Technical Appendix 9.6: Outline Peat Management Plan

Technical Appendix 9.6 Outline Peat Management Plan

9.6.1 Introduction

9.6.1.1 This Outline Peat Management Plan (PMP) has been prepared in accordance with relevant guidance[1,2].

9.6.1.2 This Outline PMP should be read in conjunction with the **Outline Decommissioning and Construction Environmental Management Plan (CEMP) (Technical Appendix 3.1, EIAR Volume 4**) and the various other reports that contribute to it, including the **Peat Depth Survey Report** (**Technical Appendix 9.5, EIAR Volume 4)** and **Peat Landslide Hazard Risk Assessment (PLHRA) (Technical Appendix 9.7, EIAR Volume 4)**.

9.6.1.3 The Outline PMP describes principles and methods to be used by the Applicant when excavating, moving and reinstating peat. It includes a volumetric peat balance and contains requirements for the final PMP, that will be developed by the Contractor post consent, prior to construction. A final PMP will be produced by the Applicant's infrastructure contractor.

9.6.1.4 The Proposed Development has been subject to a number of design iterations and evolution in response to constraints identified as part of the baseline studies. The design strategy has specifically had regard to following a mitigation hierarchy with respect to avoiding and minimising effects on carbon rich soils and peatlands. This includes siting the elements of the Proposed Development to avoid the deepest areas of peat as far as possible and thereby reducing the volume of peat to be excavated and reused.

9.6.1.5 Within this Outline PMP, 'deep peat' is defined as soils containing more than 60% organic matter and exceeding 0.5 m in depth. Areas of shallow peat have been assumed to be 'organo-mineral soils', which can be defined as soils containing more than 20% organic matter and not exceeding 0.5 m in depth[3]. The design priority was to locate infrastructure in areas of organo-mineral soils (or areas where no peat is present), avoiding impacts on deep peat. Given the nature of the peat depth and distribution at the site, in combination with other design considerations, it has not been possible to fully avoid areas of deep peat.

9.6.1.6 The overarching aim of this PMP is to provide guidance and a framework for the Contractor to effectively reuse peat excavated during construction to maintain and improve peatland habitats, reduce the risks to water quality and volumes, and retaining and using peat as close as possible to the point of extraction. The main requirement for the Contractor is to plan peat management in detail and incorporate its progressive reinstatement and restoration of adjacent peatland areas into the construction programme so that they take place concurrently, minimising the time the peat is in temporary storage and avoiding double-handling of peat.

9.6.2 Summary of Peat Depth

9.6.2.1 Peat surveys were undertaken at the Site to understand the baseline peat conditions and potential constraints, and to inform the design of the Proposed Development to minimise, as far as practicable, the potential direct and indirect effects on peat and carbon rich soils.

9.6.2.2 The surveys were undertaken by Ramboll and Fluid Environmental Consulting Limited on the following dates:

- Stage 1 peat probing in May 2024; and
- Stage 2 peat probing and coring in June 2025 and November 2025.

9.6.2.3 Peat probing and coring followed relevant guidance on peatland surveys[3].

9.6.2.4 A combined total of 1,971 peat depth probes were taken during the peat surveys. This included 314 peat depth probes during the Stage 1 survey, and 1,657 peat depth probes during the Stage 2 surveys.

9.6.2.5 The peat depth survey results indicate approximately half of the locations surveyed to be underlain by areas where either no peat is present, or a shallow depth of peat is present (approximately 52% of peat depth probes recorded peat depths less than or equal to 0.5 m depth). This includes areas where existing track is present and where therefore peat has already been excavated. Approximately 34% of points surveyed recorded peat depths greater than 1m depth, with the maximum peat depth recorded being 3.55 m. The mean peat depth recorded during the surveys was 0.73 m. The frequency distribution of peat depths is summarised as:

- 697 no. samples (35.4%) located on land with no peat present;
- 321 no. samples (16.3%) located on land with > 0.0 m and ≤0.5 m depth of peat or organo-mineral soil;
- 273 no. samples (13.9%) located on land with >0.5 m and ≤1.0 m depth of peat;
- 321 no. samples (16.3%) located on land with >1.0 m and ≤1.5 m depth of peat;
- 243 no. samples (12.3%) located on land with >1.5 m and ≤2.0 m depth of peat;
- 88 no. samples (4.5%) located on land with >2.0 m and ≤2.5 m depth of peat;
- 24 no. samples (1.2%) located on land with >2.5 m and ≤3.0 m depth of peat; and
- 3 no. samples (0.2%) located on land with >3.0 m and ≤4.0 m depth of peat.

9.6.2.6 The peat probe depth and interpolated contours are shown on **Figure 9.8 (EIAR Volume 3a)**. It can be seen that sections of existing Internal Tracks have been used where possible, which reduces the sections of new Internal Track required in areas of deep peat. The turbines and associated hardstanding have been sited where possible to avoid the areas of deepest peat within the Site. However, it has not been possible to site them in areas where peat is absent or in shallow depths of peat. With the exception of the proposed location for Turbine 1 and the hardstanding for Turbine 6, where the mean peat depths were recorded to be 1.73 m and 1.59 m respectively, all of the new permanent infrastructure is sited in areas where the mean peat depth is less than 1.5 m.

9.6.3 Limitations

9.6.3.1 Peat probing and mapping have been used to inform the design process, at strategic points in the design evolution of the Proposed Development. However, there are some differences between the

[1] Scottish Renewables and SEPA, (2012), Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste.

[2] SEPA, (2011), Restoration Techniques Using Peat Spoil from Construction Works.

[3] Scottish Government, Scottish Natural Heritage, SEPA (2017), Peatland Survey. Guidance on Developments on Peatland.

final design and the extent of the peat survey results based on design changes made through this process from refinement of infrastructure design.

9.6.3.2 However, the peat survey probing points do provide high resolution coverage of the Site, and these revealed the peatland to be typically shallow (>0.5 m) but with pockets of deeper peat. It is considered that the peat depths collected, and interpolations derived from these data, are representative of the Site and have adequately informed the layout of the Proposed Development.

9.6.3.3 The peat excavation and reuse volumes included in this outline PMP are intended as an initial indication. The total peat volumes are based on a series of design assumptions and estimates for the Proposed Development layout and peat depth sample data interpolated across discrete areas of the Site. Such parameters can still vary over a small scale and therefore local topographic changes in the geological profile may impact the total accuracy of the volume calculations.

9.6.3.4 The PMP is a 'live' document and would be developed into a final PMP post-consent and in advance of construction commencing, when the Contractor has been appointed. As part of this process, it is proposed that further peat depth probing and coring would be undertaken at infrastructure locations, particularly wind turbine locations, post-consent and during pre-construction ground investigation surveys. This additional data would be used to aid micro-siting of wind turbines away from any pockets of deeper peat into the shallowest areas, thereby minimising impacts on peatland within the micro-siting tolerances, and to gather further information on the characteristics of the peat deposits present. A finalised post-consent layout would be completed once detailed ground investigations have been undertaken and before construction works commence. This would demonstrate how any newly collected information has been used to inform the proposed layout and reduce impacts on features such as deep peat.

9.6.4 Peatland Condition

9.6.4.1 A combined total of 1,971 peat depth probes were taken during the peat surveys at the Site. This included 314 peat depth probes during the Stage 1 survey, and 1,657 peat depth probes during the Stage 2 surveys.

9.6.4.2 **Figure 9.8 (EIAR Volume 3a)** shows the results of the peat depth survey at the Site with the indicative peat depth contours, which is based on data interpolation of the survey results.

9.6.4.3 The peat depth survey results indicate approximately half of the locations surveyed to be underlain by areas where either no peat is present or a shallow depth of peat is present (approximately 52% of peat depth probes recorded peat depths less than or equal to 0.5 m depth). This includes areas where existing Internal Track is present and where therefore peat has already been excavated. Approximately 34% of points surveyed recorded peat depths greater than 1 m depth, with the maximum peat depth recorded being 3.55 m. The mean peat depth recorded during the surveys was 0.73 m.

9.6.4.4 The frequency distribution of peat depths is summarised as follows:

- 697 no. samples (35.4%) located on land with no peat present;
- 321 no. samples (16.3%) located on land with > 0.0 m and ≤0.5 m depth of peat or organo-mineral soil;
- 273 no. samples (13.9%) located on land with >0.5 m and ≤1.0 m depth of peat;
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9.6.4.5 The peat probe depth and interpolated contours are shown on **Figure 9.8 (EIAR Volume 3a)**. It can be seen that sections of existing Internal Track have been used where possible, which reduces the sections of new Internal Track required in areas of deep peat. The turbines and associated hardstanding have been sited where possible to avoid the areas of deepest peat within the Site. However, it has not been possible to site them in areas where no peat or only shallow depths of peat are present. With the exception of the proposed location for Turbine 1 and the hardstanding for turbine 6, where the mean peat depths were recorded to be 1.73 m and 1.59 m respectively, all of the new permanent infrastructure is sited in areas where the mean peat depth is less than 1.5 m.

9.6.4.6 The mean depth of the acrotelm from the peat core sample locations sampled where this was analysed was 0.14 m but it is likely that this is not representative and therefore the depth of the acrotelm has been assumed as 0.5 m based on a precautionary approach.

9.6.4.7 The peat across the Site is generally fibrous and intermediate in nature (as opposed to amorphous). Concerning the fibrous content, the majority of the peat core samples indicated a low to moderate fine fibre content and a variable course fibre content.

9.6.4.8 The water content of the peat across the peat core samples was recorded to be variable from moderately dry (B2) to wet (B4).

9.6.4.9 All of the peat core samples scored between H5 and H6 on the Von Post scale indicating the peat sampled to be moderately decomposed.

9.6.5 Estimated Peat Balance

9.6.5.1 The volume of peat excavated and to be reinstated has been estimated based on the following data and assumptions:

- Review of interpolated peat model generated using Ordnance Survey 5 m Digital Terrain Model;
- Peat depth survey data from probing during the Phase 1 and 2 surveys;
- Excavations would take place only within the footprint of the Proposed Development;
- Peat would shrink on replacement due to some inevitable dewatering during handling and compaction at placement;
- Improvement to areas of degraded or existing peatland would be undertaken as part of habitat management and restoration proposals (as set out in the **Outline Biodiversity Enhancement Management Plan (OBEMP), Technical Appendix 7.4 (EIAR Volume 4)**). These would be confirmed and developed further as part of the detailed PMP and habitat management plans prior to construction;
- Assumed that temporary peat excavated from temporary infrastructure such as the construction compound and cable runs could be reinstated, and therefore not considered as part of the permanent excavation volumes;
- One borrow pit is proposed as part of the Proposed Development; and
- A proportion of acrotelm peat would become unsuitable for reuse as the top layer due to unavoidable damage to vegetation during the excavations.

9.6.5.2 Specific design assumptions used to estimate the peat volumes to be excavated and reinstated are:

- The area for construction of the wind turbine foundations has been estimated to be a maximum diameter excavation to allow for an excavated working area around the concrete foundation (refer to **Chapter 3: Site Description and Proposed Development (EIAR Volume 2)**). A turbine foundation would be constructed in accordance with the final detailed design and site-

specific ground conditions. For the purposes of estimating peat excavation volumes, a representative foundation excavation of approximately 25 m diameter and a founding depth typically between 3 m and 5 m has been assumed. Actual foundation dimensions, excavation depths and construction methodologies may vary where required by geotechnical conditions, turbine supplier requirements or detailed design development. With regard to backfilling at these foundations, it has been assumed that an area of the 'compacted backfill between foundation and excavation face', would partially comprise peat. Peat would not be used to backfill the excavation void over the 25 m diameter plan footprint of the foundation due to its potential low strength; instead, rockfill, sands, or gravel would be required to backfill, but could be used outside of this area. The area of potential peat backfill equates to 625 m² per wind turbine. As above, the founding depth would be up to 5 m, however for the majority of the Site it has been assumed a depth of up to 2 m can be used as an approximation to backfill excavations to ground level;

- It has been assumed a restoration area of 650m² per turbine (the actual extent and location of peat reinstatement would be determined during detailed design and construction planning) could be used for surface reinstatement of peat around each turbine (based on a thickness of 0.2 m);
- A crane hardstanding would be required at each wind turbine location, which would be maintained during the operational phase of the Proposed Development. It has been assumed that one length and one width of each hardstanding would be available for peat reinstatement during construction, with verges 3 m in width. However, the final extent would be determined through detailed design;
- A substation compound with a total footprint up to 1,800 m² would be required. Within this area, it is assumed that two lengths and one width would be available for peat reinstatement, with verges 3 m in width. However, the final extent would be determined through detailed design;
- New Internal Tracks would incorporate landscaped verges where practicable to provide visual continuity and facilitate peat reinstatement. For assessment purposes, verge widths of approximately 2.5 m have been assumed; however, actual verge dimensions may vary to reflect detailed design requirements, topography, drainage arrangements and site conditions.

9.6.5.3 Table 9.5.1 provides estimates of the volumetric peat balance for the Proposed Development. These volumes would be subject to review and updated following ground investigation, detailed design and micrositing as part of the post-consent process, prior to construction.

Table 9.5.1: Estimated Peat Volume to be Excavated

Element	Estimated Peat Volume to be Excavated (m³)	Estimated Acrotelmic Peat Volume to be Excavated (m³)	Estimated Catotelmic Peat Volume to be Excavated (m³)
Turbine 1 foundation, crane pad and hardstanding	6,575	2,277	4,298
Turbine 2 foundation, crane pad and hardstanding	3,151	2,275	876
Turbine 3 foundation, crane pad and hardstanding	5,071	2,278	2,793
Turbine 4 foundation, crane pad and hardstanding	7,534	2,279	5,256
Turbine 5 foundation, crane pad and hardstanding	2,434	2,249	185
Turbine 6 foundation, crane pad and hardstanding	7,508	2,279	5,229
Turbine 7 foundation, crane pad and hardstanding	5,802	2,276	3,526
Turbine 8 foundation, crane pad and hardstanding	2,768	2,280	489
Turbine 9 foundation, crane pad and hardstanding	5,058	2,272	2,787
Permanent substation compound (upgrade to existing)	612	612	0
New cut Internal Tracks	8,339	8,339	0
Borrow pit	1,673	1,673	0
Construction compound 1 (temporary)	925	925	0
Construction compound 2 (temporary)	2,909	1,500	1,410
Construction compound 3 (temporary)	0	0	0
TOTAL	**60,358**	**33,511**	**26,847**

9.6.5.4 The estimated peat excavation volumes in Table 9.5.1 are conservative and include peaty/organo-mineral soils. Table 9.5.2 provides an estimate of the potential reinstatement opportunities for the Proposed Development.

Table 9.5.2: Estimated Peat Volume Opportunity to be Reinstated

Element	Opportunity Area to be Restored (m²)	Average Depth of Restoration Area (m)	Total Reinstatement Volume Opportunity (m³)
Turbine foundation - surface	4,410	0.2	882
Turbine foundation - backfill	4,500	2.0	9,000
Crane and hardstanding verges	4,050	0.5	2,025
Hardstanding reinstatement and	23,069	1.0	23,069

Table 9.5.2: Estimated Peat Volume Opportunity to be Reinstated			
Element	**Opportunity Area to be Restored (m^2)**	**Average Depth of Restoration Area (m)**	**Total Reinstatement Volume Opportunity (m^3)**
restoration of existing access tracks/infrastructure			
Permanent substation compound verges	450	0.5	225
Internal Track verges	14,785	0.5	7,393
Borrow pit restoration	16,732	0.6	10,039
Construction compound reinstatement	10,498	0.45	3,3834
TOTAL	**78,494**	**N/A**	**56,466**

9.6.5.5 The assessment indicates that the potential opportunities for re-use of peat on the Proposed Development exceeds the potential peat excavation estimate, and there would be no excess peat generated from the Proposed Development that would require off-Site disposal.

9.6.5.6 In addition, the total estimated peat excavation volume is conservative and also includes peaty/organo-mineral soils as well as peat therefore, the actual volume of peat excavation is lower.

9.6.5.7 Additional opportunity for peatland restoration is described in the **OBEMP** (**Technical Appendix 7.4 (EIAR Volume 4)**). It is assumed that suitable areas for peatland restoration would include areas of peat within the Site and areas of previous turbine foundations, hardstanding and Internal Tracks which would be obsolete following the decommissioning of the existing Novar 1 Wind Farm as shown in **Figure 7.7: Areas Available for Peat Restoration (EIAR Volume 3a)**. Peatland restoration efforts would focus on extending and improving areas of existing blanket bog or other vulnerable peatland habitats in lieu of fragmented areas along the Internal Tracks, which may in time suffer from being hydrologically isolated parcels of peat.

9.6.5.8 Areas of pre-existing hardstanding and Internal Tracks which are not required for the Proposed Development are assumed to be available for restoration. It is considered unlikely that any restoration of peat in these areas (2.7 ha) would be achievable at previous turbine foundations and along Internal Tracks. Restoration of peat in these areas would not be sufficient to achieve a habitat capable of peat formation and is more likely to result in the generation of a peat-based heath habitat. Although this does not reflect restoration of blanket bog, the presence of heath habitats in these areas would contribute to the existence of a more productive peatland mosaic within the Site. There would also be opportunities for reprofiling and drain blocking to facilitate rewetting.

9.6.5.9 It is recommended that restoration works prioritise areas of peat which have been identified as being degraded, as shown in **Figure 7.2: UK Hab habitat Survey Results (EIAR Volume 3a)**. The final extent of these areas would be subject to refinement prior to completion of the final BEMP, but the area identified for restoration would be no less than 135.7 ha to achieve the recommended ratio of 1:10 lost: restored.

9.6.6 Classification of Peat

9.6.7 Requirements for the Detailed Peat Management Plan

9.6.7.1 The Contractor would be required to update the outline PMP prior to the construction phase commencing, based on additional information such as the results of ground investigation and detailed design. As part of this update, the Contractor would be required to ensure excavated peat and other soils are reused on-Site, subject to the conditions and methods of reinstatement described in the outline PMP. The final PMP would detail the following:

- A construction timetable and highlight any seasonal considerations;
- Comply with SEPA construction site licence, as required;
- Include measures to be put in place to deal with weather related events (flash floods, peat slide, snow melt, dust);
- Appropriate use of Internal Track and road material, and other hard-standing material to reduce pollution;
- Detail measures to enable sediment management in emergency situations, to cope with high rainfall and runoff;
- Detail how construction would be scheduled around key Site constraints (such as the breeding or migration seasons for bird and fish). Where scheduling is not practical it would state what other mitigation could be put in place; and
- Detail how construction would be scheduled to benefit Site restoration.

9.6.8 Project Phasing

9.6.8.1 There are four distinct project phases, decommissioning of the existing wind farm and the construction, operation, and decommissioning of the repowered wind farm. Key activities for each phase are described in the following sections.

Decommissioning of the Novar 1 Wind Farm and Construction of Repowered Wind Farm

9.6.8.2 The key activities to be undertaken during the construction phase include:

- Prepare the final PMP referring to the detailed design and additional Site information (such as ground investigation);
- Set-out peat stripping areas;
- Set-out temporary peat and no peat soil storage areas;
- Set-out receptor areas for direct translocation of peat as per detailed peat translocation plan;
- Strip peat in pre-defined phases;
- Put peat and other soils into temporary storage;
- Translocate peat where pre-planned;
- Reinstate the peat and other soils that have been in temporary storage;
- Reinstate peat and other soils for the reinstatement of Internal Tracks and infrastructure as part of the decommissioning of the existing Novar 1 Wind Farm; and
- Monitor vegetation and stability of reinstated soil around the infrastructure, restored peatland areas, and soils to be stored for the duration of the construction period.

Operation

9.6.8.3 During this phase no peat excavation is anticipated.

Decommissioning

9.6.8.4 The peat management during decommissioning would follow the same principles as during the construction. It is not expected that disturbance of adjacent peat would be required upon the removal of turbine hardstandings. Restoration of turbine hardstandings would be achieved using suitable soils or peat that is available on Site but would be confirmed as part of the wider decommissioning restoration plan.

9.6.8.5 The main mitigation measure relating to decommissioning would be blocking of any artificial ditches (that were created during construction and were required during the operation of the Proposed Development) to facilitate rewetting of adjacent peatland. It is likely that Internal Tracks would remain in place to facilitate ongoing access to the Site, depending on the arrangements with the landowner and other users of the Site.

9.6.9 Monitoring and Record Keeping

9.6.9.1 An Environmental Clerk of Works (EnvCoW) would be appointed by the Contractor prior to commencement of the construction phase. They would be responsible for monitoring compliance against the final PMP and other relevant documents such as the final CEMP. They would also be responsible for ensuring the legislative requirements would be complied with.

9.6.9.2 The Contractor and the EnvCoW would be responsible for maintaining clear records during the construction phase such as depths and types of peat excavated, plans showing peat storage areas and locations of reinstated peat.

9.6.10 Peat and Mineral Soil Handling Methods

9.6.10.1 This section provides guidance to help the Contractor in both planning and executing the construction works at the Proposed Development (including decommissioning of the existing wind farm). Working in peat cannot be avoided because the Site is partially underlain by peat of variable depth and thickness but is generally considered to be shallow (refer to **Figure 9.8 in Volume 3a**). Peat would be excavated and could be stored temporarily in an appropriate location as set out previously where temporary storage is necessary. Careful handling of the peat would also be required to ensure its suitability for reuse.

9.6.10.2 The Contractor would provide a detailed method statement for works in peat habitats, including but not limited to:

- How to reduce the area of impact;
- How to avoid areas of higher quality bog vegetation (with the assistance of the EnvCoW);
- Means of access to areas of work and to areas where peat would be reused, including reinstatement of infrastructure decommissioned from the existing wind farm;
- Methods of peat removal;
- Managing water in the peat and pollution prevention;
- Where to avoid unnecessary intrusive work wherever possible;
- Drainage measures and design and use of appropriate techniques to maintain local hydrology; and
- Plans for the deposition of peat on-site to be agreed with the Applicant and the EnvCoW.

9.6.10.3 It would be necessary for the final PMP to detail the methods and timing involved in handling, storing and using peat for reinstatement, all of which would be dependent on the equipment adopted for the construction activities. The final method statement for this should be based on the following principles:

- The surface layer of peat and vegetation (acrotelm) would be stripped separately from the catotelmic peat. Where possible this would involve an excavation depth of 0.5 m and the creation of turves;
- The turves should be as large as practicably possible to reduce desiccation effects during storage;
- The turves should be kept wet but not saturated, and not allowed to dry out when in temporary storage;
- Contamination of excavated peat with other substrate materials (e.g. gravels, clays or silts) should be avoided and these materials stored separately where excavated;
- Acrotelmic material would be stored separately from catotelmic material even if some of this layer appears to be lacking vegetation, since it may contain a seedbank that is useful for re-establishing vegetation;
- Any risk of peat slide must be considered by a suitably qualified engineer and where risk is identified protective measures developed and agreed with the Applicant before further construction works take place;
- Careful handling would be essential to retain any existing structure and integrity of the excavated materials and thereby maximise the potential for excavated material to be reused;
- Plan all works to reduce the need for double handling the peat;
- Movement of excavated turves and peat should be kept to a minimum and it is preferable to transport peat intended for translocation to its final destination at the time of excavation;
- Less humified catotelmic peat (consolidated peat), which maintains its structure upon excavation, should be kept separate from any highly humified amorphous peat;
- Consider the timing of excavation activities to avoid very wet weather periods to reduce the risk of peat becoming wet and unconsolidated, thereby reducing pollution or peat slide risk;
- Acrotelmic material would be replaced as intact as possible once construction is complete;
- Internal Tracks and other infrastructure associated with the existing wind farm would be decommissioned and reinstated using surplus peat from the Proposed Development; and
- To reduce handling and transportation of peat, acrotelmic and catotelmic materials would be replaced, as far as is reasonably practicable, in the location from which it was removed. Acrotelmic material must be placed on the surface.

9.6.10.4 The handling of peat should be monitored by the EnvCoW and the Applicant to ensure the above principles are adopted and implemented during construction of the Proposed Development.

Reducing Damage to Existing Vegetation

9.6.10.5 To reduce damage to the existing vegetation, construction plant required for reinstatement and landscaping works would be positioned on constructed Internal Tracks, hardstanding areas or existing disturbed areas wherever possible. Areas to be excavated would be clearly marked on the plans and then on the ground to ensure that no work is undertaken outside the construction footprint.

9.6.10.6 Tracked, low ground-pressure, long reach excavators would be used for peat handling and reinstatement works. A low ground-pressure excavator would be used if the extent of the long reach

arm is insufficient. Other machinery, such as tippers, would also be tracked and low-ground pressure type when required to travel on soft ground and the use of ground protection mats could be required.

9.6.10.7 Reinstatement of vegetation would be focused on natural regeneration utilising peat vegetated turves (acrotelm). In the unlikely event that the quantity of excavated acrotelm turves is not sufficient, a nurse moorland grass seed mix would be used. The species mixture would be specified in the final PMP and could include lowland species to encourage early establishment.

Planning of Peat Reinstatement

9.6.10.8 Peat reinstatement would be undertaken using methods to reduce double handling of peat and the distances between source and receptor areas. Peat translocation, reinstatement and restoration would be carried out concurrently with other elements of the Proposed Development's construction. To achieve this, a detailed peat translocation plan would be included in the final PMP. The final PMP would include peat management recommendations as per SEPA guidance.

9.6.10.9 When peat is disturbed or translocated artificially it is prone to drying because fragmentation lets the water drain away and prevents it from accumulating. To create conditions suitable for wet bog restoration, the reinstated peat needs to be kept wet, otherwise, the vegetation would dry out, the peat would shrink and crack, and would ultimately be eroded by water and wind, which would make the restoration unsuccessful and is likely to create problems such as peat floods, water pollution, and peat landslides.

9.6.10.10 The main principle of keeping the water close to the reinstated surface (maintenance of high-water table) is to use natural and artificial enclosures to slow down the horizontal flow of water. For the enclosure to work, the peat surface needs to be flush with or only slightly (<0.3 m) above the level of adjacent land (to allow for settlement). If the level of translocated peat is substantially higher, then it would be at high risk of drying out and being easily eroded as the water would not be held effectively by the peat alone, it would naturally flow sideways.

Temporary Peat Storage

9.6.10.11 It is anticipated that during construction, on most occasions, peat and peaty soil would only be handled once and would be placed at its end use locations. However, during construction a degree of temporary peat storage would be required before the excavated material could be re-used in restoration and placed in its end use location.

9.6.10.12 It would be necessary for the final PMP to detail the methods and timing involved in temporary storage, where this is required. It is likely that a degree of temporary peat storage would be required, for instance in association with stripping areas of any area used for temporary land take; this material would then be used in the subsequent restoration of this temporary construction area.

9.6.10.13 The final method statement for this temporary storage of peat would be based on the following guiding principles:

- Temporary storage of peat should be reduced. Where required it should be temporarily stored in stockpiles/bunds adjacent to and surrounding each infrastructure Site;
- Acrotelm, catotelm, and any clay/glacial till or other substrata should be stored separately and appropriately to ensure no mixing of materials and to prevent cross-contamination;
- Suitable storage areas should be sited in areas with lower ecological value, low stability risk areas and at a minimum distance of 50 m from watercourses. Identified suitable areas would form part of the final PMP and would be agreed in advance with the EnvCoW;
- Peat turves should be stored in wet conditions where possible (e.g. within waterlogged former excavations) or irrigated to prevent desiccation;
- Larger stockpiles are preferable to numerous small stockpiles, which reduces exposure to sun and wind, which could lead to desiccation. Stockpiles would not exceed 2 m in height and would be sited with due consideration for slope stability. Benching of stored peat could be necessary to provide stability;
- Stores of non-turf, i.e., catotelm, should be bladed off to reduce surface area and desiccation of the stored peat;
- Stores of peat, particularly catotelmic material, should be inspected regularly (at least weekly) and following heavy rainfall or thaw conditions to check for any evidence of movement, tension cracks or instability in the stored peat. If there is any evidence of instability, appropriate remedial measures should be taken as necessary on the advice from a suitably qualified engineer;
- In dry weather periods, consideration should be given to watering stored turves and peat to prevent drying out, wastage and erosion;
- Pollution prevention measures should be installed around peat storage areas;
- Reinstatement would, in all instances, be undertaken at the earliest opportunity to reduce storage of turves and other materials;
- Timing the construction work, as much as possible, to avoid periods when peat materials are likely to be wetter; and
- Where practical, transportation of peat on-Site, from excavation to temporary storage and restoration locations, should be reduced.

9.6.11 Reinstatement of Peat

Decommissioning of the Repowered Wind Farm

9.6.11.1 The reinstatement would be carried out progressively with peat excavated from other areas placed directly in excavations from the decommissioning of the repowered wind farm. This would predominantly be for Internal Track restoration as turbine foundations are proposed to be left in situ, as outlined in **Chapter 3: Site Description and Proposed Development (EIAR Volume 2).** This would take place everywhere where the cut Internal Tracks pass through peat. The surplus peat not reinstated would be either directly translocated to the receptor areas or stored temporarily in designated areas.

9.6.11.2 Up to 0.5 m of acrotelm would be used to reinstate the decommissioned track excavations. Acrotelm turves would be used for this purpose, this would be done in a manner to ensure works tie in with the surrounding topography, landscape and ground conditions, and only where this is required and would not result in adverse environmental effects.

Internal Tracks

9.6.11.3 The reinstatement would be carried out progressively with peat excavated from other areas placed directly on the sides of the Internal Tracks. This would take place everywhere where the cut Internal Tracks pass through peat. The surplus peat, not reinstated along the verges, would be either directly translocated to the receptor areas or stored temporarily in designated areas.

9.6.11.4 The construction of the Internal Track involves the excavation of the acrotelm and catotelm, or top, organic layer of peaty soils, and some mineral subsoil. These would be separated on excavation, ensuring no mixing of the different peat layers, and different soil types. Once all the soil has been excavated and the higher bearing underlying subsoil has been reached, good quality aggregate should then be placed. Up to 0.5 m of acrotelm would be used to reinstate the track verges.

9.6.11.5 Following construction of the section of Internal Track, turves would be replaced along the road edges to allow quicker re-vegetation and soften visual landscaping of the road edges. Acrotelm turves would be used for this purpose, this would be done in a manner to ensure works tie in with the surrounding topography, landscape and ground conditions, and only where this is required and would not result in adverse environmental effects.

Turbine Foundations and Hardstanding

9.6.11.6 Once the wind turbine foundation has been constructed, depending on the target depth of reinstated peat, some catotelmic peat could be replaced around the turbine base excavations (subject to detailed foundation construction requirements), and re-turfed with acrotelm. Peat would be placed into any areas disturbed by the construction activities, around the crane hardstandings, rotor assembly hardstandings and other areas used in the construction phase. Other hardstanding areas, such as around the substation compound would also include areas for re-use of acrotelm.

Temporary Compounds and Cable Runs

9.6.11.7 The temporary construction compounds would be restored following removal of the stone hardstanding. The peat would be reinstated to be flush with the adjacent ground. Similarly, cable runs would be reinstated using peat as excavated, to ensure that the soil horizons would be replaced as removed.

Borrow Pit Restoration

9.6.11.8 As part of the borrow pit restoration, it is assumed that a thickness of up to 0.6 m of peat can be reused provided that it presents no residual pollution risks or harm to human health (an increased thickness of peat can be used if located within a deeper thickness of peat). However, it is likely that this would be reduced based on the limited peat depth at the borrow pit location. The excavated peat would need to be suitable for restoration purposes to achieve the establishment of peatland habitats, and a functional hydrological regime would need to be established in the borrow pit restoration to prevent desiccation of peat. This would include the reuse of both acrotelmic and catotelmic peat.

Ditch Backfilling and Habitat Restoration

9.6.11.9 Where possible, ditches and other cut areas, such as haggs, should be considered for reinstatement. This would be explored further as part of the final PMP, but it is assumed that there is potential to reinstate peat excavated in these areas. This would also include the consideration of other areas of the Site that could be used for the suitable reuse of peat as part of habitat and peatland improvements.

9.6.11.10 The EnvCoW would monitor back-filling works to check compliance with relevant documents (such as PMP and CEMP). The main parameters for ditch backfilling that would be required are:

- Areas with relatively dry peat would be chosen;
- Works would be carried out during a period of dry weather;
- Specialist low-ground pressure tracked dumpers would be used;
- Bog mats would be used where required;
- Both source and receptor areas would have good vegetation cover;
- Site supervision by the EnvCoW would enforce changing routes to avoid damage to vegetation;
- Acrotelm excavated from the source location would be kept vegetated side up; and
- Excavated catotelm would be used in ditch-backfilling shall be of H6-H8 level of decomposition.