TA2.9 Phase 2 Peat Depth and Coring Survey

Glenshero Wind Farm

Phase 2 Peat Depth and Coring Survey

Technical Appendix 2.9

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1. INTRODUCTION

MacArthur Green was commissioned by RES Ltd on behalf of Simec Wind One Ltd to carry out a peat probing and coring survey to gather data on the nature of peat deposits within the area of Glenshero Wind Farm (hereafter referred to as the 'the site').

This report has been produced by MacArthur Green in accordance with SEPA and SNH guidelines. All staff contributing to this technical appendix have undergraduate and/or postgraduate degrees in relevant subjects, have deep professional experience, and hold professional membership of either the Chartered Institute of Ecology and Environmental Management (CIEEM) or Institution of Civil Engineers (ICE). The report has been reviewed and approved by David MacArthur of MacArthur Green and a copy of his CV is included in EIAR Volume 4: Technical Appendix 1.2.

Survey methods follow current guidance: Scottish Government *et al*. (2017), and Scottish Renewables and Scottish Environment Protection Agency (SEPA) (2012). Results of the Phase 1 peat surveys are reported in EIAR Volume 4: Technical Appendix 2.8.

2. AIMS & OBJECTIVES

The Phase 2 peat survey and this technical report have the following aims and objectives:

Aim 1 **Gather additional high resolution peat depth data around proposed turbine and infrastructure locations.**

Objective 1.1	Further inform the layout of the proposed development's infrastructure to help reduce impacts associated with peatland habitats.
Objective 1.2	Provide peat depth data to inform the impact of the proposed development on carbon losses arising from disturbance to peat based habitats.

Aim 2 **Present data on the nature of peat deposits at key infrastructure locations.**

Objective 2.1	Provide data to inform a Peat Management Plan (PMP).
Objective 2.2	Assess the accuracy of peat depth probe samples.

3. THE STUDY AREA

The peat study area[1] lies approximately 5km north of the A86 and approximately 8km west of Laggan, positioned within the Monadhliath Mountains area; reaching an elevation of 859 metres (m) above sea level (a.s.l.). The majority of the peat study area contains wet dwarf shrub heath and blanket bog;

[1] The Phase 2 peat study area for the proposed development comprised the areas encompassed by infrastructure within the site boundary as detailed in EIAR Volume 4: Technical Appendix 2.9: Figure 2.9.1 with the exception of the temporary mineral workings search area, as detailed in Section 3 and addressed this is the main body of this report.

with dry heath, montane heath and montane grasslands also present on steeper slopes, around a number of the summits and elevated plateaus (see EIAR Volume 4: Technical Appendix 6.1).

The proposed development has a temporary mineral working search area adjacent to the Stronelairg Wind Farm substation (EIAR Volume 3: Figure 2.1), which is also a consented temporary mineral working area for the existing Stronelairg Wind Farm. Access to this temporary mineral working search area was not permitted throughout the duration of the peat survey. This was due to operational restrictions imposed by the contractor at Stronelairg Wind Farm as extraction works were ongoing in this area at the time of the peat survey. However, due to the current nature of the peat within this search area and the presence of the existing mineral workings, omitting this area from the survey is not considered to be a significant limitation to the results or subsequent analysis of the peat information.

For a full description of the site, see Chapter 2: Site and Development Description of the Environmental Impact Assessment Report (EIAR) in Volume 2.

4. METHODOLOGY

The Phase 2 peat study area was surveyed by MacArthur Green on the following dates:

- 10th to 14th June 2018;
- 25th to 29th June 2018; and
- 2nd to 5th July 2018.

The study area included the initial proposal for the substation, which was to be located in the southern area of the site. Now, on the basis of the design refinements undertaken, no infrastructure is proposed to be constructed in the southern area of the site.

Surveys followed best practice guidance with regard to surveying for developments on peatland (Scottish Government *et al.*, 2017 and Scottish Renewables & SEPA, 2012). In addition to following best practice guidance, MacArthur Green consulted SEPA[2] for 'site specific' protocols with regard to data collection and scoping out areas of shallow peat. The bespoke methodology that was adopted involved only probing and coring at locations where the peat depth was established as being greater than 1m (near or within the proposed infrastructure). Locations where the peat depth was established as being less than 1m were removed from the survey effort. To provide confidence with regard to ensuring the survey coverage was suitable and sufficient, a 50m buffer into the less than 1m depth peat was applied from the 1m peat depth contour (generated from the Phase 1 survey data); this approach ensured that all appropriate locations within the peat study area were surveyed.

Further information on the methods employed for peat depth probing and coring work are detailed in Sections 4.1 and 4.2 below.

4.1 Peat Depth Analysis

The first phase of peat depth probing and analysis (Phase 1 peat survey) was carried out on a 100m² systematic grid covering all areas within the Phase 1 peat study area (EIAR Volume 4: Technical

[2] MacArthur Green email communication with SEPA: 01/06/2018-05/06/2018.

Appendix 2.8 and associated Figures). This peat depth data and other constraints were used to inform the layout of the proposed development, including the turbine locations, access tracks alignment and temporary construction compounds.

The second phase of intensive peat probing (Phase 2 peat survey) supplements the original data and gathers further high-resolution data for the site and proposed infrastructure.

The following methods were employed:

1. Phase 2 peat depth probing locations are shown in EIAR Volume 4: Technical Appendix 2.9: Figure 2.9.1, with peat depth modelling results provided in EIAR Volume 4: Technical Appendix 2.9: Figure 2.9.2. The alignment of proposed access tracks were sampled at 50m intervals, with measurements taken on the access track centreline and points 10m perpendicular to the centreline on either side of the access track. For existing access tracks, only sample points 10m perpendicular to either side of the access track were probed. At the turbine bases and associated hardstandings, temporary construction compounds, substation and potential borrow pit search areas depths were sampled on a 10m x 10m grid basis around the centre of each infrastructure footprint. To allow for an infrastructure micrositing tolerance, additional cross hair samples were taken at 10m intervals, centred on the turbine base centre point.
2. Geographic Information System (GIS) was used to generate the sampling locations.
3. 2,777 Phase 2 sample locations were generated and probed in total.
4. Sampling locations were downloaded on to hand-held Geographic Positioning System (GPS) units, which were used to locate sample points in the field.
5. A custom made collapsible solid steel peat depth probe was used at each sample point to establish peat depth. Full depth recordings were taken. (N.B. As this is a peat assessment, only peat depths were recorded; where the sample point fell on mineral soil/rock the probe depth was recorded as zero).
6. Peat depth data were modelled using 'Inverse Distance Weighted' interpolation in ArcMap 10.6©. This interpolation method is best suited to situations where the density of samples is great enough to capture the local surface variation needed for the analysis (Childs, 2004).
7. A depth model was generated using the following categories of peat depth:

   0, 1-20; 21-50; 51-100, 101-150 and 50 centimetre (cm) intervals thereafter.

4.2 Peat Coring

Peat coring analysis methods follow those detailed within Hobbs (1986: see Hobbs Appendix A p.78-79) and Hodgson (1974).

1. Peat cores were taken at seven turbine locations, with coring sample locations determined from a review of the proposed locations of infrastructure within the peat study area and analysis of peat depths from the Phase 1 peat survey. A peat depth probe was taken adjacent to the core sample. In total, nine cores were taken as detailed in Table 2.9.1 below (see EIAR Volume 4: Technical Appendix 2.9: Figure 2.9.1).
2. A 'Russian Corer' (volume 0.5 litres (l)) was used to take peat cores.

3. At each core sample location, the full peat depth profile was sampled, which involved taking 50 centimetre (cm) length cores from the surface layer through to the basal layer (where peat meets the underlying substrata).
4. For each sample core, the following information was collected in the field:
   a. A photograph of each 50cm core;
   b. Depth of the acrotelm;
   c. Degree of humification (as per Hodgson, 1974):
      - Amorphous Peats - peats with fibre <1/3rd volume when not rubbed - reduces to <1/10 by rubbing, (optional - yields soluble dark humidified matter).
      - Fibrous Peats - peats with fibre >2/3rds volume when not rubbed - reduces to no less than >4/10 by rubbing, (optional - yields little soluble dark humidified matter).
      - 'Intermediate' if assessment falls between amorphous and fibrous.
   d. Degree of humification using the Von Post Scale (refer to Annex B).
   e. Fine Fibre Content: F0 (none), F1, F2, F3 (very high);
   f. Coarse Fibre Content: R0 (none), R1, R2, R3 (very high);
   g. Water Content: B1 (dry) to B5 (very wet); and
   h. Type of substrate underlying the peat (where this could be determined).

Table 2.9.1, Peat core sample numbers, locations and corresponding infrastructure

Sample Core ID	X	Y	Infrastructure
C516	249702	799389	Turbine 39
C537	253527	799465	Turbine 19
C558	248343	799608	Turbine 03
C579	253074	799659	Turbine 17
C751	249969	800345	Turbine 12
C894	254461	801148	Turbine 29
C929	253160	800367	Turbine 37

5. RESULTS

The results are presented as follows:

- Section 5.1 presents the results of the peat depth probing;
- Section 5.2 provides a comparison of probed and cored (true) peat depths; and
- Section 5.3 presents the results of each sample core. The raw data is presented in Annex A and core sample photographs are presented in Annex C.

5.1 Peat Depth Analysis

EIAR Volume 4: Technical Appendix 2.9 Figure 2.9.2 illustrates the results of the peat depth modelling. The peat depth map is based upon 4,173 sample peat probes (1,402 in Phase 1 and 2,771 in Phase 2). EIAR Volume 4: Technical Appendix 2.9: Figure 2.9.2 is based on GIS data interpolation and therefore the peat depth boundaries are to a degree indicative; as such, they cannot be taken as definite boundaries, as actual peat depths 'in the field' may vary to a degree around these interpolated boundaries. The accuracy of peat depth probes is detailed in Section 5.2 below.

5.2 Accuracy of Peat Depth Probes

At each core sample location, a peat depth probe was taken adjacent to the core sample to compare the probed depth against the true depth determined by measuring the depth of material retained in the core sample. To ensure the full depth of peat is sampled, a core is extracted that confirms the peat/substratum boundary has been reached. This approach allows a relative assessment of the accuracy of the peat depth probing. Peat was present at all seven sample locations. The results are presented in Table 2.9.2 below.

Table 2.9.2, Difference between probed and true (cored) depth

Sample Core ID	Probed Depth (cm)	Cored Depth (cm)	Difference (Probed - Cored)	Infrastructure
C516	87	87	0	Turbine 39
C537	28	30	-2	Turbine 19
C558	44	40	4	Turbine 03
C579	66	66	0	Turbine 17
C751	37	31	6	Turbine 12
C894	50	49	1	Turbine 29
C929	49	48	1	Turbine 37

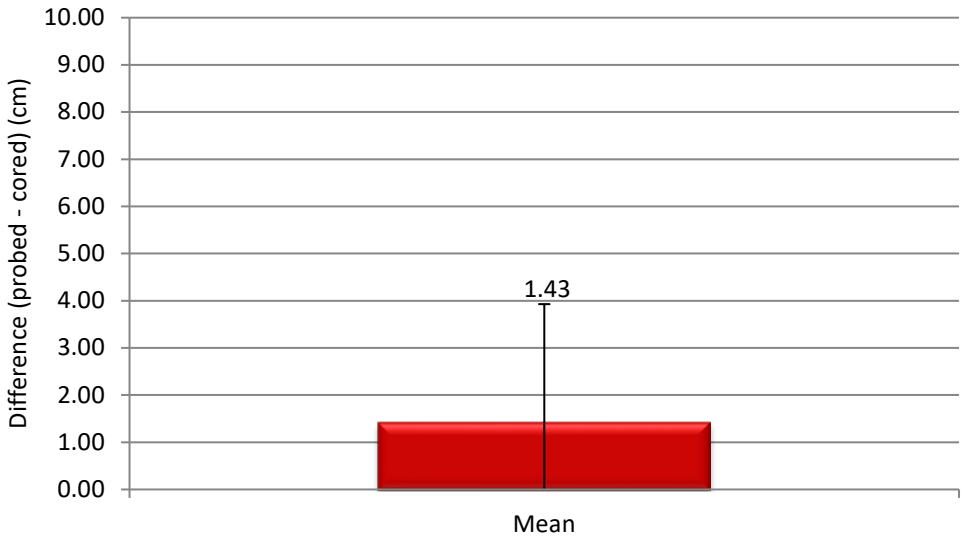

Chart 2.9.1, Difference between probed and cored (true) peat depth

Table 2.9.3, Descriptive Statistics

Mean	Standard Error	95% Confidence Interval	95% CL Lower	95% CL Upper	Precision
1.43	1.02	2.50	-1.07	3.93	174.75

Chart 2.9.1 above shows the mean difference between the probed and cored (true) peat depths from seven sample locations. Additional descriptive statistics from the combined seven locations are shown in Table 2.9.3. The following considerations are highlighted:

- Probed peat depths overestimated cored (true) peat depths by an average of 1.43cm, with a confidence interval of 2.50cm, indicating a high degree of accuracy among the peat probes, but with a very minor bias with regards to overestimating the peat depths. Hence, the resultant depths are considered to be accurate and conservative.
- Where the peat probe measurements overestimated the true peat depth by slightly larger margins (i.e. cores C558 and C751), it is likely this is due a shallow layer of granular material (gravel or weathered bedrock) between the base of the peat and bedrock, allowing the peat probe to penetrate further than the corer; thereby giving the impression that marginally deeper peat existed.

5.3 Core Sample Results

Sections 5.3.1 to 5.3.11 below present the information of the key variables recorded on the nature of peat deposits within the peat study area from the coring survey. Annex A presents the results for each of the variables from all the core samples and Annex C presents the photographs of each sub-sample taken. The cores from all seven sample locations were sent to the laboratory of analysis.

5.3.1 Depth of Acrotelm

The catotelm and acrotelm represent two distinct layers within undisturbed peat that control the hydrological regime. The catotelm is the bottom layer of peat that is mostly below the water table. The acrotelm overlies the catotelm and is the 'living' layer in which most water table fluctuations occur. The thickness of the acrotelm usually varies up to around 50cm, but it largely depends upon the habitat. Anaerobic and aerobic conditions alternate periodically with the fluctuation of the water table, favouring more rapid microbial activity than in the catotelm. The acrotelm consists of the living parts of mosses and dead and poorly decomposed plant material. It has a very loose structure that can contain and release large quantities of water in a manner that limits variations of the water table in peat bogs (Quinty & Rochefort, 2003).

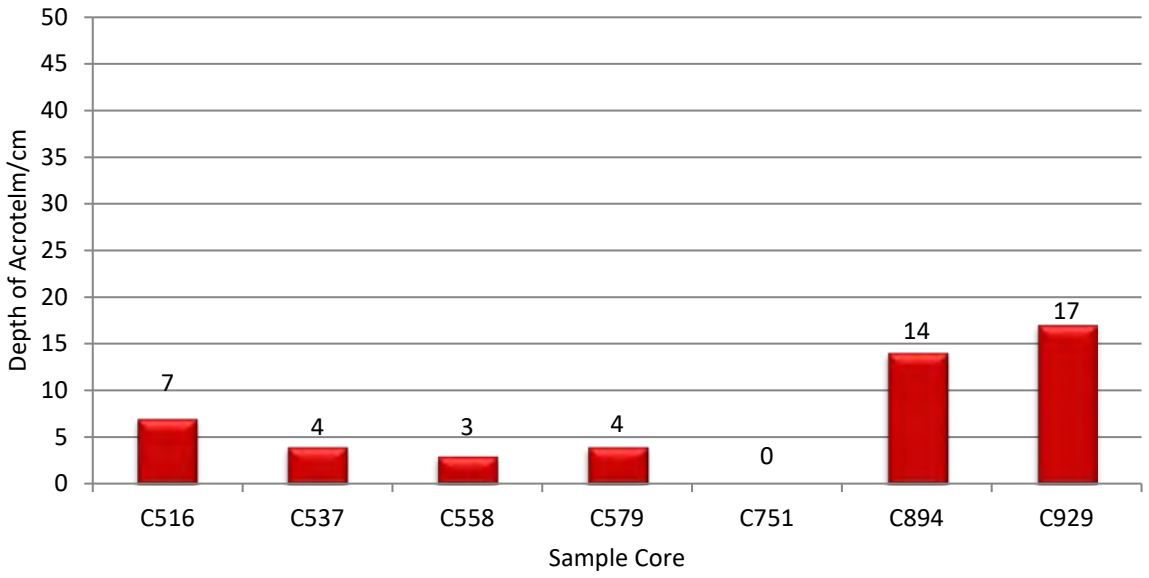

Chart 2.9.2, Depth of Acrotelm.

Chart 2.9.2 above details the depth of the acrotelm at each of the sample core locations, with peat being present at all locations. The following considerations are highlighted:

- Acrotelm depth indicated some variability but was shallow overall; with a mean depth of 7.0cm.
- Sample locations C894 and C929 were recorded with relatively deeper acrotelm depths, which can be seen in Annex C (Photographs of Cored Samples).
- It is recommended that for the purposes of construction and subsequent reinstatement, that where a sufficient peat depth exists, the top 0.5m of material should be treated as acrotelm. This approach will allow excavation of intact turves for reinstatement purposes where they are present, which will in turn facilitate quicker regeneration of disturbed areas. Even if little vegetation is present within this top layer it should still be treated as acrotelmic material as it will contain a seedbank that will aid re-vegetation of reinstatement areas.

5.3.2 Degree of Humification – Summary

The degree of humification was recorded in the field, in accordance with the methods discussed in Section 4.2 above; with each 0.5m subsample being categorised as either fibrous, intermediate, or amorphous peat. From the seven sample cores taken, there were a total of nine separate 0.5l subsamples extracted and analysed. The results are summarised below.

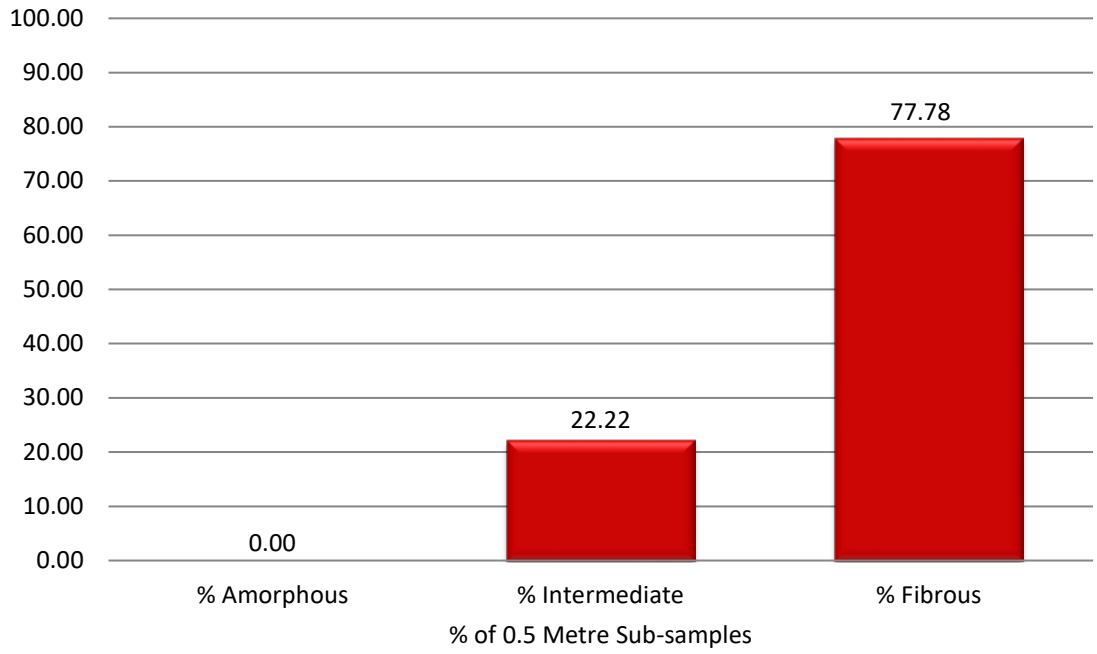

Chart 2.9.3, Degree of humification: % of 0.5 metre subsamples.

Chart 2.9.3 above shows the degree of humification, in percentage of 0.5m sub-samples, for seven sample locations. The following considerations are highlighted:

- No peat from the 0.5m sub-samples (n = 0) was amorphous in nature.
- 22.22% of the peat from the 0.5m sub-samples (n = 2) was intermediate in nature.
- 77.78% of the peat within 0.5m sub-samples (n = 7) was fibrous in nature.
- The chart above indicates that the peats across the peat study area are predominately fibrous in nature and not well humified; this is likely a function of the relatively shallow peat depths encountered at the sample locations.

5.3.3 Fibrous Content

The levels of coarse and fine fibres within the peat were ascertained in the field according to the Hobbs scale (see Section 4.2). The results are presented below.

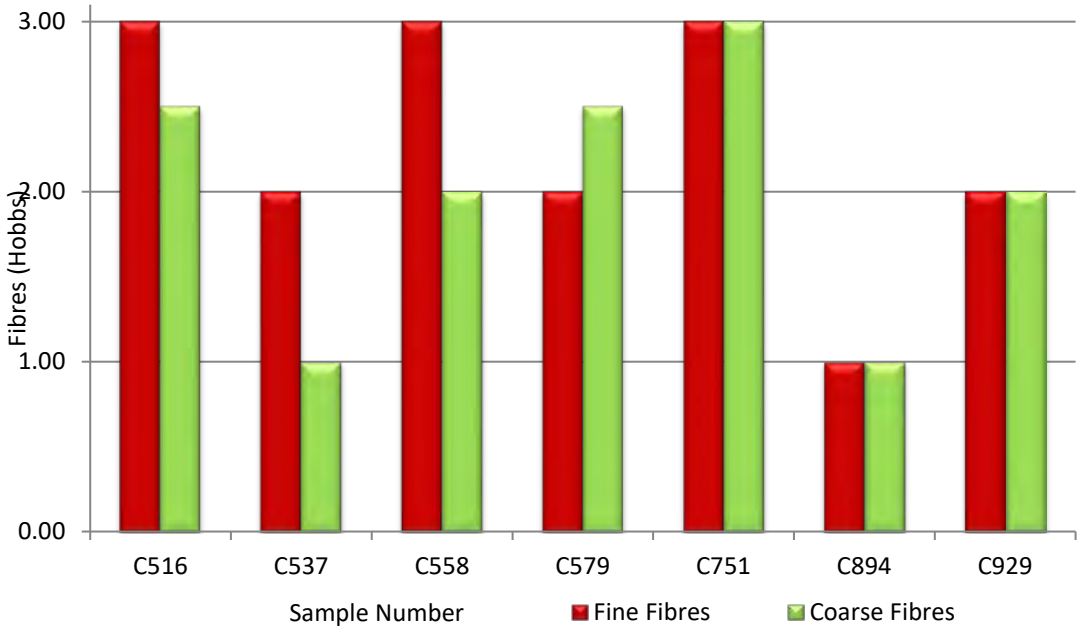

Chart 2.9.4, Levels of Coarse & Fine Fibres: % 0.5 metre subsamples

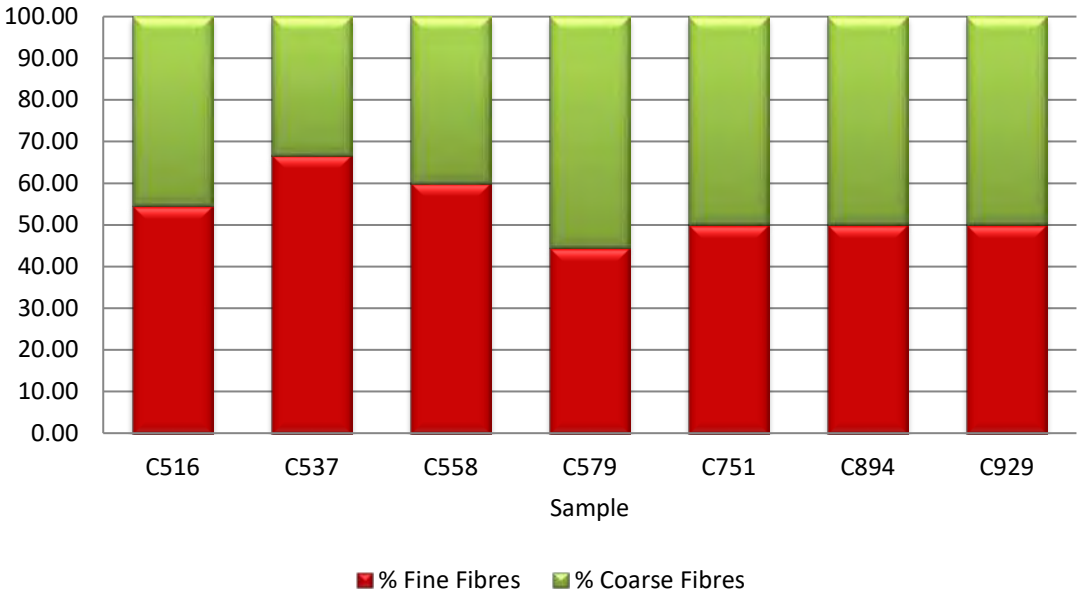

Chart 2.9.5, Fibrous Content: % 0.5 metre subsamples

Chart 2.9.4 above shows the level of coarse and fine fibres (using the Hobbs scale) present in seven core locations. Chart 2.9.5 above shows the percentage of fibrous content for fine and coarse fibres that were present in each of the seven sample locations. The following considerations are highlighted:

- Six samples were assessed as having high fine fibre content (F2 and F3) according to the Hobbs scale, with one sample location (C894) recorded as low.

- Five samples were assessed as having high coarse fibre content (R2 and R3) according to the Hobbs scale. Samples C537 and C894 were scored as R1 (low) for coarse fibre content, according to the Hobbs scale.
- Predominately the 0.5m subsamples had an even split of fine and coarse fibres.

5.3.4 Water Content – Summary

As described above, the water content of subsamples was determined in the field using the Hobbs scale (B1 Dry – B5 Very Wet). The chart below provides a summary mean for each core location.

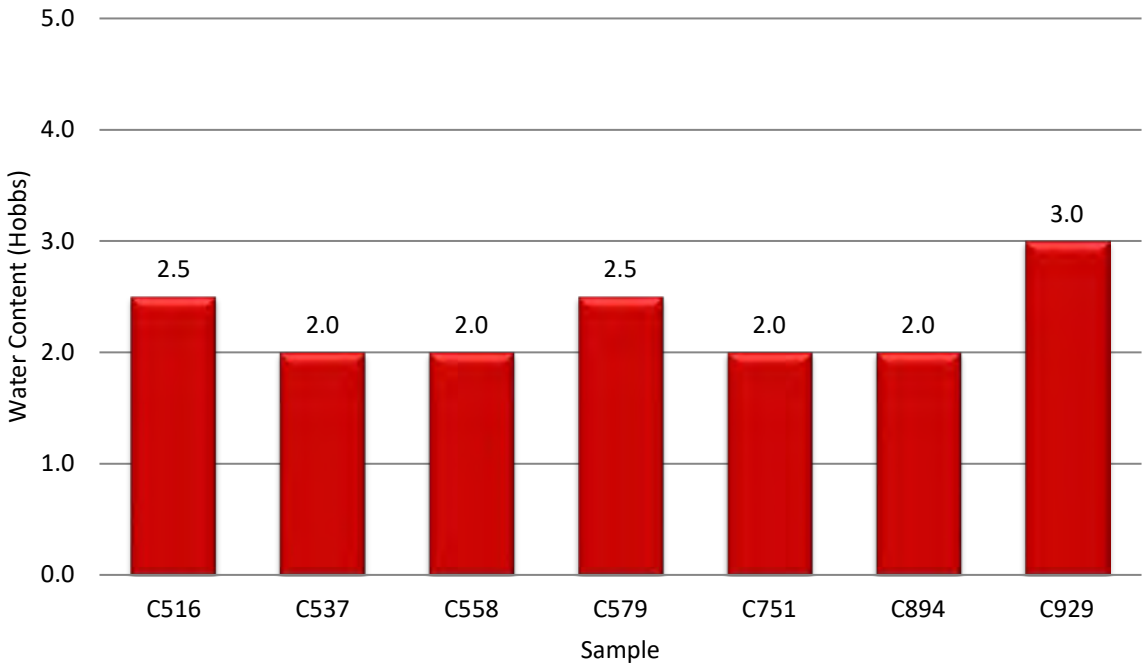

Chart 2.9.6, Water Content: Core Location Summary.

- The vertical axes in Chart 2.9.6 above refers to the water content of the peat in seven core sample locations; 1=dry to 5=very wet.
- For the purpose of this analysis, a mean was estimated for cores that had more than one 0.5m sub-sample.
- The peat at all samples was recorded between B2 and B3 on the Hobbs scale, i.e. semi-dry peats with some moisture.
- No samples were recorded as wet or very wet on the Hobbs scale (B4 or B5).
- The high degree of dryness amongst the samples in the peat study area is likely a result of the extensive hagging and drying out and oxidation of the peat associated with this erosion and exposure of bare peat surfaces.

5.3.5 Von Post (Degree of humification) – Summary

An estimate of the degree of humification according to the Von Post scale (see Annex B) was carried out on samples at all core locations, see Chart 2.9.7.

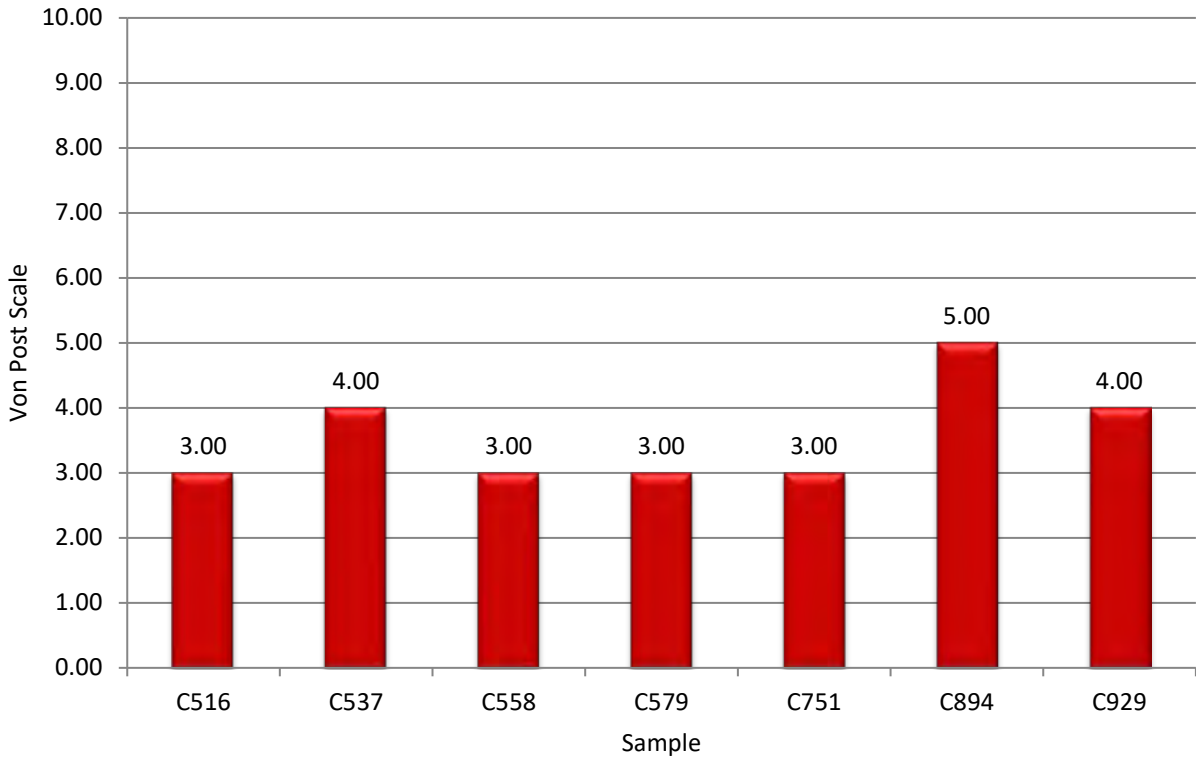

Chart 2.9.7, Von Post

- The vertical axes in Chart 2.9.7 above refers to the Von Post Scale of Peat Decomposition (H1 to H10, see Annex B for details).
- For the purpose of this analysis, a mean was estimated for cores that had more than one 0.5 m subsample.
- All samples scored relatively low on the Von Post scale (H3 to H5), indicating relatively weak decomposition.

5.3.6 pH of Peat Samples

Nine 0.5l peat subsamples from seven sample core locations were sent to the laboratory for analysis. The pH values determined are provided below.

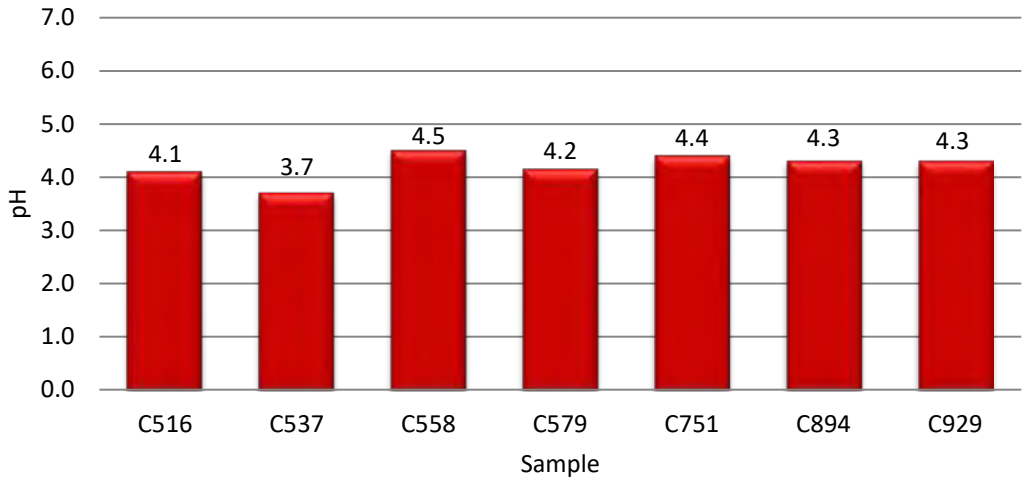

Chart 2.9.8, Summary pH.

- The mean pH value of the nine subsamples was 4.21, with a range from 3.7 to 4.5 (see Annex A).
- Chart 2.9.8 provides the mean pH for each core location and indicates that all sub-samples were acidic in nature, as would be expected from the environment present at the site.

5.3.7 Dry Matter (%)

Oven dry matter (%) was calculated for nine subsamples sent to the laboratory, and means calculated for each core location.

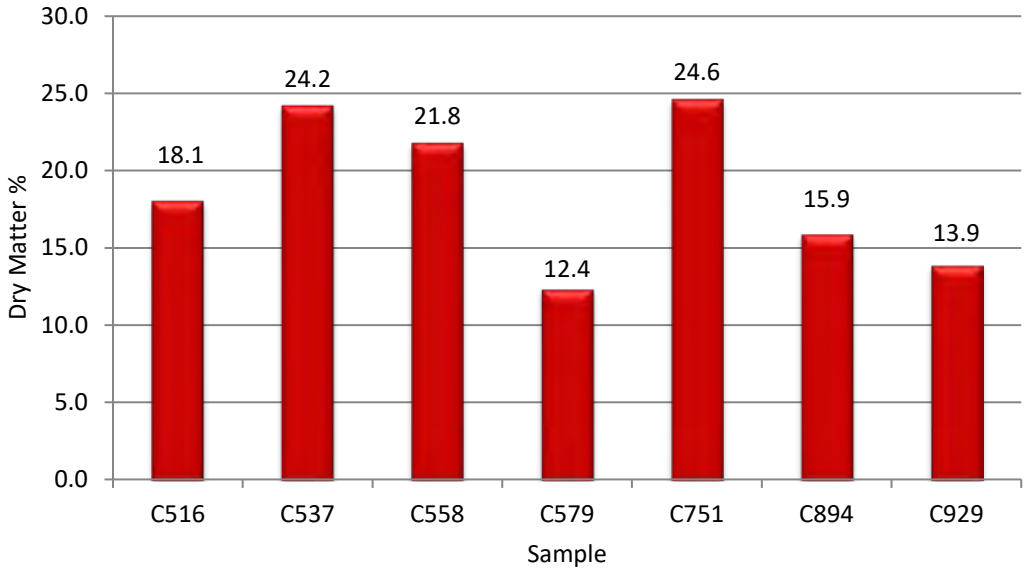

Chart 2.9.10, Core Mean Dry Matter (%).

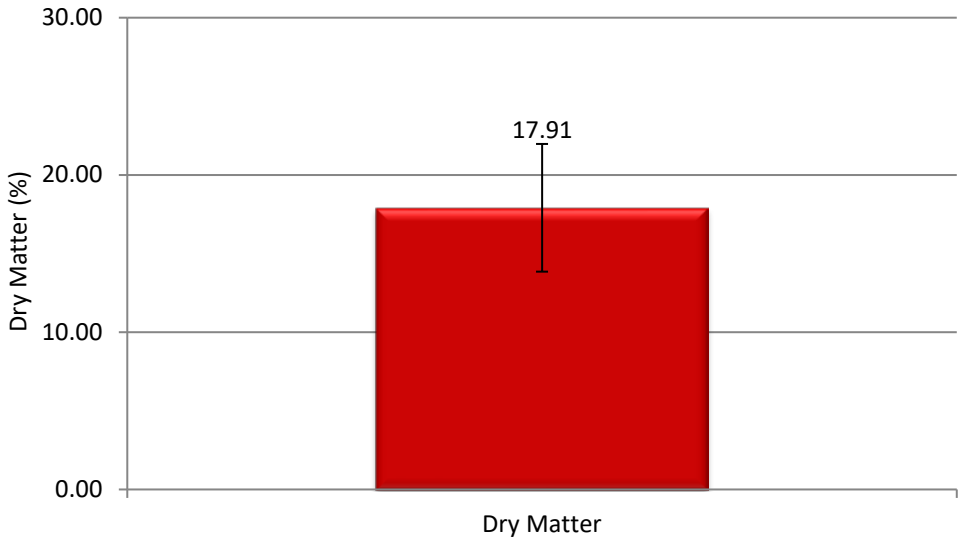

Chart 2.9.11, Subsample Mean Dry Matter (%).

Table 2.9.5, Descriptive Statistics

Mean	Standard Error	95% Confidence Interval	95% CL Lower	95% CL Upper	Precision
17.91	5.28	4.06	13.85	21.97	22.65

Chart 2.9.11 and Table 2.9.5 show the dry matter mean and summary statistics for the nine subsamples analysed. The following considerations are highlighted:

- For the purpose of the analysis in Chart 2.9.10, a mean was estimated for cores that had more than one 0.5m sub-sample.
- The mean dry matter percentage from the cores is 17.91%.

5.3.8 Wet Bulk Density (g/l)

Wet Bulk Density (g/l) was calculated from nine subsamples sent to the laboratory, and means calculated for each core location.

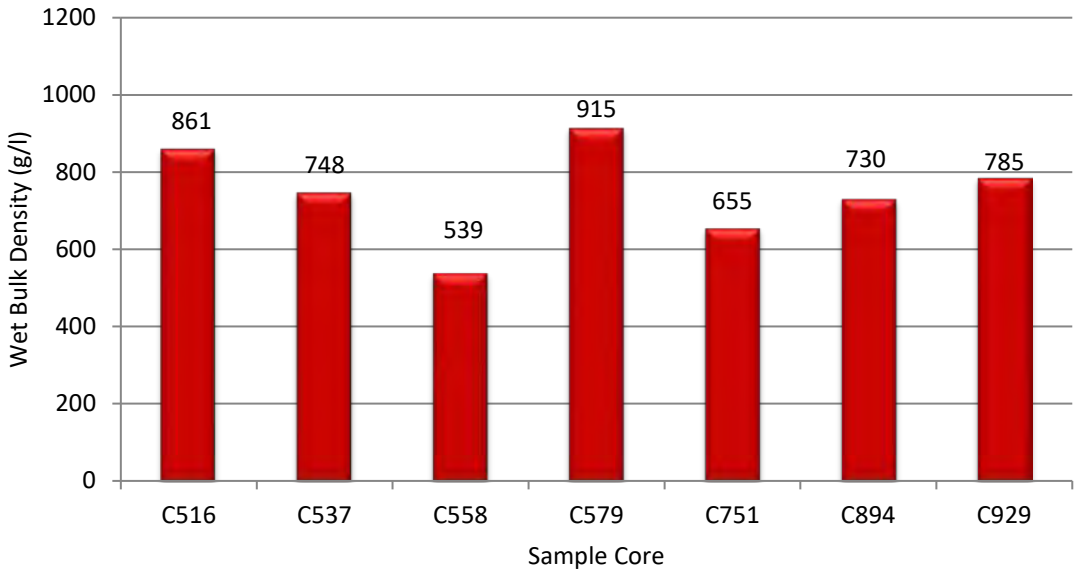

Chart 2.9.12, Core Mean Wet Bulk Density (g/l).

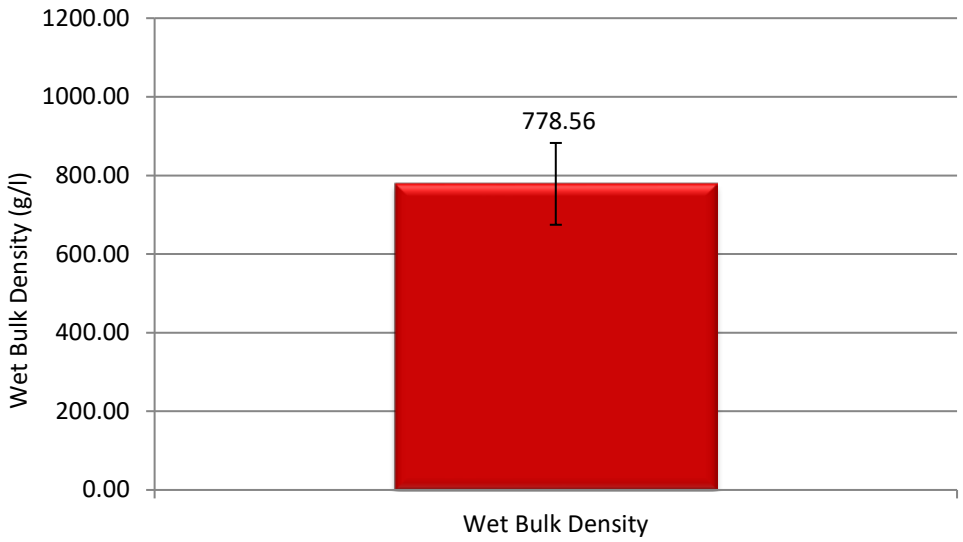

Chart 2.9.13, Subsample Mean Wet Bulk Density (g/l).

Table 2.9.6, Descriptive Statistics

Mean	Standard Error	95% Confidence Interval	95% CL Lower	95% CL Upper	Precision
778.56	135.37	104.05	674.50	882.61	13.36

Chart 2.9.13 and Table 2.9.6 show the wet bulk density mean and summary statistics for the nine subsamples analysed. The following considerations are highlighted:

- For the purpose of the analysis in Chart 2.9.12, a mean was estimated for cores that had more than one 0.5m sub-sample.
- The mean wet bulk density from the cores is 778.56 g/l.

5.3.9 Dry Bulk Density (g/cm³)

Dry Bulk Density (g/cm³) was calculated for nine subsamples sent to the laboratory, and means calculated for each core location.

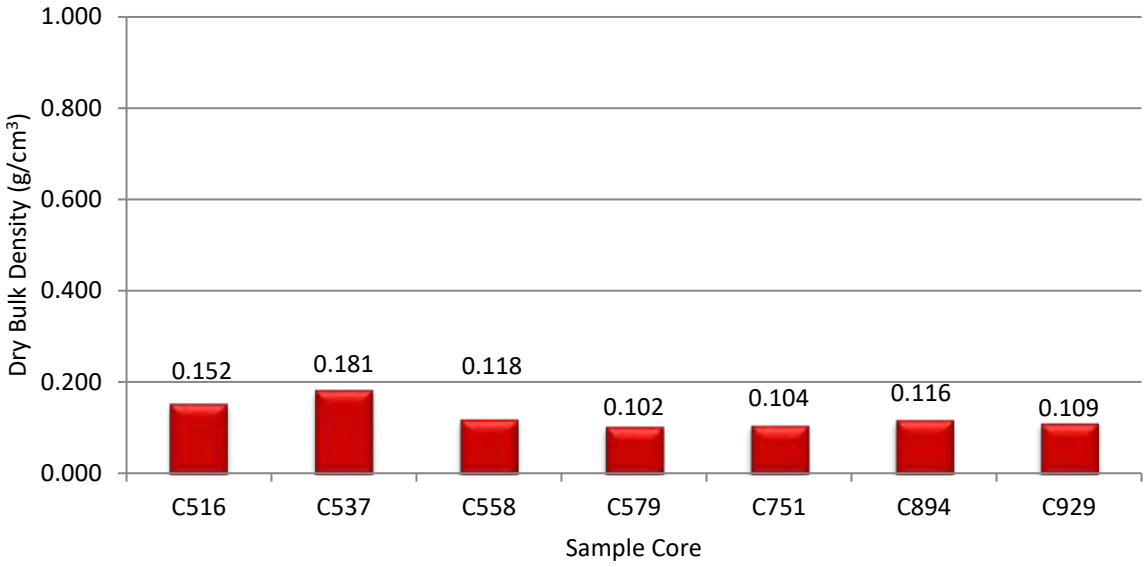

Chart 2.9.14, Core Mean Dry Bulk Density (g/cm³).

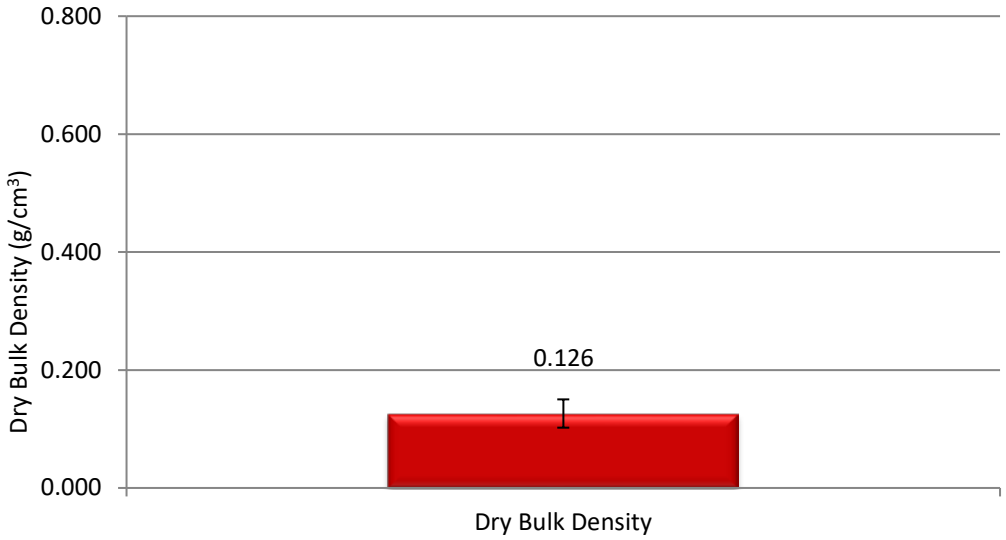

Chart 2.9.15, Sub-sample Mean Dry Bulk Density (g/cm³).

Table 2.9.7, Descriptive Statistics

Mean	Standard Error	95% Confidence Interval	95% CL Lower	95% CL Upper	Precision
0.126	0.031	0.024	0.102	0.150	18.98

Chart 2.9.15 and Table 2.9.7 show the dry bulk density mean and summary statistics for the nine sub-samples analysed. The following considerations are highlighted:

- For the purpose of the analysis in Chart 2.9.14, a mean was estimated for cores that had more than one 0.5m sub-sample. The mean dry bulk density from the cores is 0.126 g/cm^3; with maximum and minimum values of 0.181 g/cm^3 and 0102 g/cm^3 respectively (see Annex A).

5.3.10 Total Carbon (%)

Total Carbon content (% dry weight) was calculated for nine subsamples sent to the laboratory, and means calculated for each core location.

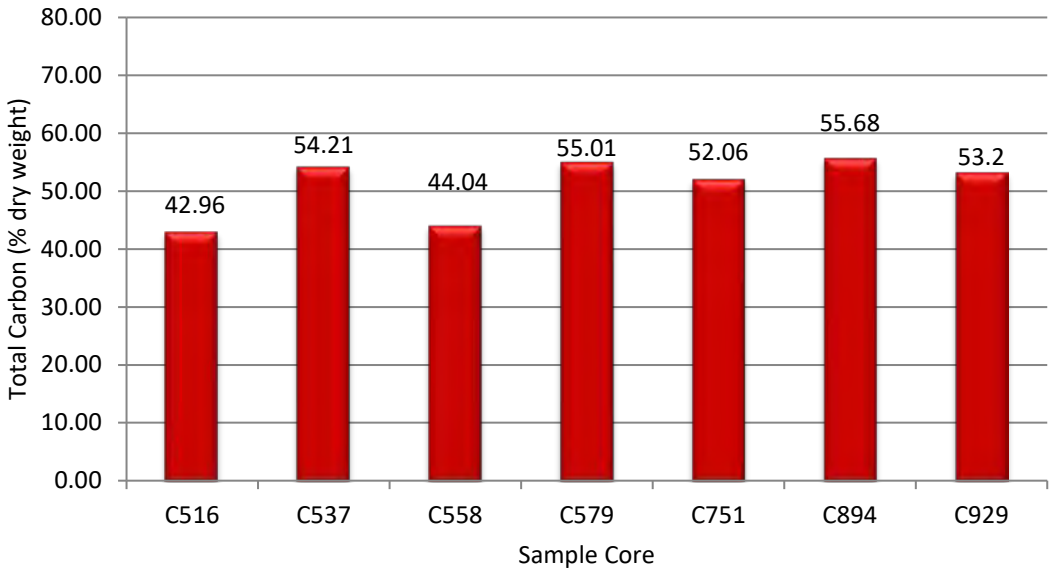

Chart 2.9.16, Core Mean Total Carbon (% weight).

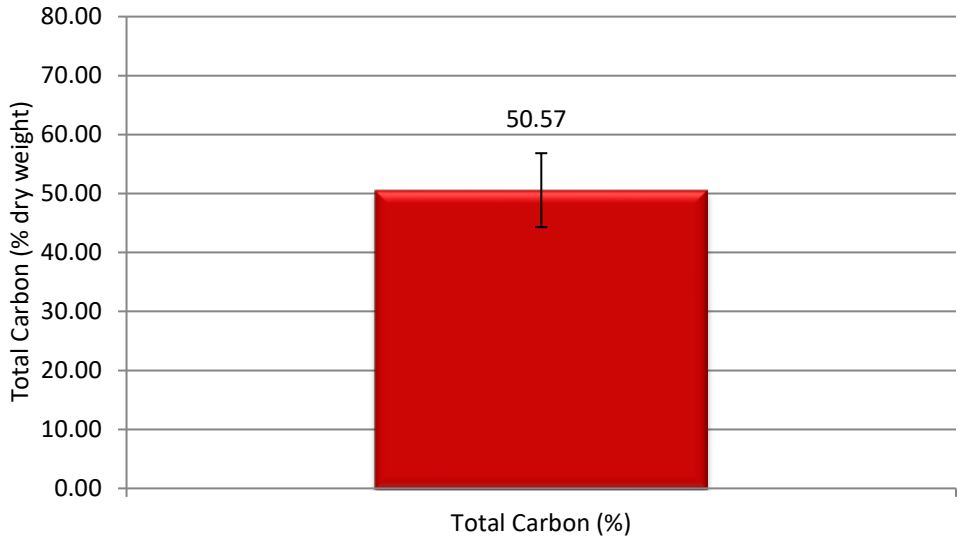

Chart 2.9.17, Sub-sample Mean Total Carbon (% weight).

Table 2.9.8, Descriptive Statistics

Mean	Standard Error	95% Confidence Interval	95% CL Lower	95% CL Upper	Precision
50.57	8.16	6.27	44.30	56.84	12.41

Chart 2.9.17 and Table 2.9.8 show the total carbon mean and summary statistics for the nine subsamples analysed. The following considerations are highlighted

- For the purpose of the analysis in Chart 2.9.16, a mean was estimated for cores that had more than one 0.5m sub-sample.
- The mean total carbon (%) from the cores is 50.57%; with maximum and minimum values of 55.68% and 42.96 % respectively (see Annex A).

5.3.11 Underlying Substrates

At each sample location, a broad characterisation was made of the underlying substrate below the peat horizon where possible. The raw data is provided in Annex A of this report and it appears that the majority or the sample locations were underlain by bedrock (five of the seven sample locations). However, prior to terminating to the rock layer, often there would be a shallow layer of granular rock/gravel that the peat probe penetrated.

6. SUMMARY

The results of the Phase 2 peat surveys undertaken on the peat deposits within the peat study area are summarised as follows:

- Overall the peat depths within the Phase 2 peat study area are shallow. Deeper areas of peat are noted within the site (up to 3.5m; see EIAR Volume 4: Technical Appendix 2.8). As seen in EIAR Volume 4: Technical Appendix 2.9 Figure 2.9.2, the infrastructure has been located, where practical, away from these deeper peat locations;
- The depth of the acrotelm at sample locations demonstrates some variability, but is generally shallow; with one sample location indicating no acrotelm;
- The peat across the peat study area is fibrous in nature, with only two of the nine subsamples being recorded as intermediate, and the peat generally contains high levels of both coarse and fine fibres;
- The mean water content of the peat at sample locations appears to be consistent with semi dry peats that contain some moisture;
- Samples analysed in the field to the Von Post scale were scored relatively low (between H3 and H4), with only one of the nine subsamples being scored as H5, indicating an overall weak level of decomposition;
- The samples were acidic, pH ranging from 3.7 - 4.5; and
- Dry matter, wet bulk density, dry bulk density and total carbon content statistics were calculated from nine subsamples sent to the laboratory from seven core sample locations.

Overall, the peats sampled across the peat study area were generally shallow, relatively dry and fibrous in nature, and exhibited low levels of decomposition.

7. REFERENCES

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ANNEX A PEAT CORING DATA

Sample No.	Infrastructure	X	Y	Planted / Unplanted	Sub-sample	Probed depth (cm)	Cored Depth (cm)	Depth of Acrotelm (cm)	Photo 0 = No, 1 = Yes	Colour	Depth of Sub Sample	Amorphous 0= No, 1 = Yes	Intermediate 0 = No, 1 = Yes	Fibrous 0 = No, 1 = Yes	Fine Fibres +	Coarse Fibres +	Water Content +	Von Post Scale #	Wet Bulk Density g/l	Dry Bulk Density g/l	Dry Bulk Density g/cm^3	Dry Matter %	Moisture %	pH	Total Carbon (fresh) mg/l	Total Carbon, dry matter mg/kg	Total Carbon % dry weight	Substrate
C516	Turbine 39	249702	799389	Unplanted	C516a	87	87	7	1	Medium brown	0-50	0.00	0.00	1.00	3.00	3.00	3.00	3.00	935	126	0.126	13.5	86.5	3.9	69388	548900	54.89	Gravel / granular
C516	Turbine 39	249702	799389	Unplanted	C516b	-	-	-	1	Medium-dark brown	50-77	0.00	0.00	1.00	3.00	2.00	2.00	3.00	786	178	0.178	22.6	77.4	4.3	55127	310200	31.02	-
C537	Turbine 19	253527	799465	Unplanted	C537a	28	30	4	1	Dark brown	0-20	0.00	0.00	1.00	2.00	1.00	2.00	4.00	748	181	0.181	24.2	75.8	3.7	98291	542100	54.21	Rock
C558	Turbine 03	248343	799608	Unplanted	C558a	44	40	3	1	Medium brown	0-30	0.00	0.00	1.00	3.00	2.00	2.00	3.00	539	118	0.118	21.8	78.2	4.5	51772	440400	44.04	Rock
C579	Turbine 17	253074	799659	Unplanted	C579a	66	66	4	1	Medium brown	0-50	0.00	0.00	1.00	2.00	3.00	2.00	3.00	823	102	0.102	12.4	87.6	4.3	55093	541600	54.16	Rock
C579	Turbine 17	253074	799659	Unplanted	C579b	-	-	-	1	Medium-dark brown	50-56	0.00	1.00	0.00	2.00	2.00	3.00	3.00	847	104	0.104	12.3	87.7	4.0	58385	558600	55.86	Rock
C751	Turbine 12	249969	800345	Unplanted	C751a	37	31	0	1	Dark brown	0-21	0.00	0.00	1.00	3.00	3.00	2.00	3.00	655	161	0.161	24.6	75.4	4.4	83748	520600	52.06	Rock
C894	Turbine 29	254461	801148	Unplanted	C894a	50	49	14	1	Dark brown	0-39	0.00	1.00	0.00	1.00	1.00	2.00	5.00	730	116	0.116	15.9	84.1	4.3	64465	556800	55.68	Rock
C929	Turbine 37	253160	800367	Unplanted	C929a	49	48	17	1	Dark brown	0-38	0.00	0.00	1.00	2.00	2.00	3.00	4.00	785	109	0.109	13.9	86.1	4.3	58216	532000	53.20	Gravel / granular

+ see Section 4.2 Methodology for description
# see Annex B for description

ANNEX B VON POST SCALE OF HUMIFICATION

Degree of Decomposition	Nature of Squeezed Liquid	Proportion of Peat Extruded	Nature of Plant Residues	Description
H1	Clear, Colourless	None	Plant structure unaltered. Fibrous, elastic	Undecomposed
H2	Almost clear, yellow-brown	None	Plant structure distinct, almost unaltered.	Almost undecomposed
H3	Slightly turbid, brown	None	Plant structures distinct, most remains easily identifiable	Very weakly decomposed
H4	Strongly turbid, brown	None	Plant structure distinct, most remains identifiable	Weakly decomposed
H5	Strongly turbid, contains a little peat in suspension	Very little	Plant structure clear but indistinct and difficult to identify	Moderately decomposed
H6	Muddy, much peat in suspension	One third	Plant structure indistinct but clearer in residue, most remains undefinable	Well decomposed
H7	Strongly muddy	One half	Plant structure indistinct	Strongly decomposed
H8	Thick mud, little free water	Two thirds	Plant structure very indistinct – only resistant material such as roots	Very strongly decomposed
H9	No free water	Nearly all	Plant structure almost unrecognisable	Almost completely decomposed
H10	No free water	All	Plant structure not recognisable, amorphous	Completely decomposed

ANNEX C PHOTOGRAPHS OF CORE SAMPLES

Photo 1: Core Sample C516a – Turbine 39

Photo 2: Core Sample C516b – Turbine 39

Photo 3: Core Sample C537a – Turbine 19

Photo 4: Core Sample C558 – Turbine 03

Photo 5: Core Sample C579a – Turbine 17

Photo 6: Core Sample C579b – Turbine 17

Photo 7: Core Sample C7521a– Turbine 12

Photo 8: Core Sample C894a – Turbine 29

Photo 9: Core Sample C929a – Turbine 37