.com					Trial Pit Log																			
Project Name: Ballyfeeney Wind Farm					Project No: 2273-24					Client:					Date: 29/05/2024														
										Contractor:					Co-ords: E598844.21 N781970.04														
Location:					Sub Contractor: SBPH					Equipment: Zaxis 130LCN																			
Location Number TP-T04					Location Type TP					Level 88.36m AoD					Logged By J.Stothers					Scale 1:25					Page Number Sheet 1 of 1				
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description																					
		Depth (m)	Type	Results																									
		0.50	B		0.30	88.06		Soft, brown, sandy, clayey TOPSOIL																					
					Firm, orangish brown, sandy, gravelly CLAY/SILT with a low cobble content																								
		2.00	B		1.60	86.76		Stiff, grey, sandy, gravelly CLAY/SILT with a low cobble and boulder content																					
					Hard, grey, sandy, gravelly CLAY/SILT with a low cobble and boulder content																								
		3.00	B		2.70	85.66		End of Pit at 3.500m																					
3.50			3.50	84.86																									
Dimensions		Pit Length		Pit Width		Pit Stability		Shoring Used		Remarks		Backfill Details		Top		Base		Description											
		3.50		0.90		Sides stable upon completion		None						0.00		3.50		Arisings											
Remarks																													
No groundwater encountered.																													

 whiteford <i>explore the possibilities</i>					Address: 2 Main Street, Straid, Ballyclare BT39 9NE, UK Tel: (028) 9334 9351 Email: Info@whitefordgeoservices.com Website: www.whitefordgeoservices.com					Trial Pit Log																			
Project Name: Ballyfeeney Wind Farm					Project No: 2273-24					Client:					Date: 29/05/2024														
										Contractor:					Co-ords: E599195.09 N782004.21														
Location:					Sub Contractor: SBPH					Equipment: Zaxis 130LCN																			
Location Number TP-T03					Location Type TP					Level 75.27m AoD					Logged By J.Stothers					Scale 1:25					Page Number Sheet 1 of 1				
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description																					
		Depth (m)	Type	Results																									
					0.25	75.02		Soft, brown, sandy, clayey TOPSOIL																					
								Firm, grey mottled orange, sandy, gravelly CLAY/ SILT																					
									Firm becoming stiff, grey, sandy, gravelly CLAY/ SILT with a low cobble and boulder content																				
									End of Pit at 4.000m																				
		1.00	B										1																
					1.75	73.52							2																
		2.50	B										3																
					4.00	71.27							4																
Dimensions		Pit Length		Pit Width		Pit Stability		Shoring Used		Remarks		Backfill Details		Top		Base		Description											
		3.50		0.90		Sides stable upon completion		None						0.00		4.00		Arisings											
Remarks																													
Groundwater encountered 1.70m b.g.l. (Seepage)																													

 whiteford <i>explore the possibilities</i>				Address: 2 Main Street, Straid, Ballyclare BT39 9NE, UK Tel: (028) 9334 9351 Email: Info@whitefordgeoservices.com Website: www.whitefordgeoservices.com				Trial Pit Log				
Project Name: Ballyfeeney Wind Farm				Project No: 2273-24		Client:			Date: 29/05/2024			
						Contractor:			Co-ords: E598328.63 N781874.42			
Location:				Sub Contractor: SBPH			Equipment: Zaxis 130LCN					
Location Number TP-T02		Location Type TP		Level 119.79m AoD		Logged By J.Stothers		Scale 1:25		Page Number Sheet 1 of 1		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description				
		Depth (m)	Type	Results								
		0.50	B		0.60	119.19		Soft, brown, sandy, clayey TOPSOIL				
								Firm becoming stiff, grey, sandy, gravelly CLAY/ SILT with a low cobble and boulder content				
		1.50	B		1.70	118.09						
		2.00	B		2.00	117.79		Probable, Extremely weak, grey, partially weathered GREYWACKE				
								End of Pit at 2.000m				
Dimensions		Trench Comments									Backfill Details	
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks				Top	Base	Description		
3.50	0.90	Sides stable upon completion	None					0.00	2.00	Arisings		
Remarks												
Groundwater encountered 1.90m b.g.l. (Seepage)												

 whiteford <i>explore the possibilities</i>				Address: 2 Main Street, Straid, Ballyclare BT39 9NE, UK Tel: (028) 9334 9351 Email: Info@whitefordgeoservices.com Website: www.whitefordgeoservices.com				Trial Pit Log			
Project Name: Ballyfeeney Wind Farm				Project No: 2273-24		Client:			Date: 29/05/2024		
						Contractor:			Co-ords: E598059.11 N781764.28		
Location:				Sub Contractor: SBPH			Equipment: Zaxis 130LCN				
Location Number TP-SUB		Location Type TP		Level 121.49m AoD		Logged By J.Stothers		Scale 1:25		Page Number Sheet 1 of 1	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		0.50	B		0.80	120.69		Soft, brown, sandy, clayey TOPSOIL		1	
		1.00	B								
		1.60	B		1.50	119.99		Firm, grey mottled orange, sandy, gravelly CLAY/ SILT		2	
					1.80	119.69		Probable, Extremely weak, grey stained orange, distinctly weathered GREYWACKE			
End of Pit at 1.800m										4	
Dimensions				Trench Comments				Backfill Details			
Pit Length		Pit Width		Pit Stability	Shoring Used	Remarks		Top	Base	Description	
3.50		0.90		Sides stable upon completion	None			0.00	1.80	Arisings	
Remarks											
Groundwater encountered 1.70m b.g.l. (Seepage)											

Infiltration Test

TP-SUB

RECEIVED: 15/09/2025

Project:	Ballyfeeny Green Energy Project		
Job No:	2273-24		
Client:	Mable IE		
Survey Type:	Soakaway Test - (BRE Digest 365)		
GPS Co-ordinate:	E =	598059	N= 781764
Date:	30/02/2024		
Soil Type:	Fluvio-glacial: SILT, CLAY, SAND, GRAVEL AND BOULDERS		
Site Description:	Agricultural		
Topography of Land:	Generally Level at test site		
Distance to nearest Watercourse:	~1.50 km		
Height difference between Site and Watercourse:	Unknown		
Description of Watercourse:	The watercourse is the Scramoge River		
Catchment Area:	Unknown		
Dimensions of Test Hole (L/W/D) (m):	1.3	0.9	0.6
Base Dimensions of Test Hole (LxW) (m):	1.25	0.85	
Volume (m³) = 0.69			
WATER DEPTH vs TIME			
Depth To Water (m)	Time (mins)	(%)	Graph
0.0000	0	100.00%	
0.0000	1	100.00%	
0.0050	5	99.15%	
0.0100	10	98.30%	
0.0150	20	97.45%	
0.0200	30	96.60%	
0.0200	60	96.60%	
0.0220	120	96.26%	
0.0220	180	96.26%	
0.0240	240	95.92%	
Additional Remarks:			
Refer to BRE Digest 365 for test procedure	$V_{p75-25} =$	0.3825 m ³	$T_{p75-25} =$ N/A mins
Soakaway Test - Filled to ground level	$A_{p50} =$	2.9075 m ²	
Average Percolation Rate =	N/A	m/s	
Test abandoned due to extremely low permeability			Initials: JS



RECEIVED: 15/09/2025

APPENDIX C

INTERPRETED GEOPHYSICAL SURVEY DATA

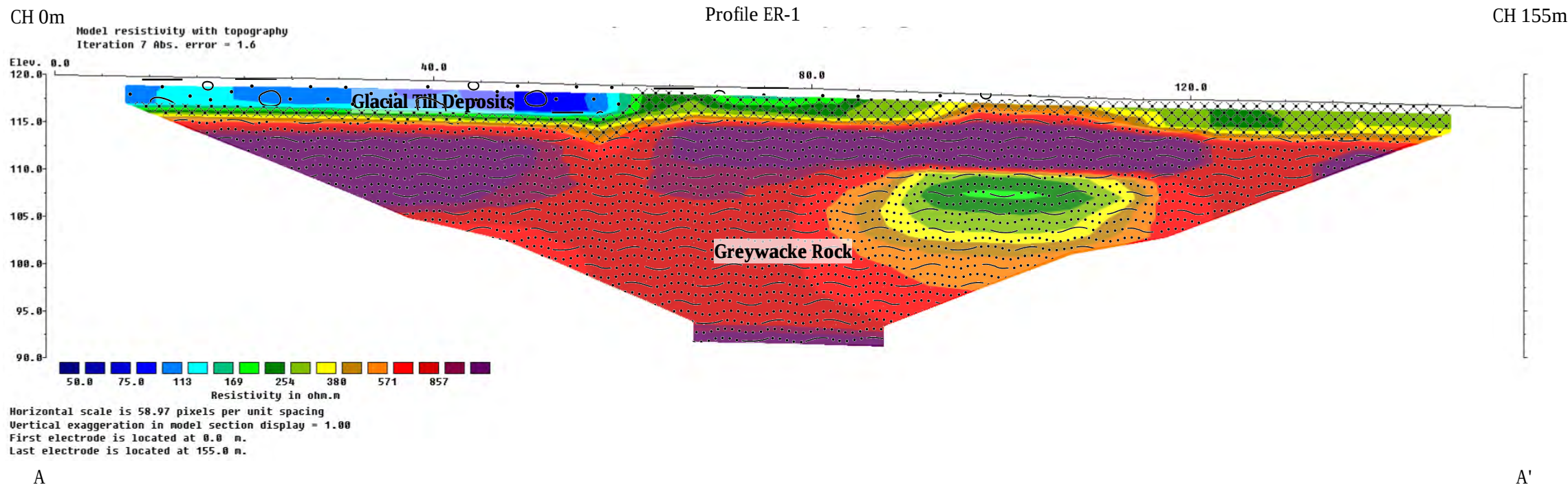
Annotated Electrical Resistivity Tomography (ERT) Profiles:

T2 – ERT1 & T4 – ERT2	1 x A3
T6 – ERT3	1 x A3

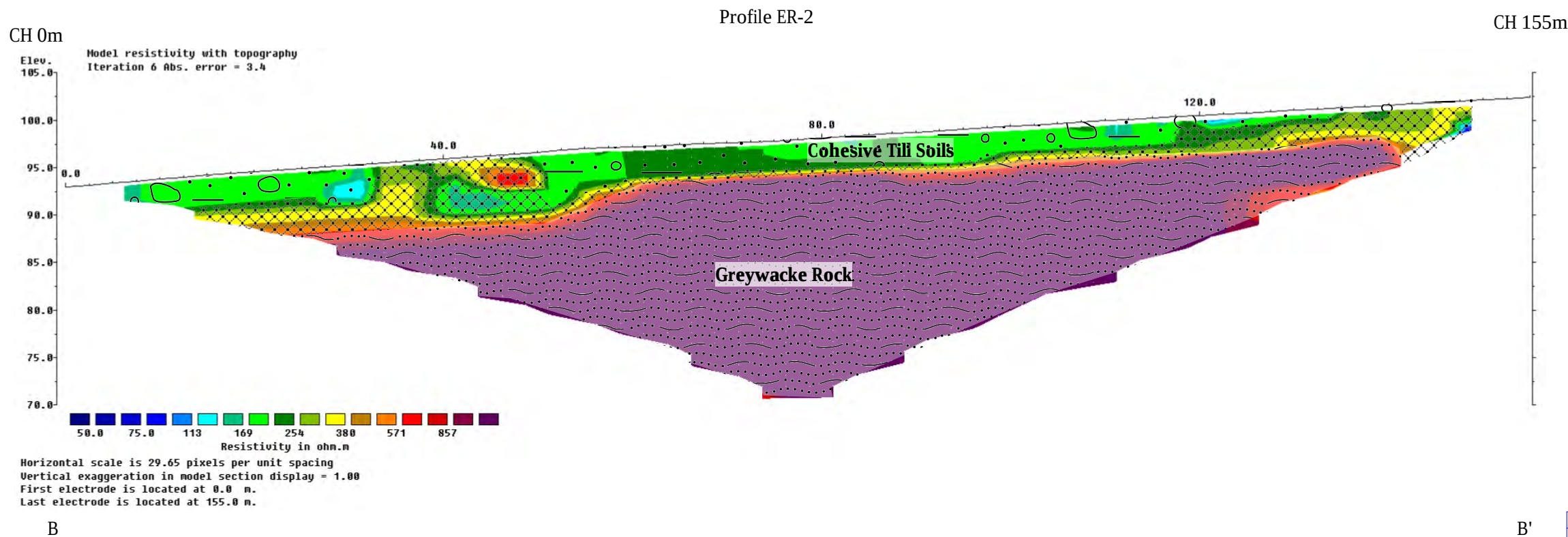
2273-24 Ballyfeeny Green Energy Project, Strokestown, Co. Roscommon
Turbines T2 and T4

Electrical Resistivity Tomography (ERT) Surveys

Interpretated Resistivity Imaging Profile at Turbine T2
24 June 2024



Interpretated Resistivity Imaging Profile at Turbine T4
24 June 2024



Key To Sections

Each Profile indicates variation in the elctrical restivity of the Subsurface with depth.

Natural Soils (generally 10 - 500Wm)
Greywacke Rock (generally >500Wm)

Organic Soils
(PEAT and sandy, organic SILT / CLAYS)

Natural Soils
(Sandy, gravelly CLAYS with cobbles and boulders)

Weathered Rock
(Probably decomposed greywacke rock or large boulders within residual soil matrix)

Weathered Rock
(Greywacke)

- Notes:
- 1. All depths are relative to ground level existing at the time of the survey / investigation.
 - 2. Positions, where detailed, relate to the IG coordinate system.
 - 3. Please refer to Drawing 2217-23-A for position of each ERT Profile.

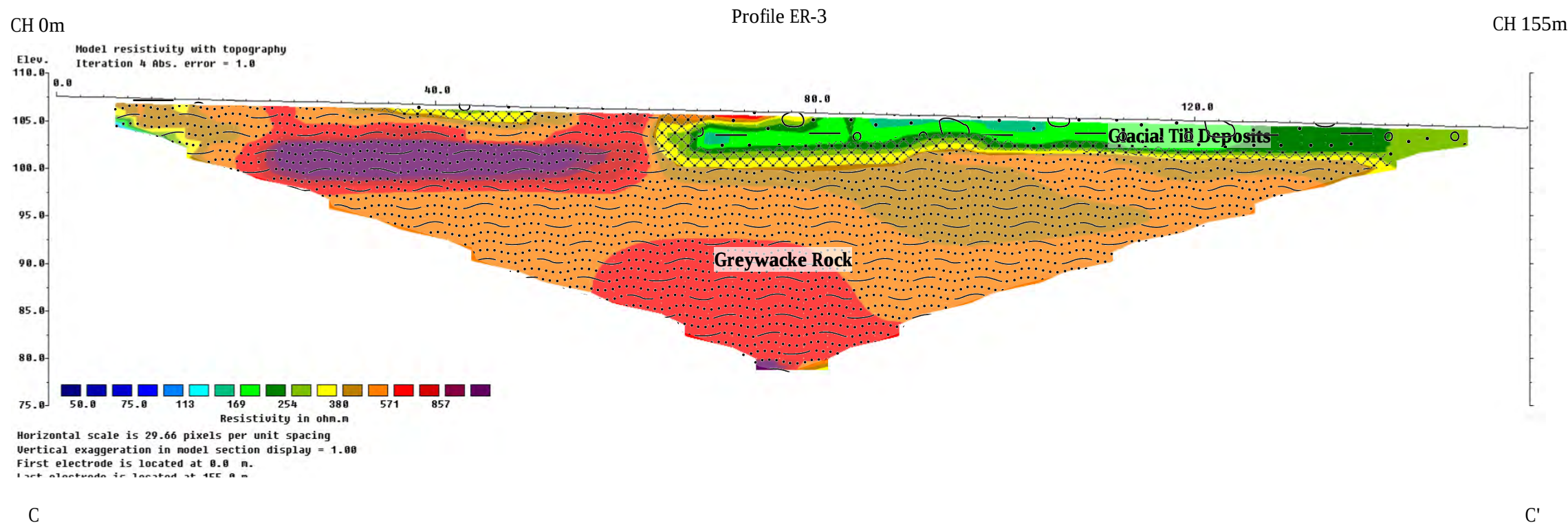
Designed by	Checked by	Approved by - date	Drawing No.	Date	Scale
J.W.	J.W.	J.M. - 30/04/2025	2252/23 - ERT-1	30/04/2025	As Shown
Interpreted Electrical Resistivity Data Profiles ER-1 (T2) and ER-2 (T4)					
Ballyfeeny Green Energy Project SI				0	A3

Draft

2273-24 Ballyfeeny Green Energy Project, Strokestown, Co. Roscommon
Turbine T6

Electrical Resistivity Tomography (ERT) Survey

Interpretated Resistivity Imaging Profile at Turbine T6
24 June 2024



Key To Sections

Each Profile indicates variation in the elctrical restivity of the Subsurface with depth.

Natural Soils (generally 10 - 500Wm)
Greywacke Rock (generally >500Wm)

Organic Soils
(PEAT and sandy, organic SILT / CLAYS)

Natural Soils
(Sandy, gravelly CLAYS with cobbles and boulders)

Weathered Rock
(Probably decomposed greywacke rock or large boulders within residual soil matrix)

Weathered Rock
(Greywacke)

Designed by	Checked by	Approved by - date	Drawing No.	Date	Scale
J.W.	J.W.	J.M. - 30/04/2025	2252/23 - ERT- 2	30/04/2025	As Shown
Ballyfeeny Green Energy Ltd 2 Main Street, Strokestown, Roscommon, Co. Roscommon, N51 9W9			Interpreted Electrical Resistivity Data Profile ER-3 (T6) Ballyfeeny Green Energy Project SI		
			0	A3	

- Notes:
1. All depths are relative to ground level existing at the time of the survey / investigation.
 2. Positions, where detailed, relate to the IG coordinate system.
 3. Please refer to Drawing 2217-23-A for position of each ERT Profile.

Draft



RECEIVED: 15/09/2025

APPENDIX D

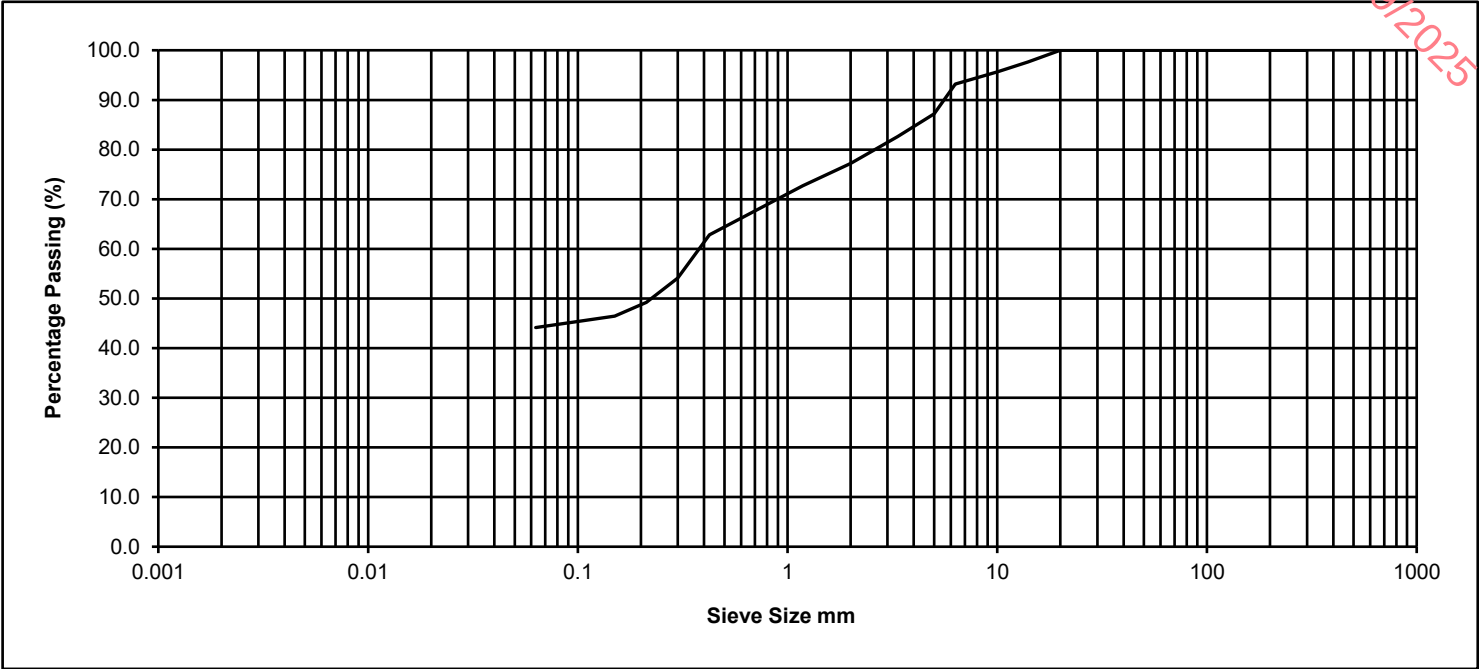
LABORATORY TESTING RESULTS

Partial Size Distribution	7 x A4
Moisture Content and Bulk Density	1 x A4
pH, Sulphate Content, Chloride Content & Sulphide Content of groundwater extract; Organic Matter Content	8 x A4

RECEIVED: 15/09/2025

Determination of Particle Size Distribution
BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve	%
Size mm	Passing
300.000	100.0
200.000	100.0
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	97.6
10.000	95.7
6.300	93.2
5.000	87.2
3.350	82.6
2.000	77.2
1.180	72.7
0.600	66.2
0.425	62.8
0.300	54.1
0.212	49.2
0.150	46.4
0.063	44.1



Percentage Particle Size										Cobbles	Boulder
Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse		
0.0	Silt			Sand			Gravel			0.0	0.0
	44.1			33.1			22.8				

Sample Description Gravelly sandy SILT

Project No. 2273-24

BH/TP No. TP-SUB

Project Ballyfeeny Green Energy Project

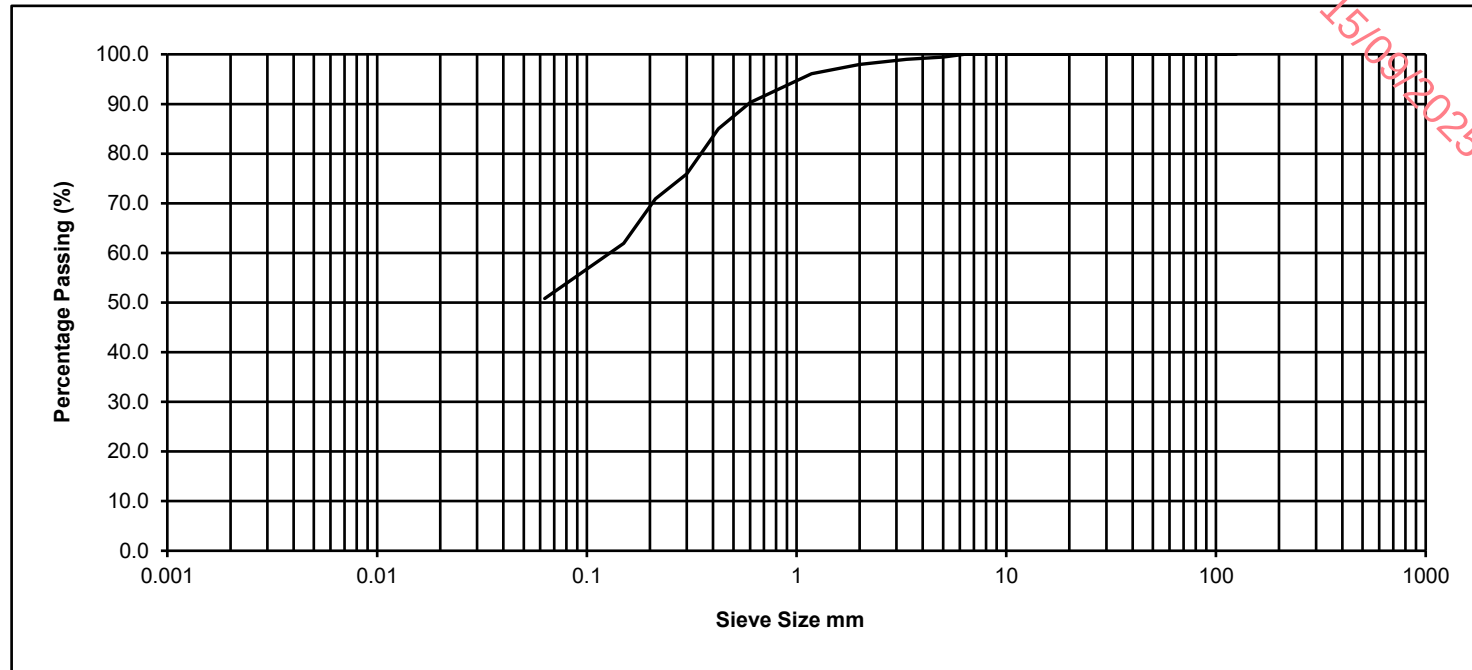
Sample No.

Operator	SS	Checked	VS	Approved	VS	Date sample tested	27/06/2024	Depth	1.0m
----------	----	---------	----	----------	----	--------------------	------------	-------	------

[illegible]

Determination of Particle Size Distribution

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



Percentage Particle Size										Cobbles	Boulder
Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse		
	Silt			Sand			Gravel				
0.0	50.8			47.2			2.0			0.0	0.0

Sample Description Sandy SILT

Project No. 2273-24

BH/TP No. TP-T01

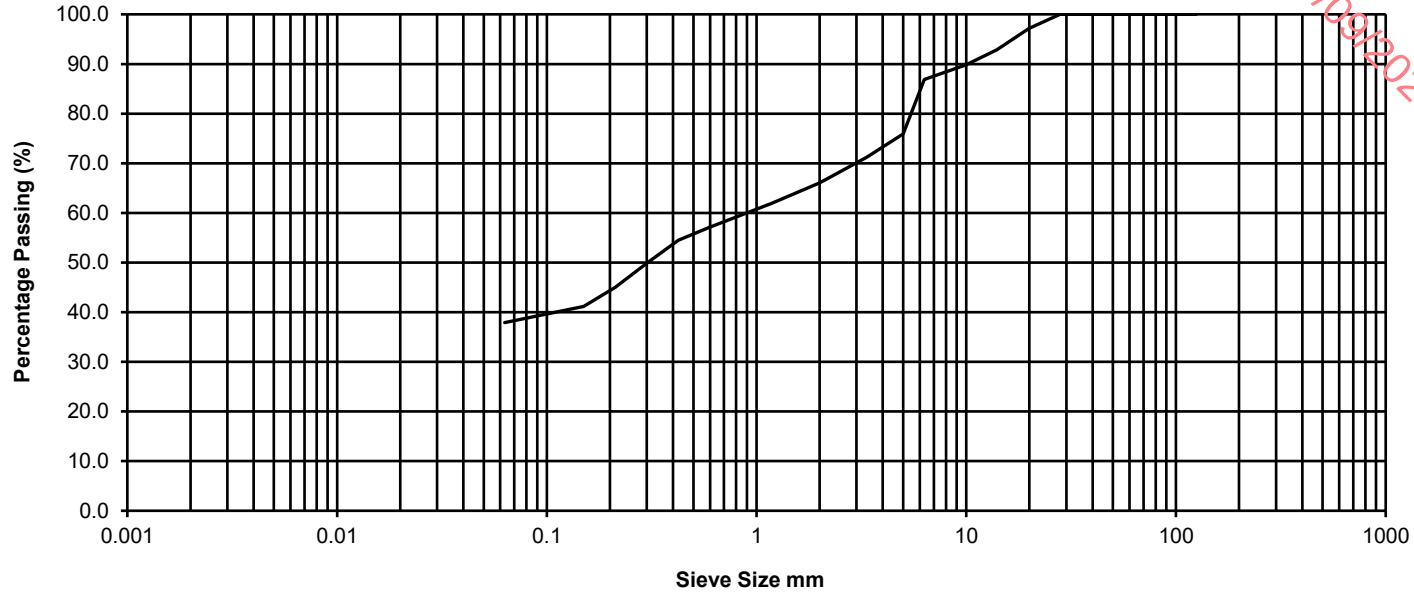
Project	Ballyfeeny Green Energy Project
---------	---------------------------------

Sample No.

Operator	SS	Checked	VS	Approved	VS	Date sample tested	27/06/2024	Depth	1.5m
----------	----	---------	----	----------	----	--------------------	------------	-------	------

[illegible]

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



Percentage Particle Size										Cobbles	Boulder
Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse		
	Silt			Sand			Gravel				
0.0	37.9			28.1			34.0			0.0	0.0

Project No. 2273-24

Project Ballyfeeny Green Energy Project

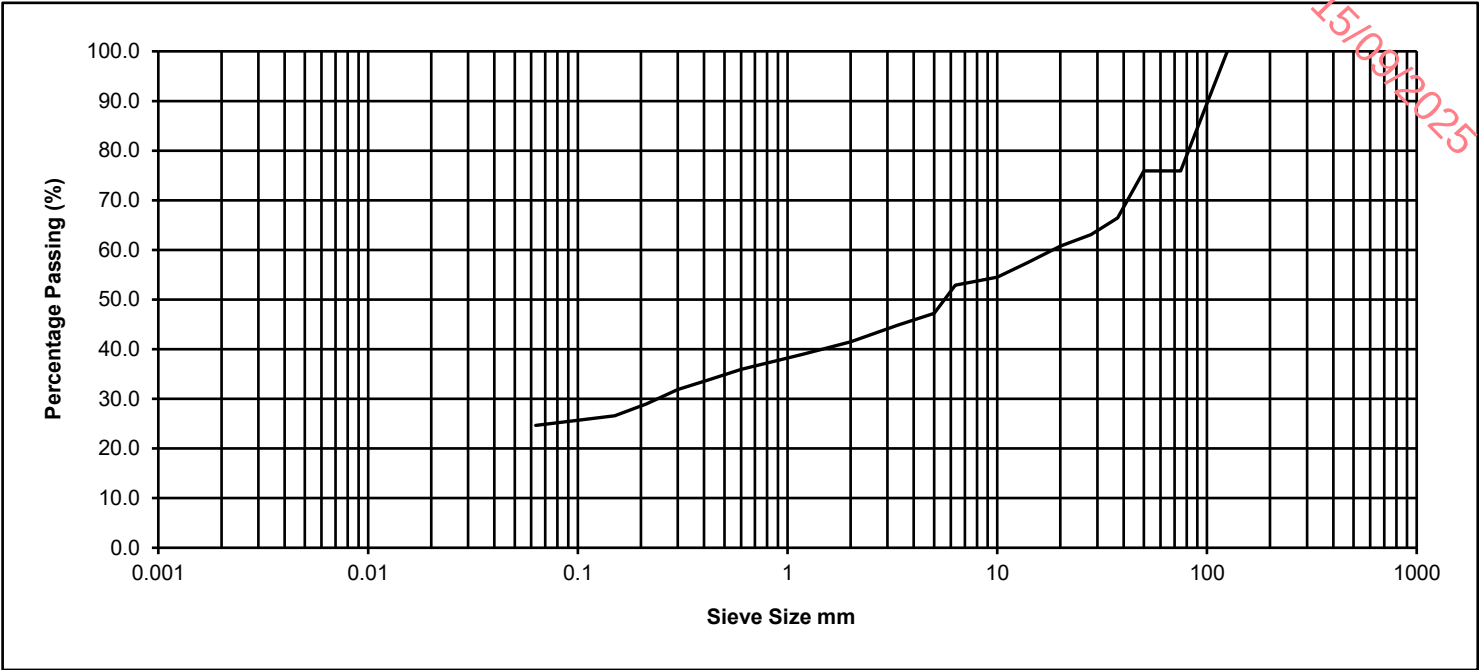
Sample No.

Operator	SS	Checked	VS	Approved	VS	Date sample tested	27/06/2024	Depth	1.5m
----------	----	---------	----	----------	----	--------------------	------------	-------	------

RECEIVED: 15/09/2025

Determination of Particle Size Distribution
BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve	%
Size mm	Passing
125.000	100.0
75.000	75.9
63.000	75.9
50.000	75.9
37.500	66.5
28.000	63.1
20.000	60.8
14.000	57.5
10.000	54.5
6.300	52.9
5.000	47.2
3.350	44.8
2.000	41.5
1.180	39.0
0.600	35.9
0.425	33.9
0.300	31.9
0.212	29.0
0.150	26.6
0.063	24.6



Percentage Particle Size										Cobbles	Boulder
Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse		
0.0	Silt			Sand			Gravel			24.1	0.0
	24.6			16.9			34.4				

Sample Description Gravelly sandy SILT cont cobbles

Project No. 2273-24

BH/TP No. TP-T03

Project Ballyfeeny Green Energy Project

Sample No.

Operator

SS

Checked

VS

Approved

VS

Date sample tested

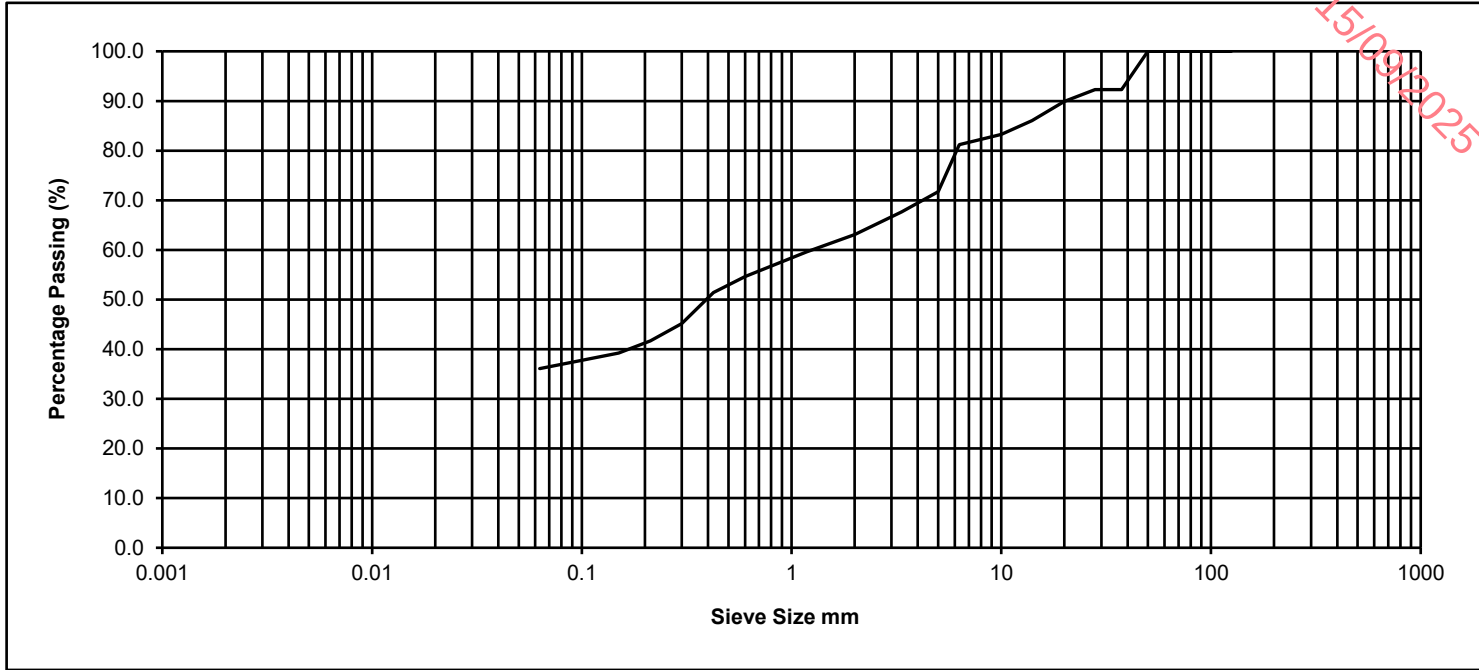
27/06/2024

Depth

2.5m

[illegible]

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



Percentage Particle Size										Cobbles	Boulder
Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse		
	Silt			Sand			Gravel				
0.0	36.1			27.0			36.9			0.0	0.0

Project No. 2273-24

Sample No.

24 Depth 3.0m

Operator	SS	Checked	VS	Approved	VS	Date sample tested	27/06/2024	Depth	3.0m
----------	----	---------	----	----------	----	--------------------	------------	-------	------

RECEIVED: 15/09/2025

Determination of Particle Size Distribution
BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5

Sieve	%
Size mm	Passing
125.000	100.0
75.000	100.0
63.000	100.0
50.000	100.0
37.500	100.0
28.000	100.0
20.000	100.0
14.000	96.2
10.000	93.8
6.300	92.2
5.000	82.6
3.350	78.3
2.000	72.9
1.180	68.2
0.600	62.6
0.425	58.4
0.300	53.7
0.212	45.3
0.150	41.1
0.063	37.9



Percentage Particle Size													
Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulder		
	Silt			Sand			Gravel						
	0.0			37.9			35.0					27.1	
0.0			37.9			35.0			27.1			0.0	0.0

Sample Description Gravelly sandy SILT

Project No. 2273-24

BH/TP No. TP-T05

Project Ballyfeeny Green Energy Project

Sample No.

Operator	SS	Checked	VS	Approved	VS	Date sample tested	27/06/2024	Depth	3.5m
----------	----	---------	----	----------	----	--------------------	------------	-------	------

RECEIVED: 15/09/2025

Sieve	%
Size mm	Passing
300.000	100.0
200.000	74.6
125.000	41.7
75.000	27.0
63.000	19.4
50.000	14.0
37.500	14.0
28.000	12.7
20.000	12.1
14.000	11.7
10.000	9.9
6.300	8.5
5.000	7.8
3.350	6.8
2.000	5.6
1.180	5.6
0.600	4.3
0.425	2.1
0.300	1.2
0.212	0.6
0.150	0.3
0.063	0.0

Determination of Particle Size Distribution
BS 1377 : 1990 : Part 2 : Clauses 9.2 & 9.5



Percentage Particle Size										Cobbles	Boulder
Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse		
0.0	Silt			Sand			Gravel			80.6	0.0

Sample Description Gravel cont Cobbles and Boulders

Project No. 2273-24

BH/TP No. TP-T06

Project Ballyfeeny Green Energy Project

Sample No.

Operator

SS

Checked

VS

Approved

VS

Date sample tested

27/06/2024

Depth

1.5m

Moisture Content & Bulk Density



Location: Ballyfeeny Green Energy Project

Client: MABLE IE

Job No: 2273-24

Hole ID	Depth	Moisture Content %	Bulk Density (kg/m ³)
TP-T01	1.50	12.5	2195
TP-T02	1.50	12.8	2214
TP-T03	2.50	8.6	2280
TP-T04	3.00	8.7	2291
TP-T05	3.50	8.8	2305
TP-T06	1.50	3.1	NA
TP-SUB	1.00	15.8	2189

Operator	Checked	Approved
Dr Sivakumar QUB	JMCN	JW

Test Method: BS 1377 : 1990: Part 2

Whiteford Geoservices
Straid House
Straid
Ballyclare
United Kingdom
BT39 9EU



Attention : Joy McNeill
Date : 27th June, 2024
Your reference : 2273-24
Our reference : Test Report 24/10675 Batch 1
Location : Ballyfeeney WF
Date samples received : 21st June, 2024
Status : Final Report
Issue : 202406271230

Seven samples were received for analysis on 21st June, 2024 of which seven were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

The greenhouse gas emissions generated (in Carbon – Co2e) to obtain the results in this report are estimated as:

Scope 1&2 emissions - 9.629 kg of CO2

Scope 1&2&3 emissions - 22.756 kg of CO2

Authorised By:



Phil Sommerton BSc

Senior Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: Whiteford Geoservices
Reference: 2273-24
Location: Ballyfeeney WF
Contact: Joy McNeill
EMT Job No: 24/10675

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

[illegible]

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Notification of Deviating Samples

Client Name: Whiteford Geoservices

Reference: 2273-24

Location: Ballyfeeney WF

Contact: Joy McNeill

Matrix : Solid

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

It is a requirement under ISO 17025 that we inform clients if samples are deviating i.e. outside what is expected. A deviating sample indicates that the sample 'may' be compromised but not necessarily will be compromised. The result is still accredited and our analytical reports will still show accreditation on the relevant analytes.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 24/10675

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 35°C ±5°C.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a requirement of our Accreditation Body for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

Age of Diesel

The age of release estimation is based on the nC17/pristane ratio only as prescribed by Christensen and Larsen (1993) and Kaplan, Galperin, Alimi et al., (1996).

Age estimation should be treated with caution as it can be influenced by site specific factors of which the laboratory are not aware.

Tentatively Identified Compounds (TICs)

Where Tentatively Identified Compounds (TICs) are reported, up to 10 Tentatively Identified Compounds will be listed where there is found to be a greater than 80% match with the NIST library. The reported concentration is determined semi-quantitatively, with a matrix specific limit of detection.

Note, other compounds may be present but are not reported.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

RECEIVED: 15/09/2025

HWOL ACRONYMS AND OPERATORS USED

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

RECEIVED: 15/09/2025

EMT Job No: 24/10675

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO ₂ generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil.	PM24	Preparation of Soil and Marine Sediment Samples for Total Organic Carbon.			AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH ₄ ⁺ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.			AR	Yes



RECEIVED: 15/09/2025

APPENDIX E

SLOPE STABILITY ANALYSIS

Slope Stability Analysis Diagrams (Soil Slope and Rock Slope) 6 x A4

- At T02 – Drained
- At T04 – Drained
- At T06 - Drained

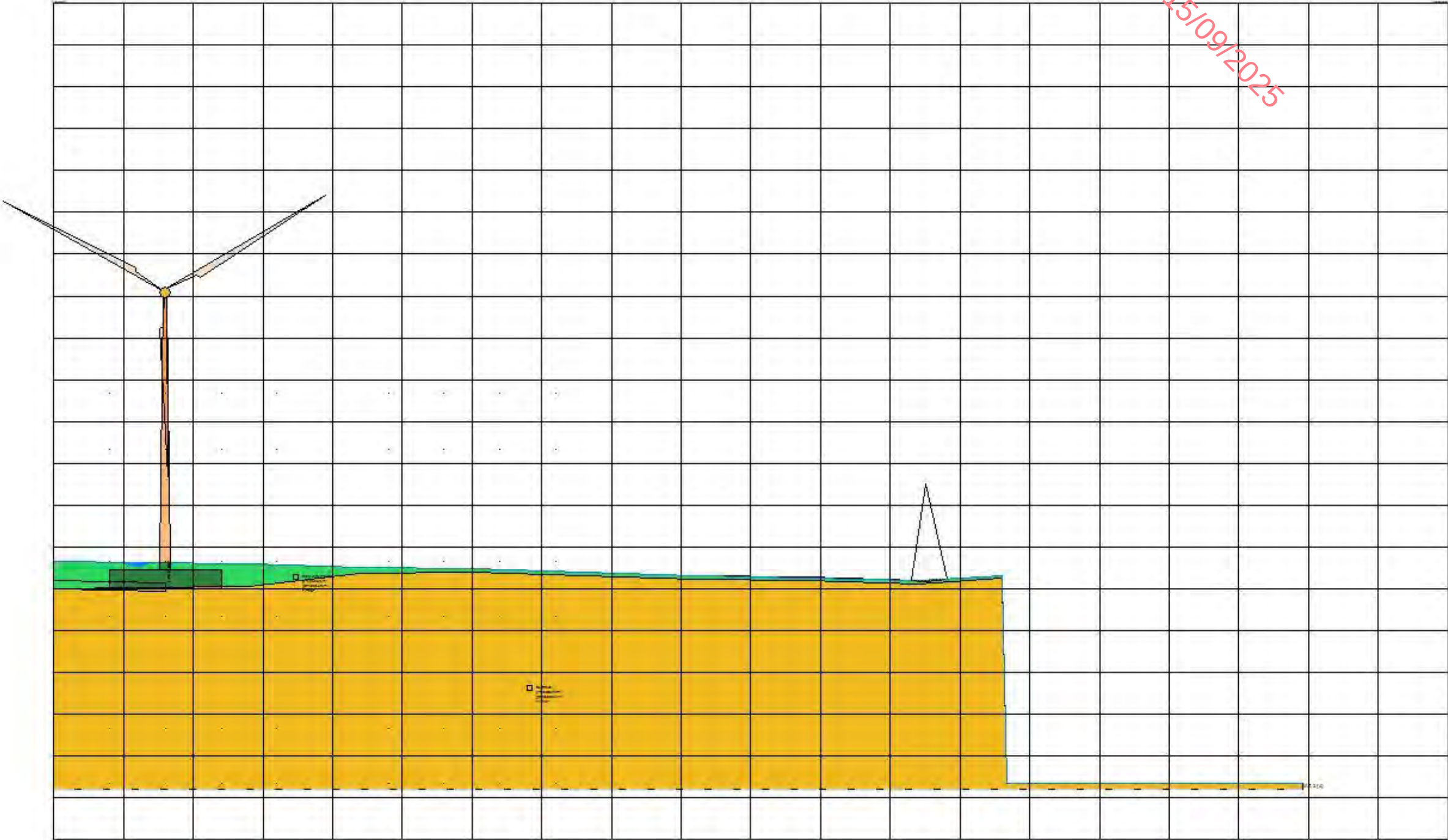
Slope Stability Analysis (Reports)

- | | |
|---|------------------|
| • At T02 – Drained (Soil and Rock Slopes) | 4 x A4 & 13 x A4 |
| • At T04 – Drained (Soil and Rock Slopes) | 4 x A4 & 12 x A4 |
| • At T06 – Drained (Soil and Rock Slopes) | 4 x A4 & 13 x A4 |

Proposed Wind Turbine at Ballyfeeny Green Energy Project, Strokestown, County Roscommon
 Ref: 2273/24

Drained Analysis of Soil Slope Stability – T02

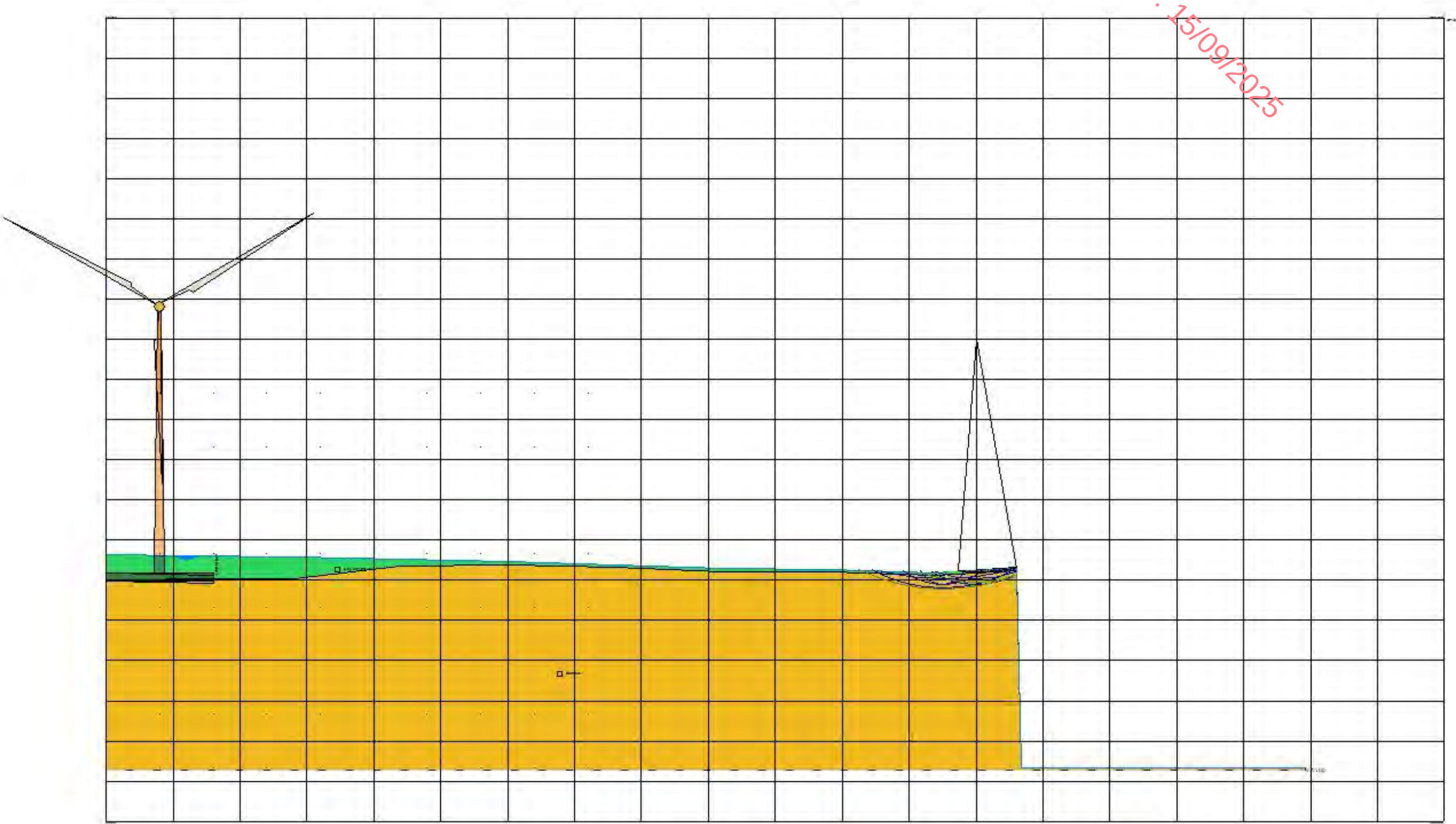
RECEIVED: 15/09/2025



Profile 1 – Drained Analysis of Soil Slope Stability

Proposed Wind Turbine at Ballyfeeny Green Energy Project, Strokestown, County Roscommon
 Ref: 2273/24

Drained Analysis of Rock Slope Stability – T02

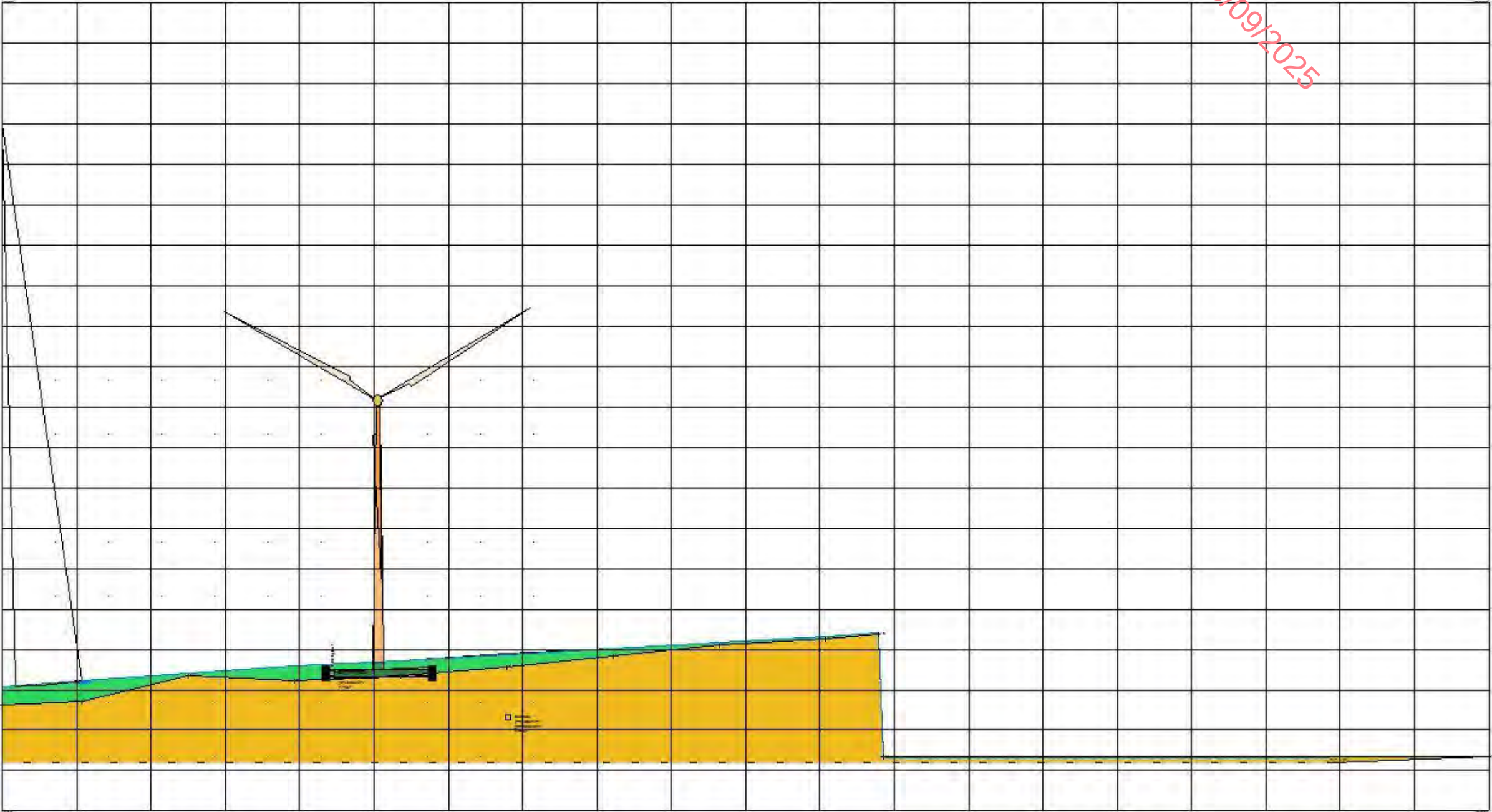


Profile 1 – Drained Analysis of Rock Slope Stability

Proposed Wind Turbine at Ballyfeeny Green Energy Project, Strokestown, County Roscommon
Ref: 2273/24

Drained Analysis of Soil Slope Stability – T04

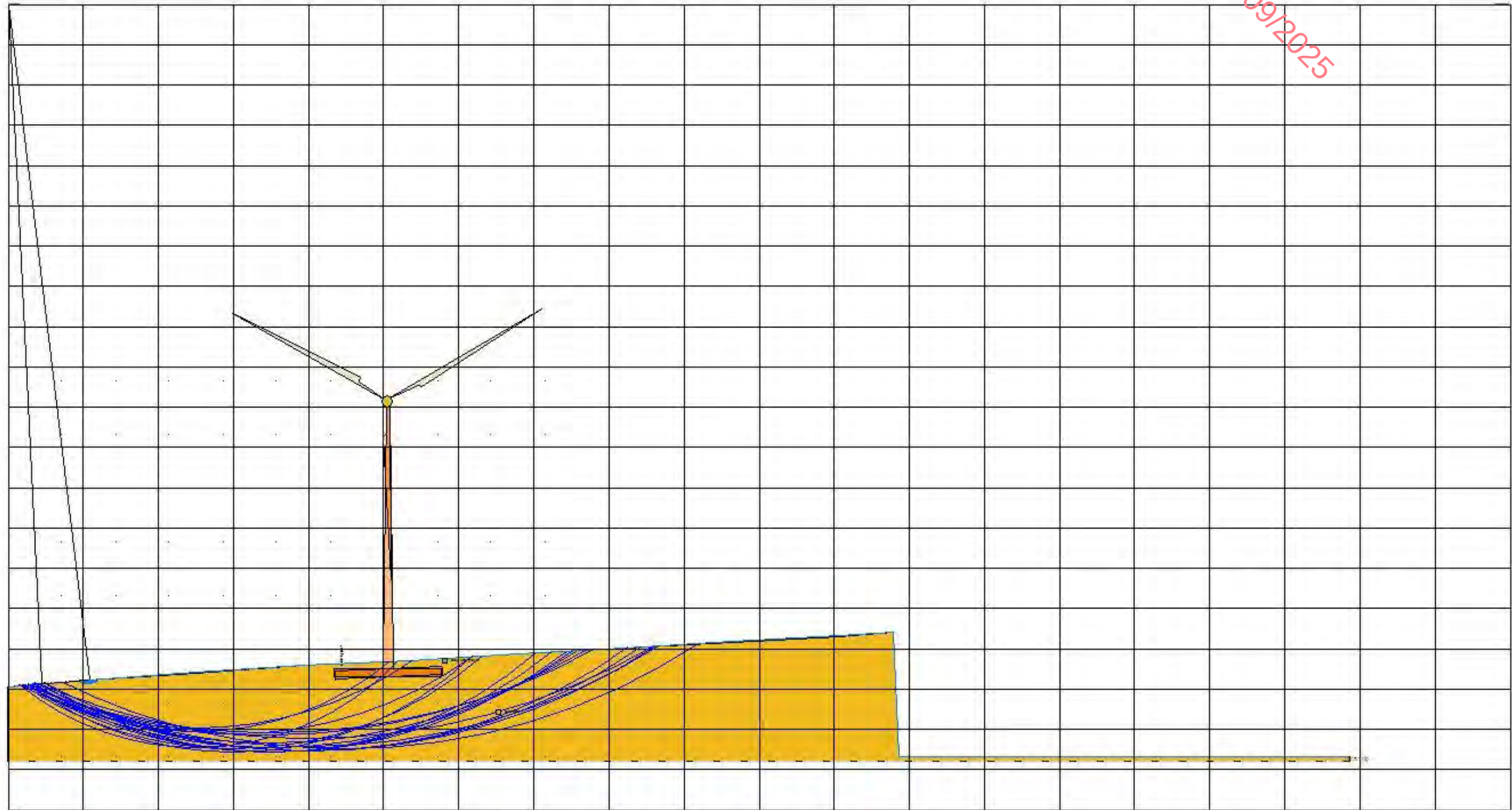
RECEIVED: 15/09/2025



Profile 1 – Drained Analysis of Soil Slope Stability

Proposed Wind Turbine at Ballyfeeny Green Energy Project, Strokestown, County Roscommon
 Ref: 2273/24

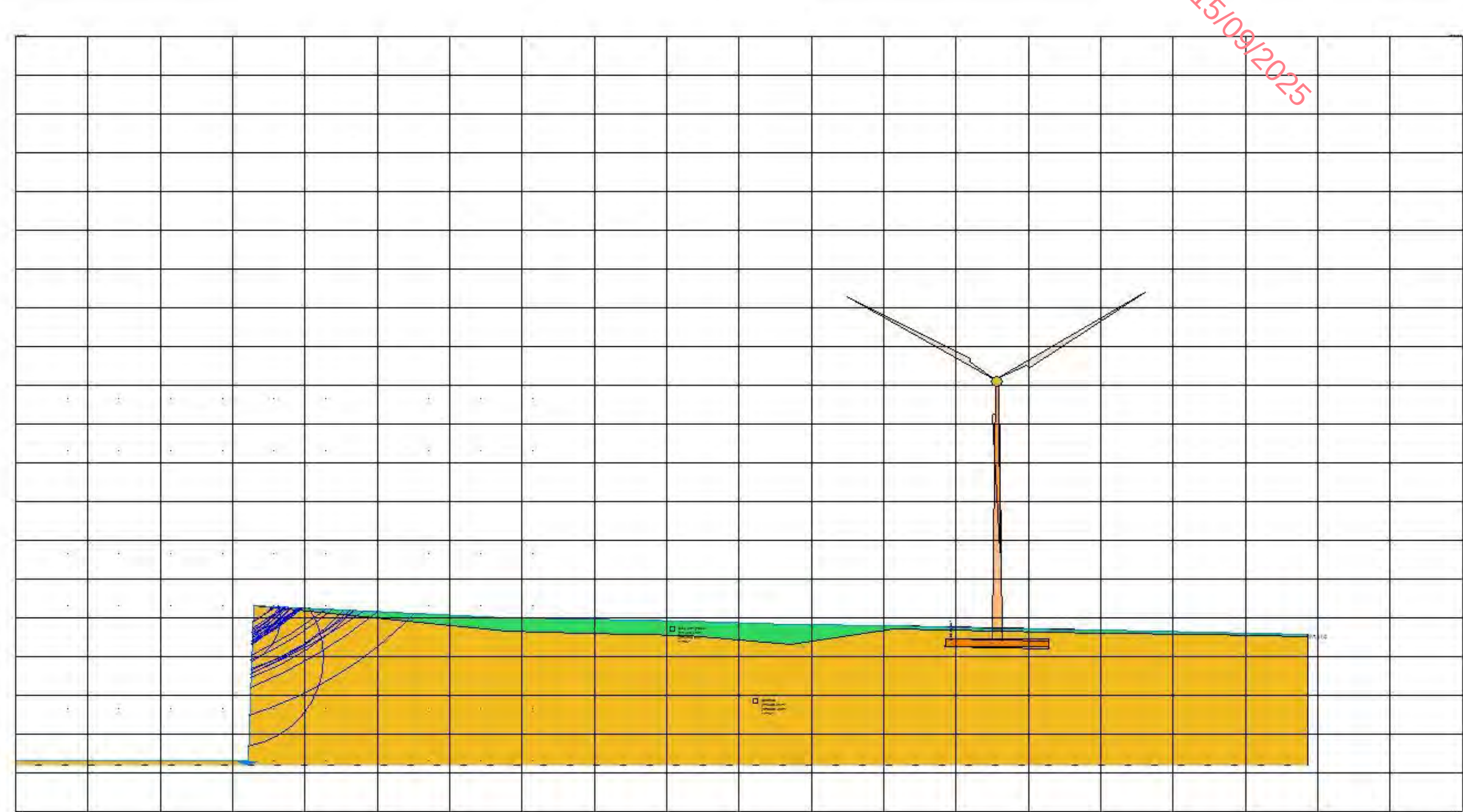
Drained Analysis of Rock Slope Stability – T04



Profile 1 – Drained Analysis of Rock Slope Stability

Proposed Wind Turbine at Ballyfeeny Green Energy Project, Strokestown, County Roscommon
Ref: 2273/24

Drained Analysis of Soil Slope Stability – T06

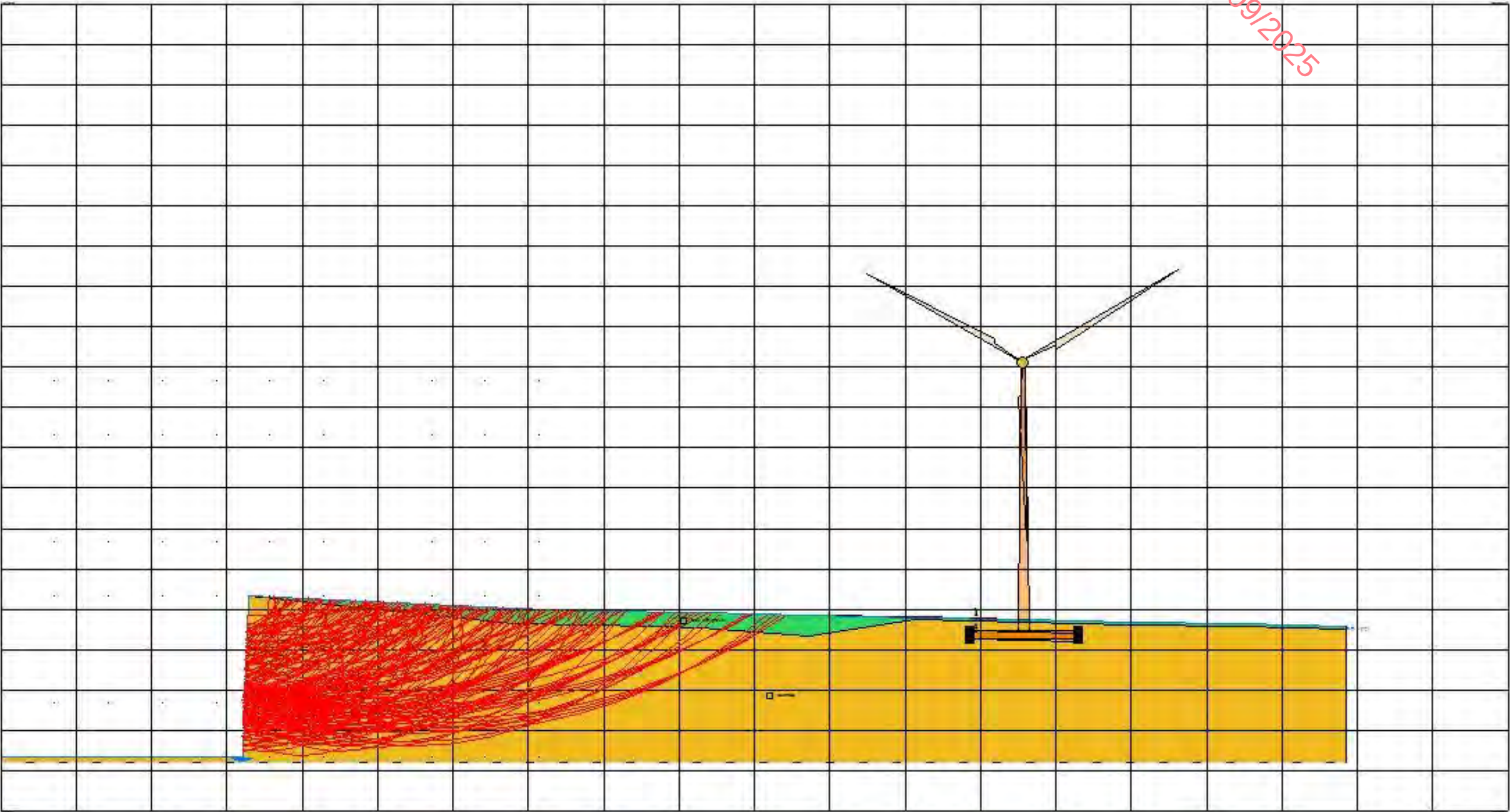


Profile 1 – Drained Analysis of Soil Slope Stability

Proposed Wind Turbine at BallyfeenyGreen Energy Project, Strokestown, County Roscommon
Ref: 2273/24

Drained Analysis of Rock Slope Stability – T06

RECEIVED: 15/09/2025



Profile 1 – Drained Analysis of Rock Slope Stability

Analysis of slope stability performed with: BISHOP (1955)

Standard	O.P.C.M.3274
Number of layers	2.6
Number of slices	10.0
Acceptable level of safety	1.1
Partial resistance factor	489981900000000000000000000000.0
Geotechnical parameters to use. Friction angle:	Peak
Circular form surface	

Centres' grid

Lower left vertex abscissa xi	0.0 m
Lower left vertex ordinate yi	70.0 m
Upper right vertex abscissa xs	250.0 m
Upper right vertex ordinate yz	220.0 m
Search step	10.0
Number of cells along the x axis	20.0
Number of cells along the y axis	20.0

Profile vertices

Nr	X (m)	y (m)
1	0.0	119.89
2	15.0	119.62
3	35.0	119.4
4	55.0	118.9
5	75.0	118.57
6	95.0	117.96
7	115.0	117.29
8	135.0	117.01
9	155.0	116.43
10	170.0	117.34
11	171.0	80.0
12	224.0	80.0

Water table

Nr.	X (m)	y (m)
1	0.0	119.88
2	15.0	119.61
3	35.0	119.39
4	55.0	118.89
5	75.0	118.56
6	95.0	117.95
7	115.0	117.28
8	135.0	117.0
9	155.0	116.42
10	170.0	117.33
11	171.0	79.99
12	224.0	79.99

Layer vertices.....1

N	X (m)	y (m)
1	0.0	114.89
2	15.0	115.22
3	35.0	115.4

4	55.0	117.7
5	75.0	117.97
6	95.0	117.36
7	115.0	116.69
8	135.0	116.51
9	155.0	115.93
10	170.0	116.84
11	171.0	80.0
12	224.0	80.0

RECEIVED: 15/09/2025

Partial factors for soil geotechnical parameters

Tangent angle of shearing resistance	1.0
Effective cohesion	1.0
Undrained cohesion	1.0
Reduction soil geotechnical parameters	No

Stratigraphy

Layer	Unit weight (kN/m³)	A	B	T	Uniaxial compressive strength (kg/cm²)	Texture	Description
1	14	0.05	0.539	0	1		Clay with gravel
2	26	0.129	0.655	-0.0002	5		BedRock

G0: Dynamic low strain shear modulus; G: Dynamic shear modulus; Dr: Relative density; OCR: Overconsolidation; IP: Plasticity index

Layer	G0 (KPa)	G (KPa)	Dr (%)	OCR	IP (%)
1	0	0	0	1	0
2					

Distributed loads

N°	xi (m)	yi (m)	xf (m)	yf (m)	External load (kg/cm²)
1	0	114.89	20	114.5367	3

Slope analysis results

Minimal Fs found	2.23
Abscissa for surface centre	162.5 m
Ordinate for surface centre	160.0 m
Surface radius	43.43 m

Number of investigated surfaces....(582)

N°	Xo	Yo	Ro	Fs
1	181.3	88.8	9.0	20.00
2	187.5	85.0	5.4	20.00
3	193.8	88.8	9.0	20.00
4	200.0	85.0	5.4	20.00
5	206.3	88.8	9.0	20.00
6	212.5	85.0	5.4	20.00
7	218.8	88.8	9.0	20.00
8	187.5	92.5	12.7	20.00
9	193.8	96.3	16.4	20.00
10	200.0	92.5	12.7	20.00

11	206.3	96.3	16.4	20.00
12	212.5	92.5	12.7	20.00
13	218.8	96.3	16.4	20.00
14	18.8	103.8	16.3	20.00
15	31.3	103.8	16.6	20.00
16	43.8	103.8	16.9	20.00
17	50.0	100.0	19.5	20.00
18	56.3	103.8	15.5	20.00
19	62.5	100.0	19.5	20.00
20	68.8	103.8	15.8	20.00
21	75.0	100.0	18.7	20.00
22	81.3	103.8	16.2	20.00
23	87.5	100.0	18.9	20.00
24	93.8	103.8	15.1	20.00
25	100.0	100.0	18.3	20.00
26	106.3	103.8	14.1	20.00
27	112.5	100.0	17.8	20.00
28	118.8	103.8	14.6	20.00
29	125.0	100.0	17.5	20.00
30	131.3	103.8	13.8	20.00
31	137.5	100.0	17.4	20.00
32	143.8	103.8	13.2	20.00
33	150.0	100.0	17.0	20.00
34	156.3	103.8	13.4	20.00
35	162.5	100.0	18.0	20.00
36	168.8	103.8	15.2	20.00
37	181.3	103.8	20.2	20.00
38	6.3	111.3	9.3	20.00
39	12.5	107.5	12.4	20.00
40	18.8	111.3	10.1	20.00
41	25.0	107.5	14.5	20.00
42	31.3	111.3	11.1	20.00
43	37.5	107.5	12.3	20.00
44	43.8	111.3	10.6	20.00
45	50.0	107.5	12.7	20.00
46	56.3	111.3	10.1	20.00
47	62.5	107.5	13.2	20.00
48	68.8	111.3	9.6	20.00
49	75.0	107.5	11.3	20.00
50	81.3	111.3	10.0	20.00
51	87.5	107.5	11.8	20.00
52	93.8	111.3	7.5	20.00
53	100.0	107.5	12.3	20.00
54	106.3	111.3	8.1	20.00
55	112.5	107.5	10.7	20.00
56	118.8	111.3	8.7	20.00
57	125.0	107.5	11.3	20.00
58	131.3	111.3	6.5	20.00
59	137.5	107.5	9.9	20.00
60	143.8	111.3	7.2	20.00
61	150.0	107.5	10.6	20.00
62	156.3	111.3	7.4	20.00
63	162.5	107.5	9.8	20.00
64	168.8	111.3	7.5	20.00
65	175.0	107.5	14.0	20.00
66	181.3	111.3	17.8	20.00
67	187.5	107.5	23.9	20.00
68	193.8	111.3	28.9	20.00
69	6.3	118.8	2.6	20.00
70	12.5	115.0	5.6	20.00
71	18.8	118.8	3.9	20.00
72	25.0	115.0	5.7	20.00

73	31.3	118.8	3.4	20.00
74	37.5	115.0	6.6	20.00
75	43.8	118.8	4.2	20.00
76	50.0	115.0	6.4	20.00
77	56.3	118.8	4.0	20.00
78	62.5	115.0	6.3	20.00
79	68.8	118.8	3.9	20.00
80	75.0	115.0	6.1	20.00
81	81.3	118.8	4.0	20.00
82	87.5	115.0	5.9	20.00
83	93.8	118.8	3.9	20.00
84	100.0	115.0	5.3	20.00
85	106.3	118.8	4.1	20.00
86	112.5	115.0	4.6	20.00
87	118.8	118.8	4.2	20.00
88	125.0	115.0	3.9	20.00
89	131.3	118.8	4.3	20.00
90	137.5	115.0	3.9	20.00
91	143.8	118.8	4.5	20.00
92	150.0	115.0	4.6	20.00
93	156.3	118.8	4.6	9.78
94	162.5	115.0	4.2	20.00
95	168.8	118.8	4.7	20.00
96	175.0	115.0	10.8	20.00
97	181.3	118.8	16.1	20.00
98	187.5	115.0	21.4	20.00
99	193.8	118.8	27.5	20.00
100	6.3	126.3	7.1	20.00
101	12.5	122.5	4.0	20.00
102	18.8	126.3	7.1	20.00
103	25.0	122.5	4.5	20.00
104	31.3	126.3	8.7	20.00
105	37.5	122.5	6.1	20.00
106	43.8	126.3	10.3	20.00
107	50.0	122.5	7.0	20.00
108	56.3	126.3	10.9	20.00
109	62.5	122.5	7.3	20.00
110	68.8	126.3	11.2	20.00
111	75.0	122.5	7.5	20.00
112	81.3	126.3	11.3	20.00
113	87.5	122.5	7.6	20.00
114	93.8	126.3	11.4	20.00
115	100.0	122.5	7.8	20.00
116	106.3	126.3	11.6	20.00
117	112.5	122.5	7.9	20.00
118	118.8	126.3	11.7	20.00
119	125.0	122.5	8.0	20.00
120	131.3	126.3	11.8	20.00
121	137.5	122.5	8.1	20.00
122	143.8	126.3	12.0	20.00
123	150.0	122.5	8.3	20.00
124	156.3	126.3	12.1	8.46
125	162.5	122.5	8.4	4.43
126	168.8	126.3	10.2	20.00
127	175.0	122.5	12.4	20.00
128	181.3	126.3	19.8	20.00
129	187.5	122.5	23.5	20.00
130	193.8	126.3	31.0	20.00
131	200.0	122.5	35.1	20.00
132	206.3	126.3	42.7	20.00
133	6.3	133.8	14.3	20.00
134	12.5	130.0	10.6	20.00

RECEIVED: 15/09/2025

135	18.8	133.8	15.3	20.00
136	25.0	130.0	11.4	20.00
137	31.3	133.8	15.7	20.00
138	37.5	130.0	13.0	20.00
139	43.8	133.8	17.3	20.00
140	50.0	130.0	14.5	20.00
141	56.3	133.8	18.4	20.00
142	62.5	130.0	14.8	20.00
143	68.8	133.8	18.7	20.00
144	75.0	130.0	15.0	20.00
145	81.3	133.8	18.8	20.00
146	87.5	130.0	15.1	20.00
147	93.8	133.8	18.9	20.00
148	100.0	130.0	15.3	20.00
149	106.3	133.8	19.1	20.00
150	112.5	130.0	15.4	20.00
151	118.8	133.8	19.2	20.00
152	125.0	130.0	15.5	20.00
153	131.3	133.8	19.3	20.00
154	137.5	130.0	15.6	20.00
155	143.8	133.8	19.5	20.00
156	150.0	130.0	15.8	20.00
157	156.3	133.8	17.4	3.29
158	162.5	130.0	15.8	5.53
159	168.8	133.8	22.2	20.00
160	175.0	130.0	18.9	20.00
161	181.3	133.8	24.5	20.00
162	187.5	130.0	27.1	20.00
163	193.8	133.8	34.6	20.00
164	200.0	130.0	38.6	20.00
165	206.3	133.8	46.2	20.00
166	6.3	141.3	21.7	20.00
167	12.5	137.5	18.2	20.00
168	18.8	141.3	22.3	20.00
169	25.0	137.5	18.5	20.00
170	31.3	141.3	22.8	20.00
171	37.5	137.5	20.0	20.00
172	43.8	141.3	24.3	20.00
173	50.0	137.5	21.5	20.00
174	56.3	141.3	25.8	20.00
175	62.5	137.5	22.3	20.00
176	68.8	141.3	26.2	20.00
177	75.0	137.5	22.5	20.00
178	81.3	141.3	26.3	20.00
179	87.5	137.5	22.6	20.00
180	93.8	141.3	26.4	20.00
181	100.0	137.5	22.8	20.00
182	106.3	141.3	26.6	20.00
183	112.5	137.5	22.9	20.00
184	118.8	141.3	26.7	20.00
185	125.0	137.5	23.0	20.00
186	131.3	141.3	26.8	20.00
187	137.5	137.5	23.1	20.00
188	143.8	141.3	27.0	20.00
189	150.0	137.5	23.3	20.00
190	156.3	141.3	27.7	8.42
191	162.5	137.5	22.3	5.10
192	168.8	141.3	25.1	20.00
193	175.0	137.5	26.5	20.00
194	181.3	141.3	31.8	20.00
195	187.5	137.5	30.0	20.00
196	193.8	141.3	38.2	20.00

197	200.0	137.5	42.1	20.00
198	206.3	141.3	49.7	20.00
199	6.3	148.8	29.2	20.00
200	12.5	145.0	25.8	20.00
201	18.8	148.8	29.5	20.00
202	25.0	145.0	25.8	20.00
203	31.3	148.8	30.0	20.00
204	37.5	145.0	27.1	20.00
205	43.8	148.8	31.4	20.00
206	50.0	145.0	28.6	20.00
207	56.3	148.8	32.8	20.00
208	62.5	145.0	29.8	20.00
209	68.8	148.8	33.7	20.00
210	75.0	145.0	30.0	20.00
211	81.3	148.8	33.8	20.00
212	87.5	145.0	30.1	20.00
213	93.8	148.8	33.9	20.00
214	100.0	145.0	30.3	20.00
215	106.3	148.8	34.1	20.00
216	112.5	145.0	30.4	20.00
217	118.8	148.8	34.2	20.00
218	125.0	145.0	30.5	20.00
219	131.3	148.8	34.3	20.00
220	137.5	145.0	30.6	20.00
221	143.8	148.8	34.2	20.00
222	150.0	145.0	28.5	20.00
223	156.3	148.8	35.4	15.85
224	162.5	145.0	30.3	19.31
225	168.8	148.8	34.8	20.00
226	175.0	145.0	29.6	20.00
227	181.3	148.8	40.7	20.00
228	187.5	145.0	37.1	20.00
229	193.8	148.8	42.4	20.00
230	200.0	145.0	45.6	20.00
231	206.3	148.8	53.2	20.00
232	212.5	145.0	57.4	20.00
233	218.8	148.8	64.9	20.00
234	6.3	156.3	36.6	20.00
235	12.5	152.5	33.0	20.00
236	18.8	156.3	36.8	20.00
237	25.0	152.5	33.1	20.00
238	31.3	156.3	37.3	20.00
239	37.5	152.5	34.3	20.00
240	43.8	156.3	38.6	20.00
241	50.0	152.5	35.7	20.00
242	56.3	156.3	39.9	20.00
243	62.5	152.5	37.1	20.00
244	68.8	156.3	41.2	20.00
245	75.0	152.5	37.5	20.00
246	81.3	156.3	41.3	20.00
247	87.5	152.5	37.6	20.00
248	93.8	156.3	41.4	20.00
249	100.0	152.5	37.8	20.00
250	106.3	156.3	41.6	20.00
251	112.5	152.5	37.9	20.00
252	118.8	156.3	41.7	20.00
253	125.0	152.5	38.0	20.00
254	131.3	156.3	41.6	20.00
255	137.5	152.5	35.7	20.00
256	143.8	156.3	40.7	20.00
257	150.0	152.5	40.6	20.00
258	156.3	156.3	44.7	20.00

259	162.5	152.5	39.8	20.00
260	168.8	156.3	46.1	20.00
261	175.0	152.5	39.5	20.00
262	181.3	156.3	44.5	20.00
263	187.5	152.5	45.7	20.00
264	193.8	156.3	50.8	20.00
265	200.0	152.5	52.0	20.00
266	206.3	156.3	56.7	20.00
267	212.5	152.5	60.9	20.00
268	218.8	156.3	68.3	20.00
269	12.5	160.0	40.6	20.00
270	18.8	163.8	44.6	20.00
271	25.0	160.0	41.2	20.00
272	31.3	163.8	44.7	20.00
273	37.5	160.0	41.6	20.00
274	43.8	163.8	45.8	20.00
275	50.0	160.0	42.9	20.00
276	56.3	163.8	47.1	20.00
277	62.5	160.0	44.2	20.00
278	68.8	163.8	48.4	20.00
279	75.0	160.0	45.0	20.00
280	81.3	163.8	48.8	20.00
281	87.5	160.0	45.1	20.00
282	93.8	163.8	48.9	20.00
283	100.0	160.0	45.3	20.00
284	106.3	163.8	49.1	20.00
285	112.5	160.0	45.4	20.00
286	118.8	163.8	49.2	20.00
287	125.0	160.0	45.5	20.00
288	131.3	163.8	46.8	20.00
289	137.5	160.0	46.1	20.00
290	143.8	163.8	48.7	20.00
291	150.0	160.0	43.5	20.00
292	156.3	163.8	48.4	8.39
293	162.5	160.0	43.4	2.23
294	168.8	163.8	50.6	20.00
295	175.0	160.0	50.8	20.00
296	181.3	163.8	55.5	20.00
297	187.5	160.0	49.6	20.00
298	193.8	163.8	54.6	20.00
299	200.0	160.0	55.8	20.00
300	206.3	163.8	65.5	20.00
301	212.5	160.0	64.3	20.00
302	218.8	163.8	71.8	20.00
303	225.0	160.0	75.9	20.00
304	6.3	171.3	51.6	20.00
305	12.5	167.5	48.0	20.00
306	18.8	171.3	51.9	20.00
307	25.0	167.5	48.5	20.00
308	31.3	171.3	52.0	20.00
309	37.5	167.5	48.9	20.00
310	43.8	171.3	53.1	20.00
311	50.0	167.5	50.1	20.00
312	56.3	171.3	54.4	20.00
313	62.5	167.5	51.4	20.00
314	68.8	171.3	55.6	20.00
315	75.0	167.5	52.5	20.00
316	81.3	171.3	56.3	20.00
317	87.5	167.5	52.6	20.00
318	93.8	171.3	56.4	20.00
319	100.0	167.5	52.8	20.00
320	106.3	171.3	56.6	20.00

321	112.5	167.5	52.9	20.00
322	118.8	171.3	58.2	20.00
323	125.0	167.5	52.5	20.00
324	131.3	171.3	59.1	20.00
325	137.5	167.5	53.9	20.00
326	143.8	171.3	58.3	20.00
327	150.0	167.5	53.3	20.00
328	156.3	171.3	60.0	20.00
329	162.5	167.5	55.3	20.00
330	168.8	171.3	55.1	20.00
331	175.0	167.5	55.3	20.00
332	181.3	171.3	60.1	20.00
333	187.5	167.5	60.3	20.00
334	193.8	171.3	65.1	20.00
335	200.0	167.5	65.3	20.00
336	206.3	171.3	70.1	20.00
337	212.5	167.5	70.3	20.00
338	218.8	171.3	79.0	20.00
339	225.0	167.5	79.4	20.00
340	12.5	175.0	55.4	20.00
341	18.8	178.8	59.3	20.00
342	25.0	175.0	55.8	20.00
343	31.3	178.8	59.4	20.00
344	37.5	175.0	56.2	20.00
345	43.8	178.8	60.5	20.00
346	50.0	175.0	57.4	20.00
347	56.3	178.8	61.6	20.00
348	62.5	175.0	58.6	20.00
349	68.8	178.8	62.8	20.00
350	75.0	175.0	59.8	20.00
351	81.3	178.8	63.8	20.00
352	87.5	175.0	60.1	20.00
353	93.8	178.8	63.9	20.00
354	100.0	175.0	60.3	20.00
355	106.3	178.8	64.1	20.00
356	112.5	175.0	59.9	20.00
357	118.8	178.8	64.5	20.00
358	125.0	175.0	59.1	20.00
359	131.3	178.8	62.0	20.00
360	137.5	175.0	63.2	20.00
361	143.8	178.8	69.4	20.00
362	150.0	175.0	64.7	20.00
363	156.3	178.8	64.4	20.00
364	162.5	175.0	59.7	20.00
365	168.8	178.8	69.6	20.00
366	175.0	175.0	59.9	20.00
367	181.3	178.8	64.7	20.00
368	187.5	175.0	64.9	20.00
369	193.8	178.8	69.7	20.00
370	200.0	175.0	69.9	20.00
371	206.3	178.8	74.7	20.00
372	212.5	175.0	74.9	20.00
373	218.8	178.8	84.3	20.00
374	225.0	175.0	82.8	20.00
375	231.3	178.8	90.7	20.00
376	12.5	182.5	63.0	20.00
377	18.8	186.3	67.0	20.00
378	25.0	182.5	63.2	20.00
379	31.3	186.3	66.8	20.00
380	37.5	182.5	63.6	20.00
381	43.8	186.3	67.8	20.00
382	50.0	182.5	64.7	20.00

RECEIVED: 15/09/2025

383	56.3	186.3	68.9	20.00
384	62.5	182.5	65.9	20.00
385	68.8	186.3	70.1	20.00
386	75.0	182.5	67.0	20.00
387	81.3	186.3	71.1	20.00
388	87.5	182.5	67.6	20.00
389	93.8	186.3	71.4	20.00
390	100.0	182.5	67.8	20.00
391	106.3	186.3	70.9	20.00
392	112.5	182.5	65.2	20.00
393	118.8	186.3	72.3	20.00
394	125.0	182.5	67.1	20.00
395	131.3	186.3	71.8	20.00
396	137.5	182.5	66.9	20.00
397	143.8	186.3	73.8	20.00
398	150.0	182.5	69.1	20.00
399	156.3	186.3	78.3	20.00
400	162.5	182.5	73.8	20.00
401	168.8	186.3	74.9	20.00
402	175.0	182.5	74.1	20.00
403	181.3	186.3	78.7	20.00
404	187.5	182.5	69.5	20.00
405	193.8	186.3	82.4	20.00
406	200.0	182.5	74.5	20.00
407	206.3	186.3	86.1	20.00
408	212.5	182.5	85.4	20.00
409	218.8	186.3	89.6	20.00
410	225.0	182.5	88.8	20.00
411	231.3	186.3	97.8	20.00
412	6.3	193.8	74.0	20.00
413	12.5	190.0	70.4	20.00
414	18.8	193.8	74.4	20.00
415	25.0	190.0	70.6	20.00
416	31.3	193.8	74.9	20.00
417	37.5	190.0	71.0	20.00
418	43.8	193.8	75.2	20.00
419	50.0	190.0	72.1	20.00
420	56.3	193.8	76.3	20.00
421	62.5	190.0	73.2	20.00
422	68.8	193.8	77.3	20.00
423	75.0	190.0	74.2	20.00
424	81.3	193.8	78.4	20.00
425	87.5	190.0	75.1	20.00
426	93.8	193.8	78.2	20.00
427	100.0	190.0	72.3	20.00
428	106.3	193.8	77.5	20.00
429	112.5	190.0	77.5	20.00
430	118.8	193.8	81.7	20.00
431	125.0	190.0	76.8	20.00
432	131.3	193.8	83.2	20.00
433	137.5	190.0	78.5	20.00
434	143.8	193.8	78.2	20.00
435	150.0	190.0	73.5	20.00
436	156.3	193.8	83.5	20.00
437	162.5	190.0	79.0	20.00
438	168.8	193.8	80.2	20.00
439	175.0	190.0	79.4	20.00
440	181.3	193.8	84.0	20.00
441	187.5	190.0	83.2	20.00
442	193.8	193.8	87.7	20.00
443	200.0	190.0	86.9	20.00
444	206.3	193.8	91.5	20.00

RECEIVED: 15/09/2025

445	212.5	190.0	90.7	20.00
446	218.8	193.8	94.9	20.00
447	225.0	190.0	94.1	20.00
448	231.3	193.8	103.8	20.00
449	237.5	190.0	102.1	20.00
450	12.5	197.5	77.9	20.00
451	18.8	201.3	81.8	20.00
452	25.0	197.5	78.0	20.00
453	31.3	201.3	82.3	20.00
454	37.5	197.5	78.4	20.00
455	43.8	201.3	82.6	20.00
456	50.0	197.5	79.4	20.00
457	56.3	201.3	83.6	20.00
458	62.5	197.5	80.5	20.00
459	68.8	201.3	84.7	20.00
460	75.0	197.5	81.5	20.00
461	81.3	201.3	85.6	20.00
462	87.5	197.5	82.5	20.00
463	93.8	201.3	83.5	20.00
464	100.0	197.5	82.9	20.00
465	106.3	201.3	85.6	20.00
466	112.5	197.5	80.4	20.00
467	118.8	201.3	85.4	20.00
468	125.0	197.5	80.4	20.00
469	131.3	201.3	87.6	20.00
470	137.5	197.5	82.9	20.00
471	143.8	201.3	92.4	20.00
472	150.0	197.5	88.0	20.00
473	156.3	201.3	88.7	20.00
474	162.5	197.5	84.2	20.00
475	168.8	201.3	85.5	20.00
476	175.0	197.5	84.7	20.00
477	181.3	201.3	89.3	20.00
478	187.5	197.5	88.5	20.00
479	193.8	201.3	93.0	20.00
480	200.0	197.5	92.2	20.00
481	206.3	201.3	96.8	20.00
482	212.5	197.5	96.0	20.00
483	218.8	201.3	100.2	20.00
484	225.0	197.5	105.4	20.00
485	231.3	201.3	109.9	20.00
486	237.5	197.5	108.3	20.00
487	243.8	201.3	117.2	20.00
488	12.5	205.0	85.5	20.00
489	18.8	208.8	89.2	20.00
490	25.0	205.0	85.9	20.00
491	31.3	208.8	89.7	20.00
492	37.5	205.0	85.9	20.00
493	43.8	208.8	90.0	20.00
494	50.0	205.0	86.8	20.00
495	56.3	208.8	91.0	20.00
496	62.5	205.0	87.8	20.00
497	68.8	208.8	92.0	20.00
498	75.0	205.0	88.8	20.00
499	81.3	208.8	93.1	20.00
500	87.5	205.0	88.5	20.00
501	93.8	208.8	95.9	20.00
502	100.0	205.0	90.8	20.00
503	106.3	208.8	95.3	20.00
504	112.5	205.0	90.3	20.00
505	118.8	208.8	97.1	20.00
506	125.0	205.0	92.4	20.00

RECEIVED: 15/09/2025

507	131.3	208.8	92.1	20.00
508	137.5	205.0	96.9	20.00
509	143.8	208.8	97.6	20.00
510	150.0	205.0	93.1	20.00
511	156.3	208.8	93.9	20.00
512	162.5	205.0	89.4	20.00
513	168.8	208.8	103.6	20.00
514	175.0	205.0	90.1	20.00
515	181.3	208.8	94.6	20.00
516	187.5	205.0	93.8	20.00
517	193.8	208.8	98.3	20.00
518	200.0	205.0	97.6	20.00
519	206.3	208.8	102.1	20.00
520	212.5	205.0	101.3	20.00
521	218.8	208.8	113.3	20.00
522	225.0	205.0	111.5	20.00
523	231.3	208.8	115.9	20.00
524	237.5	205.0	114.4	20.00
525	12.5	212.5	92.9	20.00
526	18.8	216.3	96.9	20.00
527	25.0	212.5	93.3	20.00
528	31.3	216.3	97.1	20.00
529	37.5	212.5	93.3	20.00
530	43.8	216.3	97.5	20.00
531	50.0	212.5	94.2	20.00
532	56.3	216.3	98.4	20.00
533	62.5	212.5	95.2	20.00
534	68.8	216.3	99.3	20.00
535	75.0	212.5	95.1	20.00
536	81.3	216.3	98.1	20.00
537	87.5	212.5	98.9	20.00
538	93.8	216.3	104.0	20.00
539	100.0	212.5	100.2	20.00
540	106.3	216.3	98.9	20.00
541	112.5	212.5	101.8	20.00
542	118.8	216.3	101.5	20.00
543	125.0	212.5	96.8	20.00
544	131.3	216.3	106.6	20.00
545	137.5	212.5	102.1	20.00
546	143.8	216.3	102.8	20.00
547	150.0	212.5	98.3	20.00
548	156.3	216.3	111.6	20.00
549	162.5	212.5	107.4	20.00
550	168.8	216.3	109.7	20.00
551	175.0	212.5	107.9	20.00
552	181.3	216.3	112.2	20.00
553	187.5	212.5	99.1	20.00
554	193.8	216.3	103.6	20.00
555	200.0	212.5	102.9	20.00
556	206.3	216.3	107.4	20.00
557	212.5	212.5	106.6	20.00
558	218.8	216.3	119.4	20.00
559	225.0	212.5	117.5	20.00
560	231.3	216.3	121.9	20.00
561	237.5	212.5	120.4	20.00
562	243.8	216.3	130.7	20.00
563	250.0	212.5	128.0	20.00
564	12.5	220.0	100.4	20.00
565	25.0	220.0	100.7	20.00
566	37.5	220.0	100.7	20.00
567	50.0	220.0	101.6	20.00
568	62.5	220.0	102.6	20.00

569	75.0	220.0	102.1	20.00
570	87.5	220.0	106.3	20.00
571	100.0	220.0	103.9	20.00
572	112.5	220.0	106.2	20.00
573	125.0	220.0	111.0	20.00
574	137.5	220.0	107.3	20.00
575	150.0	220.0	103.5	20.00
576	162.5	220.0	113.3	20.00
577	175.0	220.0	113.9	20.00
578	187.5	220.0	116.4	20.00
579	200.0	220.0	118.9	20.00
580	212.5	220.0	121.4	20.00
581	225.0	220.0	123.5	20.00
582	237.5	220.0	126.4	20.00

RECEIVED: 15/09/2025

Index

1.Main parameters	1
2.Profile vertices	1
3.Water table	1
4.Layer vertices.....1	1
5.Partial factors for soil geotechnical parameters	2
6.Stratigraphy	2
7.Slope analysis results	2
Index	13

RECEIVED: 15/09/2025

Analysis of slope stability performed with: BISHOP (1955)

Standard	O.P.C.M.3274
Number of layers	2.6
Number of slices	10.0
Acceptable level of safety	1.1
Partial resistance factor	489981900000000000000000000000.0
Geotechnical parameters to use. Friction angle:	Peak
Analysis	Drained state
Circular form surface	

Centres' grid

Lower left vertex abscissa xi	0.0 m
Lower left vertex ordinate yi	70.0 m
Upper right vertex abscissa xs	250.0 m
Upper right vertex ordinate yz	220.0 m
Search step	10.0
Number of cells along the x axis	20.0
Number of cells along the y axis	20.0

Profile vertices

Nr	X (m)	y (m)
1	0.0	119.89
2	15.0	119.62
3	35.0	119.4
4	55.0	118.9
5	75.0	118.57
6	95.0	117.96
7	115.0	117.29
8	135.0	117.01
9	155.0	116.43
10	170.0	117.34
11	171.0	80.0
12	224.0	80.0

Water table

Nr.	X (m)	y (m)
1	0.0	119.88
2	15.0	119.61
3	35.0	119.39
4	55.0	118.89
5	75.0	118.56
6	95.0	117.95
7	115.0	117.28
8	135.0	117.0
9	155.0	116.42
10	170.0	117.33
11	171.0	79.99
12	224.0	79.99

Layer vertices.....1

N	X (m)	y (m)
1	0.0	114.89
2	15.0	115.22

3	35.0	115.4
4	55.0	117.7
5	75.0	117.97
6	95.0	117.36
7	115.0	116.69
8	135.0	116.51
9	155.0	115.93
10	170.0	116.84
11	171.0	80.0
12	224.0	80.0

RECEIVED: 15/09/2025

Partial factors for soil geotechnical parameters

Tangent angle of shearing resistance	1.0
Effective cohesion	1.0
Undrained cohesion	1.0
Reduction soil geotechnical parameters	No

Stratigraphy

Layer	Cohesion (kg/cm ²)	Undrained cohesion (kg/cm ²)	Angle of shearing resistance (°)	Unit weight (kN/m ³)	Saturated weight (kN/m ³)	Lithology description	
1	0	0	26	1356	1826	Clay with gravel	
2	0	0	45	2600	2600	BedRock	

G0: Dynamic low strain shear modulus; G: Dynamic shear modulus; Dr: Relative density; OCR: Overconsolidation; IP: Plasticity index

Layer	G0 (KPa)	G (KPa)	Dr (%)	OCR	IP (%)
1	0	0	0	1	0
2					

Distributed loads

N°	xi (m)	yi (m)	xf (m)	yf (m)	External load (kg/cm ²)
1	0	114.89	20	114.5367	3

Slope analysis results

Minimal Fs found	8.91
Abscissa for surface centre	156.25 m
Ordinate for surface centre	133.75 m
Surface radius	17.45 m

B: Slice width; Alfa: Slice base inclination angle; Li: Length of slice base; Wi: Slice weight; Ut: Forces resultant from neutral pressures.; Ni: Forces normal to slide direction; Ti: Forces parallel to slide surface; Fi: Friction angle; c: cohesion.

xc = 156.25 yc = 133.75 Rc = 17.45 Fs=8.906

Nr.	B m	Alfa (°)	Li m	Wi (Kg)	Kh•Wi (Kg)	Kv•Wi (Kg)	c (kg/cm ²)	Fi (°)	Ui (Kg)	N'i (Kg)	Ti (Kg)
1	0.63	-6.9	0.64	3397.07	0.0	0.0	0.0	26.0	0.0	3444.5	188.6
2	0.52	-5.0	0.53	7011.52	0.0	0.0	0.0	26.0	0.0	7071.7	387.3
3	0.74	-2.9	0.74	18067.54	0.0	0.0	0.0	26.0	0.0	18140.8	993.5

4	0.63	-0.6	0.6322636.99	0.0	0.0	0.0	26.0	0.022652.0	1240.5
5	0.63	1.4	0.6326907.33	0.0	0.0	0.0	26.0	0.026878.8	1472.0
6	0.63	3.5	0.63 28108.6	0.0	0.0	0.0	26.0	0.028067.2	1537.1
7	0.63	5.6	0.6426583.56	0.0	0.0	0.0	26.0	0.026568.7	1455.0
8	0.63	7.7	0.6422315.35	0.0	0.0	0.0	26.0	0.022353.1	1224.2
9	0.63	9.8	0.6415636.41	0.0	0.0	0.0	26.0	0.015719.4	860.9
10	0.63	11.9	0.65 5761.41	0.0	0.0	0.0	26.0	0.0 5821.3	318.8

PROJ.D. 15/09/2025

Index

1.Main parameters	1
2.Profile vertices	1
3.Water table	1
4.Layer vertices.....1	1
5.Partial factors for soil geotechnical parameters	2
6.Stratigraphy	2
7.Slope analysis results	2
Index	4

RECEIVED: 15/09/2025

Analysis of slope stability performed with: BISHOP (1955)

Standard	O.P.C.M.3274
Number of layers	2.6
Number of slices	10.0
Acceptable level of safety	1.1
Partial resistance factor	489981900000000000000000000000.0
Geotechnical parameters to use. Friction angle:	Peak
Circular form surface	

Centres' grid

Lower left vertex abscissa xi	0.0 m
Lower left vertex ordinate yi	70.0 m
Upper right vertex abscissa xs	280.0 m
Upper right vertex ordinate yz	220.0 m
Search step	10.0
Number of cells along the x axis	20.0
Number of cells along the y axis	20.0

Profile vertices

Nr	X (m)	y (m)
1	0.0	92.98
2	15.0	94.26
3	35.0	95.65
4	55.0	97.03
5	75.0	97.86
6	95.0	99.1
7	115.0	100.23
8	135.0	101.35
9	155.0	102.46
10	165.0	103.17
11	166.0	80.0
12	250.0	80.0

Water table

Nr.	X (m)	y (m)
1	0.0	92.97
2	15.0	94.25
3	35.0	95.64
4	55.0	97.02
5	75.0	97.85
6	95.0	99.09
7	115.0	100.22
8	135.0	101.34
9	155.0	102.45
10	165.0	103.16
11	166.0	79.99
12	250.0	79.99

Layer vertices.....1

N	X (m)	y (m)
1	0.0	92.88
2	15.0	94.16
3	35.0	95.55

4	55.0	96.93
5	75.0	97.76
6	95.0	99.0
7	115.0	100.13
8	135.0	101.25
9	155.0	102.36
10	165.0	103.07
11	166.0	80.0
12	250.0	80.0

RECEIVED: 15/09/2025

Partial factors for soil geotechnical parameters

Tangent angle of shearing resistance	1.0
Effective cohesion	1.0
Undrained cohesion	1.0
Reduction soil geotechnical parameters	No

Stratigraphy

Layer	Unit weight (kN/m³)	A	B	T	Uniaxial compressive strength (kg/cm²)	Texture	Description
1	13.6	0.05	0.539	0	5		Clay with gravel
2	26	0.129	0.655	-0.0002	50		BedRock

G0: Dynamic low strain shear modulus; G: Dynamic shear modulus; Dr: Relative density; OCR: Overconsolidation; IP: Plasticity index

Layer	G0 (KPa)	G (KPa)	Dr (%)	OCR	IP (%)
1	0	0	0	1	0
2					

Distributed loads

N°	xi (m)	yi (m)	xf (m)	yf (m)	External load (kg/cm²)
1	61	94.36	81	95.192	3

Slope analysis results

Minimal Fs found	1.26
Abscissa for surface centre	0.0 m
Ordinate for surface centre	220.0 m
Surface radius	126.64 m

Number of investigated surfaces....(517)

N°	Xo	Yo	Ro	Fs
1	7.0	88.8	5.2	20.00
2	21.0	88.8	6.5	20.00
3	35.0	88.8	7.5	20.00
4	49.0	88.8	8.3	20.00
5	63.0	88.8	9.0	20.00
6	175.0	88.8	9.1	20.00
7	182.0	85.0	5.4	20.00
8	189.0	88.8	9.1	20.00
9	196.0	85.0	5.4	20.00
10	203.0	88.8	9.1	20.00

11	210.0	85.0	5.4	20.00
12	217.0	88.8	9.1	20.00
13	224.0	85.0	5.4	20.00
14	231.0	88.8	9.1	20.00
15	238.0	85.0	5.4	20.00
16	245.0	88.8	9.1	20.00
17	7.0	96.3	7.1	2.35
18	14.0	92.5	10.8	5.53
19	21.0	96.3	13.9	2.88
20	28.0	92.5	12.3	8.30
21	35.0	96.3	13.8	3.42
22	42.0	92.5	4.3	20.00
23	49.0	96.3	15.5	4.05
24	56.0	92.5	5.1	20.00
25	63.0	96.3	13.9	6.32
26	70.0	92.5	5.9	20.00
27	77.0	96.3	13.9	8.09
28	84.0	92.5	6.7	20.00
29	91.0	96.3	14.1	8.10
30	98.0	92.5	7.4	20.00
31	105.0	96.3	14.3	11.18
32	112.0	92.5	8.2	20.00
33	119.0	96.3	4.8	20.00
34	126.0	92.5	8.7	20.00
35	133.0	96.3	6.7	20.00
36	140.0	92.5	9.7	20.00
37	147.0	96.3	7.1	20.00
38	154.0	92.5	10.1	20.00
39	161.0	96.3	8.2	20.00
40	175.0	96.3	15.0	20.00
41	182.0	92.5	12.8	20.00
42	196.0	92.5	12.9	20.00
43	210.0	92.5	12.7	20.00
44	224.0	92.5	12.7	20.00
45	238.0	92.5	12.7	20.00
46	7.0	103.8	12.4	1.86
47	14.0	100.0	14.6	1.97
48	21.0	103.8	20.5	1.74
49	28.0	100.0	17.6	2.27
50	35.0	103.8	21.3	1.96
51	42.0	100.0	17.5	2.34
52	49.0	103.8	19.3	2.15
53	56.0	100.0	19.1	3.00
54	63.0	103.8	22.8	2.62
55	70.0	100.0	19.0	3.78
56	77.0	103.8	20.6	3.02
57	84.0	100.0	14.7	3.45
58	91.0	103.8	11.7	2.66
59	98.0	100.0	18.9	3.69
60	105.0	103.8	17.9	2.86
61	112.0	100.0	16.8	4.32
62	119.0	103.8	22.3	2.59
63	126.0	100.0	12.6	4.26
64	133.0	103.8	22.3	3.15
65	140.0	100.0	19.0	5.21
66	147.0	103.8	15.0	3.35
67	154.0	100.0	11.1	9.65
68	161.0	103.8	3.0	4.07
69	168.0	100.0	7.5	20.00
70	175.0	103.8	14.9	20.00
71	7.0	111.3	19.2	1.94
72	14.0	107.5	18.6	1.68

73	21.0	111.3	26.6	1.56
74	28.0	107.5	25.1	1.70
75	35.0	111.3	28.8	1.65
76	42.0	107.5	25.0	1.83
77	49.0	111.3	28.6	1.83
78	56.0	107.5	22.9	2.17
79	63.0	111.3	26.4	2.10
80	70.0	107.5	26.5	2.45
81	77.0	111.3	30.2	2.21
82	84.0	107.5	22.2	2.38
83	91.0	111.3	30.1	2.13
84	98.0	107.5	24.0	2.21
85	105.0	111.3	30.0	2.06
86	112.0	107.5	23.8	2.45
87	119.0	111.3	25.0	2.18
88	126.0	107.5	26.0	2.49
89	133.0	111.3	29.7	2.19
90	140.0	107.5	20.7	2.45
91	147.0	111.3	19.0	2.32
92	154.0	107.5	9.6	2.67
93	161.0	111.3	9.4	3.01
94	168.0	107.5	8.7	20.00
95	175.0	111.3	17.8	20.00
96	182.0	107.5	23.0	20.00
97	7.0	118.8	26.4	2.03
98	14.0	115.0	25.4	1.60
99	21.0	118.8	32.2	1.47
100	28.0	115.0	34.0	1.49
101	35.0	118.8	34.6	1.47
102	42.0	115.0	29.0	1.63
103	49.0	118.8	36.1	1.67
104	56.0	115.0	32.2	1.83
105	63.0	118.8	35.9	1.91
106	70.0	115.0	34.0	2.04
107	77.0	118.8	37.7	1.95
108	84.0	115.0	33.9	2.05
109	91.0	118.8	37.6	1.84
110	98.0	115.0	27.1	1.89
111	105.0	118.8	35.2	1.78
112	112.0	115.0	33.6	1.88
113	119.0	118.8	34.9	1.81
114	126.0	115.0	31.1	2.02
115	133.0	118.8	34.7	1.74
116	140.0	115.0	25.6	2.06
117	147.0	118.8	23.8	2.03
118	154.0	115.0	17.0	2.43
119	161.0	118.8	17.9	20.00
120	168.0	115.0	16.5	20.00
121	175.0	118.8	22.3	20.00
122	182.0	115.0	24.2	20.00
123	189.0	118.8	33.7	20.00
124	7.0	126.3	33.7	2.12
125	14.0	122.5	32.1	1.62
126	21.0	126.3	38.5	1.45
127	28.0	122.5	39.3	1.40
128	35.0	126.3	45.5	1.37
129	42.0	122.5	38.2	1.56
130	49.0	126.3	45.4	1.48
131	56.0	122.5	39.7	1.73
132	63.0	126.3	41.4	1.79
133	70.0	122.5	41.5	1.71
134	77.0	126.3	43.1	1.82

135	84.0	122.5	37.1	1.88
136	91.0	126.3	45.1	1.77
137	98.0	122.5	39.0	1.74
138	105.0	126.3	40.4	1.71
139	112.0	122.5	38.8	1.75
140	119.0	126.3	40.0	1.74
141	126.0	122.5	38.6	1.81
142	133.0	126.3	39.6	1.73
143	140.0	122.5	30.5	1.90
144	147.0	126.3	29.1	2.02
145	154.0	122.5	20.2	2.75
146	161.0	126.3	25.1	20.00
147	168.0	122.5	23.7	20.00
148	175.0	126.3	29.1	20.00
149	182.0	122.5	28.8	20.00
150	189.0	126.3	38.2	20.00
151	7.0	133.8	40.8	2.40
152	14.0	130.0	38.6	1.76
153	21.0	133.8	44.3	1.52
154	28.0	130.0	43.9	1.40
155	35.0	133.8	52.1	1.33
156	42.0	130.0	49.2	1.41
157	49.0	133.8	51.1	1.48
158	56.0	130.0	47.2	1.58
159	63.0	133.8	52.8	1.58
160	70.0	130.0	49.0	1.68
161	77.0	133.8	50.6	1.72
162	84.0	130.0	48.9	1.70
163	91.0	133.8	50.4	1.70
164	98.0	130.0	44.3	1.71
165	105.0	133.8	52.4	1.53
166	112.0	130.0	48.6	1.62
167	119.0	133.8	52.3	1.58
168	126.0	130.0	48.5	1.66
169	133.0	133.8	44.6	1.68
170	140.0	130.0	37.4	1.83
171	147.0	133.8	35.7	2.07
172	154.0	130.0	30.4	3.24
173	161.0	133.8	33.9	20.00
174	168.0	130.0	32.3	20.00
175	175.0	133.8	37.4	20.00
176	182.0	130.0	34.6	20.00
177	189.0	133.8	42.7	20.00
178	196.0	130.0	44.9	20.00
179	7.0	141.3	48.3	2.46
180	14.0	137.5	46.2	1.72
181	21.0	141.3	51.9	1.49
182	28.0	137.5	51.5	1.37
183	35.0	141.3	56.7	1.35
184	42.0	137.5	56.7	1.38
185	49.0	141.3	56.8	1.50
186	56.0	137.5	54.7	1.53
187	63.0	141.3	60.3	1.50
188	70.0	137.5	54.5	1.64
189	77.0	141.3	60.2	1.58
190	84.0	137.5	56.4	1.57
191	91.0	141.3	55.7	1.69
192	98.0	137.5	56.3	1.60
193	105.0	141.3	57.6	1.56
194	112.0	137.5	53.8	1.56
195	119.0	141.3	59.8	1.47
196	126.0	137.5	53.5	1.62

197	133.0	141.3	49.5	1.71
198	140.0	137.5	41.0	1.99
199	147.0	141.3	43.9	2.47
200	154.0	137.5	38.9	16.89
201	161.0	141.3	44.3	20.00
202	168.0	137.5	36.9	20.00
203	175.0	141.3	42.0	20.00
204	182.0	137.5	42.5	20.00
205	189.0	141.3	47.6	20.00
206	196.0	137.5	49.3	20.00
207	7.0	148.8	56.0	2.28
208	14.0	145.0	53.4	1.76
209	21.0	148.8	58.3	1.59
210	28.0	145.0	57.1	1.41
211	35.0	148.8	63.2	1.38
212	42.0	145.0	64.2	1.34
213	49.0	148.8	66.1	1.47
214	56.0	145.0	64.1	1.45
215	63.0	148.8	65.8	1.48
216	70.0	145.0	60.0	1.64
217	77.0	148.8	67.7	1.52
218	84.0	145.0	61.7	1.58
219	91.0	148.8	67.6	1.53
220	98.0	145.0	63.8	1.53
221	105.0	148.8	65.1	1.53
222	112.0	145.0	58.9	1.56
223	119.0	148.8	64.6	1.46
224	126.0	145.0	57.3	1.60
225	133.0	148.8	57.8	1.80
226	140.0	145.0	48.9	1.89
227	147.0	148.8	48.3	2.69
228	154.0	145.0	43.3	3.09
229	161.0	148.8	49.4	20.00
230	168.0	145.0	47.6	20.00
231	175.0	148.8	52.4	20.00
232	182.0	145.0	47.1	20.00
233	189.0	148.8	56.6	20.00
234	196.0	145.0	56.0	20.00
235	203.0	148.8	63.5	20.00
236	7.0	156.3	63.4	2.32
237	14.0	152.5	60.3	1.90
238	21.0	156.3	65.4	1.62
239	28.0	152.5	64.9	1.38
240	35.0	156.3	71.1	1.35
241	42.0	152.5	71.1	1.35
242	49.0	156.3	75.4	1.35
243	56.0	152.5	69.7	1.46
244	63.0	156.3	75.3	1.44
245	70.0	152.5	71.5	1.47
246	77.0	156.3	73.1	1.52
247	84.0	152.5	71.4	1.52
248	91.0	156.3	75.1	1.49
249	98.0	152.5	69.0	1.52
250	105.0	156.3	72.6	1.52
251	112.0	152.5	71.1	1.45
252	119.0	156.3	70.5	1.46
253	126.0	152.5	62.5	1.68
254	133.0	156.3	63.0	1.75
255	140.0	152.5	53.2	2.43
256	147.0	156.3	58.8	3.65
257	154.0	152.5	54.1	20.00
258	161.0	156.3	54.6	20.00

RECEIVED: 15/09/2025

259	168.0	152.5	53.0	20.00
260	175.0	156.3	57.8	20.00
261	182.0	152.5	57.2	20.00
262	189.0	156.3	62.0	20.00
263	196.0	152.5	61.4	20.00
264	203.0	156.3	69.9	20.00
265	7.0	163.8	70.6	2.61
266	14.0	160.0	68.1	1.83
267	21.0	163.8	72.7	1.65
268	28.0	160.0	71.8	1.40
269	35.0	163.8	77.8	1.37
270	42.0	160.0	75.9	1.36
271	49.0	163.8	82.9	1.33
272	56.0	160.0	77.2	1.43
273	63.0	163.8	80.8	1.46
274	70.0	160.0	79.0	1.44
275	77.0	163.8	78.5	1.54
276	84.0	160.0	78.9	1.46
277	91.0	163.8	82.6	1.46
278	98.0	160.0	74.2	1.53
279	105.0	163.8	79.3	1.50
280	112.0	160.0	78.0	1.43
281	119.0	163.8	76.5	1.48
282	126.0	160.0	67.7	1.67
283	133.0	163.8	68.1	1.84
284	140.0	160.0	63.5	2.06
285	147.0	163.8	63.9	2.51
286	154.0	160.0	59.3	4.45
287	161.0	163.8	68.1	20.00
288	168.0	160.0	58.3	20.00
289	175.0	163.8	63.1	20.00
290	182.0	160.0	62.5	20.00
291	189.0	163.8	67.3	20.00
292	196.0	160.0	71.5	20.00
293	203.0	163.8	75.9	20.00
294	210.0	160.0	77.6	20.00
295	7.0	171.3	78.3	2.38
296	14.0	167.5	73.2	1.50
297	21.0	171.3	80.5	1.59
298	28.0	167.5	78.0	1.48
299	35.0	171.3	84.7	1.38
300	42.0	167.5	84.1	1.36
301	49.0	171.3	90.4	1.32
302	56.0	167.5	82.8	1.46
303	63.0	171.3	88.3	1.42
304	70.0	167.5	86.5	1.42
305	77.0	171.3	90.2	1.45
306	84.0	167.5	84.2	1.48
307	91.0	171.3	90.1	1.43
308	98.0	167.5	81.2	1.51
309	105.0	171.3	85.2	1.52
310	112.0	167.5	84.7	1.44
311	119.0	171.3	82.4	1.51
312	126.0	167.5	78.0	1.75
313	133.0	171.3	73.3	2.27
314	140.0	167.5	68.6	2.26
315	147.0	171.3	76.8	20.00
316	154.0	167.5	72.4	20.00
317	161.0	171.3	74.0	20.00
318	168.0	167.5	72.0	20.00
319	175.0	171.3	76.4	20.00
320	182.0	167.5	74.8	20.00

321	189.0	171.3	79.2	20.00
322	196.0	167.5	77.5	20.00
323	203.0	171.3	82.0	20.00
324	210.0	167.5	84.4	20.00
325	0.0	175.0	81.8	3.39
326	7.0	178.8	85.6	2.65
327	14.0	175.0	80.7	1.67
328	21.0	178.8	87.8	1.61
329	28.0	175.0	85.9	1.44
330	35.0	178.8	91.6	1.40
331	42.0	175.0	89.3	1.39
332	49.0	178.8	97.0	1.32
333	56.0	175.0	94.1	1.37
334	63.0	178.8	95.8	1.39
335	70.0	175.0	94.0	1.39
336	77.0	178.8	97.7	1.41
337	84.0	175.0	91.7	1.44
338	91.0	178.8	93.9	1.48
339	98.0	175.0	92.8	1.51
340	105.0	178.8	91.1	1.53
341	112.0	175.0	91.4	1.47
342	119.0	178.8	88.3	1.56
343	126.0	175.0	84.0	1.72
344	133.0	178.8	85.5	2.27
345	140.0	175.0	73.8	3.94
346	147.0	178.8	82.7	20.00
347	154.0	175.0	78.4	20.00
348	161.0	178.8	79.9	20.00
349	168.0	175.0	78.0	20.00
350	175.0	178.8	82.4	20.00
351	182.0	175.0	80.8	20.00
352	189.0	178.8	85.2	20.00
353	196.0	175.0	83.6	20.00
354	203.0	178.8	88.0	20.00
355	210.0	175.0	91.2	20.00
356	7.0	186.3	93.1	2.67
357	14.0	182.5	90.3	1.90
358	21.0	186.3	94.6	1.72
359	28.0	182.5	93.1	1.46
360	35.0	186.3	98.7	1.42
361	42.0	182.5	97.6	1.37
362	49.0	186.3	103.7	1.32
363	56.0	182.5	101.6	1.34
364	63.0	186.3	103.3	1.36
365	70.0	182.5	101.5	1.36
366	77.0	186.3	102.7	1.51
367	84.0	182.5	98.3	1.44
368	91.0	186.3	99.9	1.52
369	98.0	182.5	99.5	1.50
370	105.0	186.3	97.1	1.55
371	112.0	182.5	98.1	1.51
372	119.0	186.3	94.3	1.63
373	126.0	182.5	89.9	1.73
374	133.0	186.3	91.5	2.08
375	140.0	182.5	87.1	3.72
376	147.0	186.3	88.7	8.71
377	154.0	182.5	84.3	20.00
378	161.0	186.3	85.9	20.00
379	168.0	182.5	84.1	20.00
380	175.0	186.3	88.5	20.00
381	182.0	182.5	86.9	20.00
382	189.0	186.3	91.3	20.00

383	196.0	182.5	89.7	20.00
384	203.0	186.3	94.1	20.00
385	210.0	182.5	98.0	20.00
386	0.0	190.0	96.8	3.58
387	7.0	193.8	100.5	2.69
388	14.0	190.0	97.3	2.06
389	21.0	193.8	102.4	1.65
390	28.0	190.0	94.7	1.37
391	35.0	193.8	105.7	1.43
392	42.0	190.0	103.2	1.43
393	49.0	193.8	108.9	1.38
394	56.0	190.0	109.1	1.32
395	63.0	193.8	108.8	1.42
396	70.0	190.0	106.9	1.39
397	77.0	193.8	111.7	1.38
398	84.0	190.0	107.6	1.44
399	91.0	193.8	105.8	1.57
400	98.0	190.0	106.2	1.48
401	105.0	193.8	103.0	1.60
402	112.0	190.0	104.8	1.55
403	119.0	193.8	100.2	1.71
404	126.0	190.0	95.8	1.71
405	133.0	193.8	97.4	2.01
406	140.0	190.0	93.0	2.81
407	147.0	193.8	94.6	4.10
408	154.0	190.0	90.2	20.00
409	161.0	193.8	91.8	20.00
410	168.0	190.0	90.1	20.00
411	175.0	193.8	94.6	20.00
412	182.0	190.0	92.9	20.00
413	189.0	193.8	97.4	20.00
414	196.0	190.0	95.7	20.00
415	203.0	193.8	100.2	20.00
416	210.0	190.0	104.8	20.00
417	0.0	197.5	104.3	3.32
418	7.0	201.3	108.3	2.42
419	14.0	197.5	104.8	2.07
420	21.0	201.3	109.3	1.76
421	28.0	197.5	102.2	1.52
422	35.0	201.3	112.9	1.44
423	42.0	197.5	110.2	1.45
424	49.0	201.3	117.3	1.33
425	56.0	197.5	116.6	1.29
426	63.0	201.3	119.8	1.35
427	70.0	197.5	113.0	1.41
428	77.0	201.3	118.4	1.39
429	84.0	197.5	114.3	1.47
430	91.0	201.3	111.7	1.65
431	98.0	197.5	112.9	1.48
432	105.0	201.3	108.9	1.69
433	112.0	197.5	111.5	1.59
434	119.0	201.3	106.1	1.85
435	126.0	197.5	101.8	1.85
436	133.0	201.3	103.3	2.11
437	140.0	197.5	99.0	2.43
438	147.0	201.3	100.6	3.03
439	154.0	197.5	96.2	5.61
440	161.0	201.3	110.0	20.00
441	168.0	197.5	96.2	20.00
442	175.0	201.3	100.6	20.00
443	182.0	197.5	99.0	20.00
444	189.0	201.3	103.4	20.00

445	196.0	197.5	101.8	20.00
446	210.0	197.5	111.6	20.00
447	0.0	205.0	111.6	2.24
448	7.0	208.8	115.5	2.69
449	14.0	205.0	112.6	1.96
450	21.0	208.8	116.7	1.78
451	28.0	205.0	114.8	1.52
452	35.0	208.8	120.1	1.46
453	42.0	205.0	117.3	1.46
454	49.0	208.8	124.3	1.34
455	56.0	205.0	123.2	1.30
456	63.0	208.8	126.5	1.36
457	70.0	205.0	118.9	1.46
458	77.0	208.8	125.1	1.39
459	84.0	205.0	116.1	1.60
460	91.0	208.8	123.7	1.42
461	98.0	205.0	119.7	1.48
462	105.0	208.8	114.9	1.76
463	112.0	205.0	118.3	1.61
464	119.0	208.8	112.1	2.05
465	126.0	205.0	107.7	2.08
466	133.0	208.8	109.3	2.59
467	140.0	205.0	104.9	2.61
468	147.0	208.8	118.1	20.00
469	161.0	208.8	116.8	20.00
470	175.0	208.8	118.2	20.00
471	182.0	205.0	105.1	20.00
472	189.0	208.8	109.5	20.00
473	210.0	205.0	118.3	20.00
474	0.0	212.5	119.1	1.53
475	7.0	216.3	123.2	2.44
476	14.0	212.5	120.0	1.97
477	21.0	216.3	124.6	1.70
478	28.0	212.5	122.1	1.54
479	35.0	216.3	127.3	1.48
480	42.0	212.5	125.6	1.42
481	49.0	216.3	130.5	1.38
482	56.0	212.5	129.2	1.34
483	63.0	216.3	133.2	1.37
484	70.0	212.5	129.2	1.37
485	77.0	216.3	131.8	1.40
486	84.0	212.5	122.0	1.67
487	91.0	216.3	123.6	1.80
488	98.0	212.5	126.4	1.49
489	105.0	216.3	120.8	1.94
490	112.0	212.5	125.0	1.64
491	119.0	216.3	118.0	2.41
492	126.0	212.5	113.6	2.51
493	133.0	216.3	115.2	4.41
494	140.0	212.5	110.9	5.66
495	147.0	216.3	124.8	20.00
496	161.0	216.3	123.6	20.00
497	175.0	216.3	125.0	20.00
498	189.0	216.3	126.4	20.00
499	196.0	212.5	123.7	20.00
500	203.0	216.3	127.8	20.00
501	210.0	212.5	125.1	20.00
502	217.0	216.3	129.2	20.00
503	224.0	212.5	126.5	20.00
504	0.0	220.0	126.6	1.26
505	14.0	220.0	127.1	2.12
506	28.0	220.0	129.5	1.56

RECEIVED: 15/09/2025

507	42.0	220.0	132.2	1.45
508	56.0	220.0	135.3	1.40
509	70.0	220.0	130.8	1.63
510	84.0	220.0	134.5	1.49
511	98.0	220.0	133.1	1.50
512	112.0	220.0	131.7	1.65
513	126.0	220.0	119.6	3.90
514	140.0	220.0	128.9	20.00
515	154.0	220.0	127.5	20.00
516	210.0	220.0	131.9	20.00
517	224.0	220.0	133.3	20.00

RECEIVED: 15/09/2025

Index

1.Main parameters	1
2.Profile vertices	1
3.Water table	1
4.Layer vertices.....1	1
5.Partial factors for soil geotechnical parameters	2
6.Stratigraphy	2
7.Slope analysis results	2
Index	12

RECEIVED: 15/09/2025

Analysis of slope stability performed with: BISHOP (1955)

Standard	O.P.C.M.3274
Number of layers	2.6
Number of slices	10.0
Acceptable level of safety	1.1
Partial resistance factor	489981900000000000000000000000.0
Geotechnical parameters to use. Friction angle:	Peak
Analysis	Drained state
Circular form surface	

Centres' grid

Lower left vertex abscissa xi	0.0 m
Lower left vertex ordinate yi	70.0 m
Upper right vertex abscissa xs	280.0 m
Upper right vertex ordinate yz	220.0 m
Search step	10.0
Number of cells along the x axis	20.0
Number of cells along the y axis	20.0

Profile vertices

Nr	X (m)	y (m)
1	0.0	92.98
2	15.0	94.26
3	35.0	95.65
4	55.0	97.03
5	75.0	97.86
6	95.0	99.1
7	115.0	100.23
8	135.0	101.35
9	155.0	102.46
10	165.0	103.17
11	166.0	80.0
12	250.0	80.0

Water table

Nr.	X (m)	y (m)
1	0.0	92.97
2	15.0	94.25
3	35.0	95.64
4	55.0	97.02
5	75.0	97.85
6	95.0	99.09
7	115.0	100.22
8	135.0	101.34
9	155.0	102.45
10	165.0	103.16
11	166.0	79.99
12	250.0	79.99

Layer vertices.....1

N	X (m)	y (m)
1	0.0	89.68
2	15.0	90.36

3	35.0	95.15
4	55.0	94.28
5	75.0	95.11
6	95.0	96.6
7	115.0	98.73
8	135.0	100.85
9	155.0	101.96
10	165.0	102.77
11	166.0	80.0
12	280.0	80.0

RECEIVED: 15/09/2025

Partial factors for soil geotechnical parameters

Tangent angle of shearing resistance	1.0
Effective cohesion	1.0
Undrained cohesion	1.0
Reduction soil geotechnical parameters	No

Stratigraphy

Layer	Cohesion (kg/cm ²)	Undrained cohesion (kg/cm ²)	Angle of shearing resistance (°)	Unit weight (kN/m ³)	Saturated weight (kN/m ³)	Lithology description	
1	0	0	26	1356	1826	Clay with gravel	
2	0	0	45	2600	2600	BedRock	

G0: Dynamic low strain shear modulus; G: Dynamic shear modulus; Dr: Relative density; OCR: Overconsolidation; IP: Plasticity index

Layer	G0 (KPa)	G (KPa)	Dr (%)	OCR	IP (%)
1	0	0	0	1	0
2					

Distributed loads

N°	xi (m)	yi (m)	xf (m)	yf (m)	External load (kg/cm ²)
1	61	94.36	81	95.192	3

Slope analysis results

Minimal Fs found	5.74
Abscissa for surface centre	0.0 m
Ordinate for surface centre	197.5 m
Surface radius	104.33 m

xc = 0.00 yc = 197.50 Rc = 104.331 Fs=5.74

Nr.	B m	Alfa (°)	Li m	Wi (Kg)	Kh•Wi (Kg)	Kv•Wi (Kg)	c (kg/cm ²)	Fi (°)	Ui (Kg)	N'i (Kg)	Ti (Kg)
1	1.25	1.7	1.25	7536.03	0.0	0.0	0.0	26.0	0.0	7520.1	639.0
2	1.25	2.4	1.25	21735.4	0.0	0.0	0.0	26.0	0.0	21676.8	1841.8
3	1.25	3.1	1.25	32427.5	0.0	0.0	0.0	26.0	0.0	32326.0	2746.7
4	1.25	3.8	1.25	39608.32	0.0	0.0	0.0	26.0	0.0	39472.8	3353.9
5	1.25	4.5	1.26	43268.13	0.0	0.0	0.0	26.0	0.0	43113.7	3663.3
6	1.25	5.2	1.26	43398.01	0.0	0.0	0.0	26.0	0.0	43242.9	3674.2
7	1.25	5.9	1.26	39987.72	0.0	0.0	0.0	26.0	0.0	39850.4	3386.0
8	1.25	6.6	1.26	33024.4	0.0	0.0	0.0	26.0	0.0	32920.5	2797.2

SLOPE STABILITY ASSESSMENT TURBINE T04 (DRAINAEED SOIL STABILITY)

9	1.25	7.3	1.2622495.15	0.0	0.0	0.0	26.0	0.022434.1	1906.2
10	1.25	8.0	1.26 8383.97	0.0	0.0	0.0	26.0	0.0 8366.1	710.8

RECEIVED: 15/09/2025

Index

1.Main parameters	1
2.Profile vertices	1
3.Water table	1
4.Layer vertices.....1	1
5.Partial factors for soil geotechnical parameters	2
6.Stratigraphy	2
7.Slope analysis results	2
Index	4

RECEIVED: 15/09/2025

Analysis of slope stability performed with: BISHOP (1955)

Standard	O.P.C.M.3274
Number of layers	2.6
Number of slices	10.0
Acceptable level of safety	1.1
Partial resistance factor	489981900000000000000000000000.0
Geotechnical parameters to use. Friction angle:	Peak
Circular form surface	

Centres' grid

Lower left vertex abscissa xi	0.0 m
Lower left vertex ordinate yi	70.0 m
Upper right vertex abscissa xs	280.0 m
Upper right vertex ordinate yz	220.0 m
Search step	10.0
Number of cells along the x axis	20.0
Number of cells along the y axis	20.0

Profile vertices

Nr	X (m)	y (m)
1	0.0	80.0
2	45.0	80.0
3	46.0	109.99
4	95.0	107.65
5	110.0	107.28
6	130.0	106.88
7	150.0	106.37
8	170.0	106.0
9	190.0	105.55
10	210.0	105.17
11	230.0	104.77
12	250.0	104.32

Water table

Nr.	X (m)	y (m)
1	0.0	79.99
2	45.0	79.99
3	46.0	109.98
4	95.0	107.64
5	110.0	107.27
6	130.0	106.87
7	150.0	106.36
8	170.0	105.99
9	190.0	105.54
10	210.0	105.16
11	230.0	104.76
12	250.0	104.31

Layer vertices.....1

N	X (m)	y (m)
1	0.0	80.0
2	45.0	80.0
3	46.0	109.89

4	95.0	104.9
5	110.0	104.53
6	130.0	104.13
7	150.0	102.52
8	170.0	105.5
9	190.0	105.05
10	210.0	104.67
11	230.0	104.37
12	250.0	103.92

RECEIVED: 15/09/2025

Partial factors for soil geotechnical parameters

Tangent angle of shearing resistance	1.0
Effective cohesion	1.0
Undrained cohesion	1.0
Reduction soil geotechnical parameters	No

Stratigraphy

Layer	Unit weight (kN/m³)	A	B	T	Uniaxial compressive strength (kg/cm²)	Texture	Description
1	1356	0.042	0.534	0	1		Clay with gravel
2	2600	0.061	0.546	0	50		BedRock

G0: Dynamic low strain shear modulus; G: Dynamic shear modulus; Dr: Relative density; OCR: Overconsolidation; IP: Plasticity index

Layer	G0 (KPa)	G (KPa)	Dr (%)	OCR	IP (%)
1	0	0	0	1	0
2					

Distributed loads

N°	xi (m)	yi (m)	xf (m)	yf (m)	External load (kg/cm²)
1	180	102.05	200	101.596	3

Slope analysis results

Minimal Fs found	0.03
Abscissa for surface centre	28.0 m
Ordinate for surface centre	107.5 m
Surface radius	23.02 m

Number of investigated surfaces....(604)

N°	Xo	Yo	Ro	Fs
1	7.0	88.8	9.1	20.00
2	14.0	85.0	5.4	20.00
3	21.0	88.8	9.1	20.00
4	28.0	85.0	5.4	20.00
5	35.0	88.8	9.1	20.00
6	42.0	85.0	5.4	20.00
7	7.0	96.3	16.8	20.00
8	14.0	92.5	12.7	20.00
9	28.0	92.5	12.7	20.00
10	35.0	96.3	16.6	20.00

11	49.0	96.3	14.5	0.39
12	63.0	96.3	13.4	20.00
13	77.0	96.3	12.6	20.00
14	91.0	96.3	11.8	20.00
15	105.0	96.3	11.5	20.00
16	119.0	96.3	11.6	20.00
17	133.0	96.3	11.1	20.00
18	147.0	96.3	10.6	20.00
19	161.0	96.3	10.9	20.00
20	175.0	96.3	10.5	20.00
21	189.0	96.3	10.0	20.00
22	203.0	96.3	9.5	20.00
23	217.0	96.3	9.1	20.00
24	224.0	92.5	12.6	20.00
25	231.0	96.3	9.8	20.00
26	238.0	92.5	12.5	20.00
27	245.0	96.3	8.4	20.00
28	35.0	103.8	16.7	0.03
29	42.0	100.0	19.3	0.04
30	49.0	103.8	22.6	0.06
31	56.0	100.0	19.7	0.18
32	63.0	103.8	22.7	0.53
33	70.0	100.0	9.1	20.00
34	77.0	103.8	6.0	20.00
35	84.0	100.0	8.9	20.00
36	91.0	103.8	5.8	20.00
37	98.0	100.0	8.7	20.00
38	105.0	103.8	5.5	20.00
39	112.0	100.0	8.2	20.00
40	119.0	103.8	5.0	20.00
41	126.0	100.0	7.6	20.00
42	133.0	103.8	4.3	20.00
43	140.0	100.0	7.0	20.00
44	147.0	103.8	3.7	20.00
45	154.0	100.0	8.1	20.00
46	161.0	103.8	17.5	6.20
47	168.0	100.0	7.5	20.00
48	175.0	103.8	5.0	20.00
49	182.0	100.0	7.0	20.00
50	189.0	103.8	3.0	20.00
51	196.0	100.0	6.5	20.00
52	203.0	103.8	3.6	20.00
53	210.0	100.0	5.9	20.00
54	217.0	103.8	3.3	20.00
55	224.0	100.0	5.4	20.00
56	231.0	103.8	2.4	20.00
57	238.0	100.0	5.6	20.00
58	245.0	103.8	2.1	20.00
59	21.0	111.3	29.0	0.03
60	28.0	107.5	23.0	0.03
61	35.0	111.3	25.9	0.04
62	42.0	107.5	25.7	0.04
63	49.0	111.3	29.2	0.06
64	56.0	107.5	22.9	0.13
65	63.0	111.3	29.2	0.23
66	70.0	107.5	3.1	20.00
67	77.0	111.3	5.7	20.00
68	84.0	107.5	2.9	20.00
69	91.0	111.3	6.3	20.00
70	98.0	107.5	2.9	20.00
71	105.0	111.3	6.5	20.00
72	112.0	107.5	2.9	20.00

73	119.0	111.3	6.8	20.00
74	126.0	107.5	3.2	20.00
75	133.0	111.3	7.1	20.00
76	140.0	107.5	3.5	20.00
77	147.0	111.3	7.4	20.00
78	154.0	107.5	9.3	6.79
79	161.0	111.3	13.1	3.26
80	168.0	107.5	6.8	5.13
81	175.0	111.3	21.5	17.36
82	182.0	107.5	4.3	20.00
83	189.0	111.3	8.2	20.00
84	196.0	107.5	4.6	20.00
85	203.0	111.3	8.5	20.00
86	210.0	107.5	4.8	20.00
87	217.0	111.3	8.7	20.00
88	224.0	107.5	4.9	20.00
89	231.0	111.3	7.8	20.00
90	238.0	107.5	3.7	20.00
91	245.0	111.3	7.2	20.00
92	21.0	118.8	33.3	0.04
93	28.0	115.0	29.6	0.03
94	35.0	118.8	36.6	0.04
95	42.0	115.0	32.8	0.05
96	49.0	118.8	32.3	0.07
97	56.0	115.0	29.9	0.11
98	63.0	118.8	36.7	0.17
99	70.0	115.0	9.1	20.00
100	77.0	118.8	13.2	20.00
101	84.0	115.0	9.7	20.00
102	91.0	118.8	13.8	20.00
103	98.0	115.0	10.1	20.00
104	105.0	118.8	14.0	20.00
105	112.0	115.0	10.4	20.00
106	119.0	118.8	14.3	20.00
107	126.0	115.0	10.7	20.00
108	133.0	118.8	14.6	20.00
109	140.0	115.0	11.0	20.00
110	147.0	118.8	14.9	20.00
111	154.0	115.0	19.5	7.91
112	161.0	118.8	20.6	4.00
113	168.0	115.0	19.7	5.26
114	175.0	118.8	15.4	20.00
115	182.0	115.0	11.8	20.00
116	189.0	118.8	15.7	20.00
117	196.0	115.0	12.1	20.00
118	203.0	118.8	16.0	20.00
119	210.0	115.0	12.3	20.00
120	217.0	118.8	15.8	20.00
121	224.0	115.0	11.8	20.00
122	231.0	118.8	14.9	20.00
123	238.0	115.0	10.8	20.00
124	245.0	118.8	14.5	20.00
125	21.0	126.3	40.8	0.04
126	28.0	122.5	40.3	0.04
127	35.0	126.3	40.1	0.05
128	42.0	122.5	39.6	0.05
129	49.0	126.3	42.8	0.07
130	56.0	122.5	40.1	0.10
131	63.0	126.3	41.1	0.19
132	70.0	122.5	40.5	0.39
133	77.0	126.3	20.7	20.00
134	84.0	122.5	17.2	20.00

135	91.0	126.3	21.3	20.00
136	98.0	122.5	17.6	20.00
137	105.0	126.3	21.5	20.00
138	112.0	122.5	17.9	20.00
139	119.0	126.3	21.8	20.00
140	126.0	122.5	18.2	20.00
141	133.0	126.3	22.1	20.00
142	140.0	122.5	18.5	20.00
143	147.0	126.3	22.4	20.00
144	154.0	122.5	27.0	18.83
145	161.0	126.3	28.1	6.59
146	168.0	122.5	27.2	7.26
147	175.0	126.3	22.9	20.00
148	182.0	122.5	19.3	20.00
149	189.0	126.3	23.2	20.00
150	196.0	122.5	19.6	20.00
151	203.0	126.3	23.5	20.00
152	210.0	122.5	19.8	20.00
153	217.0	126.3	22.9	20.00
154	224.0	122.5	18.9	20.00
155	231.0	126.3	22.1	20.00
156	238.0	122.5	18.2	20.00
157	245.0	126.3	22.0	20.00
158	7.0	133.8	51.0	0.04
159	14.0	130.0	44.5	0.04
160	21.0	133.8	48.3	0.04
161	28.0	130.0	47.8	0.04
162	35.0	133.8	50.5	0.05
163	42.0	130.0	41.7	0.06
164	49.0	133.8	49.5	0.08
165	56.0	130.0	46.8	0.10
166	63.0	133.8	50.9	0.15
167	70.0	130.0	45.0	0.42
168	77.0	133.8	48.8	3.03
169	84.0	130.0	24.7	20.00
170	91.0	133.8	28.8	20.00
171	98.0	130.0	25.1	20.00
172	105.0	133.8	29.0	20.00
173	112.0	130.0	25.4	20.00
174	119.0	133.8	29.3	20.00
175	126.0	130.0	25.7	20.00
176	133.0	133.8	29.6	20.00
177	140.0	130.0	26.0	20.00
178	147.0	133.8	29.9	20.00
179	154.0	130.0	26.3	20.00
180	161.0	133.8	32.9	9.33
181	168.0	130.0	32.0	10.98
182	175.0	133.8	30.4	20.00
183	182.0	130.0	26.8	20.00
184	189.0	133.8	30.7	20.00
185	196.0	130.0	27.1	20.00
186	203.0	133.8	31.0	20.00
187	210.0	130.0	27.0	20.00
188	217.0	133.8	30.2	20.00
189	224.0	130.0	26.1	20.00
190	231.0	133.8	29.5	20.00
191	238.0	130.0	25.6	20.00
192	245.0	133.8	29.4	20.00
193	7.0	141.3	55.2	0.05
194	14.0	137.5	55.2	0.04
195	21.0	141.3	55.0	0.05
196	28.0	137.5	54.5	0.04

RECEIVED: 15/09/2025

197	35.0	141.3	57.2	0.05
198	42.0	137.5	53.1	0.06
199	49.0	141.3	50.2	0.10
200	56.0	137.5	53.6	0.11
201	63.0	141.3	53.0	0.21
202	70.0	137.5	55.0	0.25
203	77.0	141.3	59.0	0.53
204	84.0	137.5	32.2	20.00
205	91.0	141.3	36.3	20.00
206	98.0	137.5	32.6	20.00
207	105.0	141.3	36.5	20.00
208	112.0	137.5	32.9	20.00
209	119.0	141.3	36.8	20.00
210	126.0	137.5	33.2	20.00
211	133.0	141.3	37.1	20.00
212	140.0	137.5	33.5	20.00
213	147.0	141.3	37.4	20.00
214	154.0	137.5	33.8	20.00
215	161.0	141.3	43.1	19.12
216	168.0	137.5	34.1	20.00
217	175.0	141.3	37.9	20.00
218	182.0	137.5	34.3	20.00
219	189.0	141.3	38.2	20.00
220	196.0	137.5	34.6	20.00
221	203.0	141.3	38.2	20.00
222	210.0	137.5	34.2	20.00
223	217.0	141.3	37.4	20.00
224	224.0	137.5	33.4	20.00
225	231.0	141.3	36.9	20.00
226	238.0	137.5	33.0	20.00
227	245.0	141.3	36.9	20.00
228	7.0	148.8	62.7	0.05
229	14.0	145.0	59.4	0.05
230	21.0	148.8	65.4	0.05
231	28.0	145.0	56.6	0.05
232	35.0	148.8	64.0	0.06
233	42.0	145.0	59.9	0.07
234	49.0	148.8	62.9	0.09
235	56.0	145.0	54.6	0.14
236	63.0	148.8	64.3	0.16
237	70.0	145.0	57.4	0.39
238	77.0	148.8	65.7	0.46
239	84.0	145.0	63.1	2.70
240	91.0	148.8	43.8	20.00
241	98.0	145.0	40.1	20.00
242	105.0	148.8	44.0	20.00
243	112.0	145.0	40.4	20.00
244	119.0	148.8	44.3	20.00
245	126.0	145.0	40.7	20.00
246	133.0	148.8	44.6	20.00
247	140.0	145.0	41.0	20.00
248	147.0	148.8	44.9	20.00
249	154.0	145.0	41.3	20.00
250	161.0	148.8	45.2	20.00
251	168.0	145.0	41.6	20.00
252	175.0	148.8	45.4	20.00
253	182.0	145.0	41.8	20.00
254	189.0	148.8	45.7	20.00
255	196.0	145.0	42.1	20.00
256	203.0	148.8	45.4	20.00
257	210.0	145.0	41.4	20.00
258	217.0	148.8	44.8	20.00

259	224.0	145.0	40.8	20.00
260	231.0	148.8	44.3	20.00
261	238.0	145.0	40.5	20.00
262	245.0	148.8	44.4	20.00
263	0.0	152.5	69.3	0.05
264	7.0	156.3	73.0	0.05
265	14.0	152.5	69.5	0.05
266	21.0	156.3	67.1	0.06
267	28.0	152.5	68.1	0.05
268	35.0	156.3	64.3	0.08
269	42.0	152.5	59.9	0.09
270	49.0	156.3	69.7	0.09
271	56.0	152.5	67.0	0.12
272	63.0	156.3	71.1	0.16
273	70.0	152.5	63.3	0.42
274	77.0	156.3	67.7	1.13
275	84.0	152.5	47.6	20.00
276	91.0	156.3	50.2	20.00
277	98.0	152.5	47.6	20.00
278	105.0	156.3	51.5	20.00
279	112.0	152.5	47.9	20.00
280	119.0	156.3	51.8	20.00
281	126.0	152.5	48.2	20.00
282	133.0	156.3	52.1	20.00
283	140.0	152.5	48.5	20.00
284	147.0	156.3	52.4	20.00
285	154.0	152.5	48.8	20.00
286	161.0	156.3	52.7	20.00
287	168.0	152.5	49.1	20.00
288	175.0	156.3	52.9	20.00
289	182.0	152.5	49.3	20.00
290	189.0	156.3	53.2	20.00
291	196.0	152.5	49.5	20.00
292	203.0	156.3	52.7	20.00
293	210.0	152.5	48.7	20.00
294	217.0	156.3	52.1	20.00
295	224.0	152.5	48.2	20.00
296	231.0	156.3	51.8	20.00
297	238.0	152.5	48.1	20.00
298	245.0	156.3	51.9	20.00
299	0.0	160.0	76.8	0.05
300	7.0	163.8	79.7	0.05
301	14.0	160.0	76.3	0.05
302	21.0	163.8	79.0	0.05
303	28.0	160.0	74.9	0.06
304	35.0	163.8	77.6	0.07
305	42.0	160.0	73.5	0.08
306	49.0	163.8	76.4	0.10
307	56.0	160.0	73.7	0.13
308	63.0	163.8	77.8	0.17
309	70.0	160.0	75.1	0.24
310	77.0	163.8	79.2	0.41
311	84.0	160.0	54.2	20.00
312	91.0	163.8	59.8	20.00
313	98.0	160.0	53.4	20.00
314	105.0	163.8	59.0	20.00
315	112.0	160.0	55.4	20.00
316	119.0	163.8	59.3	20.00
317	126.0	160.0	55.7	20.00
318	133.0	163.8	59.6	20.00
319	140.0	160.0	56.0	20.00
320	147.0	163.8	59.9	20.00

RECEIVED: 15/09/2025

321	154.0	160.0	56.3	20.00
322	161.0	163.8	60.2	20.00
323	168.0	160.0	56.5	20.00
324	175.0	163.8	60.4	20.00
325	182.0	160.0	56.8	20.00
326	189.0	163.8	60.7	20.00
327	196.0	160.0	56.7	20.00
328	203.0	163.8	60.1	20.00
329	210.0	160.0	56.1	20.00
330	217.0	163.8	59.5	20.00
331	224.0	160.0	55.6	20.00
332	231.0	163.8	59.2	20.00
333	238.0	160.0	55.6	20.00
334	245.0	163.8	59.3	20.00
335	0.0	167.5	83.5	0.05
336	7.0	171.3	81.4	0.06
337	14.0	167.5	83.0	0.05
338	21.0	171.3	79.2	0.07
339	28.0	167.5	81.6	0.06
340	35.0	171.3	76.4	0.10
341	42.0	167.5	80.2	0.08
342	49.0	171.3	74.0	0.18
343	56.0	167.5	80.5	0.13
344	63.0	171.3	76.8	0.34
345	70.0	167.5	75.2	0.53
346	77.0	171.3	85.9	0.40
347	84.0	167.5	62.3	20.00
348	91.0	171.3	67.6	20.00
349	98.0	167.5	61.6	20.00
350	105.0	171.3	64.0	20.00
351	112.0	167.5	62.9	20.00
352	119.0	171.3	66.8	20.00
353	126.0	167.5	63.2	20.00
354	133.0	171.3	67.1	20.00
355	140.0	167.5	63.5	20.00
356	147.0	171.3	67.4	20.00
357	154.0	167.5	63.8	20.00
358	161.0	171.3	67.7	20.00
359	168.0	167.5	64.0	20.00
360	175.0	171.3	67.9	20.00
361	182.0	167.5	64.3	20.00
362	189.0	171.3	68.0	20.00
363	196.0	167.5	64.0	20.00
364	203.0	171.3	67.4	20.00
365	210.0	167.5	63.5	20.00
366	217.0	171.3	66.9	20.00
367	224.0	167.5	63.1	20.00
368	231.0	171.3	66.7	20.00
369	238.0	167.5	63.1	20.00
370	245.0	171.3	66.9	20.00
371	0.0	175.0	90.3	0.05
372	7.0	178.8	87.5	0.07
373	14.0	175.0	83.6	0.07
374	21.0	178.8	92.5	0.06
375	28.0	175.0	88.4	0.07
376	35.0	178.8	82.5	0.11
377	42.0	175.0	87.0	0.09
378	49.0	178.8	79.9	0.21
379	56.0	175.0	87.2	0.14
380	63.0	178.8	82.7	0.41
381	70.0	175.0	88.6	0.26
382	77.0	178.8	85.5	2.32

383	84.0	175.0	90.0	0.85
384	91.0	178.8	94.0	11.79
385	98.0	175.0	68.3	20.00
386	105.0	178.8	73.9	20.00
387	112.0	175.0	70.2	20.00
388	119.0	178.8	73.6	20.00
389	126.0	175.0	70.7	20.00
390	133.0	178.8	74.6	20.00
391	140.0	175.0	71.0	20.00
392	147.0	178.8	74.9	20.00
393	154.0	175.0	71.3	20.00
394	161.0	178.8	75.2	20.00
395	168.0	175.0	71.5	20.00
396	175.0	178.8	75.4	20.00
397	182.0	175.0	71.8	20.00
398	189.0	178.8	75.3	20.00
399	196.0	175.0	71.4	20.00
400	203.0	178.8	74.8	20.00
401	210.0	175.0	70.8	20.00
402	217.0	178.8	74.4	20.00
403	224.0	175.0	70.5	20.00
404	231.0	178.8	74.2	20.00
405	238.0	175.0	70.5	20.00
406	245.0	178.8	74.4	20.00
407	0.0	182.5	91.7	0.08
408	7.0	186.3	100.0	0.06
409	14.0	182.5	96.5	0.06
410	21.0	186.3	99.3	0.07
411	28.0	182.5	95.2	0.07
412	35.0	186.3	97.9	0.08
413	42.0	182.5	93.8	0.10
414	49.0	186.3	85.9	0.26
415	56.0	182.5	93.9	0.15
416	63.0	186.3	88.7	0.50
417	70.0	182.5	95.3	0.27
418	77.0	186.3	91.5	4.61
419	84.0	182.5	96.7	0.81
420	91.0	186.3	81.3	20.00
421	98.0	182.5	76.5	20.00
422	105.0	186.3	81.8	20.00
423	112.0	182.5	75.5	20.00
424	119.0	186.3	81.5	20.00
425	126.0	182.5	78.2	20.00
426	133.0	186.3	82.1	20.00
427	140.0	182.5	78.5	20.00
428	147.0	186.3	82.4	20.00
429	154.0	182.5	78.8	20.00
430	161.0	186.3	82.7	20.00
431	168.0	182.5	79.0	20.00
432	175.0	186.3	82.9	20.00
433	182.0	182.5	79.3	20.00
434	189.0	186.3	82.7	20.00
435	196.0	182.5	78.7	20.00
436	203.0	186.3	82.2	20.00
437	210.0	182.5	78.3	20.00
438	217.0	186.3	81.8	20.00
439	224.0	182.5	78.0	20.00
440	231.0	186.3	81.6	20.00
441	238.0	182.5	78.0	20.00
442	245.0	186.3	81.9	20.00
443	0.0	190.0	97.7	0.09
444	7.0	193.8	99.5	0.09

445	14.0	190.0	103.3	0.06
446	21.0	193.8	106.1	0.07
447	28.0	190.0	92.9	0.11
448	35.0	193.8	104.7	0.09
449	42.0	190.0	90.1	0.19
450	49.0	193.8	103.3	0.13
451	56.0	190.0	100.6	0.16
452	63.0	193.8	104.7	0.20
453	70.0	190.0	102.0	0.28
454	77.0	193.8	88.8	20.00
455	84.0	190.0	103.4	0.81
456	91.0	193.8	93.0	20.00
457	98.0	190.0	86.3	20.00
458	105.0	193.8	91.3	20.00
459	112.0	190.0	87.1	20.00
460	119.0	193.8	88.0	20.00
461	126.0	190.0	84.0	20.00
462	133.0	193.8	87.2	20.00
463	140.0	190.0	86.0	20.00
464	147.0	193.8	89.9	20.00
465	154.0	190.0	86.3	20.00
466	161.0	193.8	90.2	20.00
467	168.0	190.0	86.5	20.00
468	175.0	193.8	90.4	20.00
469	182.0	190.0	86.7	20.00
470	189.0	193.8	90.0	20.00
471	196.0	190.0	86.1	20.00
472	203.0	193.8	89.6	20.00
473	210.0	190.0	85.7	20.00
474	217.0	193.8	89.3	20.00
475	224.0	190.0	85.4	20.00
476	231.0	193.8	89.1	20.00
477	238.0	190.0	85.5	20.00
478	245.0	193.8	89.4	20.00
479	0.0	197.5	103.8	0.10
480	7.0	201.3	105.6	0.10
481	14.0	197.5	110.0	0.07
482	21.0	201.3	112.8	0.08
483	28.0	197.5	99.0	0.13
484	35.0	201.3	111.4	0.10
485	42.0	197.5	96.2	0.23
486	49.0	201.3	110.0	0.14
487	56.0	197.5	96.2	0.50
488	63.0	201.3	111.4	0.22
489	70.0	197.5	108.8	0.30
490	77.0	201.3	112.8	0.46
491	84.0	197.5	110.2	0.83
492	91.0	201.3	114.2	3.33
493	98.0	197.5	90.7	20.00
494	105.0	201.3	95.7	20.00
495	112.0	197.5	90.8	20.00
496	119.0	201.3	96.1	20.00
497	126.0	197.5	93.6	20.00
498	133.0	201.3	95.4	20.00
499	140.0	197.5	93.5	20.00
500	147.0	201.3	97.4	20.00
501	154.0	197.5	93.8	20.00
502	161.0	201.3	97.6	20.00
503	168.0	197.5	94.0	20.00
504	175.0	201.3	97.9	20.00
505	182.0	197.5	94.0	20.00
506	189.0	201.3	97.4	20.00

507	196.0	197.5	93.5	20.00
508	203.0	201.3	97.0	20.00
509	210.0	197.5	93.1	20.00
510	217.0	201.3	96.7	20.00
511	224.0	197.5	92.9	20.00
512	231.0	201.3	96.6	20.00
513	238.0	197.5	93.0	20.00
514	245.0	201.3	96.8	20.00
515	0.0	205.0	117.4	0.07
516	7.0	208.8	120.3	0.07
517	14.0	205.0	107.7	0.11
518	21.0	208.8	109.5	0.14
519	28.0	205.0	115.5	0.09
520	35.0	208.8	118.2	0.10
521	42.0	205.0	102.2	0.28
522	49.0	208.8	116.8	0.15
523	56.0	205.0	102.2	0.71
524	63.0	208.8	118.1	0.23
525	70.0	205.0	105.0	6.07
526	77.0	208.8	119.5	0.46
527	84.0	205.0	98.6	20.00
528	91.0	208.8	120.9	3.11
529	98.0	205.0	102.8	20.00
530	105.0	208.8	107.5	20.00
531	112.0	205.0	100.7	20.00
532	119.0	208.8	105.7	20.00
533	126.0	205.0	101.4	20.00
534	133.0	208.8	102.1	20.00
535	140.0	205.0	101.3	20.00
536	147.0	208.8	104.1	20.00
537	154.0	205.0	101.3	20.00
538	161.0	208.8	105.1	20.00
539	168.0	205.0	101.5	20.00
540	175.0	208.8	105.3	20.00
541	182.0	205.0	101.4	20.00
542	189.0	208.8	104.8	20.00
543	196.0	205.0	100.9	20.00
544	203.0	208.8	104.4	20.00
545	210.0	205.0	100.6	20.00
546	217.0	208.8	104.2	20.00
547	224.0	205.0	100.4	20.00
548	231.0	208.8	104.1	20.00
549	238.0	205.0	100.5	20.00
550	245.0	208.8	104.3	20.00
551	0.0	212.5	124.2	0.07
552	7.0	216.3	127.0	0.08
553	14.0	212.5	123.5	0.08
554	21.0	216.3	115.5	0.16
555	28.0	212.5	122.3	0.09
556	35.0	216.3	112.7	0.26
557	42.0	212.5	120.9	0.13
558	49.0	216.3	109.9	0.91
559	56.0	212.5	108.1	1.09
560	63.0	216.3	124.9	0.25
561	70.0	212.5	110.9	20.00
562	77.0	216.3	126.3	0.49
563	84.0	212.5	113.7	20.00
564	91.0	216.3	127.7	3.16
565	98.0	212.5	108.0	20.00
566	105.0	216.3	112.7	20.00
567	112.0	212.5	112.2	20.00
568	119.0	216.3	110.1	20.00

RECEIVED: 15/09/2025

569	126.0	212.5	110.7	20.00
570	133.0	216.3	110.3	20.00
571	140.0	212.5	107.7	20.00
572	147.0	216.3	113.3	20.00
573	154.0	212.5	107.4	20.00
574	161.0	216.3	112.6	20.00
575	168.0	212.5	109.0	20.00
576	175.0	216.3	112.7	20.00
577	182.0	212.5	108.7	20.00
578	189.0	216.3	112.2	20.00
579	196.0	212.5	108.3	20.00
580	203.0	216.3	111.9	20.00
581	210.0	212.5	108.0	20.00
582	217.0	216.3	111.6	20.00
583	224.0	212.5	107.8	20.00
584	231.0	216.3	111.6	20.00
585	238.0	212.5	108.0	20.00
586	245.0	216.3	111.8	20.00
587	0.0	220.0	131.0	0.08
588	14.0	220.0	130.2	0.08
589	28.0	220.0	129.1	0.10
590	42.0	220.0	127.7	0.14
591	56.0	220.0	127.5	0.21
592	70.0	220.0	128.9	0.35
593	84.0	220.0	119.7	20.00
594	98.0	220.0	113.2	20.00
595	112.0	220.0	117.4	20.00
596	126.0	220.0	115.1	20.00
597	140.0	220.0	115.6	20.00
598	154.0	220.0	115.3	20.00
599	168.0	220.0	116.5	20.00
600	182.0	220.0	116.1	20.00
601	196.0	220.0	115.7	20.00
602	210.0	220.0	115.5	20.00
603	224.0	220.0	115.3	20.00
604	238.0	220.0	115.5	20.00

Index

1.Main parameters	1
2.Profile vertices	1
3.Water table	1
4.Layer vertices.....1	1
5.Partial factors for soil geotechnical parameters	2
6.Stratigraphy	2
7.Slope analysis results	2
Index	13

RECEIVED: 15/09/2025

Analysis of slope stability performed with: BISHOP (1955)

Standard	O.P.C.M.3274
Number of layers	2.6
Number of slices	10.0
Acceptable level of safety	1.1
Partial resistance factor	489981900000000000000000000000.0
Geotechnical parameters to use. Friction angle:	Peak
Analysis	Drained state
Circular form surface	

Centres' grid

Lower left vertex abscissa xi	0.0 m
Lower left vertex ordinate yi	70.0 m
Upper right vertex abscissa xs	280.0 m
Upper right vertex ordinate yz	220.0 m
Search step	10.0
Number of cells along the x axis	20.0
Number of cells along the y axis	20.0

Profile vertices

Nr	X (m)	y (m)
1	0.0	80.0
2	45.0	80.0
3	46.0	109.99
4	95.0	107.65
5	110.0	107.28
6	130.0	106.88
7	150.0	106.37
8	170.0	106.0
9	190.0	105.55
10	210.0	105.17
11	230.0	104.77
12	250.0	104.32

Water table

Nr.	X (m)	y (m)
1	0.0	79.99
2	45.0	79.99
3	46.0	109.98
4	95.0	107.64
5	110.0	107.27
6	130.0	106.87
7	150.0	106.36
8	170.0	105.99
9	190.0	105.54
10	210.0	105.16
11	230.0	104.76
12	250.0	104.31

Layer vertices.....1

N	X (m)	y (m)
1	0.0	80.0
2	45.0	80.0

3	46.0	109.89
4	95.0	104.9
5	110.0	104.53
6	130.0	104.13
7	150.0	102.52
8	170.0	105.5
9	190.0	105.05
10	210.0	104.67
11	230.0	104.37
12	250.0	103.92

RECEIVED: 15/09/2025

Partial factors for soil geotechnical parameters

Tangent angle of shearing resistance	1.0
Effective cohesion	1.0
Undrained cohesion	1.0
Reduction soil geotechnical parameters	No

Stratigraphy

Layer	Cohesion (kg/cm ²)	Undrained cohesion (kg/cm ²)	Angle of shearing resistance (°)	Unit weight (kN/m ³)	Saturated weight (kN/m ³)	Lithology description	
1	0	0	26	1356	1826	Clay with gravel	
2	0	0	45	2600	2600	BedRock	

G0: Dynamic low strain shear modulus; G: Dynamic shear modulus; Dr: Relative density; OCR: Overconsolidation; IP: Plasticity index

Layer	G0 (KPa)	G (KPa)	Dr (%)	OCR	IP (%)
1	0	0	0	1	0
2					

Distributed loads

N°	xi (m)	yi (m)	xf (m)	yf (m)	External load (kg/cm ²)
1	180	102.05	200	101.596	3

Slope analysis results

Minimal Fs found	0.47
Abscissa for surface centre	21.0 m
Ordinate for surface centre	111.25 m
Surface radius	29.03 m

Number of investigated surfaces....(604)

N°	Xo	Yo	Ro	Fs
1	7.0	88.8	9.1	20.00
2	14.0	85.0	5.4	20.00
3	21.0	88.8	9.1	20.00
4	28.0	85.0	5.4	20.00
5	35.0	88.8	9.1	20.00
6	42.0	85.0	5.4	20.00
7	7.0	96.3	16.8	20.00
8	14.0	92.5	12.7	20.00
9	28.0	92.5	12.7	20.00

10	35.0	96.3	16.6	20.00
11	49.0	96.3	14.5	20.00
12	63.0	96.3	13.4	20.00
13	77.0	96.3	12.6	20.00
14	91.0	96.3	11.8	20.00
15	105.0	96.3	11.5	20.00
16	119.0	96.3	11.6	20.00
17	133.0	96.3	11.1	20.00
18	147.0	96.3	10.6	20.00
19	161.0	96.3	10.9	20.00
20	175.0	96.3	10.5	20.00
21	189.0	96.3	10.0	20.00
22	203.0	96.3	9.5	20.00
23	217.0	96.3	9.1	20.00
24	224.0	92.5	12.6	20.00
25	231.0	96.3	9.8	20.00
26	238.0	92.5	12.5	20.00
27	245.0	96.3	8.4	20.00
28	35.0	103.8	16.7	0.85
29	42.0	100.0	17.5	1.84
30	49.0	103.8	22.6	2.97
31	56.0	100.0	19.7	8.07
32	63.0	103.8	6.2	20.00
33	70.0	100.0	9.1	20.00
34	77.0	103.8	6.0	20.00
35	84.0	100.0	8.9	20.00
36	91.0	103.8	5.8	20.00
37	98.0	100.0	8.7	20.00
38	105.0	103.8	5.5	20.00
39	112.0	100.0	8.2	20.00
40	119.0	103.8	5.0	20.00
41	126.0	100.0	7.6	20.00
42	133.0	103.8	4.3	20.00
43	140.0	100.0	7.0	20.00
44	147.0	103.8	3.7	20.00
45	154.0	100.0	8.1	20.00
46	161.0	103.8	3.1	20.00
47	168.0	100.0	7.5	20.00
48	175.0	103.8	5.0	20.00
49	182.0	100.0	7.0	20.00
50	189.0	103.8	3.0	20.00
51	196.0	100.0	6.5	20.00
52	203.0	103.8	3.6	20.00
53	210.0	100.0	5.9	20.00
54	217.0	103.8	3.3	20.00
55	224.0	100.0	5.4	20.00
56	231.0	103.8	2.4	20.00
57	238.0	100.0	5.6	20.00
58	245.0	103.8	2.1	20.00
59	21.0	111.3	29.0	0.47
60	28.0	107.5	23.0	0.60
61	35.0	111.3	16.5	0.80
62	42.0	107.5	9.1	1.20
63	49.0	111.3	29.2	2.91
64	56.0	107.5	22.9	5.88
65	63.0	111.3	29.2	10.77
66	70.0	107.5	3.1	20.00
67	77.0	111.3	5.7	20.00
68	84.0	107.5	2.9	20.00
69	91.0	111.3	6.3	20.00
70	98.0	107.5	2.9	20.00
71	105.0	111.3	6.5	20.00

72	112.0	107.5	2.9	20.00
73	119.0	111.3	6.8	20.00
74	126.0	107.5	3.2	20.00
75	133.0	111.3	7.1	20.00
76	140.0	107.5	3.5	20.00
77	147.0	111.3	7.4	20.00
78	154.0	107.5	3.8	20.00
79	161.0	111.3	7.7	20.00
80	168.0	107.5	4.1	20.00
81	175.0	111.3	8.0	20.00
82	182.0	107.5	4.3	20.00
83	189.0	111.3	8.2	20.00
84	196.0	107.5	4.6	20.00
85	203.0	111.3	8.5	20.00
86	210.0	107.5	4.8	20.00
87	217.0	111.3	8.7	20.00
88	224.0	107.5	4.9	20.00
89	231.0	111.3	7.8	20.00
90	238.0	107.5	3.7	20.00
91	245.0	111.3	7.2	20.00
92	21.0	118.8	30.1	0.56
93	28.0	115.0	23.3	0.65
94	35.0	118.8	17.7	1.01
95	42.0	115.0	10.5	1.54
96	49.0	118.8	32.3	3.15
97	56.0	115.0	29.9	5.14
98	63.0	118.8	36.7	8.29
99	70.0	115.0	9.1	20.00
100	77.0	118.8	13.2	20.00
101	84.0	115.0	9.7	20.00
102	91.0	118.8	13.8	20.00
103	98.0	115.0	10.1	20.00
104	105.0	118.8	14.0	20.00
105	112.0	115.0	10.4	20.00
106	119.0	118.8	14.3	20.00
107	126.0	115.0	10.7	20.00
108	133.0	118.8	14.6	20.00
109	140.0	115.0	11.0	20.00
110	147.0	118.8	14.9	20.00
111	154.0	115.0	11.3	20.00
112	161.0	118.8	15.2	20.00
113	168.0	115.0	11.6	20.00
114	175.0	118.8	15.4	20.00
115	182.0	115.0	11.8	20.00
116	189.0	118.8	15.7	20.00
117	196.0	115.0	12.1	20.00
118	203.0	118.8	16.0	20.00
119	210.0	115.0	12.3	20.00
120	217.0	118.8	15.8	20.00
121	224.0	115.0	11.8	20.00
122	231.0	118.8	14.9	20.00
123	238.0	115.0	10.8	20.00
124	245.0	118.8	14.5	20.00
125	21.0	126.3	34.4	0.81
126	28.0	122.5	27.6	0.93
127	35.0	126.3	22.2	1.49
128	42.0	122.5	31.8	2.24
129	49.0	126.3	42.8	3.22
130	56.0	122.5	40.1	4.61
131	63.0	126.3	41.1	8.70
132	70.0	122.5	40.5	18.45
133	77.0	126.3	20.7	20.00

RECEIVED: 15/09/2025

134	84.0	122.5	17.2	20.00
135	91.0	126.3	21.3	20.00
136	98.0	122.5	17.6	20.00
137	105.0	126.3	21.5	20.00
138	112.0	122.5	17.9	20.00
139	119.0	126.3	21.8	20.00
140	126.0	122.5	18.2	20.00
141	133.0	126.3	22.1	20.00
142	140.0	122.5	18.5	20.00
143	147.0	126.3	22.4	20.00
144	154.0	122.5	18.8	20.00
145	161.0	126.3	22.7	20.00
146	168.0	122.5	19.1	20.00
147	175.0	126.3	22.9	20.00
148	182.0	122.5	19.3	20.00
149	189.0	126.3	23.2	20.00
150	196.0	122.5	19.6	20.00
151	203.0	126.3	23.5	20.00
152	210.0	122.5	19.8	20.00
153	217.0	126.3	22.9	20.00
154	224.0	122.5	18.9	20.00
155	231.0	126.3	22.1	20.00
156	238.0	122.5	18.2	20.00
157	245.0	126.3	22.0	20.00
158	7.0	133.8	51.0	0.74
159	14.0	130.0	41.2	0.73
160	21.0	133.8	38.6	1.03
161	28.0	130.0	31.6	1.21
162	35.0	133.8	37.6	1.97
163	42.0	130.0	41.7	2.50
164	49.0	133.8	49.5	3.43
165	56.0	130.0	46.8	4.71
166	63.0	133.8	50.9	7.20
167	70.0	130.0	45.0	19.01
168	77.0	133.8	28.2	20.00
169	84.0	130.0	24.7	20.00
170	91.0	133.8	28.8	20.00
171	98.0	130.0	25.1	20.00
172	105.0	133.8	29.0	20.00
173	112.0	130.0	25.4	20.00
174	119.0	133.8	29.3	20.00
175	126.0	130.0	25.7	20.00
176	133.0	133.8	29.6	20.00
177	140.0	130.0	26.0	20.00
178	147.0	133.8	29.9	20.00
179	154.0	130.0	26.3	20.00
180	161.0	133.8	30.2	20.00
181	168.0	130.0	26.6	20.00
182	175.0	133.8	30.4	20.00
183	182.0	130.0	26.8	20.00
184	189.0	133.8	30.7	20.00
185	196.0	130.0	27.1	20.00
186	203.0	133.8	31.0	20.00
187	210.0	130.0	27.0	20.00
188	217.0	133.8	30.2	20.00
189	224.0	130.0	26.1	20.00
190	231.0	133.8	29.5	20.00
191	238.0	130.0	25.6	20.00
192	245.0	133.8	29.4	20.00
193	7.0	141.3	55.2	0.89
194	14.0	137.5	45.5	0.92
195	21.0	141.3	44.1	1.29

196	28.0	137.5	38.7	1.54
197	35.0	141.3	57.2	2.20
198	42.0	137.5	53.1	2.68
199	49.0	141.3	50.2	4.05
200	56.0	137.5	53.6	4.86
201	63.0	141.3	53.0	9.00
202	70.0	137.5	55.0	12.12
203	77.0	141.3	33.2	20.00
204	84.0	137.5	32.2	20.00
205	91.0	141.3	36.3	20.00
206	98.0	137.5	32.6	20.00
207	105.0	141.3	36.5	20.00
208	112.0	137.5	32.9	20.00
209	119.0	141.3	36.8	20.00
210	126.0	137.5	33.2	20.00
211	133.0	141.3	37.1	20.00
212	140.0	137.5	33.5	20.00
213	147.0	141.3	37.4	20.00
214	154.0	137.5	33.8	20.00
215	161.0	141.3	37.7	20.00
216	168.0	137.5	34.1	20.00
217	175.0	141.3	37.9	20.00
218	182.0	137.5	34.3	20.00
219	189.0	141.3	38.2	20.00
220	196.0	137.5	34.6	20.00
221	203.0	141.3	38.2	20.00
222	210.0	137.5	34.2	20.00
223	217.0	141.3	37.4	20.00
224	224.0	137.5	33.4	20.00
225	231.0	141.3	36.9	20.00
226	238.0	137.5	33.0	20.00
227	245.0	141.3	36.9	20.00
228	7.0	148.8	59.4	1.04
229	14.0	145.0	52.9	1.16
230	21.0	148.8	52.4	1.55
231	28.0	145.0	51.9	1.84
232	35.0	148.8	64.0	2.40
233	42.0	145.0	59.9	2.89
234	49.0	148.8	62.9	3.88
235	56.0	145.0	54.6	5.97
236	63.0	148.8	64.3	7.26
237	70.0	145.0	57.4	16.85
238	77.0	148.8	41.7	20.00
239	84.0	145.0	39.7	20.00
240	91.0	148.8	43.8	20.00
241	98.0	145.0	40.1	20.00
242	105.0	148.8	44.0	20.00
243	112.0	145.0	40.4	20.00
244	119.0	148.8	44.3	20.00
245	126.0	145.0	40.7	20.00
246	133.0	148.8	44.6	20.00
247	140.0	145.0	41.0	20.00
248	147.0	148.8	44.9	20.00
249	154.0	145.0	41.3	20.00
250	161.0	148.8	45.2	20.00
251	168.0	145.0	41.6	20.00
252	175.0	148.8	45.4	20.00
253	182.0	145.0	41.8	20.00
254	189.0	148.8	45.7	20.00
255	196.0	145.0	42.1	20.00
256	203.0	148.8	45.4	20.00
257	210.0	145.0	41.4	20.00

258	217.0	148.8	44.8	20.00
259	224.0	145.0	40.8	20.00
260	231.0	148.8	44.3	20.00
261	238.0	145.0	40.5	20.00
262	245.0	148.8	44.4	20.00
263	0.0	152.5	66.1	0.96
264	7.0	156.3	65.8	1.22
265	14.0	152.5	57.5	1.35
266	21.0	156.3	62.0	1.78
267	28.0	152.5	68.1	2.05
268	35.0	156.3	64.3	2.70
269	42.0	152.5	59.9	3.35
270	49.0	156.3	69.7	4.10
271	56.0	152.5	67.0	5.28
272	63.0	156.3	71.1	7.44
273	70.0	152.5	63.3	17.63
274	77.0	156.3	48.6	20.00
275	84.0	152.5	47.6	20.00
276	91.0	156.3	50.2	20.00
277	98.0	152.5	47.6	20.00
278	105.0	156.3	51.5	20.00
279	112.0	152.5	47.9	20.00
280	119.0	156.3	51.8	20.00
281	126.0	152.5	48.2	20.00
282	133.0	156.3	52.1	20.00
283	140.0	152.5	48.5	20.00
284	147.0	156.3	52.4	20.00
285	154.0	152.5	48.8	20.00
286	161.0	156.3	52.7	20.00
287	168.0	152.5	49.1	20.00
288	175.0	156.3	52.9	20.00
289	182.0	152.5	49.3	20.00
290	189.0	156.3	53.2	20.00
291	196.0	152.5	49.5	20.00
292	203.0	156.3	52.7	20.00
293	210.0	152.5	48.7	20.00
294	217.0	156.3	52.1	20.00
295	224.0	152.5	48.2	20.00
296	231.0	156.3	51.8	20.00
297	238.0	152.5	48.1	20.00
298	245.0	156.3	51.9	20.00
299	0.0	160.0	73.5	1.13
300	7.0	163.8	71.1	1.39
301	14.0	160.0	62.1	1.55
302	21.0	163.8	79.0	1.95
303	28.0	160.0	74.9	2.22
304	35.0	163.8	77.6	2.77
305	42.0	160.0	73.5	3.30
306	49.0	163.8	76.4	4.34
307	56.0	160.0	73.7	5.52
308	63.0	163.8	77.8	7.66
309	70.0	160.0	75.1	11.14
310	77.0	163.8	79.2	18.68
311	84.0	160.0	54.2	20.00
312	91.0	163.8	59.8	20.00
313	98.0	160.0	53.4	20.00
314	105.0	163.8	59.0	20.00
315	112.0	160.0	55.4	20.00
316	119.0	163.8	59.3	20.00
317	126.0	160.0	55.7	20.00
318	133.0	163.8	59.6	20.00
319	140.0	160.0	56.0	20.00

320	147.0	163.8	59.9	20.00
321	154.0	160.0	56.3	20.00
322	161.0	163.8	60.2	20.00
323	168.0	160.0	56.5	20.00
324	175.0	163.8	60.4	20.00
325	182.0	160.0	56.8	20.00
326	189.0	163.8	60.7	20.00
327	196.0	160.0	56.7	20.00
328	203.0	163.8	60.1	20.00
329	210.0	160.0	56.1	20.00
330	217.0	163.8	59.5	20.00
331	224.0	160.0	55.6	20.00
332	231.0	163.8	59.2	20.00
333	238.0	160.0	55.6	20.00
334	245.0	163.8	59.3	20.00
335	0.0	167.5	79.6	1.28
336	7.0	171.3	76.4	1.56
337	14.0	167.5	77.6	1.74
338	21.0	171.3	79.2	2.16
339	28.0	167.5	81.6	2.40
340	35.0	171.3	76.4	3.25
341	42.0	167.5	80.2	3.52
342	49.0	171.3	74.0	5.99
343	56.0	167.5	80.5	5.78
344	63.0	171.3	76.8	12.67
345	70.0	167.5	61.9	20.00
346	77.0	171.3	85.9	18.28
347	84.0	167.5	62.3	20.00
348	91.0	171.3	67.6	20.00
349	98.0	167.5	61.6	20.00
350	105.0	171.3	64.0	20.00
351	112.0	167.5	62.9	20.00
352	119.0	171.3	66.8	20.00
353	126.0	167.5	63.2	20.00
354	133.0	171.3	67.1	20.00
355	140.0	167.5	63.5	20.00
356	147.0	171.3	67.4	20.00
357	154.0	167.5	63.8	20.00
358	161.0	171.3	67.7	20.00
359	168.0	167.5	64.0	20.00
360	175.0	171.3	67.9	20.00
361	182.0	167.5	64.3	20.00
362	189.0	171.3	68.0	20.00
363	196.0	167.5	64.0	20.00
364	203.0	171.3	67.4	20.00
365	210.0	167.5	63.5	20.00
366	217.0	171.3	66.9	20.00
367	224.0	167.5	63.1	20.00
368	231.0	171.3	66.7	20.00
369	238.0	167.5	63.1	20.00
370	245.0	171.3	66.9	20.00
371	0.0	175.0	85.6	1.42
372	7.0	178.8	87.5	1.72
373	14.0	175.0	83.6	1.91
374	21.0	178.8	92.5	2.27
375	28.0	175.0	88.4	2.57
376	35.0	178.8	82.5	3.55
377	42.0	175.0	87.0	3.75
378	49.0	178.8	79.9	6.74
379	56.0	175.0	87.2	6.01
380	63.0	178.8	82.7	14.54
381	70.0	175.0	88.6	11.47

382	77.0	178.8	71.3	20.00
383	84.0	175.0	71.9	20.00
384	91.0	178.8	71.2	20.00
385	98.0	175.0	68.3	20.00
386	105.0	178.8	73.9	20.00
387	112.0	175.0	70.2	20.00
388	119.0	178.8	73.6	20.00
389	126.0	175.0	70.7	20.00
390	133.0	178.8	74.6	20.00
391	140.0	175.0	71.0	20.00
392	147.0	178.8	74.9	20.00
393	154.0	175.0	71.3	20.00
394	161.0	178.8	75.2	20.00
395	168.0	175.0	71.5	20.00
396	175.0	178.8	75.4	20.00
397	182.0	175.0	71.8	20.00
398	189.0	178.8	75.3	20.00
399	196.0	175.0	71.4	20.00
400	203.0	178.8	74.8	20.00
401	210.0	175.0	70.8	20.00
402	217.0	178.8	74.4	20.00
403	224.0	175.0	70.5	20.00
404	231.0	178.8	74.2	20.00
405	238.0	175.0	70.5	20.00
406	245.0	178.8	74.4	20.00
407	0.0	182.5	91.7	1.56
408	7.0	186.3	100.0	1.86
409	14.0	182.5	96.5	2.04
410	21.0	186.3	99.3	2.43
411	28.0	182.5	95.2	2.75
412	35.0	186.3	97.9	3.36
413	42.0	182.5	93.8	3.97
414	49.0	186.3	85.9	7.69
415	56.0	182.5	93.9	6.31
416	63.0	186.3	88.7	17.23
417	70.0	182.5	95.3	11.75
418	77.0	186.3	83.6	20.00
419	84.0	182.5	76.3	20.00
420	91.0	186.3	81.3	20.00
421	98.0	182.5	76.5	20.00
422	105.0	186.3	81.8	20.00
423	112.0	182.5	75.5	20.00
424	119.0	186.3	81.5	20.00
425	126.0	182.5	78.2	20.00
426	133.0	186.3	82.1	20.00
427	140.0	182.5	78.5	20.00
428	147.0	186.3	82.4	20.00
429	154.0	182.5	78.8	20.00
430	161.0	186.3	82.7	20.00
431	168.0	182.5	79.0	20.00
432	175.0	186.3	82.9	20.00
433	182.0	182.5	79.3	20.00
434	189.0	186.3	82.7	20.00
435	196.0	182.5	78.7	20.00
436	203.0	186.3	82.2	20.00
437	210.0	182.5	78.3	20.00
438	217.0	186.3	81.8	20.00
439	224.0	182.5	78.0	20.00
440	231.0	186.3	81.6	20.00
441	238.0	182.5	78.0	20.00
442	245.0	186.3	81.9	20.00
443	0.0	190.0	97.7	1.71

RECEIVED: 15/09/2025

444	7.0	193.8	99.5	2.04
445	14.0	190.0	103.3	2.19
446	21.0	193.8	106.1	2.59
447	28.0	190.0	92.9	3.24
448	35.0	193.8	104.7	3.56
449	42.0	190.0	90.1	5.48
450	49.0	193.8	103.3	5.41
451	56.0	190.0	100.6	6.62
452	63.0	193.8	104.7	8.78
453	70.0	190.0	102.0	12.10
454	77.0	193.8	88.8	20.00
455	84.0	190.0	88.3	20.00
456	91.0	193.8	93.0	20.00
457	98.0	190.0	86.3	20.00
458	105.0	193.8	91.3	20.00
459	112.0	190.0	87.1	20.00
460	119.0	193.8	88.0	20.00
461	126.0	190.0	84.0	20.00
462	133.0	193.8	87.2	20.00
463	140.0	190.0	86.0	20.00
464	147.0	193.8	89.9	20.00
465	154.0	190.0	86.3	20.00
466	161.0	193.8	90.2	20.00
467	168.0	190.0	86.5	20.00
468	175.0	193.8	90.4	20.00
469	182.0	190.0	86.7	20.00
470	189.0	193.8	90.0	20.00
471	196.0	190.0	86.1	20.00
472	203.0	193.8	89.6	20.00
473	210.0	190.0	85.7	20.00
474	217.0	193.8	89.3	20.00
475	224.0	190.0	85.4	20.00
476	231.0	193.8	89.1	20.00
477	238.0	190.0	85.5	20.00
478	245.0	193.8	89.4	20.00
479	0.0	197.5	103.8	1.85
480	7.0	201.3	105.6	2.21
481	14.0	197.5	110.0	2.33
482	21.0	201.3	112.8	2.75
483	28.0	197.5	99.0	3.53
484	35.0	201.3	111.4	3.77
485	42.0	197.5	96.2	6.14
486	49.0	201.3	110.0	5.71
487	56.0	197.5	96.2	14.34
488	63.0	201.3	111.4	9.23
489	70.0	197.5	108.8	12.53
490	77.0	201.3	112.8	19.41
491	84.0	197.5	93.5	20.00
492	91.0	201.3	98.2	20.00
493	98.0	197.5	90.7	20.00
494	105.0	201.3	95.7	20.00
495	112.0	197.5	90.8	20.00
496	119.0	201.3	96.1	20.00
497	126.0	197.5	93.6	20.00
498	133.0	201.3	95.4	20.00
499	140.0	197.5	93.5	20.00
500	147.0	201.3	97.4	20.00
501	154.0	197.5	93.8	20.00
502	161.0	201.3	97.6	20.00
503	168.0	197.5	94.0	20.00
504	175.0	201.3	97.9	20.00
505	182.0	197.5	94.0	20.00

506	189.0	201.3	97.4	20.00
507	196.0	197.5	93.5	20.00
508	203.0	201.3	97.0	20.00
509	210.0	197.5	93.1	20.00
510	217.0	201.3	96.7	20.00
511	224.0	197.5	92.9	20.00
512	231.0	201.3	96.6	20.00
513	238.0	197.5	93.0	20.00
514	245.0	201.3	96.8	20.00
515	0.0	205.0	117.4	1.95
516	7.0	208.8	120.3	2.26
517	14.0	205.0	107.7	2.66
518	21.0	208.8	109.5	3.27
519	28.0	205.0	115.5	3.28
520	35.0	208.8	118.2	3.98
521	42.0	205.0	102.2	6.96
522	49.0	208.8	116.8	6.02
523	56.0	205.0	102.2	18.42
524	63.0	208.8	118.1	9.68
525	70.0	205.0	105.0	20.00
526	77.0	208.8	119.5	19.91
527	84.0	205.0	98.6	20.00
528	91.0	208.8	103.3	20.00
529	98.0	205.0	102.8	20.00
530	105.0	208.8	107.5	20.00
531	112.0	205.0	100.7	20.00
532	119.0	208.8	105.7	20.00
533	126.0	205.0	101.4	20.00
534	133.0	208.8	102.1	20.00
535	140.0	205.0	101.3	20.00
536	147.0	208.8	104.1	20.00
537	154.0	205.0	101.3	20.00
538	161.0	208.8	105.1	20.00
539	168.0	205.0	101.5	20.00
540	175.0	208.8	105.3	20.00
541	182.0	205.0	101.4	20.00
542	189.0	208.8	104.8	20.00
543	196.0	205.0	100.9	20.00
544	203.0	208.8	104.4	20.00
545	210.0	205.0	100.6	20.00
546	217.0	208.8	104.2	20.00
547	224.0	205.0	100.4	20.00
548	231.0	208.8	104.1	20.00
549	238.0	205.0	100.5	20.00
550	245.0	208.8	104.3	20.00
551	0.0	212.5	124.2	2.08
552	7.0	216.3	127.0	2.40
553	14.0	212.5	123.5	2.63
554	21.0	216.3	115.5	3.55
555	28.0	212.5	122.3	3.46
556	35.0	216.3	112.7	5.84
557	42.0	212.5	120.9	4.92
558	49.0	216.3	109.9	17.55
559	56.0	212.5	108.1	20.00
560	63.0	216.3	124.9	10.18
561	70.0	212.5	110.9	20.00
562	77.0	216.3	115.3	20.00
563	84.0	212.5	113.7	20.00
564	91.0	216.3	108.5	20.00
565	98.0	212.5	108.0	20.00
566	105.0	216.3	112.7	20.00
567	112.0	212.5	112.2	20.00

568	119.0	216.3	110.1	20.00
569	126.0	212.5	110.7	20.00
570	133.0	216.3	110.3	20.00
571	140.0	212.5	107.7	20.00
572	147.0	216.3	113.3	20.00
573	154.0	212.5	107.4	20.00
574	161.0	216.3	112.6	20.00
575	168.0	212.5	109.0	20.00
576	175.0	216.3	112.7	20.00
577	182.0	212.5	108.7	20.00
578	189.0	216.3	112.2	20.00
579	196.0	212.5	108.3	20.00
580	203.0	216.3	111.9	20.00
581	210.0	212.5	108.0	20.00
582	217.0	216.3	111.6	20.00
583	224.0	212.5	107.8	20.00
584	231.0	216.3	111.6	20.00
585	238.0	212.5	108.0	20.00
586	245.0	216.3	111.8	20.00
587	0.0	220.0	131.0	2.20
588	14.0	220.0	130.2	2.77
589	28.0	220.0	129.1	3.65
590	42.0	220.0	127.7	5.18
591	56.0	220.0	127.5	8.12
592	70.0	220.0	128.9	14.14
593	84.0	220.0	119.7	20.00
594	98.0	220.0	113.2	20.00
595	112.0	220.0	117.4	20.00
596	126.0	220.0	115.1	20.00
597	140.0	220.0	115.6	20.00
598	154.0	220.0	115.3	20.00
599	168.0	220.0	116.5	20.00
600	182.0	220.0	116.1	20.00
601	196.0	220.0	115.7	20.00
602	210.0	220.0	115.5	20.00
603	224.0	220.0	115.3	20.00
604	238.0	220.0	115.5	20.00

RECEIVED: 15/09/2025

Index

1.Main parameters	1
2.Profile vertices	1
3.Water table	1
4.Layer vertices.....1	1
5.Partial factors for soil geotechnical parameters	2
6.Stratigraphy	2
7.Slope analysis results	2
Index	13

RECEIVED: 15/09/2025



RECEIVED: 15/09/2025

APPENDIX F

PHOTOGRAPHIC RECORD

Photographic Plates

12 x A4

Site Visit 1 (May 2024)



Plate 1—T01



Plate 2—T01



Plate 3—T01



Plate 4—T01



Plate 5—T02



Plate 6—T02



Plate 7—T02



Plate 8—T02



Plate 9—T03 (225m from turbine - not accessible)



Plate 10—T03 (225m from turbine - not accessible)



Plate 11—T03 (225m from turbine - not accessible)



Plate 12—T03 (225m from turbine - not accessible)



Plate 13—T04 (125m from turbine - not accessible)



Plate 14—T04 (125m from turbine - not accessible)



Plate 15—T04 (125m from turbine - not accessible)



Plate 16—T04 (125m from turbine - not accessible)



Plate 17—T05



Plate 18—T05



Plate 19—T05



Plate 20—T05



Plate 21—T06



Plate 22—T06



Plate 23—T06



Plate 24—T06