Appendix 8.1: Outline Peat Management Plan

Giants Burn Wind Farm

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1 Introduction

1.1 Overview

This report details the requirements for a Peat Management Plan (PMP) at the proposed Giants Burn Wind Farm ('the Proposed Development'), situated approximately 1.3 km north-west of Dunoon and 1.5 km south-west of Sandbank. This document provides supporting information to the Environmental Impact Assessment (EIA) for the Proposed Development. This is an outline PMP that will be updated to incorporate any further site investigations within the application boundary (the Site) and will be finalised after conditions discharge, should the project gain consent.

The PMP provides details of how peat would be excavated on-site, the characteristics of the peat that could be excavated, and outlines suitable methods for reusing and managing excavated peat in line with good practice methods.

This strategy should be adopted to allow the peat on-site to be managed in a sustainable manner, minimising excavation via the adoption of appropriate construction methods. Targeted reuse of peat as part of the reinstatement works shall also be a key consideration.

The following sections of this report provide:

- A description of the peat conditions on-site;
- Detail of the construction activities that will generate peat, and of the estimated volumes that will be generated, as well as the estimated reuse volumes;
- Detail of the physical nature of the peat and confirmation of its suitability for the reuses proposed;
- Methods and procedures for handling excavated soils; and
- Details of temporary storage.

This document should be read in conjunction with the information provided as part of the EIA Report, including Chapter 8.

This document should be considered a **live** document throughout the development phase of the wind farm. As such, additional information may be incorporated following the results of any further investigations carried out as part of the detailed design process that provide further information across infrastructure locations. Additional information may also be incorporated from discussions with NatureScot, the Scottish Environment Protection Agency (SEPA), the Local Planning Authority, or other stakeholders. Such information should be used to refine the peat excavation and re-use volumes provided in this plan.

1.2 Guidance

This document addresses the following requirements in line with the SEPA Regulatory Position Statement – Developments on Peatland:

- Prevention – the best management option for waste peat is to prevent its production; and
- Re-use – developers should attempt to re-use as much of the peat produced on-Site as possible.

This PMP has been produced in accordance with the following guidance on developing on peatland:

- Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland Survey. Guidance on Developments on Peatland, online version only;

- SEPA, Scottish Renewables (2012) Developments on Peatland: Guidance on the assessment of peat volumes, reuse of excavated peat and the minimisation of waste;
- SEPA (2017) WST-G-052, version 1, Developments on Peat and Off-Site Uses of Waste Peat;
- Scottish Renewables, SNH, SEPA, Forestry Commission Scotland (2019) Good Practice During Wind Farm Construction 4th Edition; and
- Forestry Civil Engineering, SNH (2010) Floating Roads on Peat.

1.3 Limitations

This document has been prepared by Green Cat Renewables Limited (GCR) with all environmental, planning, and technical skill and expertise for the purposes of assessing the potential peat extraction and likely reuse options at the Proposed Development.

The peat extraction and likely reuse options are provided as predictive indications and are based on a series of assumptions. Peat depth surveys should not be considered fully comprehensive as peat is naturally occurring material with natural variations, therefore its composition and depth can vary between peat probing locations. As such, the peat depth can still vary over a small scale which can impact on the suitability of the proposed extraction and reuse options. It is considered that this information gap does not significantly affect the broader assessment of the peatland value of the Site.

Further, the recommendations of this report are based on an interpretation of legislation, Codes of Practice, guidance notes, and current research opinion. Such guidance, particularly in environmental matters, is developing rapidly. Although this report endeavours to anticipate any such changes that may arise within the foreseeable future, changes are liable to occur which may cause the report inadequately to address the position at that time. Further, the situation may be subject to varied interpretation by statutory authorities and others, for which GCR cannot be responsible.

Further ground investigation techniques will be employed, as necessary, prior to and during the construction phase in order to update the PMP and inform micro-siting. This will be carried out as part of the planning condition discharge, should the project gain consent.

2 Site Context

The Site is situated approximately 1.3 km north-west of Dunoon and 1.5 km south-west of Sandbank on an area largely comprised of shrub heathland with rough grassland and blanket bog habitat, spread across the upper slopes of a mountainous ridge. Several areas of coniferous forestry are located along the Site Boundary with trees of varied maturity.

Topography within the Site generally slopes from east to west with elevations ranging from 160m AOD to 506m AOD. The summits of The Socach (506m), Giants Knowe (446m), Bishop's Seat (504m AOD), Big Knap (452m), Eilligan (469m) form a ridge along the south-east of the Site which descends westward into Glenkin Valley.

The hydrological setting of the Site is outlined in EIA Report Chapter 8: Geology, Hydrology, Hydrogeology and Soils.

The NatureScot Carbon and Peatland Map (2016)[1] identifies the majority of the Site to be underlain by Class 2 peatland which encompasses the eastern extent and underlays a large portion of the development footprint. An area of Class 1 peatland was also identified within the northern extent of the Site, underlying Turbine 7. Class 1 and Class 2 peatland are nationally important carbon-rich soils that are likely to be of high conservation value. The remainder of the Site is underlain by mineral soil, which is not classed as a nationally important resource.

The National Soil Map of Scotland[2] identified the Site to be underlain by peaty gleys with peaty gleyed podzols with dystrophic semi-confined peat and peaty gleyed podzols with peaty gleys.

2.1 The Site

The Site, as detailed in EIA Report Chapter 3: Description of Proposed Development, comprises:

- Five, three-bladed horizontal axis wind turbines measuring up to 200m tip height and two, three-bladed horizontal axis wind turbines up to 180 m tip height;
- Turbine foundations and hardstanding areas for cranes at each turbine location;
- Battery energy storage system (BESS) compound;
- An on-Site electrical sub-station and control network of buried cables;
- Proposed access tracks, passing places and turning heads;
- Watercourse crossings;
- A temporary construction compound, including parking, and welfare facilities; and
- Associated ancillary works.

[1] https://map.environment.gov.scot/Soil_maps/?layer=10 (Accessed: 18/04/2025)
[2] https://map.environment.gov.scot/Soil_maps/?layer=1 (Accessed: 18/04/2025)

3 Peat Depth Surveys

3.1 Peat Definition

Peat is a body of sedimentary, naturally occurring material, usually dark brown or black in colour, comprising the partially decomposed remains of plants and organic matter that is preserved in anaerobic conditions within an essentially waterlogged environment. Peat is highly porous and can vary greatly in both composition and depth[3].

Under the 'Wildlife Management and Muirburn (Scotland) Act 2024'[4], peatlands are classified based on the depth and organic content of the soil. Peat deposits <0.4m deep are classified as "peaty soils," meaning they contain organic matter but do not meet the depth criteria to be considered peatland. True peat soil must have an organic content exceeding 60% and be >0.4m in depth to qualify. Additionally, peat with a surface organic layer >1m in depth is classified as "deep peat" under this legislation.

Peat deposits can exist in one of three forms:

- Fibrous – non-plastic with a firm structure and is only slightly altered by decomposition;
- Pseudo-fibrous – peat in this form still has a fibrous appearance but is much softer and more plastic than fibrous peat. The change is due to more prolonged submergence in airless water rather than to decomposition; and
- Amorphous – decomposition has destroyed the original fibrous vegetation structure such that it has virtually become organic clay.

Peat deposits can be broadly divided into two layers:

- The upper (acrotelm) layer which is quite fibrous and contains plant roots etc. Acrotelmic peat is relatively dry and has some tensile strength. The acrotelm is generally found in the upper 0.5 m of peat deposits, although it is noted in SEPA guidance that this can be up to 1 m. The acrotelm is generally suitable for re-instatement as it contains visible plant life, which supports the regeneration of peatland vegetation and carbon sequestration.
- The lower (catotelm) layers are highly amorphous, with very high water content and tend to have very low tensile strength. Generally, the low tensile strength of catotelmic peat means its structure tends to disrupt completely on excavation and handling. Such peat must not be transported any distance, and if it is disturbed it must be reinstated locally under the strictest of care. However, fibrous or semi-fibrous catotelmic peat will generally have suitable structural integrity to be used for lower level restoration. Any catotelmic peat used for restoration will be capped with a layer of acrotelm to re-establish peatland vegetation.

3.2 Peat Surveys

The peat work was carried out in three phases.

An initial phase 1 peat survey was undertaken by GCR in October 2023. The phase 1 survey consisted of a targeted sampling regime tailored to cover the entire landholding and gather an initial baseline of the depth and structure of peat on-site. A total of 263 peat probes were collected across a 100 m x 100 m grid, which included recording the NGR Easting and Northing of each probe location to 0.1 m, along with the peat depth, slope angle, peat strength, slope instability, and water conditions. This initial data was then fed into the design evolution.

A phase 2 peat survey was then carried out by GCR in March 2025. This sampling was focused on the proposed final project design and collected probes at a density of 50 m along the proposed access tracks and at 10-25 m intervals around the proposed turbine foundations and hardstanding areas. A total of 2,735 probes were

[3] https://www.sepa.org.uk/media/287064/wst-g-052-developments-on-peat-and-off-site-uses-of-waste-peat.pdf (Date Accessed: 09/06/2025)
[4] https://www.legislation.gov.uk/asp/2024/4/enacted (Date Accessed: 09/06/2025)

successfully collected across the Site. A further 1,691 probe locations were attempted but could not be completed due to obstruction.

Following the phase 2 survey, it was proposed that alternative layouts should be considered to avoid areas of deeper peat. An alternative layout was designed to avoid these areas before an additional phase 2 peat survey was completed. This survey successfully collected 636 probes across the Site. A further 288 probe locations were attempted but could not be completed due to obstruction.

As the instances of deeper peat are sporadic and localised, the entire footprint of each infrastructure component is not uniformly underlain by deep peat, with areas of shallower peat or mineral soils dominating the majority of each development area. This localised nature of deeper peat reduces the potential for widespread peat disturbance, meaning substantial excavations are not anticipated and mitigation efforts such as floating or micro-siting of tracks can be used to minimise any unnecessary disturbance to the deeper peat.

Peat soil is present across almost half of the development area, though the majority of the recorded peat depths (61.0%) across the Site were noted to be <0.5m in depth. The areas of deeper peat (≥1m deep) are prominently found around the hardstanding and foundation areas of Turbines 1, 2 and 3. Table 3.1 outlines the average depth range of peat probes within the Site.

The extent of peat coverage and depth of peat on the Site is shown on Figure 8.1.1 and is discussed further in Chapter 8.

Peat soil is present across the majority of the Site and the majority of the recorded peat depths (34.7%) across the Site were noted to be between ≥0.5 m to <1.0 m in depth. The areas of deeper peat (≥1 m deep) are prominently found around the hardstanding and foundation areas of Turbines 2, 3 and 4.

Table 3.1 - Peat Depth Range

Peat/Soil Depth Range (m)	Number of locations surveyed	Percentage of locations surveyed (%)	Average depth in range (m)
0.0 to <0.5	946	26.1	0.28
≥0.5 to <1.0	1,261	34.7	0.68
≥1.0 to <2.0	1,068	29.4	1.27
≥2.0 to <3.0	303	8.3	2.26
≥3.0	54	1.5	3.44
Total / Aggregate	3,632	100	0.92

3.2.1 Peat Composition

In terms of composition, most of the peat encountered across the Study Area was found to be strong with many fibres (83.9%), with a few lesser areas being logged as having few fibres, yet still strong in nature (13.1%). There were also a few locations that were noted to be strong but spongy in nature (1.4%), and weak with spongy composition (0.1%).

4 Minimising Excavation Volumes

4.1 General Design Principles to Minimise Peat Excavation Volumes

From the outset, the design of the Proposed Development has sought to avoid areas of deep peat on-site to prevent altogether the disturbance of peat habitat. However, where this has been considered unfeasible due to other environmental and geological constraints, the proposed infrastructure has been located on the shallowest possible peatland. The proposed layout provides an optimal solution that finds the correct balance of the various constraints on-site, given the information available at this pre-construction stage.

During the construction of the Proposed Development, all reasonable measures will be taken to avoid or minimise excavations, and to minimise disturbance to peat and peatland habitats. Details on minimising excavation volumes are presented in the following paragraphs.

4.2 Reducing the Impact on Peatland

The strongest method to reduce the impact of construction activities on peatland is to use the peat as soon as possible after excavation. This is done to minimise erosion through exposure of the peat to the air and to maintain moisture content in the peat to keep carbon losses to a minimum. Temporary storage of peat, when required, will be for the minimum time possible and no longer than 6 months.

Peat will not be disturbed unless necessary, and the disturbance of peat resulting from the construction of the access tracks, crane hard standings and foundations will be minimised as far as is practicable by considering the following points:

- Temporary retaining structures deployed to reduce the volume of excavations;
- 'Floating' type construction for access infrastructure over deep peat; and
- Low volume foundation construction techniques.

Using data collected to date and during construction, the Contractor will apply methods that reduce overall peat excavation volumes. Excavated material will be handled and stored to maintain integrity and allow reuse. An Environmental Clerk of Works (ECoW) has been appointed and prior to works commencing in each area, a walkover will be carried out to identify any areas of sensitive habitat or deep peat. The ECoW shall be consulted throughout the construction phase to ensure compliance with the peat management plan with respect to reinstatement, ecological enhancement and sustainability. A programme of geotechnical inspections will be implemented during excavation works to monitor the stability of peatland across the Site.

4.2.1 Floating Roads and Laydowns

Where there is a practical and safe alternative to cutting peat, this has been favoured. The most efficient method of reducing the required volume of peat excavation is through siting infrastructure outwith areas of deeper peat during the design process. However, when unavoidable, alternative constructional methods such as "floating" can be utilised.

Floating roads can reduce peatland disturbance on wind farm developments by avoiding peat excavation and limiting impacts on hydrology. Where tracks cross peat deeper than 1 m, floating construction may be proposed to avoid unnecessary disturbance. Suitability depends on ground slope, both across and along the route. Generally, 5% gradient is the maximum for the safe floating of structures.

According to the Scottish Natural Heritage guidance[5], the higher the fibre content, the more suitable the peat will be for floating road applications. The majority of the peat cores taken during the peat surveys showed a high fibre content, with 83.9% of the probes being noted as strong with many fibres and 13.1% noted to be strong with few fibres. This indicates that peat conditions across much of the Site are favourable for the construction of floating roads, where required.

In general, floating construction techniques will incorporate a geogrid that will be laid by hand along the alignment of the road, directly onto the prepared area with a simple overlapping arrangement generally in accordance with the relevant manufacturer's specification to prevent contamination of the aggregate layers. This geotextile may be covered with a thin regulating layer of aggregate prior to installing the main geogrid. The first layer of aggregate material will then be placed onto the geo-grid, this shall be a suitable 'well graded material' that will be able to achieve a sound interlock with the geo-grid. Care shall always be taken to avoid damage to the geotextile and geo-grids.

Other structures might also be floated. For example, there may be opportunity to float turbine component laydown areas, although this is dependent on other factors including the turbine make and model eventually employed. The same floating construction techniques would be employed.

4.2.2 General Excavation Principles

Where floating construction techniques cannot be used, peat will need to be excavated and then reinstated.

Prior to any peat excavations, an ECoW will be commissioned to carry out a walkover of the Site to identify any areas of sensitive habitat or deep peat. Additionally, the Principal Contractor will produce a method statement detailing exactly how any excavated peat will be used in reinstatement or habitat restoration works. The statement will outline the requirements for the handling, storage and reuse of peat, and will consider peat layering and potential instability of excavated materials. This method statement will be reviewed by the ECoW prior to implementation.

Where peat excavations are deemed to be necessary, good practice measures will be followed to ensure that the volume of excavated materials is kept to a minimum. Batter slopes of reinstated verges will be considered in a manner that maintains slope stability, local topography and hydrology. Good practice handling and storage methods will be followed to retain the integrity of the peat as far as possible.

Ground disturbance areas around excavations will be kept to a minimum and will be clearly defined on-site. Access to working areas during construction will be restricted to specified routes, and dedicated tracks.

Appropriate plant will be used to avoid unnecessary disturbance to the ground surface. This includes the use of low ground pressure plant and long reach excavators as appropriate. In areas of deeper peat, mobile plant will be kept to constructed tracks or hardstanding areas.

Excavated peat will have the top layer of vegetation stripped off as turf, prior to construction. These excavated turves will be stored appropriately to maintain their structure prior to reuse. If any underlying catotelmic peat is present, it will then be excavated and stored separately, ensuring it remains moist. Extreme care will be taken when handling any excavated peat turves and catotelmic peat to reduce the risk of cross contamination between distinct layers.

[5] Floating Roads on Peat, A Report into Good Practice in Design, Construction and Use of Floating Roads on Peat with particular reference to Wind Farm Developments in Scotland, Scottish Natural Heritage, August 2010. (Date Accessed: 09/06/2025)

4.3 Peat Volumes

For activities where removing the need to excavate peat entirely is not possible, an assessment using currently available information has been carried out to calculate the required excavation volumes.

Most infrastructure within the Site will require full excavation of the underlying peat or soils during construction. However, some temporary infrastructure may be removed after construction, and peat excavated from these areas will be reinstated where possible.

It is important to note that this document provides the preliminary estimated volumes of materials and potential reuse volumes for the initial design of the Proposed Development, and these volumes may vary depending on ground conditions or discrete design amendments, i.e. the micrositing of infrastructure.

The estimated volumes of excavated peat will be calculated through spatial analysis of the gathered peat depth data using LSS™ software. The peat depth data points will be used to generate a triangle-based Digital Terrain Model (DTM) to predict the peat depths across the Site, based on the relevant data points. Following this, the volume of peat will then be estimated for the proposed infrastructure that will require material excavations, using 'prismoidal' volume technique.

As discussed in Section 4.2, where new tracks are proposed across areas of peat with a depth >1 m, then floating construction techniques may be used to avoid unnecessary disturbance to peat. The construction of the floating access tracks will not create any volumes of excavated peat. Floating of access tracks are only advisable in areas where the slope gradient is <5%.

Due to the Site's topography, the use of floating access tracks is not feasible across the majority of the Site. Where ground conditions allow floating track construction will be adopted over areas of deep peat to minimise peat excavation. One area approximately 150m in length was identified to the east of T3 where topography will allow floating.

Additionally, it is proposed that the construction and BESS compounds, targeted areas within the turbine hardstandings and blade laydown areas are to be floated. These are illustrated in C5826-GCR-XX-GA-SK-P-0001.

The proposed floating track sections are illustrated in Figure 8.1.1. The peat excavation volumes provided in Table 4.1 - Peat excavation for infrastructure components do not account for the use of floating tracks and infrastructure.

4.4 Infrastructure Excavation

4.4.1 Turbine foundations, hardstandings, blade laydowns, and associated crane pad areas

Each turbine location includes a permanent circular foundation within a permanent hardstanding area, along with blade laydowns, and associated crane pad.

Permanent areas must remain in place for maintenance and future decommissioning. Earthworks are required around each hardstanding to level the ground, involving either cutting or filling depending on the slope at each turbine location. Steeper slopes generally require more extensive earthworks, which result in peat excavation.

4.4.2 Access Tracks

Access tracks within the Site include approximately 2.5 km of new cut-and-fill construction and 150 m of floating construction. A further 3.8 km of existing track is proposed for upgrade, with additional excavation only required where the upgraded footprint extends beyond the existing alignment or current earthworks. Excavation for new tracks is assumed across the full footprint, including associated earthworks.

4.4.3 Construction Compounds

Two construction compounds are proposed as part of the Proposed Development, totalling an area of approximately 10,000m^2. Site conditions allow these compounds to be floated, which reduces the volume of excavated peat.

4.4.4 Substation

The proposed substation foundation occupies an area of 1,000m^2.

Table 4.1 - Peat excavation for infrastructure components

Infrastructure Component	Estimated Volume of Acrotelmic Peat (m^3)	Estimated Volume of Catotelmic Peat (m^3)	Total Estimated Volume of Peat (m^3)
Cut Access Tracks	9,996.9	19,359.6	29,356.5
Turbine 1 Foundation & Hardstanding	1,776.2	1,656.0	3,432.2
Turbine 2 Foundation & Hardstanding	1,118.1	3805.1	4,923.2
Turbine 3 Foundation & Hardstanding	1,834.8	1176.8	3,011.6
Turbine 4 Foundation & Hardstanding	2,429.4	2,331.5	4,760.9
Turbine 5 Foundation & Hardstanding	1,528.3	4724.8	6,253.1
Turbine 6 Foundation & Hardstanding	1,674.2	3802.7	5,476.9
Turbine 7 Foundation & Hardstanding	2,543.4	1,468.5	4,011.9
BESS & Construction Compounds	0	0	0
Substation	278.4	632.6	911.0
Total	23,179.7	38,957.6	62,137.3

The total volume of peat excavation for the final layout is estimated to be approximately 62,137 m^3.

To demonstrate how peat disturbance has been minimised through the design process, Table 4.2 - Peat excavation volumes for considered layouts presents the estimated volume of peat excavation for each design iteration. This comparison highlights the progression towards a layout that results in the least amount of peat being excavated, supporting the selection of the final design as the most environmentally appropriate option.

Table 4.2 - Peat excavation volumes for considered layouts

Design Iteration	Estimated Volume of Acrotelmic Peat (m^3)	Estimated Volume of Catotelmic Peat (m^3)	Total Estimated Volume of Peat (m^3)
Initial Design Layout	27,307.1	52,560.6	79,867.7
Final Design Layout	23,179.7	38,957.6	62,137.3
Reduction in Excavated Peat Volume	4,127.4	13,603.0	17,730.4

5 Storage, Reuse, and Reinstatement

5.1 Temporary Storage and Handling of Peat

The temporary storage of peat has been considered in line with the Scottish Renewables Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat, and Minimisation of Waste[6].

Temporary storage may be required where material is not required for immediate reinstatement or reuse. To minimise handling and haulage distances excavated material will be stored close to the area of excavation where possible, and local to the end–use location where it is required for re-profiling, landscaping, or structural purposes. Stripped materials will be carefully separated to keep soils apart and then stored in appropriately designed and clearly defined separate piles.

The following measures will be implemented during peat storage:

- Prior to any excavation of peat, the locations of the temporary stockpiles will be mapped by the Principal Contractor so that all contractors handling peat know where to place the peat for temporary storage until it is reinstated or transported to the restoration area.
- Construction areas will be stripped to avoid cross contamination between distinct peat horizons. Clearly defined temporary stockpiles will be created, and side casting is given preference in a manner which allows peat to be returned to the same area it is excavated from.
- Where peat is >1m thick, the acrotelm and catolemic materials will be separated, with the acrotelmic material retained for in-situ reinstatement. Excavated peat from cut and fill sections of the nearest located infrastructure will be used for dressing the side slopes of floating track sections. Turves and re-usable extracted acrotelmic peat will be temporarily stored in accordance with 'General Principles for Reinstatement of Soils' in the SNH Good Practice During Windfarm Construction, in locations as close as possible to the excavation. These stores will not be located on areas of deep peat, on sensitive areas of wetland vegetation, or within 30m of watercourses.
- The locations of the temporary storage areas will be identified after a site investigation, and shall be determined in consideration of peat stability, sensitive receptors, and the proposed pollution prevention methods. Sensitive areas, including Groundwater Dependant Terrestrial Ecosystems (GWDTEs), will be avoided for dedicated temporary storage areas. This impact should thus minimise any potential ecological impacts, avoid risks from material instability, and prevent sediment-laden runoff directly discharging into watercourses on-Site. The storage location(s) proposed by the Contractor will be agreed with the appointed ECoW and signed-off prior to commencement of main phase of works.
- Turves incorporating vegetation will be stored vegetation side up and organised and labelled according to NVC community, under the supervision of the ECoW, for the purposes of reinstatement adjacent to similar communities within intact surrounding peat.
- Catotelm peat to be stored temporarily will be smoothed or 'bladed off' to reduce their surface area and minimise desiccation. When required, additional measures to prevent drying such as light irrigation and use of coir matting should be utilised.
- To encourage the successful reinstatement of peat turves and minimise the risk of adversely affecting the integrity of the peat and plant communities, the time for which peat would remain out of the ground will be

[6] Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste (Date Accessed: 11/06/2025)

minimised. Turves will be stored upright and not stacked on top of each other, to ensure turves are not starved of light. Suitable storage will be prioritised towards areas with lower ecological value and low instability risk.

- Temporary peat stockpiles are to be no greater than 0.5 m in height. All peat stockpile locations will be determined at the Peat Kick-Off meeting and prior to the commencement of any works involving peat within the Site. The ECoW shall be consulted to ensure the temporary stockpiles meet.
- Training is provided to the relevant construction and Site staff on the correct handling and identification of peat including excavation and separate reinstatement/restoration requirements for acrotelmic, vegetated peat or fibrous non-vegetated peat and catotelmic, amorphous non-fibrous peat. Training will Include requirements for checking, monitoring, and maintaining the moisture of the temporary peat stockpiles. Toolbox talks on the importance of peat and peat conditions at the Giants Burn Wind Farm will be conducted regularly.
- Peat shall be stored on geo-textile matting which acts as a protective barrier to the underlying soils and vegetation. The geo-textile shall be designed to prevent ingress of groundwater and erosion and de-stabilisation of the base of the stored peat. Peat within any temporary storage shall be stored to a maximum depth of 1m with the peat turfs stored separately from underlying peat. The peat turfs or vegetation layer shall be stored in a single layer.
- A system of watering the stored peat and turfs / vegetation shall be in place to ensure that the peat remains damp and prevents drying out and desiccation. The vegetation layer and seed bank shall therefore be sustained. This is an important element in the restoration of infrastructure, providing continuity with surrounding local vegetation upon reinstatement. For the duration of time that material is kept in temporary storage it shall be necessary to periodically monitor the condition of the stored peat and ensure the stability is maintained.

Disturbance and loss will be reduced to the minimum necessary for the works and all best practice measures implemented to reduce impacts on peat and the quality of the remaining soils and peat. All peat excavated for constructional activities will be reused and will not be removed from the Site.

5.2 Peat Reuse and Reinstatement Methods

Excavated peat will be reused in two ways:

- The reuse of peat to redress infrastructure and earthworks areas; and
- The use of translocated peat to support forest to bog and additional restoration within the Site.

Prior to the commencing of excavation works, consideration will be given to procedures for handling and keeping the excavated materials, notably peat. Excavation can result in peat losing structural integrity, especially when the material is overhandled or transported around the Site. As such, both the haulage distances of excavated materials and handling will be kept to a minimum.

Reinstatement will be focused on natural regeneration utilising peat, other vegetated turves, or soils that have been stripped and stored appropriately Where possible, peat turves with vegetation similar to that on the surrounding intact peat will be used to dress the reinstated surface, to help encourage early establishment. The appointed ECoW will monitor the success of reinstatement and vegetation establishment. Prior to any reinstatement works involving placing peat along verges, the locations of the reinstatement areas will be mapped by the principal contractor so that all contractors handling peat know where to place the peat.

Any restoration methods considered will adhere to the Peatland ACTION Technical Compendium where possible[7]. The following paragraphs discuss the reinstatement methods for excavated peat that can be adopted for the main infrastructure at Giants Burn Wind Farm.

[7] https://www.nature.scot/doc/peatland-action-technical-compendium (Accessed: 18/06/2025)

5.2.1 Crane Hardstandings and Turbine Foundations

Crane hardstandings are to remain in place and be uncovered for maintenance activities. The area around the crane hardstandings and exposed batters will be reinstated with soils, vegetated layers, and peat turves that were previously stripped for construction works.

Following construction, turbine foundations will be backfilled with dense aggregate which will remain subsurface, enabling placement of suitable reinstatement material above. This approach facilitates a natural transition to the surrounding peatland. As discussed in Section 5.2, the gradient of landscaped verges will be such that water retention is promoted and slowed, to ensure that vegetation can re-establish. The reinstatement works will thus be closely monitored by an experienced ECoW to ensure the strategy achieves the desired results. The peat will be reinstated such that it retains suitable water content to permit re-vegetation.

Reinstatement of verges will be carried out as soon as possible after the foundation construction to minimise the potential for turves to dry out and decompose.

5.2.2 Floating Access Tracks and infrastructure

Floating tracks and infrastructure can be used on wind farm development to reduce the disturbance of and impact on peatland on a site. According to the SNH Floating Roads on Peat guidance, Section 3.2.1, the higher the fibre content, the more suitable the peat will be for floating road applications. The majority of the peat cores taken in the 2023 and 2025 studies showed a high fibre content (83.9%), with only 0.1% of the peat studied showing no fibre content.

Floating tracks will stand approximately 1 m proud of the surface of surrounding peatland and will be designed to allow water to infiltrate through the track and into the adjacent and underlying peat. At this stage, it is anticipated that the access tracks leading to turbine one and turbine two will be floated to avoid the excavation of deeper peat.

Peat will be used to dress off the verges of the floating track and gradually grade them into the surrounding terrain in a manner that maintains slope stability, local landscape, and hydrology. This should reduce the visual impact and help stabilise the roads edges. Where possible, a batter slope of 1:5 will be utilised on the reinstated verges of the floating tracks to help maintain stability. Where possible, turves will be used to surface the peat used in this way. Peat should be reinstated such that it retains suitable water content to permit re-vegetation. Reinstatement of verges will be carried out as soon as possible after the foundation construction to minimise the potential for turves to dry out and decompose.

The floating of construction compounds and laydown areas is also proposed where topography allows.

5.2.3 Cut Access Tracks

During track redressing, peat will be placed back in the correct order of horizon and topsoil. Peat turves will then be placed on top to encourage the potential re-growth of vegetation.

Peat will be reused to gradually tie any cut and fill and exposed stone slopes into the surrounding terrain. Reinstated track verges will be laid to a depth of 0.5 m to 1 m at an angle that grades into the surrounding landscape. Turves will be used to surface the peat, where possible. If insufficient turves are available, then the surface covered by turves should be maximised by laying them in a checkerboard arrangement.

Reinstatement of verges will be carried out as soon as possible to minimise the potential for turves drying out. When laying the verges, the peat will not be arranged too thin to avoid the peat drying out, neither will the peat be laid too thick as this could result in an unstable surface and drainage issues.

Peat should be reinstated such that it retains suitable water content to permit re-vegetation.

5.2.4 General Reuse and Reinstatement Methods

The following additional design assumptions and management requirements salient to the re-use of excavated peat are highlighted below:

- Prior to any reinstatement works involving placing peat, the locations of the reinstatement areas will be mapped by the principal contractor so that all contractors handling peat know where to place the peat.
- Reinstatement strategy will be to aim for a tertiary and perched groundwater within the landscaped peat which would generally accord with the surface peat conditions across the intensely cut and drained sections of the Site. Peat will be placed in sufficient depth and volume that retention of water content is facilitated. The peat which is generally at higher degrees of humification is pseudo-fibrous to amorphous and thus is postulated to have a very low hydraulic conductivity, which shall aid in this process.
- Peat placed alongside the verge will be at an angle no larger than 45 degrees to prevent slippage and to retain vegetation. The peat will be placed so that the maximum height above the surrounding ground level is no more than 1 m. The maximum width of peat will be determined based on the height of the surrounding ground level and will be kept to a minimum as much as possible while keeping an angle no greater than 45 degrees.
- Where the reinstated soils are determined to be resultant in a free draining condition, it may be acceptable in these scenarios to promote development of dry heathland vegetation, by placing the minimum thickness of peaty soils without placing turves. The establishment of common heather vegetation would then be likely, ensuring the reinstated peat deposits established a vegetation cover, offering erosion and desiccation protection. In these areas peaty soils will be used to reinstate rather than peat.
- The final gradient of landscaped verges will be such that water retention is promoted / slowed and thus vegetation can re-establish. The reinstatement works will thus be closely monitored by the appointed ECoW to ensure the strategy achieves the desired results or otherwise where the strategy may need to be adapted.
- Batter slopes of reinstated verges will be considered in a manner that maintains slope stability, local topography and hydrology.
- Careful consideration will be given on how to manage pollution prevention in areas such as watercourse crossings, bog pools and wetlands. This will be an important element of the Construction Environmental Management Plan (CEMP).
- The ECoW will be included in decision making process around storage areas, the ECoW should sign off on these.
- Training is provided to the relevant construction and site staff on the correct handling and identification of peat including excavation and separate storage requirements for vegetated peat, fibrous non-vegetated peat (acrotelm) and catotelmic amorphous non-fibrous peat. Include requirements for checking, monitoring and maintaining the moisture of the peat bunds.
- Vegetated buffer zones ensure that GWDTE's, protected habitats or other ecologically sensitive areas are protected from runoff arising from the construction activities and built Site layout (new track drainage).

5.2.5 Translocated Peat for Forest to Bog Restoration

Peatland condition across the Site was observed to be of modified condition due to grazing pressure. However, it was noted that many areas, particularly in the northern Site extent were fairly well vegetated. There is therefore limited opportunity for restoration within the Site. As a result, several areas have been identified as having potential to benefit from forest to bog restoration.

Reuse of translocated peat to support forest to bog restoration has been overseen by Forestry and Land Scotland (FLS) at several trial sites in Scotland such as Camster 2 Wind Farm in Caithness. It is thought that similar methods would be beneficial to the forest to bog areas at Giant's Burn.

Forestry surrounding T1 and T2 has been identified as a potential area for forest to bog restoration. Felling will occur in these areas within Bat Exclusion Areas (BAE). Additionally, the remaining forestry in the immediate area has been unsuccessful and is to be removed.

Some areas within this portion of forestry may be steeper than 5 degrees which is typically considered to be a limiting factor for restoration works. With specialised machinery, slopes of up to 10 degrees may be considered. Forest to bog on steeper slopes has been successful at Benmore Forest which has been overseen by FLS[8].

Methods will include:

- The felling of BAE and forestry areas will be undertaken as far in advance of wind farm construction as possible.
- After felling there may be residual ridges and furrows which would require smoothing to create a flatter ground profile, mimicking natural peatland topography. This method would be used in conjunction with drain blocking using catotelmic peat.
- For best results, ground smoothing techniques will be implemented as soon as possible following forestry removal. A 5 m buffer will be applied to watercourses and left untreated to avoid eroded peat entering via surface runoff.
- Ground smoothing techniques may include stump flipping in areas where peat is greater that one meter. This method separates the shallow tree root systems from the underlying peat. Stumps are flipped and then compressed into furrows. In areas where peat is less than one metre, stump slipping is not advised however furrow blocking can be implemented. Full removal of forestry is planned within the Site and as such, it is not anticipated that there will be stumps remaining. If any are encountered during the restoration development, this technique will be implemented.
- Based on the ongoing field trials overseen by FLS, the optimum translocation depth for peat in forest to bog programmes is 0.25 m. Translocated peat will be applied at this depth across these previously afforested areas.

5.2.6 Translocated Peat for Cell Bunds

In addition to the forest to bog restoration, it is proposed that any remaining excavated peat is reused by the creation of cell bunds. Several areas to the north of the Site, totalling 113,096 m^2, between Turbine 6 and Turbine 7 have been identified as areas which may benefit from the use of translocated peat.

The creation of cell bunds will adhere to the Peatland ACTION technical compendium guidance on surface bunding where possible[9].

Methods will include:

- The creation of cell bunds or fish scale bunds. The slope and surface runoff rate will be considered when determining the type of bund created. In high surface water flow areas such as slopes, fish scale bunds will be implemented to allow runoff to pass through.
- Cellular bunds will be constructed to a maximum size of 10 m by 10 m to avoid wave action over larger pools and prevent erosion of bunds.
- Pools will be re-seeded with sphagnum to accelerate revegetation.
- "Plastic" catotelmic peat will be used for the creation of bunds to retain water with acrotelmic peat and vegetation used to cap bunds and provide structure

[8] 'Forest to Bog Restoration – Demonstrating Success'. 2024. IUCN UK Peatland Programme (accessed: 19/06/2025)
[9] https://www.nature.scot/doc/peatland-action-technical-compendium-restoration-5-bunding-intervention (Accessed: 18/06/2025)

- Surface bunds will be constructed to a height of 0.5 m above the peat surface. This height is to allow for settling of peat to around the suggested 0.3 m, the initial bund height will be higher.
- Bund walls will also be constructed to a width of 0.5 m to 1m.

5.2.7 Monitoring

The management and monitoring of the peat restoration area will begin during the construction phase. After construction, and for the life of the Site, the developer will be responsible for the successful restoration of peatland on the Site. If the ECoW identified, through the ongoing monitoring, that the peatland vegetation within the restoration area is not regenerating at an acceptable rate, then the remedial action should be discussed and implemented in agreement with the PMP stakeholder group.

During the construction and operational phases of the Proposed Development, monitoring will be implemented as follows:

- Vegetation monitoring will be carried out during the operational phase of the development on a regular basis within the restoration area. The establishment of peatland vegetation will be recorded using the Domin scale to assess the percentage cover of indicator species, such as bog-mosses, from within fixed quadrats, and geo-referenced fixed photographs of the present vegetation cover will be logged. As well as peatland species cover, the vegetation monitoring will also note the peat condition, the presence of any invasive species, and the visible level of herbivore activity.
- Given that the Site has been used for forestry, some regeneration of trees is likely. To avoid drying of the proposed restoration areas, this regrowth will be monitored and removed where necessary. These records will provide a means for the appointed ECoW to monitor the success of restoration and vegetation establishment.
- Where the ECoW agrees that additional restoration efforts are required, the Contractor shall compose a proposal for reseeding, which will be undertaken with species appropriate to the surrounding peatland. It is proposed that the vegetation surveys will be undertaken throughout the restoration phase in year 1, during the growing season (April – September) and then repeated in years 3, 5, 10, 15, 25 of the life of the Proposed Development. The monitoring plan will be reviewed with the PMP stakeholder group following each survey.
- Dip wells will be installed within the restoration area at allocated test points, along with a control dip well in an adjacent area of intact peatland. The appointed ECoW will mark out the proposed location for the dip wells and the baseline data will be recorded. These will monitor the water table level annually within the first five years of the PMP, after which the need for continued monitoring will be evaluated and decided with the PMP Stakeholder Group whether there is a need for ongoing monitoring of the water table.

5.3 Peat Reuse Volumes

Where it is not possible to prevent removal of peat altogether, the excavated peat will be reused on-site. GCR will apply their experience of managing the construction of wind farms across various peatland habitats in order to estimate the volume of peat that could be reused as part of construction and habitat restoration.

Peat reuse will be limited to areas on-site already disturbed during construction, and peat will not be placed on intact vegetated areas as this will smother the vegetation. This will also ensure that the associated haulage of peat is kept to a minimum.

Table 5.1 sets out the approximate volumes of peat required for specific restoration activities and areas on the Site, based on the information currently available.

Table 5.1 - Estimated total volumes of peat for reuse on-site

Type of Reuse	Potential Reuse	Estimated potential Reuse of Peat (m^3)
Reinstatement		
Access Tracks (not including tracks located upon mineral soil)	Peat will be reinstalled along the excavated verges of the access tracks (where gradient is <10%) at a thickness of c.1 m. Assumes 2.5 m wide verge.	17,358
Turbine Foundations & Hardstandings	Peat will be used to redress cut and fill slopes around the hardstandings, verges and any exposed batters at a thickness of c.1 m, assuming a 3m wide batter.	6,192
Compounds and Substation	Peat will be used to redress cut and fill slopes around the hardstandings, verges and any exposed batters at a thickness of c.1 m, assuming a 3 m wide batter.	1,302
Total reuse for reinstatement		24,852
Restoration Areas		
Forest to bog areas (216,800 m^2)	The forestry surrounding T1 and T2 is to be felled. It is proposed that some excavated peat will be used to block any ditches and furrows left behind post felling and aid in ground smoothing and re-wetting. The volume of peat reused in this area assumes an average depth of 0.25m.	54,200
Peat bunds (113,096m^2)	Cell bunds will be implemented in the areas surrounding T6 and T7. Peat may be spread to a depth of 0.25 between bunds to aid reprofiling and improve stability. The exact volume of peat reused here will be assessed prior to construction.	Potential reuse volume to be confirmed following further surveying/ micro siting etc.
Total reuse for restoration		54,200
Combined Total		79,052

The total potential reuse of peat was calculated upon the basis that only areas with existing peat would be reinstated with excavated material. The southernmost sections of access tracks have also been excluded from the calculation due to them being located upon mineral soils. The remaining peat which cannot be used to redress access tracks and infrastructure will be reused as part of a restoration programme.

Table 5.2 - Net peat balance

Total Estimated Volume of Peat (m^3)	Total Estimated potential Reuse of Peat (m^3)	Surplus (+) or Deficit (-) Peat (m^3)
62,137	79,052	-16,915

Following redressing and reinstatement of tracks and infrastructure, and the reuse of excavated peat to improve forest to bog restoration surrounding T1 and T2, there is not anticipated to be any surplus peat remaining. Whilst these areas have potential for valuable reuse of peat, further assessment of the topography will be needed post felling to determine a more precise estimate of the volume which can be used as part of forest to bog restoration.

The areas identified around T6 and T7 total an area of 113,096 m^2 and exhibit some hagging and peatland which may benefit from restorative works including cell bunds to raise the water table and aid in rewetting. Should any peat be remaining following reinstatement and translocation to forest to bog areas, it will be used to supplement restoration techniques in these areas.

Following consent, micrositing of infrastructure may result in adjustments to the total volume of peat excavated. The volumes outlined represent a worst-case scenario at this stage to support EIA.

Over the lifetime of the wind farm, it is expected that there will be a potential for more peat to be reused on the Site than the volume excavated. The values in Table 5.2, and the additional potential peat reuse around T6 and T7 indicates that the Site has sufficient capacity to accommodate the potential re-use of any excavated peat. All excavated peat generated during construction will be reused within the Site. No peat will be removed from the Site or treated as waste.

It is important to note that these calculations are approximate in relation to both the volumes of peat which can be reused and excavated. In all cases, the calculations are thought to be conservative and are based on the information currently available.

6 Conclusion

This outline PMP has set out the estimated volume of peat to be excavated and it is considered that any peat disturbed during the construction of the wind farm can be suitably reused within the Site. It is considered that no waste license will be required for the construction of the Proposed Development.

As outlined, the volumes calculated and presented in this report are conservative and provide an extreme scenario in terms of extraction. The developer and their appointed contractor will review the Site before any construction work commences to ascertain any further savings which can be achieved to avoid the disturbance of peat on-site, and which sections of access tracks will be floated.

This PMP should be treated as a live document. Further information will be collated with input from statutory consultees and the PMP will be updated and finalised as part of the planning condition discharge. The updated PMP will also include the results of further investigations and detailed design, should the project gain consent.

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