

APPENDIX 6A

OUTLINE PEAT MANAGEMENT PLAN



RWE Renewables Onshore Wind UK LTD

Eredine Wind Farm

Outline Peat Management Plan





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Eredine Wind Farm

Outline Peat Management Plan

Outline Peat Management Plan (version 2) Internal

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WSP

7 Lochside View

Edinburgh Park

Edinburgh, Midlothian

EH12 9DH

Phone: +44 131 344 2300

WSP.com



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Prepared by	Graham Burt-Smith	Graham Burt-Smith		
Signature				
Checked by	Glen Robson	Glen Robson		
Signature				
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Contents

Executive summary

1	Introduction	5
1.1	Background	5
1.2	Guidance	5
1.3	Definition of Peat	6
1.4	National Planning Framework 4	7
1.5	Report Structure	8
2	Peat Balance	9
2.1	Desk Study	9
2.2	Peat Surveys	9
2.3	Peat Excavation	11
2.4	Peat Reinstatement	15
2.5	Peatland Restoration and Borrow Pit Reinstatement	20
2.6	Summary	21
3	Peat Protection Measures	25
3.1	Introduction	25
3.2	Protection of <i>In Situ</i> Peat	25
3.3	Stripping and Excavation of Peat	25
	Turves (Acrotelmic Peat)	25
	Deep (Catotelmic) Peat	26
3.4	General Principles for Temporary Peat Storage	26
3.5	Stockpile Monitoring	28
3.6	Peat Reinstatement Methods	29
4	Roles and Responsibilities	31

5	Monitoring and Inspection	32
5.1	Activities	32
5.2	Corrective Actions	33
5.3	Audit Procedure	33
	Peat Stripping and Stockpiling Documentation and Plans	33
	Reporting of Non-Compliances	34
5.4	Criteria for Cessation of Works	35
5.5	Toolbox Talks	35
6	References	36

Tables

Table 2-1 - Assessment of Peat Extraction Volumes	12
Table 2-2 - Proposed uses of excavated peat for reinstatement/ restoration together with indicative volumes ³	16
Table 2-3 - Borrow Pit Reinstatement Proposals (see Annex C for a more detailed breakdown)	22
Table 3-1 - Temporary peat storage criteria	27
Table 4-1 - Summary of oPMP roles and responsibilities	31
Table 5-1 - Checklist for checking peat stockpiles and storage of turves	32
Table 5-2 - Indicative Audit Checklist	34
Table 5-3 - Indicative Toolbox Talks	35

Figures

Figure 1	Site Location
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Annexes

Annex A - Von Post Humification Scale



Annex B - Peat Excavation Volumes

Annex C - Peat Reinstatement Volumes

Annex D - Figures

Executive summary

This outline Peat Management Plan (oPMP) has been produced to set out how impacts upon peat will be minimised as reasonably practicable, during construction of the proposed Eredine Wind Farm.

Policy 5 of the Scottish Government's National Planning Framework 4 (NPF4) (February 2023) states that proposed developments on peat must comply with the mitigation hierarchy and this has been a guiding principle during the design of the proposed Eredine Wind Farm. Full details of the way that potential impacts upon peat have been minimised during the design process are set out in **Chapter 3: Design Evolution and Alternatives**

The indicative volume of excavated peat is 254,199m³, which has been calculated from the 10,083 peat depth measurements that have been taken across the proposed infrastructure locations during various peat probing surveys that were carried out between 2020 and 2023.

The oPMP identifies that all excavated peat can be beneficially re-used and also sets out:

- A series of peat protection measures that will be implemented during stripping and excavation of peat, temporary peat storage and subsequent reinstatement; and
- Roles/ responsibilities and monitoring requirements, which will form the basis against which the Development Site will be monitored by the Environmental Team and Site Construction Manager.

Whilst the principles set out within the oPMP will help to ensure that potential impacts on peat are further minimised in accordance with Policy 5 of NPF4, it is expected that a full PMP will be prepared as a condition of any planning consent. This will set out further ways in which impacts on peat will be avoided or minimised during construction, including the use of micro-siting to avoid or minimise excavation of peat wherever practicable.

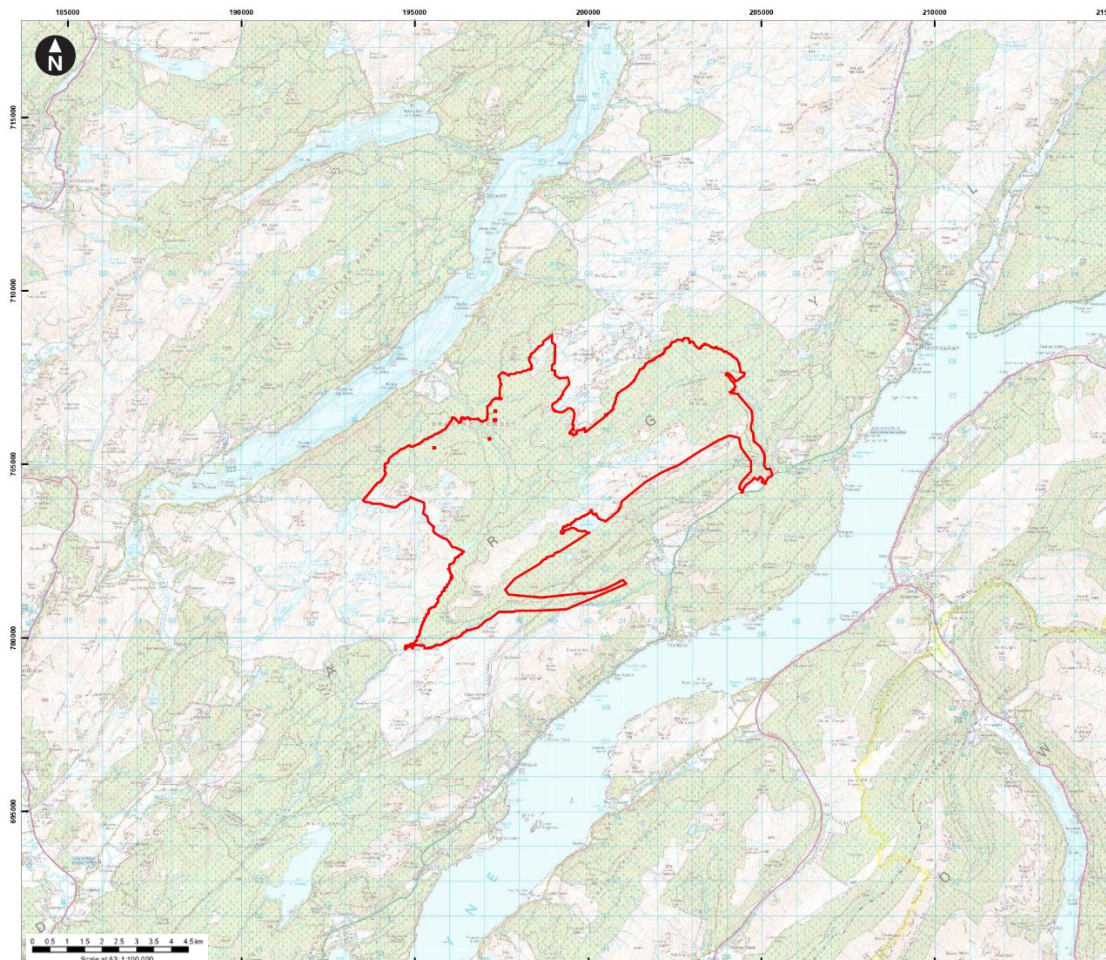
Any further iteration of this oPMP should also consider the options for re-use of excavated peat in peatland restoration, taking into account evidence from sites where this has been attempted and best practice at the time.

Introduction

Background

RWE Renewables UK Onshore Wind Limited ('the Applicant') is submitting an application under section 36 of the Electricity Act 1989, as amended, seeking consent to construct and operate a wind farm comprising up to 22 wind turbines and associated infrastructure including access tracks, a control building and substation compound and a battery storage facility (the 'Proposed Development'). The Proposed Development is located in Argyll and Bute approximately 4.5km to the west of Inveraray and approximately 17km north of Lochgilphead. The majority of the Development Site, which is centred at coordinates easting (E) 199418, northing (N) 704212, is located within Eredine Forest and comprises commercial coniferous plantation. The planning application boundary (encompassing the 'Development Site') is shown in **Figure 1**.

Figure Error! No text of specified style in document. Site Location



Guidance

This oPMP has been prepared in general accordance with the following guidance and best practice documents:

- Scottish Renewables and SEPA (2012) Developments on Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste, Version 1;
- Scottish Renewables, Scottish Natural Heritage, SEPA, Forestry Commission (2019) Good Practice During Wind Farm Construction, 4th Edition;
- Scottish Government (2017) Guidance on Developments on Peatland - Peatland Survey ;
- SEPA (undated) Regulatory Position Statement – Developments on Peat;
- Forestry Civil Engineering and Scottish Natural Heritage (2010) Floating Roads on Peat;
- SEPA Guidance (2017); WST-G-052: Developments on Peat and Off –Site Uses of Waste Peat, Version 1; and
- NatureScot - Peatland Action: Peat depth and peat condition survey guidance and recording form guidance.

As well as providing a quantitative assessment of peat volumes that will be excavated, the oPMP sets out procedures to minimise this and presents a range of methods and control measures to ensure that peat resources are protected as far as reasonably practicable.

Definition of Peat

Peat is an organic material formed by the accumulation of plant matter at various stages of decomposition, formed over many thousands of years. The characteristics of peat vary widely depending on, but not limited to, the nature of plant material that the peat is derived from, the degree of decomposition, the type of peat bog and the quality of the water sustaining the bog. The Scottish Government defines peat and deep peat as follows (Scottish Government, 2017):

- Peaty soils (or Organo-soils): soils with an organic horizon <0.5m thick;
- Peat: soils with an organic surface horizon greater than 0.5m in thickness and an organic matter content exceeding 60%; and
- Deep peat: peat as defined above, with a depth greater than 1.0m.

The recent Wildlife Management and Muirburn (Scotland) Bill (2024), section 20(1) defines peat as a soil which has an organic content of more than 60%. In the same bill, peatland is defined as land where the soil layer of peat has a thickness of greater than 40 cm.

There are two distinct types of peat, termed acrotelmic and catotelmic peat. The interface between the two layers is controlled by the position of the water-table. The upper layer of the peat (the acrotelm) is typically fibrous and comprises the living and partially decomposed peat forming plant matter (vegetation). The thickness of the acrotelm is typically controlled by seasonal variations in the water-table that creates cycles of aerobic and anaerobic conditions near the surface. The catotelm is situated below the minimum

average depth of the water-table resulting in permanent anaerobic decomposition of the plant matter and the formation of less fibrous sometimes amorphous peat.

National Planning Framework 4

Policy 5 of the Scottish Government's National Planning Framework 4 (NPF4) (February 2023) states that:

"Development proposals will only be supported if they are designed and constructed:

- i. In accordance with the mitigation hierarchy by first avoiding and then minimising the amount of disturbance to soils on undeveloped land; and*
- ii. In a manner that protects soil from damage including from compaction and erosion, and that minimises soil sealing."*

The mitigation hierarchy is:

Mitigation hierarchy	The mitigation hierarchy indicates the order in which the impacts of development should be considered and addressed. These are: i. Avoid – by removing the impact at the outset ii. Minimise – by reducing the impact iii. Restore – by repairing damaged habitats iv. Offset – by compensating for the residual impact that remains, with preference to on-site over off-site measures.
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The mitigation hierarchy has been a guiding principle in the design of the Proposed Development.

Peat with a mean depth greater than 1m has been avoided as far as possible together with areas where spot depths exceed 2m. Where avoidance of deeper peat has not been possible, after taking into account all other environmental and engineering constraints, impacts upon peat have been minimised as far as reasonably practicable. For example, the proposed locations of T3, T7, T12, T15 and T20, along with associated access tracks, were relocated in November 2023 following discussions with SEPA to reduce impacts upon peat.

Full details of the way that potential impacts upon peat have been minimised during the design process are set out in **Chapter 3: Alternatives and Design Evolution**.

Whilst the principles set out within the oPMP will help to ensure that potential impacts on peat are further minimised in accordance with Policy 5 of NPF4, a full PMP will be prepared as a condition of any planning consent. This will set out ways in which impacts on peat will be avoided or minimised during construction, including the use of micro-siting to prevent or minimise excavation of peat wherever practicable.

This oPMP quantifies the expected volumes of peat extraction based upon information collated to date, identifies suitable options for re-use of excavated peat and sets out a range

of methods and control measures to ensure that peat resources are protected as far as possible during construction.

If consented, microsinning within agreed limits¹, will continue to be used to further reduce peat excavation where possible.

Report Structure

The remaining sections within this oPMP are set out as follows:

- Section 2 sets out the peat balance comprising the estimated volume of peat that will need to be excavated together with reinstatement/ restoration proposals;
- Section 3 sets out the peat protection measures that will be adopted;
- Section 4 sets out the roles and responsibilities for implementation of the oPMP; and
- Section 5 provides a reference list.

¹ 50m for wind turbines and most associated infrastructure proposed, with a 100m microsinning allowance required for certain elements (e.g. construction compounds) in contingency for unforeseen ground conditions due to the existing forestry; as described in Table 4.1 of EIA Report Chapter 4: Description of the Proposed Development.

Peat Balance

Desk Study

A description of site characteristics (including topography, bedrock geology, superficial deposits and soils and carbon) and peat conditions (including peat depths, peat locations and a summary of peat sampling that has been carried out) is provided in **Technical Appendix 6B: Peat Slide Risk Assessment**.

A summary of the key elements relevant to this oPMP are as follows:

- The 1:250,000 Soil Map (National Soil Map) indicates that soils within the Development Site are dominated by peat and peaty soils (see **Technical Appendix 6B: Peat Slide Risk Assessment** - Figure 6B-3);
- The Carbon and Peatland 2016 map (Scottish Natural Heritage, 2016), shows that peatland is divided into two primary categories of Class 2 (carbon-rich soil and deep peat dominated by peatland habitats) and Class 5 (no peatland habitat recorded) (see **Technical Appendix 6B: Peat Slide Risk Assessment** - Figure 6B-4),
- Areas of open moorland within the south-east, north and west of the Development Site are recorded as Class 2 carbon-rich soil and deep peat dominated by peatland habitats. These extend over approximately 39% of the area surveyed and can be sub-divided into the following habitats (see **Technical Appendix 10B: Phase 1 Habitat and National Vegetation Classification Survey and Peatland Condition Report**):
 - Mire habitats extend over approximately 11.5% of the Development Site and buffer zone;
 - Heathland (predominantly wet heath) extends over approximately 22.3% of the Development Site and buffer zone;
 - Open water extends over approximately 3.1% of the Development Site and buffer zone; and
 - Grassland extends over less than approximately 0.01% of the Development Site and buffer zone.
- Areas of commercial forestry are recorded as Class 5 (no peatland habitat recorded) and extend over approximately 61% of the area surveyed.

Peat Surveys

A series of peat depth surveys have been carried out within the Development Site. These are in general accordance with published guidance (Scottish Government, 2017):

- A Phase 1 peat depth survey was undertaken over two visits in August and October 2020;
- A detailed Phase 2 peat depth survey was undertaken on the 'design chill' layout in October 2022. This included an extension to the Phase 1 survey area in the north-east of the Development Site; and

- A supplementary Phase 2 peat survey was carried out on the 'design freeze' layout in July and August 2023.

Further details of these surveys and subsequent data analysis/assessment are provided in the **Technical Appendix 6B: Peat Slide Risk Assessment**.

In summary, 10,083 peat depth measurements have been taken. These reveal peat depths ranging between 0 and 6m. A total of 4,800 survey locations (~47.6%) have recorded peat depths $\geq 0.5\text{m}$ and the calculated mean of all peat depths $\geq 0.5\text{m}$ is 1.09m. **Figure 6A-1 (Annex D)** presents a composite plan of all peat depth data and an interpolated peat depth map for the Development Site².

The interpolated peat depth map indicates that Development Site contains a mosaic of confined and semi-confined blanket peat controlled by the topography. The deepest areas of peat are typically found within topographic hollows, between minor ridge lines and near some lochs and lochans. There are eight principal areas where peat is generally $>1.0\text{m}$ deep as follows:

- Around Loch Sidheannach;
- Along the upper Abhainn a' Bhealaich;
- North-west of T19;
- Between Loch Garbh and Loch Leacann;
- At the headwater of the Douglas Water north of T5;
- In the far north-east in the Coire Dubh-ghlas area;
- Between T14 and T18; and
- Between T9 and T14.

The peat depth map also indicates that peat is generally more continuously $>0.5\text{m}$ deep on the west and south-west facing slopes of An Suidh as well as the mid and lower north-east facing slopes of Beinn Dubh Airigh. Peat is generally absent from the Beinn Dearg and Beinn Laoigh ridges.

During the October 2022 peat depth survey, a total of 75 no. Russian core samples were also recovered for description in general accordance with a modified von Post classification scheme (**Annex A**) (Hobbs, 1986). The peat cores were all taken from areas where the peat depth exceeded 0.5m but covered a variety of land uses as well as different topography.

The peat cores reveal that the peat generally has a typical two-layer profile, with 18 no. locations exhibiting a triple or four-layer profile. There was no significant difference in the

² This has been collated using ESRI ArcGIS and the Natural Neighbour interpolation method (for further details, please see Technical Appendix 6B: Peat Slide Risk Assessment).

peat characteristics between forested and open habitat peatland. A typical degree of humification is set out below:

- Upper layer - H5 (moderately decomposed peat containing a fair amount of amorphous material. Plant structure recognisable though somewhat vague).
- Second layer - H7 (strongly decomposed peat with much amorphous material and faintly recognisable plant structure).
- Lower layers - H8 (strongly decomposed peat with much amorphous material and very indistinct plant structure).

Peat Excavation

Indicative volumes of excavated peat have been calculated using the peat depth data gathered during the surveys outlined in section 2.2.

Table Error! No text of specified style in document.-4 summarises the estimated excavation volumes of peat and peaty soils that will need to be excavated for the construction of the Proposed Development. Volumes of excavated peat have been calculated using the footprint of each element of the Proposed Development and mean peat depths in affected locations using a 2-D GIS model. This includes an allowance for additional excavations that will be required for batters etc but excludes any detailed allowance for cut and fill that will only become known once a 3-D model has been created (this represents detailed design and is typically only developed once a wind farm is consented).

Annex B provides a detailed breakdown of the anticipated volume of excavated peat, broken down into each of the elements as set out in **Table Error! No text of specified style in document.-1**.

Table Error! No text of specified style in document.-1 - Assessment of Peat Extraction Volumes³

Infrastructure	Peaty soils (m ³)	Acrotelmic Peat (m ³)	Catotelmic Peat (m ³)	Volume (m ³)	Assumptions regarding size of excavation
Turbine foundations	3,081	4,994	2,807	10,882	The total area of excavation for each turbine foundation is 908m ² . The total area to be excavated is 19,976m ² .
Crane Hardstandings	5,871	11,349	6,782	24,002	Each turbine location will have a main crane hardstanding and two auxiliary crane hardstandings. The total area of excavation for crane pads at each turbine location is 1,746m ² . The total area to be excavated is 38,412m ² .
Blade Laydown Areas	3,010	8,093	4,333	15,436	The total area of excavation for each blade laydown area is 1,245m ² . The total area to be excavated is 27,390m ² .
Substation	0	9,900	2,020	11,920	The total area of excavation is 19,800m ² .
Construction Compounds	863	2,500	41	3,404	The total area of excavation is 7,500m ² .
New Access Tracks (Cut)	25,947	34,316	14,132	74,395	The total length of new cut access track is 18,830m. The running width will generally be an average of 5m,

³ Please note that figures are based on GIS derived area data to multiple decimal places and have been rounded for presentation of Table 2.1.

Infrastructure	Peaty soils (m ³)	Acrotelmic Peat (m ³)	Catotelmic Peat (m ³)	Volume (m ³)	Assumptions regarding size of excavation
					but calculations include an assumed excavated width of 8m to allow for drainage. The total area to be excavated is 150,640m ² .
Upgraded Access tracks (Cut)	13,430	14,577	6,028	34,035	The total length of upgraded cut access track is 16,679m. The existing width is an average of 3m. The running width will generally be an average of 5m, but calculations include an assumed additional excavated width of 5m to allow for drainage. The total area to be excavated is 83,395m ² .
Turning Heads (Cut)	1,376	1,818	945	4,139	The total area of excavation is 7,271m ² .
New Access Tracks (Floating)	0	0	0	0	It is assumed that all new track across peat that is deeper than 1m will be floated. Consideration has been given to floating tracks where peat is deeper than 0.5m. However, tracks where the peat depths are less than 5m are proposed to be located on slopes where the gradient exceeds 5 degrees and/ or the crossfall would exceed 2 degrees. As such these areas are unsuitable for floating roads. The total length of new floating track is 3,338m. The running width will generally be 5m, but it is assumed that the total width will be an average of 8m. The total area of new floating roads will be 26,704m² but no excavated peat will be required to create these.

Infrastructure	Peaty soils (m ³)	Acrotelmic Peat (m ³)	Catotelmic Peat (m ³)	Volume (m ³)	Assumptions regarding size of excavation
Upgraded Access tracks (Floating)	0	0	0	0	It is assumed that all upgraded track across peat that is deeper than 1m will be floated. The total length of upgraded floating track is 1,939m. The running width will generally be 5m, but it is assumed that the total width will be an average of 8m. The total area of upgraded floating roads will be 9,695m ² but no excavated peat will be required to create these.
Turning Heads (Floating)	0	0	0	0	The total area of floating turning heads will be 909m ² but no excavated peat will be required to create these.
Cable Trenches	6,794	12,688	10,652	30,134	The total length of cable trenches is estimated to be 24,313m. It is assumed that a 2m wide trench will be required and the total area to be excavated will therefore be 48,626m ² .
Borrow Pits	29,006	15,780	1,066	45,852	Nine borrow pit search areas have been identified extending over an area of 142,478m ² .
TOTALS	89,379	116,014	48,806	254,199	

Peat Reinstatement

Figure 6A-2 (Annex D) identifies indicative temporary peat storage areas that could be used prior to re-use/reinstatement. **Table Error! No text of specified style in document.- 2** outlines how excavated peat and peaty soils can be reused/ reinstated together with indicative volumes and associated assumptions. A more detailed breakdown of the calculation for each element is presented in **Annex C**.

Table Error! No text of specified style in document.-2 - Proposed uses of excavated peat for reinstatement/ restoration together with indicative volumes³

Infrastructure	Peaty soils (m ³)	Acrotelmic Peat (m ³)	Catotelmic Peat (m ³)	Volume (m ³)	Assumptions for proposed re-use
Turbine Foundations	827	7,550	0	8,378	The turbine bases will be reinstated apart from the turbine base itself and a 5m surrounding stoned walkway. Only peaty soils or acrotelmic peat will be used and the depth of reinstatement will be 0.5m, or less where the previous depth was less.
Crane Hardstandings	53	4,946	0	4,999	Crane hardstandings will not be reinstated or reduced in size following construction but will be retained for future turbine maintenance. The crane hardstandings are to be reinstated at the edges of the hardstanding not connected to the access track (three sides) using peaty soils or acrotelmic peat to a maximum depth of 0.5m. The width of the reinstatement will be between 3m and 4m subject to local topography and to achieve a good tie-in to adjacent vegetation.
Blade Laydown Areas	3,010	8,093	4,333	15,436	The blade laydown areas will be fully reinstated to the original peat profile.
Substation	0	100	0	100	The batter will be reinstated around two sides of the substation using peaty soils or acrotelmic peat to a depth of 0.5m. The width of the reinstatement will be between 3m and 4m subject to local topography and to achieve a good tie-in to adjacent vegetation.

Infrastructure	Peaty soils (m ³)	Acrotelmic Peat (m ³)	Catotelmic Peat (m ³)	Volume (m ³)	Assumptions for proposed re-use
Construction Compound	863	2,500	41	3,404	The construction compound will be fully reinstated to the original peat profile.
New Access Tracks (Cut) ⁴	25,947	32,666	1,650	60,263	For new cut tracks, the verges will be reinstated to ensure that a suitable tie-in is created with the surrounding vegetation. The reinstated area will generally not be more than 0.5m deep and will be up to 4m wide along either side of the track using peaty soils or acrotelmic peat, although suitable catotelmic peat can be used subject to approval by the Ecological Clerk of Works (ECoW).
Upgraded Access Tracks (Cut) ⁴	13,430	14,577	0	28,007	For upgraded cut tracks, the verge will be reinstated to ensure that a suitable tie-in is created with the surrounding vegetation. The reinstated area will generally not be more than 0.5m deep and will be up to 4m wide along the upgraded side of the track using peaty soils or acrotelmic peat although suitable catotelmic peat can be used subject to approval by the ECoW.

⁴ The calculations in this table are based upon a maximum peat depth of 0.5m; however, reinstatement may extend to a depth of up to 1.0m where this is required to create a suitable tie in with the surrounding vegetation and subject to approval by the ECoW.

Infrastructure	Peaty soils (m ³)	Acrotelmic Peat (m ³)	Catotelmic Peat (m ³)	Volume (m ³)	Assumptions for proposed re-use
Turning Heads (Cut) ⁴	1,376	1,818	0	3,193	For cut turning heads, the verge will be reinstated to ensure that a suitable tie-in is created with the surrounding vegetation. The reinstated area will generally not be more than 0.5m deep and will be up to 4m wide around the turning heads using peaty soils or acrotelmic peat although suitable catotelmic peat can be used subject to approval by the ECoW.
New Access Tracks (Floating)	0	13,549	0	13,549	For new floating access tracks, the verge can be reinstated using peaty soils or acrotelmic peat, subject to approval by the ECoW. Reinstated verges would be similar to cut access tracks with peat depth limited to 0.5m.
Upgraded Access Tracks (Floating)	4,625	0	0	4,625	For upgraded floating access tracks, the verge can be reinstated using peaty soils or acrotelmic peat, subject to approval by the ECoW. Reinstated verges would be similar to cut access tracks with peat depth limited to 0.5m.
Turning Heads (Floating)	454	0	0	454	For turning heads that are floated the verges can be reinstated using peaty soils or acrotelmic peat, subject to approval by the ECoW. Reinstated verges would be similar to cut access tracks with peat depth limited to 0.5m.

Infrastructure	Peaty soils (m ³)	Acrotelmic Peat (m ³)	Catotelmic Peat (m ³)	Volume (m ³)	Assumptions for proposed re-use
Cable Trenches	6,794	12,688	10,652	30,134	Cable trenches will be fully reinstated to the original peat profile.
Peatland Restoration	0	0	0	0	It is considered that surplus excavated peat could be re-used in peatland restoration, which is a favoured option and will be used where feasible. However, it is not possible to commit to or determine an accurate volume at this stage (see Section 2.5).
Borrow Pits	32,000	17,527	32,129	81,656	Borrow pits will be reinstated to a maximum depth of 0.8m (see Section 2.5 for maximum depth for each borrow pit).
TOTALS	89,379	116,014	48,806	254,199	

Peatland Restoration and Borrow Pit Reinstatement

Considerable thought has been given to the options for the re-use of excavated peat which cannot be re-used for reinstatement at/ around infrastructure.

This has included the potential for re-use in peatland restoration, which is a favoured option and will be used where feasible.

The outline Habitat Management Plan (oHMP) (**Technical Appendix 10H**) identifies many locations throughout the Development Site where peatland restoration would be feasible. Four specific prescriptions are identified where surplus excavated peat from the Proposed Development could potentially be beneficially used:

- Infilling of bare hollows and gulleys – potential re-use of excavated peat to infill areas where peat has been eroded/ lost and the current lack of vegetation indicates that erosion will continue;
- Hag, gully and bare peat restoration – these restoration techniques aim to stabilise and re-vegetate the affected areas using turves that are normally sourced from local “borrow pits” (NatureScot, undated). However, excavated peat from the Proposed Development could provide these turves; and
- Drain blocking.

Given the extent of the opportunities that have been identified for peatland restoration within the oHMP, it is expected that peat that has been excavated for the Proposed Development could be used in helping to achieve the peatland restoration goals.

However, as there are currently no known examples of wind farm related peatland restoration achieving the aims originally envisioned, a precautionary approach has been adopted in presenting the peat reinstatement calculations for this oPMP, which assume that no surplus excavated peat will be re-usable in peatland restoration. This is presented to demonstrate that all surplus excavated peat could be beneficially re-used in restoring borrow pits.

Table Error! No text of specified style in document.-3 presents the key measurements and the rationale for the proposed borrow pit reinstatement. A more detailed breakdown is presented in **Annex C**.

This shows that surplus peat which cannot be used for reinstatement around the immediate area from which it is excavated could be used for borrow pit restoration, with maximum depths of:

- 0.80m in borrow pits 1 & 2;
- 0.75m in borrow pits 8 & 9; and
- 0.50m in borrow pits 4, 5 & 6.

Borrow pits 3 and 7 will be fully reinstated to the existing profile as the current status of the areas indicates that reinstating them with peat would not be feasible.

A further iteration of this oPMP should consider the options for re-use of excavated peat in peatland restoration, taking into account evidence from sites where this has been attempted and best practice at the time. Should a satisfactory use be identified for excavated peat in peatland restoration, this would reduce the volume of peat for borrow pit restoration; however, it is unlikely that this would be a significant reduction.

Summary

Table Error! No text of specified style in document.-1 indicates that the total volume of peat that will be stripped and excavated during construction of the Proposed Development will be approximately 254,199m³, all of which can be beneficially re-used for reinstatement/restoration (**Table Error! No text of specified style in document.-2** and **Table Error! No text of specified style in document.-3**).

Table Error! No text of specified style in document.-3 - Borrow Pit Reinstatement Proposals (see Annex C for a more detailed breakdown)

Borrow Pit	Area (m ²)	Current mean peat depth (m)	Reinstated mean peat depth	Rationale
1	13,693	0.25	0.80	The maximum depth of peat recorded in the north of this borrow pit search area is 2.36m. No habitat mapping is available as the area is heavily forested. Peat probes suggest that there are small pockets of very deep peat (>2.0m) surrounded by peat between 0.5m and 1.0m deep predominantly in the north of the search area, but also on the southeastern edge. Quarrying should seek to avoid these areas and reinstatement to a depth of ~0.8m would tie into them.
2	31,559	0.53	0.80	The maximum depth of peat recorded in this borrow pit search area is 2.32m. No habitat mapping is available as the area is heavily forested. Peat probes suggest that there are small, but regular, pockets of deep peat (>1.0m) throughout the search area. Quarrying should seek to avoid these areas where possible and reinstatement to a depth of ~0.8m would tie into them.
3	9,920	0.02	0.02	This area supports very shallow peaty soils and will be fully reinstated to the existing profile.
4	15.167	0.15	0.50	The maximum depth of peat recorded in this borrow pit search area is 0.53m. No habitat mapping is available for this area. Peat probes suggest that there are three small pockets of peat >0.5m, generally towards the centre and southeast of the search area. Quarrying should seek to avoid these areas and reinstatement to a depth of ~0.5m would tie into them.

Borrow Pit	Area (m ²)	Current mean peat depth (m)	Reinstated mean peat depth	Rationale
5	9,295	0.26	0.50	The maximum depth of peat recorded in this borrow pit search area is 0.96m. No habitat mapping is available as the area is forested. Peat probes suggest that there are small pockets of peat >0.5m, generally in the southeast of the search area. Quarrying should seek to avoid these areas and reinstatement to a depth of ~0.5m would tie into them.
6	20,715	0.20	0.50	The maximum depth of peat recorded in this borrow pit search area is 1.17m. Habitat mapping indicates that approximately 50% of this search area supports wet heath (M15d). Peat probes suggest that There is an area of peat that is between 0.5m and 1.0m deep that extends across most of the northern extent of the search area. Quarrying should seek to avoid this area and reinstatement to a depth of ~0.5m would tie into this and the existing wet heath.
7	6,197	0.12	0.12	Although the maximum depth recorded is 0.53m, this was only on one location and this area generally supports very shallow peaty soils. Habitat mapping shows that the area is heavily forested. This borrow pit will be fully reinstated to the existing profile.
8	21,364	0.47	0.75	The maximum depth of peat recorded in the central southern part of this borrow pit search area is 2.01m. No habitat mapping is available as the area is heavily forested. Peat probes suggest that there are pockets of very deep peat >2.0m surrounded by peat between 0.5m and 1.0m deep predominantly in the south of the search area, but also in the far northeast. Quarrying should avoid these areas and reinstatement to a depth of ~0.75m would tie into them.

Borrow Pit	Area (m ²)	Current mean peat depth (m)	Reinstated mean peat depth	Rationale
9	14,568	0.40	0.75	The maximum depth of peat recorded in the central southern part of this borrow pit search area is 1.71m. No habitat mapping is available as the area comprises felled forestry. Peat probes suggest that there is a quite extensive pocket of deeper peat in the west of the search area, and this is bordered by peat which is between 0.5m and 1.0m deep. Quarrying should avoid this area and reinstatement to a depth of ~0.75m would tie into it.

Peat Protection Measures

Introduction

Where peat excavation is unavoidable, care must be taken in its handling, transporting and stockpiling to protect its structure and strength as far as possible. The movement of peat over long distances will be minimised and peat will be stored locally for re-use as soon as practicable. Double handling will be avoided or minimised, and a robust planning and monitoring programme will be developed to ensure that peat and mineral soils are not mixed.

Protection of *In Situ* Peat

The layout of the Proposed Development has already taken into account constraints relating to sensitive areas of deep peat. The layout of the Proposed Development will be marked on an Access Plan, which will provide a designated controlled route and a permissible corridor within which service vehicles and plant can operate. The purpose of the Access Plan is to protect in situ peat in areas that are not affected by the Proposed Development and to prevent unnecessary damage by vehicle and plant movements across these areas. The following rules will apply to the Access Plan:

- There will be no vehicle access to areas of the Development Site outwith the area marked on the Access Plan (i.e., the layout/working area marked on the plan).
- Servicing or refuelling activities will only take place within clearly designated areas within the Access Plan which have been identified in the Construction Environmental Management Plan (CEMP).
- Laydown of materials (either construction materials or waste materials) will take place only within designated areas within the Access Plan. There will be no laydown, unless identified in the construction drawings, of any type of materials either within the access route corridors or anywhere outwith the designated areas. Laydown areas will be checked with the peat landslide risk assessment prior to their designation.

Access routes and working areas will be clearly delimited throughout the construction phase to ensure that peat compaction and damage in areas not directly involved in the works will be avoided. The construction works will be phased to ensure that peat is stripped in each part of the Development Site ahead of mineral subsoil.

Stripping and Excavation of Peat

Turves (Acrotelmic Peat)

In all locations where there is an organic surface layer, the stripping and excavation method(s) to be used in each part of the Development Site will be agreed in advance. Wherever possible, a 360 degree excavator will be used to permit stripping of large-scale surface peat turves, with their vegetation intact. Ideally these should be a minimum of 0.5m

deep and with an area up to a maximum of 1m². However, the depth and scale will depend on the depth, consistency, and condition of the surface peat at each location and the plant used for stripping. The general rule should be that the largest possible turf should be stripped, which allows it to remain intact.

The turves will be transferred intact, using for example, the bucket of the excavator, to their temporary storage location where they will be placed with vegetation upright. Geotextile will be used where necessary (to be confirmed by the ECoW) to ensure that underlying vegetation and peat is protected as much as possible from the effects of temporary storage.

Deep (Catotelmic) Peat

Where excavation of catotelmic peat is necessary it is more likely to have reduced structure (depending on its water content and fibrosity) and could be very wet. If possible, it should be transferred straightaway to a designated location for re-use. If not possible, a suitable temporary storage location will be identified in a location which minimises the distance of travel. Storage will be for as short as possible and control measures implemented to minimise damage to the peat (see **section 3.4**).

During peat and soil stripping, handling and temporary stockpiling, all efforts will be made to prevent unnecessary trafficking over peat. Appropriate scale plant will be used, such as 360 degree excavators rather than bulldozers. Double handling will be avoided as much as possible, and a robust planning and monitoring programme will be invoked by the ECoW and Development Site Environmental Manager to ensure that peat and mineral soil are not mixed.

To ensure a minimum amount of damage to peat during stripping activities, strict procedures will be adopted for heavy plant access, stripping and handling/transport of surface, intact, peaty turf and subsurface wetter peat. Antecedent moisture conditions are critical for this and peat stripping and handling will not take place if there are heavy rainfall conditions which exceed those specified for cessation of works (see below).

Where mineral soil is encountered, soil stripping and excavation will generally follow the methodologies recommended for mineral soil by Ministry of Agriculture Fisheries and Food (2000) and the Department for Environment Food and Rural Affairs (2009).

General Principles for Temporary Peat Storage

Separate stockpiles will be created for peat and mineral soil. Documentation and physical control measures will be set in place to prevent accidental mixing and to ensure that peat and mineral soils are appropriately segregated. The principal aim will be to keep peat in a suitable condition for reinstatement/ restoration by minimising problems of erosion, soil compaction, dewatering and instability.

The selection of temporary peat storage locations will consider the environmental constraints including peat landslide risk, avoidance of sensitive peatland habitats and avoidance of water features.

The number and locations of temporary peat storage areas will be chosen to minimise the distance that stripped and excavated peat would have to be transported both at the time of excavation and at the time of replacement/ restoration.

Each storage location must be approved by the site ECoW, taking into account each location's suitability in terms of its proximity to the source of peat, environmental impact, safety, constructability and whether special mitigation measures will be required.

Acrotelmic peat stockpiles will generally be to a depth of no more than 1m. However, where the condition of the peat is suitable and where approved by the ECoW (in consultation with a suitably experienced peat specialist if this is not a primary specialism), peat may be stored to a maximum height of 2m. This would have the advantage of reducing the footprint area of peat storage and the surface area exposed to sunlight and drying.

The ECoW will determine, on a case-by-case basis, whether any drainage control measures need to be applied (e.g. settling ponds, drainage ditches, check dams etc) and whether a bund should be constructed around the perimeter of the peat storage area(s); if so, the bunds will extend to a minimum level of above the toe of the stockpiled peat to restrain surface runoff.

A summary of the stockpiling method for a low water content catotelmic peat is provided below:

- Step 1 - The peat will be loose tipped in heaps to a maximum height of 2m starting at the furthest point in the storage area and working back toward the access point. To avoid compaction, no machinery (even tracked plant) will traverse the stockpile.
- Step 2 - The surface of the stockpile will be lightly tamped and smoothed off with the bucket of an excavator to reduce rainwater infiltration.

Where catotelmic peat is very wet, this will be stored in a purpose-built bunded location with the final peat depth no greater than 1m. Each bunded storage area will be designed with a settling pond to collect run-off and infiltrated rainwater and enable sediment retention. Each settling pond will be designed with appropriate filtration treatment facilities prior to connection into the surface water drainage scheme for the Proposed Development. It will also be regularly inspected and maintained with peat sediment returned to the stockpile as necessary. If significant erosion of the storage area is observed, it should be covered to protect it from further erosion by heavy rainfall and frost during the winter months.

Table Error! No text of specified style in document.-4 sets out criteria for the selection of suitable temporary peat storage areas.

Table Error! No text of specified style in document.-4 - Temporary peat storage criteria

Suitability	Criteria
High	Less than 75m from proposed infrastructure (to minimise extent of construction envelope).

Suitability	Criteria
	More than 50m from watercourses. More than 25m from active ditches or gullies. Avoids active blanket bog vegetation (to be determined by the ECoW, in consultation with a suitably experienced peatland ecologist where necessary). Located and constructed so that erosion and runoff is limited, leachate from the material is controlled, and stability of the existing peatland in the vicinity is not affected. Located on peat that is less than 1m deep. Located in an area with negligible or low peat landslide risk. Avoids groundwater dependent terrestrial ecosystems (GWDTEs).
Moderate	Defined in the same way as High but GWDTEs are present.
Low	Areas which do not meet one or more of the defined criteria (excluding the presence of GWDTEs).

Figure 6A-2 (Annex D) identifies indicative peat storage locations that appear to meet the criteria set out in **Table Error! No text of specified style in document.-4** based upon constraints mapping. Before use, these will need to be ground-truthed by the Principal Contractor and ECoW.

The Principal Contractor will develop a programme of works to identify the specific locations and estimate the volume of peat that will require temporary storage at any one time.

Stockpiles will be designed to include measures that avoid instability of the stockpiles and the run-off of peat laden sediment into watercourses.

Measures to manage and treat run-off and prevent erosion during peat stripping and stockpiling works will be set in place through a series of specific control measures relating to surface water management which may include specifically orientating the stockpile, levelling/benching, bunding to contain stored materials and site-specific drainage to ensure that runoff waters are sufficiently controlled (details of the Drainage Management Strategy will be provided in the CEMP).

Stockpile Monitoring

There will be frequent, routine, and regular inspections of peat in all stockpiles and temporary storage areas as part of the oPMP audit process by the ECoW (see Section 4). The inspections will assess in situ peat physical conditions, integrity of containment, temporary drainage conditions and confirm that stockpile design and management is adequate to prevent erosion and peat landslide. It is recommended that these inspections take place weekly during the stockpile creation and throughout the storage duration, as well as following any heavy/prolonged rainfall events. The inspection should follow the list of

inspection criteria in **Table Error! No text of specified style in document.-6** as a minimum.

Should any problem be observed during regular visual inspections of peat stockpiles, this will invoke implementation of an appropriate corrective action which will be recorded and monitored for effectiveness. Types of corrective actions will include, but will not be limited to:

- Modification of temporary drainage;
- Additional or modified bunding;
- Incorporating of sediment fencing if required;
- Light re-grading to correct any areas of surface erosion; and
- Where necessary, covering with geotextile (that does not prevent rainwater infiltration).

Peat Reinstatement Methods

The characteristics of the excavated peat (e.g., fibrosity and water content) determines its suitability for re-use with the wettest most amorphous peat generally being the least suitable.

For the purpose of this oPMP it has been assumed that the top 0.5m will be acrotelmic peat consisting of fibrous and pseudo-fibrous peat and the surface vegetation.

The following assumptions have been made with regard to the characteristics of the peat and the intended suitable reuses:

- Acrotelmic peat / peaty soils - when stripped with the vegetation, intact turves of acrotelmic peat or peaty soils will be suitable for surface reinstatement, dressing back and tying in infrastructure to the surrounding vegetation and habitats.
- Fibrous catotelmic peat - most suitable for reinstatement beneath the replaced acrotelm. Subject to suitability (to be assessed by the ECoW in consultation with a suitably experienced peat specialist if necessary) it may also be used as a surface layer with careful site selection and management to control erosion and encourage vegetation recovery (e.g., seeding, translocation of vegetation and fencing to deter deer grazing).
- Amorphous peat - peat of this type will only be suitable for reinstatement beneath a surface vegetation layer. The peat may also be used in the restoration of the borrow pits beneath an acrotelmic layer to create conditions which will support development of a mire or wet heath plant community. However, the volume of amorphous peat that will require removal is anticipated to be small given that infrastructure has avoided the need to excavate deep peat where possible.

It is anticipated that all excavated peat that has been stored correctly should be suitable for reuse.

The primary objective of peat reinstatement is to create conditions that will enable the re-establishment of habitats affected by construction that tie into adjacent undisturbed habitats.

A key aim of such reinstatement is also to stabilise the track verges and crane pad batters to prevent peat erosion.

The peat reinstatement process will involve two main stages to recreate the peat profile within the reinstatement areas. The first stage (where peat is to be greater than 0.5m deep) involves the spreading of catotelmic peat, and the second stage involves the replacement of peat turves on top to create conditions that will allow the reinstatement of peatland vegetation. During peat reinstatement the following fundamental measures would be taken to preserve its quality and to ensure the speediest re-establishment of appropriate vegetation:

- Replace, spread out and lightly tamp down the peat in layers in the following order: catotelmic peat then vegetated peat turves, either to the depth of peat recorded prior to construction, or to the pre-determined depth of peat prescribed in the oPMP;
- In all reinstatement activities, avoid over compaction and any unnecessary damage to peat turves; and
- Regularly water the replaced peat turves if reinstatement activities take place in dry summer conditions.

In order to ensure that the minimum amount of peat compaction occurs during placement when heavy machinery is used, the Principal Contractor will develop a method for tipping and spreading of catotelmic peat in each reinstatement compartment. This may include working progressively backward from the furthest point to the track/hardstanding to minimise tracking coupled with spreading and very light tamping down by use of the bucket on a long reach excavator.

Peat handling and placement during reinstatement activities should be scheduled to take place as soon as possible to limit time in storage.

During habitat reinstatement works, mitigation is required to reduce some inevitable damage to peat and peat turves caused by handling and removal of it from temporary stockpiles, transport, placement and re-grading on previously stripped areas. Mitigation measures during this phase of work would closely follow those used during the initial peat stripping phase of work, particularly methods to prevent peat compaction by heavy plant, erosion or peat landslide. This would include, but not be limited to, the implementation of an access and egress plan for vehicles and plant to prevent unnecessary trafficking of reinstated areas, use of appropriate scale, low bearing, plant, such as 360 degree excavators rather than bulldozers, forward planning to minimise double handling of peat and avoidance of mixing peat with mineral soil.

During reinstatement works, measures to manage and treat run-off, and prevent soil erosion during the works will also be set in place through a series of specific drainage control measures set out in the CEMP. In addition, where the vegetation will need to be given time to re-establish it may be necessary to temporarily fence parts of the reinstated areas to prevent damage by deer. The ECoW will monitor the re-establishment of peat forming vegetation and, where problems have been caused by inappropriate or incorrect peat



storage, the appointed Construction Contractor may need to carry out seeding and/or translocation of vegetation to achieve the appropriate revegetation.

Roles and Responsibilities

The implementation of the oPMP will require certain key responsibilities to be assigned to defined roles.

The Principal Contractor will be responsible for ensuring that a named individual has responsibility to supervise and provide quality control on peat stripping, stockpiling and restoration aspects of work. This individual will also have ultimate responsibility to ensure that all peat management and monitoring obligations are met and that the control measures described in this oPMP are correctly implemented.

The ECoW (if necessary, in consultation with a suitably experienced peat specialist) will be responsible for carrying out peat inspections of temporary storage/stockpiling areas and peat conditions in restored areas.

Roles and responsibilities in relation to the oPMP are summarised below in **Table Error! No text of specified style in document.-5**.

Table Error! No text of specified style in document.-5 - Summary of oPMP roles and responsibilities

Role	Responsibility
Principal Contractor	Appointment of a named individual to: Oversee the implementation of the oPMP, checking that prescribed methodologies are being correctly implemented; Provide overall quality control on peat management; Ensure that all peat management and monitoring obligations are met; and Work with the ECoW to ensure the proposed mitigation in the EIA Report and environmental management plans, including both the construction and operational drainage schemes, are implemented.
ECoW	Carries out regular inspection of: peat stripping (checking that peat and mineral soil are not being mixed); peat handling; peat storage/stockpiling; peat condition in temporary storage/stockpiling areas; and peat restoration activities and conditions; Work with the Principal Contractor's named individual with responsibility for peat management to ensure the proposed mitigation in the EIA Report and environmental management plans, including both the construction and operational drainage schemes, are implemented; and Reports any non-compliances to the Principal Contractor's named individual with responsibility for peat management.

Monitoring and Inspection

Activities

Water quality monitoring and regular inspections of restored vegetation conditions and runoff water conditions will be carried out throughout the construction and restoration phases of work. These will act as surrogates for peat monitoring - since both depend heavily on correct peat management, particularly correct temporary storage, and restoration.

The ECoW will carry out:

- Regular inspections of peat surface, peat profile and peat consistency conditions;
- Runoff water quality conditions; and
- Vegetation restoration.

Temporary peat stockpiles and storage of peat turves will be inspected weekly according to the checklist set out in **Table Error! No text of specified style in document.-6**.

Table Error! No text of specified style in document.-6 - Checklist for checking peat stockpiles and storage of turves

No	Criteria to check
1	Any locations where stockpiles have been constructed to higher than the threshold 2m elevation.
2	Any locations where boundaries between segregated peat and mineral soil stockpiles have become amalgamated, causing contamination of peat with mineral soil.
3	Any signs of surface peat erosion – caused by surface water runoff, frost or wind. Any locations of surface water ponding, indicating that stockpile is not shedding water correctly.
4	Any signs of inappropriate vehicle tracking, indicating inappropriate access and trafficking, causing additional unnecessary compaction.

If any non-compliances are found, corrective actions will be invoked as noted below:

- Restored peat conditions will be inspected immediately after restoration to ensure that the methods outlined in this oPMP have been correctly implemented and to inform any corrective actions should they be required.
- Peat physical conditions must be retained as carefully as possible both at the peat storage and peat reinstatement stages. This is particularly important for vegetation establishment.
- Visual inspections of restored areas will record any locations where any of the following conditions occur after reinstatement, in order to formulate remedial actions.

- Bare peat surfaces without peat turf which require stabilisation and re-seeding;
- Any areas of eroding peat turf, for example where slumping of reinstated turf on a gradient has occurred and stabilisation is required; and
- Any areas of ponded water where temporary or permanent adjustment/re-design of the surface water drainage system is required.

Corrective Actions

Should there be any incidences where inspections of peat storage areas or reinstated peat areas identify any issues, corrective actions will be invoked. This procedure is particularly important during

- The storage/stockpiling stage to ensure that there is no risk of peat landslide or peat erosion; and
- The final phase of works, once reinstatement activities are completed, to ensure that any non-compliances are corrected before re-vegetation activities take place.

Should any non-compliances be identified, they will be reported via the oPMP Audit procedure.

Audit Procedure

An auditing process is required to ensure that the correct checks and inspections are carried out and that non-compliances are identified, reported, and rectified, with measures put in place to prevent future occurrences. In addition, it ensures that the required inspections are carried out, correctly interpreted, reported, and acted upon as required.

The auditing process for recording peat conditions in storage/stockpile areas will form part of the overall environmental inspections and audits that will be implemented as part of the CEMP. The oPMP auditing process will include documentation, incident reporting and a procedure for implementing corrective actions. It will also describe any required review procedures.

Peat Stripping and Stockpiling Documentation and Plans

The documentation and database to be used to log and chronicle the origin, handling, transport, storage/stockpiling, inspections and final peat reuse will be developed in detail by the Principal Contractor prior to the start of construction. The written procedure for peat stripping and storage/stockpiling will form part of the Construction Method Statement.

As construction activities proceed, the oPMP will indicate locations and quality of in situ peat and peaty soils: particularly the depth of peat, together with schedules of actual volumes of peat stripped and expected after-use. Documentation will identify the person(s) responsible for supervising and overseeing peat management during the works.

An indicative Audit checklist is provided in **Table Error! No text of specified style in document.-7**.

Table Error! No text of specified style in document.-7 - Indicative Audit Checklist

Element	Indicative Checklist
Access Plan/ Trafficking	Inspect to ensure that the Access Plan is being adhered to and that there is no trafficking, stopping of vehicles or refuelling of vehicles or plant outside of permitted areas marked on the Access Plan. Inspect to ensure that there is no laydown of any materials outside of permitted areas on the Access Plan. No plant should traffic across any area of virgin peat outside the Access Plan though in the event this occurs, issue non-compliances. Advise on restoration of any trafficked and/or damaged area.
Peat Stripping Method	Ensure that correct peat turf depth is being adhered to when stripped to ensure that peat structure and strength is maintained; and Ensure that correct methods for excavation and transport of 'loose' peat are being adhered to.
Peat Storage/ Stockpiling	Inspect peat turf storage areas for each element of infrastructure and ensure that correct storage is being adhered to. Advise on whether watering of turves is required. Inspect storage of 'loose' peat and carry out inspections as per checklist in Table Error! No text of specified style in document.-6. Advise on any corrective actions on storage/stockpiles.
Peat Restoration	Inspect replacement of 'loose' peat and peat turves and advise on any necessary corrective actions (e.g., methods for prevention of erosion). Advise on whether watering of turves after replacement is required.

This procedure will provide auditable evidence that weekly inspections and checks are implemented and recorded in a timely manner and will inform monthly status reports.

Reporting of Non-Compliances

Non-compliances will be reported as soon as they are identified by programmed inspections. They will be reported via the oPMP Auditing procedure to the Principal Contractor's named individual (see **Table Error! No text of specified style in document.-5**) and corrective actions will be identified and implemented promptly. This will require timely decision making. If further inspections are required to ensure that acceptability criteria have been achieved, this will be prescribed and implemented. To facilitate speedy rectification of any non-compliances, the Principal Contractor's named individual will be responsible for day-to-day decisions on routine non-compliance issues.

Criteria for Cessation of Works

Experience has shown that the combination of wet weather and wet peat conditions create very difficult conditions for vehicle and plant operations and elevate the possibility of peat slide and peat erosion, leading, for example, to impaired water quality impacts. For this reason, appropriate weather criteria are prescribed in this section to provide thresholds beyond which peat stripping, handling and stockpiling activities will cease.

If sustained heavy rainfall, or flash flooding, occurs during soil/peat stripping operations, work must be suspended and not restarted until the ground has at least one full dry day to recover.

If sustained snowfall and freezing conditions occur, soil/peat stripping and/or stockpiling, and/or restoration activities will cease. When thawing conditions occur, the Principal Contractor will use forecast meteorological conditions to determine the appropriate timescale for restarting any peat management activities (stripping, handling, storage, restoration). The decision-making will pay due attention to the potential for rapid and turbulent snowmelt runoff, peat erosion and peat slide risk.

Toolbox Talks

Regular toolbox talks will be undertaken to ensure that all staff are aware of the oPMP and applicable peat handling and protection procedures. The toolbox talks will be site-specific, discussing peat conditions at the Development Site.

An indicative list of toolbox talks is provided in **Table Error! No text of specified style in document.-8**.

Table Error! No text of specified style in document.-8 - Indicative Toolbox Talks

Topic	Contents
Peat Protection	Why peat resources need to be protected. Site restrictions and good practice activities to protect peat resources.
Planning	Importance of planning peat management for example access and egress routes, temporary peat storage locations.
Peat Stripping	Why segregation of peat and mineral soils is important.
Peat Reinstatement	Process for ensuring that the integrity of reinstated/ restored peat is maintained.

SEPA Regulatory Position Statement - Developments on Peat [Microsoft Word - Peat Position Statement - update 290310.doc \(sepa.org.uk\)](#)

Annex A - Von Post Humification Scale

(from Scottish Government: Guidance on Developments on Peatland – Peatland Survey, 2017)

DEGREE OF HUMIFICATION - von POST SCALE

H1	Completely undecomposed peat free of amorphous material. On squeezing, clear colourless water is pressed out.
H2	Nearly undecomposed peat, free of amorphous material, yielding only yellowish brown water on pressing.
H3	Very slightly decomposed peat, containing a little amorphous material. On squeezing, muddy brown water but no peat passes between the fingers. Residue is not pasty.
H4	Slightly decomposed peat containing some amorphous material. Strongly muddy brown water but no peat passes between the fingers. Residue is somewhat pasty.
H5	Moderately decomposed peat containing a fair amount of amorphous material. Plant structure recognisable though somewhat vague. On squeezing, some peat but mainly muddy water issues. Residue is strongly pasty.
H6	Moderately decomposed peat with a fair amount of amorphous material and indistinct plant structure. On pressing, about one third of the peat passes between the fingers. Residue is strongly pasty, but shows the plant structure more distinctly than in unsqueezed peat.
H7	H7 Strongly decomposed peat with much amorphous material and faintly recognisable plant structure. On squeezing, about one half of the peat is extruded. The water is very dark in colour.
H8	Strongly decomposed peat with much amorphous material and very indistinct plant structure. On squeezing, two thirds of the peat and some water passes between the fingers. Residue consists of plant tissues capable of resisting decomposition (roots, fibres, wood, etc.).
H9	Practically fully decomposed peat with almost no recognisable plant structure. Nearly all the peat squeezed between the fingers as a uniform paste.
H10	Completely decomposed peat with no discernible plant structure. On squeezing, all the peat, without water, passes between the fingers.



Annex B - Peat Excavation Volumes

WTG Foundations								
WTG_ID	Area (m ²)	Min depth (m)	Max depth (m)	Mean depth (m)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
1	908	0.24	0.67	0.46	419	0	0	419
2	908	0.26	1.34	0.80	0	454	271	725
3	908	0.00	0.72	0.17	152	0	0	152
4	908	0.26	1.11	0.66	0	454	148	602
5	908	0.14	0.99	0.39	356	0	0	356
6	908	0.31	1.32	0.60	0	454	95	549
7	908	0.14	0.46	0.27	248	0	0	248
8	908	0.12	0.33	0.22	201	0	0	201
9	908	0.50	1.24	0.83	0	454	301	755
10	908	0.34	1.26	0.70	0	454	182	636
11	908	0.78	1.29	1.04	0	454	490	944
12	908	0.00	0.03	0.02	15	0	0	15
13	908	0.16	1.85	0.83	0	454	296	750
14	908	0.26	0.72	0.48	434	0	0	434
15	908	0.24	0.50	0.36	329	0	0	329
16	908	0.06	0.74	0.25	229	0	0	229
17	908	0.44	0.98	0.64	0	454	125	578
18	908	0.25	0.60	0.41	371	0	0	371
19	908	0.32	0.86	0.54	0	454	39	493
20	908	0.25	1.91	1.30	0	454	722	1,176
21	908	0.16	0.59	0.36	327	0	0	327
22	908	0.24	1.26	0.65	0	454	139	593
19,974		TOTALS			3,081	4,994	2,807	10,882

Peat Excavation Volumes (continued)

WTG Crane pads								
WTG_ID	Area (m ²)	Min depth (m)	Max depth (m)	Mean depth (m)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
1	1,746	0.08	0.90	0.31	537	0	0	537
2	1,746	0.11	0.99	0.39	673	0	0	673
3	1,746	0.01	1.43	0.53	0	873	46	919
4	1,746	0.35	1.25	0.68	0	873	307	1,180
5	1,746	0.05	1.18	0.58	0	873	138	1,011
6	1,746	0.10	1.26	0.48	837	0	0	837
7	1,746	0.22	1.13	0.67	0	873	304	1,177
8	1,746	0.01	0.96	0.36	629	0	0	629
9	1,746	0.24	1.95	0.98	0	873	834	1,707
10	1,746	0.25	1.39	0.68	0	873	312	1,185
11	1,746	0.39	1.23	0.88	0	873	665	1,538
12	1,746	0.01	0.27	0.11	197	0	0	197
13	1,746	0.08	1.20	0.69	0	873	337	1,210
14	1,746	0.26	2.32	1.55	0	873	1,835	2,708
15	1,746	0.12	1.27	0.43	757	0	0	757
16	1,746	0.08	0.98	0.37	638	0	0	638
17	1,746	0.24	2.37	0.79	0	873	511	1,384
18	1,746	0.12	0.84	0.46	805	0	0	805
19	1,746	0.17	1.11	0.46	797	0	0	797
20	1,746	0.09	2.15	0.80	0	873	517	1,390
21	1,746	0.37	0.88	0.58	0	873	136	1,009
22	1,746	0.42	1.73	0.98	0	873	839	1,712
38,412		TOTALS			5,872	11,349	6,782	24,002



Peat Excavation Volumes (continued)

WTG Blade laydown areas								
WTG_ID	Area (m ²)	Min depth (m)	Max depth (m)	Mean depth (m)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
1	1,245	0.16	0.80	0.34	424	0	0	424
2	1,245	0.14	0.73	0.29	362	0	0	362
3	1,245	0.20	1.80	0.84	0	623	423	1,046
4	1,245	0.06	1.28	0.64	0	623	175	797
5	1,245	0.08	0.83	0.34	425	0	0	425
6	1,245	0.03	0.33	0.18	221	0	0	221
7	1,245	0.11	0.86	0.44	544	0	0	544
8	1,245	0.28	0.90	0.63	0	623	159	782
9	1,245	0.33	1.81	1.11	0	623	754	1,377
10	1,245	0.39	1.03	0.67	0	623	206	828
11	1,245	0.46	1.33	0.91	0	623	511	1,134
12	1,245	0.03	0.11	0.08	101	0	0	101
13	1,245	0.20	1.03	0.50	0	623	6	628
14	1,245	0.38	2.04	1.19	0	623	853	1,476
15	1,245	0.11	0.50	0.34	424	0	0	424
16	1,245	0.08	0.73	0.25	316	0	0	316
17	1,245	0.34	1.83	0.91	0	623	513	1,135
18	1,245	0.29	0.82	0.59	0	623	114	737
19	1,245	0.16	1.07	0.59	0	623	112	734
20	1,245	0.05	0.25	0.15	193	0	0	193
21	1,245	0.56	0.92	0.77	0	623	330	953
22	1,245	0.30	0.92	0.64	0	623	177	799
27,390		TOTALS			3,010	8,093	4,333	15,436

Peat Excavation Volumes (continued)

Substation								
ID	Area (m ²)	Min depth (m)	Max depth (m)	Mean depth (m)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
	19,800	0.02	1.89	0.60	0	9,900	2,020	11,920
	19,800			TOTALS	0	9,900	2,020	11,920

Construction Compounds								
ID	Area (m ²)	Min depth (m)	Max depth (m)	Mean depth (m)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
1	5,000	0.05	1.19	0.51	0	2,500	41	2,541
2	2,500	0.06	0.67	0.35	863	0	0	863
	7,500			TOTALS	863	2,500	41	3,404

Borrow Pit Search Areas								
ID	Area (m ²)	Min depth (m)	Max depth (m)	Mean depth (m)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
1	13,693	0.00	2.36	0.25	3,397	0	0	3,397
2	31,559	0.00	2.32	0.53	0	15,780	1,066	16,845
3	9,920	0.00	0.16	0.02	220	0	0	220
4	15,167	0.00	0.53	0.15	2,329	0	0	2,329
5	9,295	0.01	0.96	0.26	2,390	0	0	2,390
6	20,715	0.00	1.17	0.20	4,139	0	0	4,139
7	6,197	0.00	0.53	0.12	738	0	0	738
8	21,364	0.02	2.01	0.47	10,010	0	0	10,010
9	14,568	0.00	1.71	0.40	5,784	0	0	5,784
	142,478			TOTALS	29,007	15,780	1,066	45,852

Peat Excavation Volumes (continued)

Cut Access Tracks - New						
Length (m)	Width (m)	Area (m ²)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
18,830	8	150,639	25,947	34,316	14,132	74,395

Cut Access Tracks - Upgraded						
Length (m)	Width (m)	Area (m ²)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
16,679	5	83,394	13,430	14,577	6,028	34,035

Floating Access Tracks - New (Peat >1m deep) - New						
Length (m)	Width (m)	Area (m ²)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
3,338	8	26,701	0	0	0	0

Floating Access Tracks Upgraded (Peat >1m deep) - Upgraded						
Length (m)	Width (m)	Area (m ²)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
1,939	5	9,697	0	0	0	0

Cut Turning Heads						
Length (m)	Width (m)	Area (m ²)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
		7,271	1,376	1,818	945	4,139

Floating Turning Heads (Peat >1m deep)						
Length (m)	Width (m)	Area (m ²)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
		909	0	0	0	0

Peat Excavation Volumes (continued)

Cable Trenches						
Length (m)	Width (m)	Area (m ²)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
24,313	2	48,626	6,794	12,688	10,652	30,134



Annex C - Peat Reinstatement Volumes

WTG Foundations						
WTG_ID	Area (m ²)	Mean depth (m)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
1	888	0.50	0	444	0	444
2	888	0.50	0	444	0	444
3	888	0.17	149	0	0	149
4	888	0.50	0	444	0	444
5	888	0.50	0	444	0	444
6	888	0.50	0	444	0	444
7	888	0.27	242	0	0	242
8	888	0.22	197	0	0	197
9	888	0.50	0	444	0	444
10	888	0.50	0	444	0	444
11	888	0.50	0	444	0	444
12	888	0.02	15	0	0	15
13	888	0.50	0	444	0	444
14	888	0.50	0	444	0	444
15	888	0.50	0	444	0	444
16	888	0.25	224	0	0	224
17	888	0.50	0	444	0	444
18	888	0.50	0	444	0	444
19	888	0.50	0	444	0	444
20	888	0.50	0	444	0	444
21	888	0.50	0	444	0	444
22	888	0.50	0	444	0	444
19,542		TOTALS	827	7,550	0	8,378

Peat Reinstatement Volumes (continued)

WTG Crane Pads						
WTG_ID	Area (m ²)	Mean depth (m)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
1	471	0.50	0	236	0	236
2	471	0.50	0	236	0	236
3	471	0.50	0	236	0	236
4	471	0.50	0	236	0	236
5	471	0.50	0	236	0	236
6	471	0.50	0	236	0	236
7	471	0.50	0	236	0	236
8	471	0.50	0	236	0	236
9	471	0.50	0	236	0	236
10	471	0.50	0	236	0	236
11	471	0.50	0	236	0	236
12	471	0.11	53	0	0	53
13	471	0.50	0	236	0	236
14	471	0.50	0	236	0	236
15	471	0.50	0	236	0	236
16	471	0.50	0	236	0	236
17	471	0.50	0	236	0	236
18	471	0.50	0	236	0	236
19	471	0.50	0	236	0	236
20	471	0.50	0	236	0	236
21	471	0.50	0	236	0	236
22	471	0.50	0	236	0	236
10,362		TOTALS	53	4,946	0	4,999

Peat Reinstatement Volumes (continued)

Blade Laydown Areas						
WTG_ID	Area (m ²)	Mean depth (m)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
1	1,245	0.34	424	0	0	424
2	1,245	0.29	362	0	0	362
3	1,245	0.84	0	623	423	1,046
4	1,245	0.64	0	623	175	797
5	1,245	0.34	425	0	0	425
6	1,245	0.18	221	0	0	221
7	1,245	0.44	544	0	0	544
8	1,245	0.63	0	623	159	782
9	1,245	1.11	0	623	754	1,377
10	1,245	0.67	0	623	206	828
11	1,245	0.91	0	623	511	1,134
12	1,245	0.08	101	0	0	101
13	1,245	0.50	0	623	6	628
14	1,245	1.19	0	623	853	1,476
15	1,245	0.34	424	0	0	424
16	1,245	0.25	316	0	0	316
17	1,245	0.91	0	623	513	1,135
18	1,245	0.59	0	623	114	737
19	1,245	0.59	0	623	112	734
20	1,245	0.15	193	0	0	193
21	1,245	0.77	0	623	330	953
22	1,245	0.64	0	623	177	799
27,390		TOTALS	3,010	8,093	4,333	15,436

Peat Reinstatement Volumes (continued)

Substation						
ID	Area (m ²)	Mean depth (m)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
	200	0.50	0	100	0	100
	200	TOTALS	0	100	0	100

Construction Compounds						
WTG_ID	Area (m ²)	Mean depth (m)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
1	5,000	0.51	0	2,500	41	2,541
2	2,500	0.35	863	0	0	863
	2,500	TOTALS	863	2,500	41	3,404

Cable Trenches						
Length (m)	Width (m)	Area (m ²)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
	2		4,064	11,785	6,931	22,780
	2		2,134	2,843	1,576	6,553
24,875	TOTALS	49,751	6,199	14,628	8,507	29,334

Borrow Pit Search Areas						
ID	Area (m ²)	Mean depth (m)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
1	13,693	0.80	6,847	0	3,841	10,687
2	31,559	0.80	15,780	0	8,852	24,632
3	9,920	0.02	220	0	0	220
4	15,167	0.15	2,329	0	0	2,329
5	9,295	0.50	4,648	0	0	4,648
6	20,715	0.50	1,439	3,561	5,357	10,357
7	6,197	0.12	738	0	0	738
8	21,364	0.75	0	8,182	8,493	16,675
9	14,568	0.75	0	5,784	5,586	11,370
	142,478	TOTALS	32,000	17,527	32,129	81,656

Cut Access Tracks - New						
Length (m)	Width (m)	Area (m ²)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
18,625	8	149,004	25,947	32,666	1,650	60,263
18,625		149,004	25,947	32,666	1,650	60,263

Peat Reinstatement Volumes (continued)

Cut Access Tracks - Upgraded						
Length (m)	Width (m)	Area (m ²)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
18,237	5	82,067	13,430	14,577	0	28,007
18,237		82,067	13,430	14,577	0	28,007

Floating Access Tracks - New (Peat >1m deep) - New						
Length (m)	Width (m)	Area (m ²)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
3,446	8	27,569	0	13,549	0	13,549

Floating Access Tracks Upgraded (Peat >1m deep) - Upgraded						
Length (m)	Width (m)	Area (m ²)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
2,111	5	9,499	4,625	0	0	4,625

Cut Turning Heads						
Length (m)	Width (m)	Area (m ²)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
		7,271	1,376	1,818	0	3,193

Floating Turning Heads (Peat >1m deep)						
Length (m)	Width (m)	Area (m ²)	Peaty Soils (m ³)	Acrotelm (m ³)	Catotelm (m ³)	Volume (m ³)
		909	454	0	0	454



Annex D - Figures



7 Lochside View
Edinburgh Park
Edinburgh, Midlothian
EH12 9DH

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