# Achany Extension Wind Farm

# Technical Appendix 11.3:

# Peat Management Plan

## Stage 1: Development Planning

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# INTRODUCTION

## 1.1 Development Brief

1.1.1 SSE Renewables Developments (UK) Ltd (hereafter 'SSER') are seeking consent to construct Achany Extension Wind Farm, located within Glencassley, North Highlands, Scotland. The current proposal comprises 20 No. turbines and all associated infrastructure, with a total generating capacity in excess of 80MW.

## 1.2 Peat Management Plan Context & Objectives

1.2.1 Developments on peat soils and / or in peatland environments may in some cases generate waste excavated materials if no suitable and legally compliant on site re-uses are identified. In February 2010, the Scottish Environment Protection Agency (SEPA) produced the "SEPA Regulatory Position Statement – Developments on Peat" to help ensure a consistent approach to the management of such material.

1.2.2 Guidance was subsequently published to ensure the consistent application of the principles contained within the SEPA position statement: 'Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste', Scottish Renewables and SEPA, Version 1, January 2012.[1]

1.2.3 The guidance identifies three main stages in the development process and describes what data should be gathered and assessed at each to inform a site-specific Peat Management Plan (PMP):

- **Stage 1**: Environmental Impact Assessment (EIA);
- **Stage 2:** Post-consent / pre-construction; and
- **Stage 3:** Construction.

1.2.4 This PMP has been prepared in accordance with the requirements of **Stage 1** and demonstrates to SEPA and other relevant parties that: the extent and characteristics of peat at the study site have been investigated; excavations in peat have been minimised wherever possible through design iterations and adoption of appropriate design hierarchy[2]; and that excavation and subsequent management of peat, including an estimation of quantities, has been considered as part of the EIA.

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

[2] Design hierarchy as detailed within the SR/SEPA guidance: prevent excavation, reduce excavation volumes and reuse excavated peat in a manner to which it is suited.

1.2.5 Design decisions, proposed construction practices and peat management proposals for this site are also aligned with current guidance concerning other potential environmental constraints associated with developments on peatlands, such as ecological considerations, construction issues, carbon accounting etc. For example: Good Practice During Windfarm Construction'[3] and 'Floating Roads on Peat'[4].

1.2.6 This PMP provides:

- Details of the construction activities that are likely to generate peat arisings;
- The impact of the wind farms development on peat;
- Anticipated volumes of peat that will be excavated on the Site and estimated quantities required for reuse; and
- Conclusions on how peat excavation and reuse will be managed in the context of legal requirements on waste management.

1.2.7 Specific detail on the methods and procedures which will be implemented for excavation, storage and re-use of peat during the construction phase of the project are as detailed within the Construction Environmental Management Plan (CEMP).

## 1.3 Available Information

1.3.1 The following sources of information have been utilised in developing this PMP:

- Peat probing survey data from four phases of probing (one phase of historic peat probing conducted in 2012 by SLR and an additional three phases of peat probing conducted by Tony Gee in 2020).
- Preliminary Sources Study Report developed by Tony Gee
- Borrow Pit Appraisal developed by Tony Gee (Technical Appendix 11.1)
- Peat Slide Risk Assessment developed by Tony Gee (Technical Appendix 11.2)
- Carbon Calculation Report by Tony Gee (Technical Appendix 11.4)
- Site layout drawing, Figure 11.3.1: Site Layout Drawing

[3] Good Practice During Windfarm Construction, Scottish Renewables, Scottish Natural Heritage, Scottish Environment Protection Agency, Forestry Commission Scotland, Version 1, October 2010.

[4] Floating Roads on Peat, Forestry Civil Engineering and Scottish Natural Heritage, August 2010.

# 2 DESIGN CONSIDERATIONS FOR REDUCING PEAT EXCAVATION

2.1.1 The preliminary design for Achany Extension Wind Farm has considered a number of aspects including environmental, geographical and geological constraints that have been identified by detailed site walkover, constraint mapping and design interrogation. These steps are detailed within Chapter 2 of the EIA report. The iterative approach to the infrastructure design is intended to have been undertaken pre-application, however this process may continue post-consent in an attempt to optimise the scheme layout from an environmental, geotechnical and economic perspective.

2.1.2 The distribution and thickness of peat across the Site has been a prominent consideration throughout the preliminary design process, with the intention to minimise the requirement for peat excavation as far as reasonably practicable. The alignment of access tracks and positioning of all other infrastructure including the position of WTGs, crane hardstandings, the substation/ control building platform and borrow pits, have sought to avoid areas where peat is of any significant thickness. Where this is considered unfeasible, due to other constraints, infrastructure has been positioned on the shallowest possible peat deposits.

2.1.3 As the scheme develops, all reasonable measures will be taken to avoid or minimise excavations and minimise disturbance of peat. Such measures include:

- Maximisation of safe batter angles in cuttings, where appropriate;
- Avoid creating pathways that may encourage groundwater drawdown;
- The use of appropriate plant to avoid unnecessary disturbance to the ground surface; and
- The use of floating track in areas where peat exceeds 1.0m in thickness.

2.1.4 Despite the measures described above, there is still a requirement to excavate peat as part of the Wind Farm development due to the presence of peat across the majority of the Site and in areas of key infrastructure. This report details the estimated peat excavation volumes and proposals for the management of excavated peat.

# 3 PEAT CONDITIONS

## 3.1 Peat Probing Surveys

3.1.1 To date there have been four phases of peat probing on site; one phase of historic peat probing conducted in 2012 and an additional three phases of peat probing conducted by Tony Gee in 2020. Table 1.1 outlines the four phases of peat probing and includes the focus of each phase.

**Table 1.1 Peat probing surveys conducted to date**

| Probing phase | Company | Focus of Survey | No. of Probes |
|---|---|---|---|
| Historic Probing | SLR | Low resolution probing across the original site layout which | 1074 |

**Table 1.1 Peat probing surveys conducted to date**

| Probing phase | Company | Focus of Survey | No. of Probes |
|---|---|---|---|
| | | extended further north than the current site layout. A number of augered samples were retrieved and Von Post logging carried out, following by in-situ and lab testing. | |
| Phase 1 | Tony Gee | Low resolution probing across the entirety of the revised site boundary in a 100m grid. | 1243 |
| Phase 2 | Tony Gee | High resolution probing of turbine locations. | 144 |
| Phase 3 | Tony Gee | High resolution probing of all wind farm infrastructure. | 1608 |

## 3.2 Limitations of Surveys

3.2.1 A fully intrusive ground investigation comprising peat augers, soil borehole samples and rock coreholes will be carried out post-consent with the intention of retrieving high quality undisturbed peat samples to enable further in-situ and lab testing. This will enable the development of a ground model with defined ground properties.

3.2.2 In order to understand peat stability in terms of slope angles on site, topographic maps were utilised and data was cross referenced on CAD to obtain slope angle data at each probe location.

## 3.3 Peatland Habitats

3.3.1 The Site features two significant hills located towards the site's north, Beinn Sgeireach and Carn nam Bo Maola with summits of 476 and 494 mAOD respectively. Situated between the two hills is boggy marshland. The marshland varies in elevation from 260m OAD to approximately 360 m OAD. Within the marsh, peat was generally < 1.0m in thickness although sporadic areas recorded at depths in excess of 2.5m. The peat could generally be described as pseudo-fibrous in this area. A stream, named Allt Bad at-Sagairt runs in a west south westerly direction towards the River Cassley which flows in a south south-easterly direction and is situated towards the site's western extent.

3.3.2 Beinn Sgeireach is surrounded by rocky outcrops with the most sizable being a rocky spur which extends towards the south west, into a drainage basin. Carn nam Bo Moala has two rocky spurs, one extending to the east of the summit and the other extending to the south of the summit.

3.3.3 The spur which extends to the east of Carn nam Bo Moala can be considered the site's boundary between the north and the south of the site. To the south of this ridge the land falls away from approximately 398m OAD to 290 m OAD. A series of tributary streams drain this basin flowing into a larger stream which dissects the site's southern extent, named Allt an Rasail. From the Ridge of Carn nam Bo Moala to the stream there is a greater frequency of rocky outcrops, however to the south of the stream the land is dominated by marshland.

3.3.4 The peat within this area was generally thicker, between 1.0 and 2.5m with sporadic areas recording depths in excess of 2.5m. Like the northern area, the peat can best be described as pseudo-fibrous. South of the stream, the ground elevation varies from 290m OAD to 350m OAD.

3.3.5 Along the eastern boundary of the site, where the ground plateaus, ponding is more frequent with man-made drainage ditches in places directing groundwater towards the network of streams. In addition to the ponding, the ground begins to undulate with some scoured areas revealing weathered rock beneath the exposed peat faces.

3.3.6 A general overview of the Site is provided within Photos 1 to 6.

Photo 1: View to the south from Beinn Sgeireach at the northern extent of the Site.

Photo 2: View to the west taken from the north-west of the Site.

Photo 3: View to the north from within a marshy basin towards the north of the Site.

Photo 4: View to the south looking down the eastern edge of the Site.

Photo 5: View to the south east taken from the ridge extending to the south of Carn nam Bo Maola.

Photo 6: View north east from the western edge of the southern marshy basin, just south of Carn nam Bo Maola's southern ridge.

## 3.4 Peat Depth and Extent

3.4.1 The peat thicknesses at probed locations have been interpolated to create peat thickness contours to provide a visualisation of peat thickness and extent across the site. This is shown on Figure 11.3.3: Peat Depth Plan and in more detail within Figure 11.3.4a-11.3.4f: Proposed Layout with Peat Probes.

3.4.2 The peat probing phases carried out to date have indicated that the peat thickness across the Site varies from 0.0m to 5.8m. The majority of the Site is covered in shallow peat (<1.0m). The average peat thickness across the Site from all peat probes carried out to date is 0.6m.

3.4.3 Pockets of thicker peat in excess of 2.0m thick have been identified predominantly between Beinn Sgeireach and Carn nam Bo Maola within the associated valley and within the southern half of the Site as marshland becomes more prominent.

3.4.4 Peat thicknesses in excess of 1.0m have been identified within the vicinity of 3 no. proposed turbines locations; T04, T07 and T08 with the maximum peat depth being 1.73m at T8.

## 3.5 Peat Characteristics

3.5.1 The characteristics of the excavated peat determines its suitability for re-use on site.

3.5.2 During previous investigations (SLR, 2012) auger samples were retrieved from a number of representative locations. From these sample the following characteristics were determined for the full depth profile of the peat:

- The consistency of the peat profile is soft to firm (determine from surface to base of peat)
- The upper 0.5m of peat is generally fibrous and is correspondingly firmer.
- Vegetation is persistently present even to base of peat cores
- Undrained shear strengths ranges from 10-50kPa, although the higher end of this range is likely due to the fibrosity of the peat.
- Von Post classification of H3-H4 is applicable to all layers of peat.

3.5.3 From the above, it can be concluded that the upper 0.5m thick fibrous layer corresponds to the acrotelm. It is expected that all of this layer would be suitable for re-use within the site.

3.5.4 Beneath the acrotelm layer, where peat thickness exceed 0.5m, catotelm peat is anticipated. Where the catotelm layer hosts fibrous material, there is a possibility that this material could be used for the top layer of reinstatement but may require further management in the form of erosion control, seeding or translocation of vegetation for this material to be more readily usable. Given the overall Von Post classification of H3-H4 and the fact that vegetative matter has been proven to base of peat, it is considered that catotelmic peat will be widely suitable for re-use.

## 3.6 Classification of Excavated Material

3.6.1 Table 3.1 presents a summary of the peat anticipated across the Site specific to each infrastructural element associated with the wind farm development. Calculations are based on the total anticipated volumes of peat excavated from each infrastructural element. This total volume is then sub-divided into acrotelm and catotelm. The acrotelm comprises of ≤0.5m thick peat across the infrastructural elements footprint and the catotelm is the remaining peat volume where total peat thickness is in excess of 0.5m.

**3.1 Classification of peat anticipated across the site**

| Infrastructure | Peat Characteristic (%) | |
|---|---|---|
| | Acrotelm | Catotelm |
| **Turbine and Hardstanding** | 68.33% | 31.67% |
| **Borrow Pits** | 78.06% | 21.94% |
| **Substation/ Control Building** | 100% | 0% |
| **Access Tracks** | 100% | 0% |

# 4 PEAT MANAGEMENT PROPOSALS

## 4.1 Excavation Activities

4.1.1 The following activities require excavation, including stripping of vegetation turves and excavation of underlying soils, including peat, down to formation level (i.e., excavation down to a stratum with suitable engineering properties to meet required design criteria)

i. Establishment of borrow pit areas;

ii. Construction of turbine foundations and crane hardstandings;

iii. 'Founded' track construction (in areas of peat <1m deep or where floating track construction is not physically possible);

iv. Excavation of cable trenches (e.g. where not mole-ploughed) for underground cabling;

v. Construction of the substation and welfare building;

vi. Construction compounds and laydown areas.

## 4.2 Excavation Methods, Handling and Storage

4.2.1 All stripping of vegetation and excavation, handling and storage of excavated materials will be undertaken in accordance with the requirements of the CEMP.

## 4.3 Re-use Activities

4.3.1 The following areas will require excavated peat for reinstatement and restoration purposes:

i. Verge reinstatement and landscaping on floating tracks and on cross slope founded tracks (to create suitable tie-in with surrounding topography, reduce visual impacts, establish vegetation and reduce erosion etc);

ii. Reinstatement of temporary tracks and temporary construction compounds;

iii. Reinstatement of peat above turbine foundations;

iv. Restoration of borrow pits;

v. Reinstatement of cable trenches;

vi. Other screening and potential landscaping bunds; and

vii. Ecological habitat creation or enhancement.

4.3.2 A definitive detail regarding the re-use of peat cannot be given until a ground investigation confirms peat characteristics. The interpretations made on peat re-use within this report are based on peat characteristic assumptions made in section 3.

4.3.3 If any fluidised (wet catotelm) peat is encountered then it would be placed in appropriate locations such as the base of a borrow pit and dressed with a sequence of semi-fibrous catotelm and fibrous acrotelm peat

# 5 ESTIMATION OF EXCAVATION AND RE-USE VOLUMES

## 5.1 General

5.1.1 Details of the assumptions used to estimate peat volumes associated with each of the excavations and re-use activities are provided below.

5.1.2 The detailed calculations of peat excavation and re-use are presented in Appendix 11.3 A.

## 5.2 Borrow Pit Excavation

5.2.1 During the development of each of the five borrow pit locations it is intended that peat is removed from the entire footprint of the borrow pit. Borrow pit excavation profiles for each of the five borrow pits have been included within Figure 11.3.2a- 11.3.2e: Borrow Pit Cross-Sections. Peat volumes at these locations are based off the assumption that peat side slopes will be excavated to 1V: 4H in order to maintain slope stability around the perimeter of each borrow pit. For further information regarding the proposed borrow pit locations, refer to Technical Appendix 11.1.

5.2.2 Table 5.1 highlights the anticipated volumes of peat to be removed from each borrow pit.

**Table 5.1 Peat excavation for borrow pits**

| Borrow Pit No. | Area ($m^2$) | Avg Peat Depth (m) | Peat Vol. ($m^3$) |
|---|---|---|---|
| **1** | 33790.6$m^2$ | 0.87m | 29446$m^3$ |
| **2** | 39900.1$m^2$ | 0.94m | 37701.5$m^3$ |
| **3** | 52635.8$m^2$ | 0.41m | 21493$m^3$ |
| **4** | 56828.1$m^2$ | 0.45m | 25520$m^3$ |
| **5** | 57516.4$m^2$ | 0.42m | 23945.6$m^3$ |
| | **Total Volume of Peat Excavation ($m^3$)** | | **138106.1$m^3$** |

5.2.3 The figures shown within Table 5.1 are based on the excavation of peat from the entire borrow pit areas. As mentioned within the Borrow Pit Appraisal Document (Technical Appendix 11.1), approximately 250,000m$^3$ of site won rock is required to construct the wind farm. Subsequently not all borrow pit locations will need to be excavated, thus reducing the total amount of peat excavated across all borrow pit locations.

## 5.3 Track and Drainage Excavation

5.3.1 For the construction of access tracks, it is proposed to float tracks where peat is greater than 1 m in depth and to have founded/excavated tracks where peat is less than 1 m in depth.

5.3.2 Table 5.2 provides the indicative dimensions of the proposed tracks and peat excavated as a result. Current proposed track width is 5m at surface level but in the calculations 8m has been accounted for to allow for the appropriate excavation width for track material to be backfilled to a safe side slope angle. This calculation does not include the reinstatement of peat verges and excavation of ditches.

**Table 5.2 Peat excavation for founded tracks**

| **Description** | **Dimension** |
|---|---|
| Track width (m) | 8m |
| Length of Founded Track (m) | 13207m<br><br>(total track length (17248m) – anticipated floated track length (2020m)) |
| Depth of Peat Excavation (average) (m) | 0.37m |
| Volume of peat excavated (average) (m$^3$) | 38679m$^3$ |
| Volume of peat excavated from drainage ditches on founded tracks (assuming 0.7m width and 0.5m depth) (m$^3$) | 4623m$^3$ |
| Allowance for 1:1 batters (m$^3$) | 13208m$^3$ |
| Access Track Passing Places (33No at 23m x 3m) | 834m$^3$ |
| **Total Volume of Peat Excavation (m$^3$)** | **57344m$^3$** |

## 5.4 Turbine Foundations and Hardstanding Excavation

5.4.1 Turbine foundation and crane pad construction will be undertaken in line with best practice. An average of all turbine and crane hardstanding peat depths have been taken as a conservative figure.

5.4.2 Table 5.3 provides the indicative dimensions for foundations and hardstanding and the peat excavated as a result.

**Table 5.3 Peat excavation for turbine foundations and hardstandings**

| **Description** | **Dimension** |
|---|---|
| **Turbine Foundations** | |
| Diameter of excavation at top (average) (m) | 25.6m |
| Depth of excavated peat (average) (m) | 0.57m |
| Cut slope angle in peat | 1V : 4H |
| Diameter of excavation at base (m) | 25m |
| **Total volume of peat excavated from turbine bases ($m^3$)** | **7551$m^3$** |
| **Crane Hardstanding** | |
| Area of hardstandings ($m^2$) | 1995$m^2$ |
| Depth of excavated Peat (average) (m) | 0.57m |
| Volume of peat per hardstanding (average) ($m^3$) | 1146$m^3$ |
| **Total volume of peat from hardstandings ($m^3$)** | **22922.6$m^3$** |
| **Combined Total** | |
| **Approximate Total Volume of Excavated Peat for both turbine foundations and hardstandings ($m^3$)** | **30474$m^3$** |
| **Approximate Total volume of acrotelm ($m^3$)** | **20798$m^3$** |
| **Approximate Total volume of catotelm ($m^3$)** | **9677$m^3$** |

## 5.5 Other Infrastructure Excavations

5.5.1 The remaining Wind Farm infrastructure construction will be undertaken in line with best practice. An average of all peat depths across each infrastructure footprint has been taken as a conservative figure.

5.5.2 Table 5.4 provides the indicative dimensions for foundations and the peat excavated as a result.

**Table 5.4 Peat excavation for remaining wind farm infrastructure**

| Infrastructure Type | Area ($m^2$) | Avg Peat Depth (m) | Peat Vol. ($m^3$) |
|---|---|---|---|
| **Substation/Welfare/ Temp cons. Comp (SSEN-T)** | 20000$m^2$ | 0.28m | 5600$m^3$ |
| **Temp cons. Comp. (1)** | 10000$m^2$ | 0.28m | 2800$m^3$ |
| **Temp cons. Comp. (2)** | 25648$m^2$ | 0.28m | 7181$m^3$ |
| **Temp. Batch Plant** | 10000$m^2$ | 0.28m | 2800$m^3$ |
| **Total Volume of Peat Excavation ($m^3$)** | | | **18381$m^3$** |

## 5.6 Reinstatement Volumes

5.6.1 Table 5.5 sets out the volumes of peat required for specific restoration activities and areas on the Site including the reinstatement and landscaping of site infrastructure and borrow pits. When calculating the re-use of peat adjacent to founded track, a 2m verge has been accounted for either side of the track. A bulking factor of 1.2 has been applied to the re-use volumes of peat to account for peat lost during construction due to the compressibility of peat.

**Table 5.5 Peat required for restoration and reinstatement activities**

| **Description** | **Dimension** | |
|---|---|---|
| Total peat re-used on founded tracks ($m^3$) | 21133$m^3$ | |
| Total peat re-used on floating tracks ($m^3$) | -3232$m^3$ | |
| Total peat re-used for borrow pit restoration ($m^3$) | 153560$m^3$ | |
| Reinstatement volume for area around turbines ($m^3$) | 5535$m^3$ | |
| Total peat re-used on construction phase infrastructure ($m^3$) | 20259$m^3$ | **Applied 1.2 bulk factor to Total volume of peat re-used ($m^3$)** |
| **Total volume of peat re-used ($m^3$)** | **203719**$m^3$ | **244463$m^3$** |
| **Total volume of peat excavated ($m^3$)** | | **244307$m^3$** |
| **Total volume of surplus peat ($m^3$)** | | **-157$m^3$** |

## 5.7 Results

5.7.1 A per Table 5.5, it is anticipated that most of the excavated peat shall be suitable for re-use on site. The results of the volumetric calculations determined from the peat probing data available, indicates that a balance between excavated peat required for construction and reinstated peat requirements on site can be achieved, as included within Table 5.5. A deficit of 157$m^3$ of peat has been calculated. The depth of peat reinstated at each borrow pit location will vary however depend upon the number of borrow pits developed during the projects development. This will may result in a surplus of peat which can be used to restore borrow pits with a thicker layer of peat.

5.7.2 The re-use calculations presented in Table A2, within Appendix 11.3 A, assumes various verge widths and dress back widths of peat (see the assumptions in Tables A2), and therefore reducing these widths in specific locations during construction could balance the calculation exactly.

5.7.3 As far as reasonably practicable, the acrotelm peat will be stripped with the vegetation and re-used as the top layer of reinstatement at the same location it was excavated to minimise transportation and handling of peat. It can be seen in Tables A3, within Appendix 11.3 (A) that there shall be a surplus of excavated peat at some infrastructure locations (namely turbine and crane hardstandings), and a deficit at others. Therefore, localised transportation of peat shall be required during the wind farms construction. Stockpiling and movement of peat should be minimised as far as possible.

5.7.4 Should any catotelm peat be required for use as the top layer of reinstatement, only the more fibrous catotelm peat should be used for this purpose. Additional measures may be required to prevent erosion and ensure vegetation establishment happens quickly where catotelm peat is used as the top layer of reinstatement. Such works should be carried out in consultation with NatureScot and implemented under the supervision of the ECOW. The measures may include erosion matting, seeding, or use of turves from elsewhere on the site.

5.7.5 The generation of “waste” (according to the legal definition of waste) peat during construction is considered unlikely due to the following factors:

- The estimated excavation volumes are currently based on conservative average peat depths. Further refinement of the infrastructure design and layout at detailed design stage will allow for more refined calculations to be carried out. This is anticipated to reduce the volumes of excavated peat and give a more indicative representation of peat conditions on site; and

- With the peat assumed to comprising of predominantly acrotelm peat, it is considered suitable for re-use as a material for both engineering and environmental purposes.

5.7.6 The assumption made on the generation of waste peat is based off assumed peat conditions anticipated on site. Until an intrusive ground investigation is conducted, a definitive answer can not be given regarding the volumes of waste peat on site. The presence of extremely humified or wet peat can not be discounted which would be considered “waste” peat if encountered.

# 6 CONCLUSIONS

6.1.1 This PMP presents an initial pre-planning approval assessment of the expected peat extractions and re-use volumes associated with the development of Achany Extension Wind Farm. It also provides details of industrial standard methods of "good practice" for the management of peat during construction, with specific reference to the construction of a wind farm.

6.1.2 Four phases of peat probing (including augering with core retrieval), including two phases of high-resolution probing, have been carried out for all main infrastructure. Spreadsheet based calculations have been carried out so assess the volumes of excavated peat and re-use potential as part of this PMP.

6.1.3 It is anticipated that a total of 244,307m$^3$ of peat (both acrotelm and catotelm) shall be excavated during construction and that 244,463m$^3$ shall be used for reinstatement purposes, demonstrating an overall deficit of -157m$^3$. In order to balance out this deficit, less peat can be re-used in places but given the very low difference between the extraction and re-use of peat, this demonstrates that a good balance can be achieved during construction of the proposed development.

6.1.4 Proposed re-uses for the excavated peat are in line with the SSE and SEPA Guidance, and include reinstatement of the working area around turbines, reinstatement of batters at crane hardstandings and substation platform, infill to cable trenches, reinstatement of verges along access tracks, and full reinstatement of the temporary construction compound area. Restoration of borrow pits is also proposed which is not outlined within the SEPA guidance document.

6.1.5 It is not anticipated that additional peat treatment shall be required prior to reinstatement, although methods to encourage regeneration of vegetation cover may be required, especially in areas where catotelm peat may be required for use as the top layer of reinstatement should there be a deficit of acrotelm peat.

6.1.6 Methods of good practice for the handling and storage of excavated peat have been outlined to ensure the re-use potential is maximised, and carbon loss is minimised.

# Appendix 11.3 A: PEAT EXCAVATION AND RE-USE VOLUME ESTIMATES.

**Table A1 Excavated Peat Volumes ($m^3$) by Infrastructure.**

| WHOLE SITE | EXTRACTION | | |
|---|---|---|---|
| Infrastructure | Total Peat Excavation Volume (m3) | Acrotelm Volume (m3) | Catotelm Volume (m3) |
| New Access Tracks (Founded) | 57343 | 57343 | 0 |
| Access Tracks (Floated) | 0 | 0 | 0 |
| Turbine Bases (>0.5m) | 5355 | 2662 | 2693 |
| Turbine Bases (<0.5m) | 2196 | 2196 | 0 |
| Crane Hardstandings | 22923 | 15940 | 6984 |
| Borrow Pit 1 | 29446 | 16895 | 12551 |
| Borrow Pit 2 | 37702 | 19950 | 17751 |
| Borrow Pit 3 | 21493 | 21493 | 0 |
| Borrow Pit 4 | 25520 | 25520 | 0 |
| Borrow Pit 5 | 23946 | 23946 | 0 |
| Welfare | 5600 | 5600 | 0 |
| Temp cons comp (1) | 2800 | 2800 | 0 |
| Temp cons comp (2) | 7181 | 7181 | 0 |
| Batch Plant | 2800 | 2800 | 0 |
| **TOTAL** | **244307** | **204327** | **39980** |

**Table A2 Reinstatement Peat Volumes ($m^3$) by Infrastructure.**

| WHOLE SITE | RE-USE | | | |
|---|---|---|---|---|
| Infrastructure | TOTAL Re-Use Volume ($m^3$) | Acrotelmic Volume ($m^3$) | Catotelmic Volume ($m^3$) | Assumptions |
| New Access Tracks (Founded) | 21133 | 21133 | 0 | peat only used to reinstate 2m verge either side of track |
| Access Tracks (Floated) | 3232 | 3232 | 0 | peat only used to reinstate 2m verge either side of track |
| Turbine Bases (>0.5m) | 3744 | 3744 | 0 | Avg area of top of excavation - area of conc. Foundation x peat depth |
| Turbine Bases (<0.5m) | 1791 | 1791 | 0 | Avg area of top of excavation - area of conc. Foundation x peat depth |
| Crane Hardstandings | 0 | 0 | 0 | no reinstatement |
| Borrow Pit 1 | 21964 | 16895 | 5069 | 0.65m reinstated in base of excavation in line with available peat |
| Borrow Pit 2 | 25935 | 19950 | 5985 | 0.65m reinstated in base of excavation in line with available peat |
| Borrow Pit 3 | 34213 | 26318 | 7895 | 0.65m reinstated in base of excavation in line with available peat |
| Borrow Pit 4 | 36938 | 28414 | 8524 | 0.65m reinstated in base of excavation in line with available peat |
| Borrow Pit 5 | 34510 | 28758 | 5752 | 0.65m reinstated in base of excavation in line with available peat |
| Wellfair/Substation/Ops Building/ Temp cons comp (SSEN) | 0 | 0 | 0 | No reinstatement across area |
| Temp cons comp (1) | 5000 | 5000 | 0 | 0.5m reinstatement across area |
| Temp cons comp (2) | 10259 | 10259 | 0 | 0.4m reinstatement across area |
| Batch Plant | 5000 | 5000 | 0 | 0.5m reinstatement across area |
| **TOTAL** | 203719 | 170495 | 33225 | |
| **TOTAL (1.2 bulk factor)** | **244463** | **204593** | **39870** | |

**Table A3 Peat Volumes Balance ($m^3$) by Infrastructure.**

| WHOLE SITE | BALANCE | | |
|---|---|---|---|
| Infrastructure | Total Volume ($m^3$) | Acrotelmic Volume ($m^3$) | Catotelmic Volume ($m^3$) |
| New Access Tracks (Founded) | 36210 | 36210 | 0 |
| Access Tracks (Floated) | -3232 | -3232 | 0 |
| Turbine Bases (>0.5m) | 1612 | -1081 | 2693 |
| Turbine Bases (<0.5m) | 405 | 405 | 0 |
| Crane Hardstandings | 22923 | 15940 | 6984 |
| Borrow Pit 1 | 7482 | 0 | 7482 |
| Borrow Pit 2 | 11766 | 0 | 11766 |
| Borrow Pit 3 | -12720 | -4825 | -7895 |
| Borrow Pit 4 | -11418 | -2894 | -8524 |
| Borrow Pit 5 | -10564 | -4813 | -5752 |
| Welfare/Substation/Ops Building/ Temp cons comp (SSEN) | 5600 | 5600 | 0 |
| Temp cons comp (1) | -2200 | -2200 | 0 |
| Temp cons comp (2) | -3078 | -3078 | 0 |
| Batch Plant | -2200 | -2200 | 0 |
| **TOTAL ( Extraction - Bulk Factor re-use total)** | -157 | -267 | 110 |

**Table A4 Summary of Peat Balance ($m^3$) by Peat Type.**

| | Excavation ($m^3$) | Re-used ($m^3$) | Surplus ($m^3$) |
|---|---|---|---|
| Acrotelmic | 204327 | 204593 | -267 |
| Catotelmic | 39980 | 39870 | 110 |
| Total | **244307** | **244463** | **-157** |