APPENDIX 5-13

ONSHORE GRID CONNECTION SITE INVESTIGATIONS

Report on Peat Probing

Insert 15/07/2024

Doc No.IRE1-HMV-ONC-EL-RP-0005

Rev.02

IRISH DRILLING LIMITED

LOUGHREA, CO. GALWAY, IRELAND

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SITE INVESTIGATION

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SCEIRDRE ROCKS CABLE ROUTE

SITE INVESTIGATION
FACTUAL REPORT

H &MV Engineering,
Hamilton House Block 2,
Plassey Business Park,
Castletroy,
Co. Limerick.

	Prepared by	Approved by	Rev. Issue Date:	Revision No.
	Ronan Killeen	Declan Joyce	15th July 2024	23 CE_106/02
Signature				

FOREWORD

The peat probe and shear vane 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 probe and vane test results. The assumptions, though reasonable, are given for guidance only and no liability can be accepted for changes in conditions not revealed by the probes and shear vanes.

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.

Contents:

1 Introduction.

Irish Drilling Ltd. (IDL) was instructed by H & MV Engineering Ltd. to carry out a site investigation at the site of the proposed Sceirdre Rocks Cable Route.

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

The fieldwork commenced on February 2nd 2024 and was completed on April 5th 2024.

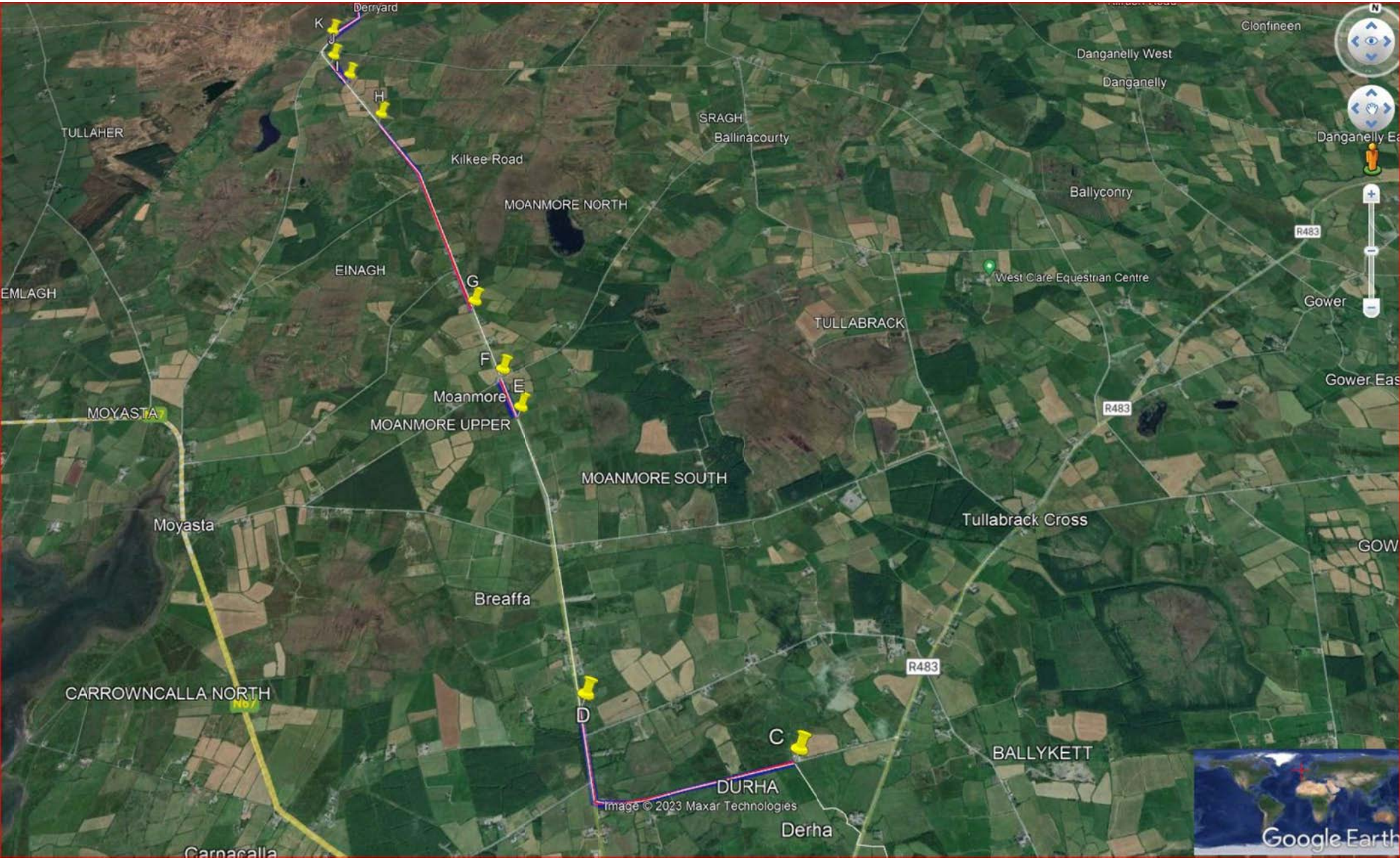
2 Site & Geology

The proposed cable route runs along the R473 Road, east of Kilrush Town County Clare (AB Line) and on local roads between the townlands of Derryadd and Doonmore, west of Doonbeg, County Clare (KL Line).

Refer to Maps 1 ,2 and 3 for lines AB and KL:

Maps 1, 2 and 3:


Breaffa
D
C
R483
BALLYKETT
DURHA
Derha
Granatooha
N68
Carnanes
Moyadda
Knockerra
KNOCKERRY EAS
Leadmore
R483
N67
N68
Ballymacurtain
B
R473
Knockerra Lower
CARROWFREE
Kilrush
Tesco Superstore
R473
Shanakyle Road
KILCARROLL
N67
Vandeleur Walled Garden & Visitor Centre
Cappa Upper
MOLOUGHA
Fortfield Farm
Kilcock
A
BALLYNOTE EAST
Donail
Ballynote Shannon Estuary View
Moyne Court
Dunroamin Caravan Park Kilrush
N67
Image © 2023 Maxar Technologies
Google Earth


Derryard
K
J
I
H
G
F
E
D
C
TULLAHER
Kilkee Road
SRAGH
Ballinacourty
Clonfineen
Danganelly West
Danganelly
MOANMORE NORTH
Ballyconry
EINAGH
West Care Equestrian Centre
Gower
TULLABRACK
Moanmore
MOANMORE UPPER
MOYASTA
MOANMORE SOUTH
Tullabrack Cross
Moyasta
Breaffa
R483
CARROWNCALLA NORTH
BALLYKETT
DURHA
Derha
Image © 2023 Maxar Technologies
Google Earth


Poulnagun
White Strand Beach
Doughmore Beach
CARROWMORE
KILLARD
Oldchapel
Doonbeg Golf Club
Caherfenick
Rhynagonnaught
Glascloune
Strand Camping Doonbeg
Baltard
Lios
Mountrivers Bridge
N67
L
Doonbeg
R2436-Doonbeg
Bealaha
CARROWBLOUGH BEG
Bealaha House B&B
MOUNTRIVERS
Derryard
K
J
I
H
TULLAHER
Image © 2023 CNES / Airbus
Image © 2023 Maxar Technologies
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Kilkee Road
Google Earth
1985
Imagery Date: 6/20/2022 52°43'44.21" N 9°35'15.48" W elev 20 m eye alt 5.90 km

The fieldwork was carried out predominantly on agricultural lands and/or road verges. 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 and showing approximate 'As-Built' fieldwork locations, is included with this report.

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.

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

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

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

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

Solid Geology
The Geological Map of Ireland: (GSI 1:100,000 scale map series) indicate that the site is underlain by siltstone and sandstone rock of the Gull Island Formation.

3 Fieldwork.

3.1 Fieldwork Plant:
The following plant was mobilised to site by IDL to carry out fieldwork operations:
1nr. Peat Probe equipment.
1nr. H70 Shear Vane Equipment.

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

- Completion of 399nr Peat Probes.
- Completion of 132nr In-Situ Shear Vane Tests using H70 Shear Vane.

3.3 Peat Probes:
Three hundred and ninety-nine peat probes were carried out using hand-held steel rods (with a cone tip) pushed by hand to 'refusal'.

Two hundred and two peat probes were carried out along the AB Line with one hundred and nine completed along the KL Line.

The peat probes were carried out at soft ground locations and to depths ranging from 0.02m to 4.40m below ground level.

Detailed records for the peat probes completed are included with this report in Appendix 1.

3.4 In-Situ Shear Vanes:

In-situ shear vane tests were carried out at one hundred and thirty-two of the peat probe locations.

Twenty-nine shear vane tests were carried out along the AB Line with one hundred and three tests completed along the KL Line.

The shear vane tests were carried out to depths ranging from 0.30m to 2.00m below ground level.

The in-situ shear vane tests were carried out using a Geonor H70 Shear Vane and the records of same are included with this report as Appendix 2.

3.5 General Summary:

The peat probe and shear vane test locations were set out on site 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 are reported to Irish Transverse Mercator (ITM) with Reduced Levels recorded relative to Malin Head Datum and with an accuracy level of + or – 0.10m.

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.

The records of all fieldwork activities are included with the appendices to this report.

Ronan Killeen
Chartered Engineer
Irish Drilling Limited
July 15th 2024

Appendix 1
Peat Probe Records

PEAT PROBE NO.	EASTING	NORTHING	REDUCED LEVEL	PEAT PROBE DEPTH
AB LINE				
AB 01-2	502425.61	653919.175	24.081	0.25m
AB 01-3	502435.46	653919.439	24.086	0.1m
AB 02-2	502423.95	653945.713	23.666	0.2m
AB 02-3	502429.42	653946.679	23.846	0.18m
AB 03-2	502421.2	653976.727	24.05	0.04m
AB 03-3	502427.08	653977.369	24.131	0.2m
AB 04-2	502421.06	654010.398	18.673	0.4m
AB 04-3	502424.48	654010.795	20.054	0.23m
AB 05-1	502410.92	654034.625	21.506	0.66m
AB 05-2	502418.44	654035.326	24.257	0.69m
AB 05-3	502422.53	654035.903	24.711	0.87m
AB 06-1	502406.26	654067.764	32.248	2.1m
AB 06-2	502414.94	654067.449	25.578	1.5m
AB 06-3	502425.73	654069.903	22.779	0.88m
AB 06-4	502428.82	654064.027	34.91	0.67m
AB 07-1	502405.31	654102.48	28.613	2.3m
AB 07-2	502412.36	654102.926	28.057	0.3m
AB 07-3	502417.61	654102.925	23.981	2.69m
AB 08-1	502420.03	654130.374	23.352	1.3m
AB 08-2	502410.26	654128.856	29.182	2.2m
AB 08-3	502415.1	654127.65	30.094	0.64m
AB 09-2	502406.69	654157.141	27.384	0.3m
AB 09-3	502413.58	654157.112	23.611	0.49m
AB 10-2	502404.08	654188.363	25.268	0.23m
AB 10-3	502408.12	654188.754	25.451	0.18m
AB 11-1	502392.95	654218.736	26.089	0.23m
AB 11-2	502400.18	654218.713	26.374	0.18m
AB 11-3	502405.89	654219.468	26.248	0.3m
AB 12-1	502391.69	654245.565	27.5	0.02m
AB 12-2	502398.92	654246.225	27.611	0.03m
AB 12-3	502402.98	654246.235	27.94	0.1m
AB 13-2	502396.56	654277.93	27.781	0.55m
AB 13-3	502401.06	654278.41	27.757	0.2m
AB 14-2	502394.02	654309.788	28.474	0.2m
AB 14-3	502398.22	654310.5	28.558	0.8m
AB 15-3	502390.85	654340.323	28.999	0.2m
AB 16-2	502374	654366.572	29.593	0.18m
AB 16-3	502377.82	654368.887	29.364	0.44m
AB 17-2	502359.71	654393.135	30.007	0.31m
AB 17-3	502363.22	654395.209	30.093	0.21m
AB 18-2	502345.46	654421.026	30.269	0.76m
AB 18-3	502349.21	654422.415	30.334	0.12m

AB 19-2	502330.27	654451.703	30.091	0.53m
AB 19-3	502334.26	654453.644	30.161	0.13m
AB 20-2	502322.6	654467.621	29.774	0.79m
AB 20-3	502326.89	654468.334	30.134	0.13m
AB 21-2	502307.97	654496.276	30.372	0.48m
AB 21-3	502312.06	654498.597	30.584	0.41m
AB 22-2	502295.42	654522.063	30.949	0.31m
AB 22-3	502299.65	654525.661	30.747	0.19m
AB 23-2	502280.54	654556.394	31.923	0.08m
AB 23-3	502284.84	654556.913	31.834	0.23m
AB 24-2	502268.68	654580.037	32.37	0.9m
AB 24-3	502272.9	654581.832	32.265	0.35m
AB 25-2	502254.23	654610.54	32.567	0.21m
AB 25-3	502257.81	654611.772	32.413	0.15m
AB 26-2	502237.4	654638.362	32.785	0.27m
AB 26-3	502240.36	654640.396	32.693	0.21m
AB 27-2	502219.85	654662.893	32.76	0.17m
AB 27-3	502223.02	654664.726	32.645	0.17m
AB 28-2	502204.93	654681.853	32.239	0.14m
AB 28-3	502207.4	654684.564	32.063	0.15m
AB 29-2	502186.11	654704.216	31.05	0.25m
AB 29-3	502189.1	654706.904	31.131	0.18m
AB 30-2	502166.52	654727.204	30.567	0.24m
AB 30-3	502169.45	654729.862	30.579	0.18m
AB 31-2	502147.8	654750.746	29.926	0.14m
AB 31-3	502150.79	654754.053	29.825	0.34m
AB 32-2	502127.2	654774.002	29.706	0.32m
AB 32-3	502131.52	654777.271	29.475	0.43m
AB 32-4	502138.32	654784.166	28.871	0.87m
AB 33-2	502107.66	654798.32	29.774	0.50m
AB 33-3	502112.38	654808.065	29.018	0.17m
AB 34-2	502085.39	654819.16	28.96	0.18m
AB 34-3	502087.73	654825.085	28.718	0.27m
AB 35-2	502060.94	654838.306	28.571	0.10m
AB 35-3	502064.28	654842.927	28.544	0.44m
AB 36-2	502041.63	654852.883	28.175	0.35m
AB 36-3	502045.82	654857.754	28.003	0.36m
AB 37-2	502018.49	654871.25	28.013	0.43m
AB 37-3	502019.93	654876.704	27.763	0.21m
AB 38-2	501993.85	654891.007	27.976	0.32m
AB 38-3	501997.34	654895.267	27.975	0.29m
AB 39-1	501970.51	654900.571	27.945	0.49m
AB 39-2	501972.68	654907.451	27.728	0.23m
AB 39-3	501974.99	654912.329	27.742	0.24m
AB 40-1	501936.13	654923.98	24.438	0.32m
AB 40-2	501947.64	654926.894	27.432	0.13m
AB 40-3	501950.65	654932.128	27.537	0.33m

AB 41-2	501924.39	654945.284	27.048	0.07m
AB 41-3	501927.34	654949.993	27.179	0.27m
AB 41-4	501926.83	654953.846	25.629	0.79m
AB 42-1	501888.62	654960.965	23.976	1.10m
AB 42-2	501900.22	654963.791	26.427	0.26m
AB 42-3	501902.19	654969.453	26.443	0.90m
AB 42-4	501900.98	654973.361	25.309	2.10m
AB 43-1	501872.14	654972.284	24.048	0.95m
AB 43-2	501879.96	654979.543	26.271	0.20m
AB 43-3	501883.4	654985.001	26.061	0.08m
AB 44-1	501842.66	654996.468	24.786	0.60m
AB 44-2	501843.22	655007.642	26.156	0.27m
AB 44-3	501850.44	655010.264	25.965	0.36m
AB 44-4	501851.16	655012.663	24.962	0.78m
AB 45-1	501826.44	655008.896	29.389	0.29m
AB 45-2	501825.74	655021.446	26.077	0.30m
AB 45-3	501826.63	655028.033	30.356	0.30m
AB 45-4	501828.17	655027.507	31.456	0.46m
AB 46-1	501794.9	655024.956	21.782	0.72m
AB 46-2	501799.4	655041.473	25.82	0.39m
AB 46-3	501805.7	655044.224	25.664	0.37m
AB 46-4	501807.47	655044.453	26.616	0.38m
AB 47-1	501773.16	655049.613	24.076	0.15m
AB 47-2	501776.86	655054.946	24.958	0.19m
AB 47-3	501783.14	655061.108	25.349	0.16m
AB 47-4	501784.41	655062.477	34.284	0.33m
AB 48-1	501749.9	655065.855	22.826	0.58m
AB 48-2	501756.93	655073.234	24.727	0.20m
AB 48-3	501759.43	655080.212	24.009	0.23m
AB 48-4	501760.7	655080.364	24.633	0.24m
AB 49-2	501732.04	655093.383	24.408	0.10m
AB 49-3	501735.16	655095.969	28.331	0.29m
AB 50-2	501709.13	655111.027	24.087	0.79m
AB 50-3	501714.08	655116.117	28.426	0.17m
AB 50-4	501718.23	655119.743	26.948	0.34m
AB 51-1	501675.98	655123.1	22.954	0.38m
AB 51-2	501686	655128.915	24.219	0.49m
AB 51-3	501690.09	655134.106	24.365	0.18m
AB 52-1	501657.62	655143.255	23.522	0.38m
AB 52-2	501662.55	655147.725	24.557	0.49m
AB 52-3	501667.68	655151.022	24.011	0.18m
AB 53-1	501635.08	655157.493	21.306	0.43m
AB 53-2	501640.55	655164.411	24.05	0.38m
AB 53-3	501644.74	655169.239	24.699	0.35m
AB 54-1	501609.41	655177.644	23.185	0.14m
AB 54-2	501613.1	655184.019	24.108	0.15m
AB 54-3	501619.13	655190.294	23.683	0.20m

AB 55-1	501579.37	655196.818	22.961	0.16m
AB 55-2	501587.25	655201.455	23.98	0.10m
AB 55-3	501592.73	655207.36	23.964	0.30m
AB 56-1	501556.27	655211.821	22.253	0.16m
AB 56-2	501564.75	655216.274	23.121	0.18m
AB 56-3	501569.44	655221.973	24.726	0.19m
AB 57-1	501535.5	655226.095	21.502	0.15m
AB 57-2	501538.62	655234.11	21.962	0.10m
AB 57-3	501543.37	655238.905	22.135	0.39m
AB 58-1	501508.81	655243.684	20.844	0.23m
AB 58-2	501515.35	655249.931	21.554	0.09m
AB 58-3	501517.57	655256.53	21.447	0.42m
AB 59-1	501480.33	655262.508	19.968	0.31m
AB 59-2	501489.84	655266.596	20.716	0.43m
AB 59-3	501491.1	655273.902	20.503	0.39m
AB 60-1	501457.3	655277.696	18.962	0.24m
AB 60-2	501462.52	655283.531	20.3	0.22m
AB 60-3	501472.27	655286.767	19.986	0.22m
AB 61-1	501435.67	655293.803	18.111	0.34m
AB 61-2	501440.33	655299.394	18.781	0.46m
AB 61-3	501445.42	655302.604	20.611	0.34m
AB 62-1	501404.23	655313.107	17.296	0.33m
AB 62-2	501412.75	655318.009	17.567	0.44m
AB 62-3	501419.4	655322.339	18.005	0.20m
AB 63-1	501384.79	655328.255	16.369	0.63m
AB 63-2	501389.03	655333.969	17.266	0.69m
AB 63-3	501391.67	655340.559	17.055	0.28m
AB 64-1	501356.64	655344.998	15.684	0.31m
AB 64-2	501365.43	655349.871	16.066	0.40m
AB 64-3	501370.56	655353.932	17.331	0.33m
AB 65-1	501332.5	655360.527	15.103	0.30m
AB 65-2	501341.3	655366.545	15.919	0.38m
AB 65-3	501349.07	655368.523	15.641	0.37m
AB 65-4	501360.24	655377.323	19.552	0.49m
AB 66-1	501308.61	655376.052	18.393	0.22m
AB 66-2	501317.17	655382.706	15.027	0.41m
AB 66-3	501322.74	655387.279	15.295	0.17m
AB 66-4	501334.12	655390.137	15.18	0.47m
AB 67-1	501284.98	655393.381	13.203	0.18m
AB 67-2	501290.14	655401.245	13.773	0.50m
AB 67-3	501294.95	655405.261	13.82	0.50m
AB 68-1	501264.31	655412.253	11.927	0.40m
AB 68-2	501267.6	655415.436	13.188	0.28m
AB 68-3	501271.97	655420.937	13.048	0.34m
AB 69-2	501241.52	655433.248	12.736	0.30m
AB 69-3	501244	655438.863	13.106	0.24m
AB 70-2	501215.12	655450.859	13.362	0.70m

AB 70-3		501212.98	655451.913	25.342	0.39m
AB 71-2		501192.33	655465.732	13.497	0.17m
AB 71-3		501196.15	655471.143	13.892	0.29m
AB 72-2		501154.28	655491.688	13.548	0.05m
AB 72-3		501157.25	655496.712	13.953	0.53m
AB 73-2		501140.12	655501.18	13.754	0.19m
AB 73-3		501144.33	655505.262	13.968	0.29m
AB 74-2		501117.51	655516.48	13.849	0.12m
AB 74-3		501123.92	655518.695	13.88	0.30m
AB 75-1		501086.19	655530.809	13.752	0.08m
AB 75-2		501090.29	655532.874	13.667	0.09m
AB 75-3		501095.6	655537.849	13.865	0.33m
AB 76-2		501067.63	655549.877	13.911	0.28m
AB 76-3		501074.41	655552.138	13.797	0.40m
AB 77-2		501042.66	655567.006	14.132	0.49m
AB 78-2		501017.05	655583.197	14.214	0.23m
AB 78-3		501022.12	655589.596	14.136	0.21m
AB 78-4		501025.01	655592.869	14.305	0.17m

KL LINE				
KL 01-2	495598.41	663077.879	16.241	0.5m
KL 01-3	495605.62	663074.963	16.328	0.2m
KL 02-2	495607.61	663104.915	16.494	0.1m
KL 03-2	495617.72	663134.27	16.788	0.1m
KL 03-3	495622.93	663132.55	16.942	0.4m
KL 04-2	495626.94	663162.056	16.593	0.4m
KL 04-3	495632.88	663159.652	16.64	0.6m
KL 05-2	495636.46	663192.351	16.054	0.2m
KL 05-3	495642.71	663189.514	15.834	0.3m
KL 06-2	495644.86	663220.403	15.464	0.1m
KL 06-3	495650.73	663216.696	15.302	0.3m
KL 06-4	495657	663213.767	15.334	0.2m
KL 07-2	495658.58	663248.7	14.513	0.5m
KL 07-3	495664.77	663244.896	14.195	0.2m
KL 08-2	495677.77	663276.853	13.625	0.1m
KL 08-3	495682.66	663272.581	13.861	0.3m
KL 09-2	495698.91	663306.1	13.576	0.2m
KL 09-3	495703.3	663303.038	13.537	0.6m
KL 10-1	495717.55	663344.27	13.252	0.2m
KL 10-2	495722.99	663340.228	13.734	0.1m
KL 10-3	495729.96	663337.204	13.32	0.3m
KL 11-2	495748.29	663376.559	13.774	0.1m
KL 11-3	495752.8	663372.168	13.564	0.5m
KL 12-2	495754.47	663409.576	13.259	0.1m
KL 12-3	495761.38	663410.08	13.357	0.4m
KL 13-2	495745.65	663436.367	13.093	0.4m
KL 13-3	495750.66	663438.368	13.18	0.5m
KL 14-2	495734.45	663463.953	13.337	0.5m
KL 14-3	495737.45	663468.579	13.097	1.2m
KL 15-2	495723.37	663491.34	13.178	0.4m
KL 15-3	495727.54	663494.026	12.966	1.1m
KL 16-2	495712.35	663519.743	13.208	0.3m
KL 16-3	495717.06	663520.195	12.993	1.4m
KL 17-2	495701.44	663547.835	14.008	0.2m
KL 17-3	495705.22	663548.517	14.036	0.5m
KL 18-2	495690.32	663575.213	14.759	0.3m
KL 18-3	495694.11	663576.581	14.795	0.2m
KL 19-2	495678	663604.714	14.785	0.6m
KL 19-3	495682.93	663606.029	14.943	1.2m
KL 20-2	495666.6	663633.733	14.893	0.5m
KL 20-3	495671.14	663634.931	15.174	0.9m
KL 21-2	495655.44	663658.251	14.964	0.7m
KL 21-3	495661.21	663660.008	14.851	0.7m

KL 22-2	495645	663688.461	15.563	0.2m
KL 22-3	495649.21	663689.476	15.456	0.4m
KL 23-2	495634.18	663716.951	16.104	0.1m
KL 23-3	495638.01	663719.077	15.979	0.5m
KL 24-2	495624.26	663742.303	16.907	0.1m
KL 24-3	495628.21	663743.744	16.843	0.3m
KL 25-2	495612.21	663772.756	17.948	0.1m
KL 25-3	495615.87	663774.494	16.891	0.9m
KL 26-2	495600.22	663800.66	17.816	0.5m
KL 26-3	495604.75	663802.884	16.996	1.2m
KL 27-1	495578.93	663821.75	17.013	1.0m
KL 27-2	495586.5	663824.94	16.96	0.8m
KL 27-3	495594.48	663828.134	16.55	0.7m
KL 28-1	495568.34	663851.678	16.398	1.9m
KL 28-2	495577.5	663855.997	17.713	0.7m
KL 28-3	495581.82	663857.802	17.49	0.6m
KL 29-1	495557.04	663871.844	15.324	2.9m
KL 29-2	495566.75	663882.077	17.077	0.3m
KL 29-3	495572.16	663884.25	16.852	3.2m
KL 30-1	495545.81	663906.823	16.092	3.2m
KL 30-2	495554.69	663909.801	16.926	0.3m
KL 30-3	495560.93	663912.515	16.798	1.0m
KL 31-1	495535.33	663932.872	16.612	0.1m
KL 31-2	495544.65	663937.529	16.624	0.1m
KL 31-3	495550.05	663939.819	16.32	1.4m
KL 32-1	495526.14	663965.107	16.253	0.1m
KL 32-2	495532.55	663967.322	16.543	0.1m
KL 32-3	495538.57	663969.534	16.288	1.2m
KL 33-1	495514.76	663993.123	15.748	3.4m
KL 33-2	495522.18	663995.057	16.281	1.3m
KL 33-3	495527.62	663996.872	15.921	0.4m
KL 34-1	495505.68	664019.481	15.537	4.0m
KL 34-2	495511.65	664021.875	16.045	1.7m
KL 34-3	495517.04	664024.223	16	0.5m
KL 35-1	495495.14	664045.502	15.57	4.1m
KL 35-2	495500.72	664048.403	15.953	0.6m
KL 35-3	495506.1	664050.761	16.081	1.6m
KL 36-1	495477.21	664083.694	15.413	4.3m
KL 36-2	495484.97	664086.579	15.664	4.4m
KL 36-3	495492.17	664089.34	15.712	1.1m
KL 36-4	495499.63	664091.583	15.721	3.7m
KL 37-1	495469.9	664114.32	15.305	4.4m
KL 37-2	495474.91	664115.638	15.543	0.3m
KL 37-3	495479.2	664117.148	15.531	0.6m
KL 37-4	495482.33	664121.289	14.515	3.7m
KL 38-1	495456.81	664141.942	15.066	4.1m
KL 38-2	495463.05	664143.354	15.647	1.8m

KL 38-3	495469.23	664145.525	15.621	0.4m
KL 39-1	495444.64	664166.577	15.929	3.7m
KL 39-2	495453.09	664169.568	15.995	0.1m
KL 39-3	495458.2	664172.404	15.968	1.4m
KL 39-4	495464.93	664178.445	14.966	2.6m
KL 40-2	495443.22	664199.366	16.089	0.7m
KL 40-3	495447.49	664201.349	16.036	0.7m
KL 40-4	495451.72	664202.696	14.671	0.2m
KL 41-2	495431.57	664226.85	15.768	0.6m
KL 41-3	495436.81	664228.691	15.74	0.3m
KL 41-4	495442.09	664232.123	15.023	0.1m
KL 42-2	495421.33	664254.884	16.084	1.3m
KL 42-3	495425.96	664256.7	15.984	0.3m
KL 42-4	495430.2	664259.017	15.371	0.1m
KL 43-2	495415.3	664284.764	16.009	0.2m
KL 43-3	495420.03	664287	14.735	0.5m
KL 43-4	495410.88	664282.497	16.259	0.1m
KL 44-2	495398.74	664310.584	16.383	0.8m
KL 44-3	495404.56	664312.534	16.372	1.4m
KL 44-4	495413.15	664317.164	15.066	0.1m
KL 45-2	495388.81	664338.859	16.766	0.3m
KL 45-3	495393.49	664340.711	16.66	1.2m
KL 45-4	495399.62	664343.481	14.273	0.1m
KL 46-2	495377.25	664366.38	16.411	1.0m
KL 46-3	495383.5	664368.706	16.241	0.2m
KL 46-4	495390.99	664368.932	13.703	0.2m
KL 47-2	495366.76	664394.951	15.885	0.3m
KL 47-3	495371.91	664396.384	15.517	1.0m
KL 47-4	495376.3	664397.614	13.513	1.4m
KL 48-1	495348.35	664420.934	13.517	1.7m
KL 48-2	495356.26	664422.073	15.239	0.3m
KL 48-3	495360.2	664424.05	15.083	0.2m
KL 48-4	495365.33	664425.8	13.445	2.0m
KL 49-1	495335.18	664450.944	12.98	2.5m
KL 49-2	495343.82	664452.864	14.105	0.2m
KL 49-3	495348.3	664455.131	14.512	0.4m
KL 49-4	495353.51	664458.018	12.814	2.2m
KL 50-1	495327.29	664474.685	12.4	2.7m
KL 50-2	495335.89	664474.763	14.05	0.5m
KL 50-3	495339.6	664476.681	13.855	0.6m
KL 50-4	495344.44	664479.318	12.7	1.3m
KL 51-1	495313.71	664500.811	11.732	0.5m
KL 51-2	495324.2	664503.339	13.369	0.2m
KL 51-3	495329.04	664505.095	13.36	0.2m
KL 51-4	495333.72	664506.666	12.398	2.9m
KL 52-1	495309.12	664528.942	12.166	3.5m
KL 52-2	495312.53	664530.355	12.895	0.1m

KL 52-3	495317.17	664532.763	12.679	0.5m
KL 53-1	495300.18	664556.159	12.829	3.0m
KL 53-2	495302.67	664558.065	12.656	1.4m
KL 53-3	495306.13	664559.221	12.822	0.3m
KL 53-4	495309.61	664559.251	18.701	3.3m
KL 54-1	495287.96	664584.52	12.036	3.5m
KL 54-2	495291.64	664585.726	12.585	0.3m
KL 54-3	495295.62	664586.992	12.867	0.4m
KL 54-4	495299.91	664590.607	15.103	2.9m
KL 55-1	495276.92	664613.027	12.625	2.7m
KL 55-2	495280.68	664614.314	13.03	0.2m
KL 55-3	495284.62	664615.95	13.127	0.1m
KL 55-4	495288.54	664620.592	16.289	0.2m
KL 56-1	495268.75	664638.804	13.19	0.4m
KL 56-2	495270.99	664640.134	14.087	0.1m
KL 56-3	495274.5	664641.212	14	0.3m
KL 56-4	495279.99	664637.195	14.29	0.9m
KL 57-1	495250.9	664672.685	12.781	2.5m
KL 57-2	495259.07	664671.57	14.186	0.1m
KL 57-3	495262.09	664676.324	13.935	0.4m
KL 58-1	495244.37	664696.722	13.85	3.5m
KL 58-2	495248.42	664698.221	14.183	0.5m
KL 58-3	495252.52	664700.27	14.031	1.2m
KL 59-1	495229.1	664728.931	13.67	2.9m
KL 59-2	495237.02	664725.858	14.37	0.9m
KL 59-3	495241.97	664727.792	14.105	1.4m
KL 60-1	495223.68	664753.223	13.795	3.0m
KL 60-2	495225.78	664754.134	14.329	1.0m
KL 60-3	495229.29	664756.38	14.364	0.9m
KL 61-1	495213.24	664780.407	14.23	3.6m
KL 61-2	495214.96	664781.313	14.643	1.3m
KL 61-3	495218.58	664781.513	14.585	0.2m
KL 62-1	495201.9	664809.661	14.294	3.4m
KL 62-2	495203.9	664810.234	15.002	0.7m
KL 62-3	495207.24	664812.061	14.906	1.0m
KL 63-1	495191.29	664836.963	15.246	3.0m
KL 63-2	495192.91	664837.609	15.561	0.2m
KL 63-3	495196.54	664839.246	15.473	0.3m
KL 64-1	495175.64	664869.484	15.712	0.3m
KL 64-2	495182.67	664865.286	16.256	4.3m
KL 64-3	495186.03	664866.86	16.221	0.6m
KL 65-2	495171.14	664895.238	16.688	0.1m
KL 65-3	495176.32	664897.668	16.691	1.0m
KL 66-1	495159.74	664921.743	16.469	3.5m
KL 66-2	495161.32	664921.702	17.114	0.1m
KL 66-3	495165.08	664923.246	16.762	0.6m
KL 67-1	495148.99	664949.46	16.821	3.4m

KL 67-2		495150.15	664950.23	17.297	0.1m
KL 67-3		495154.88	664952.019	16.983	0.3m
KL 68-1		495137.5	664977.571	16.851	4.0m
KL 68-2		495139.11	664978.198	17.523	0.1m
KL 68-3		495143.91	664980.316	16.865	0.9m
KL 69-2		495127.23	665005.693	17.351	0.8m
KL 69-3		495133.12	665007.645	17.135	0.4m
KL 70-2		495116.03	665033.874	17.32	0.6m
KL 70-3		495120.57	665036.466	17.464	0.4m
KL 71-2		495105.53	665061.594	17.825	0.3m
KL 71-3		495111.25	665064.757	17.735	0.7m

Appendix 2
In-Situ Shear Vane Test Records

SCEIRDE ROCK CABLE ROUTE SHEAR VANE RESULTS H70 Shear Vane, Vane size 75mmx151mm

location	Depth (M)	Shear Vane (KPA)	Remould Shear (KPA)	Easting	Northing	Reduced Level (m)
AB5/1	0.5m	61	3	502410.92	654034.625	21.506
AB5/2	0.3m	64	12	502418.44	654035.326	24.257
AB5/3	0.3m	48	5	502422.53	654035.903	24.711
AB6/1	0.3m	64	4	502406.26	654067.764	32.248
AB6/2	0.3m	27	6	502414.94	654067.449	25.578
AB6/3	0.4m	40	3	502425.78	654069.903	22.779
AB6/4	0.6m	41	2	502428.82	654064.027	34.91
AB7/1	0.8m	41	3	502405.31	654102.48	28.613
AB7/3	0.8m	36	4	502417.61	654102.925	23.981
AB8/1	0.4m	42	3	502420.03	654130.374	23.352
AB8/2	0.4m	73	8	502410.26	654128.856	29.182
AB8/3	0.3m	39	5	502415.1	654127.65	30.094
AB14/3	0.4m	67	10	502398.22	654310.5	28.558
AB18/2	0.6m	55	9	502345.46	654421.026	30.269
AB20/2	0.6m	51	8	502322.6	654467.621	29.774
AB24/2	0.6m	55	8	502268.68	654580.037	32.37
AB32/4	0.4m	35	4	502138.32	654784.166	28.871
AB41/4	0.3m	40	3	501926.83	654953.846	25.629
AB42/1	0.3m	26	4	501888.62	654960.965	23.976
AB42/3	0.5m	39	6	501902.19	654969.453	26.443
AB42/4	0.8m	64	11	501900.98	654973.361	25.309
AB43.1	0.6m	35	8	501872.14	654972.284	24.048
AB44/1	0.3m	34	4	501842.66	654996.468	24.786
AB44/4	0.4m	85	16	501851.16	655012.663	24.962
AB46/1	0.4m	61	3	501794.9	655024.956	21.782
AB50/2	0.4m	57	5	501709.13	655111.027	24.087
AB63/1	0.6m	32	5	501384.79	655328.255	16.369
AB63/2	0.3m	38	7	501389.03	655333.969	17.266
AB70/2	0.5m	38	7	501215.12	655450.859	13.362

SCEIRDE ROCK CABLE ROUTE SHEAR VANE RESULTS H70 Shear Vane, Vane size 75mmx151mm

location	Depth (M)	Shear Vane (KPA)	Remould Shear (KPA)	Easting	Northing	Reduced Level (m)
KL4/3	0.3m	67	4	495632.88	663159.652	16.64
KL9/3	0.3m	62	5	495703.3	663303.038	13.537
KL14/3	0.3m	62	7	495737.45	663468.579	13.097
KL15/3	0.3m	59	11	495727.54	663494.026	12.966
KL16/3	0.3m	30	7	495717.06	663520.195	12.993
KL19/2	0.3m	16	5	495678	663604.714	14.785
KL19/3	0.9m	90	12	495682.93	663606.029	14.943
KL20/3	0.3m	60	9	495671.14	663634.931	15.174
KL21/2	0.3m	27	6	495655.44	663658.251	14.964
KL21/3	0.3m	43	9	495661.21	663660.008	14.851
KL25/3	0.3m	59	9	495615.87	663774.494	16.891
KL26/3	0.3m	47	6	495604.75	663802.884	16.966
KL27/1	0.4m	71	16	495578.93	663821.75	17.013
KL27/2	0.3m	50	5	495586.5	663824.94	16.96
KL27/3	0.4m	44	4	495594.48	66828.134	16.55
KL28/1	0.5m	63	4	495568.34	663851.678	16.398
KL28/2	0.3m	61	4	495577.5	663855.997	17.713
KL28/3	0.3m	63	15	495581.82	663857.802	17.49
KL29/1	0.7m	39	8	495557.04	663871.844	15.324
KL29/1	1.90m	28	7	495557.04	663871.844	15.324
KL30/1	0.8m	62	9	495545.81	663906.823	16.092
KL30/3	0.4m	42	3	495560.93	663912.515	16.798
KL31/3	0.4m	43	8	495550.05	663939.819	16.32
KL32/3	0.6m	42	4	495538.57	663969.534	16.288
KL33/1	0.4m	59	4	495514.76	663993.123	15.748
KL33/2	0.6m	61	8	495522.18	663665.057	16.281
KL34/1	1.0m	33	7	495505.68	664019.481	15.537
KL34/1	2.0m	25	4	495505.68	664019.481	15.537
KL34/2	0.5m	62	7	495511.65	664021.875	16.045
KL35/1	0.6m	40	8	495495.14	664045.502	15.57
KL35/1	1.4m	20	4	495495.14	664045.502	15.57
KL35/2	0.3m	62	7	495500.72	664048.403	15.953
KL35/3	0.4m	43	6	495506.1	664050.761	16.081
KL36/1	0.8m	66	7	495477.21	664083.694	15.413
KL36/2	0.9m	44	5	495484.97	664086.579	15.664
KL36/3	0.8m	40	7	495492.17	664089.34	15.712
KL36/4	1.0m	38	7	495499.63	664091.583	15.721
KL36/4	1.8m	32	6	495449.63	664091.583	15.721
KL37/1	0.6m	40	7	495469.9	664114.32	15.305
KL37/3	0.3m	63	9	495479.2	664117.148	15.531
KL37/4	0.8m	41	8	495482.33	664121.289	14.515
KL37/4	1.8m	22	3	495482.33	664121.289	14.515
KL38/1	0.8m	44	5	495456.81	664141.942	15.066

SCEIRDE ROCK CABLE ROUTE SHEAR VANE RESULTS H70 Shear Vane, Vane size 75mmx151mm

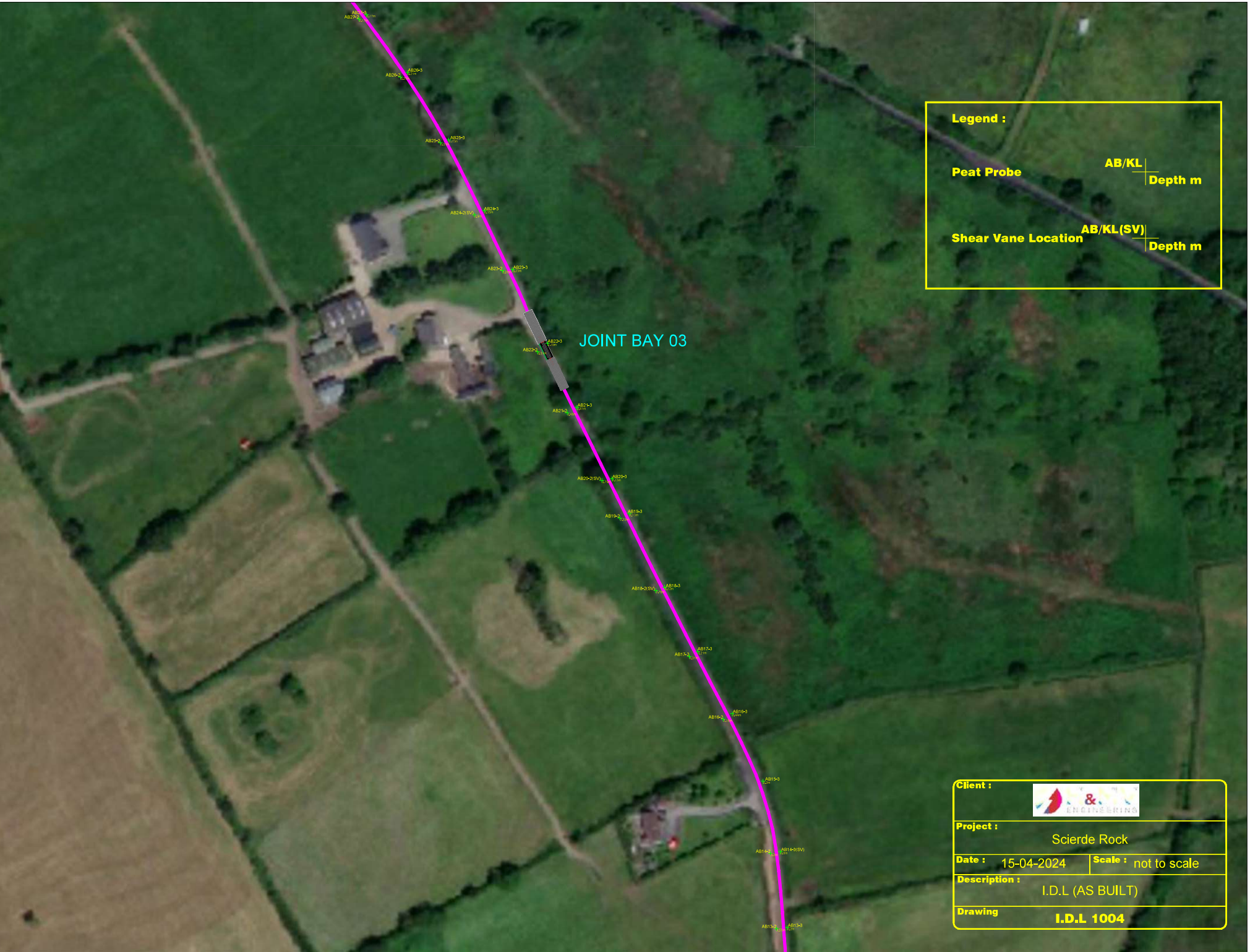
location	Depth (M)	Shear Vane (KPA)	Remould Shear (KPA)	Easting	Northing	Reduced Level (m)
KL38/2	0.3m	39	7	495463.05	664143.354	15.647
KL39/1	0.9m	61	4	495444.64	664166.577	15.929
KL39/3	0.3m	36	4	495458.2	664172.404	15.968
KL39/3	0.4m	64	4	495458.2	664172.404	15.968
KL39/4	0.8m	42	5	495464.93	664178.445	14.966
KL39/4	1.5m	60	9	495464.93	664178.445	14.966
KL40/2	0.3m	37	5	495443.22	664199.366	16.089
KL40/3	0.3m	42	7	495447.49	664201.349	16.036
KL41/2	0.4m	30	4	495431.57	664226.85	15768
KL42/2	0.4m	55	8	495421.33	664254.884	16.084
KL44/2	0.3m	40	5	495398.74	664310.584	16.383
KL44/3	0.6m	10	10	495404.56	664312.534	16.372
KL45/3	0.4m	60	8	495393.49	664340.771	16.66
KL46/2	0.3m	20	4	495377.25	664366.38	16.411
KL47/3	0.5m	58	8	495371.91	664396.384	15.517
KL47/4	0.5m	50	7	495376.3	664397.614	13.513
KL48/1	0.3m	20	4	495348.35	664420.934	13.517
KL48/4	0.8m	40	8	495365.33	664425.8	13.445
KL49/1	0.3m	90	17	495335.18	664450.944	12.98
KL49/4	0.9m	78	8	495353.51	664458.018	12.814
KL50/1	0.5m	42	5	495327.29	664474.685	12.4
KL50/4	0.5m	52	8	495344.44	664479.318	12.7
Kl51/4	0.9m	30	10	495333.72	664506.666	12.398
KL52/1	0.9m	80	20	495303.12	664528.942	12.166
KL53/1	1.0m	40	7	495300.18	664556.159	12.829
KL53/2	0.5m	47	5	495302.67	664558.065	12.656
KL53/4	0.8m	46	7	495309.61	664559.251	18.701
KL53/4	1.4m	30	5	495309.61	664559.251	18.701
KL54/1	1.0m	40	10	495287.96	664584.52	12.036
KL54/4	1.0m	35	15	495299.91	664590.607	15.103
KL54/4	1.5m	35	19	495299.91	664590.607	15.103
KL55/1	0.8m	60	10	495276.92	664613.027	12.625
KL56/4	0.3m	56	9	495279.99	664637.195	14.29
KL57/1	1.0m	40	15	495250.9	664672.685	12.781
KL58/1	0.9m	50	18	495244.37	664696.722	13.85
KL58/3	0.5m	45	8	495252.52	664700.27	14.031
KL59/1	0.9m	30	5	495229.1	664728.931	13.67
KL59/2	0.3m	30	7	495237.02	664725.858	14.37
KL59/3	0.8m	58	12	495241.97	664727.792	14.105
KL60/1	0.6m	75	17	495223.68	664753.233	13.759
KL60/2	0.4m	60	8	495225.78	664754.134	14.329
KL60/3	0.5m	10	5	495229.29	664756.38	14.364
KL61/1	0.6m	20	4	495213.24	664780.407	14.23

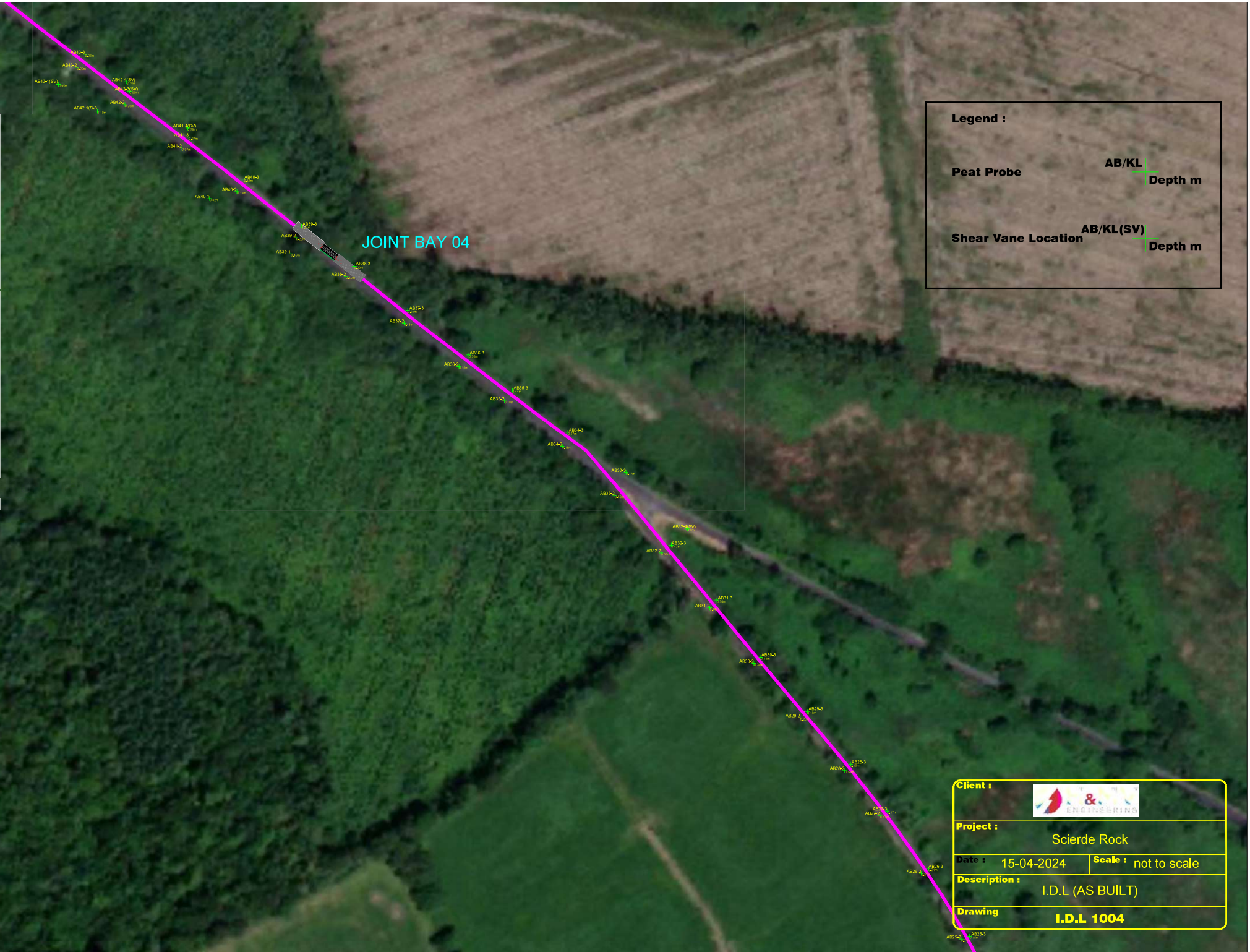
SCEIRDE ROCK CABLE ROUTE SHEAR VANE RESULTS H70 Shear Vane, Vane size 75mmx151mm

location	Depth (M)	Shear Vane (KPA)	Remould Shear (KPA)	Easting	Northing	Reduced Level (m)
KL61/2	0.5m	55	8	495214.96	664781.313	14.643
KL62/1	0.9m	58	12	495201.9	664809.661	14.294
KL62/2	0.3m	75	15	495203.9	664810.234	15.002
KL62/3	0.5m	30	8	495207.24	664812.061	14.906
KL63/1	1.0m	18	5	495191.29	664836.963	15.246
KL63/1	1.7m	35	7	495191.29	664836.963	15.246
KL64/2	0.9m	58	15	495182.67	664865.286	16.256
KL64/3	0.3m	20	10	495186.03	664866.86	16.221
KL65/3	0.4m	40	5	495176.32	664897.668	16.691
KL66/1	0.8m	20	4	495159.74	664921.743	16.469
KL66/3	0.4m	50	9	495165.08	664923.246	16.762
KL67/1	0.8m	70	22	495148.99	664949.46	16.821
KL68/1	0.8m	40	40	495137.5	664977.571	16.851
KL68/3	0.6m	35	10	495143.91	664980.316	16.865
KL69/2	0.6m	10	2	495127.23	665005.693	17.351
KL70/2	0.3m	20	4	495116.03	665033.874	17.32
KL70/3	0.3m	50	5	495111.25	665064.757	17.735

Appendix 3
‘As-Built’ Site Plans


Legend :
Peat Probe
AB/KL
Depth m
Shear Vane Location
AB/KL(SV)
Depth m
JOINT BAY 02
Client :
Project :
Scierde Rock
Date :
15-04-2024
Scale :
not to scale
Description :
I.D.L (AS BUILT)
Drawing
I.D.L 1004


JOINT BAY 03
Legend :
Peat Probe
AB/KL
Depth m
Shear Vane Location
AB/KL(SV)
Depth m
Client :
Project :
Scierde Rock
Date :
15-04-2024
Scale :
not to scale
Description :
I.D.L (AS BUILT)
Drawing
I.D.L 1004


JOINT BAY 04
Legend :
Peat Probe
AB/KL
Depth m
Shear Vane Location
AB/KL(SV)
Depth m
Client :
Project :
Scierde Rock
Date :
15-04-2024
Scale :
not to scale
Description :
I.D.L (AS BUILT)
Drawing
I.D.L 1004


JOINT BAY 05
Legend :
Peat Probe
AB/KL
Depth m
Shear Vane Location
AB/KL(SV)
Depth m
Client :
Project :
Scierde Rock
Date : 15-04-2024
Scale : not to scale
Description :
I.D.L (AS BUILT)
Drawing
I.D.L 1004


JOINT BAY 06
Legend :
Peat Probe
AB/KL
Depth m
Shear Vane Location
AB/KL(SV)
Depth m
Client :
Project :
Scierde Rock
Date :
15-04-2024
Scale :
not to scale
Description :
I.D.L (AS BUILT)
Drawing
I.D.L 1004


JOINT BAY 06
Legend :
Peat Probe
AB/KL
Depth m
Shear Vane Location
AB/KL(SV)
Depth m
Client :
Project :
Scierde Rock
Date :
15-04-2024
Scale :
not to scale
Description :
I.D.L (AS BUILT)
Drawing
I.D.L 1004


Legend :
Peat Probe
AB/KL
Depth m
Shear Vane Location
AB/KL(SV)
Depth m
JOINT BAY 29
Client :
Project :
Scierde Rock
Date :
15-04-2024
Scale :
not to scale
Description :
I.D.L (AS BUILT)
Drawing
I.D.L 1004


Legend :
Peat Probe
AB/KL
Depth m
Shear Vane Location
AB/KL(SV)
Depth m
JOINT BAY 30
Client :
Project :
Scierde Rock
Date : 15-04-2024
Scale : not to scale
Description :
I.D.L (AS BUILT)
Drawing
I.D.L 1004


Legend :
Peat Probe
AB/KL
Depth m
Shear Vane Location
AB/KL(SV)
Depth m
JOINT BAY 31
Client :
Project :
Scierde Rock
Date : 15-04-2024
Scale : not to scale
Description :
I.D.L (AS BUILT)
Drawing
I.D.L 1004


Legend :
Peat Probe
AB/KL
Depth m
Shear Vane Location
AB/KL(SV)
Depth m
JOINT BAY 32
Client :
Project :
Scierde Rock
Date :
15-04-2024
Scale :
not to scale
Description :
I.D.L (AS BUILT)
Drawing
I.D.L 1004


JOINT BAY 33
Legend :
Peat Probe
AB/KL
Depth m
Shear Vane Location
AB/KL(SV)
Depth m
Client :
Project :
Scierde Rock
Date :
15-04-2024
Scale :
not to scale
Description :
I.D.L (AS BUILT)
Drawing
I.D.L 1004

Report on Peatland Hand Auguring

Insert date.19/07/2024

Doc No. IRE1-HMV-ONC-EL-RA-0001

Rev.02

IRISH DRILLING LIMITED

LOUGHREA, CO. GALWAY, IRELAND

CONTRACT DRILLING
SITE INVESTIGATION

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SCEIRDRE ROCKS CABLE ROUTE
PHASE 2

SITE INVESTIGATION
FACTUAL REPORT

H &MV Engineering,
Hamilton House Block 2,
Plassey Business Park,
Castletroy,
Co. Limerick.

	Prepared by	Approved by	Rev. Issue Date:	Revision No.
	Ronan Killeen	Declan Joyce	19th July 2024	23 CE_106/02a
Signature				

FOREWORD

The hand auger 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 hand auger results. The assumptions, though reasonable, are given for guidance only and no liability can be accepted for changes in conditions not revealed by the hand augers.

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.

Contents:

1 Introduction.

Irish Drilling Ltd. (IDL) was instructed by H & MV Engineering Ltd. to carry out a site investigation at the site of the proposed Sceirde Rocks Cable Route.

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

This site investigation as carried out as a Phase 2 project, following on from the Phase 1 works completed between February and April 2024 which included the completion of peat probes and in-situ shear vanes.

The fieldwork commenced on June 18th 2024 and was completed on June 19th 2024.

2 Site & Geology

The proposed cable route runs along local roads between the townlands of Derryadd and Doonmore, west of Doonbeg, County Clare (KL Line).

The fieldwork was carried out predominantly on road verges adjacent to the public road. Weather conditions in general were quite variable with the majority of the fieldwork carried out over a typical summer period in Ireland.

Site Plans, prepared by the client's representatives and showing approximate 'As-Built' fieldwork locations, is included with this report.

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.

Estuarine Deposits:
These comprise of estuarine sands, gravels and silts from water borne deposits.

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

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

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

Solid Geology
The Geological Map of Ireland: (GSI 1:100,000 scale map series) indicate that the site is underlain by siltstone and sandstone rock of the Gull Island Formation.

3 Fieldwork.

3.1 Fieldwork Plant:
The following plant was mobilised to site by IDL to carry out fieldwork operations:
1nr. Geonor Hand Auger Unit.

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

- Completion of 12nr Hand Augers.

3.3 Hand Augers:
Twelve hand augers were carried out using a Geonor Hand Auger Unit. The augers are carried out by pushing 1m long threaded steel rods (with an auger tip) by hand to 'refusal'.

Extension rods are threaded on as necessary until 'refusal' depth is reached. A soil sample is then recovered from the auger tip and the hand auger unit is then pulled out from the ground using a T-Bar rod.

The augers were carried out along the KL Line at soft ground locations and to depths ranging from 0.30m to 4.90m below ground level.

Detailed records for the hand augers completed are included with this report in Appendix 1.

3.5 General Summary:
The hand auger test locations were set out on site 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 are reported to Irish Transverse Mercator (ITM) with Reduced Levels recorded relative to Malin Head Datum and with an accuracy level of + or – 0.10m.

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.

The soil descriptions as noted on the auger records 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 activities are included with the appendices to this report.

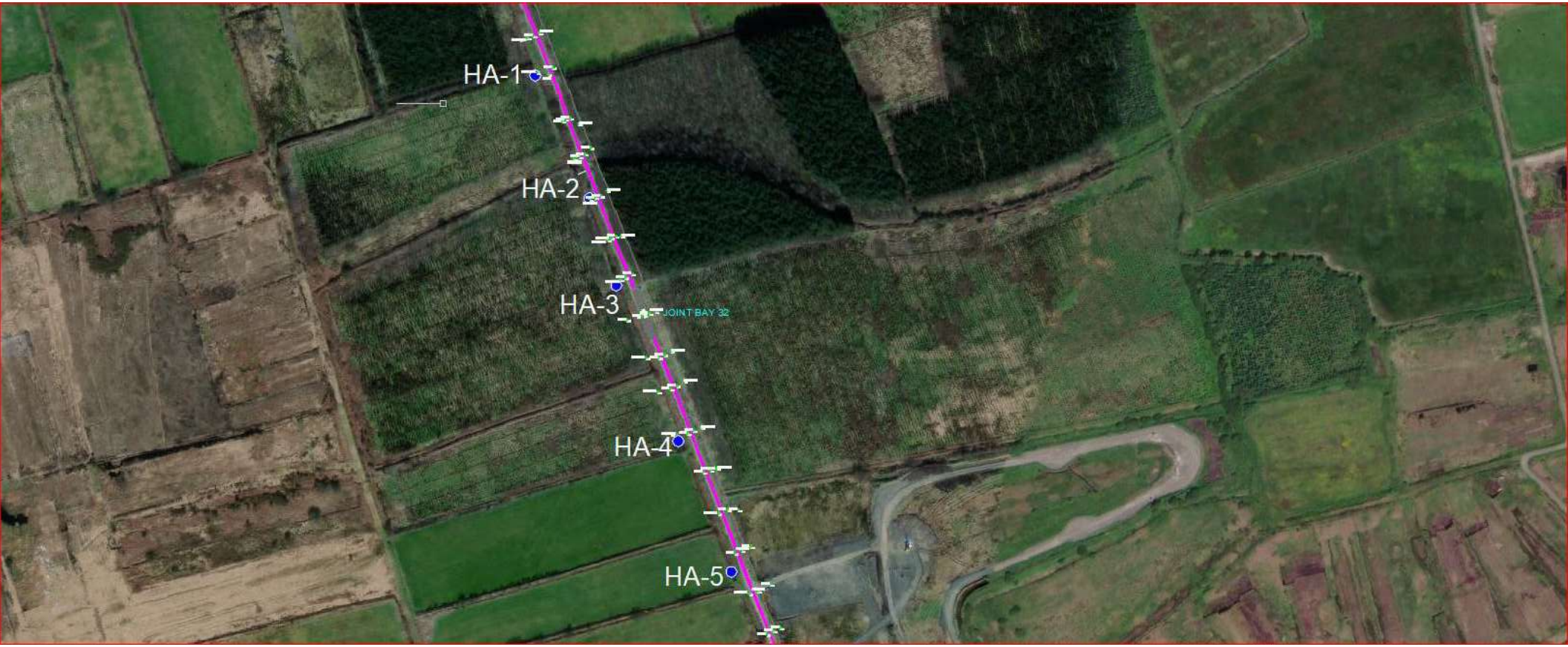
Ronan Killeen
Chartered Engineer
Irish Drilling Limited
July 19th 2024

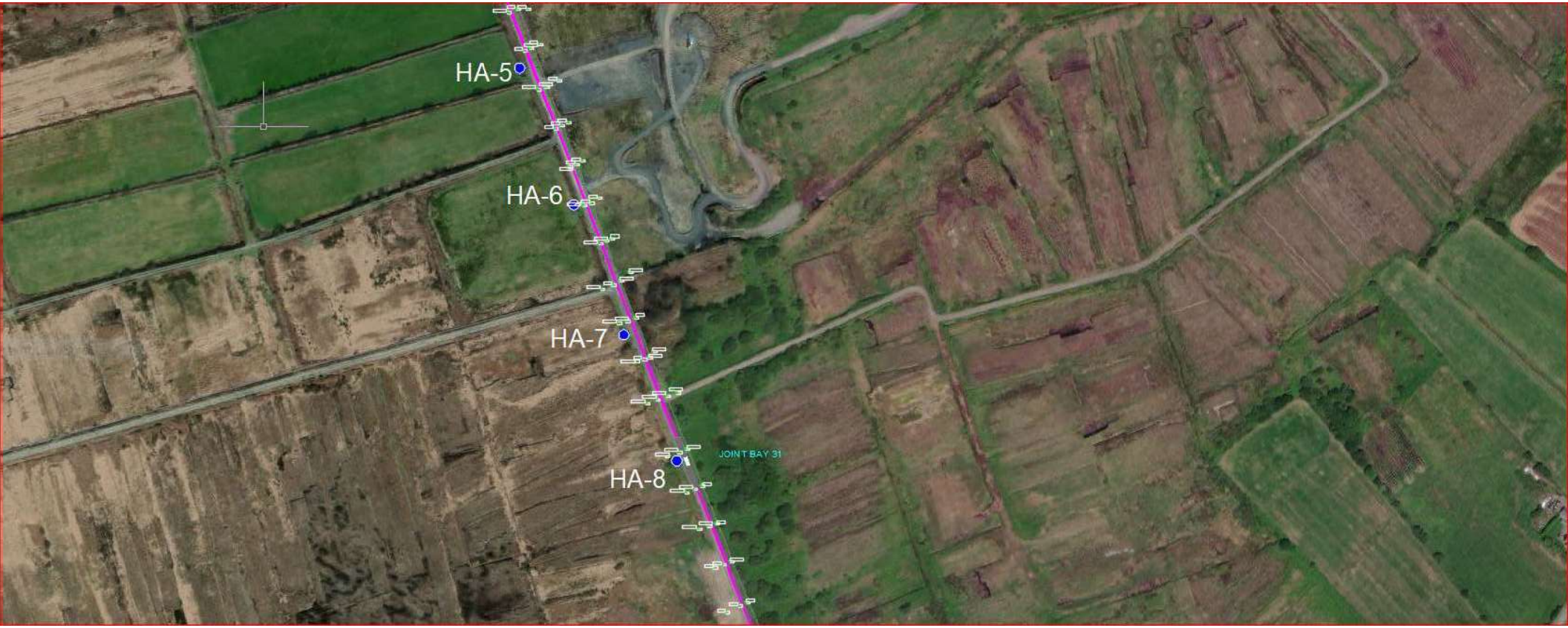
Appendix 1
Hand Auger Records

HAND AUGER NO.	EASTING	NORTHING	REDUCED LEVEL	GEOLOGY
KL LINE				
HA-01	495249.8	664670.7	12.812	0.00-2.60m: Peat 2.60-2.70m: Soft blue Clay Tub Sample: 2.60-2.70m
HA-02	495287.8	664585.4	12.258	0.00-3.30m: Peat 3.30-3.40m: Soft blue Clay Tub Sample: 3.30-3.40m
HA-03	495306.4	664524.6	12.222	0.00-3.10m: Peat 3.10-3.20m; Soft blue Clay Tub Sample: 3.10-3.20m
HA-04	495349.3	664416.6	13.834	0.00-1.50m: Peat 1.50m: Refusal - possible Boulders No sample recovered.
HA-05	495386.4	664325.7	14.954	0.00-1.10m: Peat 1.10-1.30m: Soft blue Clay Tub Sample: 1.10-1.30m
HA-06	495425.3	664227	14.646	0.00-2.10m: Peat with wood 2nr attempts made. No sample recovered. Unable to push past wood.
HA-07	495461.7	664133.1	15.288	0.00-3.90m: Peat 3.90-4.30m: Peat and soft grey Clay. Tub Sample: 3.90-4.30m
HA-08	495499.9	664041.9	16.08	0.00-4.30m: Peat 4.30-4.90m: Peat and blue Clay. 4.90m: Possible gravelly Clay - unable to recover sample. Tub Sample: 4.30-4.90m
HA-09	495546.5	663916.8	15.904	0.00-3.00m: Peat 3.00-3.10m: Peat and grey Clay Tub Sample: 3.00-3.10m

HA-10	495570.6	663850	16.503	0.00-1.50m: Peat 1.50-1.60m: Peat and grey gravelly Clay. Tub Sample: 1.50-1.60m
HA-11	495611.6	663756.8	16.217	0.00-0.30m: Firm grey Clay. Tub Sample: 0.00-0.30m
HA-12	495632	663703.7	15.27	0.00-0.30m: stiff mottled orange brown gravelly Clay Tub Sample: 0.00-0.30m

Appendix 2
'As-Built' Site Plans


HA-1
HA-2
HA-3
JOINT BAY 32
HA-4
HA-5


HA-5
HA-6
HA-7
HA-8
JOINT BAY 31


JOINT BAY 31
HA-8
HA-9
HA-10
HA-11
HA-12

Appendix 3
Digital Data

Peatland Geophysical Survey Report

Insert date. 19/07/2024

Doc No. IRE1-HMV-ONC-EL-RA-0002

Rev.02

Sceirde Rock WF Cable Route

L20301, Doonmore, Co. Clare

Geophysical Survey

Report Status: Final

MGX Project Number: 6791

MGX File Reference: 6791f-005.doc

19th July 2024

Confidential Report To:

H&MV Engineering
Hamilton House Block 2
Plassey Business Park
Castletroy, Limerick
V94 YHD6

Sceirde Rocks Wind Farm
Unit C, Grillagh
West Cork Business and Technology Park
Co. Cork
P85RV08

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 (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 2D-Resistivity (ERT) and seismic refraction (p-wave) surveying for the ground investigation for a proposed cable route along the R20301 in Doonmore, Co. Clare.
2. The main objectives of the survey were to determining the depth and type of glacial deposits which underlie the peat and the depth to the top of rock.
3. The data was modelled with a total of six interpretation layers using the seismic refraction, 2D-Resistivity as well as peat probe and hand auger results.
4. Layer 1a is interpreted as road material and underlying peat. This layer is present from Ch310 – 1240 and is 3 – 5m in thickness, becoming thinner towards the SE.
5. Layer 1b is described as road material with no peat. This layer is approx. 1m in thickness and is present from Ch0 – 310.
6. Layer 2a is described as sandy gravelly clay and silt and layer 2b as clayey silty sand and gravel. Where these layers are present, they likely extend to 12m bgl.
7. Layer 3 is interpreted as stiff sandy gravelly clay and silt and is only present from Ch0 – 330. This layer had a thickness of 2 – 6m.
8. Layer 4 is described as mudstone, siltstone and sandstone. The depth to the top of this layer between Ch0 – 420 is between 2.5 – 7m below ground level (bgl).
9. The rock is interpreted as being less than 4m bgl from Ch140 – 330.
10. The survey shows that peat is not present along the full length of the Horizontal Directional Drill (HDD).
11. The rock becomes shallower in the area where no peat is present and generally greater than 12m bgl where peat is present.

CONTENTS

List of Tables, Maps and Figures:

1. INTRODUCTION

1.1 Background

Minerex Geophysics Ltd. (MGX) carried out a geophysical survey for the ground investigation of a peatland area along the L20301 at Doonmore, Co. Clare. The survey consisted of 2D-Resistivity (ERT) and seismic refraction (p-wave) measurements. The survey was commissioned by H&MV Engineering on behalf of Sceirde Wind Farm Ltd.

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

The project involves placing underground ducts and power cables through a Horizontal Directional Drill (HDD), between joint bays.

The survey was aimed at determining the depth and type of glacial deposits which underlie the peat and the depth to the top of rock.

Before the survey the presence of peat and the peat depth was known from probing, while the ground conditions below the peat were unknown. The peat depths were provided to MGX, with the aim of determining the ground conditions below the peat layer.

1.2 Objectives

The main objectives of the geophysical survey were:

- To determine the ground conditions below the peatlands
- 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

1.3 Site Description

The site is located along the road L20301 in Doonmore, Co. Clare, between the roads L2030 and N67. Road L20301 runs along the peatlands, the total length of the survey is 1200m. The elevation along the survey line are about 1-2m higher than the surrounding area because of the road construction materials and varies between 12.6-18mOD. The survey was carried out along the western grass verge of the road.

1.4 Geology

Online geological maps of Ireland (GSI, 2024) give the following information:

The overburden geology consists of cut over raised peat.

In terms of rock, the survey area is underlain by the Gull Island Formation, described as grey siltstone and sandstone.

Direct ground investigation (Peat probes and Hand Augers), carried out by Irish Drilling Ltd, shows peat thickness from 0.0m at the SE end of the road to about 4.0 m at the middle and NW end of 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 also was used as the background. 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 (ERT) and seismic refraction surveying along the road. The survey was carried out along the western verge and was continuous along the section.

The overview survey locations are indicated on Map 1. A total of 1,221m of seismic refraction and 1,245m of 2D-Resistivity were surveyed.

Map 1 also indicates the location of joint bays, peat probe locations and depth, hand auger locations and a local chainage made by MGX from the survey start point in the SE.

2.2 2D-Resistivity (ERT)

2D-Resistivity lines were surveyed with electrode spacing of 3m, up to 64 electrodes per set-up and a maximum length of 189m per set-up. The readings were taken with a Tigre Resistivity Meter, Imager Cables, stainless steel electrodes and a laptop with ImagerPro acquisition software.

The 2D-Resistivity lines were continuous along the chainage. The data was acquired in the roll-along mode to achieve continuous coverage to a depth of 15m along the line.

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.

2.3 Seismic Refraction

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. Where low velocity layers or shadow zones are present (e.g., below solid ground surface) or where layers dip with more than 20 degrees angle the accuracy becomes much less. This is the case on this site near the surface as the road material has higher velocities than the underlying peat.

For seismic refraction set-ups, 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. In this report we used a depth of 12m bgl. where the seismic modelling was ended as deeper modelling becomes less meaningful. This maximum depth was calculated by analysing the velocities of visible p-waves and calculating the effective depth of this data.

2.4 Site Work

The data acquisition was carried out between the 18th and 19st of June 2024. The weather conditions were fair throughout the acquisition period. Health and safety standards were adhered to at all times. A traffic management system was in place at all times, clearly highlighted by the use of warning signs.

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.

Peat probes and Hand Augers results were available after the survey and were used to calibrate the layers. All the Hand Augers noted peat at the surface which was underlain by clay, with the exception of HA11 and HA12, near the SE. These are shown on the section on Map 1 and Plan 1a. Both of these Hand Augers noted clay at the surface and refused at a depth of 0.3m. HA4 was not able to penetrate below the peat and noted a refusal on a possible boulder or rock.

The peat depth is shown as a bold black vertical line in the cross sections. There were typically two or three probes carried out at each location to the east, west and close to the road. The peat probes to the west of the road (KL XX-01) are displayed on the sections as these are the most relevant to the survey line. Two peat probes (KL 31-01 & KL 32-01) are not shown as they refuse at 0.1m. The top of each line is at the ground surface elevation of the peat probe, which is sometimes lower than the geophysical survey elevation, because of the elevation difference between the verge and the peatland.

3.1 2D-Resistivity (ERT)

The 2D-Resistivity data was positioned and inverted with the RES2DINV inversion package. Lines using the roll-along method were concatenated for a joint inversion. 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 (Plans 1a – 1d).

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.

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. Within the overburden layers, low resistivity values (<177 Ohmm) typically indicate peat or sandy gravelly clay and silt. Medium values (>177 Ohmm) indicate clayey silty sand and gravel.

Within the rock layers, there is a wide variation of resistivities which indicates mudstone, siltstone and sandstone, which can have various degrees of weathering.

3.2 Seismic Refraction

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 a total of 4 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 1.8 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 (Plans 1a – 1d). 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 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. On this site there is compacted road material underlain by compressed peat. The peat would have high seismic wave attenuation and may even have lower seismic velocities compared to the overlying road material which is not conducive to producing seismic refraction waves. From Ch310 to Ch1240, the high seismic wave attenuation present did not allow for the refraction waves to penetrate deeper into the ground than approximately 12m.

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

Layer 1 was modelled over the entire survey length. From Ch0 – 310, this layer has a thickness of around 1m and velocities of 200 – 400m/s. From Ch310 – 2400 the layer has a thickness of 3 – 5m and seismic velocities less than 200m/s and was modelled with the support of the peat probes.

Layer 2 velocities of 600 - 800m/s indicate predominantly overburden with firm or medium dense strength or compaction. This layer is present from Ch330 - 1240 and the top of the layer varies between 1 and 5m below ground level (bgl).

Layer 3 velocities of 1000 - 1200m/s indicate an overburden with stiff strength or compaction. This layer is present from Ch0 – 330 and its thickness varies between 2-6m.

Good rock (Layer 4) is indicated by seismic velocities of 3200 - 3600m/s and the depth to the top of this layer varies between 2.5 and 7m bgl between Ch0 – 400 before dropping to over 12m bgl from Ch420 - 1240.

3.3 Interpretation of Resistivity and Seismic Refraction

Table 1 summarises the interpretation. The stiffness or compaction of overburden and the rock strength or quality have been estimated from the seismic velocity.

Interpreted cross sections are shown in Plans 2a - 2d. The interpretation has been made from all available information. For peat thicknesses, the peat probes and hand augers has been used as well as the seismic refraction and 2D-Resistivity models. For other 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 overburden material (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.

Seismic refraction Layers 1 and 2 were divided using the 2D-Resistivity data. Layer 1a is interpreted as road material and peat which matches with the low resistivities and with the results from the peat probes and hand augers. Layer 1b is in an area where no peat is indicated and is interpreted as road material. Layer 2a is below the peat and is interpreted as firm sandy gravelly clay and silt while layer 2b is interpreted as medium dense clayey silty sand and gravel. These layers are interpreted as extending up to 12m below the road but no interpretation can be given below this depth.

Table 1: Summary of Interpretation

Layer	General Seismic Velocity Range (m/sec)	General Resistivity Range (Ohmm)	Stiffness or Compaction or Rock Quality	Interpretation
1a	<200	<177	N/A	Road Material and Peat
1b	200 - 400	Any	N/A	Road Material
2a	600 - 800	<177	Firm	Sandy gravelly Clay and Silt
2b	600 - 800	>177	Medium dense	Clayey silty Sand and Gravel
3	1000 - 1200	Any	Stiff	Sandy gravelly Clay and Silt
4	3200 - 3600	Any	Good Rock	Mudstone, Siltstone & Sandstone

4. CONCLUSIONS

The following conclusions are made:

- The geophysical surveys has been carried out for the Sceirde Rock Wind Farm Cable Route, along the L20301 in Doonmore Co. Clare consisted of 2D-Resistivity (ERT) and seismic refraction along 1200m of the proposed survey section of the road.
- A chainage is provided from the SE where the survey starts and extends 1250m along the road.
- The 2D-Resistivty data shows low resistivities near the surface along most of the section but there are higher resistivities near the surface from Ch0 – 300. This indicates a change from peat (<177Ohmm) to a sandy gravelly clay and silt (>177Ohmm).
- Within the overburden at depth, low resistivities (<177Ohmm) are interpreted as sandy gravelly clay and silt while high resistivities (>177Ohmm) are interpreted as clayey silty sand and gravel.
- Within the rock layer, the variations in resistivities indicate mudstone, siltstone and sandstone.
- The seismic refraction data was modelled with a total of four layers. Layers 1 and 2 were further divided into 1a, 1b, 2a and 2b using the 2D-Resistivity, peat probe and hand auger data.
- Layer 1a is described as road material and peat. This layer is 3 – 5m in thickness, becoming thinner towards the SE. The geophysical surveying was carried out along the road while the peat probing and hand augers were carried out in the lower ground beside the road. This layer is present from approx. Ch310 to Ch1240.
- Layer 1b, present from Ch0 – 310 is described as road material. No peat is interpreted in this area and the thickness of this layer 1b is approx. 1m.
- Layer 2a is interpreted as firm sandy gravelly clay and silt. This layer likely extends to a depth of at least 12m bgl from Ch 420 – 740, Ch 780 - 815 and Ch1080 – 1240.
- Layer 2b is described as medium dense clayey silty sand and gravel and is present from Ch 740 – 780 and Ch 815 – 1080. Where this layer is present it likely extends to at least 12m bgl.
- Layer 3 is only present from Ch 0 – 330, has a thickness of 2 – 6m and is interpreted as stiff sandy gravelly clay and silt.
- A rock layer is interpreted from Ch0 – 420. The rock is interpreted as mudstone, siltstone and sandstone due to the variations in resistivities within it. The depth to the top of this layer varies from 2.5 – 7m bgl. The depth to the top of this layer is less than 4m bgl between Ch 140 – 330.
- The survey showed that peat is not present along the entire length of the proposed HDD, and that the top of rock is quite shallow in the area with no peat present.

- The resistivities at depth are very variable, so they cannot be used to delineate between overburden and rock.
- The seismic refraction survey is limited in depth to around 12m bgl., less than typical because of the road material and compressed peat below it. The interpretation shows no rock present within 12m depth from Ch420 to the end of the survey line.

5. REFERENCES

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CLIENT	H&MV Engineering Sceirde Rocks Wind Farm
PROJECT	Sceirde Rock WF Cable Route Doonmore, Co. Clare
TITLE	Map 1: Geophysical Survey Location Map

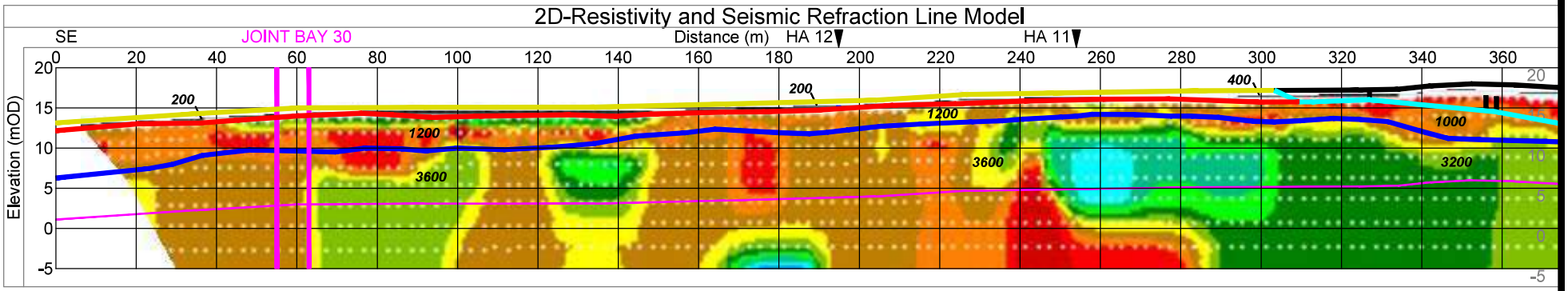
SCALE:	1:4000 @ A3
PROJECT:	6791
DRAWN:	JS
DATE:	02/07/2024
MGX FILE:	6791f_Drawings.dwg
STATUS:	Final

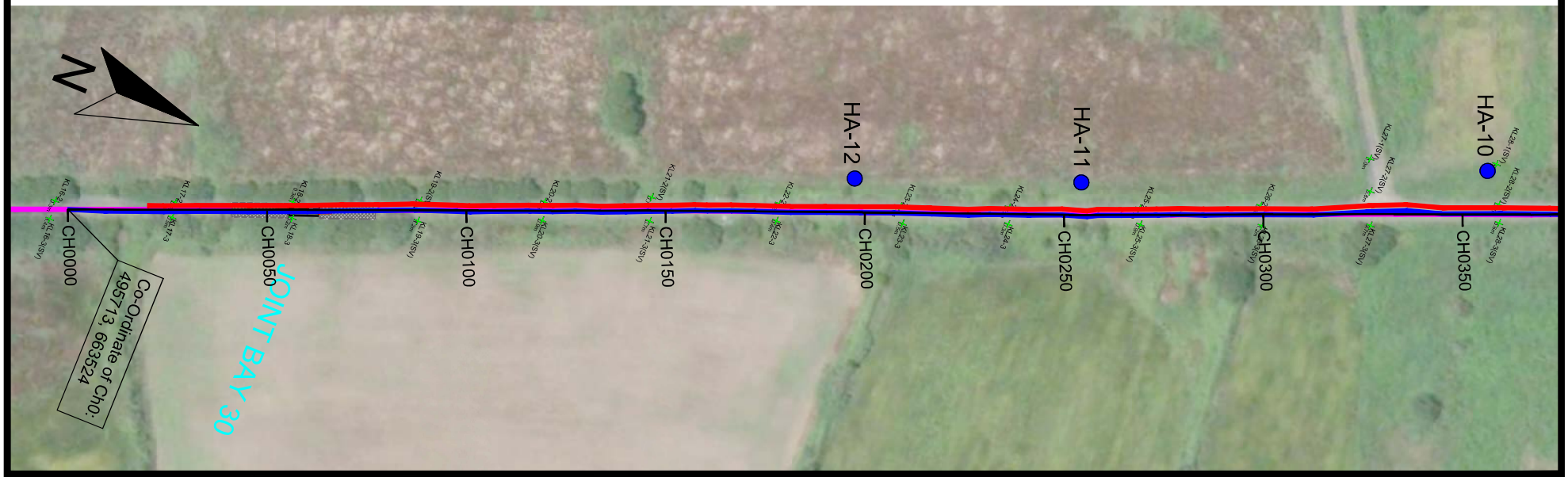
Geophysical Survey Locations:

- 2D-Resistivity Line
- Seismic Refraction Line
- CH0100 Centreline with Chainage

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

2D-Resistivity and Seismic Refraction Line Model





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CLIENT	H&MV Engineering Sceirde Rocks Wind Farm
PROJECT	Sceirde Rock WF Cable Route Doonmore, Co. Clare
TITLE	Plan 1a: Location Map and Model of Geophysical Survey

SCALE:	Hor 1:1000 @ A1, Ver 1:500 @ A3, VE x 2
PROJECT:	6791
DRAWN:	JS
DATE:	02/07/2024
MGX FILE:	6791f_Drawings.dwg
STATUS:	Final

2D-Resistivity Model Values:

Resistivities (Ohmm)

31.2 62.5 125 250 500 1000 2000 4000

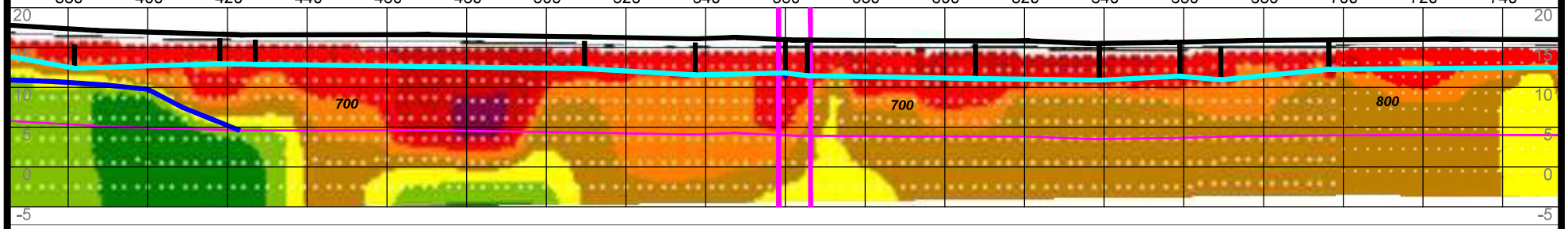
Peat Probes or Hand Augers

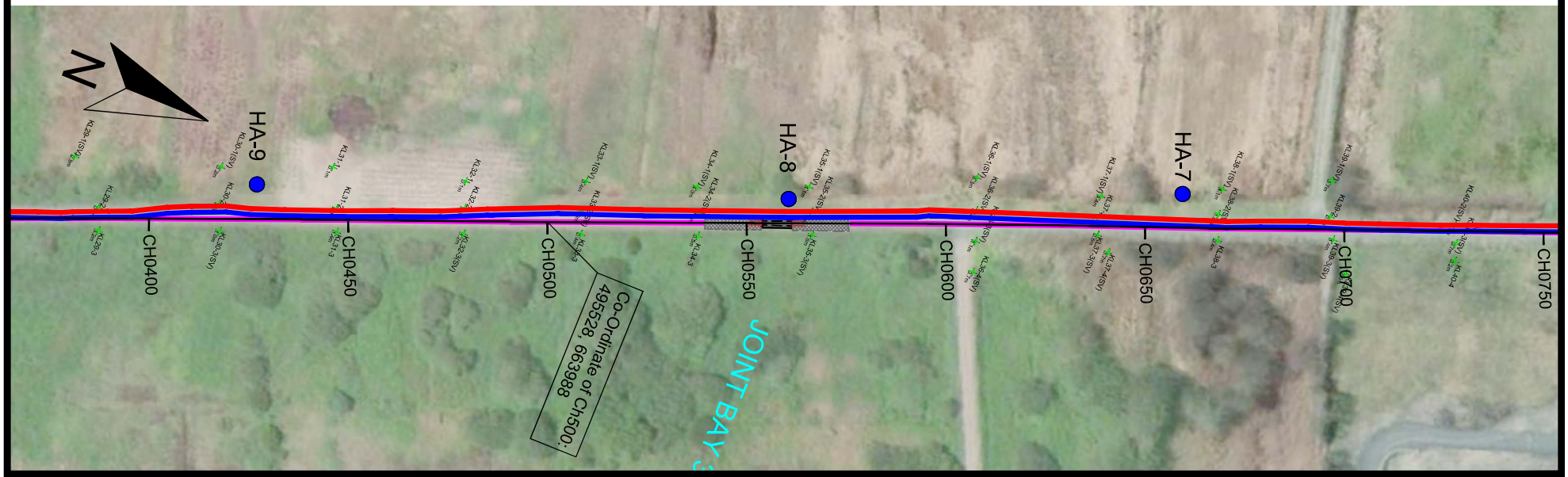
Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1a (<200 m/s)
- Ground Surface/Top of Layer 1b (200 - 400 m/s)
- Top of Layer 2 (600 - 800 m/s)
- Top of Layer 3 (1000 - 1200 m/s)
- Top of Layer 4 (3200 - 3600 m/s)
- Seismic Modelling Depth
- **1200** Seismic Velocity in m/s

2D-Resistivity and Seismic Refraction Line Model

Distance (m) JOINT BAY 31





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PROJECT	Sceirde Rock WF Cable Route Doonmore, Co. Clare
TITLE	Plan 1b: Location Map and Model of Geophysical Survey

SCALE:	Hor 1:1000 @ A1, Ver 1:500 @ A3, VE x 2
PROJECT:	6791
DRAWN:	JS
DATE:	02/07/2024
MGX FILE:	6791f_Drawings.dwg
STATUS:	Final

2D-Resistivity Model Values:

Resistivities (Ohmm)

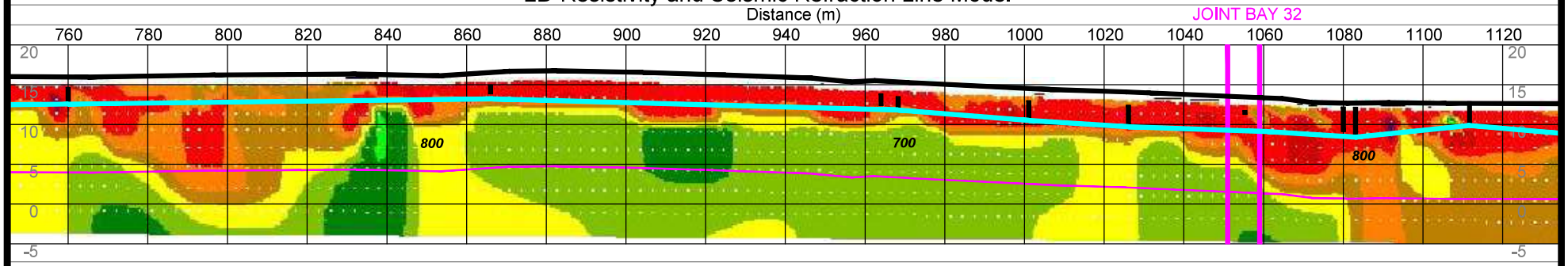
31.2 62.5 125 250 500 1000 2000 4000

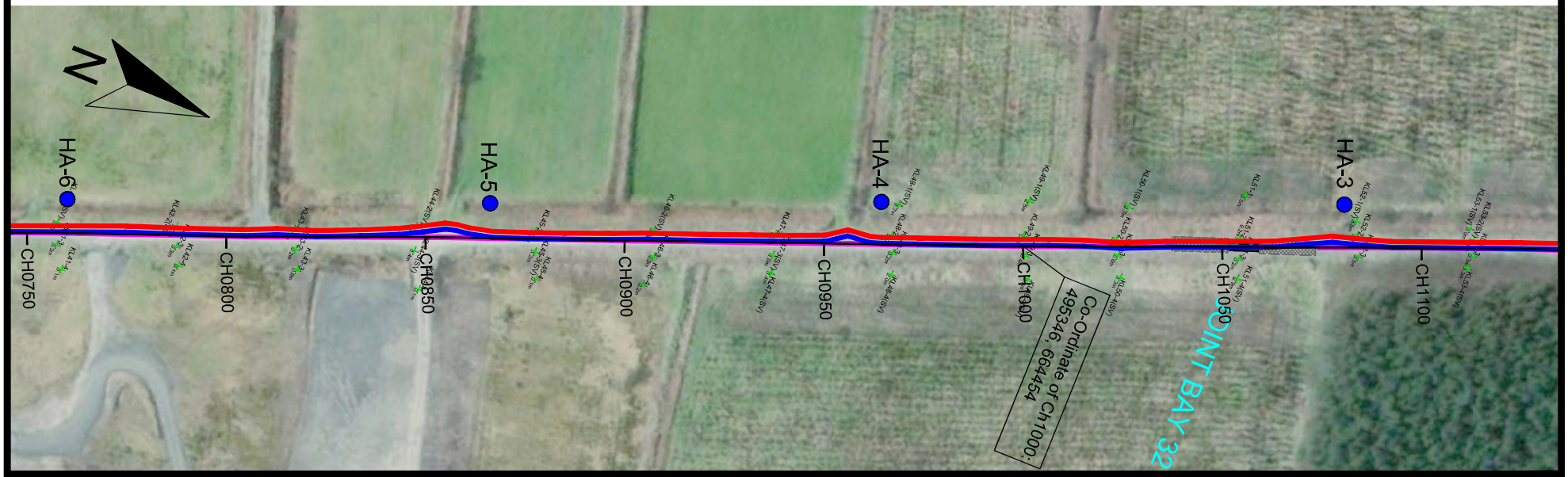
Peat Probes or Hand Augers

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1a (<200 m/s)
- Ground Surface/Top of Layer 1b (200 - 400 m/s)
- Top of Layer 2 (600 - 800 m/s)
- Top of Layer 3 (1000 - 1200 m/s)
- Top of Layer 4 (3200 - 3600 m/s)
- Seismic Modelling Depth
- **1200** Seismic Velocity in m/s

2D-Resistivity and Seismic Refraction Line Model





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PROJECT	Sceirde Rock WF Cable Route Doonmore, Co. Clare
TITLE	Plan 1c: Location Map and Model of Geophysical Survey

SCALE:	Hor 1:1000 @ A1, Ver 1:500 @ A3, VE x 2
PROJECT:	6791
DRAWN:	JS
DATE:	02/07/2024
MGX FILE:	6791f_Drawings.dwg
STATUS:	Final

2D-Resistivity Model Values:

Resistivities (Ohmm)

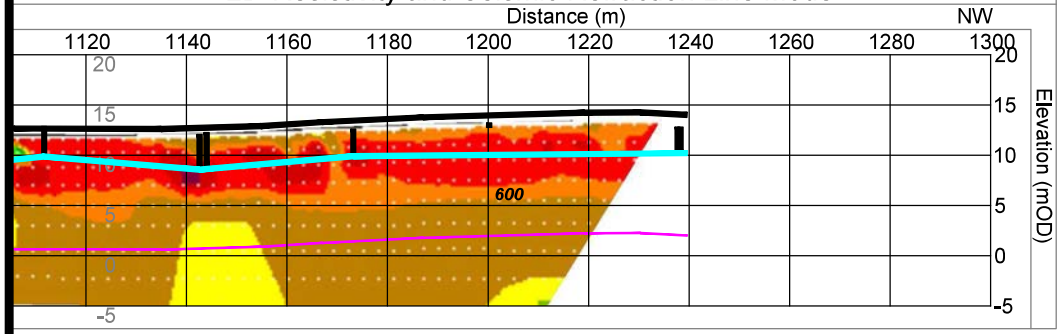
31.2 62.5 125 250 500 1000 2000 4000

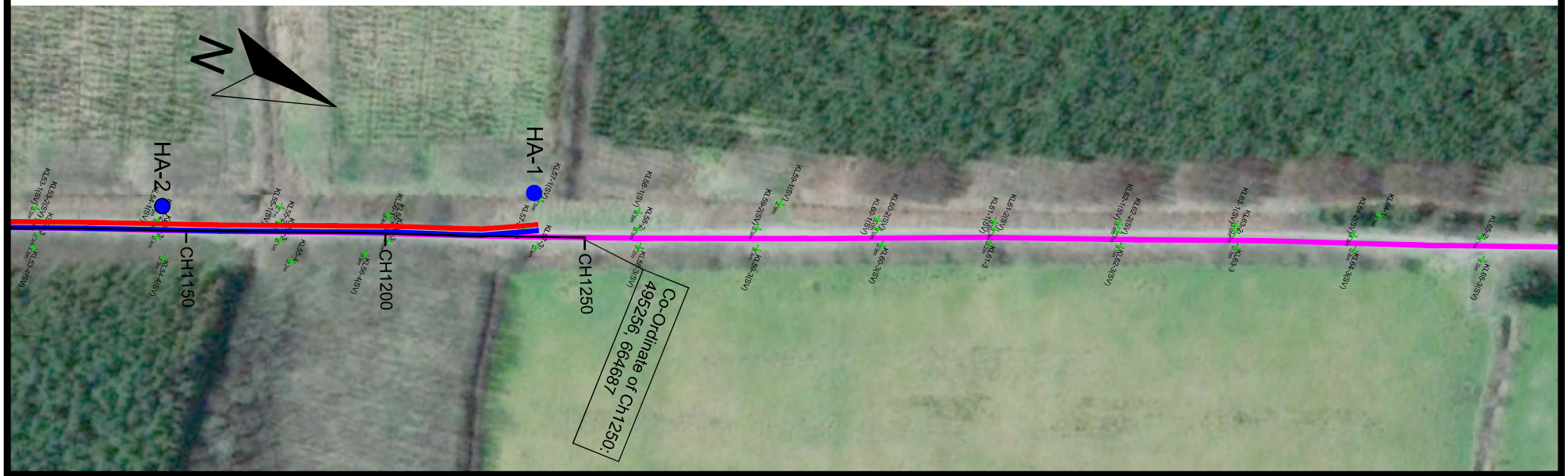
Peat Probes or Hand Augers

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1a (<200 m/s)
- Ground Surface/Top of Layer 1b (200 - 400 m/s)
- Top of Layer 2 (600 - 800 m/s)
- Top of Layer 3 (1000 - 1200 m/s)
- Top of Layer 4 (3200 - 3600 m/s)
- Seismic Modelling Depth
- ***1200*** Seismic Velocity in m/s

2D-Resistivity and Seismic Refraction Line Model





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PROJECT	Sceirde Rock WF Cable Route Doonmore, Co. Clare
TITLE	Plan 1d: Location Map and Model of Geophysical Survey

SCALE:	Hor 1:1000 @ A1, Ver 1:500 @ A3, VE x 2
PROJECT:	6791
DRAWN:	JS
DATE:	02/07/2024
MGX FILE:	6791f_Drawings.dwg
STATUS:	Final

2D-Resistivity Model Values:

Resistivities (Ohmm)

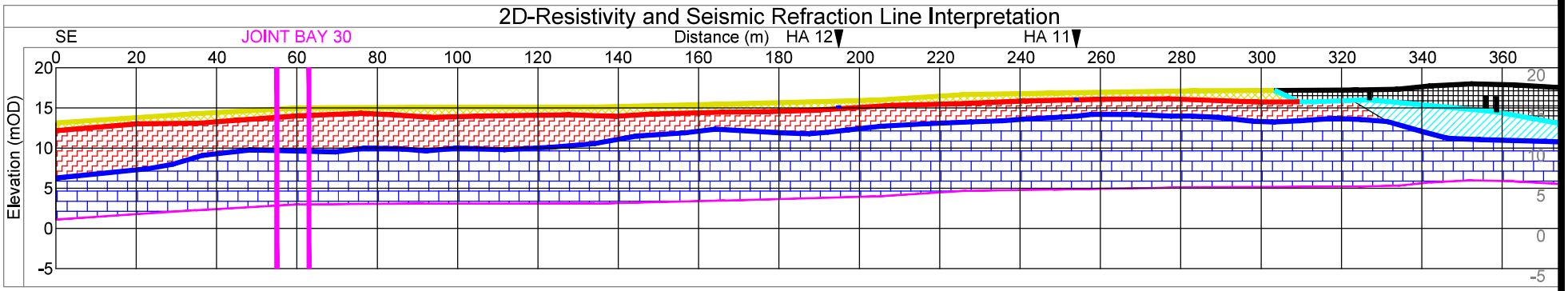
31.2 62.5 125 250 500 1000 2000 4000

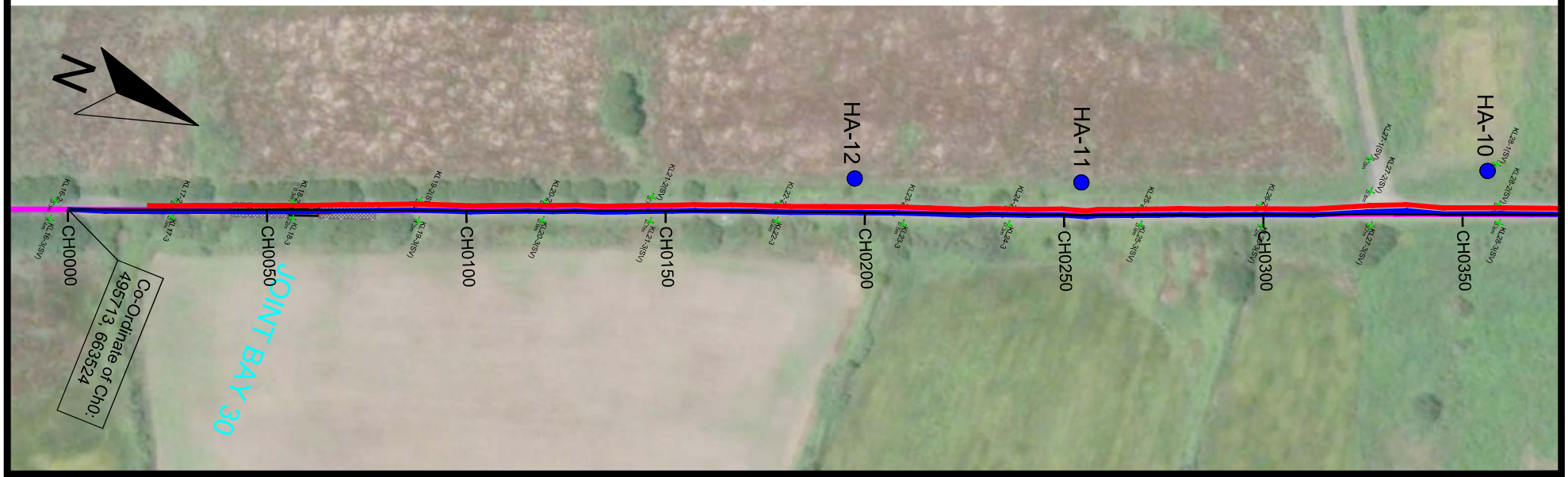
Peat Probes or Hand Augers

Layers from Seismic Refraction Model:

- Ground Surface/Top of Layer 1a (<200 m/s)
- Ground Surface/Top of Layer 1b (200 - 400 m/s)
- Top of Layer 2 (600 - 800 m/s)
- Top of Layer 3 (1000 - 1200 m/s)
- Top of Layer 4 (3200 - 3600 m/s)
- Seismic Modelling Depth
- ***1200*** Seismic Velocity in m/s

2D-Resistivity and Seismic Refraction Line Interpretation





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CLIENT	H&MV Engineering Sceirde Rocks Wind Farm
PROJECT	Sceirde Rock WF Cable Route Doonmore, Co. Clare
TITLE	Plan 2a: Location Map and Interpretation of Geophysical Survey

SCALE:	Hor 1:1000 @ A1, Ver 1:500 @ A3, VE x 2
PROJECT:	6791
DRAWN:	JS
DATE:	02/07/2024
MGX FILE:	6791f_Drawings.dwg
STATUS:	Final

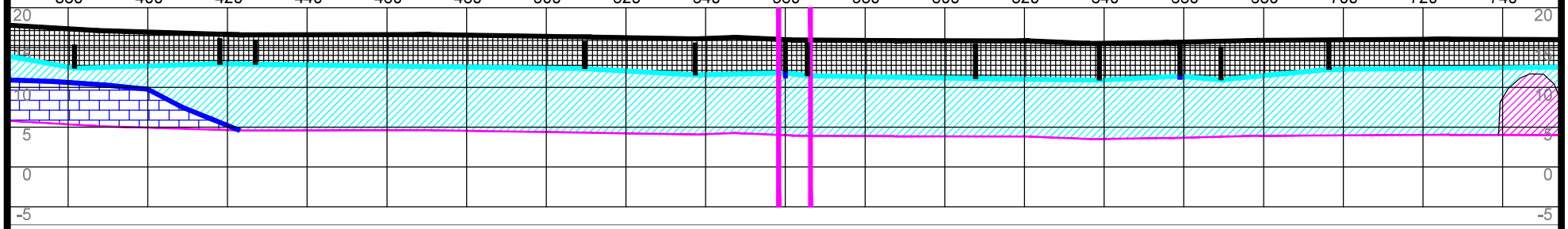
Interpretation:

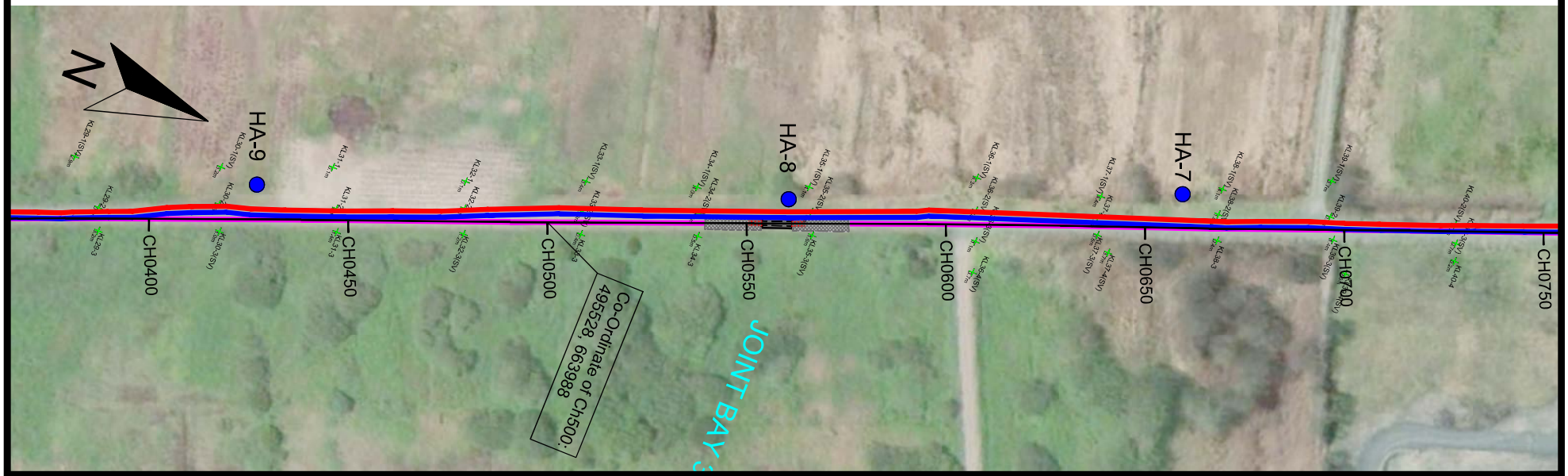
- 1a Road Material and Peat
- 1b Road Material
- 2a Firm Sandy gravelly Clay and Silt
- 2b Medium dense Clayey silty Sand and Gravel
- 3 Stiff Sandy gravelly Clay and Silt
- 4 Good Mudstone, Siltstone & Sandstone

Peat Probes or Hand Augers

2D-Resistivity and Seismic Refraction Line Interpretation

Distance (m) JOINT BAY 31





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PROJECT	Sceirde Rock WF Cable Route Doonmore, Co. Clare
TITLE	Plan 2b: Location Map and Interpretation of Geophysical Survey

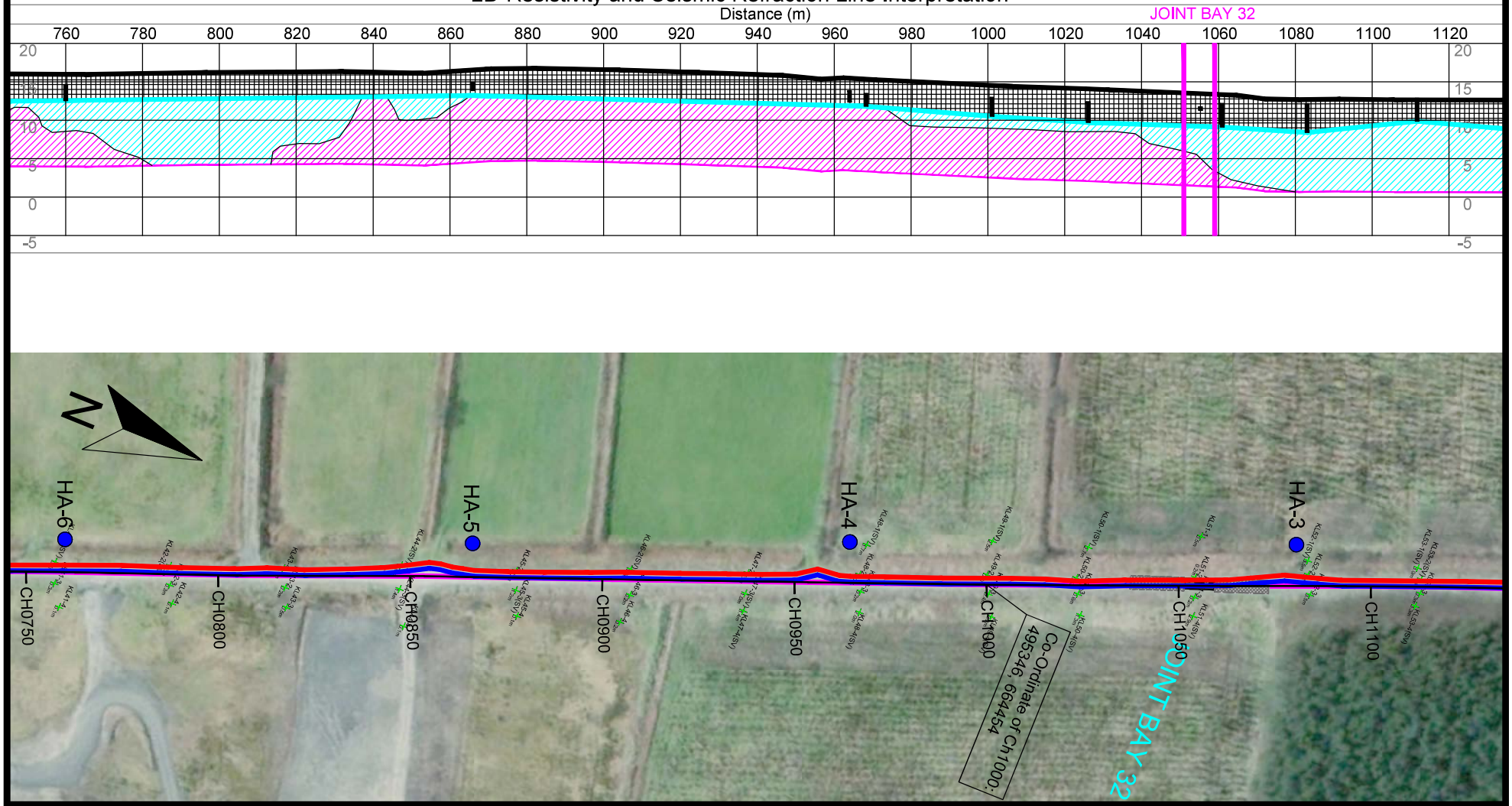
SCALE:	Hor 1:1000 @ A1, Ver 1:500 @ A3, VE x 2
PROJECT:	6791
DRAWN:	JS
DATE:	02/07/2024
MGX FILE:	6791f_Drawings.dwg
STATUS:	Final

Interpretation:

- 1a Road Material and Peat
- 1b Road Material
- 2a Firm Sandy gravelly Clay and Silt
- 2b Medium dense Clayey silty Sand and Gravel
- 3 Stiff Sandy gravelly Clay and Silt
- 4 Good Mudstone, Siltstone & Sandstone

Peat Probes or Hand Augers

2D-Resistivity and Seismic Refraction Line Interpretation



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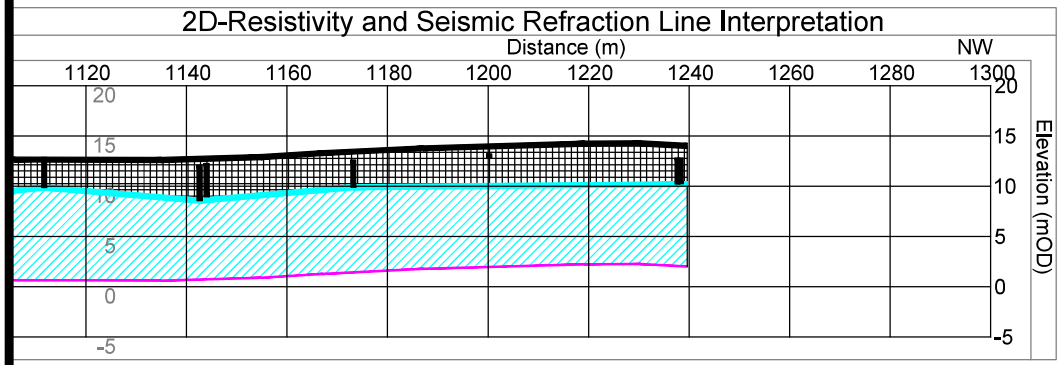
PROJECT	Sceirde Rock WF Cable Route Doonmore, Co. Clare
TITLE	Plan 2c: Location Map and Interpretation of Geophysical Survey

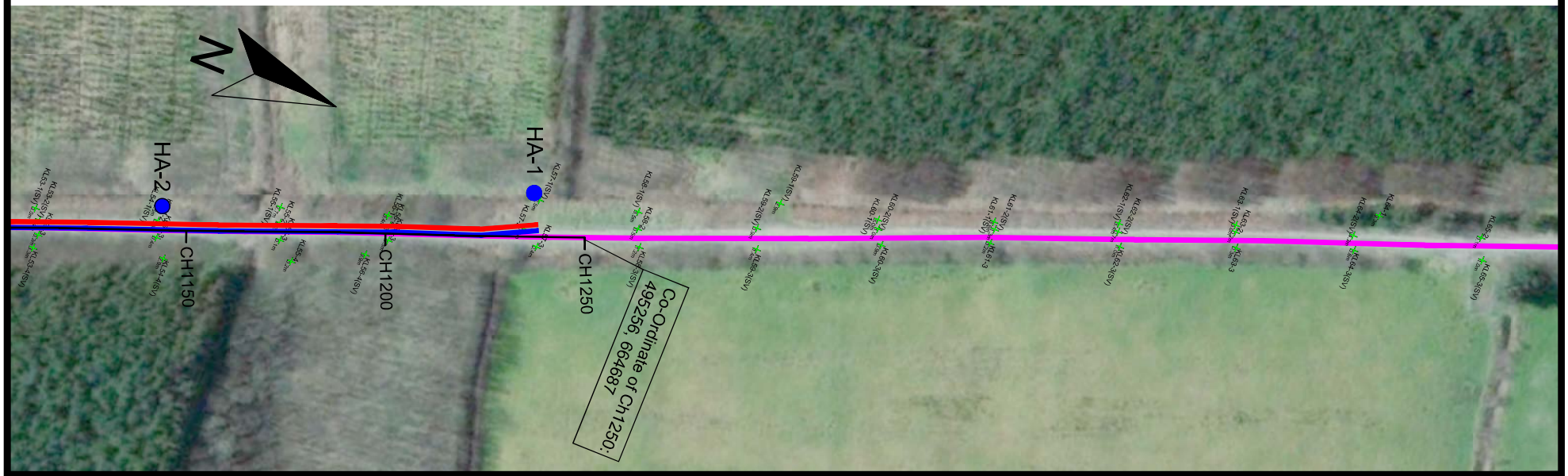
SCALE:	Hor 1:1000 @ A1, Ver 1:500 @ A3, VE x 2
PROJECT:	6791
DRAWN:	JS
DATE:	02/07/2024
MGX FILE:	6791f_Drawings.dwg
STATUS:	Final

Interpretation:

- 1a Road Material and Peat
- 1b Road Material
- 2a Firm Sandy gravelly Clay and Silt
- 2b Medium dense Clayey silty Sand and Gravel
- 3 Stiff Sandy gravelly Clay and Silt
- 4 Good Mudstone, Siltstone & Sandstone

Peat Probes or Hand Augers





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CLIENT	H&MV Engineering Sceirde Rocks Wind Farm
PROJECT	Sceirde Rock WF Cable Route Doonmore, Co. Clare
TITLE	Plan 2d: Location Map and Interpretation of Geophysical Survey

SCALE:	Hor 1:1000 @ A1, Ver 1:500 @ A3, VE x 2
PROJECT:	6791
DRAWN:	JS
DATE:	02/07/2024
MGX FILE:	6791f_Drawings.dwg
STATUS:	Final

Interpretation:

- 1a Road Material and Peat
- 1b Road Material
- 2a Firm Sandy gravelly Clay and Silt
- 2b Medium dense Clayey silty Sand and Gravel
- 3 Stiff Sandy gravelly Clay and Silt
- 4 Good Mudstone, Siltstone & Sandstone

Peat Probes or Hand Augers