Foel Fach Wind Farm Limited.

Foel Fach Wind Farm - Environmental Statement Volume III

Appendix 7.4: Outline Peat Management Plan

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EXECUTIVE SUMMARY

A Peat Management Plan has been prepared to address the requirements for excavation of peat soil during the construction phase of the Proposed Development. The key environmental characteristics of the Site outlined, and the importance and sensitivity of peat soils highlighted. Data from Phase 1 and Phase 2 peat soil depth surveys were analysed and calibrated, and the estimated volumes of peat soil required for excavation, during the construction phase of the Proposed Development, have been calculated. These volumes are outlined for the different components of infrastructure across the Site. A total volume of 13,503 m^3 peat soil is estimated to be excavated for construction of all required temporary and permanent infrastructure. This Peat Management Plan offers recommendations towards minimising impacts of construction on peat soils across the Site, complying with environmental regulations and best practice guidance. Options for reuse of excavated peat soil are suggested, through reinstatement of temporary construction infrastructure and peatland restoration. More reuse options have been identified than expected peat soil requiring reuse, allowing reuse to be targeted to the opportunities with best potential outcomes. Recommendations on peat soil handling and storage during construction are also provided.

1 INTRODUCTION

1.1 Introduction

1.1.1 This report provides an Outline Peat Soil Management Plan for Foel Fach Wind Farm and associated infrastructure, hereafter referred to as the 'Proposed Development'.

1.1.2 This report forms an Appendix to the Environmental Statement (ES) for the Proposed Development and should be read in conjunction with this document. It has been produced to address the requirements for excavation of peat soils during the Proposed Development construction process.

1.1.3 This report considers the total volumes of peat soil that need to be excavated and sets out options for reuse of the excavated material. Guidance on management and handling of excavated peat soils is also provided.

1.1.4 Within this Technical Appendix 'application boundary' refers to the red line planning boundary for the Proposed Development and 'Site' refers to the area within the application boundary within which the Proposed Development lies.

1.2 Site Location

1.2.1 The Application Site ('Site') is located within the administrative boundary of Gwynedd Council, North Wales, approximately 3.1 km north east of Bala. Eryri National Park is situated to the west of the Site, with the nearest turbine (T01) located approximately 1.9 km east of the national park boundary. The Site elevation varies from approximately 225 metres (m) Above Ordnance Datum (AOD) to approximately 550 m AOD. The majority of the Site is located on an area of grazing moorland with a number of parcels of registered common land. Two registered common land parcels are located in the eastern area of the Site. The majority of the land within the Site is Countryside and Rights of Way Open Access land, with areas of agricultural land. A number of Public Rights of Way (PRoW) are present within and adjacent to the Site, although none are nationally designated trails. Small wooded areas are present within the Site. Ancient woodland and larger areas of forestry are present outside the application boundary, to the south.

1.3 Development Proposals

1.3.1 The construction phase of the Proposed Development would involve a number of different elements. **ES Volume II**, **Chapter 2: Description of the Proposed Development** describes the scheme elements in detail. The elements with particular relevance to peat soils are as follows:

- 10 no. three bladed horizontal axis wind turbines, up to 200 or 220 metres in height to the blade tip (where specified)
- wind turbine foundations and hardstanding areas which will include crane pad hardstanding areas and laydown/storage areas
- an onsite substation
- a battery energy storage system (BESS)
- permanent wind monitoring equipment (LiDAR)
- site access improvements, through the upgrading of the existing junction off the B4501
- onsite access tracks (new roads and upgraded existing roads/tracks), passing places and vehicle turning heads
- underground power cables linking the wind turbines and the substation
- watercourse crossings and associated infrastructure
- drainage system
- micrositing up to 50 m
- onsite signage, and
- biodiversity enhancements proposals.

1.4 Aims

1.4.1 This report aims to undertake a review of all available peat soil depth information for the application Site and immediate environs, and to provide a series of calculations determining the estimated volumes of peat soil that will require excavation in order to allow the Proposed Development to progress. Options will be provided to address the use of the excavated peat soil within necessary restoration of the Proposed Development's infrastructure. A series of good practice measures relating to peat soil handling and storage will also be provided.

1.5 Assessment Method

1.5.1 The assessment has involved the following stages:

- desk study
- peat soil depth surveys and infrastructure design
- volume calculations for excavation and reuse, and
- peat soil handling and storage.

2 PEAT CONDITION

2.1 Developments on Peat Soil

Definition of Peat Soil

2.1.1 Peat soils are defined by the Soil Survey of England and Wales (1980) as:

1. *More than 40 cm of organic (O horizon) material within the upper 80 cm, excluding fresh litter (L) and living moss; or*
2. *More than 30 cm of organic (O horizon) material resting directly on bedrock (R or Cr) or skeletal material (in situ angular broken-up rock); and*
3. *No overlying non-humose material mineral horizon that has a colour value of 4 or more and extends below 30 cm depth.*

2.1.2 This is in line with the Welsh Government's own definition used to produce the Peatlands of Wales Map (Welsh Government, 2022a).

2.1.3 The Joint Nature Conservation Committee (JNCC) (JNCC, 2011) classifies peat as:

> *'The partially decomposed remains of plants and soil organisms which have accumulated at the surface of the soil profile. Peat accumulates where the rate of input of organic material from the surface exceeds the rate of decomposition and 'turn-over' of this new material. Under UK climate conditions, this happens under seasonal or year-round water-logging and is exacerbated by cold temperatures.'*

2.1.4 JNCC (2011) does not specify a depth for classification as a peat soil.

2.1.5 Active peat soil typically consists of two layers: the surface layer or acrotelm and the deeper layer or catotelm. The acrotelm contains the living vegetation and consists of living and partially decayed plant material. It typically has a low but variable hydraulic conductivity and allows some through-flow of water within the plant material. The underlying catotelm is denser, with a very low hydraulic conductivity, and is formed from older decayed plant material. The catotelm varies in structure, in some areas retaining a proportion of fibrous material and in other areas being more humified and amorphous. The degree of humification typically increases with depth.

2.1.6 Underneath the peat-forming layers, the basal substrate can be a mineral soil, a superficial deposit such as glacial material, or bedrock. There may be a transition zone through a mineral-rich peaty soil layer at the base of the peat soil, although this is usually no more than 5 cm in thickness.

Importance of Peat Soils

2.1.7 Peatlands are estimated to cover 4.3% of the total land area of Wales which amounts to over 90,000 hectares (ha) (NRW, 2020). They also represent the largest terrestrial ecosystem store of carbon in Wales and are important for biodiversity (Evans, et al., 2015). Forest Research (2012) indicates that deep peat soils, defined as '*soils in which the organic content of the surface horizon is > 80% and the peat depth is >40 cm*[1]' are estimated to contain approximately 30% of Wales' total soil carbon stock.

2.1.8 Active and healthy peatlands develop continuously, removing carbon dioxide from the atmosphere and storing it within the peat soil. Therefore, protection of this peatland habitat resource is becoming increasingly recognised as crucial to climate change mitigation in the land-use sector. As well as carbon storage and improving biodiversity, another important driver for protecting peatlands is their role in regulating water flows and water quality (Forest Research, 2012).

2.1.9 Peatland protection and restoration form key parts of the Welsh Government's Climate Change Plan, promoted and enacted by Natural Resource Wales (NRW) National Peatland Action Programme (NPAP). The NPAP is a five-year plan of peatland restoration in Wales. The programme is designed to target peatlands that need the most restoration and aims to restore 600-800 ha of public and private land every year. Restoration activities took place across 1,650 ha of degraded peatland in the first two programme years (2020-2022) and 1,230 ha in the following two years (2022-2024) (NRW, 2025).

2.1.10 Activities such as over-grazing, drainage and conversion to grassland and forestry have had a detrimental effect upon many areas of peatland in Wales which can stop them from regenerating, cause peat soils to oxidise and emit greenhouse gases (Evans, et al., 2015). The Peatlands of Wales map indicates that most of Wales' mapped peat soil is a net emitter of CO_2 (Welsh Government, 2022b).

2.1.11 Measures supported by land management and conservation mechanisms, such as the Glastir Monitoring & Evaluation Programme run by NRW, aim to restore Welsh peatlands and allow them to continue carbon sequestration.

2.1.12 It is therefore important that developments in peatland areas take recognition of the importance of peatland as a habitat and carbon store. Careful planning of developments, and careful infrastructure design, can remove or minimise the disturbance of peat soil that would be needed to allow the development to proceed.

2.1.13 Developments need to follow the step-wise approach, as set out by the Welsh Government in Planning Policy Wales Edition 4 (PPW), in order to create a net benefit for biodiversity. The step-wise approach includes the following stages, where Step 1 has the highest priority: Step 1 Avoid; Step 2 Minimise; Step 3 Mitigate/Restore; Step 4 Compensate on site; Step 4 Compensate off site. Developments should also provide biodiversity enhancements and a Long-Term Management Plan (Step 5) (Welsh Government, 2024).

2.1.14 For the Proposed Development, efforts have been made to avoid impacts to peat soils by using data collected during the Phase 1 and 2 peat soil surveys to identify and avoid areas of peat soil as far as possible. This design would minimise peat soil excavation and disturbance during the construction phase.

2.1.15 In areas where peat soil cannot be avoided completely the infrastructure placement has been designed to minimise incursion into peat soil as far as possible. All areas of excavated peat soils would be reinstated appropriately under the supervision of an Environmental Clerk of Works (ECoW).

2.1.16 Details of compensation are provided in the Outline Habitat Management Plan (HMP; see **ES Volume III, Appendix 5.4: Outline HMP**) for the Proposed Development, which discusses biodiversity enhancement. The HMP indicates that there will be enhancement of heathland, wetland and mire/flush habitats.

2.2 Development Setting

Topography

2.2.1 The Site is located on relatively high ground, with elevations ranging from 250 m to 569 m AOD. The highest point within the Site is the peak of Garnedd Fawr in the north which lies at 569 m AOD. The topography of the Site slopes generally downward from north-east to south.

2.2.2 The Site is surrounded by four prominent hills: Cerrig y Gordref (497 m AOD) to the north, Foel Goch (611 m AOD) to the north-east, Moel Darren (509m AOD) to the east at the edge of the application boundary and Garw Fynydd (490 m AOD) to the south. Craig y Garn (461 m AOD) is located at a greater distance to the west, across the Afon Mynach valley.

2.2.3 The southern part of the Site slopes smoothly down from the peaks of Moel Emoel (549 m AOD) and Eglwys-Anne Warren Ffridd (463 m AOD) towards Llyn Maen Bras at approximately 355 m AOD.

Habitats and Vegetation

2.2.4 Grassland, heathland and mire habitats, typical of upland locations in North Wales, dominate the Site. These include areas of modified and acid grassland, upland heath and moorland, seasonally wet pastures and bog communities.

2.2.5 The vegetation within the Site has been surveyed using the National Vegetation Classification (NVC) methods. Within the Site, the main NVC communities present are:

- U5 Nardus stricta – Galium saxatile grassland;
- M6a Carex echinata – Sphagnum recurva/auriculatum mire ;
- H8e Calluna vulgaris – Ulex gallii heath;
- U20 Pteridium aquilinum – Galium saxatile community;
- M19 Calluna vulgaris – Eriophorum vaginatum blanket mire; and
- M15 Scirpus cespitosus – Erica tetralix wet heath.

2.2.6 A number of other NVC communities are present, but they occupy smaller areas.

Peat Characteristics

2.2.7 The Site is primarily underlain by soils described as very acidic loamy upland soils with a wet peaty surface. The south-west is underlain by freely draining acidic loamy soils over rock, while the west is underlain by slowly permeable seasonally wet acidic loamy and clayey soils. Within the central region of the Site, to the north, there is a small area of soils described as slowly permeable wet very acidic upland soils with a peaty surface (Cranfield University, 2015). Small, discontinuous areas of blanket bog have been identified within the Site. More details can be found in **ES Volume IV**, **Figure 7.4: Soils and Peat**.

2.2.8 During the Site surveys, areas of peat soil were identified in parts of the Site. The deepest peat soil depth record was 1.92 m. The majority of the Site is underlain by soils with a depth of 0.3 m or less, amounting to approximately 78% of the application boundary area. Areas with soil depths above 0.3 m are located in the southern, western and northern parts of the Site.

2.2.9 Parts of the Site have evidence of straightened or modified watercourses and artificial drainage systems. The Site is used extensively for rough grazing for sheep and cattle.

2.3 Peat Soils at the Proposed Development

2.3.1 The Phase 1 survey involved undertaking a peat soil depth survey with a hand-held probe on a 100 m grid across the Site, to identify areas of peat soil and natural variation in the distribution of the peat soil substrate across the area. The Phase 1 survey was undertaken in December 2023.

2.3.2 Following the infrastructure design process, a Phase 2 survey was undertaken across areas of infrastructure and access tracks. Probing was undertaken at approximately 10 m intervals for infrastructure and approximately 25 m intervals with 25 m offsets along proposed access track routes and in areas nearby to

ensure that sufficient peat soil depth data was available to inform the track design. These surveys took place between 13 and 25 October 2024. The infrastructure design was reviewed further following the initial Phase 2 survey using the step-wise approach to minimise placement of infrastructure on peat soils, and further Phase 2 surveys were undertaken between 25 November and 1 December 2024, 19 and 21 February 2025 and on 17 April 2025, following further infrastructure design amendments.

2.3.3 In total, 5,605 peat soil probe depths have been measured across the Site. The depths from probing were interpolated across the Site to build a picture of the soil and peat soil depths across the area and to inform the infrastructure design process.

2.3.4 Peat soil coring surveys were undertaken from 25 November to 1 December 2024, 19 to 21 February 2025 and April 17 2025. A total of 105 peat soil core samples were collected for analysis at various locations across the Site, including within proposed infrastructure locations and access tracks. At each coring location, soil samples were taken with a soil auger in 50 or 100 cm sections, until refusal. A probe depth was also taken at the same location.

2.3.5 The coring identified that probe depths had overestimated actual peat soil depth, as probes had penetrated the underlying soft materials (such as clay), rather than terminating at the base of the peat soil.

2.3.6 Consequently, to correct this overestimation, the peat soil core data collected by RSK were analysed to identify to what depth the peat soil extends in each of the 105 cores, giving a "*calibrated peat soil depth*" for each core location.

2.3.7 A ratio was then calculated for each core location by dividing the calibrated peat soil depth (determined from coring) by the corresponding uncalibrated probe depth. For example, an uncalibrated depth of 0.5 m and a calibrated depth of 0.4 m would give a ratio value of 0.8.

$$Ratio = \frac{Calibrated\ peat\ \text{soil}\ depth\ (determined\ by\ coring)}{Uncalibrated\ peat\ \text{soil}\ depth\ (determined\ by\ peat\ \text{soil}\ probe\ at\ core\ location)}$$

2.3.8 The calibration ratios were applied to surrounding, uncalibrated probe points in accordance with the following rules, thereby generating a composite, Site-wide calibrated peat soil depth model:

- The corresponding ratio from each core was applied to all probe points within a 50 m radius.
- Probe points located outside the defined 50 m buffer zone were not adjusted and retained their original, uncalibrated depth values.
- In cases where a probe point fell within the buffer zone of multiple cores, the calibration ratio from the nearest core was applied.

2.3.9 **Diagram 7.4.1** provides a visual representation of the calibration method used to correct the peat soil depths collected during Site surveys.

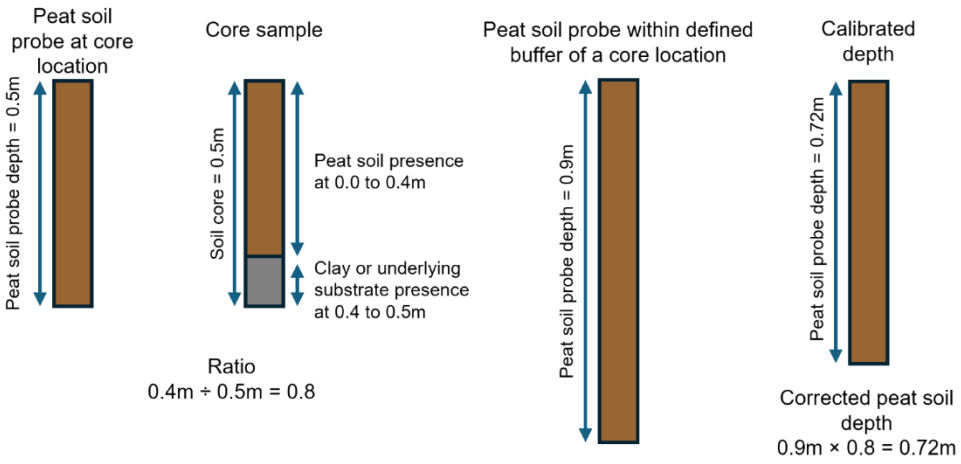

Diagram 7.4.1 Visual Representation of an Example Peat Soil Depth Corrected to Account for the Presence of Clay Using Data from a Peat Soil Core.

2.3.10 The decision to apply a 50 m buffer zone when calibrating probe data was made to balance the need for accurate spatial representation with the limitations of available core data, acknowledging that it is impractical to core all locations across a site of this size. The approach aims to minimise the risk of over-correcting peat soil depth without corroborating core data. This conservative approach ensures that localised anomalies in peat soil thickness are not disproportionately applied to surrounding areas. The majority of infrastructure locations have several peat soil cores available, providing greater confidence in the representativeness of the observed peat soil depth and supporting the spatial application of the calibration ratio.

2.3.11 Subsequently, the calibrated probe data were interpolated using the Inverse Distance Weighting method. This approach was chosen because closer peat probe points exert greater influence on the interpolation, which effectively accounts for areas away from infrastructure where survey resolution is lower.

2.3.12 The calibrated model is considered to provide the most accurate representation of peat soil depths across the Site. The model preserves genuine peat soil deposits by applying localised corrections rather than a uniform Site-wide adjustment while addressing overestimations caused by probe penetration into underlying clay substrates. This targeted approach, informed by core data, enhances the reliability and robustness of the model. It offers a significantly more accurate depiction of peat soil distribution and depth than would be achieved through interpolation of uncalibrated probe data alone.

2.4 Peat Soil Excavation Volumes

2.4.1 The tables below set out the estimated volumes of peat soil (i.e. soils deeper than 0.3 m in line with the Welsh Government's definition of peat soil) that need to be excavated in order to allow construction of the Proposed Development to proceed. The calculations are provided per 'scheme element', as totals for each element type, and as an overall total. Each set of calculations provides subdivision into 'acrotelm' and 'catotelm'.

2.4.2 For the purpose of these calculations, the acrotelm has been assumed to form the uppermost 0.3 m where peat soil is present. Acrotelm is known to vary in thickness, but it is recommended that peat soil turves are excavated to approximately 0.5 m where possible, including the uppermost part of the catotelm, to promote quicker regeneration of disturbed areas following reinstatement.

2.4.3 Volumes of peaty soil and topsoil have not been included, in line with the definition of peat soil quoted above. Soils would also require excavation but are less sensitive than peat soil to both excavation and restoration. An outline Soil Management Plan for the Proposed Development is provided in **ES Volume III, Appendix 7.9: Outline Soil Management Plan**.

2.4.4 **Table 7.4.1** provides peat soil volumes that require excavation in order to allow construction of the access track network and associated drainage. The proposed new access track running surface width would be approximately 5.5 m, although the width may increase for short sections such as at passing places, laydown areas and tighter bends. For the purposes of this report an excavational width of between 7.5 m and 12 m has been assumed, which takes into account the 5.5 m running surface plus roadside verges and drainage infrastructure on either side of the track. Turning heads present directly adjacent to the track have also been included as part of the access track.

2.4.5 Within the Site, the existing track does not cross over any areas of peat soils. Approximately 0.35 km of new cut access track is proposed that would cross peat soils.

2.4.6 All other tracks within the Site are located in areas with no identified peat soil.

Table 7.4.1 Peat Soil Excavation Volumes for Access Tracks

Scheme Element	Average depth (m)	Acrotelm (m^3)	Catotelm (m^3)	Total (m^3)
Existing access track requiring upgrade	0.10	0	0	0
New track	0.14	1,379	793	2,172
Total		**1,379**	**793**	**2,172**

2.4.7 **Table 7.4.2** provides peat soil volumes that would require excavation in order to allow construction of the turbine foundations, hardstanding areas and crane pads, plus associated drainage. Calculations have been made for each turbine base plus hardstanding areas, making use of peat soil depth data for the relevant turbine and hardstanding footprint. Where turning heads are present directly adjacent to areas of turbine hardstanding these have been combined.

Table 7.4.2 Peat Soil Excavation Volumes for Turbines, Hardstandings, Crane Pads and Associated Drainage

Scheme Element	Average depth (m)	Acrotelm (m^3)	Catotelm (m^3)	Total (m^3)
Turbine T01	0.20	1,728	1,048	2,776
Turbine T02	0	0	0	0
Turbine T03	0.13	153	90	243
Turbine T04	0.15	451	207	658
Turbine T05	0	0	0	0
Turbine T06	0	0	0	0
Turbine T07	0.16	475	209	684
Turbine T08	0.15	734	516	1,250
Turbine T09	0.20	2,213	2,258	4,471
Turbine T10	0	0	0	0
Total		**5,754**	**4,328**	**10,082**

2.4.8 **Table 7.4.3** provides peat soil volumes that require excavation in order to allow construction of additional infrastructure, such as entrance compound, substation, batching compound, watercourse crossing working area and LIDAR mast. Calculations have been made for each footprint, making use of peat soil depth data for the relevant infrastructure element.

Table 7.4.3 Peat Soil Excavation Calculations for Other Infrastructure

Scheme Element	Average depth (m)	Acrotelm (m^3)	Catotelm (m^3)	Total (m^3)
Entrance Compound	0.06	133	84	217
Substation	0.12	291	41	332
Batching Compound	0.12	0	0	0
Watercourse crossing to T09 and T10	0.15	494	132	626
LIDAR mast	0.02	0	0	0
Total		**918**	**257**	**1,175**

2.4.9 A summary of total peat soil volumes is provided in **Table 7.4.4.**

Table 7.4.4 Summary of Estimated Peat Soil Excavation

Scheme Element	Acrotelm (m^3)	Catotelm (m^3)	Total (m^3)
All tracks	1,446	800	2,246
All turbine infrastructure	5,754	4,328	10,082
All other infrastructure	918	257	1,175
Total	**8,118**	**5,385**	**13,503**

2.5 Peat Soil Reuse

2.5.1 The guidance document '*Good Practice during Wind Farm Construction*' (NatureScot, 2024) identifies a number of reuse options for excavated peat soil within wind farm developments. These have all been tested in practice and found to be effective, if undertaken with care and appropriate handling of the peat soil.

Reinstatement of Temporary Construction Areas

2.5.2 Various parts of the infrastructure required for construction purposes would not be needed during the subsequent operational phase of the Proposed Development, and these areas would be eligible for reinstatement once no longer required. Where these elements are adjacent to areas with identified peat soil deposits, reinstatement with excavated peat should be considered as a method for developing larger coherent peat volumes, minimising exposed surfaces and therefore having less potential for drying-out of the peat soils.

2.5.3 The following infrastructure has been identified as suitable for full reinstatement using excavated peat soils following completion of construction:

- Temporary hardstanding areas at the five wind turbines where peat soils have been identified; and
- Temporary watercourse crossing works area.

2.5.4 The temporary hardstanding at each turbine identified as suitable for reinstatement would have an approximate area of 1,944 m^2, or 9,720 m^2 in total for five turbines, and would be required for boom supports, tower sections and turbine nacelles. It is expected that this hardstanding would be removed and the ground reinstated following completion of the construction phase.

2.5.5 The temporary watercourse crossing works area would have an approximate area of 5,767 m^2 and would be required to allow construction of the structure to give access to turbines T09 and T10. This area is expected to be removed and the ground reinstated following successful completion of the watercourse crossing.

2.5.6 For all temporary infrastructure proposed for reinstatement with excavated peat soils, the following reinstatement methods would be undertaken to prepare the areas:

- Each footprint would be graded at the base to collect, rather than drain, water
- Each footprint would be lined with clay such that it holds water
- The reinstatement would use catotelmic peat soils placed first onto the clay, with acrotelmic peat soils placed over the catotelmic peat soil, and
- If necessary, mineral bunds constructed with large-grade aggregate or boulders, as appropriate, would be used to create retaining structures.

2.5.7 Only those infrastructure elements that are located on or adjacent to areas of peat soil have been considered in the reuse and reinstatement calculations.

2.5.8 Additional detail concerning proposals for reuse of peat soils in reinstatement will be provided in the final submission.

Peatland Restoration

2.5.9 Peatland restoration would be undertaken with excavated peat soils where suitable conditions are present. It may be possible to use peat soils in ditch blocking, although this is usually most suitable in larger drains and volumes of peat soil used in this capacity would be relatively small.

2.5.10 Potential peatland restoration opportunities have been identified in the areas around the headwater streams in the area between Foel Tyn-y-ddôl and Pen y Bwlch Gwyn, west of T02, and in the headwaters areas of the Nant Cefn-coch between T02, T03, T06 and T07 and between T05, T08, T09 and T10. There may also be opportunities in the headwaters area of tributaries to Llyn Maen Bras. These areas have existing peat soils in excess of 1.0 m and areas of notably boggy ground. Areas with extensive drainage are also present, particularly in the area west of T02 and in the lower sections of the Nant Cefn-coch, which may be well suited for ditch blocking to raise the water table.

2.6 Peat Soil Reuse Volumes

2.6.1 Calculations have been made to determine where excavated peat soil can usefully be reused within the Proposed Development, for the purposes of reinstatement and restoration. Estimated volumes for reuse are provided in **Table 7.4.5**, subdivided by different reinstatement and restoration methods that are appropriate for the Proposed Development.

Table 7.4.5 Estimated Peat Soil Volumes for Different Reuse Options

Reuse Option	Area (m^2)	Average depth (m)	Total (m^3)
Restoring temporary hardstanding areas at turbines	9,720	0.8	7,776
Restoring temporary watercourse crossing working area	5,767	1	5,767
Total potential reuse volume			**13,543**
(Total expected excavation volume: 13,508)			

2.6.2 Given that there are more opportunities for peat soil reuse than calculated excavation volumes, target areas would be identified by the ECoW for areas where peat soil reuse would be most suitable and provide greatest value. Where peat soil can be used in peatland restoration, these opportunities would be given the highest priority rather than reusing peat soils in reinstatement options.

3 PEAT SOIL HANDLING AND STORAGE

3.1 Peat Soil Excavation

3.1.1 During construction of the Proposed Development infrastructure, the Contractor would adopt the following good practice guidelines with relation to peat soil excavation:

- Where peat soil conditions are suitable, peat soil turves would be excavated as intact blocks of the uppermost 0.4 m including the vegetated surface acrotelm layer and the upper part of the catotelm.
- In areas where peat soil conditions do not allow clean removal of peat soil turves, the upper layer of peat soil would be removed as divots or mulch rather than as turves. Careful handling would help to keep the vegetated blocks largely the right way up.
- Underlying peat soil would be extracted as close to intact as is feasible within the constraints of the area. Remoulding of the peat soil by the excavator would be kept to a minimum.
- Excavated materials would be classified depending on their composition, and each type would be stored separately. Anticipated material classes are: topsoil, subsoil, acrotelmic peat soil, catotelmic peat soil, mineral soil, and rock.
- Excavated peat soil would be transported as short a distance as practicable for either reuse or temporary storage, in order to minimise loss of structure during transport.

3.1.2 Peat soil and soil stripping can be adversely affected by wet weather. The following 'stop' conditions are recommended to guide any peat soil and soil stripping activity (**Table 7.4.6**; (CH2M & Fairhurst, 2018).

Table 7.4.6 Recommended 'Stop' Conditions

'Stop' Rule	Requirements
High intensity rainfall	Rainfall during construction greater than 10 mm per hour
Long duration rainfall	Rainfall in the preceding 24 hours greater than 25 mm
7-day cumulative rainfall (1)	Preceding 7 days of rainfall greater than 50% of the monthly average
7-day cumulative rainfall (2)	Preceding 7 days of rainfall greater than 50 mm

3.1.3 Monitoring of rainfall for 'stop' conditions would require access to a suitable local source of data, such as the Met. Office's monitoring station at Bala (Met Office, 2025) to allow identification of these conditions being exceeded in order to allow appropriate action to be taken.

3.2 Temporary Storage

3.2.1 The ECoW would maintain a schedule of reuse and restoration areas and would direct whether excavated peat soils should be stored in preparation for reuse when possible.

3.2.2 Soils, peat soil turves/divots and peat soil would all be stored separately. The following outline good practice measures which would be applied to all areas of soil and peat soil storage:

- Excavated materials would not be stored immediately above excavation faces, in order to prevent overburden-induced failure.
- Local drainage lines, areas of very wet ground and locally steep slopes would be avoided for excavated material storage, including peat soils.
- Careful handling of upper-layer peat soil divots, from areas where peat soil turves cannot be excavated, would help to retain vegetated blocks the right way up.
- Catotelmic peat soil would be stored separately from vegetated peat soil blocks, in mounds up to 1 m high.
- Limited smoothing or 'blading' of stockpiled catotelmic peat soil, topsoil and subsoil would help to shed rainwater and prevent ponding of water on the stockpile.
- During periods of dry weather, light spraying of the temporary peat soil stores would be applied in order to minimise drying.
- All temporary storage areas for excavated soils and peat soils would be at least 50 m from any watercourse.
- Runoff from stored soils and peat soils would be managed to avoid impacts to habitats and watercourses. Where necessary, drainage control measures such as use of silt fences would be put in place.
- Monitoring of peat soil storage areas may be required during wet weather or snowmelt. This would be undertaken by the Contractor, with findings reported to the ECoW.

3.2.3 Areas identified as potentially suitable for peat soil and soil stockpiles are detailed in **Table 7.4.7** and shown on **Figure 7.4.1** at the rear of this appendix. These areas have been identified using the following criteria:

- Areas of flat or nearly flat ground
- Proximity to areas where peat soil excavation is anticipated, to minimise required transport distances
- Areas with no identified peat slide risk, and
- Areas not near sensitive receptors.

3.2.4 Indicated storage areas would be assessed for suitability during construction works and priority would be given to areas near to the material source; key constraints would be slope, watercourses and sensitive habitats.

Table 7.4.7 Potential Areas for Peat Soil and Soil Stockpiles

Location	Grid Reference
Adjacent to T02	SH 93448 41473
Adjacent to access track to T04	SH 93650 40631
Adjacent to T07	SH 94195 41549
Adjacent to T08	SH 94321 41187

3.2.5 Catotelm stockpiles would require four areas of approximately 40 x 34 m to provide suitable storage for the anticipated 5,385 m^3 of catotelmic peat soil in stockpiles up to 1 m in height.

3.2.6 Acrotelm stockpiles would require three areas of approximately 40 x 35 m to provide suitable storage for the anticipated 8,118 m^3 of acrotelmic peat soil in stockpiles up to 2 m in height.

3.3 Reinstatement and Restoration

3.3.1 The following principles would be applied in all situations where peat soil is being reinstated:

- Reinstatement of peat soil turves and vegetated peat soil divots would ensure that surface re-vegetation is encouraged as early as possible. Vegetated peat soil must only be used for surface layer reinstatement.
- Re-seeding of any significant areas of bare peat soil would be undertaken with a suitable species mix appropriate to the surrounding habitats. Careful planning of reinstatement should minimise areas of bare peat soil by appropriate distribution of vegetated peat soil turves and divots.
- Grazing by livestock and deer may need to be prevented in sensitive areas, by selective use of fencing, until re-vegetation has become established.
- In the event that stored peat soil becomes dewatered or desiccated, this material would not be exposed in the upper part of any reinstatement area in order to minimise any further character loss. Storage of excavated peat soil would be minimised in order to prevent or limit dewatering and desiccation.

3.4 Updated Peat Soil Management

3.4.1 The Outline Peat Management Plan presented here would be updated and refined as necessary with further Site-specific detail once ground investigation results become available. This would involve recalculation of peat soil volumes requiring excavation and storage. Location-specific reinstatement would be directed by the ECoW, taking account of specific local variation in topography and natural ground conditions. The Construction Peat Soil Management Plan, to be prepared post-consent, would be a live document, with revisions added as necessary during the construction process.

4 SUMMARY

4.1.1 This Outline Peat Soil Management Plan provides an assessment of the likely volumes of peat soil that would require excavation during the construction of the Proposed Development, and of the volumes of peat soil that can legitimately be used in reinstatement of development infrastructure. The assessment has included consideration of all proposed infrastructure that would require construction and excavation work where peat soil would require removal.

4.1.2 The assessment indicates that there would be a balance in peat soil volumes and that all peat soil excavated for construction would be able to be reused within the Proposed Development. Reinstatement and restoration areas would be identified by the ECoW for areas where peat soil placement would be most suitable.

4.1.3 Approximately 60% of the excavated peat soil would be acrotelmic, which provides good opportunities for promoting re-establishment of peatland vegetation in areas of peat soil reuse. Sensitive reinstatement would help to minimise the habitat loss from construction and promote continued formation of peat soils at the Site.

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FIGURES

Figure 7.4.1 Potential Peat Soil and Soil Stockpile Areas

290500E 291200E 291900E 292600E 293300E 294000E 294700E 295400E

342300N 341600N 340900N 340200N 339500N 338800N

Afon Mynach
Cwmtirmynach
Pen y Ffordd-goch
Bwlch y Greigwen
Nant Gau
Greigwen
Garnedd Fawr Cairn
BSs
BS
Foel Goc
BS 611
Hendre bach
Pen-yr-allt
Ty'n-y-ddôl-uchaf
Coed Nant Gau
Foel Tyn-y-ddôl
Nant Gau
Waterfall
FB
Nant Hir
Maespyllan
Sheepfold
Pont Mynachddwr
Fotty Nant Gau
Maes-y-gadra Covart
Tips (dis)
Llwyn-y-brain
Cae'r Ceiliog
Foel Fâch
Moel Darren
Gorseddau
Llaithgwm
Pen y Bwlch Gwyn
Neuadd
Glan-y
Beudy Frongoch
Coed Glan-yr-afon
Wern Fawr
Ws
Spr
Cefn-ffordd
Fords
Nant Cefn-coch
Eglwys-Anne Warren Ffridd
Eglwys-Anne
Wern Fawr Covert
Eglwys Anne Newydd
Moel Emoel
LLANDDERFEL C
Garw Fynydd
Mur-glâs
Tai'r-felin
Weirglawdd-gôch
Coed-y-foel-uchaf
Llyn Maen Bras
Maen Bras
Cwm-onen
Coed Bwlch-y-tyno
Frongoch Farm
Ty-llwyd
Gravel Pit
Y Foel
Coed Penmaen-mawr
Coed Penmaen-uchaf
Coed Foel-Emoel
Creigiau uchaf
Coed Creigiau
Creigiau-isaf
Rhos-Daw
Penmaen
Penmaen-canol
Coegnant
Pen-rhos-uchaf
Ty'n-y-celyn
Coed Maes-y-fedw
Dismantled Railway
Afon Tryw
Penmaen-

LEGEND:

- Turbine
- Site Boundary
- Hardstands
- Tracks
- Verges
- Substation
- Batching Compound
- Construction Compound
- Bridge Temporary Working Area
- Batching Earthworks Cut
- Batching Earthworks Fill
- LiDAR Compound
- Borrow Pit
- Cut
- Compound Earthworks Cut
- Compound Earthworks Fill
- LiDAR Earthworks Cut
- Substation Earthworks Cut
- Substation Earthworks Fill
- Potential Stockpile Areas

CRS: EPSG:27700
Projection: Transverse Mercator
Ellipsoid: EPSG:7001
Units: meters

Rev	Date	Description	Drn	Chk	App
1.1	05/11/2025	Second Draft	CP	GE	CI
00	24/06/2025	First Draft	CP	EA	CI

Foel Fach Wind Farm

TITLE: Figure 7.4.1
Potential Peat Soil and Soil Stockpile Areas

ID:P664094_Figure7.4.1 Potential Peat Soil & Soil Stockpile Areas

0 0.3 0.6 km
Kilometers
Scale: 1:15000 @A3

REV 1.1

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