Coille Beith Wind Farm

Technical Appendix 8.3: Outline Peat Management Plan (OPMP)

June 2025

Contents

1. Introduction

1.1 Background

1.1.1 This Outline Peat Management Plan (OPMP) has been prepared by Fluid Environmental Consulting (Fluid) on behalf of the Applicant to support the Environmental Impact Assessment Report (EIAR) for Coille Beith Wind Farm (the 'Proposed Development'). The Site (area defined by the Site boundary) is located 18 km southwest of Lairg in Sutherland, Scotland and covers an area of approximately 1,306 ha (inclusive of both access options).

1.1.2 A review of Ordnance Survey mapping and aerial imagery (Google, 2023) shows that the Site is located across a central plateau, with gently sloping sides. The highest summit is 387 m Above Ordnance Datum (AOD) in the south of the Site, two lochans are located in the northeast of the Site and two in the forest in the northwest as shown on **Figure 8.1** (EIA Report, Volume 3a). The Site slopes generally moderately north from the Cnoc nan Caorach summit, with steeper slopes in the northwest of the Site. Existing access to the Site is from a local road off the A837. The Site is mostly located on a hillside that slopes from south to north into the River Oykel valley which runs in part along the northern boundary of the Site. It is located within the Lochan Phàil and Allt Fliuch Bhadain, Allt badan Uilleim, Allt a' Bhràigh, Na h-Easan, Allt Lon a' Bhadain Bhig. Allt a' Choire Bhuidhe, Meòir Leathan, Allt a' Phris Mhòir, Meur an da Sgoiltein, Allt Mòr, and Allt an Fhithich water catchments.

1.1.3 The main elements of the Proposed Development are outlined in **Chapter 2** (EIA Report Volume 2).

1.1.4 The total area of the Proposed Development infrastructure (307,634 m^2) and associated earthworks (127,703 m^2) is 435,337 m^2.

1.1.5 This OPMP has been developed due to the presence of peat (see **Chapter 8**, EIA Report Volume 2) and potential peatland habitats on the Site (Chapter 6, EIA Report Volume 2) and as requested by SEPA at scoping and should be read in conjunction with **Technical Appendix 8.2** (EIA Report Volume 4).

1.1.6 The potential volumes of peat extracted and re-used have been calculated based on an area specific or infrastructure specific basis, using a modelled peat contour plan developed on a high-density probing grid where excavations will be undertaken (Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland Survey. Guidance on Developments on Peatland). This has allowed high levels of confidence in the estimation of the volumes of peat that will be excavated and that will require appropriate re-use.

1.1.7 This OPMP addresses the management of peat during the construction period for the Proposed Development and the restoration of the Site (both during construction and once construction has been completed). In accordance with the SEPA Regulatory Position Statement (2010) Developments on Peat, as much excavated peat as possible is reused on Site.

1.1.8 The design of the Proposed Development has been undertaken as an iterative process to avoid areas of peat and deeper peat where possible, whilst considering other constraints (see **Chapter 8**, EIA Report Volume 2). Details on the design process are discussed in the **Chapter 3** (EIA Report Volume 2).

1.1.9 The OPMP will be further developed, and implemented, should the Proposed Development receive consent from the Scottish Government; further development of the OPMP will be in consultation with SEPA, NatureScot, and The Highland Council (THC). Further details and specific plans will be determined during the detailed design process and once further site investigations have been undertaken. These details will then be included in a detailed PMP as a part of the Contractor's detailed Construction Environmental Management Plan (CEMP). The responsibility for the implementation of the detailed PMP will be with the Principal Contractor (PC). A full PMP should be secured via a suitable planning condition.

1.1.10 This Outline Peat Management Plan (OPMP) follows guidance (Scottish Renewables & SEPA, 2012) on the assessment of peat excavation and reuse for wind farms in Scotland, and accompanies **Chapter 8** (EIA Report Volume 2). The OPMP was prepared in parallel with a Peat Landslide Hazard and Risk Assessment (PLHRA) (see **Technical Appendix 8.4**, EIA Report Volume 4) and is informed by peat depth probing undertaken by Fluid Environmental Consulting (see **Technical Appendix 8.2**, EIA Report Volume 4).

1.1.11 A list of legislation, policy and guidance documents relevant to this OPMP is presented in **Section 2**.

1.2 Objectives

1.2.1 This OPMP has been developed to demonstrate that peat has been afforded significant consideration during the design and assessment process and will be afforded necessary protection during the construction phase of the Proposed Development, should consent be granted. It proposes mitigation and

enhancement measures that will minimise any impacts to peat and presents the long-term habitat restoration and management plans to enhance the Site.

1.2.2 The OPMP outlines the overall approach of minimisation of peatland disruption that has been adopted during the design stage (see **Chapter 3**, EIA Report Volume 2). It aims to ensure that all further opportunities to minimise peat disturbance and extraction will be taken.

1.2.3 The OPMP seeks to demonstrate that appropriate proposals to re-use the surplus peat can be accommodated within the Site, without significant environmental or health and safety implications, to minimise risk in terms of carbon release and human health.

1.3 Scope of Works

1.3.1 The scope of the OPMP is as follows:

- Summarise the design principles adopted for the Proposed Development with respect to peat soils, including the approach to peat characterisation and the identification of opportunities taken to minimise impacts on peatlands within the Site;
- Calculate the potential volumes of peat, both acrotelmic and catotelmic, and soil that may be excavated in association with construction of the Proposed Development;
- Identify and justify reuse of acrotelmic and catotelmic peat where it cannot be reinstated at source, including, where appropriate, in peatland restoration; and
- Identify good practice measures to ensure excavated peat is stored safely and with minimal loss of function prior to its reinstatement.

1.4 Report Structure

1.4.1 This remainder of this Report is structured as follows:

- **Section 2** provides an outline of relevant guidance relating to the excavation, storage and reuse of peat;
- **Section 3** provides an overview of the role of the PMP and describes the stages of the plan;
- **Section 4** describes the peat conditions on the Site;
- **Section 5** describes how peat disturbance will be minimised;
- **Section 6** sets out excavation areas and associated peat volumes;
- **Section 7** presents excavated volumes;
- **Section 8** sets out reuse peat volumes;
- **Section 9** provides general good practice measures and measures specific to the conditions at the Site;
- **Section 10** descibes opportunities for excavated peat and soil within the Site, including in restoration of afforested peatland; and
- **Section 11** provides a summary of the OPMP.

1.4.2 Where relevant information is available elsewhere in the EIA Report, this is referenced in the text rather than repeated in this report.

2. Legislation, Policy and Guidance for Peat Management

2.1.1 When considered as part of a carbon landscape, peat has a capacity to act as a carbon sink. The management of peat therefore has implications for carbon emissions and climate change. There is a substantial body of legislation and policy relevant to the management of peat and including for climate change and carbon.

2.1.2 Relevant documents, guidance, and policy includes the following:

- Best Practice Guidance to Planning Policy Statement 18 ‘Renewable Energy’, August 2009;
- SEPA Regulatory Position Statement – Developments on Peat. February 2010;
- Understanding the GHG implications of forestry on peat soils in Scotland, 2010
- Forestry Civil Engineering and SNH (2010). Floating Roads on Peat: A Report into Good Practice in Design, Construction and Use of Floating Roads in Peat with particular reference to Wind Farm Developments in Scotland;
- Floating Roads on Peat: A Report into Good Practice in Design, Construction and Use of Floating Roads in Peat with particular reference to Windfarm Developments in Scotland. Forestry Civil Engineering and SNH, 2010;

- Forestry Commission, 2011, 'Forests and climate change: UK Forestry Standard Guidelines.
- Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste Scottish Renewables, 17 January 2012;
- Forestry Commission (2012). Forests & Water Guidelines. 5th Edition. HMSO;
- Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste Scottish Renewables, 17 January 2012;
- Forestry Commission (2012). Forests & Water Guidelines. 5th Edition. HMSO;
- Carbon Landscapes and Drainage, 2012 'The Carbon and Water Guidelines', www.clad.ac.uk;
- Scotland's National Peatland Plan Working for our future. Scottish Natural Heritage 2015;
- Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland Survey. Guidance on Developments on Peatland;
- Peat Slide Hazards and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments. Scottish Executive, 2017;
- Peatland Survey: Guidance on Developments on Peatland. Scottish Government, Scottish Natural Heritage, SEPA, 2017;
- Good practice during windfarm construction (Scottish Renewables, SNH, SEPA & Forestry Commission Scotland, 4th Edition 2019); and
- National Planning Framework 4 (NPF4), Scottish Government, 2023

3. Role of the Peat Management Plan

3.1.1 The OPMP is intended to be a working document to be used throughout the key stages of the design, construction, operation, decommissioning, and re-instatement phases of the Proposed Development as part of the overall CEMP.

3.2 Stage 1: Environmental Impact Assessment Report

3.2.1 It is necessary to show how, through site investigation and iterative design, the Proposed Development has been designed to minimise, so far as reasonably practicable, the quantity of peat which will be excavated; that volumes of peat anticipated to be excavated for the Proposed Development have been considered; and how excavated peat will be managed. The overall aim is to minimise the impacts associated with excavation of peat by using the following hierarchy of design principles:

- prevent excavation;
- reduce volumes of peat excavated; and
- reuse excavated peat in a manner to which it is suited.

3.2.2 This hierarchical approach comprises:

- Initial assessment of peat coverage on-site based on a broad 100 m grid;
- Design of layout based on various constraints including peat occurrence on-site;
- Further detailed site surveys undertaken to obtain peat depth across the proposed layout, micro-siting allowance, and design iterations as necessary;
- Calculation of estimated volumes of excavated peat and potential reuse volume requirements based upon the proposed site design / layout;
- Determine whether there is likely to be negative or positive overall peat balance, and whether the generation of excess material can be avoided, and, if not, where reductions in the volumes of excavated materials may be achieved;
- Layout refined to avoid areas of deeper peat and hence reduce carbon impacts of the Proposed Development's construction activities;
- Further surveys undertaken if required in new sections of infrastructure;
- Record specific examples of how overriding principles of prevention and minimisation of peat disturbance are to be taken into account in the design of the Site;
- Assessment is to be consistent with and feed into the peat stability and carbon payback assessment; and
- Identify limitations and make recommendations for further site investigation (post-consent) to steer detailed design and micro-siting such that opportunities for further reductions in excavated peat volumes can be implemented where possible.

3.3 Stage 2: Post Consent / Pre-Construction

3.3.1 As part of the EIA Report it has been demonstrated that, on the basis of the investigation and data gathered, the excavated materials for the Proposed Development can be managed in an appropriate manner. The peat mass balance calculations may be further developed and refined post planning consent, and prior to the relevant works commencing, as a consequence of any further or more detailed ground investigation or survey works required to inform detailed design, or that may be required under planning consent conditions.

3.4 Stage 3: Construction Stage

3.4.1 Actual peat volumes excavated during construction will be recorded against the overall predicted volumes provided in **Table 6.3** and **Table 7.1**. Within micro-siting allowances, the alignment and design of tracks, hardstanding orientation, and construction methods will be reviewed to avoid/minimise peat disturbance as far as possible, taking account of the more detailed information available once construction commences. A regular review and update of the peat mass balance table will be undertaken by the appointed PC and monitored by the Ecological Clerk of Works (ECoW) on-site and made available to regulators as required.

4. Peat Conditions

4.1.1 Organic material less than 0.5 m depth is not defined as peat. This is in accordance with the following guidance:

- Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland Survey. Guidance on Developments on Peatland states that 'Peat soil is an organic soil which contains more than 60 per cent of organic matter and exceeds 50 centimetres in thickness'.
- The James Hutton Institute define shallow peat as having 'a prescribed depth of organic matter of 50 – 100cm'.
- (https://www.hutton.ac.uk/learning/exploringscotland/soils/organicsoils).
- The Forestry Commission use 45cm as the critical depth for peat to occur (Understanding the GHG implications of Forestry on Peat Soils in Scotland, 2010).
- Peat can therefore be classified as organic material over 0.5 m in depth.
- Peat can be separated into three main layers: acrotelmic (the upper living layer), catotelmic (the middle to lower layer), and occasionally amorphous (lower layer) peat:
- Acrotelmic peat is the living layer of the peat including the peat turf being a thin, floating vegetation mat layer. The acrotelm is generally found within the top layer of peat (often less than 0.5 m) depending on the degree of decomposition and fibrous nature of the peat (approximately H1 to H5 on the Von Post classification scale). The acrotelm is generally of high permeability, decreasing with depth. The water table fluctuates in this layer and conditions vary from aerobic to anaerobic. Material may be fibrous or pseudofibrous (plant remains recognisable), spongy, and when excavated strength is lost but retains integral structure and can stand unsupported when stockpiled up to 1m.
- Catotelmic peat is the dead layer of peat found deeper than acrotelmic peat which has some remnant plant structures. Material has high water content and is permanently below the water table (saturated) therefore organic matter decomposes anaerobically. Some plant structures may be recognisable but are highly humified losing most of their characteristics (approximately H6 to H8 on the Von Post classification scale) and strength. Water flow through the catotelm is slow unless peat structures such as sink holes or peat pipes are present.
- Amorphous peat is highly decomposed organic material where all recognisable plant remains are absent (approximately H9 to H10 in the Von Post classification scale). These deposits are dark brown to black in colour, plastic, are low tensile strength and are unable to stand unsupported up to 1 m when stockpiled.

4.2 Peat Conditions on-site

4.2.1 The Site was assessed for peat vegetation through desktop review of maps and plans and field surveys by ecologists and hydrologists; including intrusive site investigation in terms of peat depth probing and coring (see **Technical Appendix 6.1** and **Technical Appendix 8.2**, EIA Report Volume 4).

4.2.2 The Proposed Development is located on upland moorland that slopes from higher areas in the south to lower areas in the north. The Site is mostly commercial forestry and woodland.

4.2.3 Peat cover was found to be present across 48.5% of the Site (see **Technical Appendix 8.2**, EIA Report Volume 4). Peat is present over much of Proposed Development at varying depths up to 3.8 m. There

are numerous pockets of peat >1 m in depth across the Site with more extensive areas of >1 m depth across the southern extent of the Site. Most of the infrastructure has been designed to avoid the areas of peat >1 m.

4.2.4 The peatland habitats within the Site are generally in forested areas and degraded by forestry activities including erosional gullies. The depth of the peat does not always relate to the quality of the overlying peatland habitat. The peatland habitats and peat condition are assessed in **Technical Appendix 6.2** (EIA Report Volume 4).

4.3 Peat Surveying Methodology

4.3.1 To obtain a detailed understanding of the spatial and depth distribution of peat and its properties, a series of tasks have been completed which include:

- Phase 1 habitat mapping (detailed within **Technical Appendix 6.2** (EIA Report Volume 4) and shown in **Figure 6.2** and **Figure 6.3** (EIA Report Volume 3a));
- Depth penetration probing (see **Technical Appendix 8.2** (EIA Report Volume 4) and **Figure 8.8** and **Figure 8.9** (EIA Report Volume 3a)); at 7,067 locations within the Site:
  - on a 100 m grid across the Peat Study Area;
  - across the footprint of all infrastructure within peat areas on a 10 m grid and probing within a 50 m buffer area on a 20 m grid; and
  - at 50 m intervals with 10 m offset probes along the western access track, all new on-site access tracks and offset probes only along existing access tracks.
- Peat coring at 12 locations to verify the probing is representative of peat depth and to assess the peat structure and properties (see **Technical Appendix 8.2** (EIA Report Volume 4));
- Development of a penetrable substrate depth map to indicate the maximum depth of probe penetration at all investigated points across the site (see **Figure 8.9** (EIA Report Volume 3a));
- Development of an interpreted maximum depth of peat contour map to indicate the potential penetrable substrate or inferred peat depth based on the depth penetration probing results and verified by coring (see **Figure 8.10** (EIA Report Volume 3a)); and
- Examination of the variability of the depth of the acrotelm, the thickness of the catotelm and the thickness of amorphous peat.

4.4 Peat Depth Survey Results

4.4.1 The survey results present the data collected and assessed across the Peat Survey Area which comprises the area of the main site within the red line boundary and the western access track. The eastern access track is excluded from the Peat Study Area. Each probe measured the depth of penetration and the potential substrate at the limit of penetration (see **Technical Appendix 8.2** (EIA Report Volume 4).

4.4.2 Of the 7,067 locations probed a total of 3,476 probes (49.2%) recorded depths of 0.5 m or less (no peat), 1,873 probes (26.5%) recorded depths of penetration between 0.5 m and 1.0 m, and 1,718 probes (24.3%) recorded depths of penetration >1.0 m, as shown in **Table 4.1**.

Table 4.1: Depth of Penetration Distribution

Depth Range (m)	Number of Probes	Percentage of Probes
0 – 0.5	3476	49.2%
>0.5 - 1.0	1873	26.5%
>1.0 – 1.5	792	11.2%
>1.5 - 2.0	589	8.33%
>2.0 – 3.0	314	4.44%
>3.0 – 4.0	23	0.33%
Total	**7,067**	**100%**

4.4.3 The depth of penetration at each probe location within the peat survey area is presented on **Figure 8.9** (EIA Report Volume 3a).

4.4.4 Based on the data collected an interpreted peat depth map (**Figure 8.10**, EIA Report Volume 3a) was produced to demonstrate the variation in peat across the survey area and at the various infrastructure locations. The peat depth within the infrastructure footprint is presented in **Table 4.2**.

Table 4.2: Peat Penetration Depth across the Infrastructure and Earthworks Footprint

Depth Range (m)	Peat depth distribution across infrastructure and earthworks footprint (m^2)	Peat depth percentage distribution across infrastructure and earthworks footprint
0 to 0.5 (no peat)	209,495	48.3%
> 0.5 - 1.0 m	113,056	26.0%
> 1.0 - 1.5 m	60,865	14.0%
> 1.5 - 2.0 m	33,181	7.64%
> 2.0 - 3.0 m	15,885	3.66%
> 3.0 m	1,708	0.39%
Total	**434,190**	**100.0%**
Note: Any differences in figure values from the total is due to rounding.		

4.4.5 The data indicates that peat (>0.5 m depth) is present across 51.8 % of the Proposed Development infrastructure and associated earthworks, and no peat (0 – 0.5 m depth) is present across 48.25 % of the Proposed Development infrastructure and associated earthworks. The OPMP is therefore only concerned with the 51.8 % of the infrastructure and earthworks footprint that overlies peat.

4.4.6 A total of 12 cores were completed 10 of which encountered peat. The peat depth minus the acrotelm depth has been used to calculate the potential catotelm thickness.

4.5 Peat Characteristics

4.5.1 The coring identified a distinctive acrotelm layer in 10 of the 12 coring locations that ranged between 0.05 m and 0.25 m in thickness, averaging 0.16 m. In two locations there was no identifiable acrotelm layer due to the altered ground conditions caused by the presence of forestry plantations. The catotelm thickness ranged between 0.4 m and 1.75 m in the 10 cores where present.

4.5.2 No amorphous peat was identified or recorded on-site.

4.5.3 These values have been used in calculations of volumes of peat across the Peat Study Area (seen in **Figure 8.8,** EIA Report Volume 3a) where the peat contour map indicates that peat is present (e.g. >0.5 m probe depth).

5. Avoidance and Minimisation of Peat Disturbance

5.1 Avoidance

5.1.1 The development of the infrastructure layout has been an iterative process designed to avoid or minimise impact on blanket bog habitats and peat where possible. The mapping of peat depth through probing has therefore allowed a peat depth contour map to be generated with a greater level of detail at the Proposed Development infrastructure locations to inform further layout modifications, thus enabling higher confidence in the avoidance of peat. Where avoidance of peat has been unavoidable for any section of track, a floating track design is proposed, if feasible. The infrastructure has also been designed to avoid areas where peat slide risk is moderate or higher (see **Technical Appendix 8.4**, EIA Report Volume 4).

5.2 Further Minimisation

5.2.1 The disturbance of peat by the construction of the proposed infrastructure will be minimised, whilst taking into account the other constraints to the Proposed Development. Minimisation of peat excavation reduces the potential for peat waste requiring removal from site and the need for a waste management licence. Excavated peat also has the potential to lose carbon unless adequately stored and reinstated.

5.2.2 Throughout the construction process, the appointed PC (and / or Designer) will aim to minimise the volumes of excavated peat. Appropriate handling and storage of excavated materials will be undertaken such that their integrity and subsequent reuse is not jeopardised.

5.2.3 Adjustment of infrastructure within the micro siting limits (proposed as up to 100 m) could allow further improvements. Further measures to minimise peat disturbance will be incorporated in the development and construction process. The principles of the waste hierarchy will be applied to:

- avoid and/or minimise production of excavated peat;
- reuse, where possible, excavated peat on-site to facilitate habitat, ecological, and hydrogeological restoration, improvement, and enhancement; and
- avoid waste peat being sent for disposal, recovery and/or reuse off-site.

5.2.4 All contractors will be made aware of the sensitivity of peat and wetland habitats and will be required to work within the narrowest practical construction corridor when working in or near areas of peat.

5.2.5 All plans and method statements will be accompanied by justification of the final design and/or construction methods identified by the PC, including reasons for discounting alternative methods. This is required to demonstrate that all avenues for avoiding hydrological disruption, and reducing the disturbance and excavation of peat have been considered.

5.2.6 It is anticipated that an ECoW will be appointed and will:

- identify areas of sensitive habitat;
- clearly mark sensitive habitats near to construction areas, make the PC aware of the sensitivity of peat habitats, and and inform all sub-contractors;
- walk the areas affected by the Proposed Development with engineers before construction commences;
- authorise minor movement of infrastructure within the 100 m micro-siting areas where impact can be reduced; and
- monitor construction to ensure that any micro-siting does not result in movements into more sensitive habitats and deep peat unless unavoidable.

6. Peat Excavation Areas and Assumptions

6.1.1 The Proposed Development infrastructure and dimensions including associated earthworks used in the peat balance calculations are summarised in **Table 6.1**. The Proposed Development will only include one of the two access track options, two construction compounds (one group), and one substation. For the purpose of the peat excavation calculations the worst case scenario has been assessed which includes the western access track option and the western construction compounds and substation, which as are located on deeper peat.

Table 6.1: Infrastructure and Associated Earthworks Dimension Final Layout

Infrastructure	Dimensions (m)	Area (m^2)
Turbine and Crane Hardstanding 1 Permanent	Irregular (appr.45x80)	4,842
Turbine and Crane Hardstanding 1 Temporary	Irregular (appr.20x60)	2,384
Earthworks T01	Irregular (appr.13x100)	12,569
Turbine and Crane Hardstanding 2 (Permanent)	Irregular (appr.45x80)	4,858
Turbine and Crane Hardstanding 2 Temporary	Irregular (appr.20x60)	2,384
Earthworks T02	Irregular (appr.7x87)	17,751
Turbine and Crane Hardstanding 3 (Permanent)	Irregular (appr.45x80)	4,868
Turbine and Crane Hardstanding 3 Temporary	Irregular (appr.20x60)	2,384
Earthworks T3	Irregular (appr.63x109)	10,148
Turbine and Crane Hardstanding 4 (Permanent)	Irregular (appr.45x80)	4,861
Turbine and Crane Hardstanding 4 Temporary	Irregular (appr.20x60)	2,384
Earthworks T04	Irregular (appr.16x61)	6,828
Turbine and Crane Hardstanding 5 (Permanent)	Irregular (appr.45x80)	4,802
Turbine and Crane Hardstanding 5 Temporary	Irregular (appr.20x60)	2,384
Earthworks T05	Irregular (appr.31x84)	12,285
Turbine and Crane Hardstanding 6 (Permanent)	Irregular (appr.45x80)	4,868
Turbine and Crane Hardstanding 6 Temporary	Irregular (appr.20x60)	2,384
Earthworks T06	Irregular (appr.23x94)	7,473
Turbine and Crane Hardstanding 7 (Permanent)	Irregular (appr.45x80)	4,857
Turbine and Crane Hardstanding 7 Temporary	Irregular (appr.20x60)	2,384
Earthworks T07	Irregular (appr.33x49)	5,909
Turbine and Crane Hardstanding 8 (Permanent)	Irregular (appr.45x80)	4,868
Turbine and Crane Hardstanding 8 Temporary	Irregular (appr.20x60)	2,384
Earthworks T08	Irregular (appr.247x26)	37,495
Turbine and Crane Hardstanding 9 (Permanent)	Irregular (appr.45x80)	4,858
Turbine and Crane Hardstanding 9 Temporary	Irregular (appr.20x60)	2,384
Earthworks T9	Irregular (appr.247x26)	10,658
Turbine and Crane Hardstanding 10 (Permanent)	Irregular (appr.45x80)	4,868
Turbine and Crane Hardstanding 10 Temporary	Irregular (appr.20x60)	2,384

Infrastructure	Dimensions (m)	Area (m^2)
Earthworks T10	Irregular (appr.114x19)	9,231
Turbine and Crane Hardstanding 11 (Permanent)	Irregular (appr.45x80)	4,868
Turbine and Crane Hardstanding 11 Temporary	Irregular (appr.20x60)	2,384
Earthworks T11	Irregular (appr.108x25)	10,413
Substation	Regular (appr 70x150)	10,502
Construction Compound 1	Regular (appr 50x100)	5,001
Construction Compound 2	Regular (appr 50x100)	5,001
Proposed Access Track	Irregular (appr. 5x7434)	37,173
Proposed Access Track - Floating	Irregular (appr. 5x1840)	9,200
Borrow Pit	Irregular (appr. 61x80)	16,769
West Access Track	Irregular (appr. 5x3205)	16,477
West Access Track EW	Irregular (appr. 10x3205)	32,123
Access Track Earthworks	Irregular (appr. 5x7434)	64,687
Borrow Pit Earthworks	Irregular (appr.109x55)	9,392
Construction Compound 1 Earthworks	Irregular (appr.112x19)	3,351
Construction Compound 2 Earthworks	Irregular (appr.105x7)	1,431
Substation Earthworks	Irregular (appr.173x20)	3,828

6.1.2 The calculations are based on the GIS footprint and earthworks provided by the Applicant for the Proposed Development.

6.2 Excavated Volumes

6.2.1 Peat excavation volumes associated with the project have been calculated using the GIS package QGIS based on the data in **Table 6.1** and these further assumptions:

- A contour map of assumed peat depth based on interpolation of values from probing across the Site (**Figure 8.9**, EIA Report Volume 3a);
- Dimensions of the proposed areas for excavation for site infrastructure on peat of >0.5 m are based on the final layout shape files provided (**Figure 8.8**, EIA Report Volume 3a) and detailed in **Table 6.1**;
- An estimated acrotelm depth of 0.16 m across infrastructure area where peat (>0.5 m organic soil) is present based on the peat core data;
- An estimated catotelm thickness of the average depth of the peat minus the acrotelm (0.16 m) across infrastructure areas where peat is present and based on the peat core data;
- An assumption that the probe depth is representative of the actual depth of the peat (validated by the spatial coverage of 10 cores); and
- Any peat excavated for cable trenches is stored adjacent to the trench while the track is laid and then replaced, therefore this volume is not applicable to the excavated volume.

6.2.2 Using the interpreted peat depth contour map, **Figure 8.9**, EIA Report Volume 3a), the volumes of peat that would be excavated during construction were calculated based on the final layout infrastructure dimensions as shown in **Table 6.1**. These calculations produced the following volume estimates and are detailed in **Table 6.2**.

6.2.3 A total volume of peat to be excavated of 211,177 m^3. This comprises:

- Total volume of acrotelm which will be excavated = 31,125 m^3; and
- Total volume of catotelm which will be excavated = 180,052 m^3.

6.2.4 These values are estimates based on the available data and the above assumptions.

6.2.5 A bulking factor of 10% is applied to these values which increases them to a total volume of peat once excavated = 232,294 m^3. This comprises:

- Total volume of acrotelm once excavated = 34,237 m^3; and
- Total volume of catotelm once excavated = 198,057 m^3.

Table 6.2: Excavated Peat Volumes Based on Actual Footprint of Infrastructure and Earthworks

Infrastructure	Infrastructure area (m^2)	Average peat depth over infrastructure area (m)	Percentage of infrastructure with >0.5 m depth of peat	Area of infrastructure with >0.5 m depth of peat (m^2)	Average peat depth over area of infrastructure with >0.5 m depth of peat (m)	Volume of peat excavated (m^3)	Volume of acrotelm peat excavated (m^3)	Volume of catotelm peat excavated (m^3)
Turbine and Crane Hardstanding 1 Permanent	4,842	0.59	48	2,307	1.0	2,246	373	1,873
Turbine and Crane Hardstanding 1 Temporary	2,384	0.40	24	567	0.7	380	91	289
Earthworks T01	12,569	0.28	15	1,903	0.8	1,555	305	1,250
Turbine and Crane Hardstanding 2 (Permanent)	4,858	0.44	41	1,968	0.6	1,276	316	960
Turbine and Crane Hardstanding 2 Temporary	2,384	0.40	30	723	0.7	484	116	368
Earthworks T02	17,751	0.50	30	5,368	1.1	6,088	897	5,191
Turbine and Crane Hardstanding 3 (Permanent)	4,868	0.30	13	611	0.6	391	98	293
Turbine and Crane Hardstanding 3 Temporary	2,384	0.30	8	187	0.6	121	30	91
Earthworks T3	10,148	0.37	23	2,383	0.7	1,607	381	1,226
Turbine and Crane Hardstanding 4 (Permanent)	4,861	0.59	65	3,160	0.7	2,324	506	1,818
Turbine and Crane Hardstanding 4 Temporary	2,384	0.71	80	1,911	0.8	1,590	306	1,284
Earthworks T04	6,828	0.46	40	2,731	0.7	2,180	474	1,706
Turbine and Crane Hardstanding 5 (Permanent)	4,802	0.39	21	999	0.6	613	160	452
Turbine and Crane Hardstanding 5 Temporary	2,384	0.50	48	1,141	0.7	757	183	574
Earthworks T05	12,285	0.44	35	4,299	0.7	2,851	688	2,163
Turbine and Crane Hardstanding 6 (Permanent)	4,868	1.47	100	4,868	1.5	7,153	780	6,373
Turbine and Crane Hardstanding 6 Temporary	2,384	1.43	100	2,384	1.4	3,410	381	3,029
Earthworks T06	7,473	1.41	100	7,471	1.4	10,600	1,200	9,400
Turbine and Crane Hardstanding 7 (Permanent)	4,857	0.61	72	3,497	0.7	2,513	561	1,952
Turbine and Crane Hardstanding 7 Temporary	2,384	0.63	72	1,715	0.7	1,248	274	974
Earthworks T07	5,909	0.61	65	3,817	0.8	3,024	621	2,403
Turbine and Crane Hardstanding 8 (Permanent)	4,868	1.22	100	4,848	1.2	5,947	777	5,169
Turbine and Crane Hardstanding 8 Temporary	2,384	1.36	100	2,384	1.4	3,250	381	2,868
Earthworks T08	37,495	1.58	100	37,334	1.6	23,337	2,357	20,980

Infrastructure	Infrastructure area (m^2)	Average peat depth over infrastructure area (m)	Percentage of infrastructure with >0.5 m depth of peat	Area of infrastructure with >0.5 m depth of peat (m^2)	Average peat depth over area of infrastructure with >0.5 m depth of peat (m)	Volume of peat excavated (m^3)	Volume of acrotelm peat excavated (m^3)	Volume of catotelm peat excavated (m^3)
Turbine and Crane Hardstanding 9 (Permanent)	4,858	0.82	91	4,420	0.9	3,822	710	3,111
Turbine and Crane Hardstanding 9 Temporary	2,384	1.01	100	2,384	1.0	2,400	381	2,019
Earthworks T9	10,658	1.09	96	10,230	1.1	11,711	1,680	10,031
Turbine and Crane Hardstanding 10 (Permanent)	4,868	0.38	29	1,405	0.8	1,155	225	930
Turbine and Crane Hardstanding 10 Temporary	2,384	0.40	28	658	0.8	554	105	448
Earthworks T10	9,231	0.27	13	1,210	0.7	960	206	755
Turbine and Crane Hardstanding 11 (Permanent)	4,868	0.22	9	442	0.9	411	71	340
Turbine and Crane Hardstanding 11 Temporary	2,384	0.32	24	566	0.8	481	91	390
Earthworks T11	10,413	0.37	29	3,029	0.8	2,093	445	1,647
Substation	10,502	0.61	64	6,707	0.8	5,400	1,073	4,327
Construction Compound 1	5,001	0.65	76	3,810	0.7	2,855	610	2,245
Construction Compound 2	5,001	0.44	43	2,146	0.7	1,598	343	1,254
Proposed Access Track	37,173	0.81	57	21,063	1.3	28,179	3,370	24,809
Proposed Access Track - Floating	9,200	1.61	97	8,921	1.7	0	0	0
Borrow Pit	16,769	0.21	9	1,468	0.6	947	235	712
West Access Track	16,026	0.31	18	2,845	0.7	1,963	455	1,508
West Access Track EW	32,123	0.31	19	6,127	0.7	4,212	980	3,232
Overrun	451	0.20	3	15	0.5	8	2	5
Access Track Earthworks	64,687	0.86	63	40,443	1.2	48,775	6,471	42,305
Borrow Pit Earthworks	9,392	0.73	54	5,113	1.1	5,648	818	4,830
Construction Compound 1 Earthworks	3,351	0.49	45	1,514	0.9	1,335	242	1,092
Construction Compound 2 Earthworks	1,431	0.65	79	1,125	0.7	829	180	649
Substation Earthworks	3,828	0.37	28	1,075	0.8	898	172	726
Total	**435,337**	**N/A**	**N/A**	**225,292**	**N/A**	**211,177**	**31,125**	**180,052**

6.3 Peat Sensitivity

6.3.1 The sensitivity of the peat can be determined by both the depth and the quality of the peat. Unmodified peat greater than 1 m in depth is of higher sensitivity, while modifications which alter the carbon stored within the peat will reduce sensitivity including drainage, deep eroded gullies or forestry). The sensitivity criteria for peat are detailed in **Chapter 8** (EIA Report Volume 2). Much of the peat on-site is located within commercial forestry and therefore the carbon content is effected within the upper metre. The summary of the peat sensitivity across the infrastructure is detailed below in **Table 6.3**.

Table 6.3: Peat Presence across Infrastructure

Peat Presence	Ground/Peat Condition	Infrastructure including associated earthworks	Sensitivity
Peat 0.5 m to 1.0 m	Modified peat in forestry	T01, T02, T03, T04, T05, T10, T11, Substation, Construction Compounds, sections of Proposed Access Track, Track to be upgraded	Low
Peat 0.5 m to 1.0 m	Intact peat on open moorland	T07 and Western access track	Medium
Peat 1.0 m to 2.0 m	Modified peat in forestry	T06, T08, T09	Medium

7. Peat Reuse Volume Estimates

7.1 Peat Reuse Volumes

7.1.1 The amount of peat that will be removed by the excavation of the infrastructure is 31,125 m³ acrotelm and 180,052 1 m³ catotelm (as detailed in **Table 6.1** and **Table 6.2**). This will increase in size due to bulking by an estimated 10 % once excavated to 34,237m³ of acrotelm and 198,057m³ of catotelm. Peat reuse on-site will be focused on the reinstatement of the temporary infrastructure where peat can be reinstated and connected to the existing peat habitat. This will include:

- placement of peat on track margins up to 0.5m depth where it will connect to existing peat habitat;
- reinstatment of temporary crane hardstandings, clearance areas and earthworks at depth consistent with the depths of peat excavated. There may be the requirement to remove hardcore used in the construction to engineer bunds for peat retention;
- reinstatement of peat across the construction compounds;
- placement of peat on the substation earthworks areas; and
- placement of peat within the borrow pit area. This will require the pit to be reprofiled post construction so that peat will be able to tie in to the surrounding peat habitat.

7.1.2 In order for peat reuse within temporary infrastructure areas to be successful the areas will need to be reprofiled and some hardcore may require to be removed or for bund construction to allow appropriate peat reinstatement.

7.1.3 Peat excavated from infrastructure footprints will be used to support peatland restoration within Bat Exclusion Areas (BEAs) that will be cut around each turbine location. These BEAs involve felling of trees within a set distance of each turbine to minimise collision risks with bats, and are maintained by the wind farm operator for the operational life of the wind farm. As a result, they are ideal habitat restoration targets and their management falls within habitat management proposals for the wind farm.

7.1.4 At the Site, new techniques under trial in Forest and Land Scotland (FLS) owned estates in Scotland will be applied within the BEAs. Trees will be felled to as close to ground level as possible (ideally with tree shears). Following felling, all brash will be removed, and residual stumps either drilled and broken or flipped from their ridges into adjacent furrows. The ground surface will then be cross-tracked by low ground pressure plant to 'smooth' the bog surface. Peat will then be placed at one of two target depths – 0.3 m (on shallower terrain) and 0.15 m (on slightly steeper terrain, but still <7°). Areas of steeper slope have been excluded and therefore only a subset of BEAs have been specified for this reuse approach. Where acrotelmic peat is available (with bog species), this will form the top surface, where absent, seeding using locally appropriate seed stock will be undertaken to encourage rapid recovery of bog species. Where local ground conditions indicate the need to do so, trench bunds will be cut across the former ridge and furrow alignments to provide a hydrological seal to placed peat. Reinstated peat will be monitored and additional seeding or repair undertaken as required throughout the life of the Proposed Development.

7.1.5 In addition to the BEAs, an area of forest-to-bog restoration using the same technique will be undertaken to the northeast of T3, extending the area of open bog in the centre of the Site. All areas identified for peat reinstatement are outlined in **Table 7.1** and shown in **Figure 8.10** (EIA Report Volume 3a).

Table 7.1: Estimated Peat Reuse Volumes

Reuse Location	Reuse Summary	Total Volume (m^3)	Acrotelm volume (m^3)	Catotelm volume (m^3)
Earthworks T01	Peat infilled to a depth of 0.8 m	10,055	2,011	8,044
Turbine and Crane Hardstanding 1 Temporary	Peat infilled to a depth of 0.67 m	1,597	381	1,216
Turbine and Crane Hardstanding 2 Temporary	Peat infilled to a depth of 0.67 m	1,597	381	1,216
Earthworks T02	Peat infilled to a depth of 1.09 m	19,349	2,840	16,508
Turbine and Crane Hardstanding 3 Temporary	Peat infilled to a depth of 0.65 m	1,550	381	1,168
Earthworks T3	Peat infilled to a depth of 0.67 m	6,799	1,624	5,175
Turbine and Crane Hardstanding 4 Temporary	Peat infilled to a depth of 0.83 m	1,979	381	1,597
Earthworks T04	Peat infilled to a depth of 0.73 m	3,827	839	2,988
Turbine and Crane Hardstanding 5 Temporary	Peat infilled to a depth of 0.66 m	1,581	381	1,199
Earthworks T05	Peat infilled to a depth of 0.66 m	8,146	1,966	6,180
Turbine and Crane Hardstanding 6 Temporary	Peat infilled to a depth of 1.43 m	3,410	381	3,029
Earthworks T06	Peat infilled to a depth of 1.41 m	10,559	1,196	9,364
Turbine and Crane Hardstanding 7 Temporary	Peat infilled to a depth of 0.72 m	1,735	381	1,354
Earthworks T07	Peat infilled to a depth of 0.77 m	4,606	945	3,661
Turbine and Crane Hardstanding 8 Temporary	Peat infilled to a depth of 1.36 m	3,250	381	2,868
Earthworks T08	Peat infilled to a depth of 1.60 m	23,543	2,342	21,202
Turbine and Crane Hardstanding 9 Temporary	Peat infilled to a depth of 1m	2,400	381	2,019
Earthworks T9	Peat infilled to a depth of 1.17 m	12,322	1,676	10,645
Turbine and Crane Hardstanding 10 Temporary	Peat infilled to a depth of 0.84 m	2,006	381	1,625
Earthworks T10	Peat infilled to a depth of 0.74 m	6,891	1,477	5,414
Turbine and Crane Hardstanding 11 Temporary	Peat infilled to a depth of 0.84 m	2,024	381	1,643
Earthworks T11	Peat infilled to a depth of 0.86 m	6,766	1,250	5,516
Construction Compound 1	Peat infilled to a depth of 0.74 m	3,747	800	2,947
Construction Compound 2	Peat infilled to a depth of 1.5 m	7,502	800	6,701
Borrow Pit	Peat infilled to a depth of 1.5 m	25,154	2,683	22,470
Overrun	Peat infilled to a depth of 0.51 m	229	72	157
Access Track Earthworks	Peat infilled to a depth of 0.5 min areas where earthworks are located on peat	20,222	6,471	13,751
Borrow Pit Earthworks	Peat infilled to a depth of 1 m	9,392	1,503	7,889
Construction Compound 1 Earthworks	Peat infilled to a depth of 0.88 m	2,954	536	2,418
Construction Compound 2 Earthworks	Peat infilled to a depth of 0.74m	1,054	229	825
Substation Earthworks	Peat infilled to a depth of 0.84 m	3,199	612	2,586
BEA9_b	Bat Exclusion area fill to a depth of 0.15 m	120	120	0
BEA9_a	Bat Exclusion area fill to a depth of 0.15 m	421	421	0
BEA8_a	Bat Exclusion area fill to a depth of 0.3 m	746	398	348
BEA8_b	Bat Exclusion area fill to a depth of 0.3 m	1,181	630	551
BEA6_a	Bat Exclusion area fill to a depth of 0.15 m	1,588	1,588	0
BEA6_b	Bat Exclusion area fill to a depth of 0.15 m	350	350	0
BEA6_c	Bat Exclusion area fill to a depth of 0.15 m	679	679	0
BEA5_a	Bat Exclusion area fill to a depth of 0.3 m	1,054	562	492
BEA4_a	Bat Exclusion area fill to a depth of 0.3 m	2,900	1,547	1,353
BEA4_b	Bat Exclusion area fill to a depth of 0.15 m	584	584	0
BEA1_a	Bat Exclusion area fill to a depth of 0.3 m	793	423	370
BEA1_b	Bat Exclusion area fill to a depth of 0.3 m	2,188	1,167	1,021
BEA1_c	Bat Exclusion area fill to a depth of 0.3 m	1,003	535	468
FTB_b	Forest to Bog to a depth of 0.3 m	1,645	877	768
FTB_a	Forest to Bog to a depth of 0.3 m	4,807	2,564	2,243
Total		**243,081**	**52,868**	**190,213**

7.2 Net Peat Balance

7.2.1 The excavated peat volumes and reuse volumes are summarised in **Table 3.2**.

Table 3.2: Net Peat Balance

Volume (m^3)	Acrotelm volume (m^3)	Catotelm (m^3)	Total volume (m^3)
Excavated Peat (including bulking factor)	34,237	198,057	232,294
Peat reuse	52,868	190,213	243,081
Total Balance	-18,631	7,843	-10,787

7.2.2 The total volume of peat predicted to be excavated is 232,294 m^3 including bulking factor, is less than the peat volume that is considered feasible for reuse and restoration, 243,041 m^3. No off-site disposal of peat is therefore required and all excavated peat is able to be reused appropriately within the Site.

8. Handling Excavated Materials

8.1 Excavation

8.1.1 The following methodologies for excavation of peat are recommended:

- Areas of peat within the footprint of any excavation will have the top layer of vegetation stripped off as turf prior to construction by an experienced specialist contractor. When excavating areas of peat, the excavated turfs should be kept as intact as possible. Often it is easiest to achieve this by removing large turfs up to 500 mm to keep the peat intact;
- These turfs should be stored adjacent to the construction area such that they remain moist and viable (see temporary storage below). Excavated turfs should be as intact as possible to minimise carbon losses. Stacking of turfs will be avoided to best preserve the viability of the vegetation layer;
- Peat will then be removed, stored separately and kept damp[1];
- Excavated soils and turfs will be handled to avoid cross contamination between distinct horizons and allow reuse potential to be maximised;
- Mineral soil and aggregate will be kept separate from peat or peaty soils to avoid contamination (which could result in a change in chemical or hydrological properties in the peat, reducing the likelihood of successful reinstatement on placement);
- Prior to any excavations, the PC will produce a detailed Method Statement identifying where, and how, excavated peat will be used in reinstatement works. Specific requirements for the excavation, handling, storage, and reinstatement of peat will be outlined in this Method Statement. The PC will consider potential impacts on downstream hydrological receptors in consultation with ECoW, and the potential for instability issues with the excavated material.

8.2 Temporary Storage

8.2.1 Where additional preparation of restoration areas is required at the time of excavation, peat may be required to be temporarily stored before reuse. Likewise, material will be required to be temporarily stored if there is any additional excavated peat beyond the volume that can be placed within the peat restoration areas and the material is instead planned for placement in either the temporary construction compounds or the areas of temporary hardstanding, as these will not be available until after the construction period. Excavated peat should be stored in stockpiles to minimise carbon losses while being stored. Peat excavation will be scheduled so as to avoid all temporary storage of peat as much as possible, with a preference for excavated peat being transported directly to restoration areas.

8.2.2 Where possible, excavated turfs will be stored adjacent to the construction area such that they remain moist and viable.

8.2.3 Areas of temporary storage required for peat will be identified in the PC's Method Statement taking into account constraints and mitigation requirements identified in further pre-construction investigations. This will describe any intended drainage, pollution prevention and material stability mitigation measures that may be required.

8.2.4 The following general guidelines will apply:

- The appropriate temporary storage areas for excavated peat will be as close to the excavation as practicable;
- Temporary peat storage areas require the ground conditions to be suitable for loading, the peat slide risk and the topographical gradients to be low, and to be located outside of the main watercourse buffers;
- The design and location of stockpiles, including incorporated drainage elements, will be agreed with the ECoW prior to excavation works commencing;
- Temporary peat storage areas should be located so that erosion and run off is limited, leachate from the material is controlled, and stability of the existing peatland in the vicinity is not affected;

[1] Carbon Landscapes and Drainage, 2012 'The Carbon and Water Guidelines', www.clad.ac.uk

- Excavated material is to be stockpiled at least 50 m away from watercourses. This will ensure that any wetting required on stored peat does not runoff and discharge into adjacent watercourses;
- Any edges of cut peat that may remain exposed, or areas of peat excavation on steep slopes, will be covered with geotextile or similar approved. This will allow re-turfing and re-vegetation and reduce erosion risks;
- Suitable storage areas are more appropriately sited in areas with lower ecological value and low slopes. Cleared areas of forestry are preferred to areas of higher ecological value or areas close to watercourses;
- An up-gradient cut off ditch should be installed around the edge of the storage bund in order to collect up-gradient surface water runoff and divert water runoff from eroding the toe of the bund;
- It is desirable to keep haul distances of excavated peat as short as possible, and as close as possible to intended re-use destinations, to minimise plant movements in relation to any earthworks activity, including peat management, in order to minimise the potential impact on the peat structure. It is important that temporary storage is safe and keeps the material suitable for its planned reuse;
- The handling and storage of peat will seek to ensure that excavated peat does not lose either its structure or moisture content. Peat turfs require careful storage and wetting and to be maintained to prevent drying out and subsequent oxidisation to ensure that they remain fit for re-use; and
- Stockpiling of peat should be in large volumes, taking due regard to potential loading effects. Piles should be bladed off at the side to minimise the available drying surface area.

9. Reuse of Peat in Infrastructure Restoration

9.1.1 As stated above, priority for peat reuse will be given to the peat restoration areas shown in **Figure 8.10** (EIA Report Volume 3a). The following methodologies apply to any potential excess excavated peat that may be reused within infrastructure excavations.

9.2 Bare Peat

9.2.1 There are several important methodologies regarding the exposure of bare peat including:

- The amount of time any bare peat will be exposed will be minimised to preserve its integrity;
- The phasing of work should be carried out to minimise the total amount of exposed ground at any one time. By stripping turf and replacing as soon as reasonably possible after peat has been re-distributed there will be minimal areas of bare peat;
- Any peat areas on steep ground or that remains partially bare will be covered using geotextile or a similar method to stop erosion;
- Any areas of bare peat, where vegetation is not re-growing, will be seeded with a seed mixture obtained from the existing habitat. Stock exclusion in these areas will continue until vegetation is properly established;
- The re-vegetated areas will be monitored; and
- Areas where full recovery is complete will have fences removed.

9.2.2 This approach has been shown to be effective on other peat sites and the turfs re-grow quickly both establishing vegetation and consolidating the peat.

9.3 Peat Reuse around Infrastructure

9.3.1 Peat reuse within infrastructure areas allows a further opportunity to maintain the integrity of the excavated peat, enhance habitats, and create new habitats beyond use of peat in restoration of already degraded areas.

9.3.2 This will be undertaken through:

- The PC will be required to provide appropriate plant for undertaking all reinstatement works such that no unnecessary disturbance of the ground surface occurs. To minimise disturbance and damage to the ground surface, any mobile plant required for reinstatement works will be positioned on constructed access tracks, hardstanding areas or existing disturbed areas wherever possible. The use of a long reach excavator for excavations and reinstatement works is preferable as it enables sufficient room to allow initial side casting and subsequent pulling back of turfs over reinstated peat or soil.
- Excavated catotelm or amorphous peat will only be used in restoration works where the topography allows straight forward deposition with no pre-treatment or containment measures and without risk to the environment. Suitable scenarios may be present in those disturbed areas where natural

topography profile allows such use. A fibrous layer of acrotelm and turf will be placed above any catotelm or amorphous peat reinstated.

- Reinstatement of vegetation will be focused on natural regeneration utilising peat vegetated turfs. To encourage stabilisation and early establishment of vegetation cover, where available, peat turfs (acrotelmic material) or other topsoil and vegetation turfs in keeping with the surrounding vegetation type will be used to provide a dressing for the final surface.
- Any reinstatement and re-profiling proposals will consider, and mitigate against, identified significant risks to environmental receptors. In particular, in areas of replaced peat, water management will be considered in the PC's Method Statement to ensure that as far as possible an appropriate hydrological regime is re-established within areas of disturbance. Particular attention will be paid to maintaining hydrological continuity and preventing the creation of preferential subsurface flow paths (for instance within backfilled cable trenches).
- When cutting the track the vegetation layer (approx. 500 mm thick) will be undercut and rolled back. A geotextile layer will then be installed on the side slopes of the track immediately after track construction to prevent erosion. The undercut vegetation layer will then be rolled back over the verge of the installed track. Through careful management of upgradient water and track cambers to shed water to the peat on the verges the level of saturation can be maintained.
- Peat placed on track verges should gently taper into the adjacent landform, with the peat blocks placed snugly together and the edge of the peat placed furthest from the track should be firmed in to the adjacent ground to form a seal, in order to minimise water loss through evaporation.
- Track edges and passing places would be reinstated post construction through the removal of capping material and the reuse of peat turfs. Where peat turfs are used to reinstate track edges this will be done in a manner to ensure works tie in with the surrounding topography, landscape and ground conditions.
- The design and construction of tracks on peat shall be done in such a way so as to reduce impacts on the existing peat hydrology at the site. The built track should allow for the transmittance of water, so natural drainage can be maintained as far as possible.
- Where possible drains will be blocked as soon as they are no longer required to reduce impacts on adjacent peat habitat and allow recovery of the drains to peat habitat.

10. Summary

10.1.1 Depth penetration probing has been undertaken at 7,067 locations with associated cores comprising a high-density grid over all site infrastructure and a 100 m grid across the Peat Study Area to obtain a detailed understanding of peat variability, depth, and characteristics of the Peat Study Area.

10.1.2 The total area of the Proposed Development infrastructure including associated earthworks (footprint) is 435,337 m^2.

10.1.3 The infrastructure has avoided peat where possible with peat >1.0 m depth present across 25.7% of the Proposed Development infrastructure and peat >0.5 m depth present across 51.8% of the Proposed Development infrastructure.

10.1.4 The total volume of excavated peat associated with the footprint of the infrastructure and associated earthworks has been calculated at 232,294 m^3 with about 34,237 m^3 of acrotelmic peat and about 198,057 m^3 of catotelmic peat when allowing for a 10% bulking factor.

10.1.5 The potential reuse of excavated peat has been calculated based on SEPA guidance and comprises the reuse of peat in temporary infrastructure areas as well as restoration of forested areas of peat. Temporary infrastructure areas include some crane hardstandings and clearance areas, construction compounds, the borrow pit, track margins and earthworks. Peat restoration will be undertaken within the BEAs and within an area of forest-to-bog restoration to the north of T3.

10.1.6 The total volume of peat reinstatement that have been identified could accommodate an estimated total volume of 243,081 m^3 of excavated peat. This is comprised of approximately 52,868 m^3 of acrotelmic peat and approximately 190,213 m^3 of catotelmic peat.

10.1.7 The total reuse volume therefore does not exceed the peat excavation volumes and based on the peat depth, characteristics, and distribution investigations undertaken across the Site and the final layout, a surplus of excavated peat is not expected to be generated by the Proposed Development.

10.1.8 Further investigations will be undertaken prior to works commencing to confirm peat depth, distribution, and characterisation. Additional survey data will be used to inform any micro-siting, and potentially further

minimise the volume of peat extracted. The peat management plan will be updated using the additional survey data and detailed infrastructure design. The detailed PMP will be approved by THC in consultation with SEPA and NatureScot as part of the CEMP pursuant to the imposition of a planning condition.

10.1.9 The PC will maintain a record of actual peat volumes excavated and the subsequent peat re-use to compare the predicted and actual peat volumes. This record during the construction, operation, decommissioning, and restoration phases of the Proposed Development will be made available for review by regulators as and when required.