TOBIN

Rooaunalaghta Green Energy Project

Appendix 2-5

Site Investigation Reports

ROOAUNALAGHTA
Green Energy

BUILT ON KNOWLEDGE

IRISH DRILLING LIMITED

LOUGHREA, CO. GALWAY, IRELAND

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SITE INVESTIGATION

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ROOAUNALAGHTA WIND FARM

GROUND INVESTIGATION FACTUAL REPORT

FINAL

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	Prepared by	Approved by	Rev. Issue Date:	Revision No.
	Ronan Killeen	Declan Joyce	27th April 2026	25 _MO _103/02a
Signature				

FOREWORD

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

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

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

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1 Introduction.

Irish Drilling Ltd. (IDL) was instructed by Tobin Consulting Engineers, on behalf of Greensource, to carry out a site investigation at the site of the proposed Rooaunalaghta Wind Farm.

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

The fieldwork commenced on May 20th 2025 and was completed on November 25th 2025.

2 Site & Geology

The site is located approximately 2.5km to the south west of Shrule, County Mayo and 3.5km north west of Headford, County Galway..

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

Site Plans, prepared by the client's representatives to show approximate fieldwork locations, are included with this report as Appendix 8.

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

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

Overview of Subsoil Geology

Peat:

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

Glacial Till:

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

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

Solid Geology

The Geological Map of Ireland: (GSI 1:500,000 scale map series) indicate that the site is predominantly underlain by dark cherty limestone and thin shale of the Ardnasillagh Formation.

3 Fieldwork.

3.1 Fieldwork Plant:

The following plant was mobilised to site by IDL to carry out fieldwork operations:
1nr. XCMG XE80E 12T Tracked Excavator.
1nr. Deltabase 520 Rotary Core Drilling Rig.
1nr. Yanmarr All-Terrain Support Vehicle.
1nr. HQ Rotary Core Drill String.
1nr. Honda Water Supply Pump.
1nr. Drilling Water Recirculation Tank Syatem.

Fieldwork carried out to date has included the following:

3.2 Fieldwork Operations:

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

- Completion of 9nr Rotary Core Boreholes.
- Excavation of 15nr Trial Pits.
- Installation of 3nr 50mm diameter standpipes at borehole locations.
- Completion of Geophysical Survey.

3.3 Rotary Core Boreholes:

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

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

The borehole depths ranged from 6.20m to 10.50m below ground level. The boreholes were carried out to target depths as instructed by the client representatives. Target depths were established by the client's representatives based on bedrock quality and bedrock depths encountered.

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

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

A 50mm diameter standpipe was installed in the following rotary core boreholes and as instructed by the Client's Engineer, to allow for monitoring of groundwater levels over a prolonged period of time:
BH-01
BH-05
BH-07

A data logger was subsequently installed at borehole locations BH 01 and BH 07 to allow for continuous monitoring of groundwater levels over a set period of time. Attempts to install a data logger at location BH 05 encountered a blockage in the standpipe at 0.50m below ground level.

Groundwater readings recorded on January 19th 2026 are included with this report as Appendix 2.

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

3.4 Trial Pits:

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

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

The pits were excavated to depths ranging from 0.60m to 2.90m below ground level. Trial pits were terminated in general once target depths were achieved and/or due to pit stability issues encountered and for further details on pit terminations please refer to the trial pit logs included as Appendix 2.

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

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

3.5 Geophysical Survey:

A Geophysical Survey was carried out by Minerex Geophysics Limited at each proposed turbine location.

The geophysical survey consisted of 2D-Resistivity and Seismic Refraction (p-wave) and the main objectives of the survey were to determine ground conditions, estimate the depth to rock, overburden thickness and reduce the risk of encountering unknown subsurface conditions (including soft ground, shallow bedrock or bedrock karstification) during construction.

The geophysical models and interpretations give guidance about the geological ground and in conjunction with the boreholes a detailed picture of the subsurface conditions.

The records of the geophysical survey and interpretations are included as a ‘stand-alone’ report in appendix 3.

3.6 General Summary:

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

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

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

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

Peat was encountered at trial pit locations TP 14 and TP 15 at depths ranging from 0.70m to 0.90m below ground level.

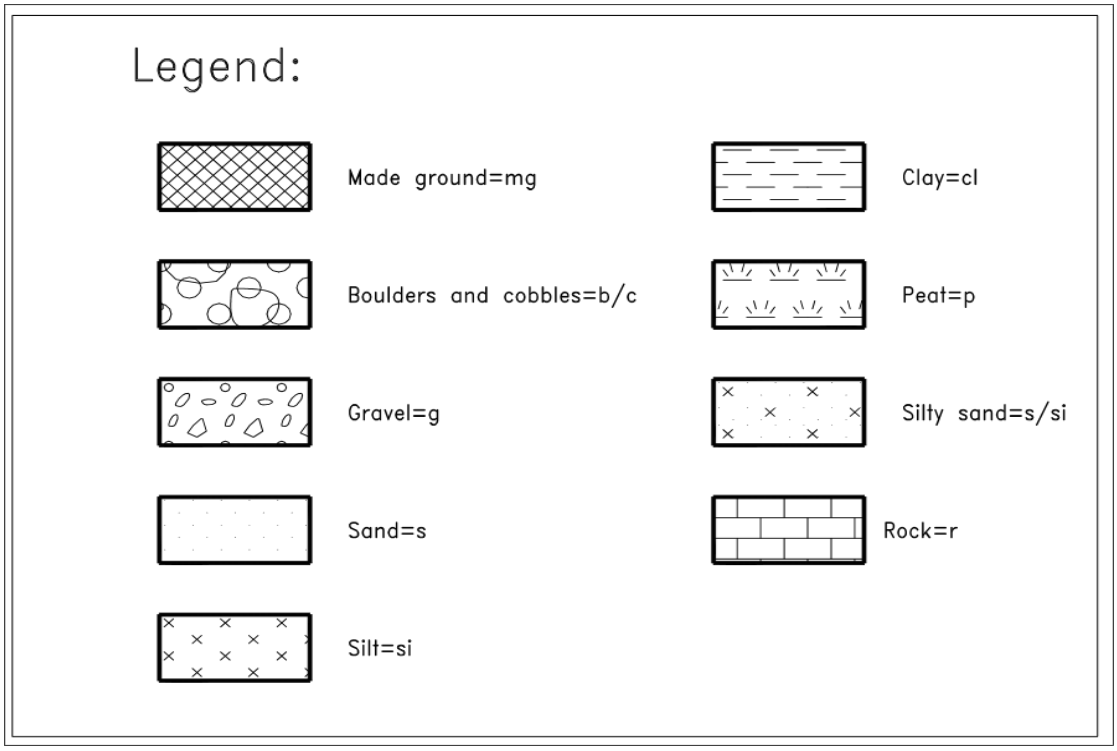
Intact bedrock was encountered in the boreholes at depths ranging from 1.10m to 4.90m below ground level. Weathered bedrock was also encountered in a number of the borehole at shallower depths.

Intact bedrock was not encountered in borehole BH 04 to a depth of 10.50m below ground level before borehole termination.

Bedrock is predominantly described as very strong, locally strong, thinly bedded, fine and coarse grained limestone.

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

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



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

4 Laboratory Testing

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

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

Test Type:	Number
Moisture Content	13
Atterberg Limit	05
Particle Size Distribution	09

The test schedules also included some or all of the following tests on rock core samples:

Test Type:	Number
Point Load	15

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

Soil samples in general were recovered from the excavation of trial pits. Rock core samples were recovered from the completion of rotary core boreholes and the records of all laboratory test results are included with this report as Appendix 4.

The soil and rock descriptions as noted on the borehole and trial pit logs are in general visual descriptions as observed and logged by our Engineers and are described in accordance with IS EN 1997-2 and BS5930:2015+A1:2020 Code of Practice for Site Investigations.
Soils descriptions (cohesive or otherwise) are also initially assessed based on the texture and 'feel' of the soil materials as witnessed by our Geotechnical Engineers and in accordance with IS EN 1997-2 and BS5930:2015+A1:2020.

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

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

Ronan Killeen
Chartered Engineer
Irish Drilling Limited
February 24th 2026

Appendix 1
Borehole Records
(Rotary Core)

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Rooaunalaghta Wind Farm	Co Mayo	**BH-01**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2025MO103	12-11-25 12-11-25	33.89	E 523,641.6 N 750,028.1

Engineer	Sheet	Status
Tobin	1 of 1	FINAL

RUN DETAILS					STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
0.00			33.84		0.05	0.00 - 2.10 : overburden.		TOPSOIL: Grass over firm brown slightly sandy SILT. Sand is fine and medium.	
	35 -							Subangular fine to coarse grey limestone GRAVEL with cobbles and a little brown silt and surficial orangish brown iron stain. Cobbles are of grey limestone.	
1.40					(2.05)				
	42 -								
2.10			31.79		2.10				
	100 (95) 90	5				2.10 - 6.30 DISC, medium spaced, locally closely spaced, dipping 8 to 10°, stepped, rough, with 0.5 to 3mm thick orangish brown clay smear.		Very strong locally strong thinly bedded grey slightly bioclastic fine and coarse grained LIMESTONE with vertical and subvertical white calcitic veinlets.	
3.30						2.60 - 2.60 vertical 10mm wide white calcitic vein. 2.45 - 2.60 Joint, subvertical dip, stepped, rough, clean, open as drilling induced over 1mm thick white calcitic veinlet.			
		4							
	100 (96) 93				(4.20)	3.24 - 3.24 horizontal white calcitic vein.			
4.80		3							
	100 (92) 85					5.20 - 5.25 Joint, dipping 45°, stepped, rough, with 0.5 to 2mm thick brown clay smear and minor surficial orangish brown iron stain, open.			
		6				5.90 - 5.95 Joint, dipping 45°, stepped, rough, with 0.5 to 1mm thick grey silt smear, open.			
12.11 6.30			27.59		6.30				

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
12/11/25	17.00	6.30	1.00	96			

Rotary Flush

From (m)	To (m)	Type	Return (%)
0	2	Water	100
2	6.3	Water	0

GENERAL REMARKS

BH terminated at 6.30m bgl on REs instruction. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Greensource	Method/ Plant Used: CS-14		Driller: DK	Logged By: EAT

IDL AGS4 UK DH (SPTS) ROOAUNALAGHTA WF RC FILE 1 DEC 4 2025.GPJ ID GINT AGS 4_0_4.GDT 13/1/26

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Rooaunalaghta Wind Farm	Co Mayo	**BH-02**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2025MO103	11-11-25 11-11-25	56.90	E 522,846.5 N 750,234.4

Engineer	Sheet	Status
Tobin	1 of 1	FINAL

RUN DETAILS

Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick- ness)
0.00			56.70		0.20
	90 (36) -	NI			(0.90)
1.10			55.80		1.10
	100 (85) 80	4			
2.00					
	100 (95) 93	4			
3.50					
		5			(5.10)
	100 (94) 90				
		3			
5.00					
	100 (93) 82	5			
6.20			50.70		6.20

STRATA DESCRIPTION

Discontinuities / Detail	Main
0.00 - 0.20 : overburden.	TOPSOIL: Grass over firm brown slightly sandy SILT. Sand is fine and medium.
0.20 - 1.10 Non-intact as weathered rock.	Weathered rock. Very strong locally strong thinly bedded grey fine and coarse grained limestone recovered as angular fine to coarse gravel and cobble sized clasts with some orangish brown clay smear and minor surficial orangish brown iron stain.
1.00 - 6.20 DISC, medium spaced, locally closely spaced, dipping 8 to 10°, stepped, rough, with 0.5 to 4mm thick orangish brown clay smear. 1.10 - 2.00 Joint, vertical dip, planar, rough, clean, 0.5 to 1mm thick white calcitic veneer, open as drilling induced? 2.20 - 2.25 Joint, dipping 45°, stepped, rough, with 0.5 to 2mm thick grey silt smear, open. 4.85 - 4.95 Joint, dipping 60°, stepped, rough, with 0.5 to 1mm thick orangish brown clay smear and minor surficial orangish brown iron stain, open. 5.90 - 6.20 Joint, subvertical dip, stepped, rough, with 0.5 to 2mm thick grey silt smear and minor surficial orangish brown iron stain, open.	Very strong locally strong thinly bedded grey slightly bioclastic fine and coarse grained LIMESTONE.

Instrument / Backfill

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
11/11/25	17.00	6.20	1.00	96			

Rotary Flush

From (m)	To (m)	Type	Return (%)
0	6.2	Water	100

GENERAL REMARKS

BH terminated at 6.20m bgl on REs instruction. BH backfilled.

All dimensions in metres Scale 1:50	Client: Greensource	Method/ Plant Used CS-14		Driller DK	Logged By EAT

IDL AGS4 UK DH (SPTS) ROOAUNALAGHTA WF RC FILE 1 DEC 4 2025.GPJ ID GINT AGS 4_0_4.GDT 13/1/26

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Rooaunalaghta Wind Farm	Co Mayo	**BH-03**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2025MO103	24-11-25 24-11-25	29.04	E 524,687.0 N 751,184.4

Engineer	Sheet	Status
Tobin	1 of 1	FINAL

RUN DETAILS					STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION Discontinuities / Detail	Main	Instrument/ Backfill
0.00			28.84		0.20	0.00 - 2.90 : overburden.	TOPSOIL: Grass over firm brown slightly sandy SILT. Sand is fine and medium.	
	58 -						Subangular fine to coarse assorted grey limestone GRAVEL with cobbles. Cobbles are of grey limestone.	
1.20					(2.70)			
	23 -							
2.50			26.14		2.90	3.20 - 3.20 Core Run: 1 No grey limestone boulder 350mm in length.		
	71 (42) -					2.90 - 4.90 Non-intact as weathered rock. No recovery as washout of fines during drilling. No record of cavity.	Weathered rock. Very strong locally strong thinly bedded grey bioclastic fine and coarse grained limestone recovered as angular fine to coarse gravel cobble and boulder sized clasts.	
3.20								
	70 (55) 20				(2.00)	4.20 - 4.20 Core Run: 1 No grey limestone boulder 500mm in length.		
4.20		NR						
	83 (17) -							
4.80			24.14		4.90			
	100 (95) 91	4				4.90 - 7.80 DISC, medium spaced, locally closely spaced, dipping 8 to 10°, stepped, rough, with 0.5 to 2mm thick light brown clay smear.	Very strong locally strong thinly bedded grey bioclastic fine and coarse grained LIMESTONE.	
6.30					(2.90)			
		4						
	100 (97) 96							
		2						
24.11 7.80			21.24		7.80			

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
24/11/25	17.00	7.80	1.00	96			

Rotary Flush

From (m)	To (m)	Type	Return (%)
0	7.8	Water	0

GENERAL REMARKS

BH terminated at 7.80m bgl on REs instruction. BH backfilled.

All dimensions in metres Scale 1:50	Client: Greensource	Method/ Plant Used CS-14		Driller DK	Logged By EAT

IDL AGS4 UK DH (SPTS) ROOAUNALAGHTA WF RC FILE 1 DEC 4 2025.GPJ ID GINT AGS 4_0_4.GDT 13/1/26

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Rooaunalaghta Wind Farm	Co Mayo	**BH-04**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2025MO103	25-11-25 25-11-25	26.60	E 525,022.1 N 751,075.2

Engineer	Sheet	Status
Tobin	1 of 2	FINAL

RUN DETAILS					STRATA			
Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 4.10 : overburden.		Subangular fine to coarse assorted dark grey and grey limestone GRAVEL with cobbles and a little orangish brown slightly sandy clay. Sand is fine. Cobbles are of assorted grey limestone.	
	36 -								
1.90					(4.10)				
	36 -								
3.00									
	83 -								
3.60									
			22.50		4.10				
	100 (40) 38					4.10 - 5.00 Non-intact as weathered rock.		Weathered rock. Very strong locally strong thinly bedded light grey coarse grained limestone recovered as boulder sized clasts with minor surficial orangish brown iron stain.	
		NI			(0.90)				
5.00			21.60		5.00				
						5.00 - 6.30 Non-intact as weathered rock. No recovery as washout of fines during drilling. No record of cavity.		Weathered rock. Very strong grey coarse grained limestone recovered as angular fine to coarse gravel and cobble sized clasts with some greenish orangish brown speckled white silty fine and medium sand. Driller Comment: possible clay band.	
	30 (21) -	NR			(1.30)				
6.30			20.30		6.30				
						6.30 - 10.50 Non-intact as weathered rock.		Weathered rock. Very strong locally strong thinly bedded light grey coarse grained limestone recovered as boulder sized clasts with minor surficial orangish brown iron stain.	
		1			(1.00)				
	100 (63) 60	3	19.30		7.30				
7.90									

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
			1.00	96			

Rotary Flush

From (m)	To (m)	Type	Return (%)
0	10.5	Water	0

GENERAL REMARKS

BH terminated at 10.50m bgl on REs instruction. BH backfilled.

All dimensions in metres Scale 1:50	Client: Greensource	Method/ Plant Used CS-14		Driller DK	Logged By EAT

IDL AGS4 UK DH (SPTS) ROOAUNALAGHTA WF RC FILE 1 DEC 4 2025.GPJ ID GINT AGS 4_0_4.GDT 13/1/26

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Rooaunalaghta Wind Farm	Co Mayo	**BH-04**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2025MO103	25-11-25 25-11-25	26.60	E 525,022.1 N 751,075.2

Engineer	Sheet	Status
Tobin	2 of 2	FINAL

RUN DETAILS					STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
	100 (64) 38	NI			(3.20)			Weathered rock. Very strong and strong thinly bedded grey slightly bioclastic fine and medium grained limestone recovered as angular fine to coarse gravel and cobble sized clasts with some orange and orangish brown clay and minor surficial orangish brown iron stain and powder. *(continued)*	
9.50						10.20 - 10.20 angular fine and medium gravel sized clasts with some orange and orangish brown clay and surficial orangish brown iron stain.			
	100 (30) 25								
25.11 10.50			16.10		10.50				

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
25/11/25	17.00	10.50										BH terminated at 10.50m bgl on REs instruction. BH backfilled.

All dimensions in metres Scale 1:50	Client: Greensource	Method/ Plant Used CS-14		Driller DK	Logged By EAT

IDL AGS4 UK DH (SPTS) ROOAUNALAGHTA WF RC FILE 1 DEC 4 2025.GPJ ID GINT AGS 4_0_4.GDT 13/1/26

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Rooaunalaghta Wind Farm	Co Mayo	**BH-05**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2025MO103	19-11-25 19-11-25	48.31	E 525,532.6 N 751,392.5

Engineer	Sheet	Status
Tobin	1 of 1	FINAL

RUN DETAILS / STRATA

Depth / Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION: Discontinuities / Detail	DESCRIPTION: Main	Instrument/ Backfill
0.00			48.26		0.05	0.00 - 2.70 : overburden.	TOPSOIL: Grass over firm brown slightly sandy SILT. Sand is fine.	
	35 - -				(2.65)		Subangular and angular fine to coarse assorted grey limestone GRAVEL with cobbles and a little greyish brown silt. Cobbles are of assorted grey limestone.	
2.00								
	100 (57) 43	2	45.61		2.70	2.70 - 6.40 DISC, medium spaced, locally closely spaced, dipping 8 to 10°, stepped, rough, with 0.5 to 5mm thick grey silt smear.	Very strong locally strong thinly bedded grey bioclastic fine and coarse grained LIMESTONE.	
3.50		8				3.05 - 3.15 Joint, vertical dip, stepped, rough, with 0.5 to 1mm thick greyish brown silt smear, open.		
	100 (93) 90	3			(3.70)			
5.00						5.00 - 5.20 Joint, subvertical dip, planar, rough, clean, open as drilling induced?		
	100 (92) 90	4				5.50 - 5.55 Joint, dipping 45°, stepped, rough, with 0.5 to 2mm thick dark grey silt smear, open.		
19.11 6.40			41.91		6.40	6.30 - 6.35 Joint, dipping 45°, stepped, rough, with 0.5 to 2mm thick dark grey silt smear, open.		

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
19/11/25	17.00	6.40	1.00	96			

Rotary Flush

From (m)	To (m)	Type	Return (%)
0	6.4	Water	100

GENERAL REMARKS

BH terminated at 6.40m bgl on REs instruction. 50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Greensource	Method/ Plant Used: CS-14		Driller: DK	Logged By: EAT

IDL AGS4 UK DH (SPTS) ROOAUNALAGHTA WF RC FILE 1 DEC 4 2025.GPJ ID GINT AGS 4_0_4.GDT 13/1/26

Irish drilling LTD

DRILLHOLE LOG

Project	Location	DRILLHOLE No
Rooaunalaghta Wind Farm	Co Mayo	**BH-06**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2025MO103	20-11-25 20-11-25	37.51	E 524,513.0 N 751,669.1

Engineer	Sheet	Status
Tobin	1 of 1	FINAL

RUN DETAILS					STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
0.00	44 -		35.91		(1.60) 1.60	0.00 - 1.60 : overburden.		Subangular fine to coarse assorted grey limestone GRAVEL with cobbles and some greyish orangish brown clay. Cobbles are of assorted grey limestone.	
1.80	92 (30) -	NI	34.41		(1.50) 3.10	1.60 - 3.10 Non-intact as weathered rock.		Weathered rock. Very strong and strong thinly bedded grey slightly bioclastic fine and medium grained limestone recovered as angular fine to coarse gravel and cobble sized clasts with a little brown silt.	
3.10 3.70	100 (90) 38	NI	31.11		(3.30) 6.40	3.10 - 6.40 DISC, medium spaced, locally closely spaced, dipping 8 to 10°, stepped, rough, with 0.5 to 3mm thick orangish brown clay smear. 3.60 - 3.80 Joint, subvertical dip, stepped, rough, with 0.5 to 2mm thick grey silt smear, open. 4.15 - 5.35 Joint, subvertical dip, stepped, rough, clean, open as drilling induced to 4.35m bgl, then with 0.5 to 3mm thick orangish brown clay smear and surficial orangish brown iron stain with much surficial orangish brown iron stain from 5.10m bgl. 6.40 - 6.40 becoming slightly bioclastic.		Very strong locally strong thinly bedded grey bioclastic fine and medium grained LIMESTONE.	
5.00	100 (96) 34	4 6							
20.11 6.40	100 (92) 81	5 0				6.40 - 6.40 2 No subvertical white calcitic veinlets.			

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
20/11/25	17.00	6.40	1.00	96			

Rotary Flush

From (m)	To (m)	Type	Return (%)
0	2	Water	100
2	6.4	Water	0

GENERAL REMARKS

BH terminated at 6.40m bgl on REs instruction. BH backfilled.

All dimensions in metres Scale 1:50	Client: Greensource	Method/ Plant Used CS-14		Driller DK	Logged By EAT

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Rooaunalaghta Wind Farm	Co Mayo	**BH-07**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2025MO103	13-11-25 13-11-25	43.91	E 524,036.9 N 751,036.6

Engineer	Sheet	Status
Tobin	1 of 2	FINAL

RUN DETAILS					STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 1.75 : overburden.		TOPSOIL: Grass over soft greyish brown slightly sandy SILT. Sand is fine and medium.	
	38 - -				(1.75)				
1.30									
	100 (38) 36		42.16		1.75				
2.10						1.75 - 3.10 Non-intact as weathered rock.		Weathered rock. Very strong and strong thinly bedded grey slightly bioclastic fine and medium grained limestone recovered as angular fine to coarse gravel and cobble sized clasts with a little greyish brown silt.	
	100 (54) 36	NI			(1.35)				
			40.81		3.10				
3.20						3.10 - 10.20 DISC, medium spaced, locally closely spaced, dipping 8 to 10°, stepped, rough, with 0.5 to 2mm thick grey silt smear.		Very strong locally strong thinly bedded grey slightly bioclastic fine and coarse grained LIMESTONE with subvertical and horizontal white calcitic veinlets.	
	100 (93) 90	8							
4.70		2							
	100 (96) 94	1							
6.30		5			(7.10)	6.20 - 6.55 Joint, vertical dip, stepped, rough, with 0.5 to 6mm thick greenish brown silt smear, open to moderately wide. 6.55 - 6.90 Joint, vertical dip, stepped, rough, with 0.5mm thick white calcitic veneer, 0 to 10mm wide.			
	100 (96) 85								
7.70		2							

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
			1.00	96			

Rotary Flush

From (m)	To (m)	Type	Return (%)
0	2	Water	100
2	10.2	Water	0

GENERAL REMARKS

BH terminated at 10.20m bgl on REs instruction.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Greensource	Method/ Plant Used: CS-14		Driller: DK	Logged By: EAT

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Rooaunalaghta Wind Farm	Co Mayo	**BH-07**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2025MO103	13-11-25 13-11-25	43.91	E 524,036.9 N 751,036.6

Engineer	Sheet	Status
Tobin	2 of 2	FINAL

RUN DETAILS				STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION Discontinuities / Detail / Main	Instrument/ Backfill
	100 (97) 95	2				Very strong locally strong thinly bedded grey slightly bioclastic fine and coarse grained LIMESTONE with subvertical and horizontal white calcitic veinlets. *(continued)*	
9.30							
	100 (97) 96	2					
13.11 10.20		0	33.71		10.20		

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
13/11/25	17.00	10.20					

Rotary Flush

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

GENERAL REMARKS

BH terminated at 10.20m bgl on REs instruction.
50mm standpipe installed.

All dimensions in metres Scale 1:50	Client: Greensource	Method/ Plant Used CS-14		Driller DK	Logged By EAT

IDL AGS4 UK DH (SPTS) ROOAUNALAGHTA WF RC FILE 1 DEC 4 2025.GPJ ID GINT AGS 4_0_4.GDT 13/1/26

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Rooaunalaghta Wind Farm	Co Mayo	**BH-08**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2025MO103	17-11-25 17-11-25	35.16	E 524,408.9 N 751,555.2

Engineer	Sheet	Status
Tobin	1 of 1	FINAL

RUN DETAILS					STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
0.00						0.00 - 1.80 : overburden.		TOPSOIL: Grass over firm brown slightly sandy SILT. Sand is fine and medium.	
	35 (7) -				(1.50)				
			33.66		1.50				
			33.36		1.80			Subangular fine to coarse assorted grey limestone GRAVEL with cobbles and a little brown silt. Cobbles are of assorted grey limestone.	
2.00						1.80 - 3.00 Non-intact as weathered rock. No recovery as washout of fines during drilling. No record of cavity.		Weathered rock. Very strong locally strong thinly bedded grey slightly bioclastic fine and coarse grained limestone recovered as angular fine to coarse gravel cobble and boulder sized clasts with a little orangish brown clay.	
	50 (20) -	NR							
3.00					(2.20)	3.00 - 4.00 Non-intact as weathered rock.			
						4.60 - 4.60 Core Run: 1 No grey limestone boulder 230mm in length. 1 No grey limestone boulder 240mm in length.			
	100 (65) 56	20							
			31.16		4.00				
						4.00 - 6.50 DISC, medium spaced, locally closely spaced, dipping 8 to 10°, stepped, rough, with 0.5 to 1mm thick dark grey silt smear.		Very strong locally strong thinly bedded grey slightly bioclastic fine and coarse grained LIMESTONE.	
4.60		3							
	100 (87) 67				(2.50)	5.15 - 5.35 Joint, subvertical dip, stepped, rough, with 0.5 to 10mm thick orangish brown clay smear, open to wide.			
		6				5.55 - 5.60 Joint, dipping 45°, stepped, rough, with 0.5 to 4mm thick orangish brown clay smear, open to moderately wide.			
6.10									
	100 (98) 97								
17.11 6.50		1	28.66		6.50				

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
17/11/25	17.00	6.50	1.00	96			

Rotary Flush

From (m)	To (m)	Type	Return (%)
0	2	Water	100
2	6.5	Water	0

GENERAL REMARKS

BH terminated at 6.50m bgl on REs instruction. BH backfilled.

All dimensions in metres Scale 1:50	Client: Greensource	Method/ Plant Used CS-14		Driller DK	Logged By EAT

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DRILLHOLE LOG

Project	Location	DRILLHOLE No
Rooaunalaghta Wind Farm	Co Mayo	**BH-09**

Job No	Date	Ground Level (m OD)	Co-Ordinates ()
2025MO103	14-11-25 14-11-25	45.84	E 523,977.5 N 750,999.5

Engineer	Sheet	Status
Tobin	1 of 1	FINAL

RUN DETAILS					STRATA			
Depth Date	TCR (SCR) RQD	(SPT) Fracture Index	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION Discontinuities	Detail	Main	Instrument/ Backfill
0.00			45.79		0.05	0.00 - 1.20 : overburden.		TOPSOIL: Grass over firm brown slightly sandy SILT. Sand is fine.	
	29 (11) -				(1.15)			Subangular fine to coarse assorted grey limestone GRAVEL with cobbles and a little brown silt and minor surficial orangish brown iron stain. Cobbles are of assorted grey limestone.	
			44.64		1.20	1.20 - 3.00 Non-intact as weathered rock.		Weathered rock. Very strong locally strong thinly bedded grey bioclastic fine and medium grained limestone recovered as angular fine to coarse gravel and cobble sized clasts with a little brown silt.	
1.70									
	100 (33) -	NI			(1.80)				
2.60									
	100 (77) 33		42.84		3.00	3.00 - 6.50 DISC, medium spaced, locally closely spaced, dipping 8 to 10°, stepped, rough, with 0.5 to 2mm thick dark grey silt smear. 3.01 - 3.35 Joint, subvertical dip, stepped, rough, with 0.5 to 1mm thick greyish brown silt smear, open. 3.45 - 3.65 Joint, subvertical dip, stepped, rough, with 0.5 to 1mm thick greyish brown silt smear, open.		Very strong locally strong thinly bedded grey bioclastic fine and coarse grained LIMESTONE with subvertical white calcitic veinlets	
3.50		6							
	100 (97) 94								
		3			(3.50)				
5.00									
	100 (97) 96	3							
14.11 6.50		2	39.34		6.50	6.00 - 6.15 Joint, subvertical dip, stepped, rough, clean, open as drilling induced?			

Drilling Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia	Core Dia mm	Water Strike	Water Standing
14/11/25	17.00	6.50	1.00	96			

Rotary Flush

From (m)	To (m)	Type	Return (%)
0	2	Water	100
2	6.5	Water	0

GENERAL REMARKS

BH terminated at 6.50m bgl on REs instruction. BH backfilled.

All dimensions in metres Scale 1:50	Client: Greensource	Method/ Plant Used CS-14		Driller DK	Logged By EAT

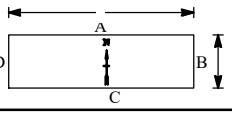
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Appendix 2
Trial Pit Records

PROJECT: Rooaunalaghta Wind Farm	**TRIALPIT:** TP-01
LOCATION: Co Mayo	**Sheet** 1 of 1
CLIENT: Greensource	**Co-ordinates:** E 523,635.4 N 750,020.2
ENGINEER: Tobin	**Rig:** XCMG XE80E
	Rev:
Ground level: 33.85m O.D.	**DATE:** 13.11.25

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

PIT DIRECTION: 90°
PIT DIMENSION: 4.00m * 1.20
LOGGED BY: DF



Shoring/Support: N/A
Stability: Pit unstable. Occasional collapse during dig.

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0										
									TOPSOIL: Grass over firm brown gravelly SILT. Gravel is subrounded to rounded fine to coarse.	
							33.45	0.40		
			B 1	0.40-0.60					Grey brown silty SAND and angular to subrounded fine to coarse GRAVEL with frequent cobbles and occasional boulders. Boulders are angular of limestone. Increase in boulder size and content with depth. 0.60-1.00: becoming slightly silty.	
1										
			B 2	1.30-1.50						
2							31.75	2.10		
						END				
3										
4										
5										

Remarks: TP dry on excavation. TP terminated at 2.10m bgl. Obstruction as rock. TP backfilled with arisings.

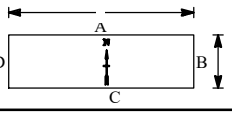
Scale: 1:25

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PROJECT: Rooaunalaghta Wind Farm	**TRIALPIT:** TP-02
LOCATION: Co Mayo	**Sheet** 1 of 1
CLIENT: Greensource	**Co-ordinates:** E 523,179.1 N 750,157.6
ENGINEER: Tobin	**Rig:** XCMG XE80E
Ground level: 47.19m O.D.	**Rev:**
GROUNDWATER Water strikes: 1st: dry Rose to after: 2nd: 3rd:	**DATE:** 11.11.25
PIT DIRECTION: 90° **PIT DIMENSION:** 3.50m * 1.10 **LOGGED BY:** DF	Shoring/Support: N/A Stability: Pit stable.



Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0										
							46.79	0.40	TOPSOIL: Grass over firm brown SILT.	
			B 1 D 2	0.40-0.60 0.40-0.60					Soft grey brown slightly sandy gravelly SILT with occasional cobbles. Gravel is angular to subangular fine to coarse. Cobbles are angular to subangular.	
1							46.09	1.10		
									Soft grey gravelly SILT with occasional cobbles and occasional large boulders. Gravel is angular to subangular fine to coarse. Cobbles are angular to subangular. Boulders are angular of limestone. Boulders are up to 650mm in length.	
							45.69	1.50		
									END	
2										
3										
4										
5										

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

Scale: 1:25

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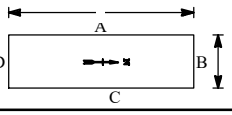
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PROJECT: Rooaunalaghta Wind Farm		**TRIALPIT:** TP-03
LOCATION: Co Mayo		**Sheet** 1 of 1
CLIENT: Greensource	**Co-ordinates:** E 522,986.5 N 749,916.9	**Rig:** XCMG XE80E
ENGINEER: Tobin		**Rev:**
Ground level: 39.59m O.D.		**DATE:** 11.11.25

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

PIT DIRECTION: 0°
PIT DIMENSION: 3.90m * 1.50
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							39.39	0.20	TOPSOIL: Grass over firm brown SILT.	
			B 1	0.40-0.60					Greish brown silty very sandy subrounded to subangular fine to coarse GRAVEL with occasional cobbles and occasional boulders. Cobbles are subangular to rounded. Boulders are subangular to rounded of limestone. Boulders are up to 600mm in length.	
1			B 2	1.30-1.50					1.60: with large angular boulders.	
							37.69	1.90		
2									Grey silty subrounded to subangular fine to coarse GRAVEL with occasional cobbles and occasional boulders. Cobbles are subangular to rounded. Boulders are subangular to rounded of limestone. Boulders are up to 600mm in length.	
							37.29	2.30		
						END				
3										
4										
5										

Remarks: TP dry on excavation. TP terminated at 2.30m bgl. Obstruction as rock. TP backfilled with arisings.

Scale: 1:25

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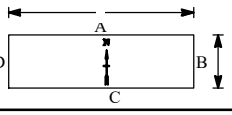
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PROJECT: Rooaunalaghta Wind Farm	**TRIALPIT: TP-04**
LOCATION: Co Mayo	**Sheet 1 of 1**
CLIENT: Greensource	**Co-ordinates: E 522,872.1 N 750,238.9** / **Rig: XCMG XE80E**
ENGINEER: Tobin	**Rev:**
Ground level: 56.52m O.D.	**DATE: 11.11.25**

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

PIT DIRECTION: 90°
PIT DIMENSION: 3.00m * 1.10
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0										
							56.22	0.30	TOPSOIL: Grass over firm brown slightly gravelly SILT with frequent cobbles. Gravel is subangular fine to coarse. Cobbles are subangular.	
			B 1	0.30-0.50						
							55.87	0.65	Firm brown slightly sandy very gravelly SILT with frequent cobbles and occasional boulders. Cobbles are angular to subangular. Boulders are subangular to subrounded. Gravel is angular to subangular, fine to coarse.	
									END	
1										
2										
3										
4										
5										

Remarks: TP dry on excavation. TP terminated at 0.65m bgl. Obstruction as rock. TP backfilled with arisings.

Scale: 1:25

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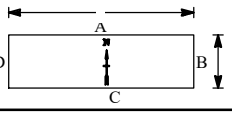
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PROJECT: Rooaunalaghta Wind Farm		**TRIALPIT:** TP-05
LOCATION: Co Mayo		**Sheet** 1 of 1
CLIENT: Greensource	**Co-ordinates:** E 524,252.0 N 750,988.1	**Rig:** XCMG XE80E
ENGINEER: Tobin		**Rev:**
Ground level: 37.17m O.D.		**DATE:** 14.11.25

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

PIT DIRECTION: 90°
PIT DIMENSION: 5.00m * 3.00
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							36.72	0.45	TOPSOIL: Grass over firm brown gravelly SILT with frequent cobbles. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded.	
			B 1	0.60-0.80			36.37	0.80	Grey brown silty very sandy angular to subangular fine to coarse GRAVEL with frequent cobbles and occasional boulders. Cobbles are angular to subangular. Boulders are angular of limestone.	
1							35.77	1.40	Large limestone BOULDERS.	
									END	
2										
3										
4										
5										

Remarks: TP dry on excavation. TP terminated at 1.40m bgl. Obstruction as possible weathered rock. TP backfilled with arisings.

Scale: 1:25

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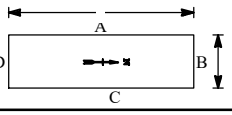
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PROJECT: Rooaunalaghta Wind Farm	**TRIALPIT:** TP-06
LOCATION: Co Mayo	**Sheet** 1 of 1
CLIENT: Greensource	**Co-ordinates:** E 523,983.2 N 751,226.5
ENGINEER: Tobin	**Rig:** XCMG XE80E
	Rev:
Ground level: 42.74m O.D.	**DATE:** 13.11.25

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

PIT DIRECTION: 0°
PIT DIMENSION: 3.90m * 1.20
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							42.39	0.35	TOPSOIL: Grass over firm brown gravelly SILT. Gravel is subangular to subrounded fine to coarse.	
			B 1 D 2	0.45-0.60 0.45-0.60					Firm grey slightly gravelly sandy SILT with frequent cobbles. Gravel is angular to subangular fine to coarse. Cobbles are subrounded.	
1										
			B 3 D 4	1.60-1.80 1.60-1.80					1.80: becoming stiff.	
2							40.39	2.35		
						END				
3										
4										
5										

Remarks: TP dry on excavation. TP terminated at 2.35m bgl. Obstruction as possible rock. TP backfilled with arisings.

Scale: 1:25

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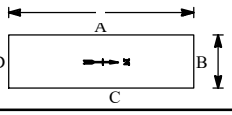
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TRIALPIT ROOAUNALAGHTA WP TPS FILE1 NEW DEC 4 2025.GPJ ID GINT AGS 4_0_4.GDT 25/2/26

PROJECT: Rooaunalaghta Wind Farm	**TRIALPIT:** TP-07
LOCATION: Co Mayo	**Sheet** 1 of 1
CLIENT: Greensource	**Co-ordinates:** E 524,517.6 N 751,682.5
ENGINEER: Tobin	**Rig:** XCMG XE80E
	Rev:
Ground level: 39.12m O.D.	**DATE:** 18.11.25

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

PIT DIRECTION: 0°
PIT DIMENSION: 3.80m * 1.20
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0										
							38.82	0.30	TOPSOIL: Grass over firm brown slightly gravelly SILT. Gravel is angular to subangular fine to coarse.	
							38.52	0.60	Greyish brown very sandy very silty silty subangular fine to coarse GRAVEL with frequent cobbles and occasional boulders. Cobbles are subangular to subrounded. Boulders are subangular.	
			B 1	0.60-0.80						
1							38.02	1.10	Grey sandy angular to subangular fine to coarse GRAVEL with frequent cobbles. Cobbles are angular to subangular.	
									END	
2										
3										
4										
5										

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

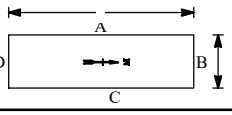
Scale: 1:25

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PROJECT: Rooaunalaghta Wind Farm	**TRIALPIT:** TP-08
LOCATION: Co Mayo	**Sheet** 1 of 1
CLIENT: Greensource	**Co-ordinates:** E 524,681.9 N 751,171.4
ENGINEER: Tobin	**Rig:** XCMG XE80E
Ground level: 29.55m O.D.	**Rev:**
GROUNDWATER Water strikes: 1st: dry 2nd: 3rd: Rose to after:	**DATE:** 14.11.25
PIT DIRECTION: 0° **PIT DIMENSION:** 4.00m * 1.30 **LOGGED BY:** DF	Shoring/Support: N/A Stability: Pit unstable. Occasional collapse during dig.



Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0										
							29.05	0.50	TOPSOIL: Grass over firm brown gravelly SILT with frequent cobbles. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular to subrounded.	
			B 1	0.60-0.80					Firm grey brown slightly sandy gravelly SILT with frequent cobbles and frequent boulders. Cobbles are angular. Boulders are angular of limestone. Boulders are up to 600mm in length. Gravel is angular to subrounded fine to coarse.	
1							28.05	1.50		
			B 2	1.50-1.70					Grey silty coarse SAND and angular to subangular fine to coarse GRAVEL with frequent cobbles and frequent boulders. Cobbles are angular to subrounded. Boulders are angular of limestone. Boulders are up to 500mm in length.	
2										
			B 3	2.60-2.80						
							26.65	2.90		
3									END	
4										
5										

Remarks: TP dry on excavation. TP terminated at 2.90m bgl. Obstruction as rock. TP backfilled with arisings.

Scale: 1:25

Irish drilling LTD

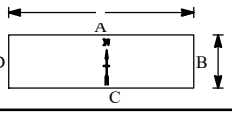
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TRIALPIT ROOAUNALAGHTA WP TPS FILE1 NEW DEC 4 2025.GPJ ID GINT AGS 4_0_4.GDT 25/2/26

PROJECT: Rooaunalaghta Wind Farm		**TRIALPIT: TP-09**
LOCATION: Co Mayo		**Sheet 1 of 1**
CLIENT: Greensource	**Co-ordinates:**	**Rig: XCMG XE80E**
ENGINEER: Tobin	**E 524,783.6 N 751,501.2**	**Rev:**
Ground level: 36.30m O.D.		**DATE: 14.11.25**

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

PIT DIRECTION: 90°
PIT DIMENSION: 3.80m * 1.20
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0										
							35.80	0.50	TOPSOIL: Grass over firm brown gravelly SILT with frequent cobbles. Gravel is angular to subangular fine to coarse. Cobbles are subangular to subrounded.	
			B 1	0.50-0.70						
1									Grey silty coarse SAND and angular to subangular fine to coarse GRAVEL with frequent cobbles and frequent boulders. Cobbles are angular to subrounded. Boulders are angular of limestone. Boulders are up to 400mm in length.	
			B 2	1.50-1.70						
							34.60	1.70		
									END	
2										
3										
4										
5										

Remarks: TP dry on excavation. TP terminated at 1.70m bgl. Obstruction as possible weathered rock. TP backfilled with arisings.

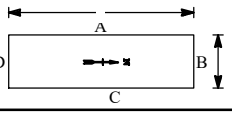
Scale: 1:25

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TRIALPIT ROOAUNALAGHTA WP TPS FILE1 NEW DEC 4 2025.GPJ ID GINT AGS 4_0_4.GDT 25/2/26

PROJECT: Rooaunalaghta Wind Farm	**TRIALPIT:** TP-10
LOCATION: Co Mayo	**Sheet** 1 of 1
CLIENT: Greensource	**Co-ordinates:** E 525,015.7 N 751,071.2
ENGINEER: Tobin	**Rig:** XCMG XE80E
Ground level: 25.62m O.D.	**Rev:**
GROUNDWATER Water strikes: 1st: dry 2nd: 3rd: Rose to after:	**DATE:** 17.11.25
PIT DIRECTION: 0° **PIT DIMENSION:** 4.20m * 1.30 **LOGGED BY:** DF	Shoring/Support: N/A Stability: Pit stable.



Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0										
							25.12	0.50	TOPSOIL: Grass over firm brown slightly gravelly SILT with occasional cobbles. Gravel is subangular to subrounded fine to coarse. Cobbles are subangular.	
			B 1	0.50-0.70						
							24.52	1.10	Firm grey brown slightly sandy gravelly SILT with frequent cobbles and occasional boulders. Cobbles are subangular to subrounded. Boulders are subrounded of limestone. Boulders are up to 400mm in length. Sand is coarse. Gravel is fine to coarse.	
1										
			B 2	1.40-1.60					Grey brownvery silty very sandy angular to subangular fine to coarse GRAVEL with frequent cobbles and occasional boulders and large boulders. Cobbles are subangular to subrounded. Boulders are subrounded of limestone. Boulders are up to 400mm in length. Large boulders are up to 1100mm in length. Sand is fine to coarse.	
2										
			B 3	2.40-2.60						
							22.82	2.80	**END**	
3										
4										
5										

Remarks: TP dry on excavation. TP terminated at 2.80m bgl. Obstruction. TP backfilled with arisings.

Scale: 1:25

Irish drilling LTD

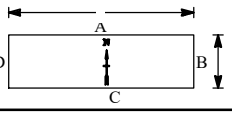
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TRIALPIT ROOAUNALAGHTA WP TPS FILE1 NEW DEC 4 2025.GPJ ID GINT AGS 4_0_4.GDT 25/2/26

PROJECT: Rooaunalaghta Wind Farm	**TRIALPIT:** TP-11
LOCATION: Co Mayo	**Sheet** 1 of 1
CLIENT: Greensource	**Co-ordinates:** E 525,286.7 N 750,837.7
ENGINEER: Tobin	**Rig:** XCMG XE80E
	Rev:
Ground level: 31.90m O.D.	**DATE:** 17.11.25

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

PIT DIRECTION: 90°
PIT DIMENSION: 3.00m * 1.20
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0										
							31.60	0.30	TOPSOIL: Grass over firm brown gravelly SILT. Gravel is angular to subangular fine to coarse.	
			B 1	0.40-0.60			31.20	0.70	Grey slightly silty sandy subangular to subrounded fine to coarse GRAVEL with frequent cobbles. Cobbles are subangular to subrounded.	
									END	
1										
2										
3										
4										
5										

Remarks: TP dry on excavation. TP terminated at 0.70m bgl. Obstruction as rock. TP backfilled with arisings.

Scale: 1:25

Irish drilling LTD

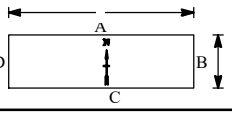
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TRIALPIT ROOAUNALAGHTA WP TPS FILE1 NEW DEC 4 2025.GPJ ID GINT AGS 4_0_4.GDT 25/2/26

PROJECT: Rooaunalaghta Wind Farm		**TRIALPIT: TP-12**
LOCATION: Co Mayo		**Sheet 1 of 1**
CLIENT: Greensource	**Co-ordinates:**	**Rig: XCMG XE80E**
ENGINEER: Tobin	**E 525,603.5 N 751,125.1**	**Rev:**
Ground level: 38.82m O.D.		**DATE: 18.11.25**

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

PIT DIRECTION: 90°
PIT DIMENSION: 3.80m * 1.40
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							38.47	0.35	TOPSOIL: Grass over firm brown SILT with frequent cobbles and frequent boulders. Cobbles are subangular to subrounded of limestone. Boulders are subangular to subrounded of limestone.	
			B 1	0.40-0.60			38.02	0.80	Firm brown slightly sandy gravelly SILT with frequent cobbles and occasional boulders. Cobbles are angular. Boulders are angular of limestone. Gravel is angular fine to coarse. Sand is coarse.	
									END	
1										
2										
3										
4										
5										

Remarks: TP dry on excavation. TP terminated at 0.80m bgl. Obstruction as rock. TP backfilled with arisings.

Scale: 1:25

Irish drilling LTD

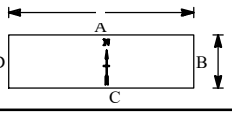
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TRIALPIT ROOAUNALAGHTA WP TPS FILE1 NEW DEC 4 2025.GPJ ID GINT AGS 4_0_4.GDT 25/2/26

PROJECT: Rooaunalaghta Wind Farm	**TRIALPIT: TP-13**
LOCATION: Co Mayo	**Sheet 1 of 1**
CLIENT: Greensource	**Co-ordinates: E 525,529.3 N 751,380.1** / **Rig: XCMG XE80E**
ENGINEER: Tobin	**Rev:**
Ground level: 49.01m O.D.	**DATE: 18.11.25**

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

PIT DIRECTION: 90°
PIT DIMENSION: 3.50m * 1.20
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							48.81	0.20	TOPSOIL: Grass over firm brown slightly gravelly SILT.	
							48.41	0.60	Large subangular to subrounded limestone BOULDERS.	
						END				
1										
2										
3										
4										
5										

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

Scale: 1:25

Irish drilling LTD

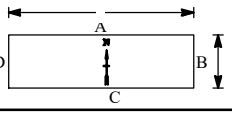
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TRIALPIT ROOAUNALAGHTA WP TPS FILE1 NEW DEC 4 2025.GPJ ID GINT AGS 4_0_4.GDT 25/2/26

PROJECT: Rooaunalaghta Wind Farm	**TRIALPIT:** TP-14
LOCATION: Co Mayo	**Sheet** 1 of 1
CLIENT: Greensource	**Co-ordinates:** E 531,075.6 N 751,001.5
ENGINEER: Tobin	**Rig:** XCMG XE80E
	Rev:
Ground level: 30.45m O.D.	**DATE:** 19.11.25

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

PIT DIRECTION: 90°
PIT DIMENSION: 3.50m * 1.20
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							30.30	0.15	TOPSOIL: Grass over soft dark brown peaty SILT.	
							30.05	0.40	Soft black slightly sandy slightly gravelly amorphous PEAT.	
			B 1 D 2	0.50-0.70 0.50-0.70			29.45	1.00	Firm grey slightly gravelly SILT with frequent cobbles. Gravel is angular to subangular fine to coarse. Cobbles are subangular to subrounded.	
1			B 3	1.10-1.30			28.85	1.60	Grey sandy angular to subangular medium to coarse GRAVEL with frequent cobbles. Cobbles are angular.	
									END	
2										
3										
4										
5										

Remarks: Seepage of water at 1.00m bgl. TP terminated at 1.60m bgl. Obstruction as probable rock. TP backfilled with arisings.

Scale: 1:25

Irish drilling LTD

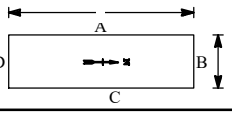
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TRIALPIT ROOAUNALAGHTA WP TPS FILE1 NEW DEC 4 2025.GPJ ID GINT AGS 4_0_4.GDT 27/4/26

PROJECT: Rooaunalaghta Wind Farm		**TRIALPIT: TP-15**
LOCATION: Co Mayo		**Sheet 1 of 1**
CLIENT: Greensource	**Co-ordinates:**	**Rig: XCMG XE80E**
ENGINEER: Tobin	**E 531,133.3 N 750,906.5**	**Rev:**
Ground level: 30.57m O.D.		**DATE: 19.11.25**

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

PIT DIRECTION: 0°
PIT DIMENSION: 4.10m * 1.20
LOGGED BY: DF



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

Depth (m)	Date	Water	Samples	Depth (m)	SPT (N) / In Situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	Instrument/ Backfill
0							30.37	0.20	TOPSOIL: Grass over soft brown peaty SILT.	
							29.87	0.70	Soft black amorphous PEAT.	
1			B 1 D 2	0.70-0.90 0.70-0.90			28.97	1.60	Soft grey brown slightly sandy slightly gravelly SILT with occasional cobbles. Gravel is angular to subangular fine to coarse. Cobbles are subangular.	
		▼	B 3	1.70-1.90			28.67	1.90	Wet grey silty sandy angular to subangular fine to coarse GRAVEL with frequent cobbles. Cobbles are angular to subangular.	
2									**END**	
3										
4										
5										

Remarks: Seepage of water at 1.60m bgl. TP terminated at 1.90m bgl. Obstruction as rock. TP backfilled with arisings.

Scale: 1:25

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TRIALPIT ROOAUNALAGHTA WP TPS FILE1 NEW DEC 4 2025.GPJ ID GINT AGS 4_0_4.GDT 25/2/26

Appendix 2A
Groundwater Readings

Rooaunalghta Wind Farm Water Levels

Date	Location	Depth (blg)	Remarks
19.01.26	BH01	4.69m	Logger installed at 5.50m
19.01.26	BH07	3.06m	Logger installed at 7.00m
20.01.26	BH 05		When carrying out a manual dip refusal in the standpipe was encountered at 0.50m bgl When trying to unblock the standpipe it appears that a stone had been lodged in the standpipe.

Remarks:

Depths records depth to top of groundwater level from surface.

Appendix 3
Geophysical Survey

Roonalaghta Wind Farm

County Mayo

Geophysical Survey

Report Status: Draft

MGX Project Number: 6868

MGX File Reference: 6868d-005.doc

28th May 2025

Confidential Report To:

Irish Drilling Ltd.
Old Galway Rd.
Loughrea
Co. Galway

TOBIN
Fairgreen House
Fairgreen Road
Co. Galway
H91 AXK8

Report submitted by:
Minerex Geophysics Limited

Unit F4, Maynooth Business Campus
Maynooth, Co. Kildare, W23X7Y5
Ireland
Tel.: 01-6510030
Email: info@mgx.ie

Issued by:

Author: Jan Stach (Geophysicist)

Reviewer: John Connaughton (Geophysicist)

Minerex
Geophysics Limited

Subsurface Geophysical Investigations

EXECUTIVE SUMMARY

1. Minerex Geophysics Ltd. (MGX) carried out a geophysical survey consisting of 2D-Resistivity (ERT) and Seismic Refraction (p-wave) surveying for the ground investigation for the Roonalaghta Wind Farm, Co. Mayo.
2. The main objectives of the survey were to determine the ground conditions under the site, to determine the depth to rock and the overburden thickness, to estimate the strength or stiffness or compaction of overburden and the rock quality and to detect possible karstified rock.
3. The data was modelled with 3 layers based on electrical resistivity and seismic velocities.
4. Layer 1 has thickness up to 2m, and is interpreted as soft or loose soil.
5. Layer 2 is interpreted as weathered limestone and Epikarst and reaches a depth between 1 and 5m below ground level (bgl).
6. Layer 3 is interpreted as good to very good, clean limestone, with depth to rock between 1 and 3m at the location X and 2.5 and 5m at location Y.
7. The good to very good, clean limestone layer lies at a slightly greater depth in the vicinity of location Y.
8. Karstified limestone was not found under the survey lines.

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1.2 Objectives 1
1.3 Site Description 1
1.4 Geology 2
1.5 Report 2

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2.2 2D-Resistivity (ERT) 3
2.3 Seismic Refraction (p-waves) 4
2.4 Site Work 4

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3.1 2D-Resistivity (ERT) 5
3.2 Seismic Refraction (p-wave) 5
3.3 Interpretation of Resistivity and Seismic Refraction 6

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List of Tables, Maps and Figures:

Title	Pages	Document Reference
Table 1: Geophysical Survey Locations and Acquisition Parameters	In text	In text
Table 2: Summary of Interpretation	In text	In text
Map 1: Geophysical Survey Location Map	1 x A3	6868d_Drawings.dwg
Figure 1: Models of Geophysical Survey	1 x A3	6868d_Drawings.dwg
Figure 2: Interpretation of Geophysical Survey	1 x A3	6868d_Drawings.dwg

1. INTRODUCTION

1.1 Background

Minerex Geophysics Ltd. (MGX) carried out a geophysical survey for the ground investigation for Roonalaghta Wind Farm, Co. Mayo. The survey consisted of 2D-Resistivity (ERT) and Seismic Refraction (p-wave). The survey was commissioned by Irish Drilling Ltd. acting on behalf of TOBIN.

This survey utilized two complementary geophysical methods to the improve final interpretation. The role of geophysics as a non-destructive fast method is to provide a geological interpretation over a wide area to complement direct ground investigation at specific locations. The direct ground investigation results can be used to improve the initial geophysical results and interpretation.

The survey was carried out at two locations locations called X and Y in this report. The aim of the survey was to establish and characterise the existing ground conditions.

1.2 Objectives

The main objectives of the geophysical survey were:

- To determine the ground conditions under the site
- To determine the depth to rock and the overburden thickness
- To estimate the strength or stiffness or compaction of overburden materials and the rock quality
- To determine the type of overburden and rock
- To detect possible karstified zones within the rock or karst features

1.3 Site Description

The site is located in the townland of Carrowoughteragh in Co. Mayo, approximately 4.0km to the west of Shrule, Co. Mayo and approximately 4.7km to the northwest of Headford, County Galway. The survey was carried out at two locations approximately 700 meters apart. The site is located on agricultural fields bounded by hedgerows and treelines. An active quarry is located approximately 300 meters from the location Y. Access to the land was agreed with the client and followed the road leading to the water tower. Elevations at the survey locations range from 46mOD in the location X to 31mOD in the location Y.

1.4 Geology

Online geological maps of Ireland (GSI, 2025) give the following information:

The overburden geology consists of till derived from limestones and karstified bedrock outcrops or subcrops.

In terms of rock, the survey area is underlain by the Oakport Limestone Formation, described as pale grey massive limestone.

The Oakport Limestone formation is karstifiable; however, no karst features have been noted in the GSI in the vicinity of the survey area.

Generally shallow rock is noted over the survey area.

There are no faults or karst features recorded on the GSI near the site.

1.5 Report

This report includes the results and interpretation of the geophysical survey. Maps, figures and tables are included to illustrate the results of the survey. More detailed descriptions of geophysical methods and measurements can be found in GSEG (2002), Milsom (1989) and Reynolds (1997).

The description of soil, rock and the use of geotechnical terms (soft, stiff, dense etc) follows Eurocode (2007) and BSI (2020) standards. The terms are defined in the standards and the physical parameters are related from experience. This geophysical survey has been acquired, processed, interpreted and reported in accordance with these guidelines. An aerial image was used as the map background as we did not receive a topographical survey map or Ordnance Survey background map. Elevations were surveyed on site and are used in the vertical sections.

The interpretative nature and the non-invasive survey methods must be taken into account when considering the results of this survey and Minerex Geophysics Limited, while using appropriate practice to execute, interpret and present the data, give no guarantees in relation to the existing subsurface.

2. GEOPHYSICAL SURVEY

2.1 Methodology

The methodology consisted of using 2D-Resistivity and seismic refraction surveying along lines proposed by the client.

The survey locations are indicated on Map 1. The lines, and parameters are tabulated in Table 1.

Table 1: Geophysical Survey Locations and Acquisition Parameters

Resistivity Line	**Electrode Spacing/m**	**Number of Electrodes**	**Line Length/m**
R1	3	35	102
R2	3	35	102
R3	3	35	102
R4	3	35	102
SUM			**408**
Seismic Line	**Geophone Spacing/m**	**Number of Geophones**	**Line Length/m**
S1	3	35	102
S2	3	35	102
S3	3	35	102
S4	3	35	102
SUM			**408**

2.2 2D-Resistivity (ERT)

2D-Resistivity lines were surveyed with electrode spacing of 3m, 35 electrodes per set-up and a maximum length of 102m per set-up. The readings were taken with a Tigre Resistivity Meter, Imager Cables, stainless steel electrodes and a laptop with ImagerPro acquisition software.

During 2D-Resistivity surveying, data is acquired in the form of linear arrays using a suite of metal electrodes. A current is induced into the ground via a pair of electrodes whilst a potential difference is measured across a second pair of electrodes. This allows for the recording of the apparent resistivity in a two-dimensional arrangement below the line. The data is inverted after the survey to obtain a model of subsurface resistivities. The generated model resistivity values and their spatial distribution can then be related to typical values for different geological materials.

The penetration depth of a resistivity set-up increases towards the centre where it reaches an approx. value of 15m bgl.

The 2D-Resistivity Method is designed to work on a two dimensional subsurface, and the more the ground deviates from this and has a more complex 3D structure, the less accurate the resistivity models will be. The accuracy can be best seen at crossings of the 2D lines. 2D-Resistivity has previously proven zones of karstified rock with lateral extents of 5m and more.

2.3 Seismic Refraction (p-waves)

Seismic refraction lines were surveyed with geophone spacing of 3m and 24 geophones per set-up resulting in a 69m length per set-up. The recording equipment consisted of a 24 Channel GEOMETRICS ES-3000 engineering seismograph with 4.5Hz vertical geophones. The seismic energy source consisted of a hammer and plate. A zero-delay trigger was used to start the recording. Normally 7 shot points per p-wave set-up were used.

Set-ups were acquired in longer continuous lines using common shot points between set-ups and concatenating into longer lines at the processing stage.

The seismic refraction survey method focuses on propagating p-waves travelling through the subsurface, which are generated by a seismic source. As the wave propagates through the subsurface, its velocity varies as it travels through overburden, rock with different elastic properties, and along geological boundaries. Velocity data is recorded via the surveying equipment, which is then processed, allowing geological layer thicknesses and boundaries to be established.

Seismic Refraction generally determines the depth to horizontal or near horizontal layers where the compaction or strength or rock quality changes with an accuracy of around 20% of the depth to that layer. Where the layers are shallower than the geophone spacing depth deviations of +- 1m to top of layers can occur.

The seismic refraction set-ups with 69m individual length have a reasonable penetration depth of around 15m. An internationally accepted maximum depth estimate for a seismic refraction set-up is 1/6 of the set-up length including offshots. The depth penetration varies according to the velocity structure of the subsurface.

2.4 Site Work

The data acquisition was carried out between the 21st and 22nd of May 2025. The weather conditions were fair throughout the acquisition period. Health and safety standards were adhered to at all times.

The locations and elevations were surveyed with a Carlson NR3 RTK-GPS to accuracy < 0.05m.

3. RESULTS AND INTERPRETATION

The interpretation of geophysical data was executed utilizing the known response of geophysical measurements, typical physical parameters for subsurface features that may underlay the site, and the experience of the authors.

3.1 2D-Resistivity (ERT)

The 2D-Resistivity data was positioned and inverted with the RES2DINV inversion package. The programme uses a smoothness constrained least-squares inversion method to produce a 2D model of the subsurface resistivities from the recorded apparent resistivity values. Three variations of the least squares method are available and for this project the Jacobian Matrix was recalculated for the first three iterations, then a Quasi-Newton approximation was used for subsequent iterations. Each dataset was inverted using seven iterations resulting in a typical RMS error of <3.0%. The resulting models were colour contoured with the same resistivity scale for all lines and they are displayed as cross sections (Figure 1).

Resistivities are characteristic for certain overburden and rock types. If there is a high content of clay minerals (which are electrically conductive) then the overburden resistivity will be lower than as if there is a high content of clastic grains like sand or gravel. The purer the clay and the lower the sand and gravel content, the lower the resistivity. Water content in overburden layers can influence the resistivities, but generally clay content has a more dominating effect.

Within bedrock types like clean limestone, high resistivities indicate a fresh, strong, unweathered rock. As the weathering in the rock increases the resistivity gets lower because of weathering products, remineralisation of rock and infill of cracks, faults and voids with clay and water. Weathering within rock is typically indicated by lower resistivity values in the cross sections.

The resistivities cover a range typical for materials from clay rich overburden or peat (low resistivities) to fresh strong unweathered bedrock (high resistivities). The ranges have been taken into the consideration for the interpretation. The lower values (250-1400Ωm) show weathered bedrock and epikarst. The higher resistivities (>1400Ωm) indicate clean limestone.

3.2 Seismic Refraction (p-wave)

The seismic refraction data was positioned and processed with the SEISIMAGER software package to give a layered model of the subsurface. The number of layers has been determined by analysing the seismic traces and 3 layers were used in the models. All seismic lines were subject to a standardised processing sequence which consisted of a topographic correction which was based on integrated elevation data, first break picking, tomographic inversion, travel-time computation via ray-tracing and velocity modelling. Residual deviations of typically 0.4 to 1.2 msec RMS have been obtained for each line. Following each processing

stage QC procedures were adhered to. The resulting layer boundaries are shown as thick lines overlaid on the 2D-Resistivity cross sections (Figure 1). The average seismic velocities obtained within the layers are annotated on the sections as bold black numbers.

The p-wave seismic velocity is closely linked to the density of subsurface materials and to parameters like compaction, stiffness, strength and rock quality. The higher the density of the subsurface materials the higher the seismic velocity. More compacted, stiffer, denser and stronger material will have a higher seismic velocity. For rock, the seismic velocity is higher when the rock is stronger, less weathered and has a higher quality. If the rock is more weathered, broken, fractured, fissured or karstified then the seismic velocity will be reduced compared to that of intact fresh rock.

Because of the above relationship, the seismic refraction method and seismic velocities are suitable to investigate ground where the layers get denser, more compacted and stronger with depth. A disadvantage is that some materials may have the same seismic velocity: Very stiff to hard or very dense highly consolidated overburden and a weathered rock can have the same seismic velocity range (as is the case in the layer 2 below).

The modelled seismic data has created the following layered ground model:

Layer 1 has a thickness up to 2m and seismic velocities of 350-400m/s. This overburden would be soil with a soft or loose stiffness or compaction.

Layer 2 was modelled with a velocity of 2200m/s and the base reaches a depth between 1m and 5m bgl. The velocity indicates a weathered rock and Epikarst.

Good to very good rock (Layer 3) is indicated by seismic velocities of 4500m/s and the top of this good to very good rock varies between 1m and 5m bgl.

3.3 Interpretation of Resistivity and Seismic Refraction

Table 2 summarises the interpretation. The stiffness or compaction of overburden and the rock strength or quality have been estimated from the seismic velocity. The estimation of the excavatability for the bedrock has been made according to the caterpillar chart published in Reynolds (1997). The geotechnical assessment for rippability will have to take factors like rock type and jointing into account and the estimation in this report is solely based on the seismic velocities.

Interpreted cross sections are shown in Figure 2. The interpretation has been made from all available information. For overburden layers and the top of the rock the seismic refraction data has been used as seismic refraction is the best method to delineate layer boundaries. The resistivity model values have been used to delineate overburden material and rock. Resistivity data is better suited to show overburden material, rock types and features within the rock while seismic refraction velocities are indicating the change of compaction, stiffness or rock quality with depth.

Table 2: Summary of Interpretation

Layer	General Seismic Velocity Range (m/sec)	General Resistivity Range (Ωm)	Stiffness or Compaction or Rock Quality	Interpretation	Estimated Excavation Method
1	350-400	Any	Soft or loose	Soil	Diggable
2	2200	250-1400	Poor to fair rock	Weathered Limestone and Epikarst	Rippable to marginal rippable
3	4500	>1400	Good to very good rock	Clean Limestone	Breaking & Blasting

4. CONCLUSIONS

The following conclusions are made:

- The geophysical surveys carried out at the Roonalaghta Wind Farm, Co. Mayo for locations X and Y consisted of 2D-Resistivity (ERT) and Seismic Refraction (p-wave).
- There was a strong correlation between both geophysical survey methods and a combined interpretation has been made using both methods.
- The data was modelled with 3 layers based on the 2D-Resistivity and seismic velocities.
- Layer 1 is interpreted as soft or loose soil and the thickness of this layer across the site is up to 2m.
- Layer 2 is interpreted as weathered Limestone and Epikarst and reaches a depth between 1 and 5m bgl.
- Layer 3 is interpreted as good to very good clean limestone. The top of this layer is at a depth between 1 and 3m bgl. at the location X and 2.5 and 5m bgl. at location Y.
- In general, the depth to the top of the good to very good clean limestone is slightly greater in the area of location Y.
- No karstified limestone was found within the survey locations. Such karstified limestone would be visible in the cross section as a low resistivity zone within the high resistivity.

5. REFERENCES

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2. **Eurocode, 2007.** EN 1997-2:2007. Eurocode 7. Part 2 Ground Investigation and Testing 2007

3. **GSEG, 2002.** Geophysics in Engineering Investigations. Geological Society Engineering Geology Special Publication 19, London, 2002

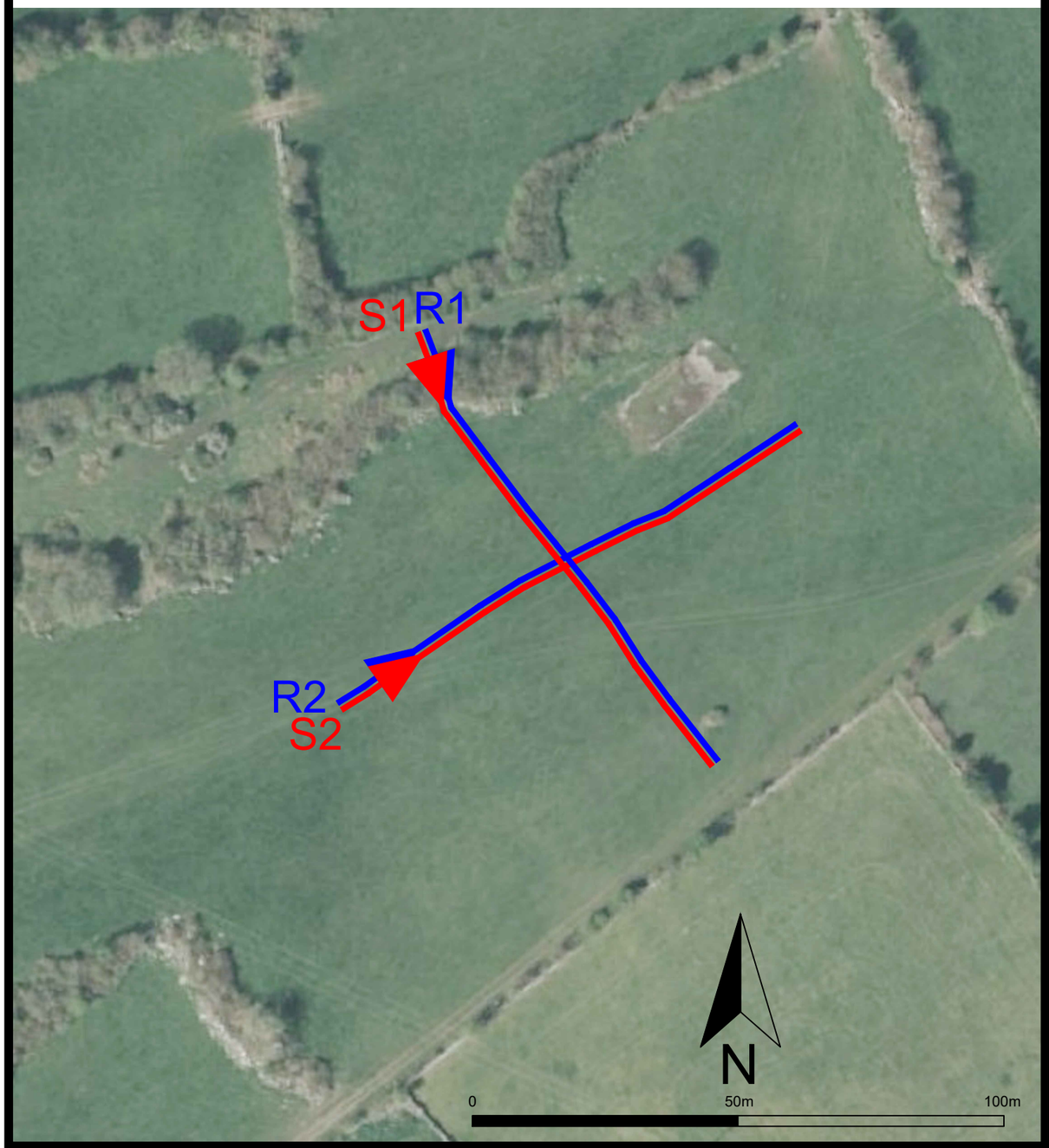
4. **GSI, 2024.** Online Geological Map of Ireland. Geological Survey of Ireland 2024

5. **Milsom, 1989.** Field Geophysics. John Wiley and Sons, 1989

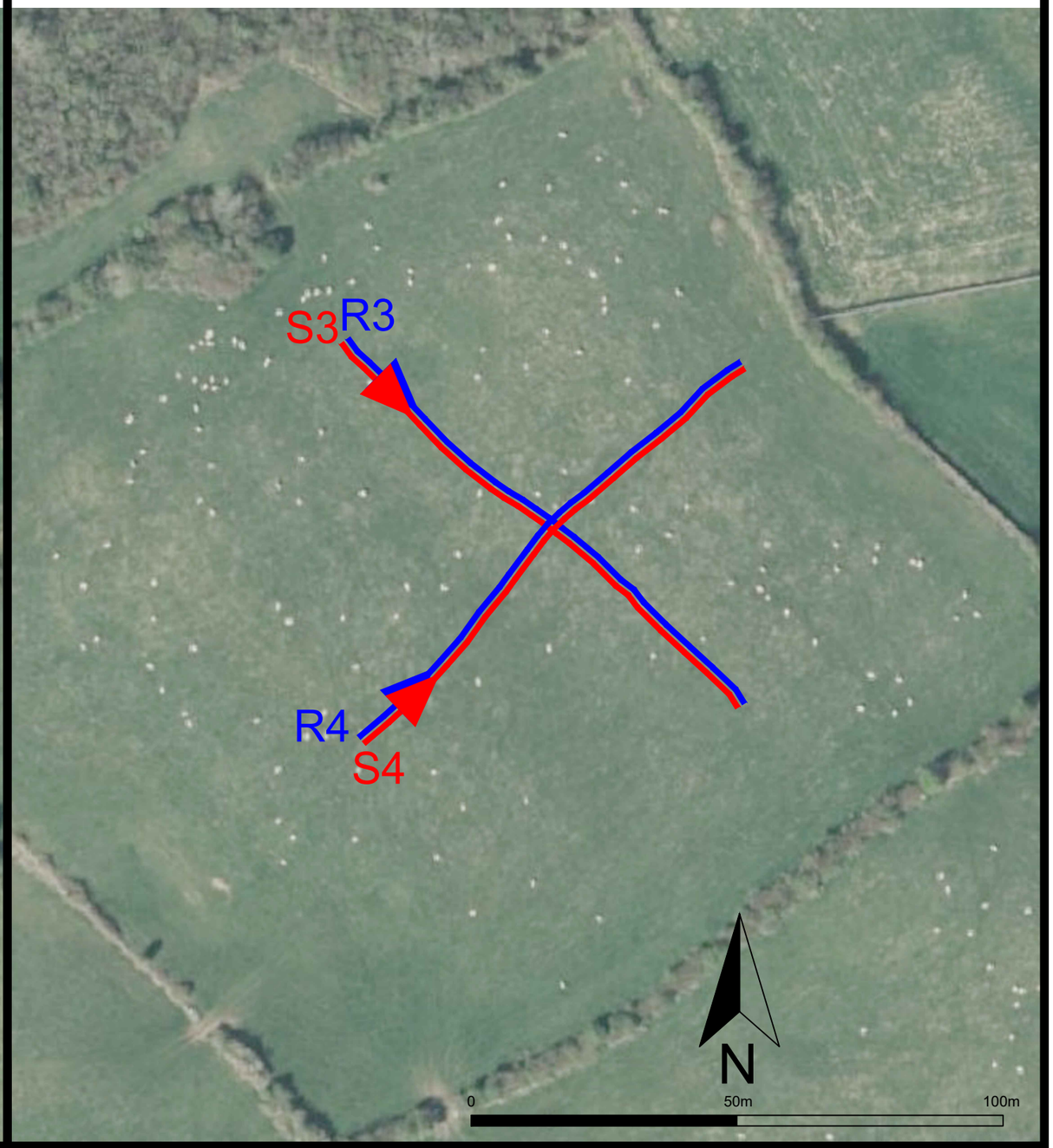
6. **Reynolds, 1997.** An Introduction to Applied and Environmental Geophysics. John Wiley and Son, 1997

7. **Weaver, 1975.** Geological Factors significant in the Assessment of Rippability, 1975

Location X



Location Y



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Web: www.mgx.ie

CLIENT	Irish Drilling Ltd. TOBIN
PROJECT	Roonalaghta Wind Farm, Co. Mayo Geophysical Survey
TITLE	Map 1: Geophysical Survey Location Map

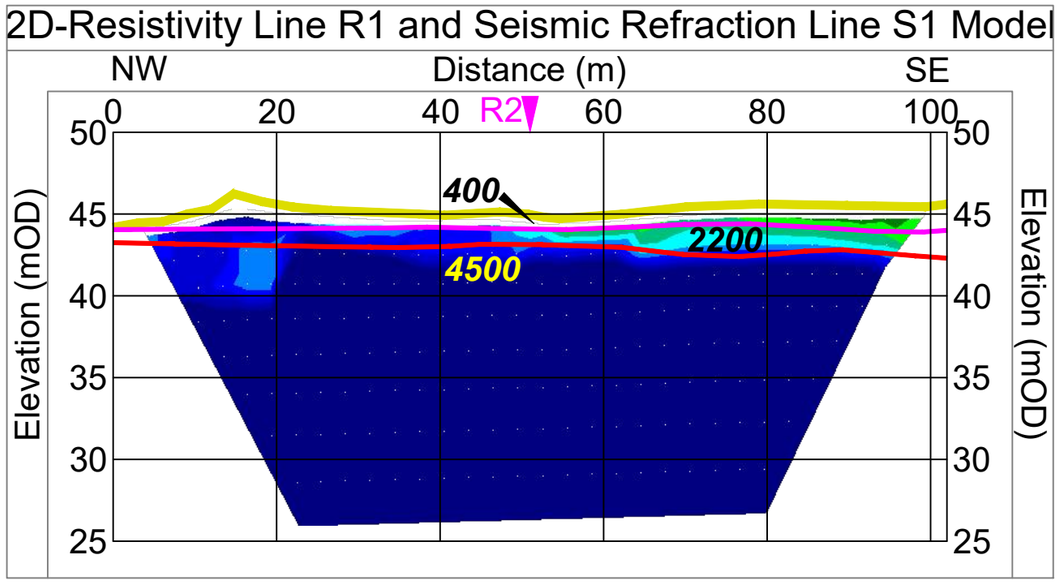
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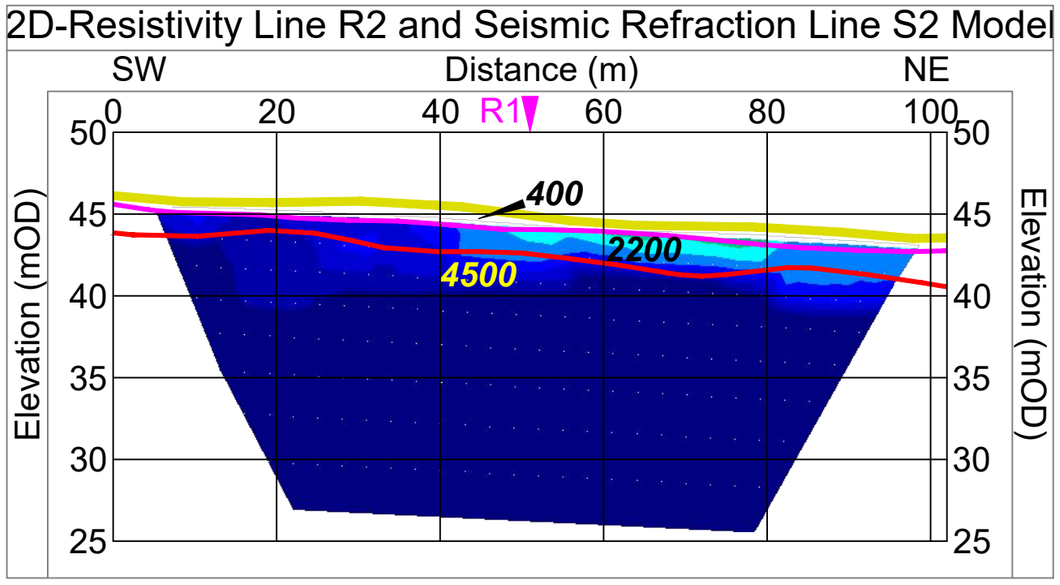
Geophysical Survey Locations:

R2	2D-Resistivity Line
S1	Seismic Refraction Line

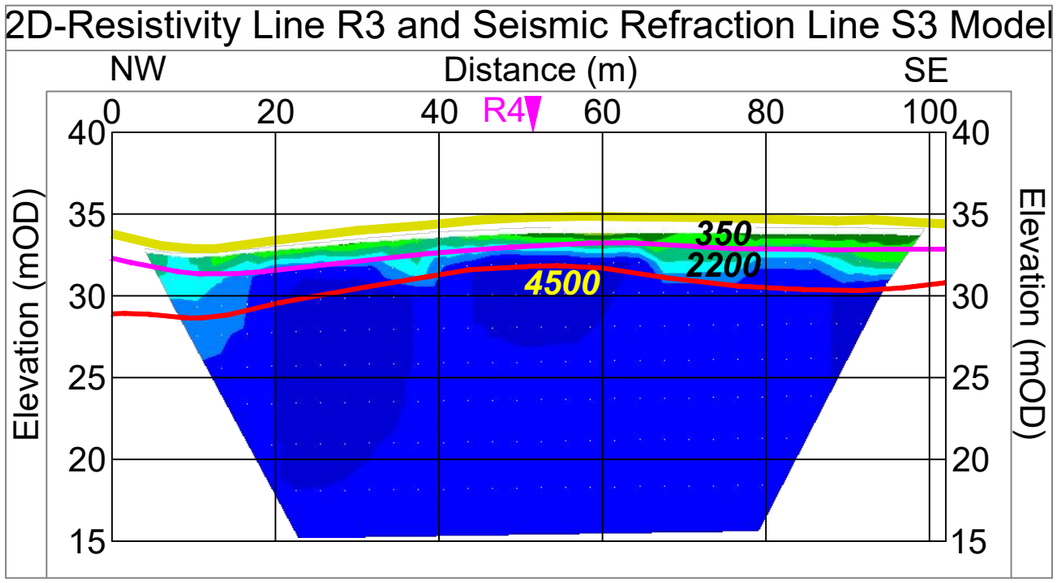
Locations are in Irish Transverse Mercator (ITM), Elevations are in mOD (Malin Head)

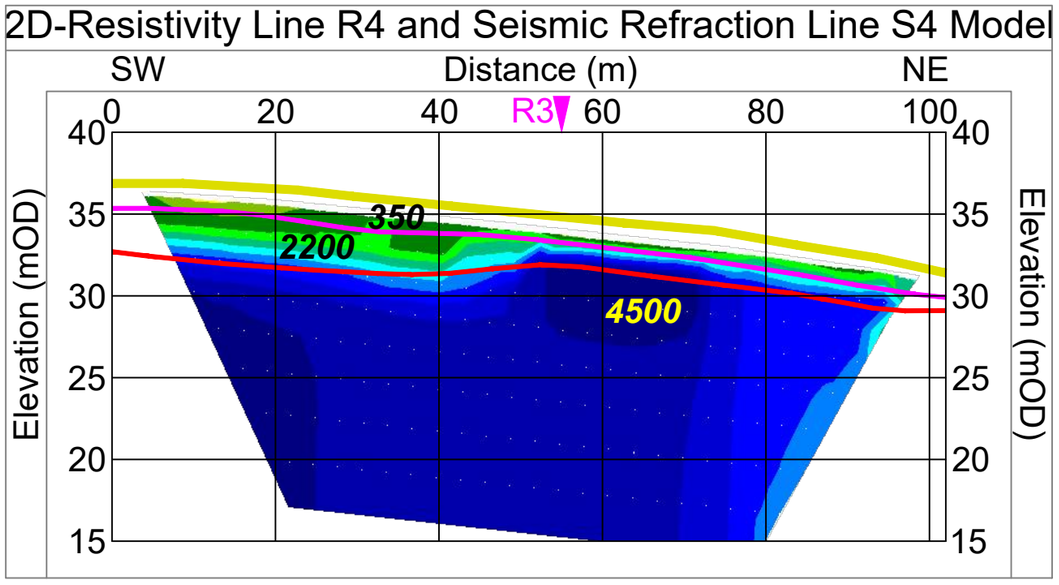
Location X





Location Y





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CLIENT	Irish Drilling Ltd. TOBIN
PROJECT	Roonalaghta Wind Farm, Co. Mayo Geophysical Survey
TITLE	Figure 1: Models of Geophysical Survey

SCALE:	1:750 @ A3, VE x 2
PROJECT:	6868
DRAWN:	JS
DATE:	27/05/2025
MGX FILE:	6868d_Drawings.dwg
STATUS:	Draft

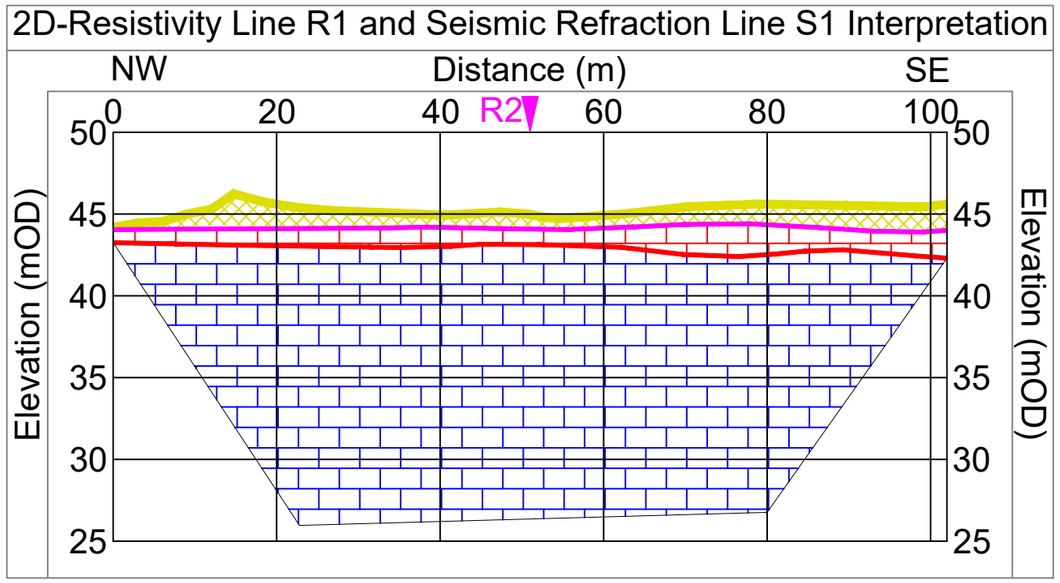
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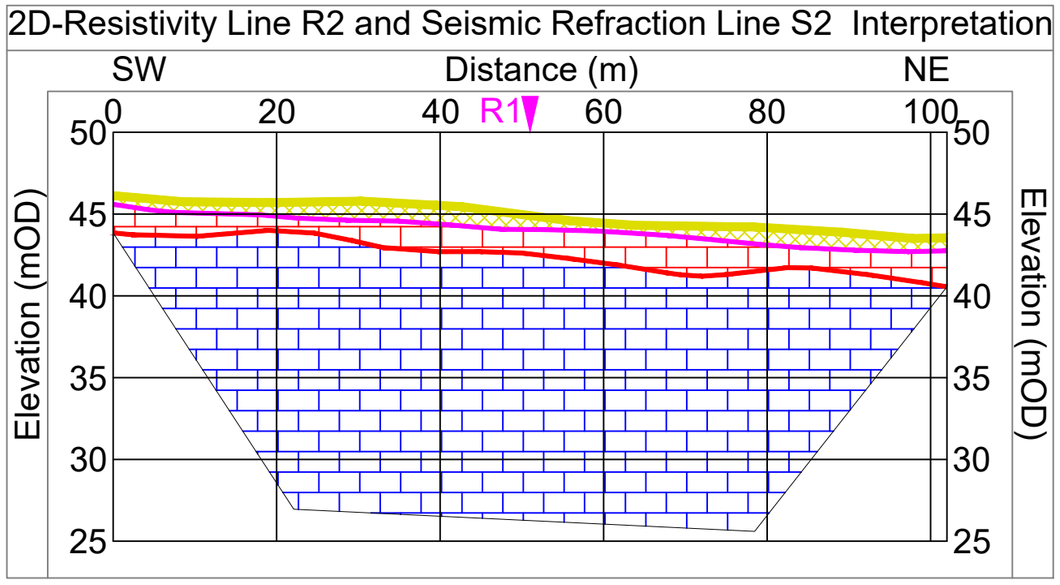


Layers from Seismic Refraction Model:

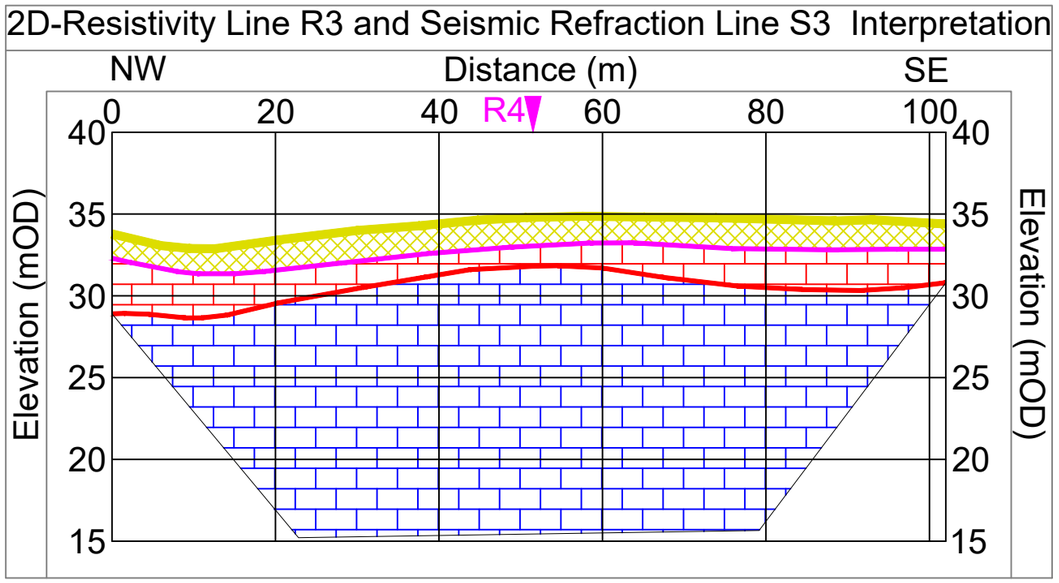
- Ground Surface/Top of Layer 1 (350 - 400 m/s)
- Top of Layer 2 (2200 m/s)
- Top of Layer 3 (4500 m/s)
- 2200 Seismic Velocity in m/s

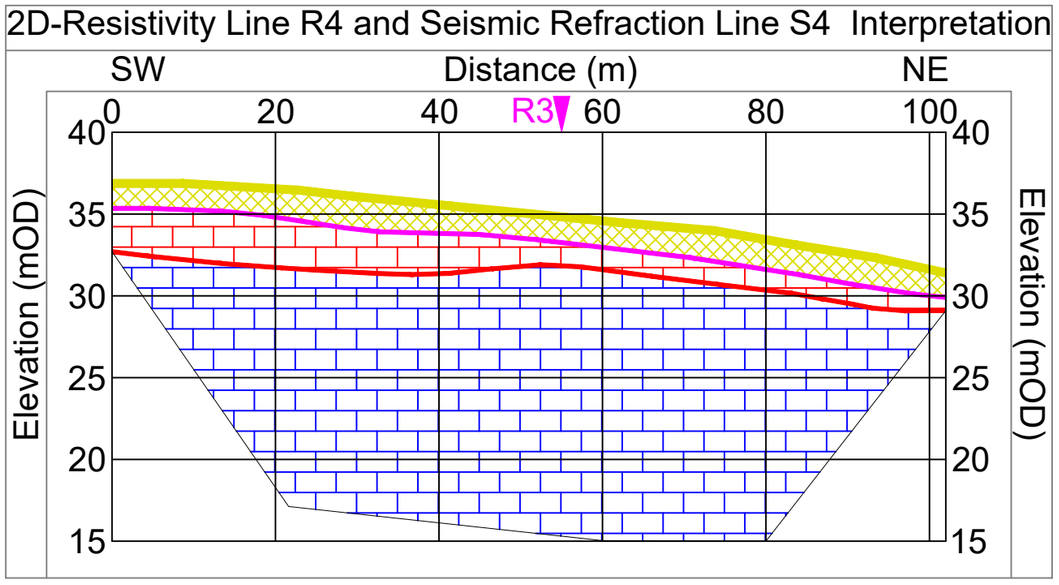
Location X





Location Y





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CLIENT	Irish Drilling Ltd. TOBIN
PROJECT	Roonalaghta Wind Farm, Co. Mayo Geophysical Survey
TITLE	Figure 2: Interpretation of Geophysical Survey

SCALE:	1:750 @ A3, VE x 2
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DATE:	27/05/2025
MGX FILE:	6868d_Drawings.dwg
STATUS:	Draft

Interpretation Figures:

1 Soft or loose Soil
2 Poor to fair weathered Limestone and Epikarst
3 Good to very good clean Limestone

Appendix 4
Laboratory Test Results

Project ID	2025MO103	Client	GreenSource	Remarks	
Project Name	Rooaunalaghta Wind Farm	Due Date	05/12/2025 12:00		
Schedule ID	2025MO103_2	Scheduled Date	05/12/2025 12:00		

Sample Details							Classification						Chemical / Concrete								Compaction						Compressibility			Strength (Total)							Stregth (Effective			Rock	
Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Moisture Content	Atterberg 4 Point	Particle Density by Gas Jar	Particle Density by Small Pyknometer	Particle Size Distribution	Hydrometer	Organic Content	Loss On Ignition	Acid Sol Sulphate (Total)	Sulphate: Water Soluble	Carbonate Titration	pH	Chloride Content	Chloride Content Acid	Compaction Light	Compaction Heavy	Compaction Vibrating Hamr	Moisture Condition Value	Moisture Condition Relation	CBR	Consolidation	Pressures	Swelling Pressure Test	Laboratory Vane test	Small Direct Shearbox	Ring shear Test	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triax	Consolidated Undrained Tri	Consolidated Undrained Tri	Rock Uniaxial compr	Point Load
Scheduled Dec 9th and Jan 6th, completed Feb 23rd							15	5	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
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BH-01	1.40	2.10	C		12/11/25																																		
BH-01	2.10	3.30	C		12/11/25																																		
BH-01	3.30	4.80	C		12/11/25																																		
BH-01	3.30	4.80	C		12/11/25																																		1
BH-01	4.80	6.30	C		12/11/25																																		
BH-02	0.00	1.10	C		11/11/25																																		
BH-02	1.10	2.00	C		11/11/25																																		
BH-02	2.00	3.50	C		11/11/25																																		
BH-02	2.00	3.50	C		11/11/25																																		1
BH-02	3.50	5.00	C		11/11/25																																		
BH-02	3.50	5.00	C		11/11/25																																		1
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BH-03	2.50	3.20	C		24/11/25																																		
BH-03	3.20	4.20	C		24/11/25																																		
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BH-03	4.80	6.30	C		24/11/25																																		
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BH-04	1.90	3.00	C		25/11/25																																		
BH-04	1.90	3.00	C		25/11/25																																		0*
BH-04	3.00	3.60	C		25/11/25																																		
BH-04	3.00	3.60	C		25/11/25																																		1
BH-04	3.60	5.00	C		25/11/25																																		
BH-04	5.00	6.30	C		25/11/25																																		

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

Project ID	2025MO103	Client	GreenSource
Project Name	Rooaunalaghta Wind Farm	Due Date	05/12/2025 12:00
Schedule ID	2025MO103_2	Scheduled Date	05/12/2025 12:00

Remarks

Sample Details							Classification						Chemical / Concrete								Compaction						Compressibility			Strength (Total)							Stregth (Effective			Rock	
Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Moisture Content	Atterberg 4 Point	Particle Density by Gas Jar	Particle Density by Small Pyknometer	Particle Size Distribution	Hydrometer	Organic Content	Loss On Ignition	Acid Sol Sulphate (Total)	Sulphate: Water Soluble	Carbonate Titration	pH	Chloride Content	Chloride Content Acid	Compaction Light	Compaction Heavy	Compaction Vibrating Hamr	Moisture Condition Value	Moisture Condition Relation	CBR	Consolidation	Pre ssu res	Swelling Pressure Test	Laboratory Vane test	Small Direct Shearbox	Ring shear Test	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxi	Consolidated Undrained Tri	Consolidated Undrained Tri	Rock Uniaxial compr	Point Load
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0 = test scheduled,
1 = test completed as scheduled,
0* = sample not suitable for scheduled test

Project ID	2025MO103
Project Name	Rooaunalaghta Wind Farm
Schedule ID	2025MO103_2

Client	GreenSource
Due Date	05/12/2025 12:00
Scheduled Date	05/12/2025 12:00

Remarks

Sample Details							Classification						Chemical / Concrete								Compaction						Compressibility			Strength (Total)								Stregth (Effective			Rock	
Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Moisture Content	Atterberg 4 Point	Particle Density by Gas Jar	Particle Density by Small Pyknometer	Particle Size Distribution	Hydrometer	Organic Content	Loss On Ignition	Acid Sol Sulphate (Total)	Sulphate: Water Soluble	Carbonate Titration	pH	Chloride Content	Chloride Content Acid	Compaction Light	Compaction Heavy	Compaction Vibrating Hamr	Moisture Condition Value	Moisture Condition Relation	CBR	Consolidation	Pressures	Swelling Pressure Test	Laboratory Vane test	Small Direct Shearbox	Ring shear Test	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triax	Consolidated Undrained Tri	Consolidated Undrained Tri	Rock Uniaxial compr	Point Load
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BH-09	2.60	3.50	C		14/11/25																																				1
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BH-09	3.50	5.00	C		14/11/25																																				1
BH-09	5.00	6.50	C		14/11/25																																				

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

Project ID 2025MO103
Project Name Rooaunalaghta Wind Farm
Schedule ID 2025MO103_2

Client GreenSource
Due Date 05/12/2025 12:00
Scheduled Date 05/12/2025 12:00

Remarks

Sample Details							Classification						Chemical / Concrete								Compaction						Compressibility			Strength (Total)							Stregth (Effective			Rock	
Location	Depth (m)	Base Depth	Sample Type	Sample Ref	Date Sampled	Storage	Moisture Content	Atterberg 4 Point	Particle Density by Gas Jar	Particle Density by Small Pyknometer	Particle Size Distribution	Hydrometer	Organic Content	Loss On Ignition	Acid Sol Sulphate (Total)	Sulphate: Water Soluble	Carbonate Titration	pH	Chloride Content	Chloride Content Acid	Compaction Light	Compaction Heavy	Compaction Vibrating Hamr	Moisture Condition Value	Moisture Condition Relation	CBR	Consolidation	Pressures	Swelling Pressure Test	Laboratory Vane test	Small Direct Shearbox	Ring shear Test	Triaxial Quick Undrained	(Specify Cell Pressure)	Triaxial UU Multi Stage	Triaxial UU Multi Specimen	Consolidated Drained Triaxi	Consolidated Undrained Tri	Consolidated Undrained Tri	Rock Uniaxial compr	Point Load
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TP-01	1.30	1.50	B	2	13/11/25	BA32	1				1																														
TP-02	0.40	0.60	B	1	11/11/25	BA32		1																																	
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TP-09	0.50	0.70	B	1	14/11/25	BA32																																			
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TP-11	0.40	0.60	B	1	17/11/25																																				
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TP-15	0.70	0.90	D	2	19/11/25																																				
TP-15	1.70	1.90	B	3	19/11/25			1																																	

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

-2146826273

Summary of Classification Test Results

Project No.: 2025MO103

Project Name: Roonaunalaghta Wind Farm

Hole No.	Sample Ref	Top	Base	Type		Soil Description	Density bulk Mg/m3	Density dry Mg/m3	w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
TP-01	2	1.30	1.50	B		Light brown silty very sandy fine and medium GRAVEL.			7.9	21					
TP-02	1	0.40	0.60	B		Light brown slightly sandy gravelly SILT.			10.0	51	22	13	9		CL
TP-02	2	0.40	0.60	D		Light brown slightly sandy gravelly SILT.			10.0						
TP-03	2	1.30	1.50	B		Light brown silty very sandy GRAVEL.			9.7	16					
TP-04	1	0.30	0.50	B		Brown slightly sandy gravelly SILT.			15.0						
TP-05	1	0.60	0.80	B		Light brown silty very sandy fine and medium GRAVEL.			10.0	27					
TP-06	3	1.60	1.80	B		Light brown slightly gravelly slightly sandy SILT.			8.8	57	21	12	9		CL
TP-07	1	0.60	0.80	B		Light brown very silty very sandy medium GRAVEL.			8.9	33					
TP-08	1	0.60	0.80	B		Light brown slightly sandy gravelly SILT.			10.0						
TP-08	3	2.60	2.80	B		Grey silty SAND and GRAVEL. Sand is coarse, gravel is fine and medium.			5.9	31					
TP-09	2	1.50	1.70	B		Light brown silty very sandy fine and medium GRAVEL. Sand is coarse.			7.4	30					NP
TP-10	1	0.50	0.70	B		Light brown slightly sandy gravelly SILT.			11.0						
TP-10	3	2.40	2.60	B		Light brown very silty very sandy medium GRAVEL.			7.9	32					
TP-12	1	0.40	0.60	B		Light brown slightly sandy gravelly SILT.			16.0						
TP-14	1	0.50	0.70	B		Greyish-light brown slightly sandy slightly gravelly SILT.			46.0	82	49	31	18		MI
TP-14	2	0.50	0.70	D		Greyish-light brown slightly sandy slightly gravelly SILT.			46.0						
TP-15	1	0.70	0.90	B		Greyish-light brown slightly gravelly slightly sandy SILT. Sand is medium.			31.0	80					
TP-15	3	1.70	1.90	B		Grey sandy silty medium GRAVEL.			8.8	27	22	18	4		ML

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

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

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

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

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

Date Printed: 24/02/2026 12:15

QC From No: R1

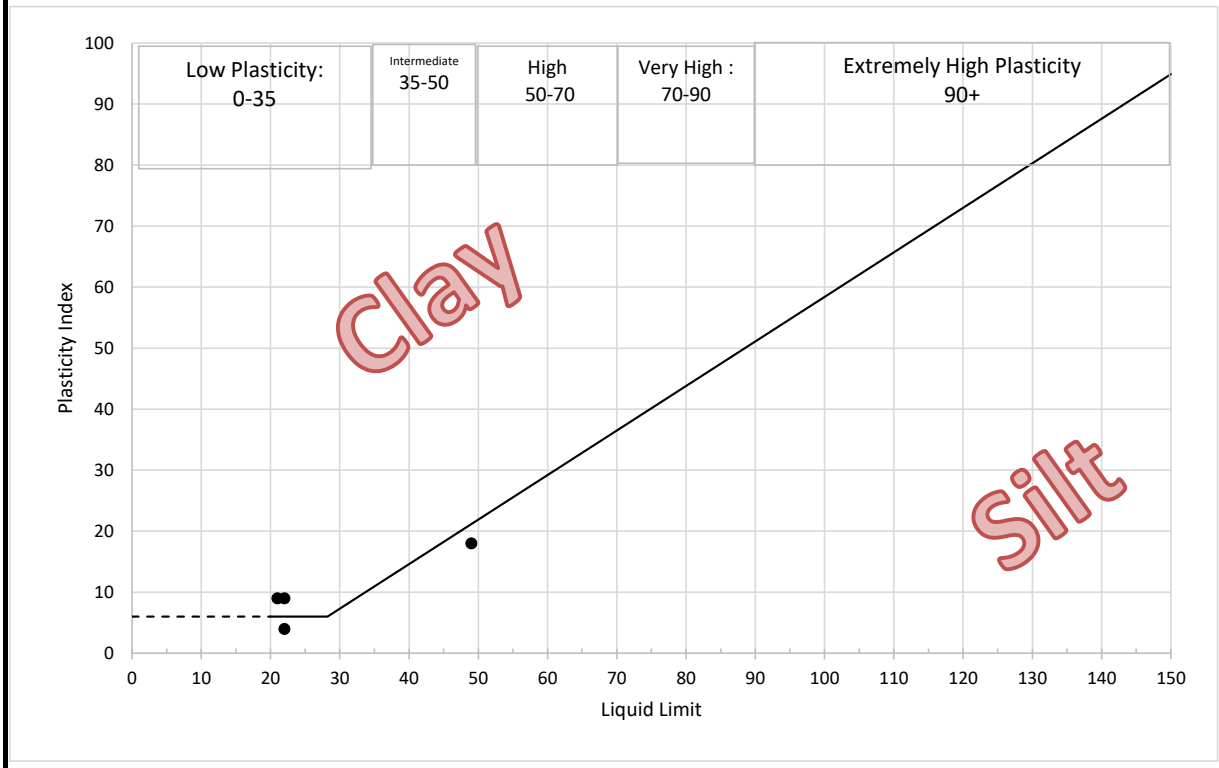
Approved By: DCD

Table 1 sheet 1

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

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

	Plasticity (A-Line) Chart	Project Number
Project Name:	**Roonaunalaghta Wind Farm**	
Location:		2025MO103



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

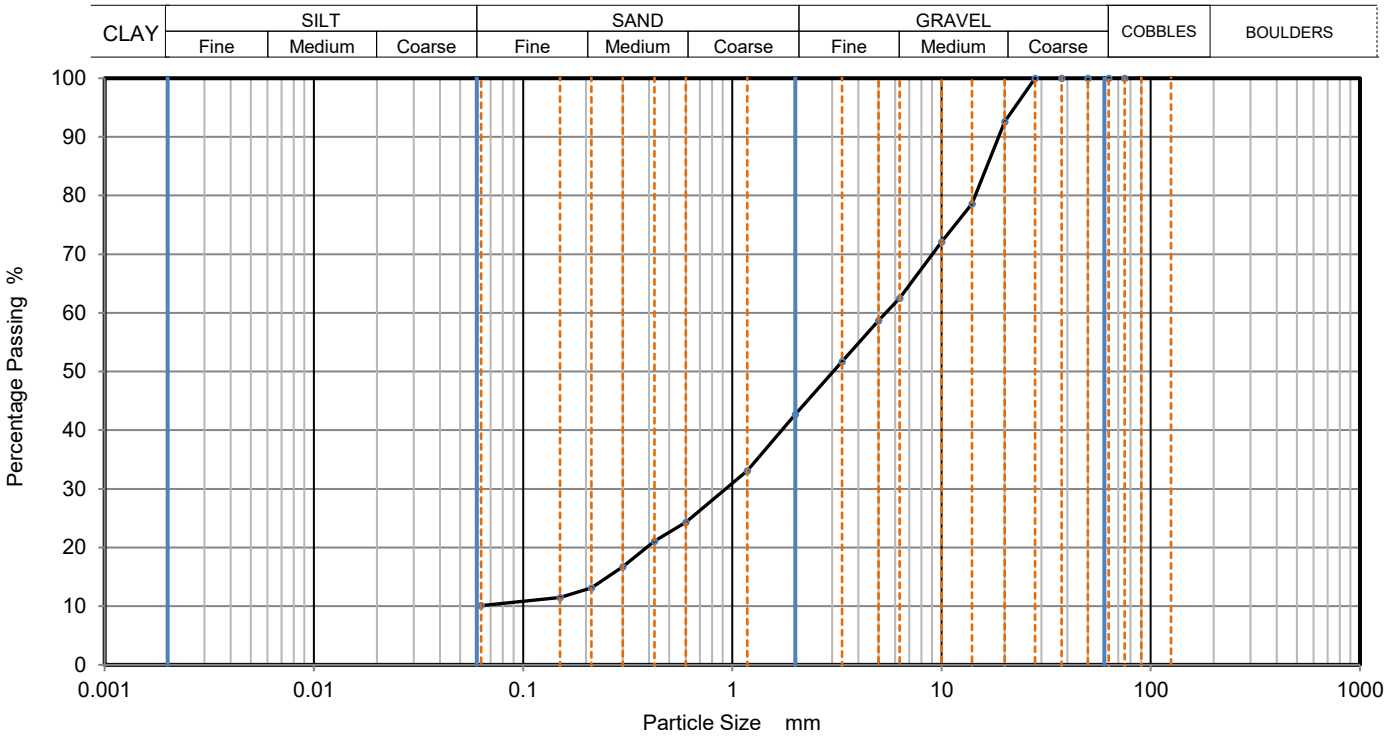
Plasticity abeviations: L = Low, I = Intermediate = H = High, V = Very High, E = Extremely High.

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

Chart taken from BS5930: 2010

QC Form: R1

-2146826273	PARTICLE SIZE DISTRIBUTION			Job Ref	2025MO103
				Borehole/Pit No.	TP-01
Site Name	Roonaunalaghta Wind Farm			Sample No.	2
Soil Description	Light brown silty very sandy fine and medium GRAVEL.			Depth, m	1.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL1202512021



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	93		
14	79		
10	72		
6.3	63		
5	59		
3.35	52		
2	43		
1.18	33		
0.6	24		
0.425	21		
0.3	17		
0.212	13		
0.15	12		
0.063	10		

Dry Mass of sample, g	794

Sample Proportions	% dry mass
Very coarse	0
Gravel	57
Sand	33
Fines <0.063mm	10

Grading Analysis		
D100	mm	
D60	mm	5.41
D30	mm	0.928
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

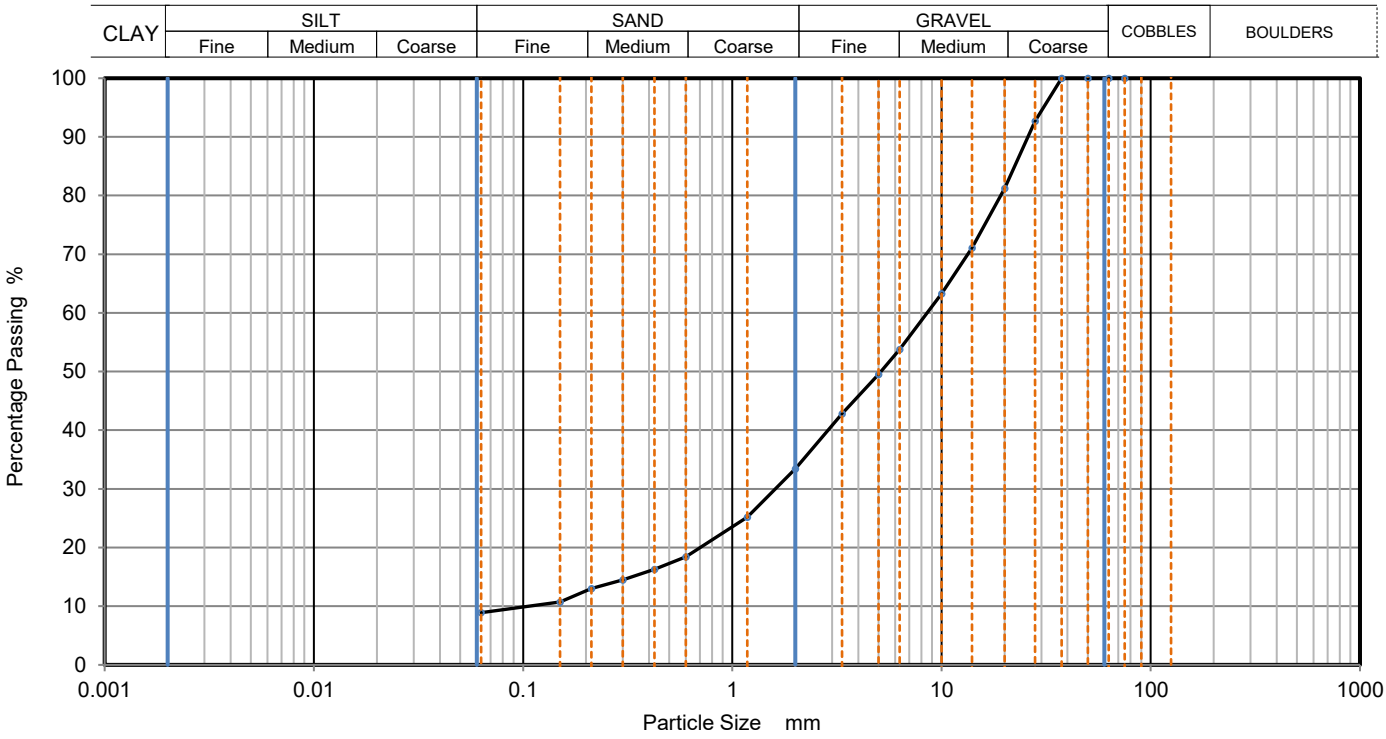
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	1
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Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

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

-2146826273	PARTICLE SIZE DISTRIBUTION			Job Ref	2025MO103
				Borehole/Pit No.	TP-03
Site Name	Roonaunalaghta Wind Farm			Sample No.	2
Soil Description	Light brown silty very sandy GRAVEL.			Depth, m	1.30
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL1202512025



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	93		
20	81		
14	71		
10	63		
6.3	54		
5	50		
3.35	43		
2	33		
1.18	25		
0.6	18		
0.425	16		
0.3	15		
0.212	13		
0.15	11		
0.063	9		

Dry Mass of sample, g	801

Sample Proportions	% dry mass
Very coarse	0
Gravel	67
Sand	25
Fines <0.063mm	9

Grading Analysis		
D100	mm	
D60	mm	8.5
D30	mm	1.6
D10	mm	0.107
Uniformity Coefficient		79
Curvature Coefficient		2.8

Remarks

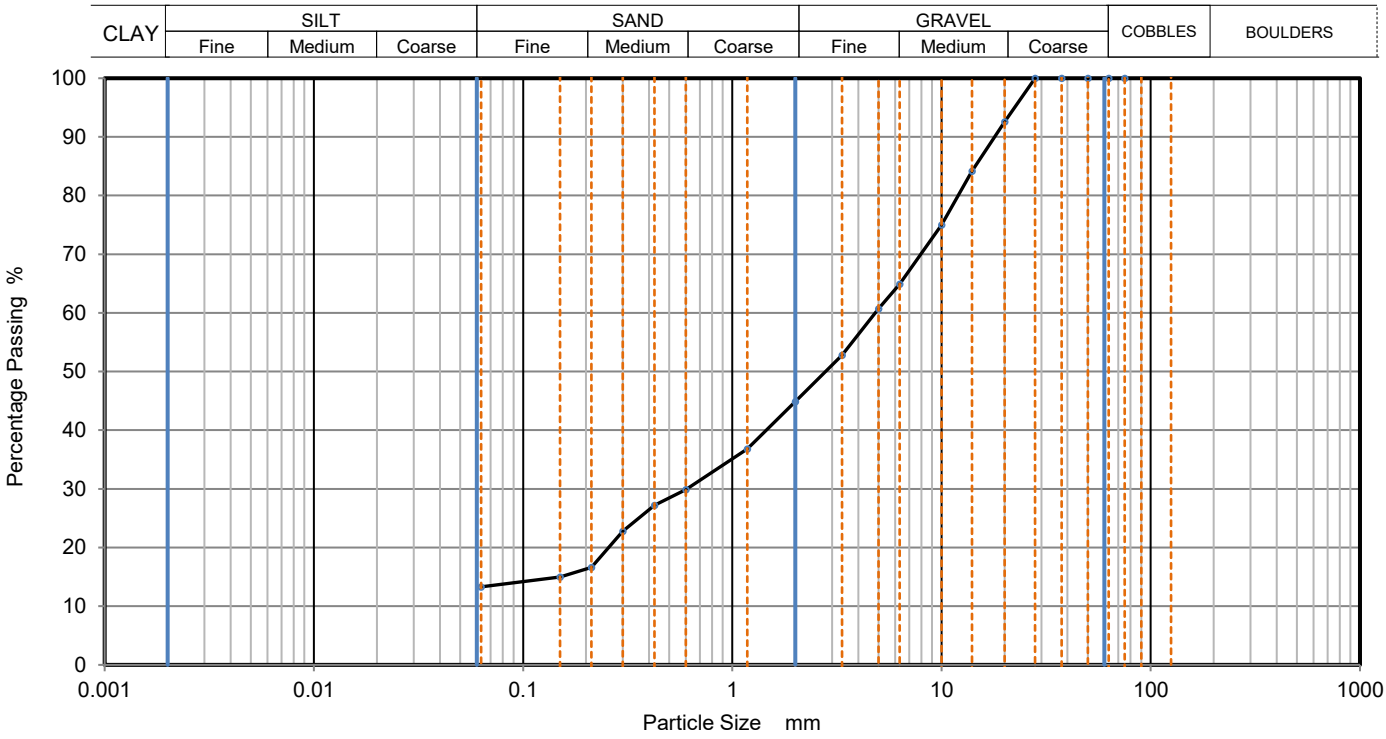
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Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

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

-2146826273	PARTICLE SIZE DISTRIBUTION			Job Ref	2025MO103
				Borehole/Pit No.	TP-05
Site Name	Roonaunalaghta Wind Farm			Sample No.	1
Soil Description	Light brown silty very sandy fine and medium GRAVEL.			Depth, m	0.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL1202512027



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	93		
14	84		
10	75		
6.3	65		
5	61		
3.35	53		
2	45		
1.18	37		
0.6	30		
0.425	27		
0.3	23		
0.212	17		
0.15	15		
0.063	13		

Dry Mass of sample, g	754

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

Grading Analysis		
D100	mm	
D60	mm	4.82
D30	mm	0.604
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

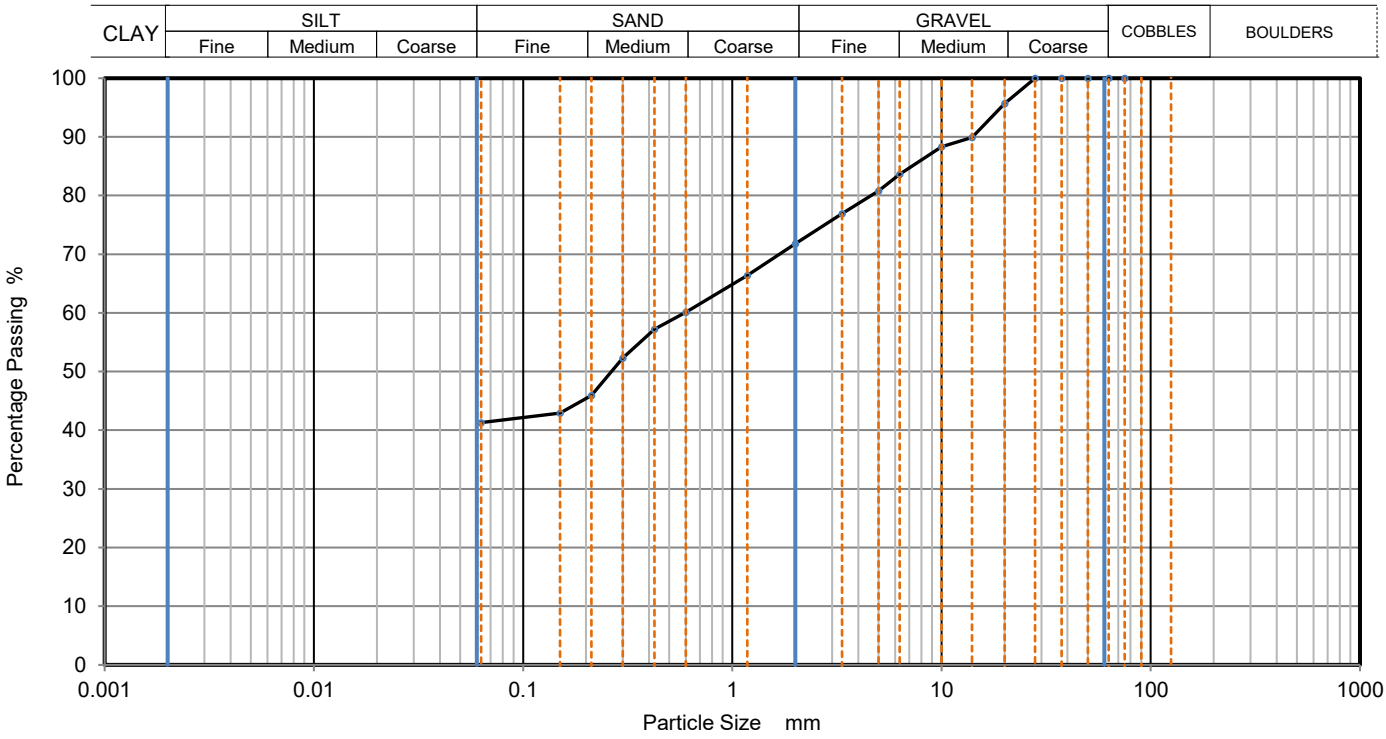
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Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

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

-2146826273	PARTICLE SIZE DISTRIBUTION			Job Ref	2025MO103
				Borehole/Pit No.	TP-06
Site Name	Roonaunalaghta Wind Farm			Sample No.	3
Soil Description	Light brown slightly gravelly slightly sandy SILT.			Depth, m	1.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12025120210



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	90		
10	88		
6.3	84		
5	81		
3.35	77		
2	72		
1.18	66		
0.6	60		
0.425	57		
0.3	52		
0.212	46		
0.15	43		
0.063	41		

Dry Mass of sample, g	836

Sample Proportions	% dry mass
Very coarse	0
Gravel	28
Sand	31
Fines <0.063mm	41

Grading Analysis		
D100	mm	
D60	mm	0.59
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

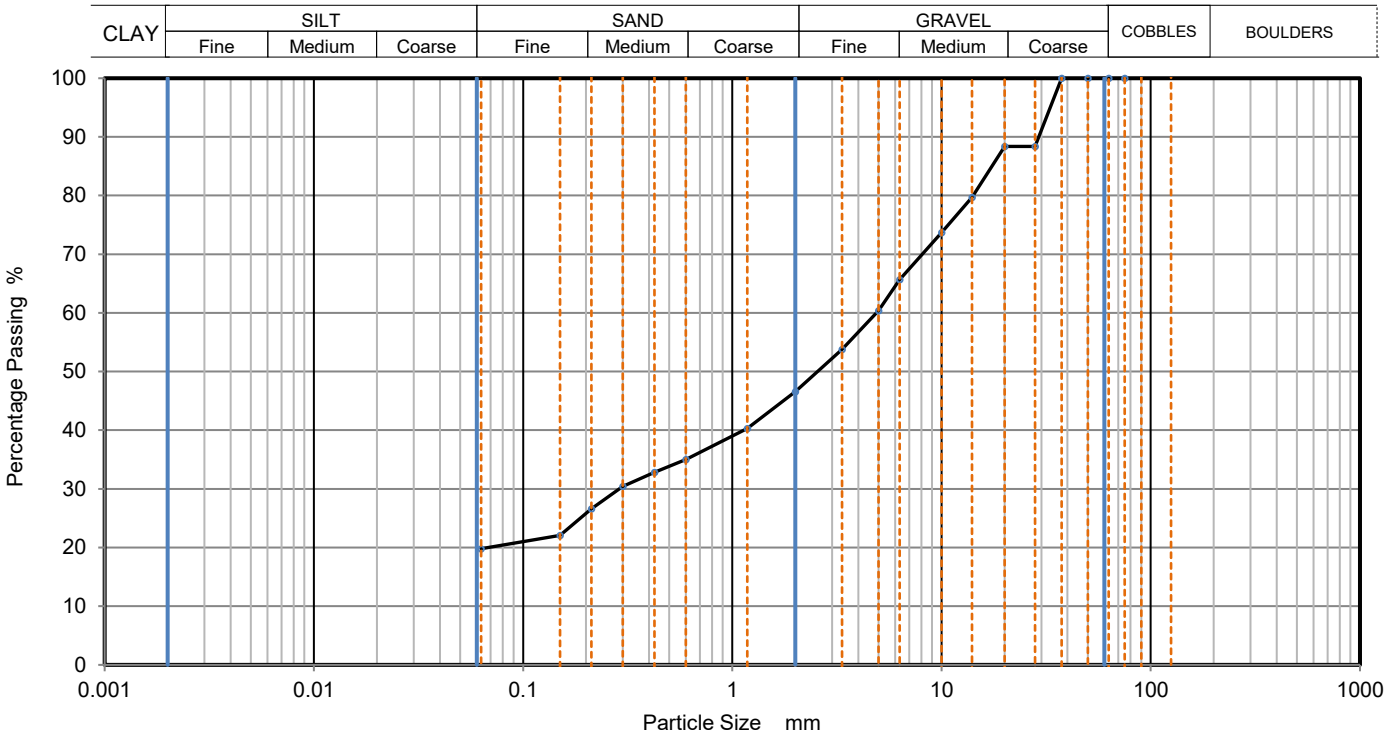
Preparation and testing in accordance with BS1377 unless noted below

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

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

-2146826273	PARTICLE SIZE DISTRIBUTION			Job Ref	2025MO103
				Borehole/Pit No.	TP-07
Site Name	Roonaunalaghta Wind Farm			Sample No.	1
Soil Description	Light brown very silty very sandy medium GRAVEL.			Depth, m	0.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12025120212



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	88		
20	88		
14	80		
10	74		
6.3	66		
5	60		
3.35	54		
2	47		
1.18	40		
0.6	35		
0.425	33		
0.3	30		
0.212	27		
0.15	22		
0.063	20		

Dry Mass of sample, g	765

Sample Proportions	% dry mass
Very coarse	0
Gravel	53
Sand	27
Fines <0.063mm	20

Grading Analysis		
D100	mm	
D60	mm	4.87
D30	mm	0.29
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

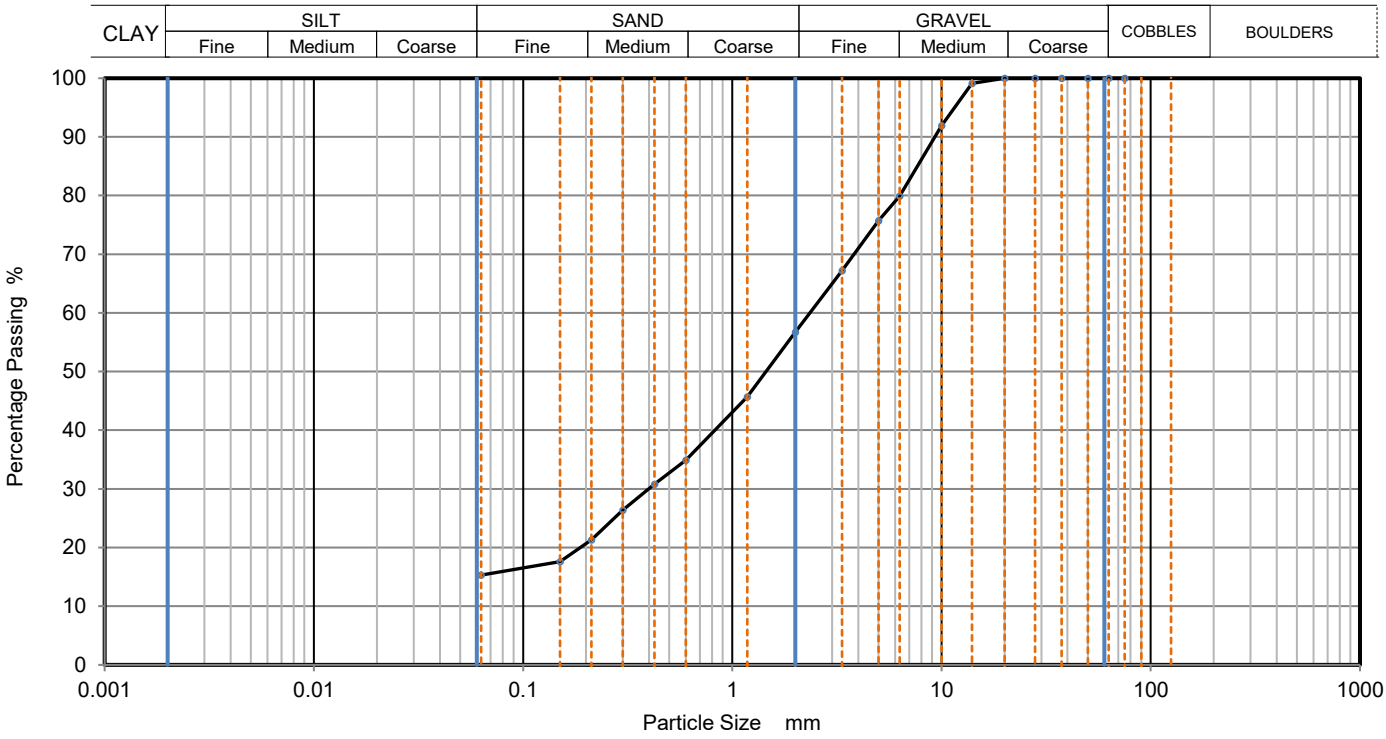
Preparation and testing in accordance with BS1377 unless noted below

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

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

-2146826273	PARTICLE SIZE DISTRIBUTION			Job Ref	2025MO103
				Borehole/Pit No.	TP-08
Site Name	Roonaunalaghta Wind Farm			Sample No.	3
Soil Description	Grey silty SAND and GRAVEL. Sand is coarse, gravel is fine and medium.			Depth, m	2.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12025120215



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	92		
6.3	80		
5	76		
3.35	67		
2	57		
1.18	46		
0.6	35		
0.425	31		
0.3	26		
0.212	21		
0.15	18		
0.063	15		

Dry Mass of sample, g	782

Sample Proportions	% dry mass
Very coarse	0
Gravel	43
Sand	41
Fines <0.063mm	15

Grading Analysis		
D100	mm	
D60	mm	2.35
D30	mm	0.4
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

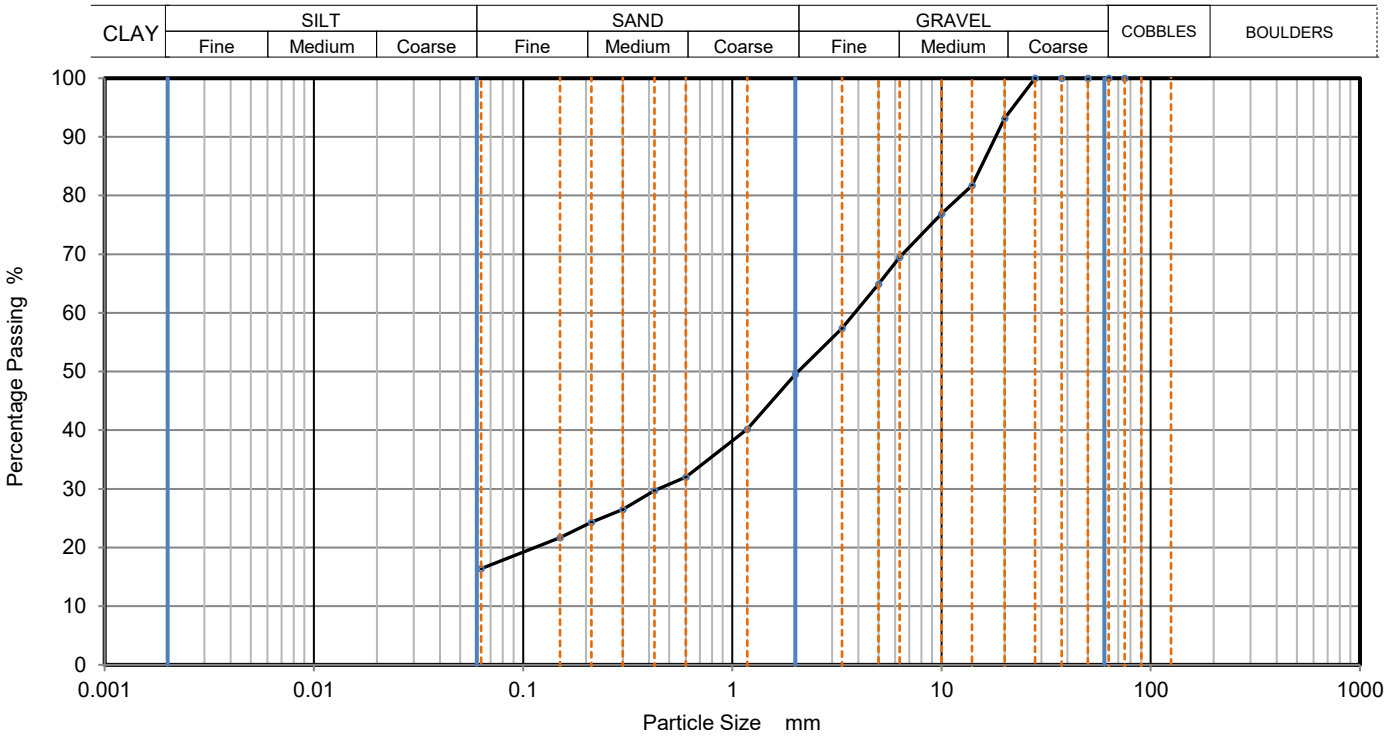
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	1
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Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

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

-2146826273	PARTICLE SIZE DISTRIBUTION			Job Ref	2025MO103
				Borehole/Pit No.	TP-09
Site Name	Roonaunalaghta Wind Farm			Sample No.	2
Soil Description	Light brown silty very sandy fine and medium GRAVEL. Sand is coarse.			Depth, m	1.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12025120217



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	93		
14	82		
10	77		
6.3	70		
5	65		
3.35	57		
2	50		
1.18	40		
0.6	32		
0.425	30		
0.3	27		
0.212	24		
0.15	22		
0.063	16		

Dry Mass of sample, g	743

Sample Proportions	% dry mass
Very coarse	0
Gravel	51
Sand	33
Fines <0.063mm	16

Grading Analysis		
D100	mm	
D60	mm	3.86
D30	mm	0.443
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

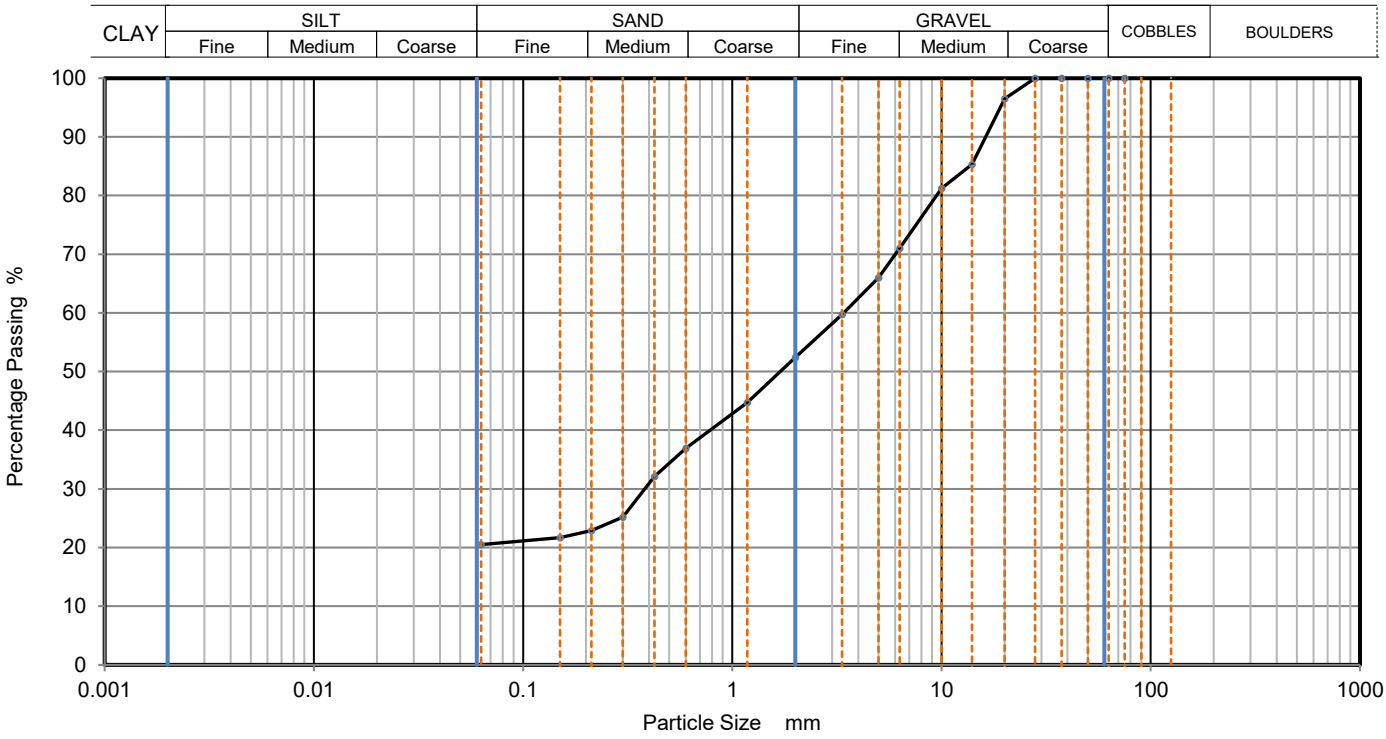
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Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

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

-2146826273	PARTICLE SIZE DISTRIBUTION			Job Ref	2025MO103
				Borehole/Pit No.	TP-10
Site Name	Roonaunalaghta Wind Farm			Sample No.	3
Soil Description	Light brown very silty very sandy medium GRAVEL.			Depth, m	2.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12025120220



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	85		
10	81		
6.3	71		
5	66		
3.35	60		
2	52		
1.18	45		
0.6	37		
0.425	32		
0.3	25		
0.212	23		
0.15	22		
0.063	21		

Dry Mass of sample, g	772

Sample Proportions	% dry mass
Very coarse	0
Gravel	48
Sand	32
Fines <0.063mm	21

Grading Analysis		
D100	mm	
D60	mm	3.41
D30	mm	0.382
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

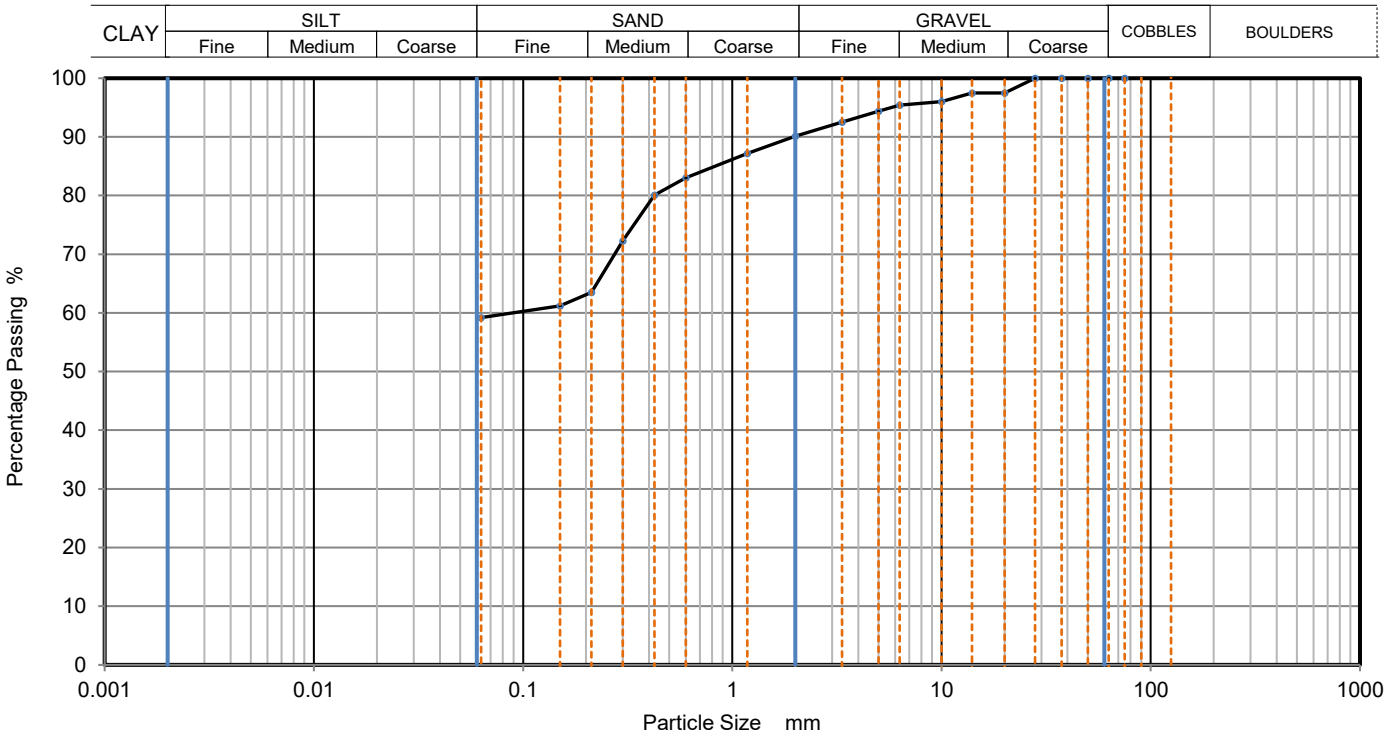
Preparation and testing in accordance with BS1377 unless noted below

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

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

-2146826273	PARTICLE SIZE DISTRIBUTION			Job Ref	2025MO103
				Borehole/Pit No.	TP-15
Site Name	Roonaunalaghta Wind Farm			Sample No.	1
Soil Description	Greyish-light brown slightly gravelly slightly sandy SILT. Sand is medium.			Depth, m	0.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12025120226



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	98		
14	98		
10	96		
6.3	95		
5	94		
3.35	93		
2	90		
1.18	87		
0.6	83		
0.425	80		
0.3	72		
0.212	64		
0.15	61		
0.063	59		

Dry Mass of sample, g	612

Sample Proportions	% dry mass
Very coarse	0
Gravel	10
Sand	31
Fines <0.063mm	59

Grading Analysis		
D100	mm	
D60	mm	0.0885
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	1
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Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

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

IDL

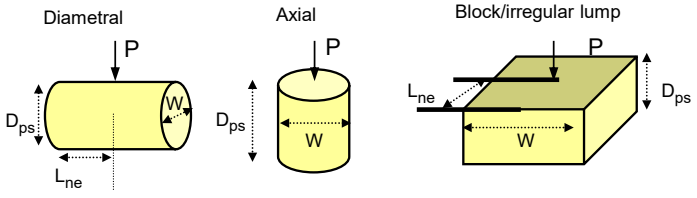
Point Load Strength Index Tests
Summary of Results

Project No.: 2025MO103

Project Name: Roonaunalaghta Wind Farm

Borehole No.	Sample			Specimen		Rock Type and Test condition	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P	Equivalent diameter, De	Point Load Strength Index		Remarks (including water content if measured)
	Top Depth	Base Depth	Type	Ref	Top		Type (D, A, I, B)	Direction (L, P or U)		Lne	W	Dps	Dps'			Is	Is(50)	
	m	m			m					mm	mm	mm	mm	kN	mm	MPa	MPa	
BH-01	3.30	4.8	C	4.1-4.2	4.10		D	U	YES		63.4		63.4	11.3	63.4	2.8	3.1	Strong
BH-02	2.00	3.5	C	2.8-3.1	2.80		D	U	YES		63.4		63.4	15.4	63.4	3.8	4.3	Very Strong
BH-02	3.50	5	C	4.1-4.3	4.10		D	U	YES		63.4		63.4	17.4	63.4	4.3	4.8	Very Strong
BH-03	3.20	4.2	C	4.1-4.2	4.10		D	U	YES		63.4		63.4	18.2	63.4	4.5	5.0	Very Strong
BH-03	4.20	4.8	C	4.5-4.6	4.50		D	U	YES		63.4		63.4	17.3	63.4	4.3	4.8	Very Strong
BH-04	3.00	3.6	C	3.2-3.3	3.20		D	U	YES		63.4		63.4	16.4	63.4	4.1	4.5	Very Strong
BH-05	3.50	5	C	4.3-4.5	4.30		D	U	YES		63.4		63.4	17.0	63.4	4.2	4.7	Very Strong
BH-06	3.10	3.7	C	3.1-3.2	3.10		D	U	YES		63.4		63.4	16.0	63.4	4.0	4.4	Very Strong
BH-06	3.70	5	C	4.0-4.4	4.00		D	U	YES		63.4		63.4	17.3	63.4	4.3	4.8	Very Strong
BH-07	4.70	6.3	C	5.3-5.5	5.30		D	U	YES		63.4		63.4	14.7	63.4	3.7	4.1	Very Strong
BH-07	6.30	7.7	C	6.9-7.14	6.90		D	U	YES		63.4		63.4	16.6	63.4	4.1	4.6	Very Strong
BH-08	3.00	4.6	C	4.2-4.4	4.20		D	U	YES		63.4		63.4	16.2	63.4	4.0	4.5	Very Strong
BH-08	4.60	6.1	C	5.5-5.7	5.50		D	U	YES		63.4		63.4	17.8	63.4	4.4	4.9	Very Strong
BH-09	2.60	3.5	C	3.2-3.35	3.20		D	U	YES		63.4		63.4	11.4	63.4	2.8	3.1	Strong
BH-09	3.50	5	C	4.2-4.3	4.20		D	U	YES		63.4		63.4	9.3	63.4	2.3	2.6	Strong

Test Type
D - Diametral, A - Axial, I - Irregular Lump, B - Block
Direction
L - parallel to planes of weakness
P - perpendicular to planes of weakness
U - unknown or random
Dimensions
Dps - Distance between platens (platen separation)
Dps' - at failure (see ISRM note 6)
Lne - Length from platens to nearest free end
W - Width of shortest dimension perpendicular to load, P



Test performed in accordance with ISRM Suggested Methods : 2007, unless noted otherwise
Detailed legend for test and dimensions, based on ISRM, is shown above.
Size factor, F = (De/50)0.45 for all tests.

Date Printed: 24/02/2026

Approved By: DCD

Table: 1

sheet: 1

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39
Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

Appendix 5
Trial Pit Photographs



Figure 1 H:\2025\25MO103_Rooaunalaghta wf photos\Tp1roo...jpg



Figure 3 H:\2025\25MO103_Rooaunalaghta wf photos\Tp1roo.jpg



Figure 2 H:\2025\25MO103_Rooaunalaghta wf photos\Tp1roo..jpg



Figure 4 H:\2025\25MO103_Rooaunalaghta wf photos\Tp2roo...jpg



Figure 5 H:\2025\25MO103_Rooaunalaghta wf photos\Tp2roo..jpg



Figure 7 H:\2025\25MO103_Rooaunalaghta wf photos\Tp3roo...jpg



Figure 6 H:\2025\25MO103_Rooaunalaghta wf photos\Tp2roo.jpg



Figure 8 H:\2025\25MO103_Rooaunalaghta wf photos\Tp3roo..jpg



Figure 9 H:\2025\25MO103_Rooaunalaghta wf photos\Tp3roo.jpg



Figure 11 H:\2025\25MO103_Rooaunalaghta wf photos\Tp4roo..jpg



Figure 10 H:\2025\25MO103_Rooaunalaghta wf photos\Tp4roo...jpg



Figure 12 H:\2025\25MO103_Rooaunalaghta wf photos\Tp4roo.jpg



Figure 13 H:\2025\25MO103_Rooaunalaghta wf photos\Tp5roo...jpg



Figure 15 H:\2025\25MO103_Rooaunalaghta wf photos\Tp5roo.jpg



Figure 14 H:\2025\25MO103_Rooaunalaghta wf photos\Tp5roo..jpg



Figure 16 H:\2025\25MO103_Rooaunalaghta wf photos\Tp6roo...jpg



Figure 17 H:\2025\25MO103_Rooaunalaghta wf photos\Tp6roo..jpg



Figure 19 H:\2025\25MO103_Rooaunalaghta wf photos\Tp7roo...jpg



Figure 18 H:\2025\25MO103_Rooaunalaghta wf photos\Tp6roo.jpg



Figure 20 H:\2025\25MO103_Rooaunalaghta wf photos\Tp7roo..jpg



Figure 21 H:\2025\25MO103_Rooaunalaghta wf photos\Tp7roo.jpg



Figure 23 H:\2025\25MO103_Rooaunalaghta wf photos\Tp8roo..jpg



Figure 22 H:\2025\25MO103_Rooaunalaghta wf photos\Tp8roo...jpg



Figure 24 H:\2025\25MO103_Rooaunalaghta wf photos\Tp8roo.jpg



Figure 25 H:\2025\25MO103_Rooaunalaghta wf photos\Tp9roo...jpg



Figure 27 H:\2025\25MO103_Rooaunalaghta wf photos\Tp9roo.jpg



Figure 26 H:\2025\25MO103_Rooaunalaghta wf photos\Tp9roo..jpg

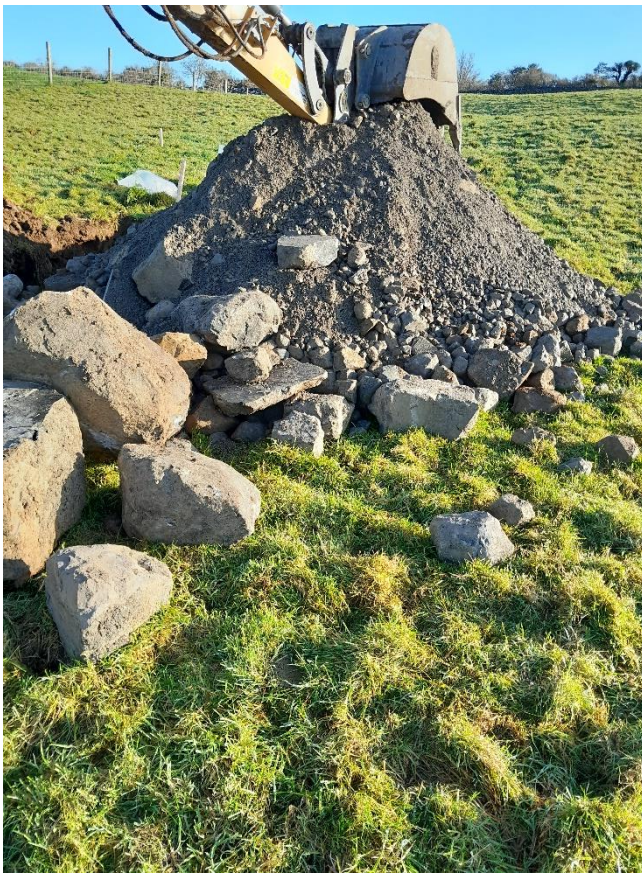


Figure 28 H:\2025\25MO103_Rooaunalaghta wf photos\Tp10roo...jpg



Figure 29 H:\2025\25MO103_Rooaunalaghta wf photos\Tp10roo..jpg



Figure 31 H:\2025\25MO103_Rooaunalaghta wf photos\Tp11roo...jpg



Figure 30 H:\2025\25MO103_Rooaunalaghta wf photos\Tp10roo.jpg



Figure 32 H:\2025\25MO103_Rooaunalaghta wf photos\Tp11roo..jpg



Figure 33 H:\2025\25MO103_Rooaunalaghta wf photos\Tp11roo.jpg



Figure 35 H:\2025\25MO103_Rooaunalaghta wf photos\Tp12roo..jpg



Figure 34 H:\2025\25MO103_Rooaunalaghta wf photos\Tp12roo...jpg



Figure 36 H:\2025\25MO103_Rooaunalaghta wf photos\Tp12roo.jpg



Figure 37 H:\2025\25MO103_Rooaunalaghta wf photos\Tp13roo...jpg



Figure 39 H:\2025\25MO103_Rooaunalaghta wf photos\Tp13roo.jpg



Figure 38 H:\2025\25MO103_Rooaunalaghta wf photos\Tp13roo..jpg



Figure 40 H:\2025\25MO103_Rooaunalaghta wf photos\Tp14roo...jpg



Figure 41 H:\2025\25MO103_Rooaunalaghta wf photos\Tp14roo..jpg



Figure 43 H:\2025\25MO103_Rooaunalaghta wf photos\Tp15roo...jpg



Figure 42 H:\2025\25MO103_Rooaunalaghta wf photos\Tp14roo.jpg



Figure 44 H:\2025\25MO103_Rooaunalaghta wf photos\Tp15roo..jpg



Figure 45 H:\2025\25MO103_Rooaunalaghta wf photos\Tp15roo.jpg

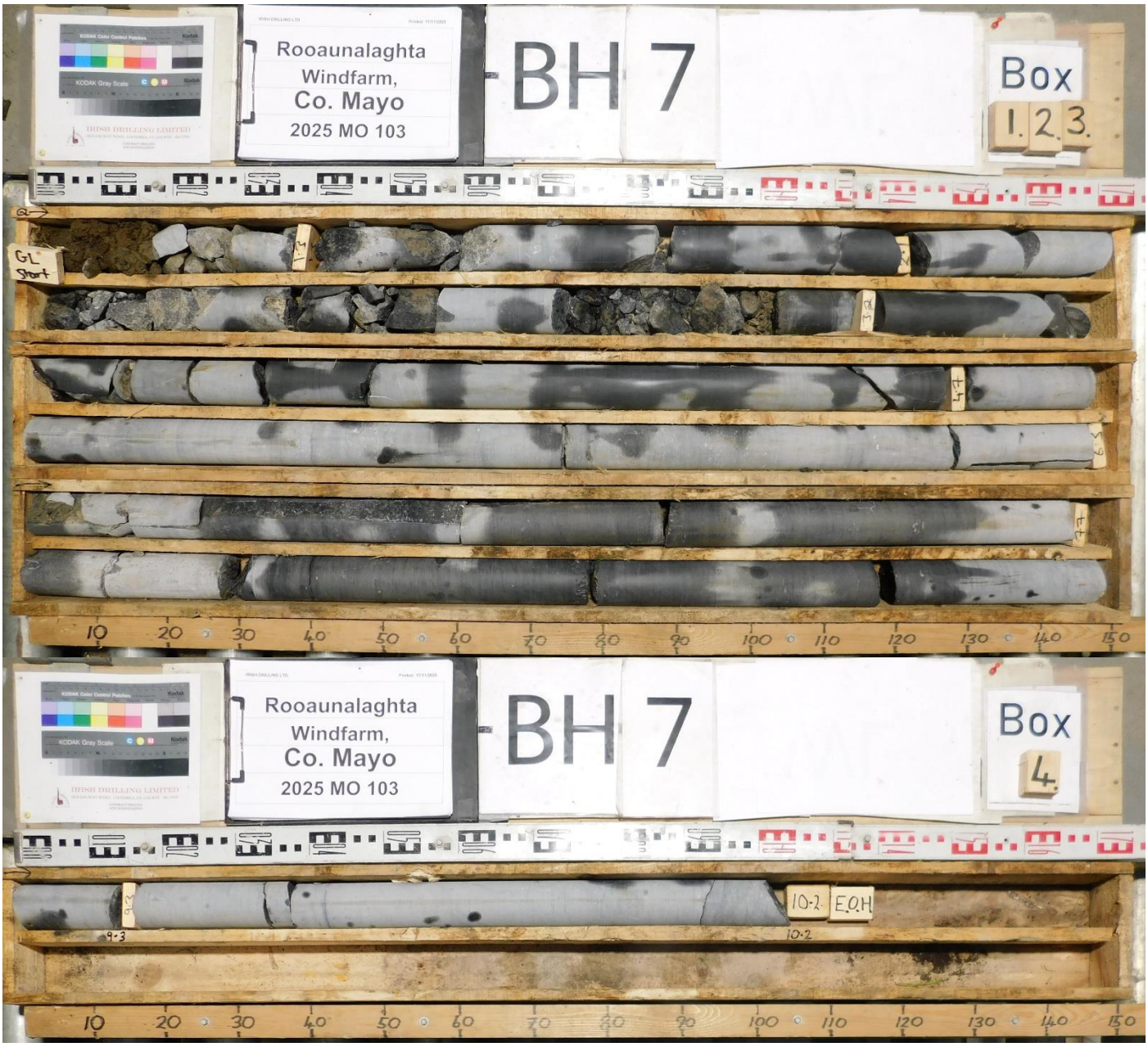
Appendix 6
Rotary Core Photographs


Rooaunalaghta
Windfarm,
Co. Mayo
2025 MO 103
BH 1
Box
1. 2.
GL Start
6.3 EOH
E.O.H
Rooaunalaghta
Windfarm,
Co. Mayo
2025 MO 103
BH 2
Box
1. 2. 3.
6.2 EOH
E.O.H
6.2 M


Rooaunalaghta
Windfarm,
Co. Mayo
2025 MO 103
BH 3
Box
1. 2. 3.
Start
GL
E.O.H.
7.8
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150


Rooaunalaghta
Windfarm,
Co. Mayo
2025 MO 103
BH 4
Box
1. 2. 3.
G.L.
E.O.H.
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150


Rooaunalaghta
Windfarm,
Co. Mayo
2025 MO 103
BH 5
Box
1. 2.
G.L.
E.O.H
Rooaunalaghta
Windfarm,
Co. Mayo
2025 MO 103
BH 6
Box
1. 2.
G.L.
E.O.H.


Rooaunalaghta
Windfarm,
Co. Mayo
2025 MO 103
BH 7
Box
1. 2. 3.
GL
Short
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
Rooaunalaghta
Windfarm,
Co. Mayo
2025 MO 103
BH 7
Box
4.
10·2
E.O.H
9·3
10·2
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150


Rooaunalaghta
Windfarm,
Co. Mayo
2025 MO 103
BH 8
Box
1. 2.
G.L.
E.O.H.
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
Rooaunalaghta
Windfarm,
Co. Mayo
2025 MO 103
BH 9
Box
1. 2. 3.
G.L.
E.O.H.
10 20 30 40 50 60 70 80 90 100 110 120 130 140

Appendix 7
Site Plans



Legend

Trial Hole

Borehole Location

Rev.	DESCRIPTION	DATE
P1		
P0	Report	27/01/2026

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway,
Tel: 091 841274
Email : info@irishdrilling.ie

Project: Rooaunalaghta

Client:

Drawing Title: Site Investigation
I.D.L (AS BUILT)

Date	Scale (A1)	Drawn by	Checked by	Approved by
27-01-26	Not to Scale	MM	RK	RK

Status
PLANNING ☐ FOR APPROVAL ☐
TENDER ☐ FOR CONSTRUCTION ☐
AS BUILT ☒

Dwg. No. IDL-WK-1000



Legend

Trial Hole

Borehole Location

Rev.	DESCRIPTION	DATE
P1		
P0	Report	27/01/2026

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway,
Tel: 091 841274
Email : info@irishdrilling.ie

Project: Rooaunalaghta

Client:

Drawing Title: Site Investigation
I.D.L (AS BUILT)

Date	Scale (A1)	Drawn by	Checked by	Approved by
27-01-26	Not to Scale	MM	RK	RK

Status
PLANNING ☐ FOR APPROVAL ☐
TENDER ☐ FOR CONSTRUCTION ☐
AS BUILT ☒

Dwg. No. IDL-WK-1000



Legend

- Trial Hole
- Borehole Location

Rev.	DESCRIPTION	DATE
P1 P0	Report	27/01/2026

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway,
Tel: 091 841274
Email : info@irishdrilling.ie

Project: Rooaunalaghta

Client:

Drawing Title: Site Investigation
I.D.L (AS BUILT)

Date	Scale (A1)	Drawn by	Checked by	Approved by
27-01-26	Not to Scale	MM	RK	RK

Status
PLANNING ☐ FOR APPROVAL ☐
TENDER ☐ FOR CONSTRUCTION ☐
AS BUILT ☒

Dwg. No. IDL-WK-1000



Legend

- Trial Hole
- Borehole Location

Rev.	DESCRIPTION	DATE
P1		
P0	Report	27/01/2026

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway,
Tel: 091 841274
Email : info@irishdrilling.ie

Project: Rooaunalaghta

Client:

Drawing Title: Site Investigation
I.D.L (AS BUILT)

Date	Scale (A1)	Drawn by	Checked by	Approved by
27-01-26	Not to Scale	MM	RK	RK

Status
PLANNING ☐ FOR APPROVAL ☐
TENDER ☐ FOR CONSTRUCTION ☐
AS BUILT ☒

Dwg. No. IDL-WK-1000



Legend

Trial Hole

Borehole Location

Rev.	DESCRIPTION	DATE
P1 P0	Report	27/01/2026

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway,
Tel: 091 841274
Email : info@irishdrilling.ie

Project: Rooaunalaghta

Client:

Drawing Title: Site Investigation
I.D.L (AS BUILT)

Date	Scale (A1)	Drawn by	Checked by	Approved by
27-01-26	Not to Scale	MM	RK	RK

Status
PLANNING ☐ FOR APPROVAL ☐
TENDER ☐ FOR CONSTRUCTION ☐
AS BUILT ☒

Dwg. No. IDL-WK-1000

Rooaunalaghta WF

County Mayo

Geophysical Survey

Report Status: Final

MGX Project Number: 6987

MGX File Reference: 6987f-005.doc

07th October 2026

Confidential Report To:

TOBIN
Fairgreen House
Fairgreen Road
Co. Galway
H91 AXK8

Report submitted by:
Minerex Geophysics Limited

Unit F4, Maynooth Business Campus
Maynooth, Co. Kildare, W23X7Y5
Ireland
Tel.: 01-6510030
Email: info@mgx.ie

Issued by:

Author: John Connaughton PGeo (Senior Geophysicist)

Reviewer: Hartmut Krahn (Senior Geophysicist)

Minerex
Geophysics Limited

Subsurface Geophysical Investigations

EXECUTIVE SUMMARY

1. Minerex Geophysics Ltd. (MGX) carried out a geophysical survey consisting of the methods 2D-Resistivity (ERT) and Seismic Refraction (p-wave). The survey was carried out for the ground investigation for the proposed windfarm development at Rooaunalaghta, County Mayo.
2. The main objectives of the survey are to determine the ground conditions under the site, to determine the depth to rock and the overburden thickness, to estimate the strength or stiffness or compaction of overburden and the rock quality and to detect possible karstified rock.
3. The survey was carried out at 14 locations (13 turbines and 1 substation) with the interpretation divided into Layers 1, 2, 3, 4a and 4b based on both methods.
4. Layer 1 is interpreted as soft or loose soil.
5. Layer 2 is described as firm or medium dense overburden or very poor highly weathered limestone and is interpreted at Turbine T8 and T10 and is.
6. Layer 3 is modelled at T2, T6, T7 and T8 and T10. This layer is described as fair weathered limestone.
7. Layer 4a is interpreted as karstified limestone. This layer is present at T2, T6 – T10 and the Substation while Layer 4b is described as good to very good clean limestone and is modelled at all survey locations except for T10.
8. At **T1, T3 – T5, T9, T11 - T13**, good to very good limestone is between 1 – 2 m bgl and may be shallower in some places. At T9, some karstified limestone interpreted between 20 – 45m along the line which extends to a depth of 2.5 m bgl.
9. At **T2, T6 and T7**, there is 1 – 5.5 m of fair weathered limestone underlain by good to very good limestone at depths of 1.5 – 7 m bgl. There is some karstified limestone interpreted at these three locations.
10. At **T8 and T10** there is a thick layer of weathered limestone interpreted underlain by primarily karstified limestone.
11. The data at **the substation** shows a significant change in rock quality across the line. The lower resistivities between 0 – 55 m along the line indicates a zone of karstified limestone. The depth to rock is interpreted at 1 – 1.5 m bgl. There may be some peat underlying the area, particularly near the end of the line where resistivities near the surface are lowest.
12. Direct ground investigation data was provided after the survey and the results tie in well with the interpretation presented here.

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3.2 Seismic Refraction (p-wave) 6
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Table 2: Summary of Interpretation	In text	In text
Map 1: Geophysical Survey Location Map	1 x A3	6987f_Drawings.dwg
Figure 1: Models and Interpretation of Geophysical Survey at T1	1 x A3	6987f_Drawings.dwg
Figure 2: Models and Interpretation of Geophysical Survey at T2	1 x A3	6987f_Drawings.dwg
Figure 3: Models and Interpretation of Geophysical Survey at T3	1 x A3	6987f_Drawings.dwg
Figure 4: Models and Interpretation of Geophysical Survey at T4	1 x A3	6987f_Drawings.dwg
Figure 5: Models and Interpretation of Geophysical Survey at T5	1 x A3	6987f_Drawings.dwg
Figure 6: Models and Interpretation of Geophysical Survey at T6	1 x A3	6987f_Drawings.dwg
Figure 7: Models and Interpretation of Geophysical Survey at T7	1 x A3	6987f_Drawings.dwg
Figure 8: Models and Interpretation of Geophysical Survey at T8	1 x A3	6987f_Drawings.dwg
Figure 9: Models and Interpretation of Geophysical Survey at T9	1 x A3	6987f_Drawings.dwg
Figure 10: Models and Interpretation of Geophysical Survey at T10	1 x A3	6987f_Drawings.dwg
Figure 11: Models and Interpretation of Geophysical Survey at T11	1 x A3	6987f_Drawings.dwg
Figure 12: Models and Interpretation of Geophysical Survey at T12	1 x A3	6987f_Drawings.dwg
Figure 13: Models and Interpretation of Geophysical Survey at T13	1 x A3	6987f_Drawings.dwg
Figure 14: Models and Interpretation of Geophysical Survey at Substation	1 x A3	6987f_Drawings.dwg

1. INTRODUCTION

1.1 Background

Minerex Geophysics Ltd. (MGX) carried out a geophysical survey for the ground investigation for the proposed Rooaunalaghta Windfarm. The survey consisted of 2D-Resistivity (ERT) and Seismic Refraction (p-wave) surveying. The survey was commissioned by TOBIN.

This survey utilized two complementary geophysical methods to improve the final interpretation. The role of geophysics as a non-destructive fast method is to provide a geological interpretation over a wide area to complement direct ground investigation at specific locations. The direct ground investigation results were provided after the survey and are included in this final report.

The survey was carried out at 13 turbine locations and one substation site.

1.2 Objectives

The main objectives of the geophysical survey were:

- To determine the ground conditions under the site
- To determine the depth to rock and the overburden thickness
- To estimate the strength or stiffness or compaction of overburden materials and the rock quality
- To determine the type of overburden and rock
- To detect lateral changes within the geological layers
- To detect possible karstified zones within the rock or karst features

1.3 Site Description

The site is located in the townlands of Cloghmoyne, Rooaunalaghta, Kinlough, Carrowughteragh, Toorard and Brodullagh South in Co. Mayo. The survey lines are in agricultural fields.

1.4 Geology

Online geological maps of Ireland (GSI, 2026) give the following information:

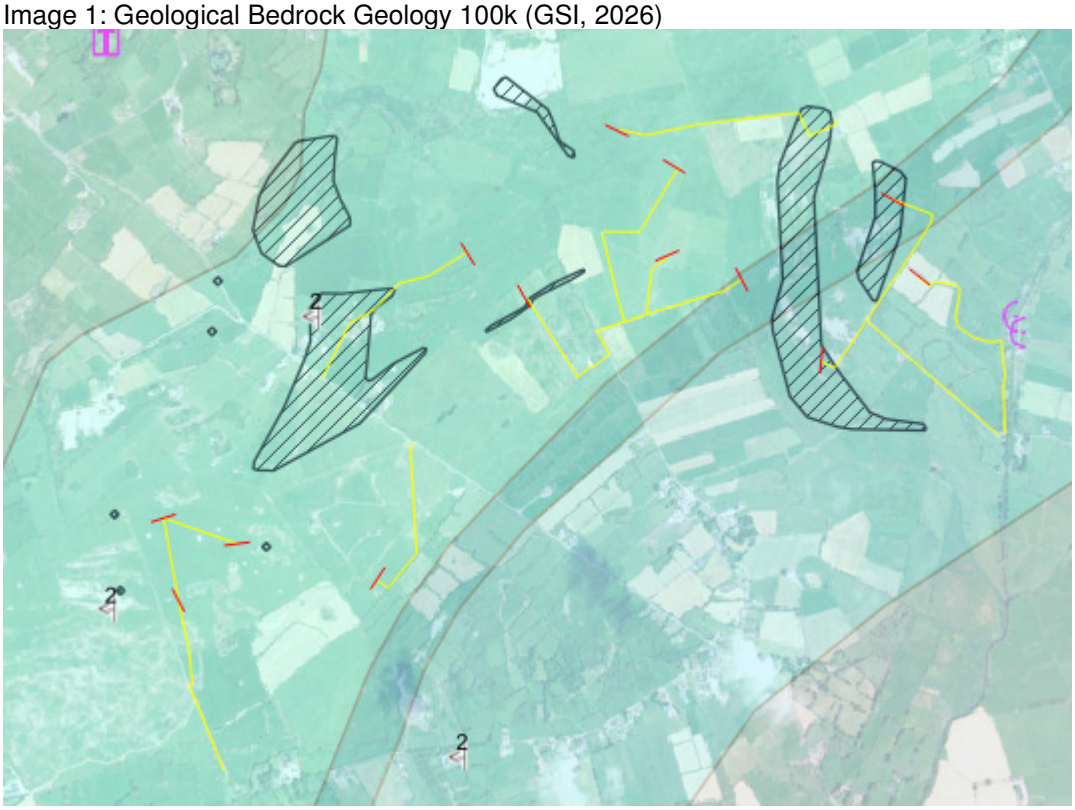
The overburden geology consists of till derived from limestones (T6 - T10) or karstified bedrock outcrop or subcrop (T1 – T5, T11 – T13) while the substation is underlain by cut over raised peat.

In terms of rock, the survey area is underlain by the Oakport Limestone Formation, described as pale grey massive limestone (T1 – T9), the Oldchapel Limestone Formation described as Dark fine limestone & calcareous shale (T10, T13), the Ollaunagappul Formation, described as limestone, thin shale partings (T11, T12) and the Ardnasillagh Formation, described as dark cherty limestone and thin shales at the substation.

Shallow rock is noted at T11 and T13 and generally around the turbine locations.

All of the rock type are karstifiable and there are two sinkholes mapped 300 m east of T12.

Image 1: Geological Bedrock Geology 100k (GSI, 2026)



1.5 Report

This report includes the results and interpretation of the geophysical survey. Maps, figures and tables are included to illustrate the results of the survey. More detailed descriptions of geophysical methods and measurements can be found in GSEG (2002), Milsom (1989) and Reynolds (1997).

The description of soil, rock and the use of geotechnical terms (soft, stiff, dense etc) follow Eurocode (2007) and BSI (2020) standards. The terms are defined in the standards and the physical parameters are related from experience. This geophysical survey has been acquired, processed, interpreted and reported in accordance with these guidelines.

An aerial image was used as the map background as we did not receive a topographical survey map or Ordnance Survey background map. Elevations were surveyed on site and are used in the vertical sections.

The interpretative nature and the non-invasive survey methods must be taken into account when considering the results of this survey and Minerex Geophysics Limited, while using appropriate practice to execute, interpret and present the data, give no guarantees in relation to the existing subsurface.

2. GEOPHYSICAL SURVEY

2.1 Methodology

The methodology consists of using 2D-Resistivity and seismic refraction surveying in one direction at the 13 turbine locations and substation site. Each 2D-Resistivity line was 93 m long while each seismic refraction line was 94 m in length.

The survey locations are indicated on Map 1. Table 1 describes the line lengths, locations and parameters.

2.2 2D-Resistivity (ERT)

2D-Resistivity lines were surveyed with electrode spacing of 3 m, up to 32 electrodes per set-up and a maximum length of 93 m per set-up. The readings were taken with a Tigre Resistivity Meter, Imager Cables, stainless steel electrodes and a laptop with ImagerPro acquisition software.

During 2D-Resistivity surveying, data is acquired in the form of linear arrays using a suite of metal electrodes. A current is induced into the ground via a pair of electrodes whilst a potential difference is measured across a second pair of electrodes. This allows for the recording of the apparent resistivity in a two-dimensional arrangement below the line. The data is inverted after the survey to obtain a model of subsurface resistivities. The generated model resistivity values and their spatial distribution can then be related to typical values for different geological materials.

The penetration depth of a resistivity set-up increases towards the centre where it reaches an approx. value of $1/6^{th}$ of the array length.

The 2D-Resistivity Method is designed to work on a two dimensional subsurface, and the more the ground deviates from this and has a more complex 3D structure, the less accurate the resistivity models will be. 2D-Resistivity has previously proven zones of anomalous or karstified rock with lateral extents of 5 m and more.

2.3 Seismic Refraction (p-waves)

Seismic refraction lines were surveyed with geophone spacing of 2 m and 24 geophones per set-up resulting in a 46 m length per set-up. The recording equipment consisted of a 24 Channel GEOMETRICS ES-3000 engineering seismograph with 4.5 Hz vertical geophones. The seismic energy source consisted of a hammer and plate. A zero-delay trigger was used to start the recording. Normally 7 shot points per p-wave set-up were used.

Set-ups were acquired in longer continuous lines using common shot points between set-ups and concatenating into longer lines at the processing stage to produce 94 m long lines at each location.

The seismic refraction survey method focuses on propagating p-waves travelling through the subsurface, which are generated by a seismic source. As the wave propagates through the subsurface, its velocity varies as it travels through overburden, rock with different elastic properties, and along geological boundaries. Velocity data is recorded via the surveying equipment, which is then processed, allowing geological layer thicknesses and boundaries to be established.

Seismic Refraction generally determines the depth to horizontal or near horizontal layers where the compaction or strength or rock quality changes with an accuracy of around 20% of the depth to that layer. Where the layers are shallower than the geophone spacing depth deviations of +- 1 m to top of layers can occur. Where low velocity layers or shadow zones are present (e.g., below solid ground surface) or where layers dip with more than 20 degree angle the accuracy becomes much less.

The seismic refraction set-ups with 46 m individual length have a reasonable penetration depth of around 10m. An internationally accepted maximum depth estimate for a seismic refraction set-up is 1/6 of the set-up length including offshots. The depth penetration varies according to the velocity structure of the subsurface.

2.4 Site Work

The data acquisition was carried out between the 15th and 17th of July 2026. The weather conditions were fair throughout the acquisition period. Health and safety standards were adhered to at all times. The locations and elevations were surveyed with a Carlson NR3 RTK-GPS to accuracy < 0.05 m.

3. RESULTS AND INTERPRETATION

The interpretation of geophysical data is executed utilizing the known response of geophysical measurements, typical physical parameters for subsurface features that may underlay the site, and the experience of the authors.

Ground investigation results were provided after the survey and the abbreviated borehole logs are indicated on the sections. The overburden was abbreviated as gravel. The rock was generally divided into weathered limestone (based on RQD value < 50%) and limestone rock (> 50%). This can be done only to a certain extend as the rock can be very variable. RQD values, fracture indices and non-intact zones often change rapidly with depth. The small size of a borehole only represents a very small volume of ground while the geophysical survey on the other end of the scale averages over a large volume of ground.

3.1 2D-Resistivity (ERT)

The 2D-Resistivity data was positioned and inverted with the RES2DINV inversion package. The programme uses a smoothness constrained least-squares inversion method to produce a 2D model of the subsurface resistivities from the recorded apparent resistivity values. Three variations of the least squares method are available and for this project the Jacobian Matrix was recalculated for the first three iterations, then a Quasi-Newton approximation was used for subsequent iterations. Each dataset was inverted using seven iterations resulting in a typical RMS error of <3.0%. The resulting models were colour contoured with the same resistivity scale for all lines and they are displayed as cross sections (Figures 1 - 14).

Resistivities are characteristic for certain overburden and rock types. If there is a high content of clay minerals (which are electrically conductive) then the overburden resistivity will be lower than as if there is a high content of clastic grains like sand or gravel. The purer the clay and the lower the sand and gravel content, the lower the resistivity. Water content in overburden layers can influence the resistivities, but generally clay content has a more dominating effect.

In limestone areas, karstified rock is defined in this report as a formerly intact clean limestone rock, liable to karstification, that has been partially dissolved by water over long geological time scales and where the cavities and voids have either remained empty (filled by air) or became filled by overburden sediment (clay, silt, sand), weathering product of the broken rock itself or water. This process would lead to a reduction of the resistivity of the overall rock and therefore karstified rock has a lower resistivity than intact clean limestone rock. This is generally indicated by lower resistivities embedded within high resistivity at depth.

The resistivities cover a range typical for materials from clay rich overburden or peat (low resistivities) to fresh strong unweathered bedrock (high resistivities). The ranges have been taken into the consideration for the interpretation. Low to medium resistivity values (<1600 Ωm) indicates overburden, weathered or karstified limestone. High resistivities (>1600 Ωm) indicate clean limestone.

3.2 Seismic Refraction (p-wave)

The seismic refraction data was positioned and processed with the SEISIMAGER software package to give a layered model of the subsurface. The number of layers has been determined by analysing the seismic traces and between 2 and 4 layers are used in the models. All seismic lines were subject to a standardised processing sequence which consisted of a topographic correction which was based on integrated elevation data, first break picking, tomographic inversion, travel-time computation via ray-tracing and velocity modelling. Residual deviations of typically 0.4 to 1.8 msec RMS have been obtained for each line. Following each processing stage QC procedures were adhered to. The resulting layer boundaries are shown as thick lines overlaid on the 2D-Resistivity cross sections (Figures 1 - 14). The average seismic velocities obtained within the layers are annotated on the sections as bold black numbers.

The p-wave seismic velocity is closely linked to the density of subsurface materials and to parameters like compaction, stiffness, strength and rock quality. The higher the density of the subsurface materials the higher the seismic velocity. More compacted, stiffer, denser and stronger material will have a higher seismic velocity. For rock, the seismic velocity is higher when the rock is stronger, less weathered and has a higher quality. If the rock is more weathered, broken, fractured, fissured or karstified then the seismic velocity will be reduced compared to that of intact fresh rock.

Because of the above relationship, the seismic refraction method and seismic velocities are suitable to investigate ground where the layers get denser, more compacted and stronger with depth. A disadvantage is that some materials may have the same seismic velocity: Some overburden and weathered rock can have the same seismic velocity range (as can be the case in the layer 2 and 3 below).

The modelled seismic data has created the following layered ground model:

Layer 1 has seismic velocities of 200-400 m/s and is interpreted as soil with a soft or loose stiffness or compaction.

Layer 2 was modelled with a velocity range of 800 - 1000 m/s and is only present at turbines T8 and T10 where it has a thickness of 1 – 2.5 m. The velocity indicates overburden material with firm or medium dense strength or compaction or a very poor highly weathered rock.

Layer 3 velocities of 2000 – 2400 m/s indicate predominantly fair weathered rock. This layer could also contain some very stiff or very dense overburden. This layer is modelled at T2, T6, T7, T8 and T10 and has a thickness of between 1 – 10 m at these locations.

Good to very good rock (Layer 4) is indicated by seismic velocities of 4000 – 5000 m/s. This layer is very shallow at T1, T3 – T5, T9, T11 - T13 and the Substation where it occurs below Layer 1.

3.3 Interpretation of Resistivity and Seismic Refraction

Table 2 summarises the interpretation. The stiffness or compaction of overburden and the rock strength or quality have been estimated from the seismic velocity. The estimation of the excavatability for the bedrock has been made according to the caterpillar chart published in Reynolds (1997). The geotechnical assessment for rippability will have to take factors like rock type and jointing into account and the estimation in this report is solely based on the seismic velocities.

Interpreted cross sections are shown in Figures 1 - 14. The interpretation has been made from all available information. For overburden layers and the top of the rock the seismic refraction data has been used as seismic refraction is the best method to delineate layer boundaries (denoted by numbers in the following table). The resistivity model values have been used to delineate karstified and clean limestone within Layer 4 (denoted by letters in the following table). Resistivity data is better suited to show overburden material, rock types and features within the rock while seismic refraction velocities are indicating the change of compaction, stiffness or rock quality with depth.

Table 2: Summary of Interpretation

Layer	General Seismic Velocity Range (m/sec)	General Resistivity Range (Ωm)	Stiffness or Compaction or Rock Quality	Interpretation	Estimated Excavation Method
1	300 - 400	Any	Soft or loose	Soil	Diggable
2	800 - 1000	Any	Firm or medium dense or very poor rock	Overburden or highly weathered Limestone	Diggable
3	2000 - 2400	Any	Fair Rock	Weathered Limestone	Diggable or rippable to marginal rippable
4a	4000 - 5000	<1600	N/A	Karstified Limestone	N/A
4b	4000 - 5000	>1600	Good to very good rock	Clean Limestone	Breaking & Blasting

4. CONCLUSIONS

The following conclusions are made:

- The geophysical surveys carried out at the Rooaunalaghta, Co. Mayo for a Windfarm project consisted of 2D-Resistivity (ERT) and Seismic Refraction (p-wave) surveying.
- There is a good correlation between both geophysical survey methods.
- The seismic data was modelled with a total of 4 layers based on seismic velocities and Layer 4 was divided using the electrical resistivities (into Layers 4a and 4b).
- Layer 1 is modelled at all survey locations and is interpreted as soft or loose soil.
- Layer 2 is only modelled at Turbine T8 and T10 and is interpreted as firm or medium dense overburden or very poor highly weathered limestone.
- Layer 3 is interpreted as fair weathered limestone and is modelled at T2, T6, T7 and T8 and T10. This layer can contain karst weathering of limestone as well as normal weathering of rock.
- Layer 4a is interpreted as karstified limestone. This layer is present at T2, T6 – T10 and the Substation.
- Layer 4b is described as good to very good clean limestone.
- At T1, T3 – T5, T11 - T13, good to very good limestone is between 1 – 2 m bgl and may be shallower in some places.
- Good to very good limestone is also less than 1.5 m bgl at T9. There is some karstified limestone interpreted between 20 – 45m along the line which extends to a depth of 2.5 m bgl.
- At T2, there is 1 – 2.5 m of fair weathered limestone underlain by good to very good limestone at depths of 1.5 – 3 m bgl. There is some karstified limestone between 0 – 45 m along the line to depths of up to 5.5 m bgl.
- At T6, there is a 1 – 4m thick layer of fair weathered limestone or possibly overburden. The depth to the top of Layer 4 ranges from 2 – 5 m bgl, becoming deeper in the NW with karstified limestone modelled from 0 – 40 m to depths of 10 m bgl where Layer 4 is deepest.
- At T7, there is 2.5 – 5.5 m of fair weathered limestone underlain by good to very good limestone between 4 – 7 m bgl. There is karstified limestone interpreted between 70 – 94 m along the line.
- The models at T8 and T10 are noticeable different to the other locations. There is a thick layer of weathered limestone interpreted underlain by primarily karstified limestone at both locations.
- The data at the substation shows a significant change in rock quality across the line. The lower resistivities between 0 – 55 m along the line indicates a zone of karstified limestone. The depth to

rock is interpreted at 1 – 1.5 m bgl. There may be some peat underlying the area, particularly near the end of the line where resistivities near the surface are lowest.

- Direct Ground investigation results were provided after the survey and tie in well with the interpretation provided her. (IDL, 2026)
- At T1, T4, T7, T9 and T13, rotary core boreholes encountered intact bedrock was encountered between 1.1 and 4.9 m bgl. (IDL, 2026)
- At T10, BH04 encounters weathered rock from 4.1 m down to a final depth of 10.5 m bgl and no intact bedrock was encountered at this location. (IDL, 2026).

5. REFERENCES

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3. **GSEG, 2002.** Geophysics in Engineering Investigations. Geological Society Engineering Geology Special Publication 19, London, 2002

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5. **IDL 2026**. Rooaunalaghta Wind Farm Ground Investigation Factual Report 2026

6. **Milsom, 1989.** Field Geophysics. John Wiley and Sons, 1989

7. **Reynolds, 1997.** An Introduction to Applied and Environmental Geophysics. John Wiley and Son, 1997

8. **Weaver, 1975.** Geological Factors significant in the Assessment of Rippability, 1975

Table 1: Geophysical Survey Locations and Acquisition Parameters

2D-Resistivity (ERT) Survey					
Site	**Line**	**Electrode Spacing (m)**	**Length (m)**	**Display direction**	**Survey Type/Mode**
T1	R10	3	93	SW-NE	Traverse
T2	R9	3	93	W-E	Traverse
T3	R8	3	93	NW-SE	Traverse
T4	R7	3	93	W-E	Traverse
T5	R11	3	93	NW-SE	Traverse
T6	R13	3	93	NW-SE	Traverse
T7	R14	3	93	NW-SE	Traverse
T8	R6	3	93	NW-SE	Traverse
T9	R5	3	93	SW-NE	Traverse
T10	R4	3	93	NW-SE	Traverse
T11	R3	3	93	S-N	Traverse
T12	R2	3	93	NW-SE	Traverse
T13	R1	3	93	NW-SE	Traverse
Substation	R12	3	93	NW-SE	Traverse
		SUM	**1302**		

Seismic Refraction Survey					
Site	**Line**	**Geophone Spacing (m)**	**Length (m)**	**Display direction**	**Survey Type/Mode**
T1	S10	2	94	SW-NE	Concatenated
T2	S9	2	94	W-E	Concatenated
T3	S8	2	94	NW-SE	Concatenated
T4	S7	2	94	W-E	Concatenated
T5	S11	2	94	NW-SE	Concatenated
T6	S13	2	94	NW-SE	Concatenated
T7	S14	2	94	NW-SE	Concatenated
T8	S6	2	94	NW-SE	Concatenated
T9	S5	2	94	SW-NE	Concatenated
T10	S4	2	94	NW-SE	Concatenated
T11	S3	2	94	S-N	Concatenated
T12	S2	2	94	NW-SE	Concatenated
T13	S1	2	94	NW-SE	Concatenated
Substation	S12	2	94	NW-SE	Concatenated
		SUM	**1316**		



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CLIENT	TOBIN
PROJECT	Rooaunalaughta, County Mayo Geophysical Survey
TITLE	Map 1: Geophysical Survey Location Map

SCALE:	1:10,000 @ A3
PROJECT:	6987
DRAWN:	JC
DATE:	23/06/2026
MGX FILE:	6987f_Drawings.dwg
STATUS:	Final

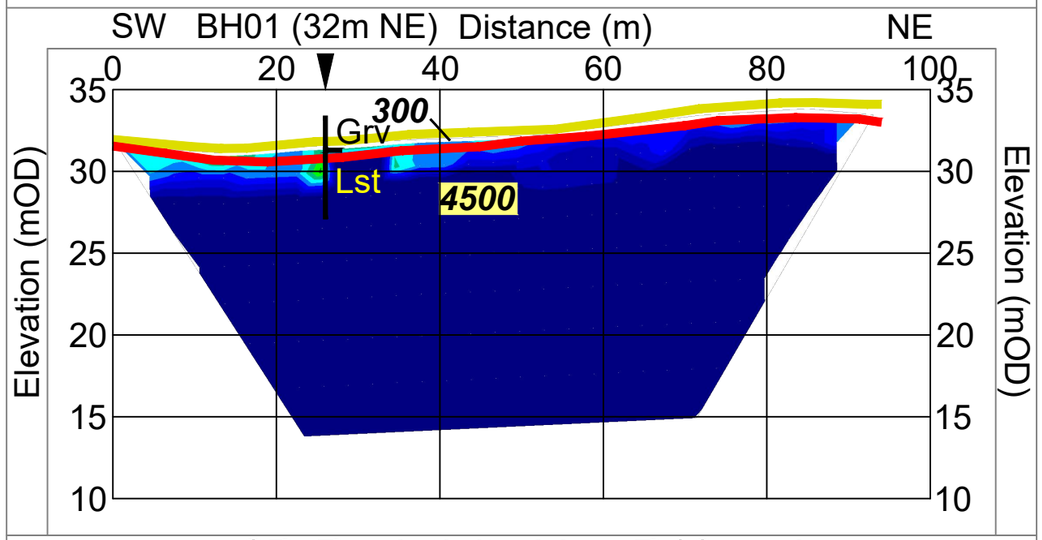
Geophysical Survey Locations:

R2	2D-Resistivity Line
S1	Seismic Refraction Line

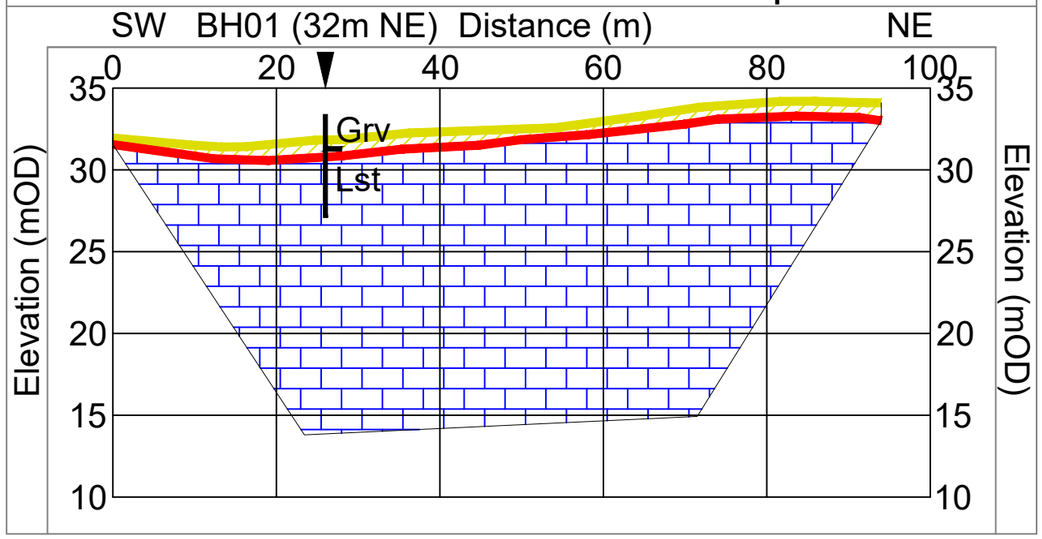
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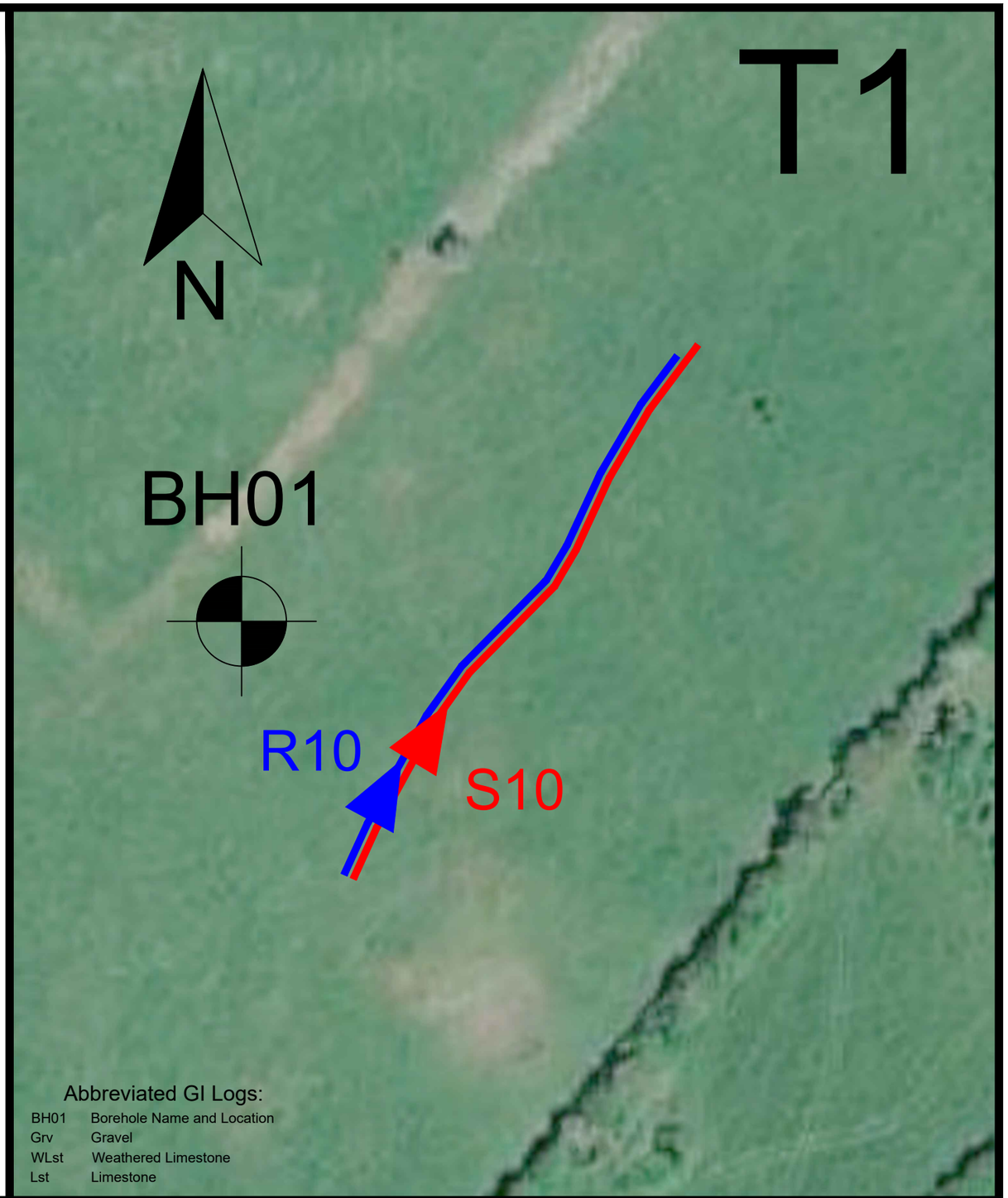
RC1	Rotary Core Hole

2D-Resistivity Line R10 and Seismic Refraction Line S10 Model



2D-Resistivity Line R10 and Seismic Refraction Line S10 Interpretation





Abbreviated GI Logs:

BH01	Borehole Name and Location
Grv	Gravel
WLst	Weathered Limestone
Lst	Limestone

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CLIENT	TOBIN
PROJECT	Rooaunalaughta, County Mayo Geophysical Survey
TITLE	Figure 1: Models and Interpretation of Geophysical Survey at T1

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PROJECT:	6987
DRAWN:	JC
DATE:	24/07/2026
MGX FILE:	6987f_Drawings.dwg
STATUS:	Final

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (200 - 400 m/s)
- Top of Layer 2 (800 - 1000 m/s)
- Top of Layer 3 (2000 - 2400 m/s)
- Top of Layer 4 (4000 - 5000 m/s)

2D-Resistivity Model Values:

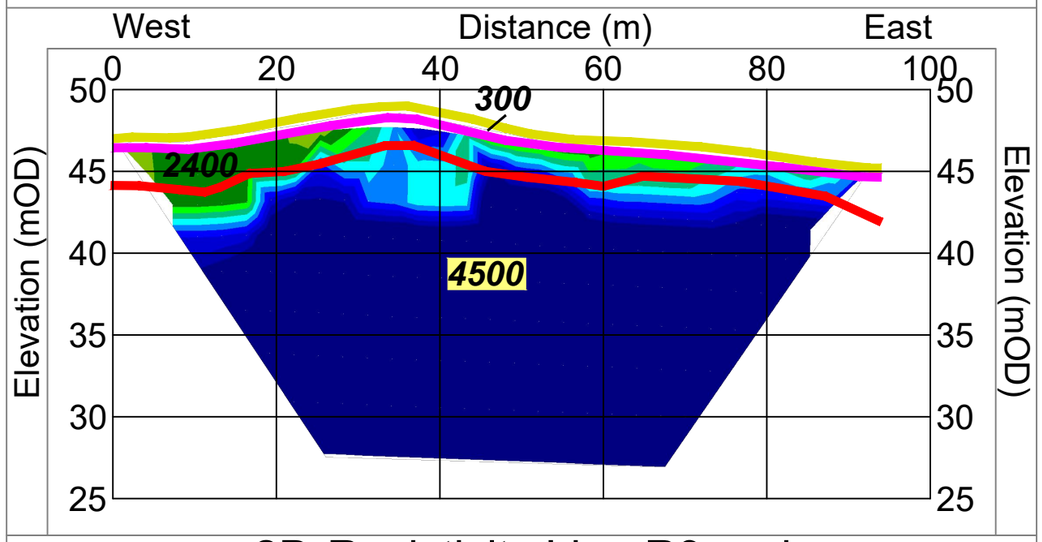
Resistivities (Ohmm)

31.2 62.5 125 250 500 1000 2000 4000

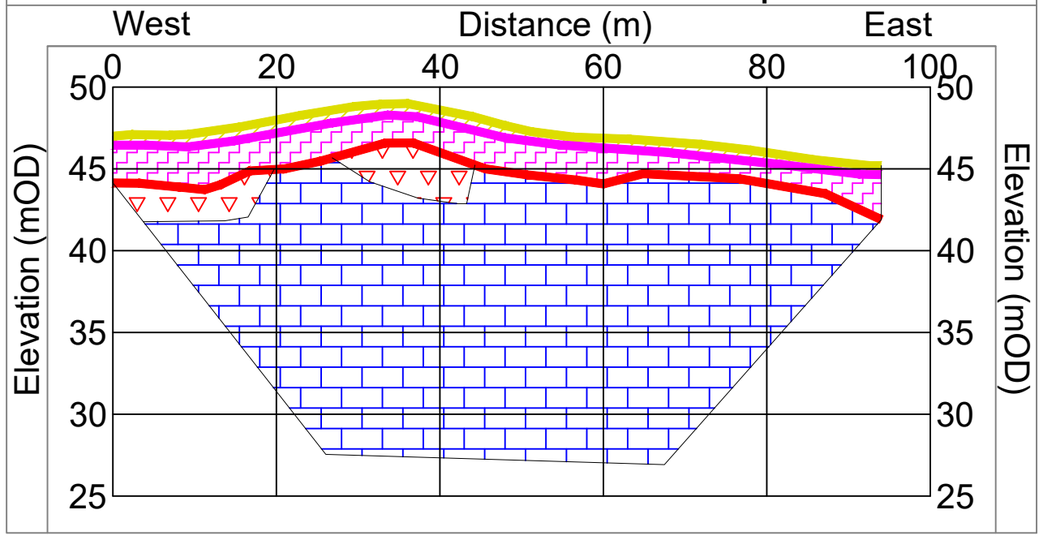
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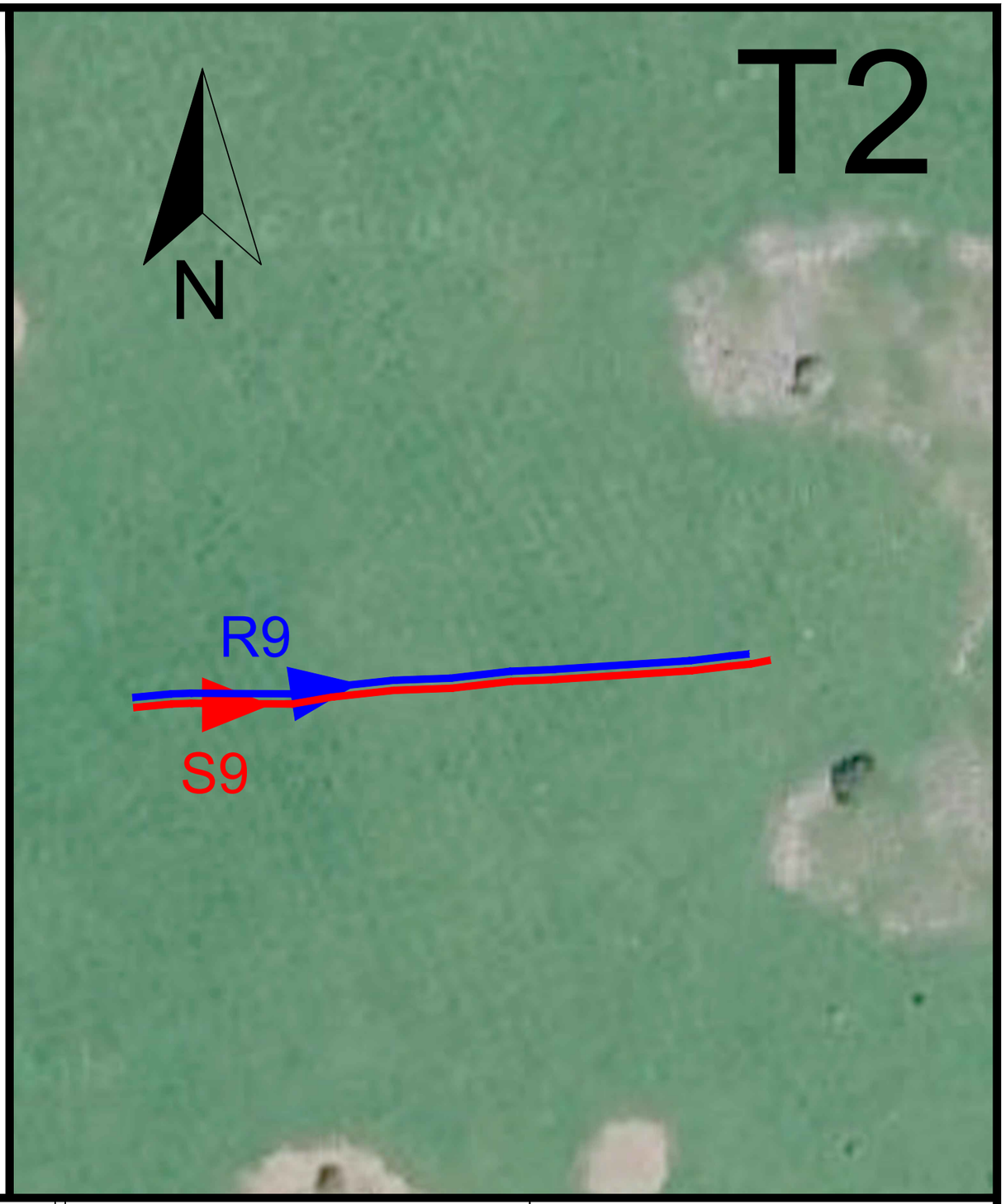
1 Soft or loose Soil
2 Firm or medium dense Overburden or very poor highly weathered Limestone
3 Fair weathered Limestone
4a Karstified Limestone
4b Good to very good Limestone

2D-Resistivity Line R9 and Seismic Refraction Line S9 Model



2D-Resistivity Line R9 and Seismic Refraction Line S9 Interpretation





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CLIENT	TOBIN
PROJECT	Rooaunalaughta, County Mayo Geophysical Survey
TITLE	Figure 2: Models and Interpretation of Geophysical Survey at T2

SCALE:	1:750 @ A3 VE x2
PROJECT:	6987
DRAWN:	JC
DATE:	24/07/2026
MGX FILE:	6987f_Drawings.dwg
STATUS:	Final

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (200 - 400 m/s)
- Top of Layer 2 (800 - 1000 m/s)
- Top of Layer 3 (2000 - 2400 m/s)
- Top of Layer 4 (4000 - 5000 m/s)

2D-Resistivity Model Values:

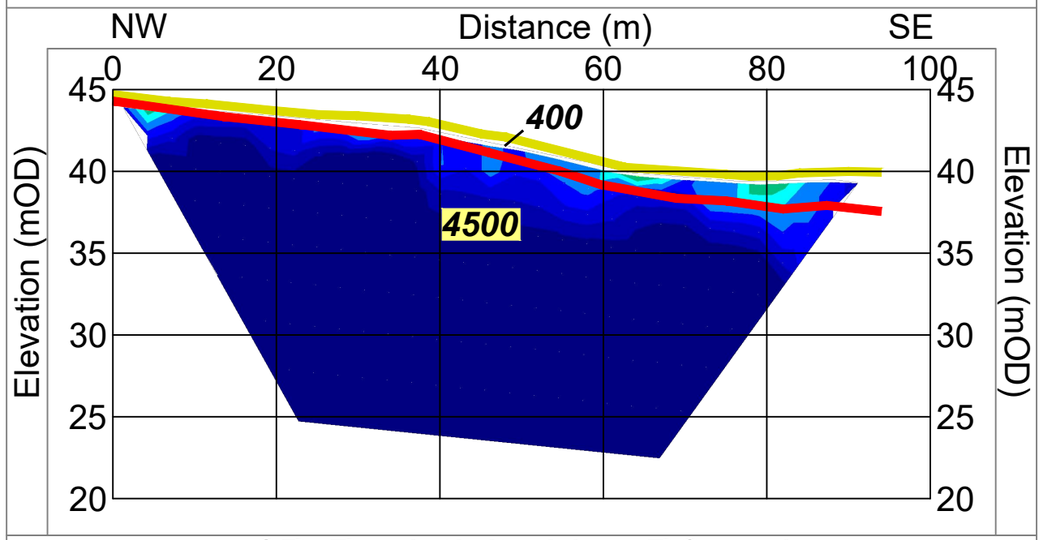
Resistivities (Ohmm)

31.2 | 62.5 | 125 | 250 | 500 | 1000 | 2000 | 4000

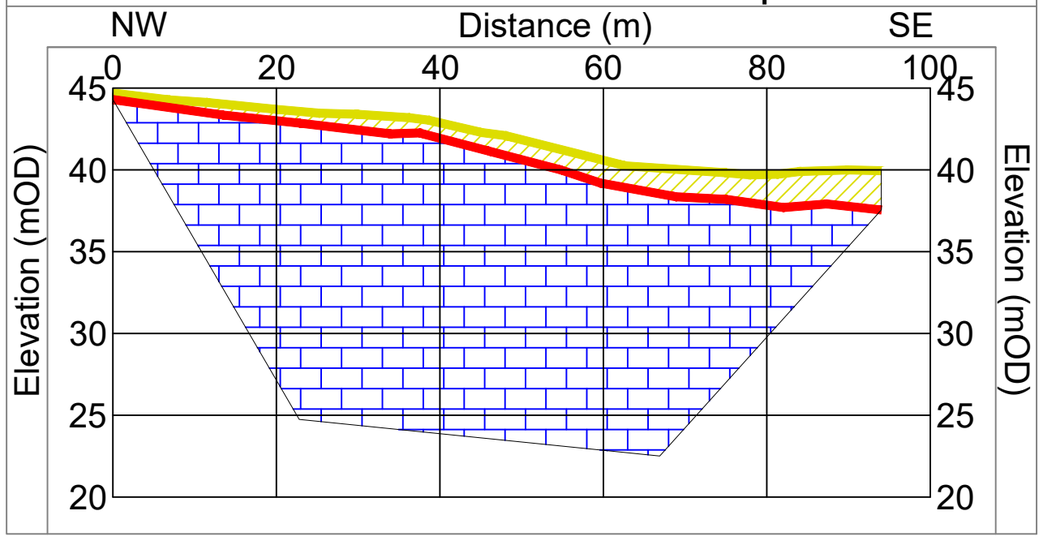
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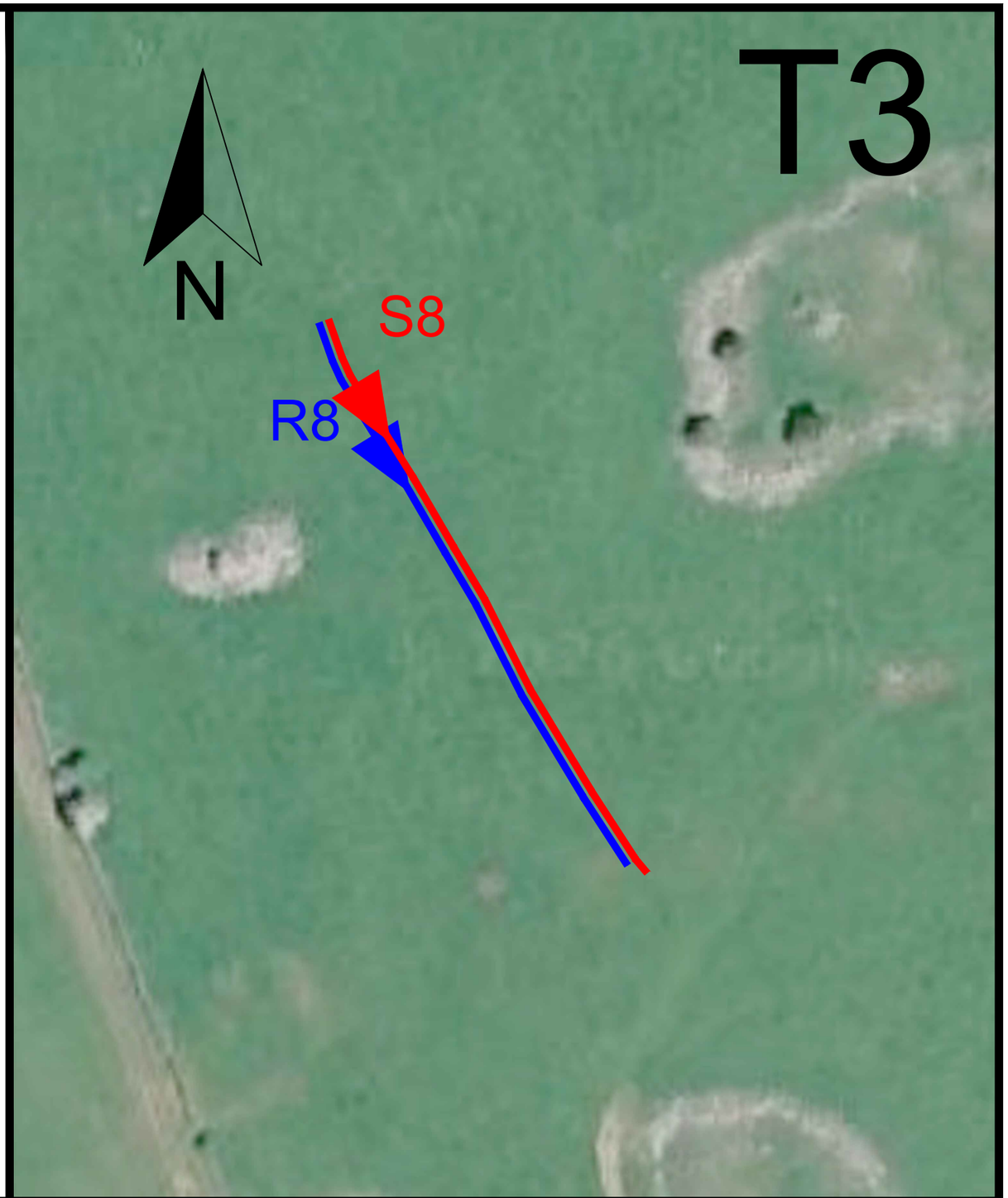
1 Soft or loose Soil
2 Firm or medium dense Overburden or very poor highly weathered Limestone
3 Fair weathered Limestone
4a Karstified Limestone
4b Good to very good Limestone

2D-Resistivity Line R8 and Seismic Refraction Line S8 Model



2D-Resistivity Line R8 and Seismic Refraction Line S8 Interpretation





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CLIENT	TOBIN
PROJECT	Rooaunalaughta, County Mayo Geophysical Survey
TITLE	Figure 3: Models and Interpretation of Geophysical Survey at T3

SCALE:	1:750 @ A3 VE x2
PROJECT:	6987
DRAWN:	JC
DATE:	24/07/2026
MGX FILE:	6987f_Drawings.dwg
STATUS:	Final

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (200 - 400 m/s)
- Top of Layer 2 (800 - 1000 m/s)
- Top of Layer 3 (2000 - 2400 m/s)
- Top of Layer 4 (4000 - 5000 m/s)

2D-Resistivity Model Values:

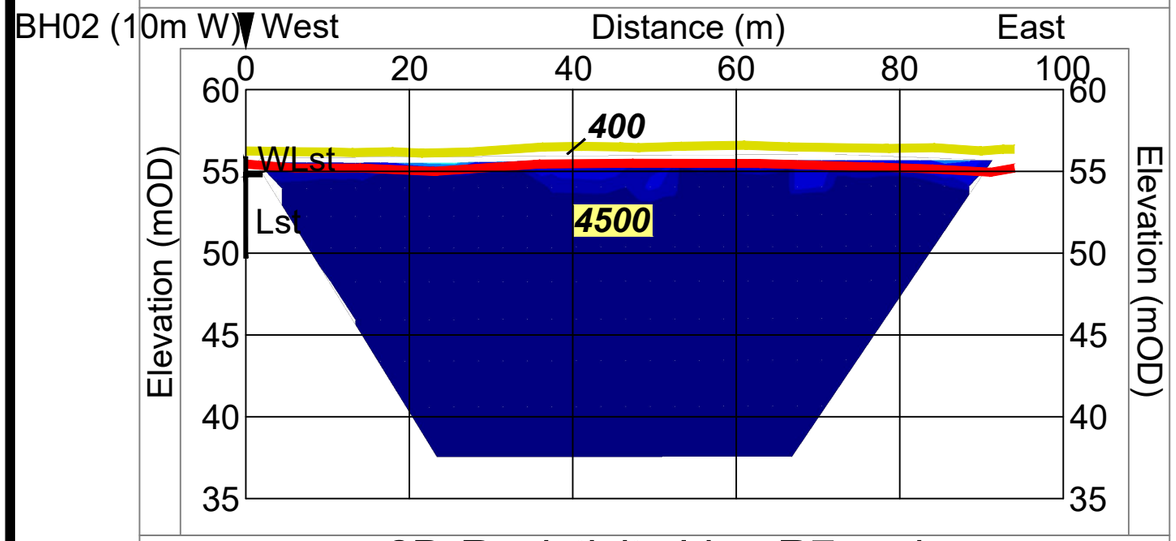
Resistivities (Ohmm)

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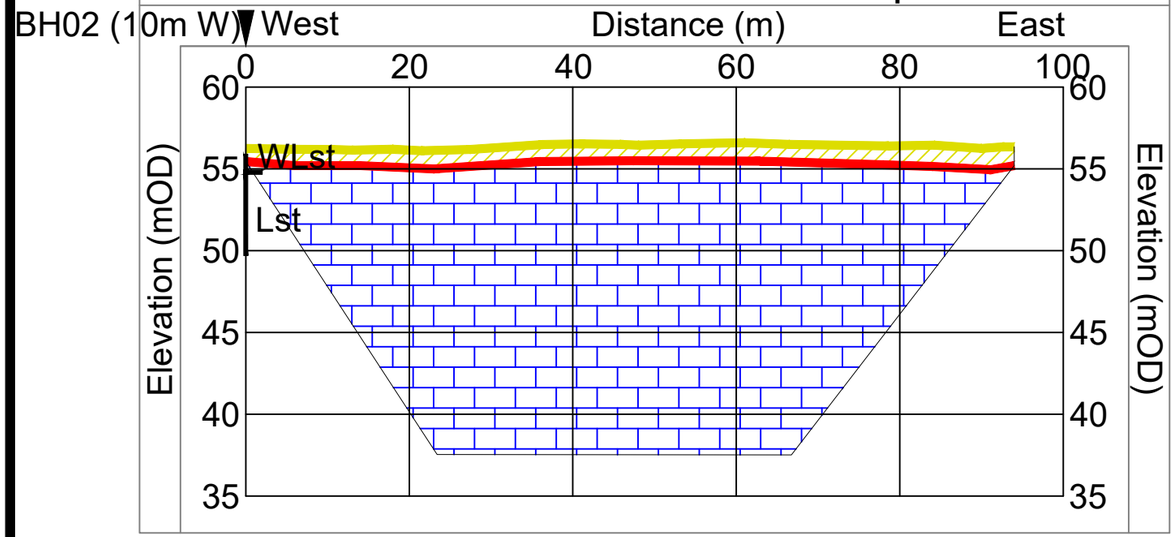
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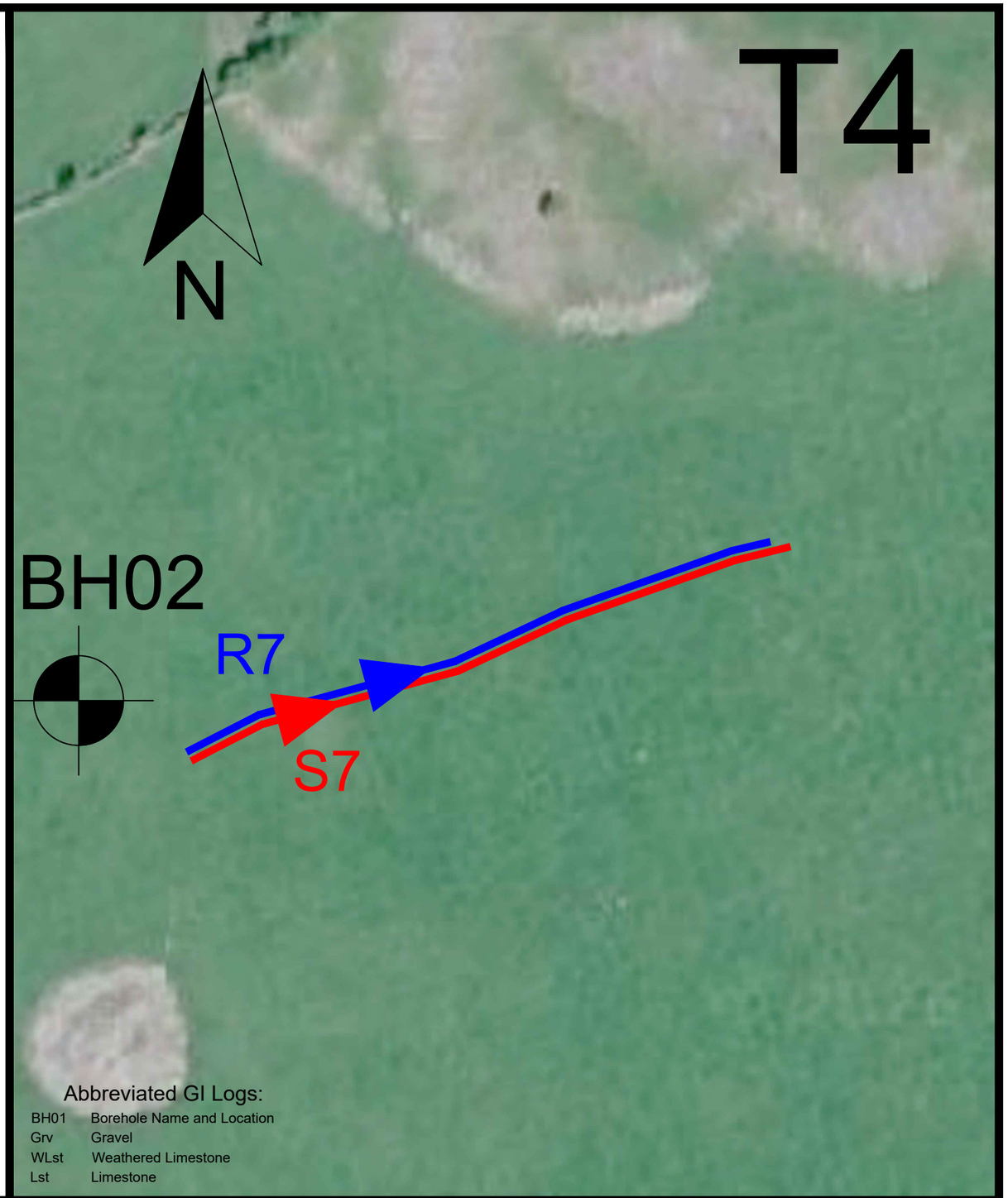
1 Soft or loose Soil
2 Firm or medium dense Overburden or very poor highly weathered Limestone
3 Fair weathered Limestone
4a Karstified Limestone
4b Good to very good Limestone

2D-Resistivity Line R7 and Seismic Refraction Line S7 Model



2D-Resistivity Line R7 and Seismic Refraction Line S7 Interpretation





Abbreviated GI Logs:

BH01	Borehole Name and Location
Grv	Gravel
WLst	Weathered Limestone
Lst	Limestone

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CLIENT	TOBIN
PROJECT	Rooaunalaughta, County Mayo Geophysical Survey
TITLE	Figure 4: Models and Interpretation of Geophysical Survey at T4

SCALE:	1:750 @ A3 VE x2
PROJECT:	6987
DRAWN:	JC
DATE:	24/07/2026
MGX FILE:	6987f_Drawings.dwg
STATUS:	Final

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (200 - 400 m/s)
- Top of Layer 2 (800 - 1000 m/s)
- Top of Layer 3 (2000 - 2400 m/s)
- Top of Layer 4 (4000 - 5000 m/s)

2D-Resistivity Model Values:

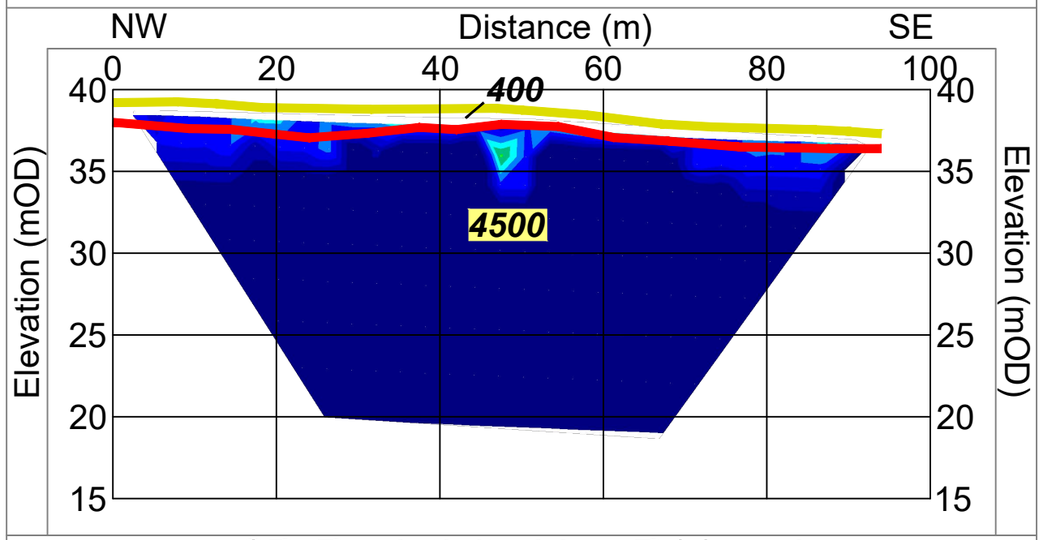
Resistivities (Ohmm)

31.2 | 62.5 | 125 | 250 | 500 | 1000 | 2000 | 4000

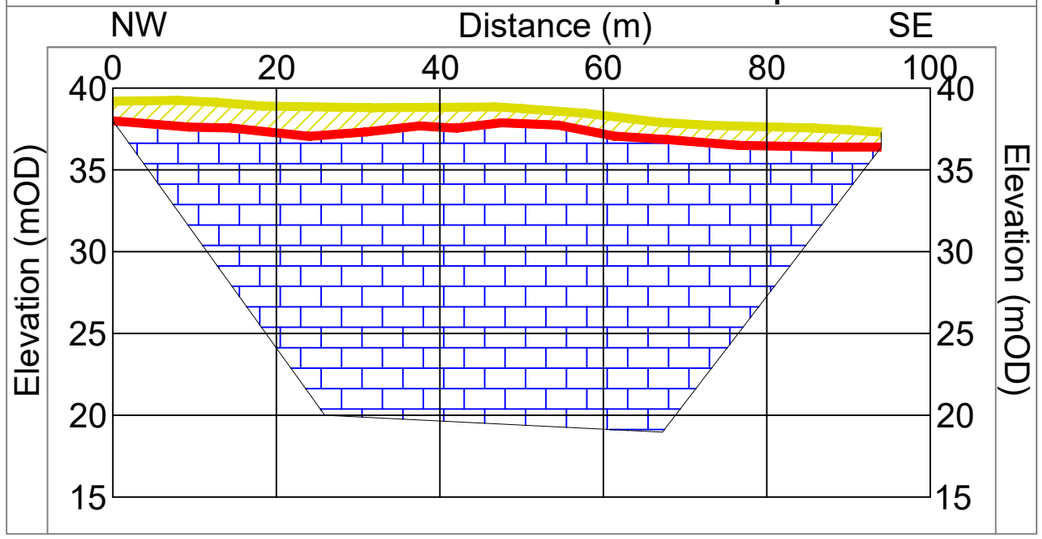
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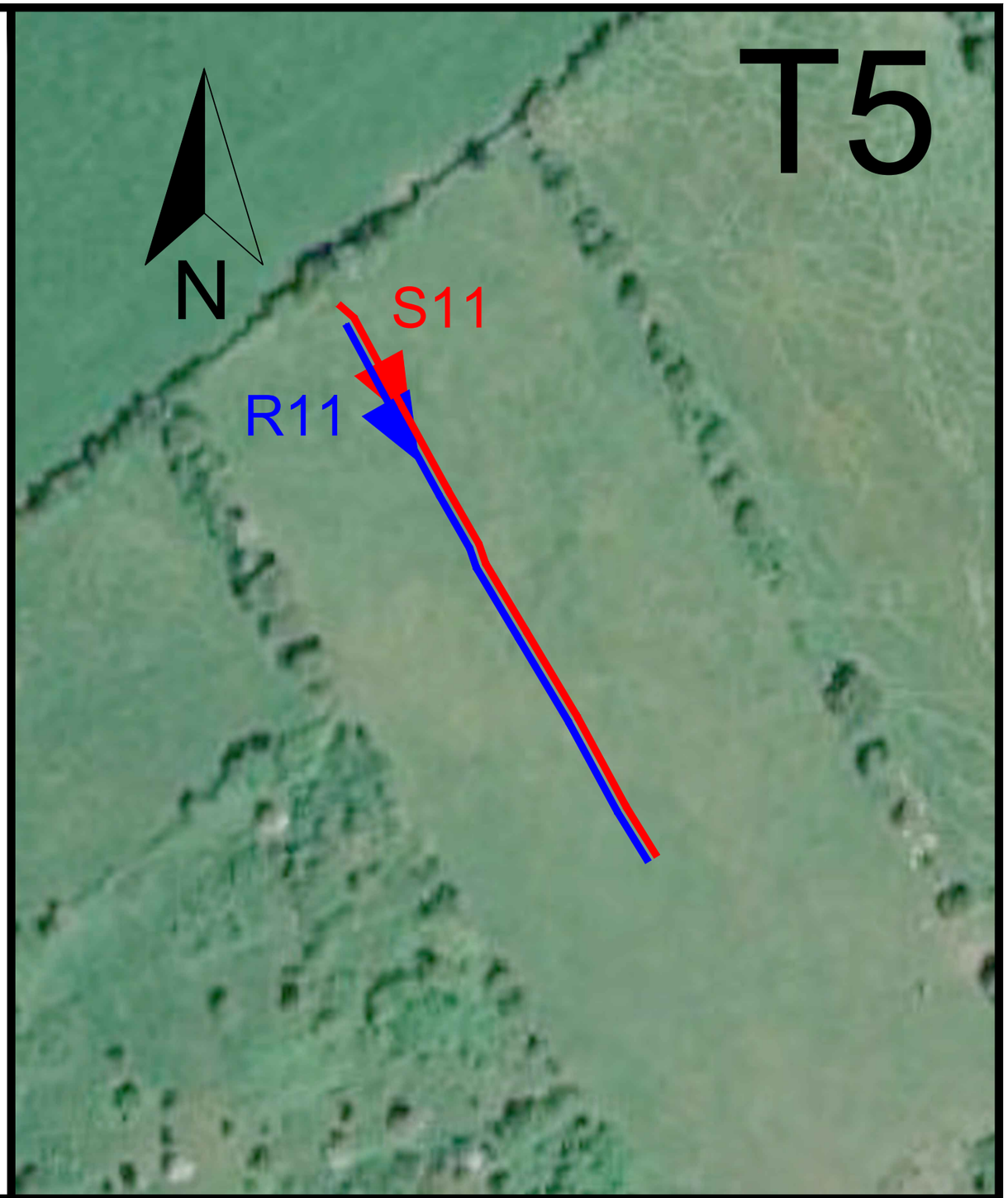
1 Soft or loose Soil
2 Firm or medium dense Overburden or very poor highly weathered Limestone
3 Fair weathered Limestone
4a Karstified Limestone
4b Good to very good Limestone

2D-Resistivity Line R11 and Seismic Refraction Line S11 Model



2D-Resistivity Line R11 and Seismic Refraction Line S11 Interpretation





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CLIENT	TOBIN
PROJECT	Rooaunalaughta, County Mayo Geophysical Survey
TITLE	Figure 5: Models and Interpretation of Geophysical Survey at T5

SCALE:	1:750 @ A3 VE x2
PROJECT:	6987
DRAWN:	JC
DATE:	24/07/2026
MGX FILE:	6987f_Drawings.dwg
STATUS:	Final

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (200 - 400 m/s)
- Top of Layer 2 (800 - 1000 m/s)
- Top of Layer 3 (2000 - 2400 m/s)
- Top of Layer 4 (4000 - 5000 m/s)

2D-Resistivity Model Values:

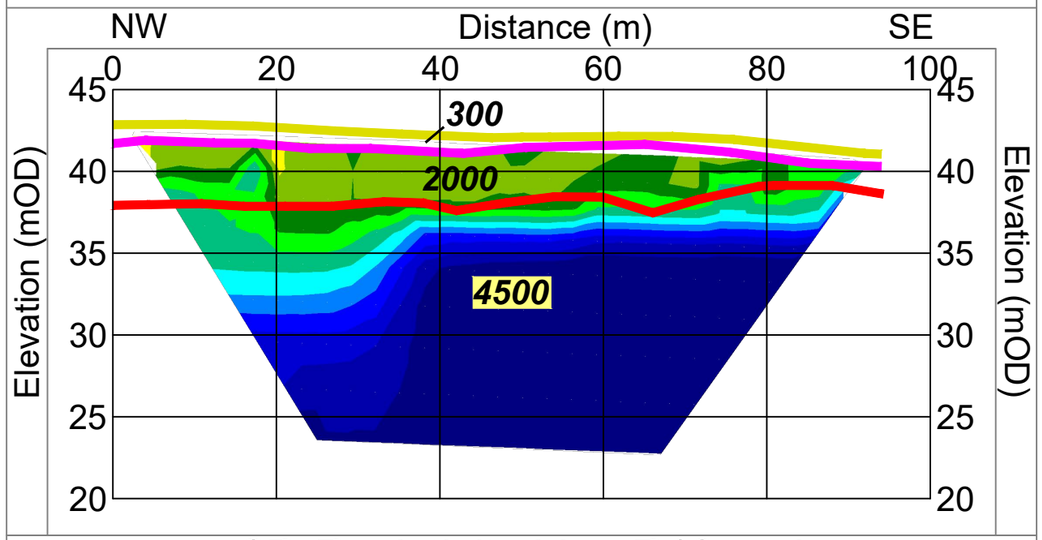
Resistivities (Ohmm)

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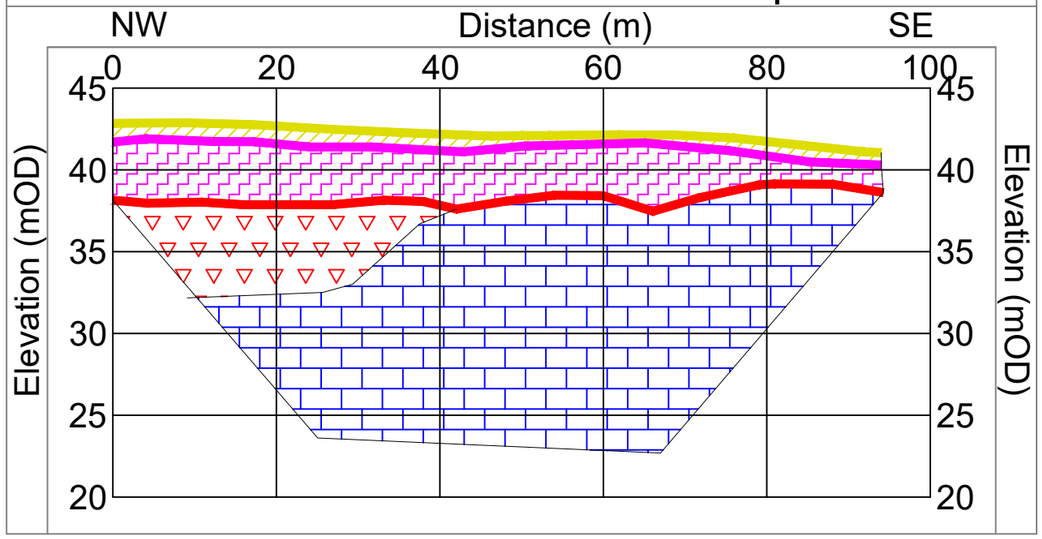
Interpretation Figures:

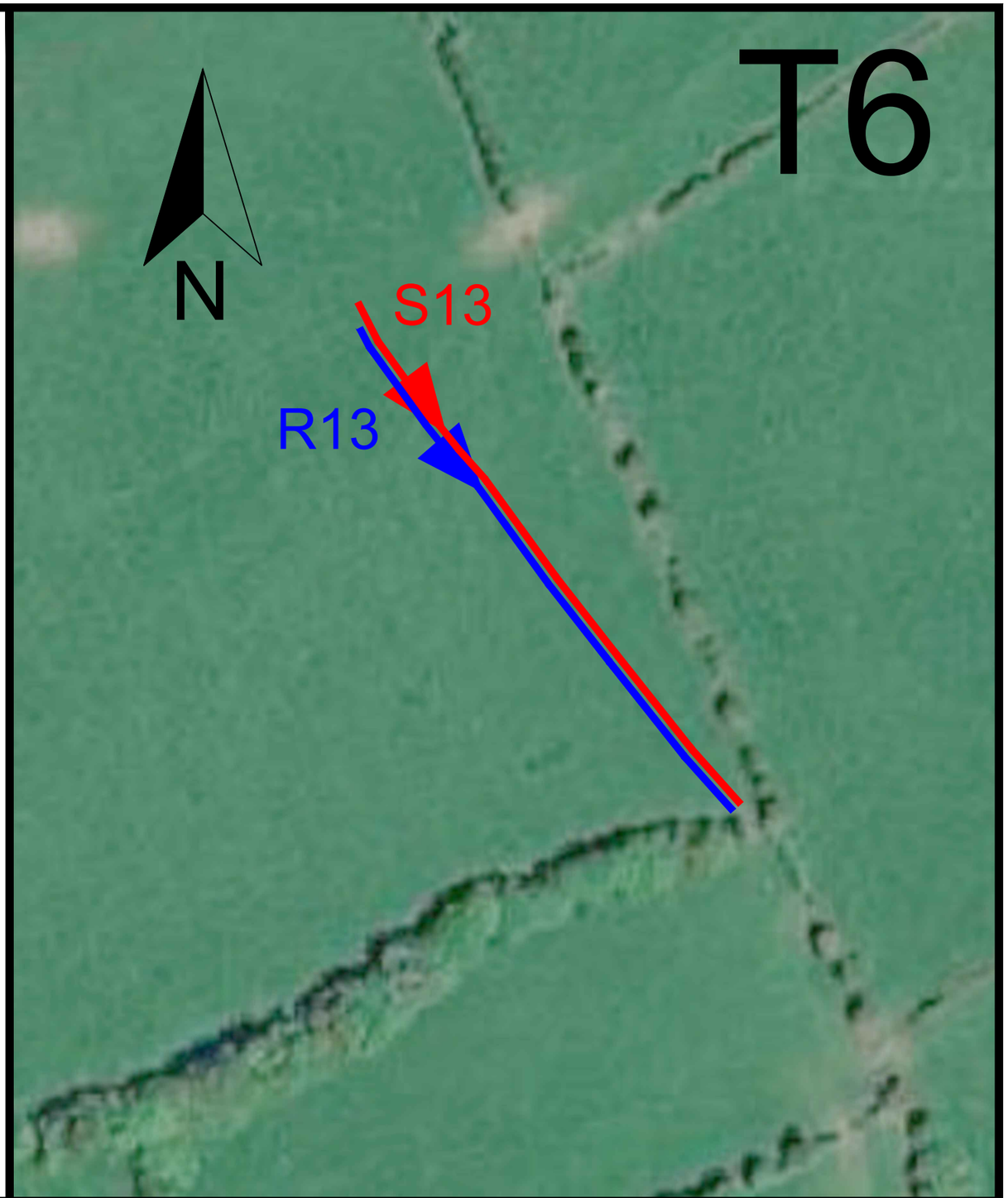
1 Soft or loose Soil
2 Firm or medium dense Overburden or very poor highly weathered Limestone
3 Fair weathered Limestone
4a Karstified Limestone
4b Good to very good Limestone

2D-Resistivity Line R13 and Seismic Refraction Line S13 Model



2D-Resistivity Line R13 and Seismic Refraction Line S13 Interpretation





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CLIENT	TOBIN
PROJECT	Rooaunalaughta, County Mayo Geophysical Survey
TITLE	Figure 6: Models and Interpretation of Geophysical Survey at T6

SCALE:	1:750 @ A3 VE x2
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STATUS:	Final

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (200 - 400 m/s)
- Top of Layer 2 (800 - 1000 m/s)
- Top of Layer 3 (2000 - 2400 m/s)
- Top of Layer 4 (4000 - 5000 m/s)

2D-Resistivity Model Values:

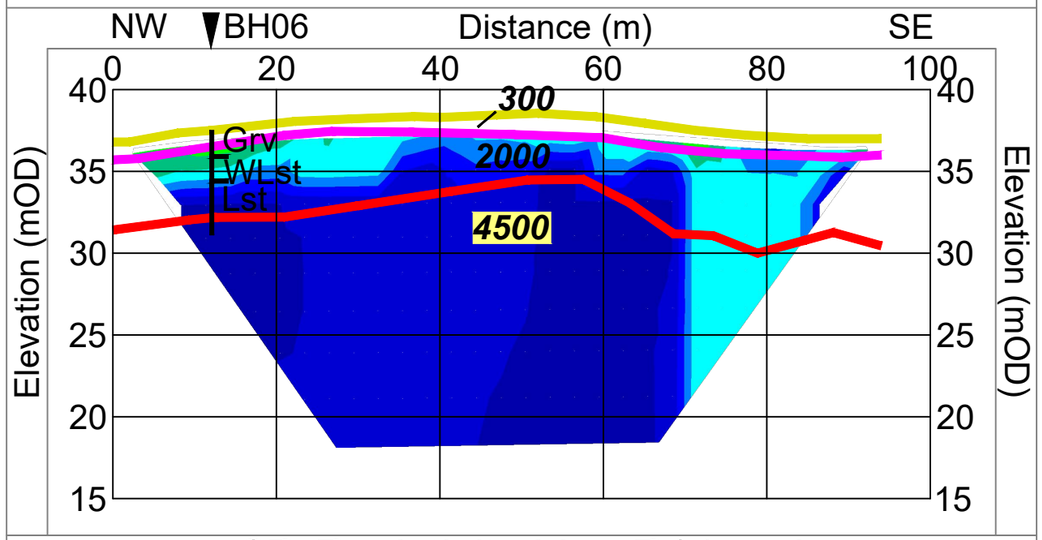
Resistivities (Ohmm)

31.2 62.5 125 250 500 1000 2000 4000

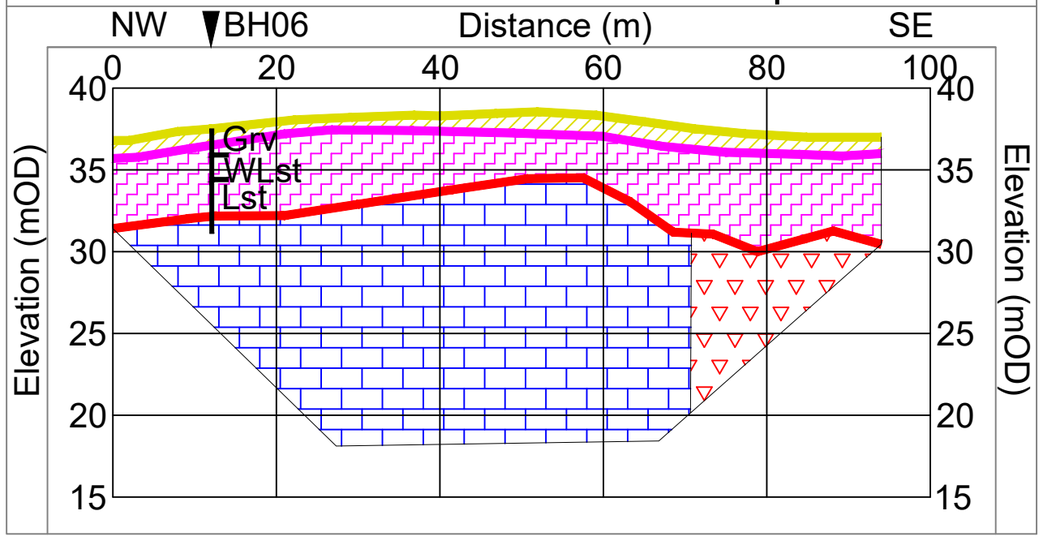
Interpretation Figures:

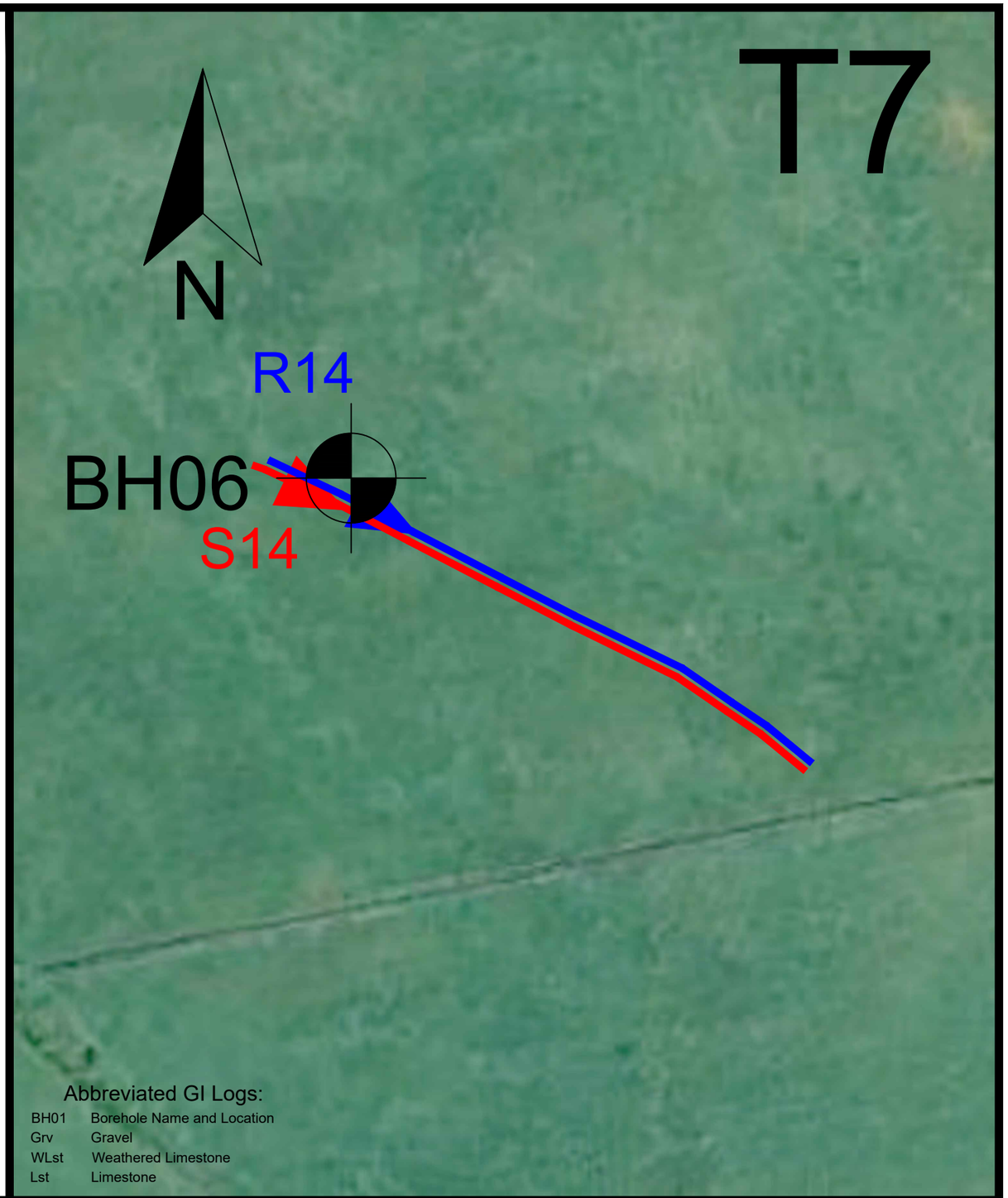
1 Soft or loose Soil
2 Firm or medium dense Overburden or very poor highly weathered Limestone
3 Fair weathered Limestone
4a Karstified Limestone
4b Good to very good Limestone

2D-Resistivity Line R14 and Seismic Refraction Line S14 Model



2D-Resistivity Line R14 and Seismic Refraction Line S14 Interpretation





Abbreviated GI Logs:

BH01	Borehole Name and Location
Grv	Gravel
WLst	Weathered Limestone
Lst	Limestone

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CLIENT	TOBIN
PROJECT	Rooaunalaughta, County Mayo Geophysical Survey
TITLE	Figure 7: Models and Interpretation of Geophysical Survey at T7

SCALE:	1:750 @ A3 VE x2
PROJECT:	6987
DRAWN:	JC
DATE:	24/07/2026
MGX FILE:	6987f_Drawings.dwg
STATUS:	Final

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (200 - 400 m/s)
- Top of Layer 2 (800 - 1000 m/s)
- Top of Layer 3 (2000 - 2400 m/s)
- Top of Layer 4 (4000 - 5000 m/s)

2D-Resistivity Model Values:

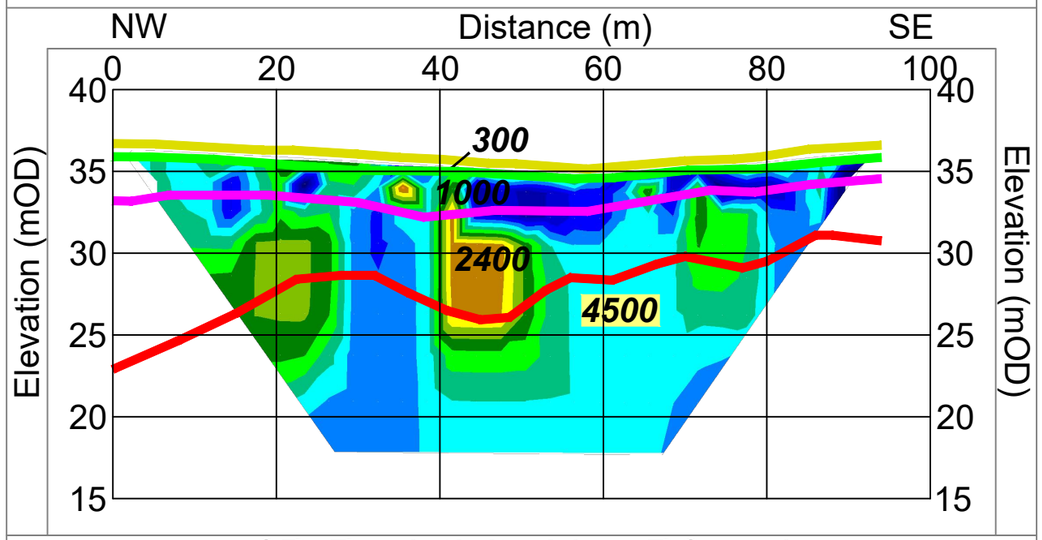
Resistivities (Ohmm)

31.2 | 62.5 | 125 | 250 | 500 | 1000 | 2000 | 4000

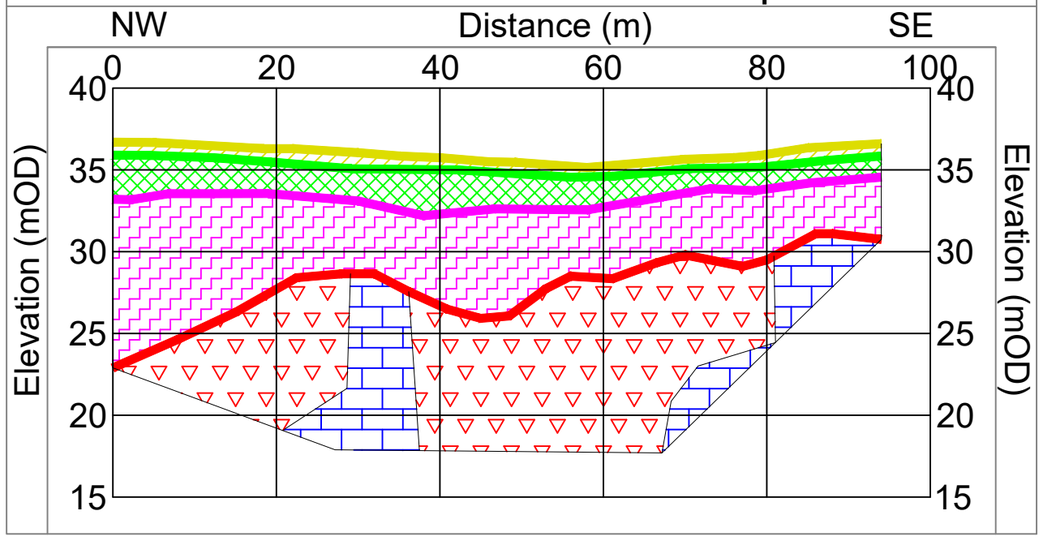
Interpretation Figures:

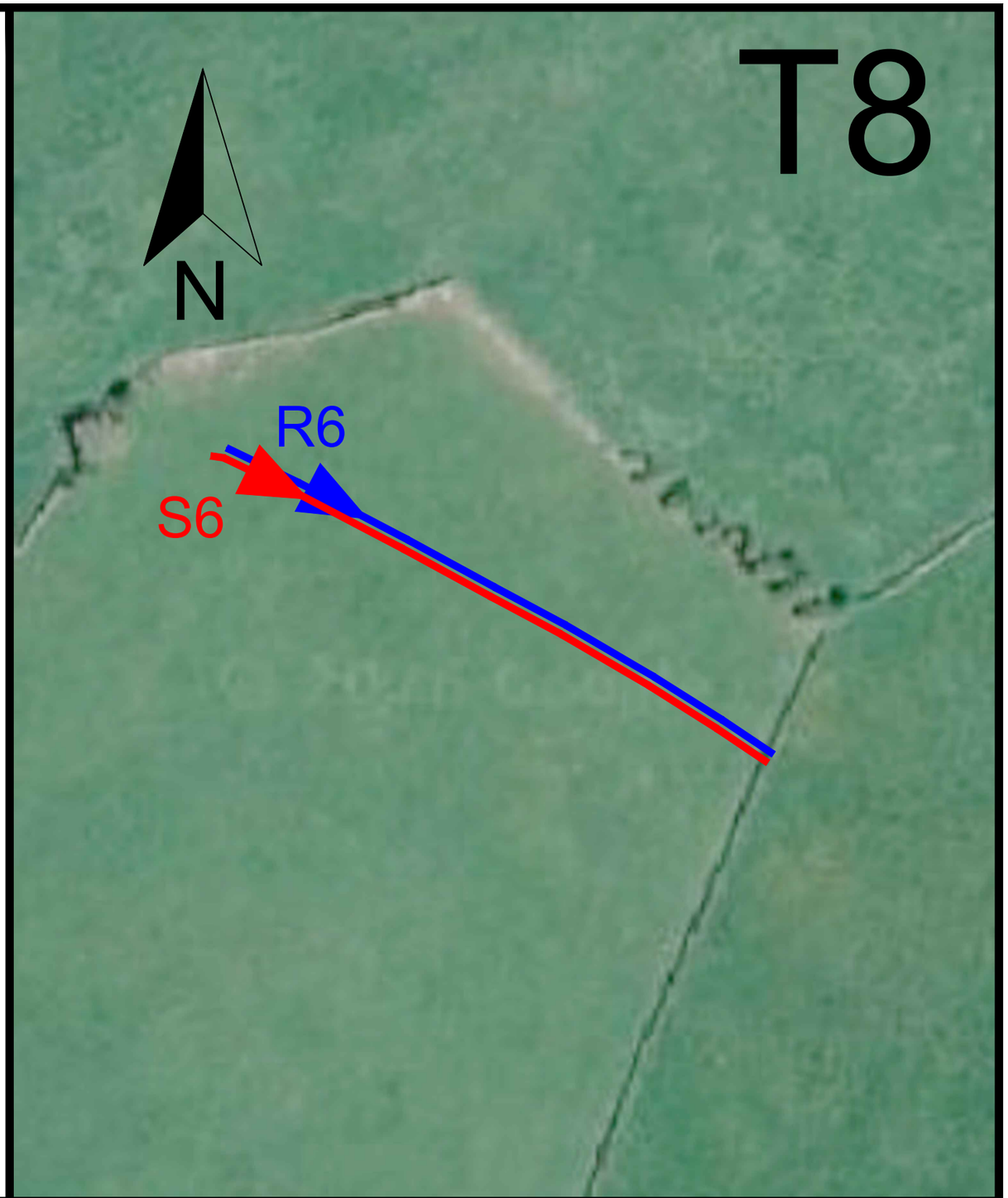
1 Soft or loose Soil
2 Firm or medium dense Overburden or very poor highly weathered Limestone
3 Fair weathered Limestone
4a Karstified Limestone
4b Good to very good Limestone

2D-Resistivity Line R6 and Seismic Refraction Line S6 Model



2D-Resistivity Line R6 and Seismic Refraction Line S6 Interpretation





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CLIENT	TOBIN
PROJECT	Rooaunalaughta, County Mayo Geophysical Survey
TITLE	Figure 8: Models and Interpretation of Geophysical Survey at T8

SCALE:	1:750 @ A3 VE x2
PROJECT:	6987
DRAWN:	JC
DATE:	24/07/2026
MGX FILE:	6987f_Drawings.dwg
STATUS:	Final

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (200 - 400 m/s)
- Top of Layer 2 (800 - 1000 m/s)
- Top of Layer 3 (2000 - 2400 m/s)
- Top of Layer 4 (4000 - 5000 m/s)

2D-Resistivity Model Values:

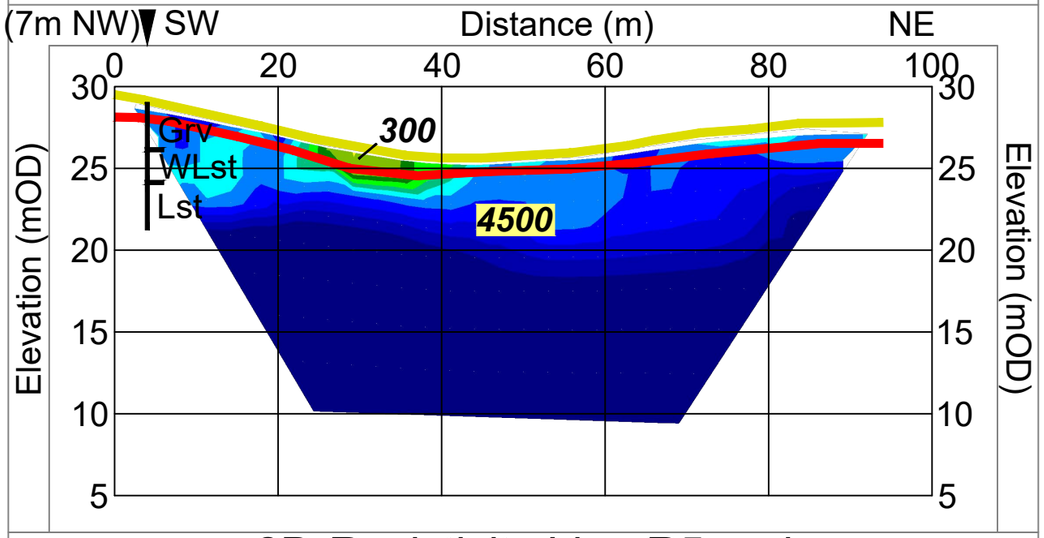
Resistivities (Ohmm)

31.2 62.5 125 250 500 1000 2000 4000

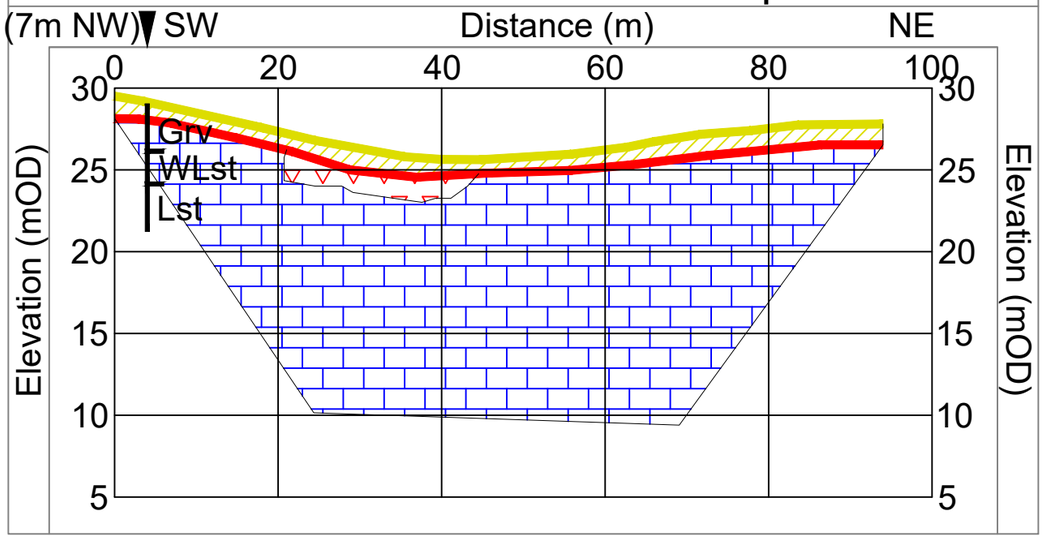
Interpretation Figures:

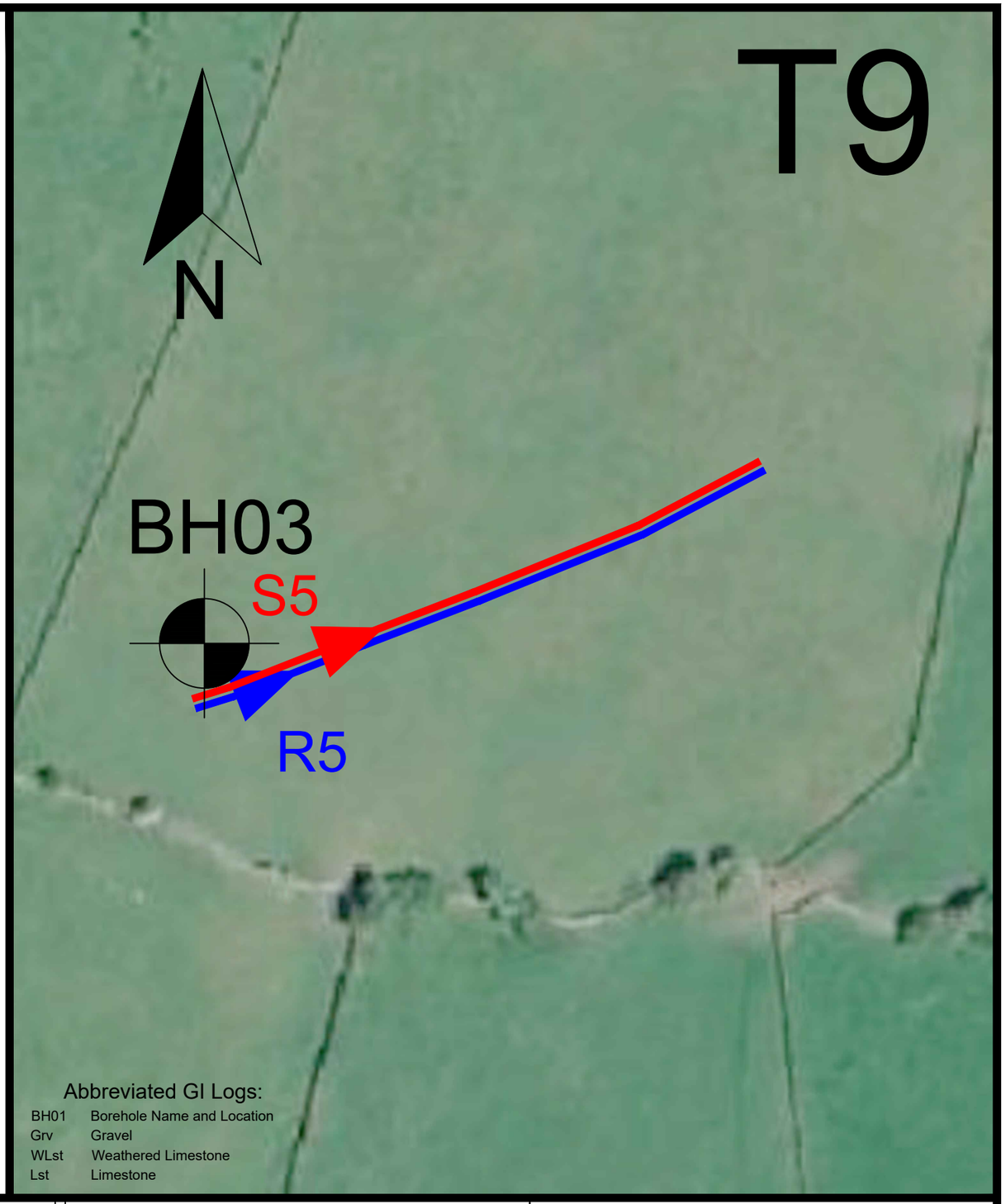
1 Soft or loose Soil
2 Firm or medium dense Overburden or very poor highly weathered Limestone
3 Fair weathered Limestone
4a Karstified Limestone
4b Good to very good Limestone

2D-Resistivity Line R5 and Seismic Refraction Line S5 Model



2D-Resistivity Line R5 and Seismic Refraction Line S5 Interpretation





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CLIENT	TOBIN
PROJECT	Rooaunalaughta, County Mayo Geophysical Survey
TITLE	Figure 9: Models and Interpretation of Geophysical Survey at T9

SCALE:	1:750 @ A3 VE x2
PROJECT:	6987
DRAWN:	JC
DATE:	24/07/2026
MGX FILE:	6987f_Drawings.dwg
STATUS:	Final

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (200 - 400 m/s)
- Top of Layer 2 (800 - 1000 m/s)
- Top of Layer 3 (2000 - 2400 m/s)
- Top of Layer 4 (4000 - 5000 m/s)

2D-Resistivity Model Values:

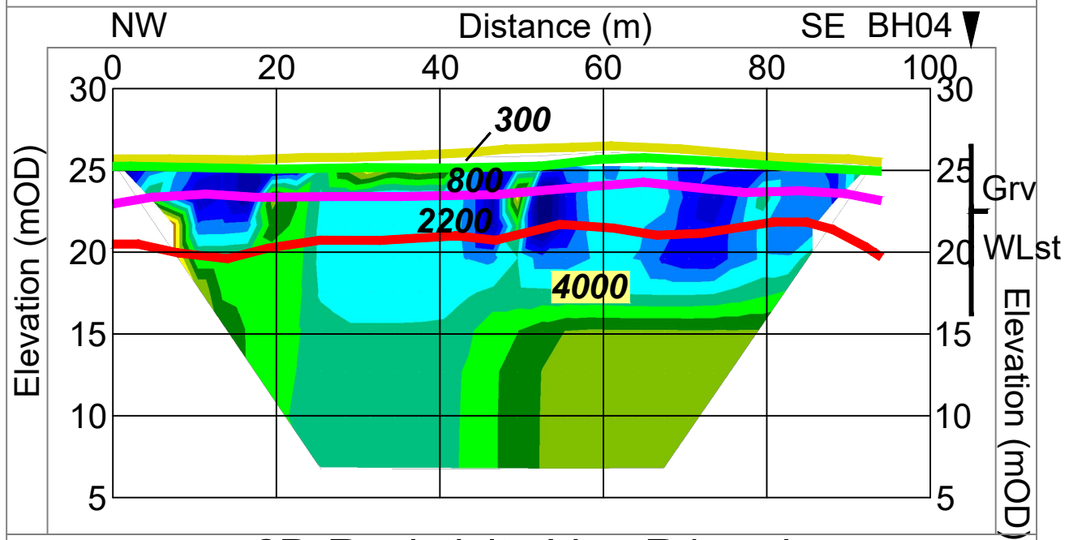
Resistivities (Ohmm)

31.2 62.5 125 250 500 1000 2000 4000

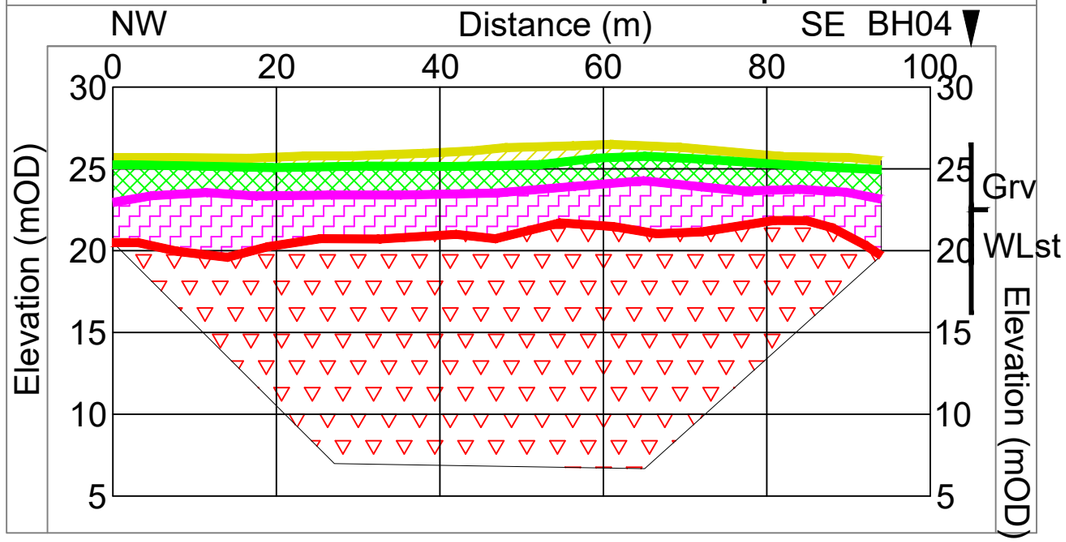
Interpretation Figures:

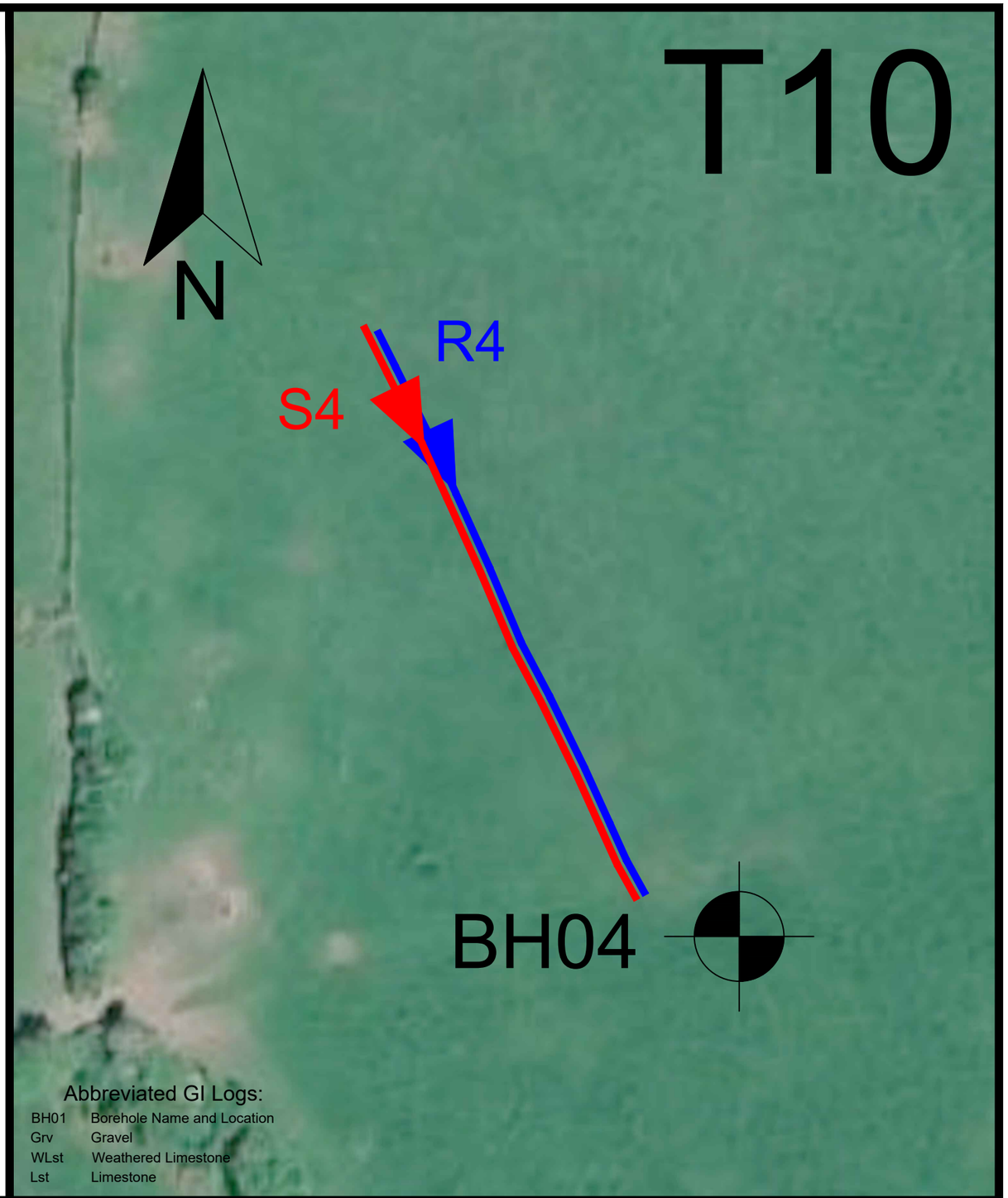
1 Soft or loose Soil
2 Firm or medium dense Overburden or very poor highly weathered Limestone
3 Fair weathered Limestone
4a Karstified Limestone
4b Good to very good Limestone

2D-Resistivity Line R4 and Seismic Refraction Line S4 Model



2D-Resistivity Line R4 and Seismic Refraction Line S4 Interpretation





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CLIENT	TOBIN
PROJECT	Rooaunalaughta, County Mayo Geophysical Survey
TITLE	Figure 10: Models and Interpretation of Geophysical Survey at T10

SCALE:	1:750 @ A3 VE x2
PROJECT:	6987
DRAWN:	JC
DATE:	24/07/2026
MGX FILE:	6987f_Drawings.dwg
STATUS:	Final

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (200 - 400 m/s)
- Top of Layer 2 (800 - 1000 m/s)
- Top of Layer 3 (2000 - 2400 m/s)
- Top of Layer 4 (4000 - 5000 m/s)

2D-Resistivity Model Values:

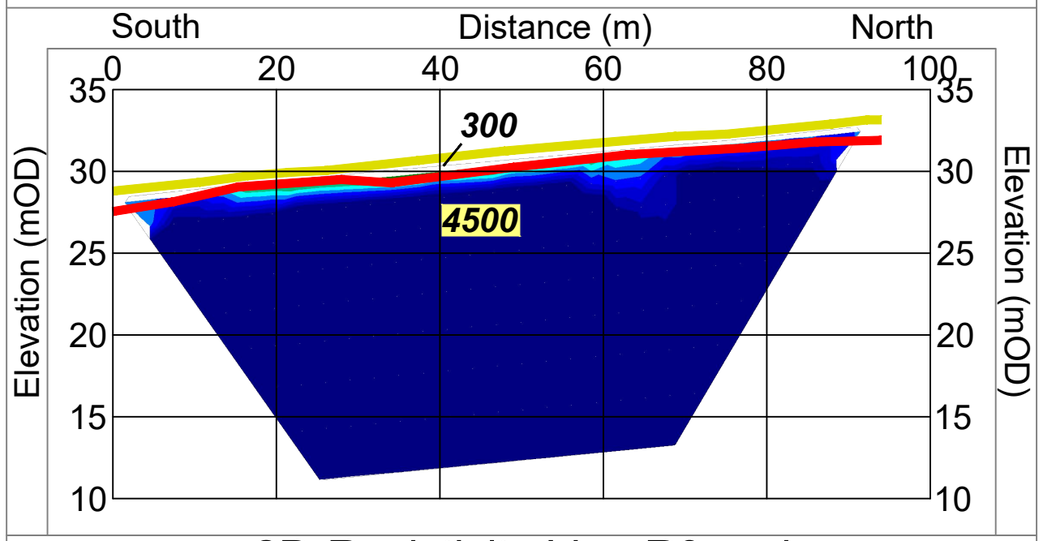
Resistivities (Ohmm)

31.2 62.5 125 250 500 1000 2000 4000

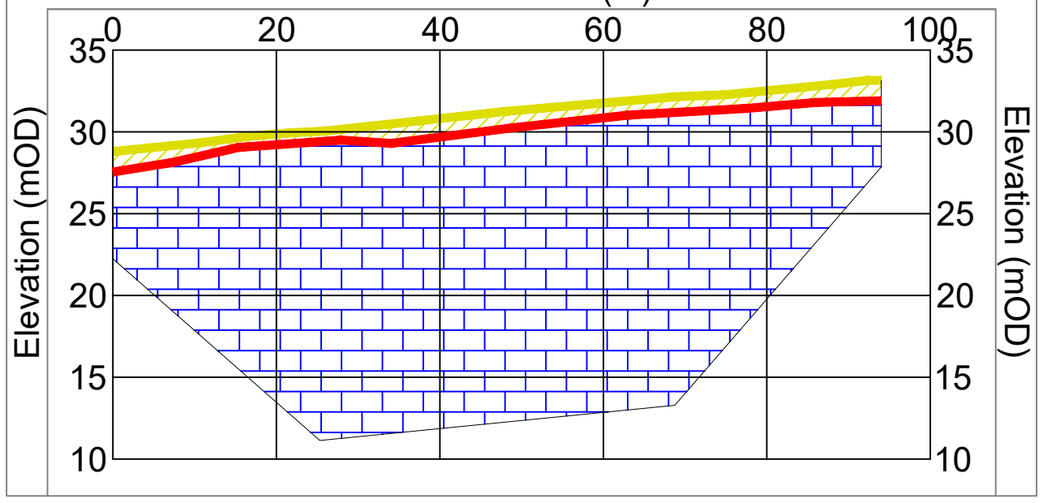
Interpretation Figures:

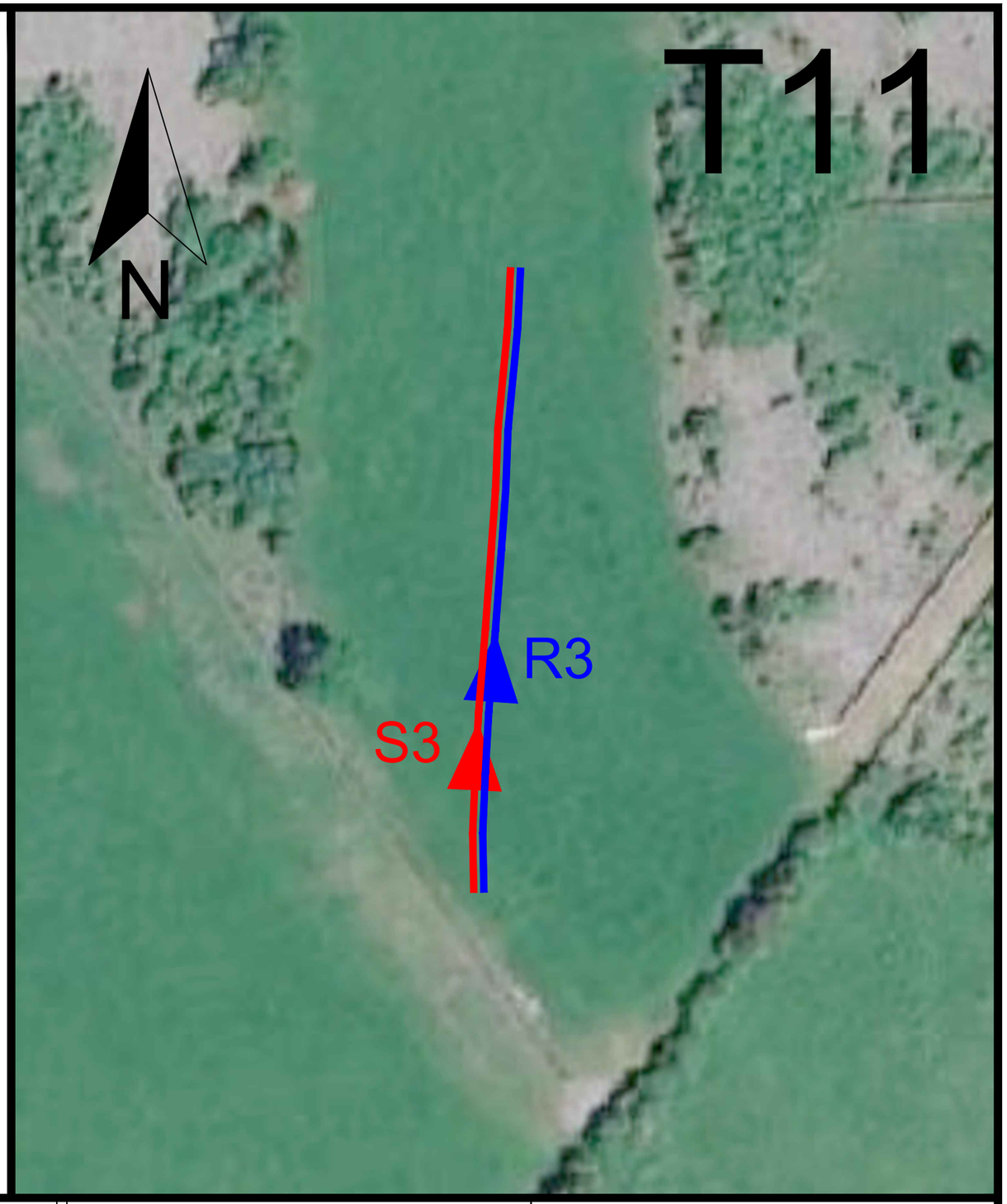
1 Soft or loose Soil
2 Firm or medium dense Overburden or very poor highly weathered Limestone
3 Fair weathered Limestone
4a Karstified Limestone
4b Good to very good Limestone

2D-Resistivity Line R3 and Seismic Refraction Line S3 Model



2D-Resistivity Line R3 and Seismic Refraction Line S3 Interpretation





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CLIENT	TOBIN
PROJECT	Rooaunalaughta, County Mayo Geophysical Survey
TITLE	Figure 11: Models and Interpretation of Geophysical Survey at T11

SCALE:	1:750 @ A3 VE x2
PROJECT:	6987
DRAWN:	JC
DATE:	24/07/2026
MGX FILE:	6987f_Drawings.dwg
STATUS:	Final

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (200 - 400 m/s)
- Top of Layer 2 (800 - 1000 m/s)
- Top of Layer 3 (2000 - 2400 m/s)
- Top of Layer 4 (4000 - 5000 m/s)

2D-Resistivity Model Values:

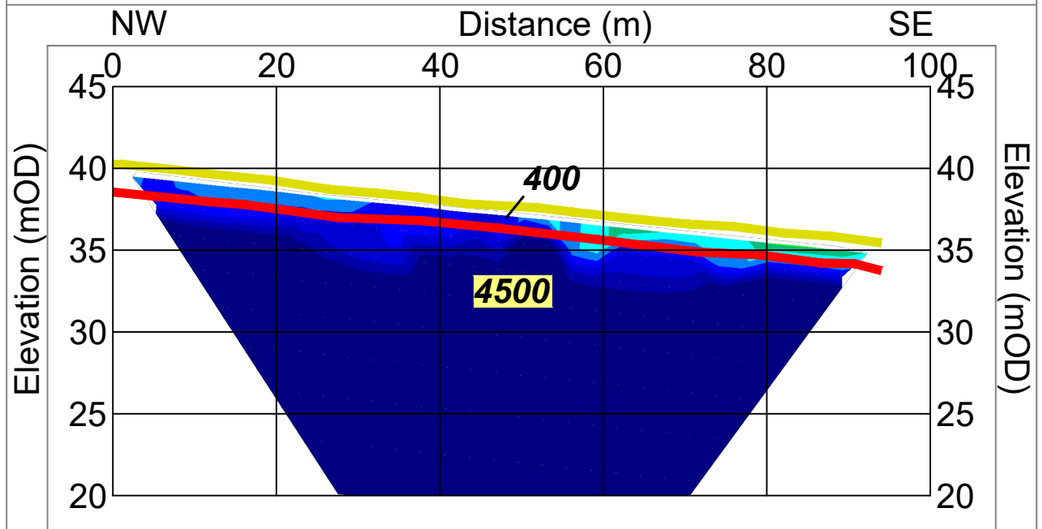
Resistivities (Ohmm)

31.2 | 62.5 | 125 | 250 | 500 | 1000 | 2000 | 4000

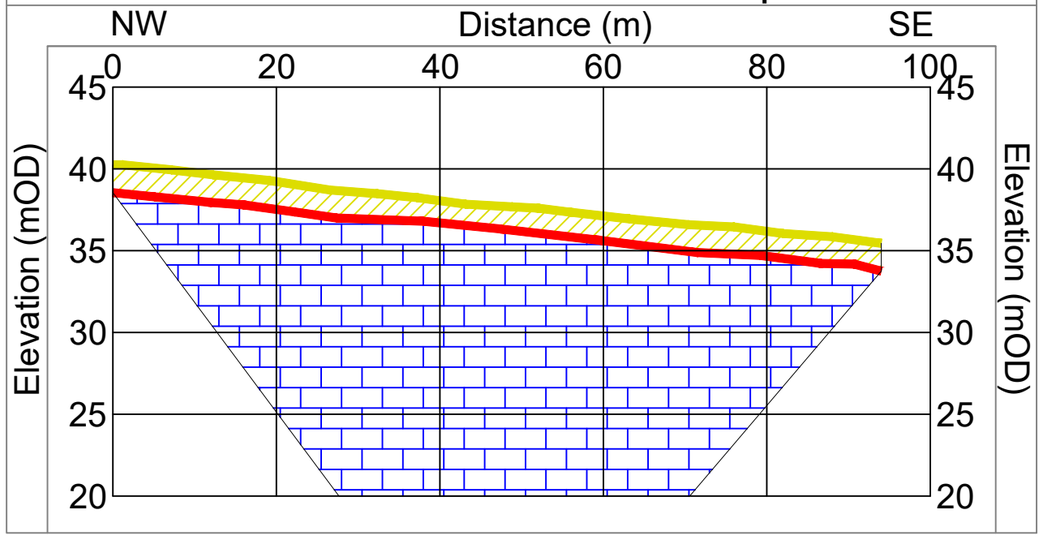
Interpretation Figures:

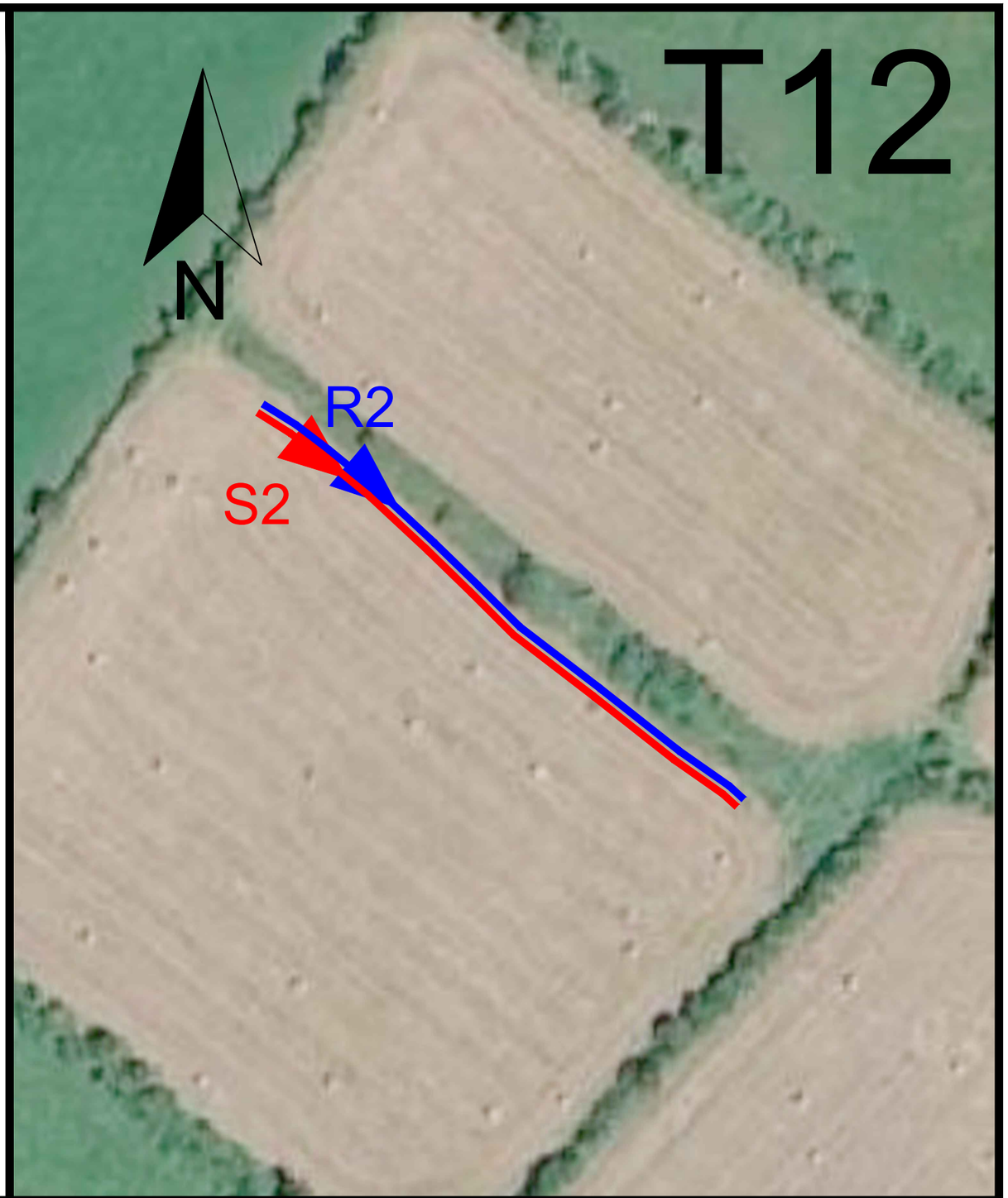
1 Soft or loose Soil
2 Firm or medium dense Overburden or very poor highly weathered Limestone
3 Fair weathered Limestone
4a Karstified Limestone
4b Good to very good Limestone

2D-Resistivity Line R2 and Seismic Refraction Line S2 Model



2D-Resistivity Line R2 and Seismic Refraction Line S2 Interpretation





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CLIENT	TOBIN
PROJECT	Rooaunalaughta, County Mayo Geophysical Survey
TITLE	Figure 12: Models and Interpretation of Geophysical Survey at T12

SCALE:	1:750 @ A3 VE x2
PROJECT:	6987
DRAWN:	JC
DATE:	24/07/2026
MGX FILE:	6987f_Drawings.dwg
STATUS:	Final

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (200 - 400 m/s)
- Top of Layer 2 (800 - 1000 m/s)
- Top of Layer 3 (2000 - 2400 m/s)
- Top of Layer 4 (4000 - 5000 m/s)

2D-Resistivity Model Values:

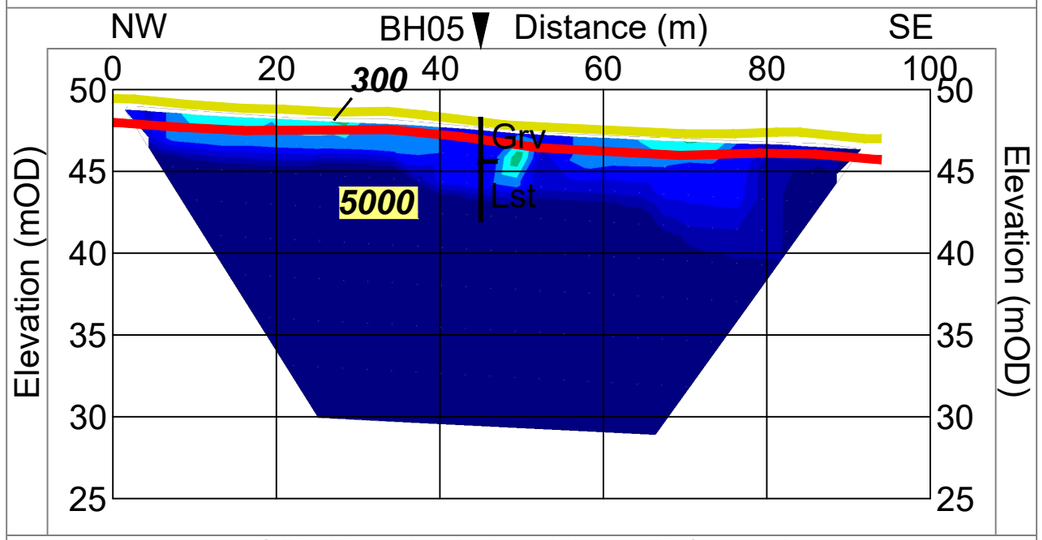
Resistivities (Ohmm)

31.2 62.5 125 250 500 1000 2000 4000

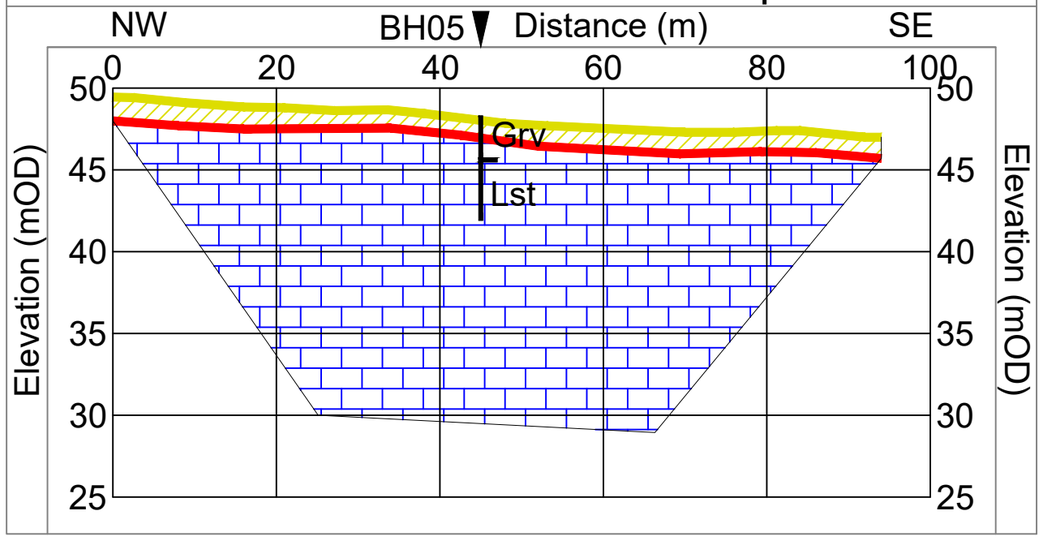
Interpretation Figures:

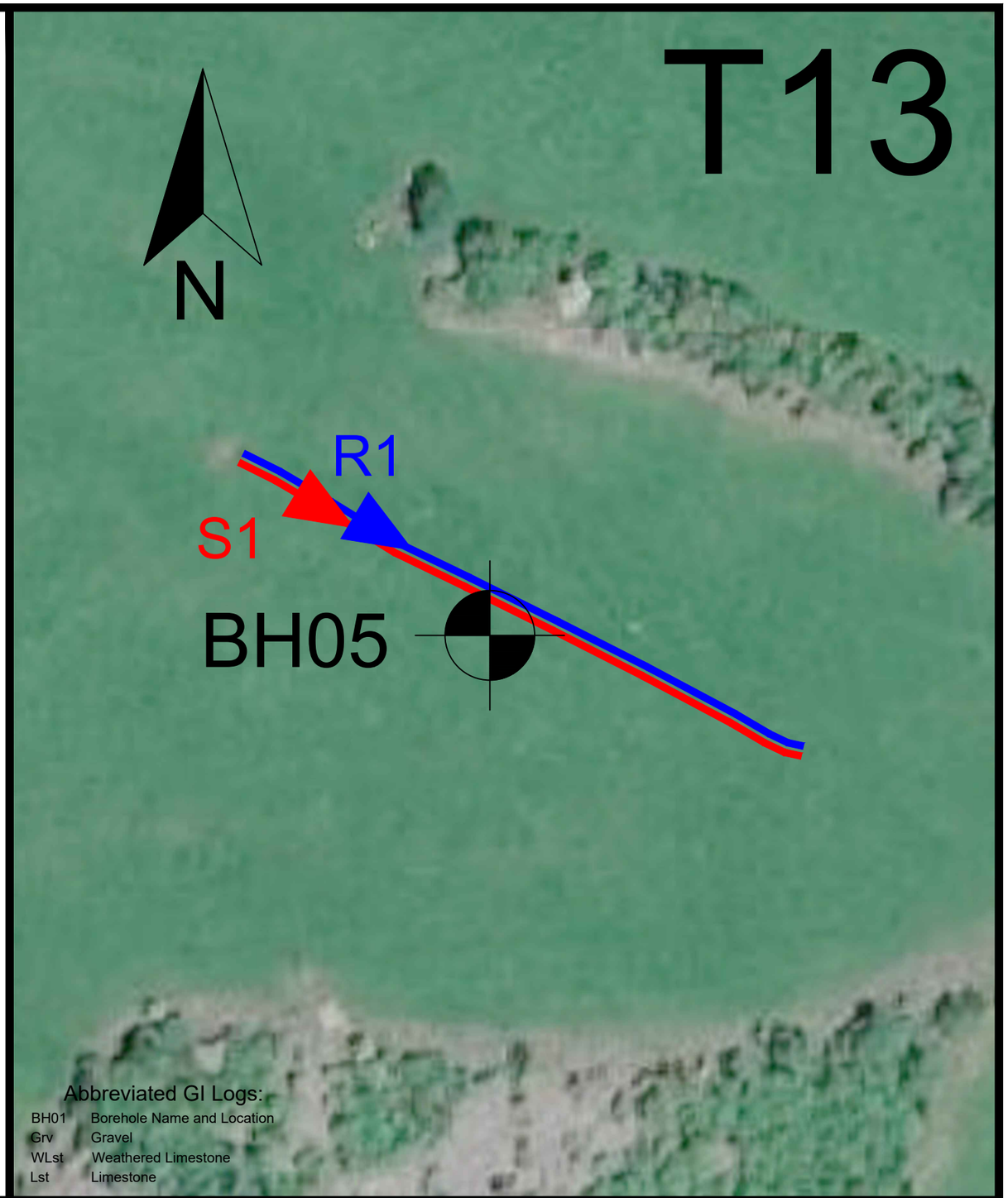
1 Soft or loose Soil
2 Firm or medium dense Overburden or very poor highly weathered Limestone
3 Fair weathered Limestone
4a Karstified Limestone
4b Good to very good Limestone

2D-Resistivity Line R1 and Seismic Refraction Line S1 Model



2D-Resistivity Line R1 and Seismic Refraction Line S1 Interpretation





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CLIENT	TOBIN
PROJECT	Rooaunalaughta, County Mayo Geophysical Survey
TITLE	Figure 13: Models and Interpretation of Geophysical Survey at T13

SCALE:	1:750 @ A3 VE x2
PROJECT:	6987
DRAWN:	JC
DATE:	24/07/2026
MGX FILE:	6987f_Drawings.dwg
STATUS:	Final

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (200 - 400 m/s)
- Top of Layer 2 (800 - 1000 m/s)
- Top of Layer 3 (2000 - 2400 m/s)
- Top of Layer 4 (4000 - 5000 m/s)

2D-Resistivity Model Values:

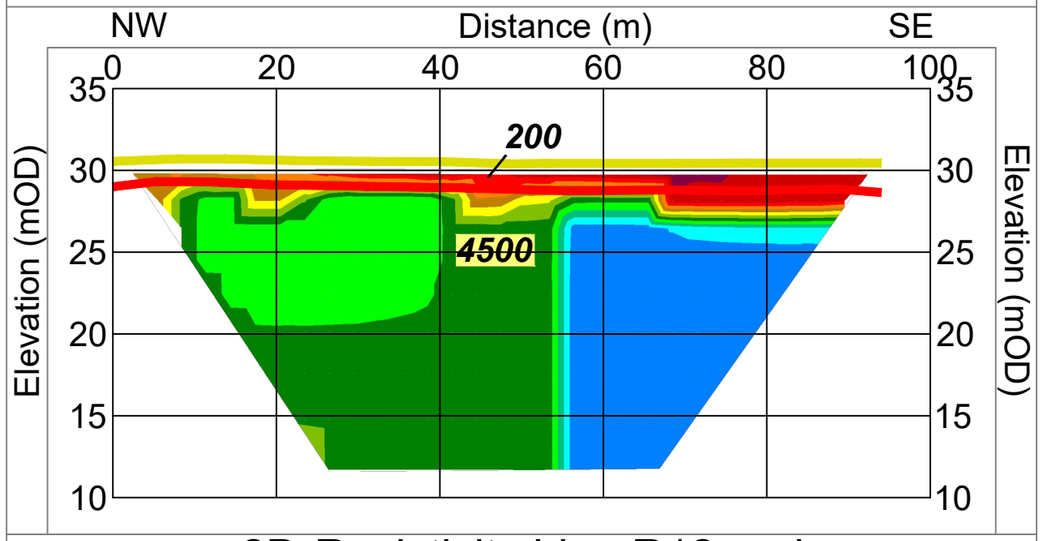
Resistivities (Ohmm)

31.2 62.5 125 250 500 1000 2000 4000

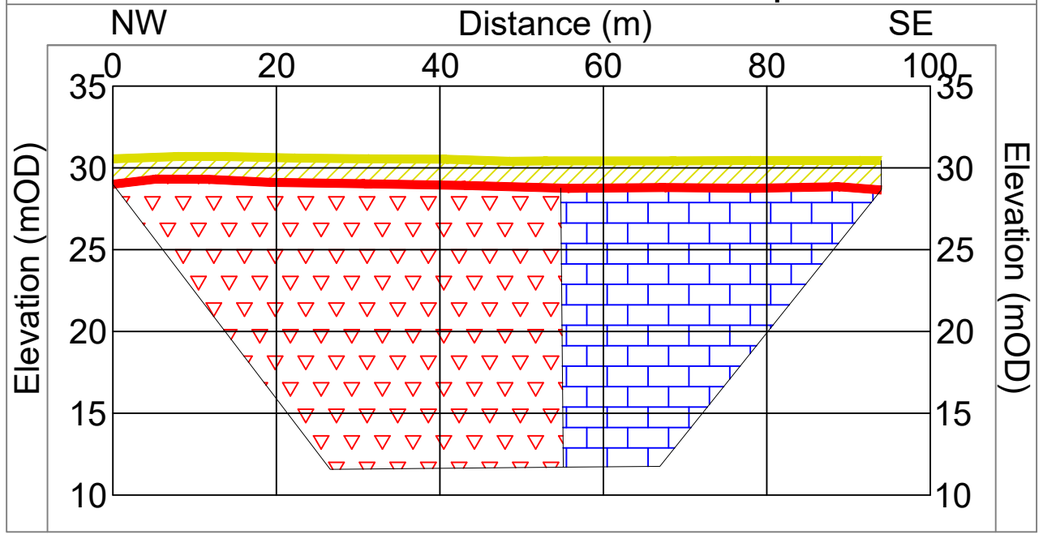
Interpretation Figures:

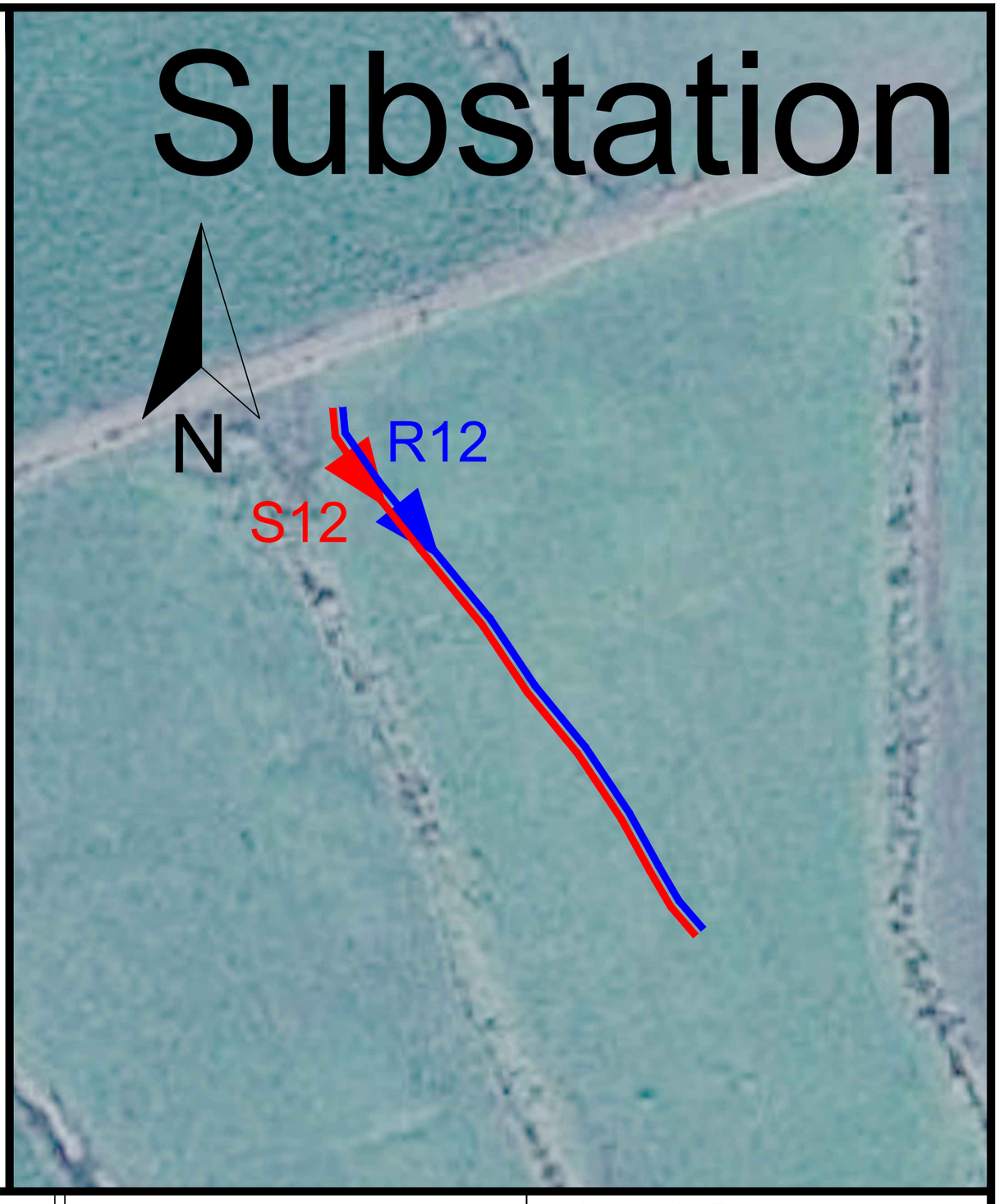
1 Soft or loose Soil
2 Firm or medium dense Overburden or very poor highly weathered Limestone
3 Fair weathered Limestone
4a Karstified Limestone
4b Good to very good Limestone

2D-Resistivity Line R12 and Seismic Refraction Line S12 Model



2D-Resistivity Line R12 and Seismic Refraction Line S12 Interpretation





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CLIENT	TOBIN
PROJECT	Rooaunalaughta, County Mayo Geophysical Survey
TITLE	Figure 14: Models and Interpretation of Geophysical Survey at Substation

SCALE:	1:750 @ A3 VE x2
PROJECT:	6987
DRAWN:	JC
DATE:	24/07/2026
MGX FILE:	6987f_Drawings.dwg
STATUS:	Final

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1 (200 - 400 m/s)
- Top of Layer 2 (800 - 1000 m/s)
- Top of Layer 3 (2000 - 2400 m/s)
- Top of Layer 4 (4000 - 5000 m/s)

2D-Resistivity Model Values:
Resistivities (Ohmm)

31.2 62.5 125 250 500 1000 2000 4000

Interpretation Figures:

1 Soft or loose Soil
2 Firm or medium dense Overburden or very poor highly weathered Limestone
3 Fair weathered Limestone
4a Karstified Limestone
4b Good to very good Limestone