Technical note:
Mynydd Llanhilleth Wind Farm –
Peat Depth Survey Report

1. Introduction

Wood Group UK Limited (Wood) were commissioned by Pennant Walters Limited to complete peat depth probing at the site of the proposed Mynydd Llanhilleth Wind Farm, located approximately 1.5km to the southeast of Abertillery in Monmouthshire as illustrated in **Figure 1**. The National Grid Reference (NGR) for the site centre is E323450 N202120. The majority of the Development Site comprises open ground set on the slopes of Mynydd Llanhilleth ranging from approximately 350m above ordnance datum (AOD) in the south to 450m AOD along a ridge in the north. An area of forestry covers a large portion of the south of the site in an area associated with former quarrying and mining works. Further quarries are located adjacent to the site in the north in the valley of the Nant Ddu.

1.1 Scope of Works

The design of the peat survey was developed in general accordance with the Guidance on Developments on Peatland[1].

The Phase 1 survey was undertaken on a 100m x 100m grid of points across the Developable Area of the site with peat depth measurement taken at each survey point. This factual report details the findings of the survey works and presents both a peat spot depth and peat contour plan (included as **Figures 2 and 3**).

1.2 Limitations

The peat depth survey was undertaken in accordance with best practice guidance to characterise peat depths across the site. It should be recognised that the survey and interpolations based on the survey provide information characterising the variation of peat depths and that different conditions may be present between survey locations.

Where utilities were identified a 50m exclusion zone was applied. Therefore, in some localised areas the grid spacing could not be fully adhered to. A Wales and West Utilities Engineer attended site with Wood's site manager to mark out the high-pressure gas main prior to any intrusive works.

[1] Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland Survey. Guidance on Developments on Peatland, on-line version only.

2. Desk Study Information

2.1 Pedology

The Cranfield Soil and Agrifood Institute Soilscapes map[2] indicates that the centre of the site is covered with restored soils from quarry and opencast spoil. The remainder of the site is noted to be covered by very acid loamy upland soils with a wet peaty surface and locally freely draining acid loamy soils over rock, predominantly located on sloping ground.

2.2 Geology

The British Geological Survey Geoindex[3] indicates the presence of artificial ground across the majority of the site considered to be related to historical coal mine workings. Superficial deposits comprising of Glacial Till are only recorded in the north of the site.

The bedrock underlying the site is predominantly recorded as sandstone of the Grovesend Formation with sandstone, siltstone and mudstone of the Hughes Member illustrated in the north and locally in the far east and west.

3. Survey Work

3.1 Methodology

The peat probing survey was undertaken in accordance with the locations and frequencies outlined in Section 1.1 and included the recording of the surveyed peat depths. The survey was undertaken using an extendable carbon fibre utility probe with lengths of probe carried to record depths of up to 8m below ground level (bgl). The probes are pushed into the ground by hand, until refusal on a hard stratum or obstruction.

The recorded depths were inputted into a personal digital assistant (PDA) with global position system (GPS) functionality to allow for a six figure NGR for each location.

The survey records the depth of any soft deposits (including peat) but is not exclusively related to peat depth and may include soft deposits that could also impact windfarm design and construction. No samples were obtained as part of this investigation.

3.2 Survey Findings

The Phase 1 peat depth survey was undertaken by Wood on the 16th September 2021 during a period of relatively dry weather. The survey comprised a total of 201 probes taken across the Developable Area, revealing potential peat depths in the range of between 0.00m and 0.40m. The calculated mean depth of recorded peat was <0.1m. The Welsh Government define true peat as being ≥0.4m in depth. Only two locations recorded potential peat of 0.4m and therefore peat can be considered as very localised across the site.

[2] Cranfield Soil and Agrifood Institute, Soilscapes Map, http://www.landis.org.uk/soilscapes/, accessed October 2021.
[3] British Geological Survey Geoindex, http://mapapps2.bgs.ac.uk/geoindex/home.html, accessed October 2021.

The peat survey results are recorded in Appendix A.

The peat depth data obtained during the survey has been used to generate a peat depth plan and interpolated peat depth map for the Development Site. The plans are included as **Figures 2 and 3**. The contour plan was created using ESRI ArcGIS and the Natural Neighbour interpolation method. This method was chosen given the relative simplicity of the weighting compared to other interpolation methods. It also avoids exaggeration of minimal and maximal values and results in a modelled surface that passes through the sample point value. The method also does not produce a pronounced "bulls-eye" effect on the modelled surface. However, unlike other methods it is not possible to barrier the interpolation. It also models depths over the furthest geographic extent and does not extrapolate out from the maximum extents of the sample points to the maximum rectangular extent. This method also calculates cell values across the longest extents of the sample points resulting in interpolations over large distances where there are large gaps in the sampling points, or they are irregularly distributed.

4. Summary

The peat survey indicates that there is very little peat present across the Developable Area with true peat (i.e. peat ≥0.4m) only recorded at two survey locations in the east of the site. The peat data is illustrated in Figures 2 and 3. The majority of the site is considered to be directly underlain by bedrock. However, this should be confirmed with an intrusive ground investigation. A Phase 2 peat survey is not considered necessary.

Prepared / Issued by	Reviewed / Approved by
Rich Bagnall	Graeme.Smart Digitally signed by Graeme.Smart Date: 2022.10.31 12:57:33 Z **Ouarda Boumendjel-Game**

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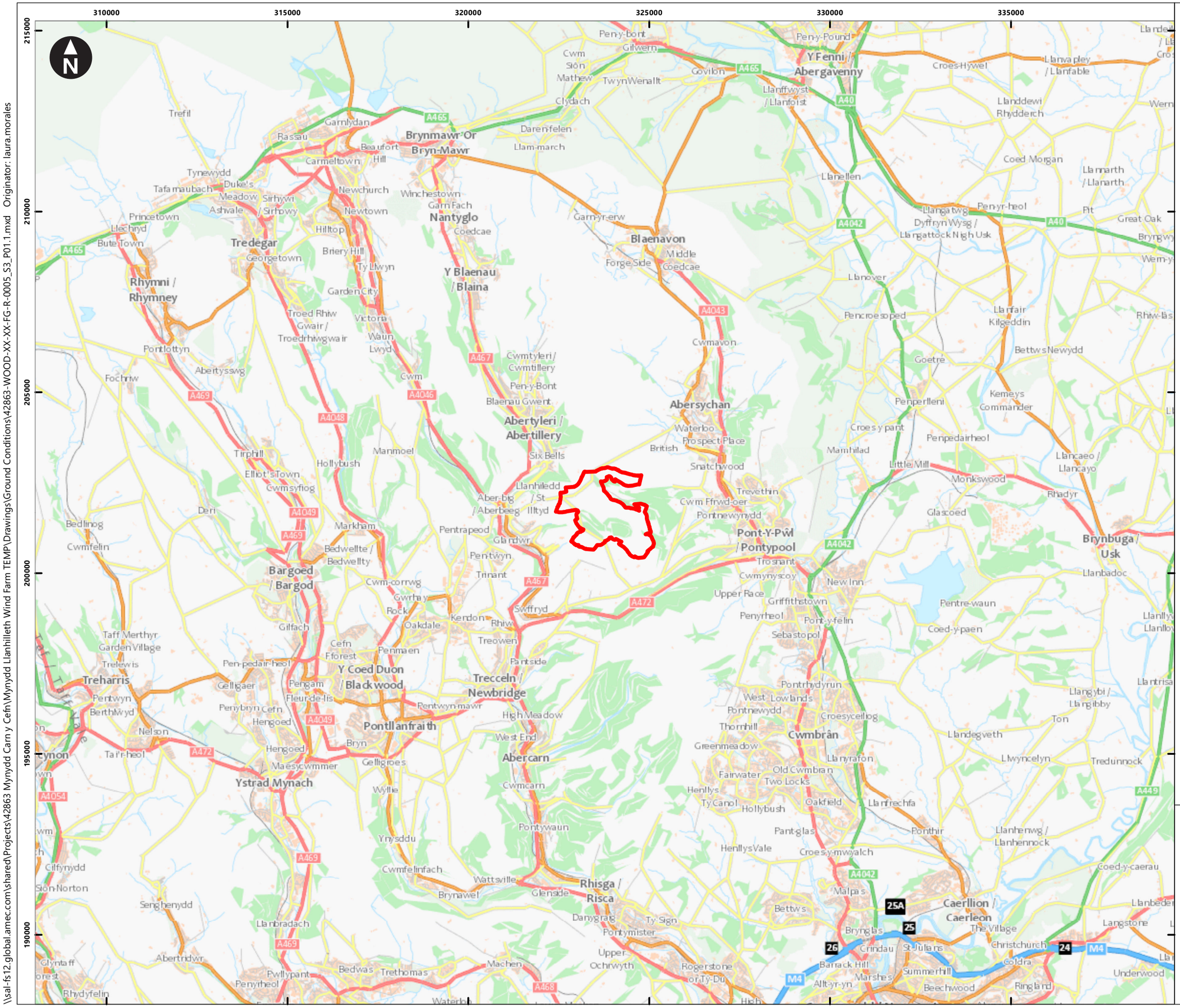
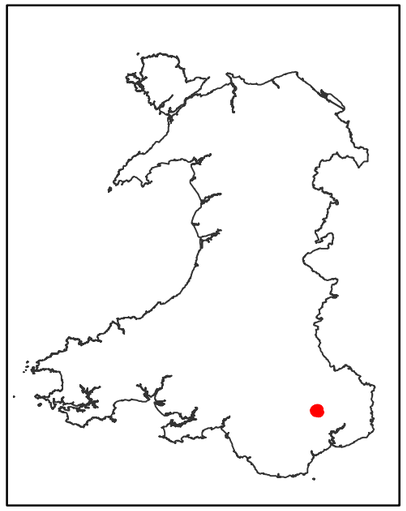
Figures



Key

Site Boundary



0 1,400 2,800 4,200 5,600 m

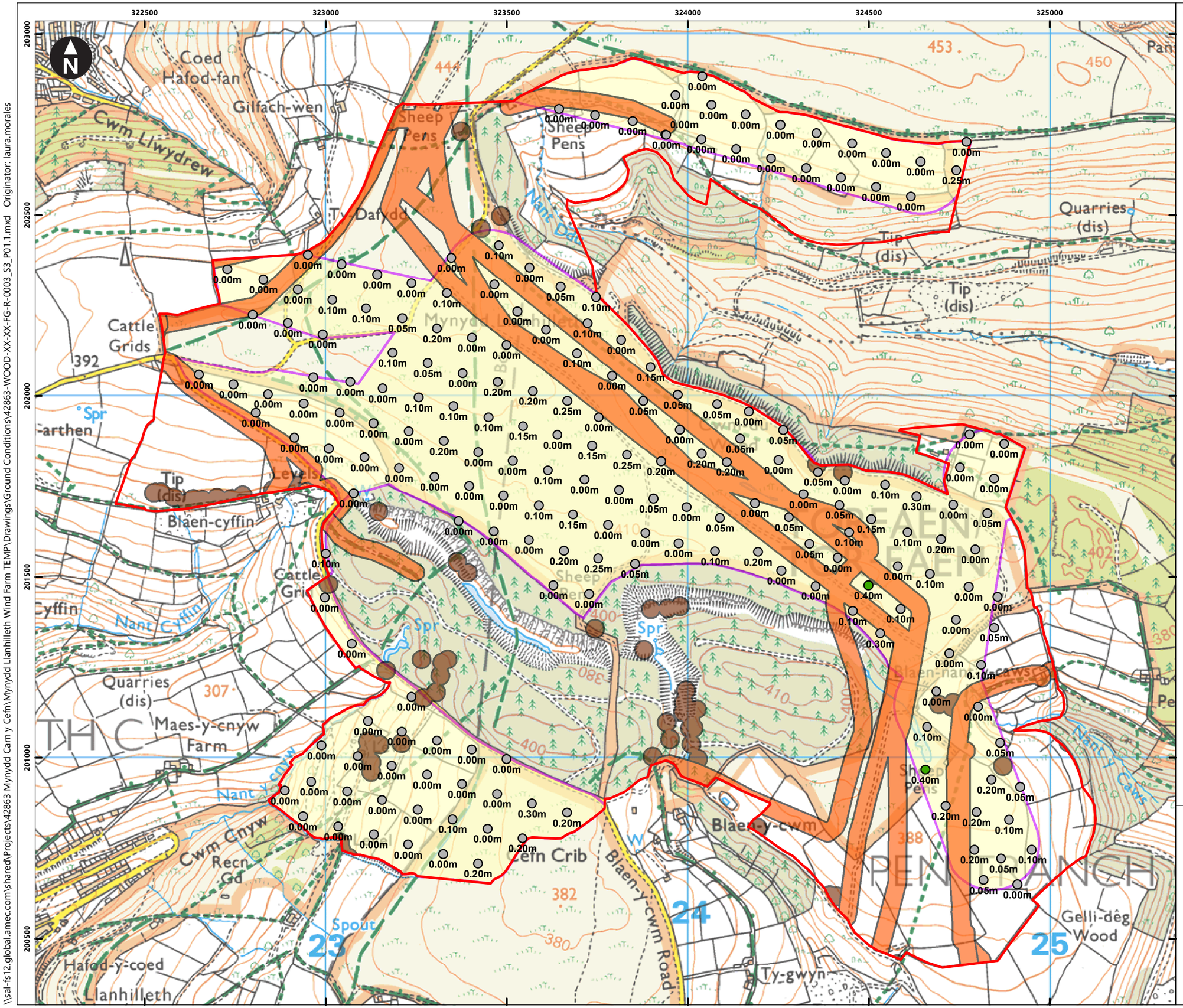
Scale at A3: 1:100,000

Mynydd Llanhilleth Wind Farm
Phase 1 Peat Depth Survey Report

Figure 1
Site Location

October 2021

wood.



Key

- Site Boundary
- Developable Area

Peat Depth(m)

- 0.00 - 0.39
- 0.40 - 1.00

Survey Constraints

- Mine Entry
- Utilities

0 100 200 300 400 500 600 m

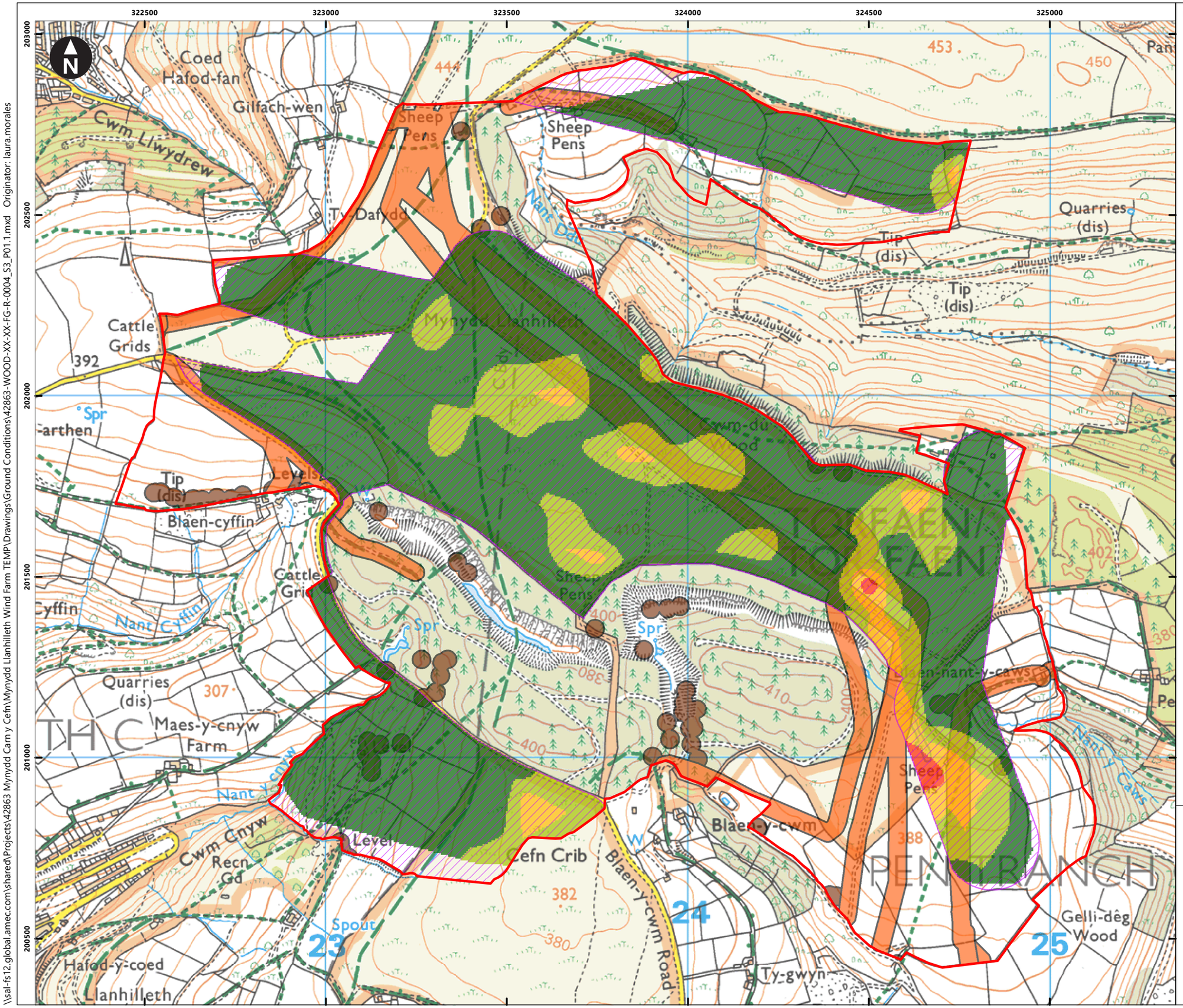
Scale at A3: 1:10,000

Mynydd Llanhilleth Wind Farm
Phase 1 Peat Depth Survey Report

Figure 2
Phase 1 Peat Depth Results

October 2021

wood.



Key

- Site Boundary
- Developable Area

Survey Constraints

- Mine Entry
- Utilities

Peat Depth (m)

- 0.0 - 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4

0 100 200 300 400 500 600 m

Scale at A3: 1:10,000

Mynydd Llanhilleth Wind Farm
Phase 1 Peat Depth Survey Report

Figure 3
Interpolated Peat Depth

October 2021

wood.

Appendix A – Peat Probing Data

Appendix A
Mynydd Llanhilleth
Peat Depth Survey Results

Probe ID	Date	Peat Depth (m)	Easting	Northing
1	16/09/2021	0.05	324863	201041
2	16/09/2021	0.1	324951	200745
3	16/09/2021	0	324911	200649
4	16/09/2021	0.05	324817	200661
5	16/09/2021	0.05	324865	200721
6	16/09/2021	0.2	324792	200746
7	16/09/2021	0.2	324712	200866
8	16/09/2021	0.2	324798	200849
9	16/09/2021	0.1	324888	200828
10	16/09/2021	0.05	324918	200919
11	16/09/2021	0.2	324838	200939
12	16/09/2021	0.4	324656	200966
13	16/09/2021	0.1	324662	201085
14	16/09/2021	0	324802	201141
15	16/09/2021	0	324723	201288
16	16/09/2021	0	324687	201183
17	16/09/2021	0.1	324811	201256
18	16/09/2021	0.05	324846	201359
19	16/09/2021	0	324856	201444
20	16/09/2021	0	324742	201380
21	16/09/2021	0.1	324588	201411
22	16/09/2021	0.3	324532	201343
23	16/09/2021	0	324776	201472
24	16/09/2021	0	324794	201575
25	16/09/2021	0.05	324827	201676
26	16/09/2021	0	324847	201771
27	16/09/2021	0	324874	201868
28	16/09/2021	0	324778	201893
29	16/09/2021	0	324752	201802
30	16/09/2021	0	324734	201699
31	16/09/2021	0.2	324699	201603
32	16/09/2021	0.1	324669	201508
33	16/09/2021	0.1	324456	201405
34	16/09/2021	0.4	324499	201476
35	16/09/2021	0	324580	201528
36	16/09/2021	0.1	324607	201622
37	16/09/2021	0.3	324632	201722
38	16/09/2021	0.1	324546	201754
39	16/09/2021	0.15	324506	201660
40	16/09/2021	0.1	324446	201623
41	16/09/2021	0	324414	201552
42	16/09/2021	0	324353	201474
43	16/09/2021	0	324258	201517
44	16/09/2021	0.05	324336	201591
45	16/09/2021	0.05	324419	201698

Probe ID	Date	Peat Depth (m)	Easting	Northing
46	16/09/2021	0	324434	201766
47	16/09/2021	0.05	324361	201789
48	16/09/2021	0	324320	201728
49	16/09/2021	0.05	324279	201664
50	16/09/2021	0.2	324194	201568
51	16/09/2021	0.1	324075	201570
52	16/09/2021	0.05	324089	201663
53	16/09/2021	0	324186	201704
54	16/09/2021	0	324251	201823
55	16/09/2021	0.05	324263	201906
56	16/09/2021	0	324168	201956
57	16/09/2021	0.05	324145	201882
58	16/09/2021	0.2	324108	201817
59	16/09/2021	0	323997	201692
60	16/09/2021	0	323975	201593
61	16/09/2021	0.05	323854	201536
62	16/09/2021	0	323883	201621
63	16/09/2021	0.05	323905	201716
64	16/09/2021	0.2	323927	201819
65	16/09/2021	0.2	324038	201841
66	16/09/2021	0	323978	201907
67	16/09/2021	0.05	324082	201976
68	16/09/2021	0.05	323972	202003
69	16/09/2021	0.1	323000	201564
70	16/09/2021	0	322998	201442
71	16/09/2021	0	323072	201315
72	16/09/2021	0	323210	201072
73	16/09/2021	0	323237	201168
74	16/09/2021	0	323183	200977
75	16/09/2021	0	323156	200882
76	16/09/2021	0	323133	200788
77	16/09/2021	0	323035	200810
78	16/09/2021	0	323059	200907
79	16/09/2021	0	323117	201101
80	16/09/2021	0	323089	201004
81	16/09/2021	0	322937	200837
82	16/09/2021	0	322989	201033
83	16/09/2021	0	322961	200934
84	16/09/2021	0	322888	200909
85	16/09/2021	0.25	324742	202623
86	16/09/2021	0	324770	202702
87	16/09/2021	0	324643	202647
88	16/09/2021	0	324548	202672
89	16/09/2021	0	324454	202697
90	16/09/2021	0	324356	202726
91	16/09/2021	0	324256	202749
92	16/09/2021	0	324161	202778
93	16/09/2021	0	324066	202804
94	16/09/2021	0	324040	202883

Probe ID	Date	Peat Depth (m)	Easting	Northing
95	16/09/2021	0	323967	202831
96	16/09/2021	0	323307	201047
97	16/09/2021	0	323280	200953
98	16/09/2021	0	323254	200856
99	16/09/2021	0	323228	200760
100	16/09/2021	0	323324	200733
101	16/09/2021	0.1	323350	200830
102	16/09/2021	0	323377	200927
103	16/09/2021	0	323403	201023
104	16/09/2021	0	323500	200996
105	16/09/2021	0.2	323667	200848
106	16/09/2021	0.2	323543	200777
107	16/09/2021	0.3	323570	200873
108	16/09/2021	0	323473	200900
109	16/09/2021	0	323447	200803
110	16/09/2021	0.2	323421	200707
111	16/09/2021	0	324617	202551
112	16/09/2021	0	324520	202577
113	16/09/2021	0	324424	202603
114	16/09/2021	0	324327	202630
115	16/09/2021	0	324230	202656
116	16/09/2021	0	324134	202683
117	16/09/2021	0	324038	202709
118	16/09/2021	0	323939	202722
119	16/09/2021	0	323728	201453
120	16/09/2021	0	323780	201643
121	16/09/2021	0	323811	201740
122	16/09/2021	0	323817	202154
123	16/09/2021	0	323791	202056
124	16/09/2021	0	323755	201940
125	16/09/2021	0	323715	201768
126	16/09/2021	0	323630	201476
127	16/09/2021	0	323561	201602
128	16/09/2021	0	323641	201892
129	16/09/2021	0	323609	202183
130	16/09/2021	0	323517	201821
131	16/09/2021	0	323491	201724
132	16/09/2021	0	323464	201626
133	16/09/2021	0	323368	201654
134	16/09/2021	0	323396	201751
135	16/09/2021	0	323422	201845
136	16/09/2021	0	323499	202140
137	16/09/2021	0	323530	202234
138	16/09/2021	0	323563	202354
139	16/09/2021	0	323466	202308
140	16/09/2021	0	323404	202161
141	16/09/2021	0.25	323753	201551
142	16/09/2021	0.25	323833	201837
143	16/09/2021	0.05	323877	201986

Probe ID	Date	Peat Depth (m)	Easting	Northing
144	16/09/2021	0.15	323898	202080
145	16/09/2021	0.15	323736	201862
146	16/09/2021	0.15	323684	201672
147	16/09/2021	0.2	323658	201572
148	16/09/2021	0.1	323588	201697
149	16/09/2021	0.1	323614	201794
150	16/09/2021	0.25	323668	201986
151	16/09/2021	0.1	323695	202118
152	16/09/2021	0.1	323723	202200
153	16/09/2021	0.1	323747	202273
154	16/09/2021	0.05	323649	202302
155	16/09/2021	0.2	323572	202013
156	16/09/2021	0.15	323545	201916
157	16/09/2021	0.1	323450	201940
158	16/09/2021	0.2	323476	202038
159	16/09/2021	0.1	323479	202416
160	16/09/2021	0	323301	201776
161	16/09/2021	0	323202	201800
162	16/09/2021	0	323347	202381
163	16/09/2021	0	323158	202021
164	16/09/2021	0	323133	201924
165	16/09/2021	0	323107	201830
166	16/09/2021	0	323077	201730
167	16/09/2021	0	323009	201854
168	16/09/2021	0	323039	201953
169	16/09/2021	0	323068	202038
170	16/09/2021	0	323142	202335
171	16/09/2021	0	323044	202364
172	16/09/2021	0	322991	202170
173	16/09/2021	0	322966	202051
174	16/09/2021	0	322939	201978
175	16/09/2021	0	322914	201884
176	16/09/2021	0	322807	201953
177	16/09/2021	0	322841	202005
178	16/09/2021	0	322745	202032
179	16/09/2021	0	322923	202294
180	16/09/2021	0	322896	202201
181	16/09/2021	0	322798	202224
182	16/09/2021	0	322828	202321
183	16/09/2021	0	322728	202349
184	16/09/2021	0	322650	202059
185	16/09/2021	0	323379	202062
186	16/09/2021	0.1	323353	201972
187	16/09/2021	0.2	323326	201875
188	16/09/2021	0	323229	201902
189	16/09/2021	0.1	323256	201995
190	16/09/2021	0.05	323282	202091
191	16/09/2021	0.2	323307	202186
192	16/09/2021	0.1	323334	202284

Probe ID	Date	Peat Depth (m)	Easting	Northing
193	16/09/2021	0	323237	202311
194	16/09/2021	0.05	323212	202215
195	16/09/2021	0.1	323185	202119
196	16/09/2021	0.1	323112	202242
197	16/09/2021	0.1	323018	202265
198	16/09/2021	0	322951	202389
199	16/09/2021	0	323645	202793
200	16/09/2021	0	323744	202777
201	16/09/2021	0	323848	202760
202	16/09/2021	0	323941	202721