Technical Appendix 8.1: Assessment Methodology

Technical Appendix 8.1: Assessment Methodology

8.1.1 Introduction

8.1.1.1 The assessment methodology in relation to Hydrology, Hydrogeology, Geology and Soils, including the criteria for assessing sensitivity of receptors, magnitude of change and cumulative effects, as well as overall significance criteria is detailed below. The following methodology has formed the basis of **Chapter 8: Hydrology, Hydrogeology, Geology and Soils (EIAR Volume 2)**.

8.1.2 Methodology

Criteria for Assessing the Sensitivity of Receptors

8.1.2.1 Effects on water resources are described as beneficial, neutral or adverse and are considered with reference to the value or sensitivity of the receptor, as described in **Table 8.1.1.**

Table 8.1.1: Sensitivity of Environmental Receptor

Sensitivity of Receptor	Definition	Typical Criteria
High	International or national level importance. Receptor with a high quality and rarity, regional or national scale and limited potential for substitution/ replacement.	High likelihood of fluvial/ tidal flooding in the sub catchment – defined as 1:10 probability in a year. European Commission (EC) Designated Salmonid/Cyprinid fishery. Surface Water Framework Directive (WFD) class 'High'. Scottish Government Drinking Water Protected Areas. Aquifer providing regionally important resource such as abstraction for public water supply, abstraction for private water supply. Supporting a site protected under EC or UK habitat legislation/species protected by EC legislation. Protected Bathing Water Area. Active floodplain. Highly GWDTEs. Average peat depth >1 m within the sub-catchment – near natural condition Peat >2 m in depth that is drained, eroded or modified Peat Landslide Hazard Risk Assessment shows High to Moderate Risk of peat landslides
Medium	Regional, county and district level importance. Receptor with a medium quality and rarity, regional scale and limited potential for substitution/ replacement.	Medium likelihood of fluvial/tidal flooding in the sub catchment – defined as a 1:200 probability in a year. Surface water WFD class 'Good' or 'Moderate'. Aquifer providing water for agricultural or industrial use. Local or regional ecological status/locally important fishery. Contains some flood alleviation features. Moderately GWDTEs. Average peat depth >0.5 m to 1.0 m within the sub catchment – mostly near natural condition. Peat >1 m to 2 m that is drained, eroded or modified Peat Landslide Hazard Risk Assessment shows Low Risk of peat landslides
Low	Local importance Receptor is on-site or on a neighbouring site with a low quality and rarity, local scale.	Surface water WFD class 'Poor'. Unproductive strata/no abstractions for water supply. Sporadic fish present. No flood alleviation features. Sewer.
	Environmental equilibrium is stable and is resilient to changes that are greater than natural fluctuations, without detriment to its present character.	No Peat or non-peat/organic rich soils <0.5 m within the sub catchment. Peat <1 m depth that is drained, eroded or modified

Criteria for Assessing the Magnitude of Change

8.1.2.2 The size or magnitude of each impact is determined as a predicted deviation from the baseline conditions during construction, operation and decommissioning of the Proposed Development, as described in **Table 8.1.2**.

Table 8.1.2: Magnitude of Impact on a Receptor

Magnitude of Impact	Criteria
Large	Total or near total loss of peat resource. Fundamental loss of integrity or function of the geological/soil/peat receptor. Peat resource loss represents >50% of the peat resource present in the survey area. Large alteration/change in the quality or quantity of and/or to the physical or biological characteristics of controlled waters.
Medium	Partial loss of peat resource. Local to site wide disturbance to function of the geological/soil/peat receptor. Peat resource loss represents >5% and <50% of the peat resource in the survey area. Medium alteration/change in the quality or quantity of and/or to the physical or biological characteristics of controlled waters.
Small	Localised excavation of peatland resource. A detectable but non-material effect such that the integrity of the geological/soil/peat receptor is not affected. Peat resource loss represents <5% of the peat resource in the survey area. Small alteration/change in the quality or quantity of and/or to the physical or biological characteristics of controlled waters.
None	No excavation peatland resource. No alteration/change detectable in the quality or quantity of and/or to the physical or biological characteristics of controlled waters.

Criteria for Assessing Cumulative Effects

8.1.2.3 The potential for cumulative effects to occur as a result of the Proposed Development is assessed based on:

- The potential hydrological connection of other similar developments, which are consented or the subject of a valid planning application;
- The potential for concurrent phases of construction with other similar developments with the potential for hydrological connection to the Site; and
- Applicable planning conditions with regards to the potential impact of other similar developments on the water environment including requirements for the implementation of drainage measures, pollution prevention and best practice working measures with regards to the water environment.

Criteria for Assessing Significance

8.1.2.4 **Table 8.1.3** illustrates how the significance of effects are determined by comparison of the sensitivity of receptors with the magnitude of impact (i.e., predicted change). For the purposes of this assessment, significant effects are **Major** or **Moderate.**

Table 8.1.3: Significance Criteria					
		Magnitude of Impact			
		None	**Small**	**Medium**	**Large**
Sensitivity of Receptor	**High**	None	Minor	**Major**	**Major**
	Medium	None	Minor	**Moderate**	**Moderate**
	Low	None	Negligible	Minor	Minor

Technical Appendix 8.2: Watercourse Crossing Assessment

Technical Appendix 8.2: Watercourse Crossing Assessment

8.2.1 Introduction

8.2.1.1 As part of the Environmental Impact Assessment (EIA) process, it was identified that several new watercourse crossings would be required associated with access tracks for the Proposed Development. The upgrading/replacement of existing crossings may also be required.

8.2.1.2 The purpose of this Technical Appendix is to provide a conceptual assessment of watercourse crossings and to outline the strategic approach to proposed crossings. This Technical Appendix does not comment on the detailed engineering design. The Principal Contractor (the 'Contractor') would have overall responsibility for the detailed design of watercourse crossings, for the production of a final Watercourse Crossing Plan and for compliance with the Environmental Authorisations (Scotland) Regulations (EASR)[1] and the Scottish Environment Protection Agency's (SEPA) good practice guidance[2] at the post-consent stage.

8.2.1.3 This Technical Appendix identifies the locations of proposed watercourse crossings and sets out the general principles of design which the Contractor would be required to follow in order to minimise changes to the hydrological regime and reduce any potential impacts on river morphology and aquatic ecology.

8.2.2 Legislation

8.2.2.1 The water environment in Scotland is managed through a legal framework built around the EU Water Framework Directive (WFD)[3] which aims to protect and enhance the quality of surface freshwater (including lakes, rivers and streams), groundwater, Groundwater Dependent Terrestrial Ecosystems (GWDTEs), estuaries and coastal waters. Scottish Ministers, SEPA and a range of public bodies have a legal duty to secure compliance with the WFD.

8.2.2.2 The key objectives of the WFD relevant to this assessment are:

- To prevent deterioration and enhance aquatic ecosystems; and
- To establish a framework of protection of surface freshwater and groundwater.

8.2.2.3 The WFD has been transposed into Scottish legislation as the Water Environment and Water Services (Scotland) Act 2003 (WEWS Act)[4], which gives Scottish Ministers powers to introduce regulatory controls over water activities, in order to protect, improve and promote sustainable use of Scotland's water environment.

8.2.2.4 From 01 November 2025, the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended in 2021) (CAR) have been replaced by the Environmental Authorisations (Scotland) Regulations (EASR) (2018)[1].

8.2.2.5 EASR guidance sets out the required level of authorisation for engineering works in the environment and provides specific guidance for watercourse crossings (under Engineering Activities)[5].

8.2.2.6 The SEPA Position Statement on Culverting of Watercourses (WAT-PS-06-02)[6] and Supporting Guidance on Sediment Management (WAT-SG-78)[7] have also been taken into account within this Technical Appendix. The Supporting Guidance provided in the River Crossings Good Practice Guide[8] has also been taken into account.

8.2.3 Identification of Watercourse Crossing Locations

8.2.3.1 Following a desk-based review of surface water features (based on OS 1:10,000 mapping and aerial imagery), the desk-based identification of surface water features was followed up with a Site walkover which was conducted by Ramboll in October 2024. This field survey of likely crossings, based on the proposed alignment of track infrastructure for the Proposed Development, has been used to determine various watercourse characteristics in order to identify the likely level of EASR authorisation required.

8.2.3.2 A total of eleven potential watercourse crossings were identified, as presented in **Table 8.2.1** below and as shown on **Figure 8.2.1**. A photographic record of watercourses surveyed during the Site walkover is provided as **Annex 1** of this report.

Table 8.2.1: Watercourse Crossing Identification

WCC ID	Crossing Category	Description	Grid Reference	
			X	Y
WC1	New Crossing	Watercourse	294122	611091
WC2	New Crossing	Ephemeral Flow Path	294320	610952
WC3	Existing Crossing	Drain	294363	610777
WC4	Existing Crossing	Watercourse	294887	608745
WC5	Existing Crossing	Watercourse	294929	608720
WC6	New Crossing	Watercourse	295589	608510
WC7	New Crossing	Ephemeral Flow Path	294993	607959
WC8	New Crossing	Watercourse	296238	610144
WC9	New Crossing	Watercourse	296215	610131
WC10	Existing Ford	Watercourse	295939	609672
WC11	Existing Crossing	Watercourse	295861	609030

8.2.4 Type of Crossing

8.2.4.1 Watercourse characteristics, both physical and ecological, would be matched to the most appropriate crossing type as part of detailed design. The potential crossing types typically considered are described below:

- Single span structures: recommended where there is a need to minimise disturbance to the bank and bed of the watercourse. Where it is possible to set back abutments from the watercourse, it is possible to maintain bank habitats under the crossing. Taking into account the maximum width of crossings to be undertaken on the Proposed Development, it is not anticipated that in-stream

[1] Available at: https://www.legislation.gov.uk/sdsi/2018/9780111039014/contents
[2] Available at: https://beta.sepa.scot/regulation/authorisations-and-compliance/easr-authorisations/water-activities/engineering/crossings/
[3] Available at: https://environment.ec.europa.eu/topics/water/water-framework-directive_en
[4] Available at: https://www.legislation.gov.uk/asp/2003/3/contents
[5] Available at: https://beta.sepa.scot/regulation/authorisations-and-compliance/easr-authorisations/water-activities/engineering/

[6] Scottish Environment Protection Agency (SEPA) (2015) WAT-PS-06-02: Culverting of Watercourses – Position Statement and Supporting Guidance. Version 2.0, June 2015. Available at: https://www.sepa.org.uk/regulations/land/contaminated-land/technical-concepts/
[7] Scottish Environment Protection Agency (SEPA) (2012) Water Use Supporting Guidance (WAT-SG-78): Sediment Management Authorisation. Version 1, December 2012. Available at: https://beta.sepa.scot/regulation/authorisations-and-compliance/easr-authorisations/water-activities/engineering/sediment-management/
[8] Scottish Environment Protection Agency (SEPA) (2010) Engineering in the Water Environment: Good Practice Guide – River Crossings (WAT-SG-25), 2nd ed., November 2010. Available at: https://1library.net/document/q27wrepy-engineering-water-environment-good-practice-guide-river-crossings.html

supports would be necessary at any crossings. Such crossings include half barrel culverts with a sufficient span to incorporate the existing bed and banks of watercourses;

- Bottomless Box/Arches: can be used where there are watercourses narrower than those appropriate for bridge construction, but which have a requirement to provide mammal and/or fish passage and ensure sufficient hydraulic capacity during peak flow periods. Arches minimise disruption to the stream bed. Box culverts may incorporate mammal ledges and can be buried below stream bed level to enable bed material replacement;
- Circular Culverts: where potential impact is negligible due to the size, location or typology of the watercourse, circular culverts can be embedded into the channel to allow the natural bed to re-establish and, where necessary, provision can be made for mammals adjacent to the culvert. Where a circular culvert is utilised, it is assumed that neither natural bed material, nor water velocity nor depth are critical other than in the purely hydraulic sense; and
- Porous granular rock fill blanket and perforated pipes: where there is no clearly defined channel flow, flow can be maintained by a drainage blanket wrapped in geotextile placed below the road construction. Where such a crossing structure is utilised, flow is predominantly sub-surface interflow and a porous fill below the track provides flow continuity without concentrating the discharges into a narrow channel.

8.2.4.2 Generally bottomless culverts or single span bridges would be the preferred options for watercourses wherever feasible, in order to minimise alteration of the hydromorphology of watercourses and to reduce potential impact on aquatic habitats.

8.2.4.3 At locations where a culverted crossing is already in place or where drains or ephemeral flow paths have been recorded, it is likely that crossings would comprise circular culverts. At more natural, larger watercourses (WC1, WC8 and WC9) an open bottomed crossing would be utilised to maintain the natural bed of the watercourse.

8.2.5 EASR Authorisations

8.2.5.1 Under SEPA Guidance, engineering activities that could impact the water environment (except culverting for land-gain, dredging and permanent diversions or realignments) on minor watercourses do not require authorisation under EASR. A minor watercourse is one that is not shown on the 1:50,000 scale Ordnance Survey maps (Landranger series). However, activities to cause, or become likely to cause, environmental harm, SEPA may take enforcement action even where authorisation is not required.

8.2.5.2 Where authorisation is required, four types of authorisation are used for all activities

General Binding Rules (GBRs)

8.2.5.3 General Binding Rules (GBRs) are mandatory rules that apply to low-risk activities. If the activity you are carrying out is covered by a GBR, as long as you comply with the rules in full, you are authorised. There is no need to apply for any other authorisation and there is no need to SEPA know.

Notification

8.2.5.4 Notifications are used for low-risk activities that SEPA require to know are being carried out and by who, but SEPA do not need to decide whether to grant or refuse an authorisation. The activity is considered authorised as soon as SEPA have been notified.

Registration

8.2.5.5 Registrations are used for activities that need a simple assessment before SEPA decide to grant or refuse the authorisation following application for a registration.

8.2.5.6 Activities that are authorised by a registration have standard conditions (rules) that apply and must be complied with.

Permit

8.2.5.7 Permits are used for higher risk and non-standard activities that need a rigorous assessment before SEPA decide to grant or refuse the application. Activities that need a detailed Fit and Proper Person assessment, bespoke conditions or involve public consultation will be authorised under a permit.

Requirements for Bridges and Other Crossings

8.2.5.8 The detailed design of crossings for the Proposed Development would include the application to SEPA for the necessary consents under EASR by an appointed contractor.

Likely Levels of EASR Authorisation

8.2.5.9 In order to take a conservative approach to the assessment of likely EASR Authorisation levels it is assumed that where circular culverts are likely to be used for the crossing of smaller watercourses Registration would be required. This level of authorisation is also likely to be applicable to smaller bottomless culverts where engineering on the banks of a watercourse may be necessary. A Permit level of Authorisation is applied where crossings exceed 2 m in width.

8.2.5.10 Based on assessment of the watercourses crossed by proposed access tracks it is anticipated that the levels of authorisation shown in **Table 8.2.2** would be required under EASR:

Table 8.2.2: Likely Levels of EASR Authorisation

WCC ID	Likely Level of EASR Authorisation	Basis of EASR Assessment	X	Y
WC1	Permit	Potrail Water, approx. 6 m wide	294122	611091
WC2	Registration	Cut drain/flow path	294320	610952
WC3	Registration	Existing circular culvert crossing approx. 0.5-1 m wide	294363	610777
WC4	Registration	Existing watercourse crossing, set in an incised channel approx. 1.5 m wide	294887	608745
WC5	Registration	Existing circular culvert, approx. 1.5 m wide and 0.5 m depth	294929	608720
WC6	Registration	Field drain approx. 1 m wide and 0.3 m depth	295589	608510
WC7	Registration	Cut drain/flow path	294993	607959
WC8	Permit	Daer Water, approx. 27 m wide	296238	610144
WC9	Permit	Meikle Burn, approx. 3 m wide	296215	610131
WC10	Registration	Existing ford crossing	295939	609672
WC11	Registration	Existing arched culvert, crossing is approx. 1 m x 1 m, river depth is approx. 0.3 m	295861	609030

8.2.6 Watercourse Crossing Design

8.2.6.1 The detailed design of each watercourse crossing shall seek to ensure hydraulic conveyance is maintained to prevent any restriction of flows, as well as allowing the free passage of mammals and aquatic ecology, including provision of suitable ledges or mammal crossings to ensure free passage to otters during periods of high water-flow. Therefore, it is proposed each watercourse crossing would have sufficient capacity to pass the climate change adjusted 1:200-year flood and include an allowance for potential partial blockage.

8.2.6.2 Where closed culverts are employed, they shall be oversized such that the base of culvert may be below the natural bed level of the watercourse allowing the naturalisation of the culvert bed substrate. Culverts shall follow the natural flow path and gradient of watercourses to which they are installed and shall be designed such that they do not represent a barrier to fish and other fauna. Culverts shall not include screening.

8.2.6.3 Detailed flow calculations would be undertaken by the Contractor in order to inform detailed design and to inform applications for EASR authorisation. Were any new crossings identified, consideration would be given to any local variations in channel dimensions and to bankside conditions. Where feasible within micro-siting allowances, the narrowest locations would be selected, and the stability of the channel banks would also be considered. The Contractor shall submit a detailed plan of proposed watercourse crossings to SEPA for acceptance.

8.2.6.4 At one crossing location (Daer Water, crossing ref.: WC8) a bridge would span a width of approximately 27 m. At this location the track would be raised as it leads into the crossing (both to the east and west of the watercourse) and raised earthworks would be installed at the confluence of the Meikle Burn and Daer Water. It is anticipated that the bridge at this location would comprise a single-span structure that would not necessitate works within the watercourse. In line with other crossing locations the bridge would be designed to accommodate the 1 in 200 year + climate change flood event.

8.2.6.5 However, it is noted that plans for the crossing include ground raising on the floodplain of Daer Water (within areas assessed by SEPA to be at a High Likelihood of river flooding). Specification for the crossing at this location would be developed at detailed design stage and would include the preparation of hydraulic modelling to demonstrate that the proposed works would not lead to an increase in flood risk due to either the constriction of flows or the displacement of water on the floodplain. Any measures to mitigate construction on the floodplain, such as openings to allow flows via the proposed track raising or volumetric floodplain compensation, would also be specified in detailed design.

8.2.7 Conclusions

8.2.7.1 This Technical Appendix sets out the conceptual approach to watercourse crossings, to demonstrate that the approach taken would align with the EASR guidance for crossings (engineering in the water environment) and would ensure the condition of the surrounding water environment would not be negatively impacted.

8.2.7.2 Watercourse crossings would be designed in line with SEPA guidance such that crossing would:

- Have sufficient capacity to pass the climate change adjusted 1:200-year flood; and
- Allow the free passage of mammals and aquatic ecology.

8.2.7.3 Closed culverts, where employed, would be oversized to allow naturalisation of the culvert bed substrate, ensuring they do not obstruct the passage of fish and other fauna.

8.2.7.4 Post-consent, the Principal Contractor will assume responsibility for the detailed design and execution, including undertaking precise flow calculations and securing necessary authorizations under EASR.

8.2.7.5 Detailed design of the Daer Water crossing would be carried out in consultation with SEPA prior to the commencement of construction work. Design of the crossing would ensure that the proposed crossing would not lead to an increase in flood risk due to either the constriction of flows or the displacement of water on the floodplain.

8.2.8 Technical Annex 1: Watercourse Crossing Photos

Location: WC 1 (Potrail Water)

Photo 1: Downstream

Photo 2: Upstream

Location: WC 3 (Potrail Water Tributary)

Photo 1: Downstream

Photo 2: Upstream

Location: WC 2 (Desktop Review only, no image obtained)

Location: WC 4 (Rae Cleuch)	Location: WC 4 (Rae Cleuch)
	
Photo 1: Downstream	**Photo 2: Upstream**

Location: WC 5 (Coom Burn)

Photo 1: Downstream

Location: WC 5 (Coom Burn)

Photo 2: Upstream

Location: WC 6 (Desktop Review only, no image obtained)

Location: WC 7 (Coom Burn)	Location: WC 7 (Coom Burn)
	
Photo 1: Downstream	Photo 2: Upstream

Location: WC 8 (Daer Water)

Photo 1: Cross Section

Location: WC 9 (Meikle Burn)

Photo 1: Cross Section

Location: WC 10 (Meikle Burn)

Photo 1: Downstream

Location: WC 10 (Meikle Burn)

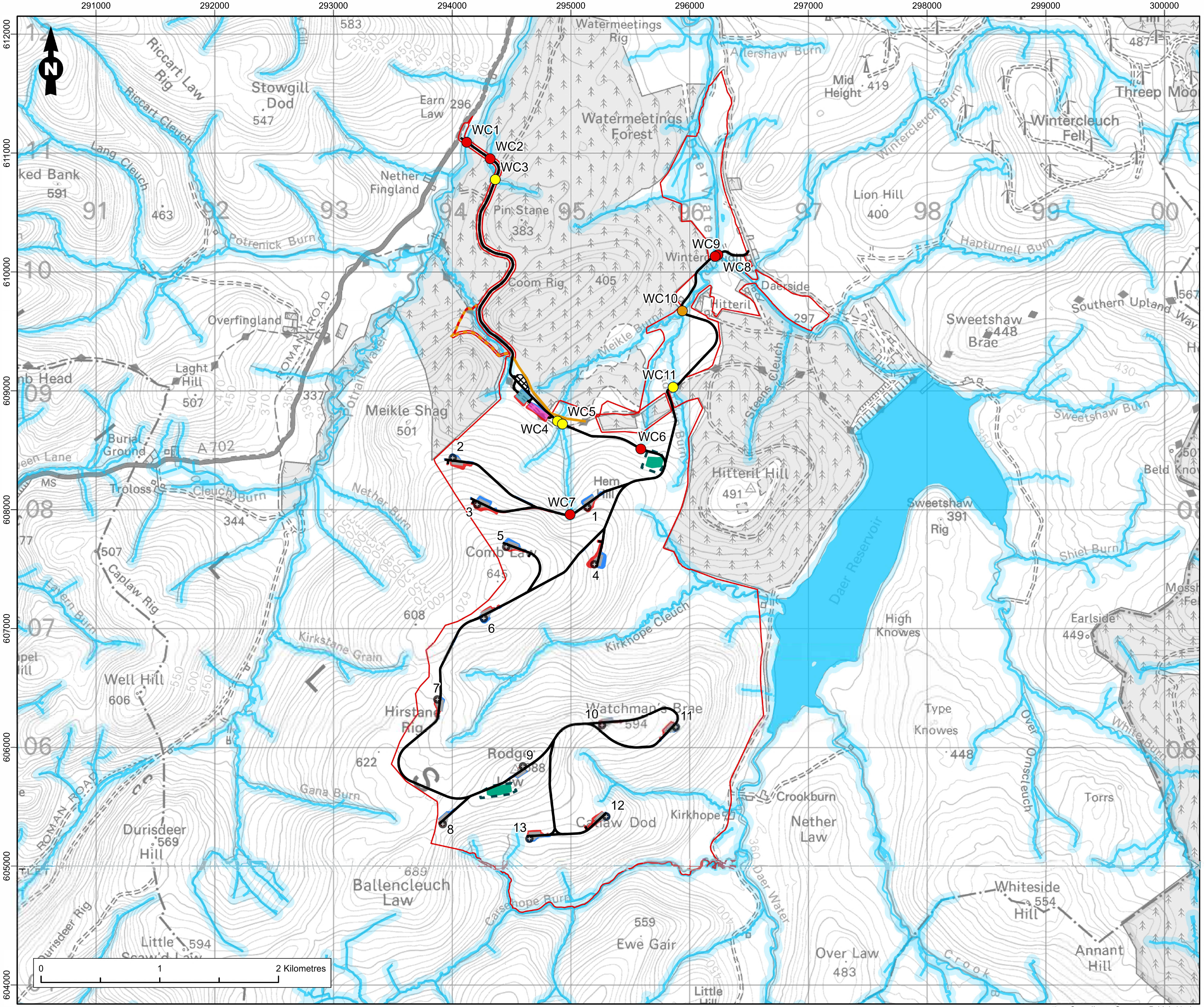
Photo 2: Cross Section

Location: WC 10 (Meikle Burn)

Photo 3: Upstream

Location: WC 11 (Old Town Burn)

Photo 1: Downstream



Legend

- Site Boundary
- Turbine Locations

Infrastructure

- Access Track
- Southern Upland Way Diversion (Permanent)
- Southern Upland Way Diversion (Temporary)
- Turbine Hardstand
- Construction Compound
- Substation
- BESS
- Borrow Pit Excavation Area
- Borrow Pit Search Area
- Earthworks Cut
- Earthworks Fill

Surface Water Features

- Watercourse
- Waterbody
- Watercourse/-body 50 m Buffer

Watercourse Crossing

- Existing Crossing
- Existing Ford
- New Crossing

Figure Title	Watercourse Crossing Locations
Project Name	Watchman Energy Park
Project No./Filery ID	1620016964 / REH2024N01805
Date	February 2026
Figure No.	8.2.1
Revision	1.0
Prepared By	RS
Scale	1:30,000 @A3
Client	Watchman Energy Park Ltd

RAMBOLL

Coordinate System: British National Grid. Projection: Transverse Mercator. Datum: OSGB 1936.

1620016964-RAM-MA-WA-00066_WatercourseCrossingAssessment_01.pagx

Technical Appendix 8.3: Groundwater Dependent Terrestrial Ecosystems

8.3.1 Introduction

8.3.1.1 This Technical Appendix provides a summary of Groundwater Terrestrial Ecosystems (GWDTEs) within the context Watchman Energy Park (the 'Proposed Development'). It is intended for review by the Scottish Environment Protection Agency (SEPA). It provides a description of geological and hydrogeological conditions underlying the Site. Characterisation of the Site considers National Vegetation Classification (NVC) surveying conducted by MacArthur Green (now SLR) in June 2023, September 2024, June 2025 and July 2025 (refer to **Technical Appendix 6.2a, EIAR Volume 4**) and hydrological surveying carried out by Ramboll in October 2024.

8.3.1.2 Following the identification of potential GWDTEs from NVC mapping data, the hydrological and hydrogeological desktop study information has been used to qualitatively determine the sensitivity of each potential GWDTE.

8.3.2 Baseline

Bedrock Geology

8.3.2.1 The British Geological Survey (BGS) 1:50,000 Digital Geological Map of Great Britain[1] shows bedrock geology underlying the Site, where development is proposed, to be of the Mindork Formation (Metasandstone and Metamudstone) across the majority of the Site, a small area of Ballencleuch Law Granite (Granite) in the southwest of the Site and Gala Unit 4 (Wacke) in the southeast. Refer to **Figure 8.4 (EIAR Volume 3a)**.

Superficial Geology

8.3.2.2 The BGS 1:50,000 Digital Geological Map of Great Britain[1] indicates that portions of the Site are underlain by superficial deposits, primarily comprising diamicton and alluvial deposits, particularly in areas adjacent to watercourses, covering approximately 5% of the total Site area. Additionally, small sections of the Site, accounting for more than 5% of the area, are underlain by superficial deposits of peat. In the remaining areas, where no superficial geology is recorded by the BGS, it is inferred that superficial deposits are absent, with shallow soils likely directly overlying the bedrock geology. Refer to **Figure 8.3 (EIAR Volume 3a)**.

8.3.2.3 Peat review of the SNH Carbon and Peatland Map (2016)[2], an extract of which is shown on **Figure 8.11 (EIAR Volume 3a)**, confirms the majority of the Site is mapped as Class 3 soil type, which is not priority peatland habitat but is associated with wet and acidic and carbon rich soil type. There are areas in the southern half of the Site that are mapped as Class 1 peatland, which are classed as nationally important carbon-rich soils, deep peat and priority peatland habitat and areas likely to be of high conservation value. Class 4 and 5 soils are also mapped as present on the Site, in the area of the proposed Western Access. These are described as areas unlikely to be associated with peatland habitats or wet and acidic type (Class 4) or peat soil with no peatland vegetation (Class 5). These are not classed as a nationally important.

8.3.2.4 Stage 1 peat surveying, undertaken by Ramboll in June 2024, followed by Stage 2 surveying in April 2025 and Stage 3 surveying in August 2025, confirmed the presence of peat soils across much of the Site (refer to **Technical Appendix 8.4, EIAR Volume 4**). Typically, peat soils maintain a high capacity for water retention where they are found to be in undegraded condition. When saturated, the porous peat matrix retains volumes of water leading to slow drainage and elevated water table levels.

Hydrogeology

8.3.2.5 According to the BGS and the Hydrogeological and Groundwater Vulnerability Maps of Scotland (1:625,000)[3], the underlying bedrock formation is recognised as a Low productivity aquifer (refer to **Figure 8.5, EIAR Volume 3a**). Such aquifers are characterised as having limited groundwater potential, with small amounts of groundwater limited to near surface weathered zones and secondary fractures (e.g., rare springs). Low productivity aquifers do not widely contain groundwater in exploitable quantities; however, some bedrock formations can locally yield water supplies in sufficient quantities for private/domestic use.

8.3.3 Groundwater Dependent Terrestrial Ecosystems

8.3.3.1 Specific guidance for the assessment of potential GWDTE habitats was published by SEPA in 2024[4]. According to the UK Technical Advisory Group guidance[5] GWDTE may be defined as habitats "*directly dependent on the water level in or flow of water from a groundwater body (that is, in or from the saturated zone). Such an ecosystem may also be dependent on the concentrations of substances (and potential pollutants) within that groundwater body, but there must be a direct hydraulic connection with the groundwater body*."

8.3.3.2 Therefore, where GWDTE are found to be present there is the potential for direct impacts where habitat may be lost, as well as the potential for indirect impacts as a result of any alteration in the quality or quantity of groundwater supply. Excavation of soil and bedrock during the construction phase of the Proposed Development may cause localised disruption and interruption to groundwater flow. Interruption of groundwater flow would potentially reduce the supply of groundwater water to GWDTEs thereby causing an alteration/change in the quality or quantity of and/or the physical or biological characteristics of the GWDTE. Contamination of groundwater may also cause physical or chemical contamination to the GWDTE.

8.3.3.3 Following identification of habitats with the potential to be GWDTEs from NVC mapping data (refer to **Figure 8.7, EIAR Volume 3a**), hydrological and hydrogeological desktop and field information has been used to help qualitatively determine the potential sensitivity of each potential GWDTE.

8.3.3.4 The sensitivity of each GWDTE receptor has been classified in accordance with SEPA LUPS – GN31[6] and 2024 SEPA Guidance on Assessing the Impacts of Developments on Groundwater Dependent Terrestrial Ecosystems[4]. The SEPA classification is modified from the UKTAG (2008)[7] list of NVC communities, which provides the full list for all communities.

[1] Available at: https://www.bgs.ac.uk/map-viewers/geoindex-onshore/

[2] Available at: http://map.environment.gov.scot/soil_maps/

[3] Available at: https://www2.bgs.ac.uk/groundwater/datainfo/hydromaps/hydro_map_625.html

[4] SEPA (2024) Guidance on Assessing the Impacts of Developments on Groundwater Dependent Terrestrial Ecosystems. Available online:https://www.sepa.org.uk/media/a1yh0blq/guidance-on-assessing-the-impacts-of-developments-on-groundwater-dependent-terrestrial-ecosystems.docx

[5] UK TAG (2004) Guidance on the identification and risk assessment of groundwater dependent terrestrial ecosystems. Available online: https://www.wfduk.org/sites/default/files/Media/Characterisation%20of%20the%20water%20environment/Risk%20assessment%20of%20terrestrial%20ecosystems%20groundwater_Draft_210104.pdf

[6] Scottish Environment Protection Agency (2014). Guidance on Assessing the Impacts of Windfarm Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems

[7] SEPA guidance is adapted from 'UK Technical Advisory Group list of NVC communities and associated groundwater dependency scores (2008)

8.3.4 National Vegetation Classification within the Site

8.3.4.1 NVC surveying was carried out by MacArthur Green (now SLR) in June 2023, September 2024, June 2025 and July 2025. Habitats were classified according to their potential groundwater dependency and where a mosaic of NVC classifications was observed, only the community occupying the largest proportion of the mosaic has been considered as representative of the potential for the mosaic to be a GWDTE.

8.3.4.2 Identification of NVC communities is provided below in line with the UKTAG list of NVC communities and associated groundwater dependency scores (2008)[7]. Refer to **Figure 8.7 (EIAR Volume 3a)**.

Habitats with Potential Low and Moderate Groundwater Dependency

8.3.4.3 **Table 8.3.1** discusses habitats of potential Low and Moderate groundwater dependency within the Site.

Table 8.3.1: Low to Moderate NVC Communities Present within the Study Area and their Potential Groundwater Dependency, According to SEPA

NVC Code	NVC	Groundwater Dependency (SEPA)	Total Area Within Site (m^2)
MG9	*Holcus lanatus - Deschampsia cespitosa grassland*	Moderate	2,739,031
MG10	*Holcus lanatus - Juncus effusus rushpasture*	Moderate	452,421
M15	*Scirpus cespitosus - Erica tetralix wet heath*	Moderate	7,455,097
M17	*Scirpus cespitosus - Eriophorum vaginatum blanket mire*	Low	3,556,427
M20	*Eriophorum vaginatum blanket and raised mire*	Low	1,923,067
M25	*Molinia caerulea - Potentilla erecta mire*	Moderate	10,497,113
M27	*Filipendula ulmaria - Angelica sylvestris mire*	Moderate	1,124
U4	*Festuca ovina - Agrostis capillaris - Galium saxatile grassland*	Low	10,531,897
U5	*Nardus stricta - Galium saxatile grassland*	Low	7,538,655
U6	*Juncus squarrosus - Festuca ovina grassland*	Moderate	5,131,562

8.3.4.4 The habitats determined by SEPA to be of a Low and Moderate groundwater dependency either coincide within watercourse corridors or are located on sloped ground which hydrological analysis indicates are predominantly supported by rainfall, surface water runoff, and water logging of soils rather than by groundwater. **Table 8.3.1** shows that habitats of potential Low and Moderate groundwater dependency cover large areas over a range of elevations and slopes and the distribution of these habitats is not consistent with topographical areas typically associated with GWDTE such as localised depressions or changes in slope gradient. It is further noted that M25 habitat is no longer classed as groundwater dependent by SEPA. Therefore, these habitats are considered not to be groundwater dependent and are not assessed further.

Habitats with Potential High Groundwater Dependency

8.3.4.5 **Table 8.3.2** sets out the NVC communities which are considered to have the potential to be Highly groundwater dependent and which have therefore been assessed further. Refer to **Figure 8.8 (EIAR Volume 3a)**.

Table 8.3.2: High NVC Communities Present within the Study Area and their Potential Groundwater Dependency, According to SEPA

NVC Code	NVC	NVC Habitat Groundwater Dependency Classification	Total Area within Site (m^2)
CG10	*Festuca ovina – Agrostis capillaris – Thymus praecox grassland (when not on limestone)*	High	7,607,863
M6	*Carex echinata – Sphagnum recurvum mire*	High	10,301,783
M9	*Carex rostrata - Calliergon cuspidatum/C.giganteum mire*	High	5,822
M23	*Juncus effusus/acutiflorus - Galium palustre rush-pasture*	High	9,364,088
U16	*Luzula sylvatica – Vaccinium myrtillus tall herb community*	High	7,979,695
W4	*Betula pubescens - Molinia caerulea woodland*	High	7,493,033
W7	*Residual alluvial forests (Alnus glutinoso-incanae)*	High	348,261

8.3.5 Groundwater Dependent Terrestrial Ecosystems (High Potential) Assessment

8.3.5.1 Following identification of High potential GWDTEs from NVC mapping data within the Site, the hydrological and hydrogeological criteria have been used to qualitatively determine the potential sensitivity of each potential GWDTE to alterations in groundwater supply. Hydrogeological assessment considers the potential for ground-surface water interactions, and therefore the potential for habitats to be reliant of water supplies from the underlying aquifer. Justification for the assessment of groundwater dependency is provided for each habitat within **Table 8.3.3**.

8.3.5.2 In accordance with SEPA's Guidance on Assessing the Impacts of Developments on Groundwater Dependent Terrestrial Ecosystems[4], potential GWDTEs located within a 250 m buffer of proposed subsurface infrastructure have been included within the assessment.

8.3.5.3 The assessment includes consideration of:

- The direct hydrological connectivity of a potential GWDTE to surface water sources;
- Underlying geological conditions including the productivity of bedrock and superficial geology, the presence of peat soils and permeability of upgradient geology;
- Topography and the presence of rills or runnels indicative of surface runoff;
- The presence of indicative 'flush' patterns of vegetation communities;
- Land use; and
- The relative proportion of NVC communities and the potential dominance of non-GWDTE communities within surveyed areas.

8.3.5.4 NVC surveying identified the presence of 641 polygons within which the habitat classification indicates the potential for groundwater dependency (refer to **Figure 6.3, EIAR Volume 3a** and summarised on **Figure 8.7 and 8.8, EIAR Volume 3a**). Due to the number of individual polygons of potential GWDTE habitat identified, hydrological and hydrogeological assessment below has been presented according to areas of the Site which are characterised by the spatial extent as defined below. Each area is characterised by broadly similar hydrological and hydrogeological conditions.

Northern Area – Including Turbines 1, 2, 3, 4 and 5

8.3.5.5 The northern area, encompassing proposed Turbines 1, 2, 3, 4, and 5, is characterised by a mix of U16 and M6 habitats, predominantly situated on sloped terrain. A highly sub-dominant area of U16 habitat is located directly west of Turbine 5, positioned upslope of several surface water flow paths. While hydrological analysis suggests limited groundwater influence, the hydrology survey noted boggy ground conditions, but no evidence of groundwater emergence was recorded.

8.3.5.6 To the west of Turbine 1, a large area of highly dominant M6 habitat occupies sloped terrain adjacent to an unnamed surface watercourse. This is the only area in which there is direct impact of the Proposed Development on potentially highly GWDTE where track leading from Turbine 1 to Turbine 2 crosses this area over approximately 200 m. Similar to the U16 habitat, the hydrology survey did not identify any groundwater emergence, instead characterizing the soil as waterlogged and saturated due to surface water accumulation and direct rainfall. Additionally, three smaller areas of highly dominant M6 habitat are located downslope of Turbines 2, 3 and 5, situated on slopes intersected by surface water flow paths. These areas appear to be primarily sustained by surface water runoff and waterlogged soils rather than groundwater sources.

8.3.5.7 Further, three small, isolated areas of highly dominant U16 habitat are located within 250 m of Turbines 3 and 5. These habitats are positioned at the brow of a slope, where the topography indicates that the emergence of groundwater is unlikely. No groundwater emergence was recorded during the hydrology survey and boggy ground conditions were noted, reinforcing the conclusion that these habitats are rain fed.

8.3.5.8 Therefore, habitats in these areas are **not groundwater dependent**.

Eastern Area – Surrounding Kirkhope Cleuch

8.3.5.9 The eastern area, which surrounds the Kirkhope Cleuch watercourse, is dominated by large areas of highly dominant and highly sub-dominant M6 habitats. These habitats are located on sloped terrain both adjacent to and within the banks of the Kirkhope Cleuch watercourse. Hydrological analysis indicates that multiple surface water tributaries converge into the Kirkhope Cleuch from the north and south, contributing to sustained surface water input.

8.3.5.10 Given this hydrological setting, the habitats in this area are likely maintained by surface water runoff and are **not groundwater dependent**.

Western Area – Including Turbines 6 and 7

8.3.5.11 The western area, encompassing Turbines 6 and 7, presents a distinct hydrological setting. During the hydrology survey, a spring was observed southwest of Turbine 6 (Target Note 18, refer to **Figure 8.9, EIAR Volume 3a**), from which groundwater flowed to a drain flowing downslope towards the Kirkhope Cleuch watercourse with habitats downstream from the spring location classified as highly sub-dominant. Between Turbines 6 and 7, an area of highly dominant M23 habitat is recorded (refer to **Figure 8.8, EIAR Volume 3a**). Hydrological analysis indicates that the surrounding land is intersected by several land drains that channel surface water towards the Kirkhope Cleuch watercourse and mapping of surface water accumulation (refer to **Figure 8.6, EIAR Volume 3a**) indicates that these areas are fed by upslope surface water runoff, indicating that habitats are fed by surface water supplies.

8.3.5.12 The M23 habitat, given its proximity to a spring and within the context of surface drainage pathways, suggests **moderate groundwater dependency** (refer to **Figure 8.9, EIAR Volume 3a**) due to the influence of both surface and groundwater contributions.

Southern Area – Including Turbines 8, 9, 10, 11, 12 and 13

8.3.5.13 The southern area, including Turbines 8, 9, 10, 11, 12 and 13, is characterised by elevated terrain along the peaks of Rodger Law and Watchman's Brae, which form a horseshoe shape. The Rodger Cleuch watercourse originates from these peaks and flows through the centre of the horseshoe, eventually draining towards the Daer Reservoir. Along the banks of this watercourse, within 250 m of turbines 10 and 12, highly dominant polygons of CG10, M9, and M23 communities are recorded. These habitats are located on sloped terrain adjacent to the watercourse, where hydrological analysis suggests they are sustained primarily by the coalescence of surface water flow pathways.

8.3.5.14 The positioning of these habitats along the banks reinforces the conclusion that they are maintained by surface water and **not groundwater dependent**.

8.3.5.15 Areas of potential high groundwater dependency habitats either coincide within watercourse corridors or are located on sloped terrain characterised by land drains. This distribution is not typical of habitats sustained by groundwater. Linking the evidence from the hydrology field survey to the conceptual hydrological analysis, it is concluded that the dominant vegetation is predominantly supported by rainfall, surface water runoff and water logging of soils rather than by groundwater. These habitats are therefore **not groundwater dependent**.

Moderate Groundwater Dependency

8.3.5.16 Where groundwater dependency has been assessed on a site-specific basis and no potential GWDTE features are present in the area of interest, no further risk assessment is required. Further information is provided below on areas to the east of the track between Turbines 6 and 7 in both the tabular summary of ecological target notes and in the Mitigation section of this Technical Appendix. The distribution of habitats assessed as having a Moderate groundwater dependency rating is illustrated on **Figure 8.9 (EIAR Volume 3a).**

NVC Spring and Flush Habitats

8.3.5.17 In addition to the potentially highly dominant habitats outlined in **Table 8.3.2**, ecological surveying identified twelve target notes of M32 (springs) and five target notes of M10 (flushes). Of these, five M32 target notes (springs) are located within 250 m of the proposed turbines. These classifications relate to the vegetation communities and despite the name may not be associated with groundwater dependency. For example, 'spring' habitat is defined in relation to ground/surface water as follows: "*It marks out permanent springs of a well-defined character, also diffuse flushes and seepage lines, rills and small streams and occasionally steep, dripping ground*".

Table 8.3.3: Ecological Target Note GWDTE Assessment

Target Note Reference	NVC Habitat	Feature Type	NVC GWDTE Classification	Hydrological / Hydrogeological Commentary	Ramboll GWDTE Classification
1	M10	Flush	High	Adjacent to Carsehope Burn, within a flow path draining to the Burn.	Not groundwater dependent.

Table 8.3.3: Ecological Target Note GWDTE Assessment

Target Note Reference	NVC Habitat	Feature Type	NVC GWDTE Classification	Hydrological / Hydrogeological Commentary	Ramboll GWDTE Classification
2	M32a	Flush	High	Adjacent to Carsehope Burn, within a flow path draining to the Burn.	Not groundwater dependent.
3	M32a	Spring	High	Adjacent to Carsehope Burn, within a flow path draining to the Burn.	Not groundwater dependent.
4	M32a	Spring	High	Adjacent to Carsehope Burn.	Not groundwater dependent.
5	M32a	Spring	High	Adjacent to Carsehope Burn.	Not groundwater dependent.
11	M32a	Spring	High	Within the 250 m buffer of Turbine 10. Situated at the headwaters of the Rodger Cleuch watercourse. Located within area of surface water accumulation and topographic bowl.	Not groundwater dependent.
14	M10	Flush	High	Situated to the east of Turbine 11, however it is not located within the 250 m buffer. Land comprises of rills and drainage ditches.	Not groundwater dependent.
15	M32a	Spring	High	Situated to the south of the Kirkhope Cleuch watercourse, topography slopes towards the watercourse. Situated within a defined flow path and is not within a Turbine buffer.	Not groundwater dependent.
16	M32a	Spring	High	Situated adjacent to the Kirkhope Cleuch watercourse and is not within a Turbine buffer.	Not groundwater dependent.
18	M32a	Spring	High	Located to the southwest of Turbine 6 and is within the 250 m buffer. The hydrology survey recorded visible groundwater emergence in this area with a drain extending southwards from the spring towards the Kirkhope Cleuch watercourse.	Groundwater dependent (Moderate).
19	M32a	Spring	High	Located to the east of Turbine 4, situated outside of the 250 m buffer. In connection with defined upslope flow path.	Not groundwater dependent.
21	M32	Spring	High	Located to the south of the Site Boundary. Situated within the course of a drainage ditch that leads to the Carsehope Burn.	Not groundwater dependent.
22	M32	Spring	High	Located to the south of the Site Boundary. Situated adjacent to the Birch Cleuch watercourse.	Not groundwater dependent.
23	M32	Spring	High	Located to the south of the Site Boundary. Located at the headwaters of the Howe Cleuch watercourse.	Groundwater dependent (Moderate).
25	M32	Spring	High	Situated to the northwest of Turbine 4, located within the 250 m buffer. Upslope source of surface water runoff observed, and this area is located on a water shedding upland ridge.	Not groundwater dependent.
26	M10	Flush	High	Located to the south of the proposed access track in the north of the Site. Shown to be within an area of drainage ditches. Surface water flow paths extend down the slope from the south draining to the Coom Burn to the west of the target note.	Not groundwater dependent.
27	M10	Flush	High	Located to the north of the proposed access track in the north of the site. Shown to be within an area of drainage ditches. Surface water flow paths extend down the slope from the south draining to the Calf Burn to the east of the target note.	Not groundwater dependent.

8.3.6 Mitigation

8.3.6.1 The layout of the Proposed Development has been set out specifically to avoid interaction with areas identified as potentially groundwater dependent. No turbine locations are proposed on areas classified as highly groundwater dependent according to NVC surveying. However, a limited interaction is anticipated where an area assessed to be of Moderate groundwater dependent habitat is present along the access track between Turbines 1 and 2 and within 250 m of Turbine 6.

8.3.6.2 Hydrological and hydrogeological assessment of areas identified as potential GWDTE through NVC habitat surveys shows that vegetation communities on the Site are unlikely to be groundwater dependent, and therefore specific mitigation with respect to groundwater supplies is not considered to be applicable.

8.3.6.3 Ecological target notes identified small areas of potentially groundwater dependent habitat (M32, M32a and M10 habitats). Of the 17 areas at which 'flush' or 'spring' habitats were recorded, Target Note 18 is within a 250m buffer of the Proposed Development and was assessed to be of Moderate groundwater dependency.

8.3.6.4 Groundwater emergence was observed at the location of Target Note 18 during the hydrological survey and habitats noted at this location are assessed to be of Moderate groundwater dependence, with further habitats downslope assessed to be of Moderate groundwater dependency. The design of the track layout closest to this location (150 m northeast) specifically avoids interaction with the spring location and prevents direct loss of habitat. Target Note 18 is located downslope of a water shedding ridge line and, due to the limited productivity of the underlying aquifer, it is likely that groundwater emergence in this area is supported by flows from superficial deposits or a localised discontinuity in the underlying bedrock. Therefore, at a distance of 150 m it is unlikely that shallow excavations for the track construction would impact the supply of groundwater to this location, provided the distribution of surface water runoff were maintained from the upslope area. Suitable track cross drainage measures should be installed to ensure surface water runoff continues to be distributed across the zone of contribution to this location.

8.3.6.5 It is noted that the locations assessed are in connection with habitats supported by surface water supplies and rain fed habitats which are present across the wider Site. As such, while these habitats are of a low sensitivity with regards to the potential for alterations in groundwater supplies, the maintenance of quality and quantity in surface water distribution across these areas would be important. Suitable drainage and surface water measures would be used to maintain hydrological connectivity in peatland and wetland habitats and prevent deleterious impacts on surface water distribution. Mitigation measures would include those presented in an outline Construction and Environmental Management Plan (CEMP) (refer to **Technical Appendix 2.1, EIAR Volume 4**) to be provided with the EIAR and to cover the following:

- Avoidance of direct impacts by construction activity in such areas;
- Implementation of Sustainable Drainage System (SuDS) measures to maintain quality of water supply;
- Maintenance of flow paths/redistribution of water where diverted;
- Implementation of pollution control measures; and
- Demarcation of the most sensitive habitat areas identified in ecological surveying, and monitoring of works in close proximity by the Ecological Clerk of Works (ECoW).

8.3.7 Conclusions

8.3.7.1 The Proposed Development has been set out to avoid interaction with potential GWDTE areas as far as practical. No turbine locations are proposed on areas classified as highly groundwater dependent according to NVC surveying and there is only one location (west of Turbine 1) at which infrastructure crosses an area identified through ecological surveying as potentially groundwater dependent.

8.3.7.2 Following this initial NVC based screening, Ramboll undertook a detailed hydrological and hydrogeological assessment to determine whether the habitats identified as having potential groundwater dependency are actually reliant on groundwater supply. This assessment considered site specific factors including geology, peat presence, topography, surface water flow paths, drainage features and field observations of groundwater emergence.

8.3.7.3 The Ramboll hydrogeological assessment of potential GWDTEs concludes that all of the areas identified by the ecological assessment of NVC communities as potential GWDTEs are considered to have a low likelihood of groundwater dependency and therefore are of low sensitivity with respect to the Proposed Development.

8.3.7.4 Two locations at which ecological target notes identified the presence of small areas of flush, or spring habitat are assessed as likely to be groundwater dependent. One of these is not within the Site Boundary. The second location, to the southwest of Turbine 6 is assessed by Ramboll as likely to be supported by shallow groundwater flows from superficial deposits of peat. Measures would be set out in the EIA to ensure surface water distribution is maintained over the zone of contribution to this location.

8.3.7.5 The Ramboll hydrological and hydrogeological assessment of potential GWDTEs identified through NVC surveying shows that the majority of these areas are not GWDTE and therefore no further risk assessment of these areas is required. Vegetation communities downslope of the track between Turbines 6 and 7 are assessed by Ramboll to be of Moderate groundwater dependency. However, based on the distance to the proposed infrastructure and the limited productivity of the underlying aquifer, the risk of impact to groundwater supplies is assessed to be low and measures to ensure the continued supply of surface water would provide suitable mitigation to avoid drying of these areas.

Technical Appendix 8.4: Peat Depth Survey Results

Technical Appendix 8.4: Peat Depth Survey Results

8.4.1 Introduction

8.4.1.1 Ramboll was commissioned by the Applicant to undertake peat depth and coring survey to aid the design process and to an inform an assessment of the nature and condition of the peatland for the Proposed Development.

8.4.1.2 This Technical Appendix has been produced, in accordance with guidance published by the Scottish Environment Protection Agency (SEPA), NatureScot, and the Scottish Government, which is referenced in the following sections.

8.4.1.3 This Technical Appendix is supported by the following figures in **EIAR Volume 3a**:

- **Figure 8.3: Superficial Geology**;
- **Figure 8.4: Bedrock Geology**;
- **Figure 8.10: Peat Depths**; and
- **Figure 8.11: SNH Carbon and Peatland Map 2016 Extract**.

8.4.1.4 Reference should also be made to **Annex 8.4.1: Peat Coring Data** and **Annex 8.4.2: Core Sample Photographs** in this report.

8.4.2 The Site and Study Area

8.4.2.1 The 'Site' (defined by the Site Boundary on **Figure 1.2, EIAR Volume 3a**) covers an area of approximately 1,089 hectares (ha) and is located approximately 10 km south of Crawford, 7 km south of Elvanfoot and 12 km to the west of Moffat, within the administrative boundary of South Lanarkshire Council (SLC).

8.4.2.2 Surrounding the Site is the valley of the Daer Water and commercial forestry to the north, Daer Reservoir and commercial forestry to the east, open moorland of the Southern Uplands to the south, and further open moorland with the A702 road beyond to the west.

8.4.2.3 The Site predominantly comprises upland moorland and is intersected by a section of the Southern Upland Way (SUW), approximately 2 km in length. The landscape is typical of the wider location, undulating and includes a series of rounded hills characteristic of the Southern Uplands including Comb Hill (645 m Above Ordnance Datum (AOD)), Watchman's Brae (594 m AOD) and Rodger Law (688 m AOD).

8.4.2.4 Immediately south of the Site is the statutory designated site of Shiel Dod Site of Special Scientific Interest (SSSI) which is designated for blanket bog. Approximately 282 ha of the Shiel Dod SSSI fall within an additional area of land ownership (refer to **Figure 1.2, EIAR Volume 3a**). While no construction activities would occur within the SSSI, certain areas may be used for some measures as set out in the Outline Biodiversity Enhancement Management Plan (OBEMP) **(Technical Appendix 6.7, EIAR Volume 4)**.

8.4.2.5 A number of watercourses run through the Site. The south of the Site is within the catchment of Daer Water, upstream of Daer Reservoir which located a short distance east of the Site. The central area of the Site drains to Kirkhope Cleuch which in turn flows to Daer Reservoir with the west of the central catchment draining directly to Daer Reservoir. The north of the Site (approximately 15% of the total Site area) drains via Meikle and Calf Burn to Daer Water downstream of the reservoir. A very small area (<5% of the total Site area) drains in a north westerly direction to Potrail Water.

8.4.2.6 There is extensive wind energy development within this part of southern Scotland and there are several windfarms within the surrounding landscape of the Site including Clyde and Extension (operational) to the northeast, Daer and Rivox Wind Farms (both at application stage) to the east, and Harestanes and Minnygap (operational) to the southeast[1].

8.4.2.7 According to BGS geological mapping[2], areas of the Site are underlain by superficial deposits of diamicton and alluvial deposits on areas in close connection to watercourses (approximately 5% of the total Site area). Small areas are shown to be underlain by superficial deposits of peat (>5% of the total site area). Superficial geology is not recorded by the BGS on remaining areas of the Site indicating the absence of superficial deposits in these areas, where shallow soils may directly overlay the bedrock geology. This is shown in **Figure 8.3 (EIAR Volume 3a)**.

8.4.2.8 The majority of the Site is underlain by bedrock geology of the Mindork Formation (Metasandstone and Metamudstone), with a small area of Ballencleuch Law Granite (Granite) in the southwest of the Site and Gala Unit 4 (Wacke) in the southeast. This is shown in **Figure 8.4 (EIAR Volume 3a)**.

8.4.2.9 A review of the SNH Carbon and Peatland Map (2016)[3], an extract of which is shown on **Figure 8.11 (EIAR Volume 3a)**, confirms the majority of the Site is mapped as Class 3 soil type, which is not priority peatland habitat but is associated with wet and acidic and carbon rich soil type. There are areas in the southern half of the Site that are mapped as Class 1 peatland, which are classed as nationally important carbon-rich soils, deep peat and priority peatland habitat and areas likely to be of high conservation value. Class 4 and 5 soils are also mapped as present on the Site, in the area of the proposed Western Access. These are described as areas unlikely to be associated with peatland habitats or wet and acidic type (Class 4) or peat soil with no peatland vegetation (Class 5). These are not classed as a nationally important.

8.4.3 Methodology

8.4.3.1 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.

8.4.3.2 The following surveys were undertaken by Ramboll:

- Stage 1 peat probing in June 2024; and
- Stage 2 peat probing and coring in April 2025 and August 2025[4].

8.4.3.3 Peat probing and coring followed relevant guidance on peatland surveys[5,6]. The methods employed for peat depth probing and peat coring are detailed further below.

Stage 1 Peat Probing

8.4.3.4 The Stage 1 survey is a preliminary, low-density survey and was carried out on a 100 m grid across the developable area of the Site and within areas of likely peatland. The probing was carried out using

[1] The status of cumulative developments is as of the 18 December 2025.
[2] British Geological Survey Online Viewer. Available at: https://geologyviewer.bgs.ac.uk/
[3] Scottish Natural Heritage. (2016). Carbon and Peatland 2016 Map. Available at: http://map.environment.gov.scot/soil_maps/
[4] Surveys in August 2025 focused on the area of Eastern Access Track.
[5] Scottish Government, Scottish Natural Heritage, SEPA. (2017). Peatland Survey. Guidance on Developments on Peatland. Available at: https://www.gov.scot/publications/peatland-survey-guidance/
[6] Scottish Renewables and SEPA (2012). Development on Peatlands. Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste.

collapsible avalanche probes, allowing for probing in excess of 6 m. However, such depths were not reached.

8.4.3.5 The survey points and field data were collected using a handheld Trimble GPS unit. Peat depth data was modelled using Inversive Distance Weighted (IDW) interpolation in GIS software, and a depth model generated using incremented peat depth categories.

8.4.3.6 This peat depth data along with other environmental and engineering constraints were used to inform the initial layout of the Proposed Development.

Stage 2 Peat Probing and Coring

8.4.3.7 The high-density probing during the Stage 2 survey was carried out along the access tracks, and in the planned turbine, crane pad, and compound locations, known at the time of the survey. The sampling pattern comprised:

- Proposed turbine locations: peat probing was undertaken at 10 m intervals along cardinal points from the central point of the infrastructure to a distance of 50 m; and
- Proposed new tracks: the alignment was probed at 50 m intervals along the track and at points every 10 m perpendicular to the centreline on either side of the proposed track.

8.4.3.8 Again, this was carried out using collapsible avalanche probes, allowing for probing in excess of 6 m, and data collected using a handheld Trimble GPS unit.

8.4.3.9 Peat cores were taken using a Russian auger, with a sample volume of 0.5 litre (l), and a number of field tests and observations were undertaken. The probing results are included in **Annex 8.4.1** of this Technical Appendix, and records taken include:

- Depth of acrotelm;
- Degree of humification to establish amorphous, intermediate, fibrous and content;
- Degree of humification using the Von Post classification;
- Fine fibre content, based on scale of F0 (none) to F3 (very high);
- Coarse fibre content, based on scale of R0 (none) to R3 (very high);
- Water content, based on scale of B1 (dry) to B5 (very wet); and
- Substrate underlying the peat where this was possible.

8.4.3.10 A peat depth probe was taken adjacent to the core location, and cores were photographed (refer to **Annex 8.4.2** of this Technical Appendix).

8.4.3.11 This peat depth data along with other environmental and engineering constraints were used to inform the final layout of the Proposed Development as description in **Chapter 2: Description of Proposed Development (EIAR Volume 2)**.

8.4.4 Limitations

8.4.4.1 Peat probing and mapping has been used to inform the design process, at strategic points in the design evolution of the Proposed Development. There are, however, likely to be some differences between the final design (following detailed GI at the Site) and the extent of the peat survey results based on design changes made through this process.

8.4.4.2 Despite this, the peat survey probing points do provide high resolution coverage of the Site, and these revealed the peatland to be typically shallow (less than 1.0 m) but with pockets of deeper peat (up to 3 m). It is considered that the peat depth data collected to date, and interpolations derived from these data, are representative of the Site and have adequately informed the layout of the Proposed Development and are sufficient to inform a robust Peat Landslide Hazard Risk Assessment (refer to **Technical Appendix 8.6, EIAR Volume 4**) and outline Peat Management Plan (refer to **Technical Appendix 8.5, EIAR Volume 4**).

8.4.4.3 A finalised post-consent layout would be confirmed once detailed ground investigations have been undertaken on-Site and before construction works commence. As part of this, it is proposed that further peat depth probing and coring would be undertaken at infrastructure locations, particularly wind turbine locations. This additional data would be used to aid micrositing of wind turbines away from any pockets of deeper peat into the shallowest areas, thereby minimising impacts on peatland within the micrositing tolerances, and to gather further information on the characteristics of the peat deposits present.

8.4.4.4 Peat coring locations were selected based on areas found to have deeper peat around the Site.

8.4.5 Results

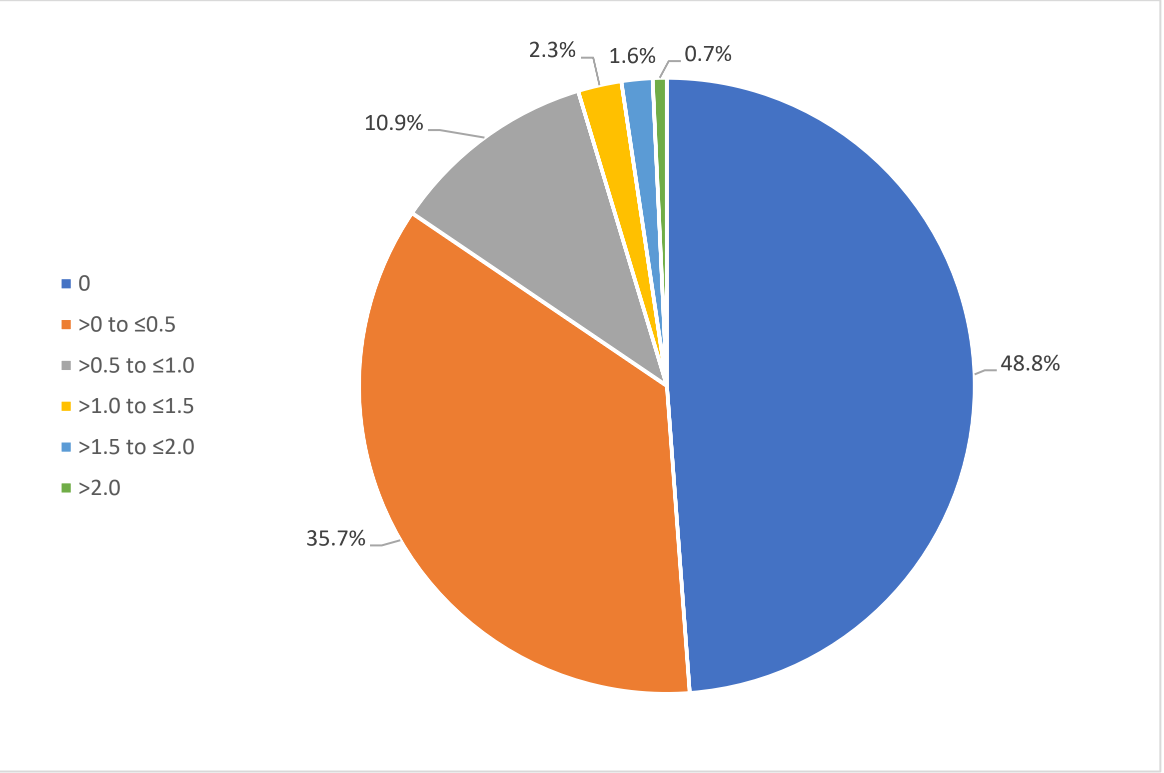
Peat Probing

8.4.5.1 A combined total of 2,706 peat depth probes were taken during the peat surveys. This included 883 peat depth probes during Stage 1 survey, and 1,823 peat depth probes during the Stage 2 surveys.

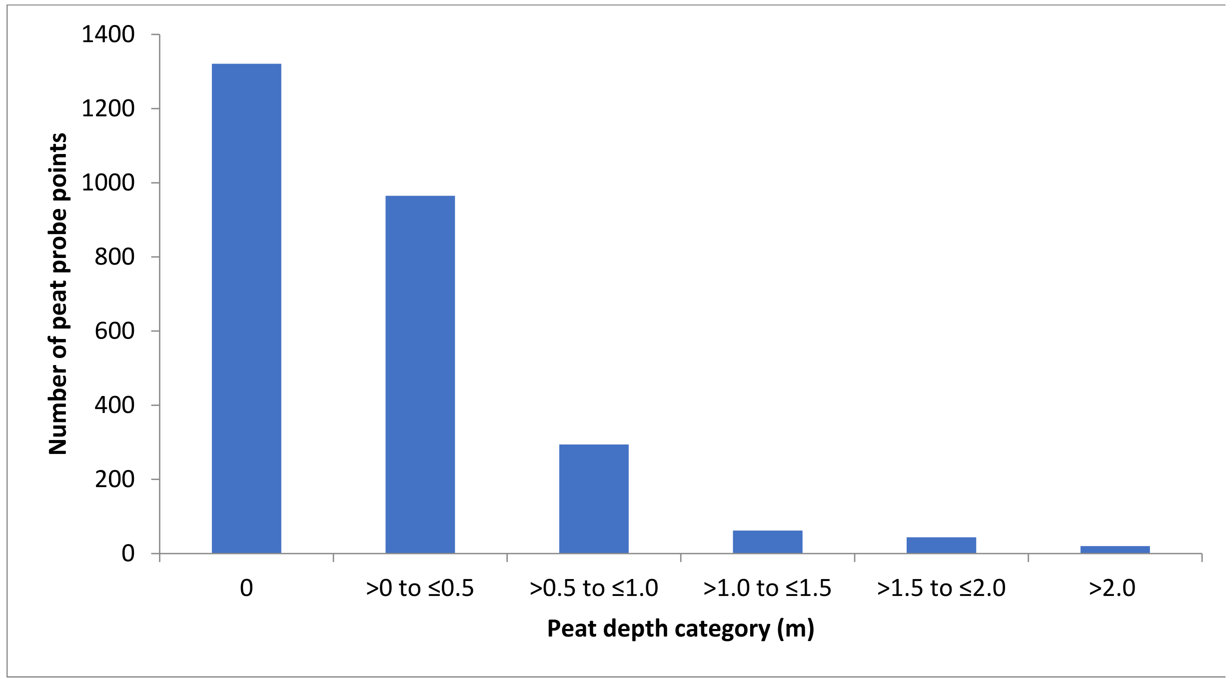
8.4.5.2 **Graph 1** and **Graph 2** below present the percentage and frequency of peat probe results within the specific peat depth categories recorded during the surveys.

8.4.5.3 **Figure 8.10 (EIAR Volume 3a)** shows the results of the peat depth survey at the Site. This includes the indicative peat depth contours based on IDW data interpolation of the survey results.

Graph1: Percentage of Peat Depth Categories (All Surveys Combined)



Graph 2: Peat Depth Frequency Distribution



8.4.5.4 The peat depth survey results indicate that the Site is predominately underlain by areas where either no peat is present or a shallow depth of peat is present (approximately 85% of peat depth probes recorded peat depths less than or equal to 0.5 m depth). Further, approximately 95% of the peat depth probes recorded peat depths less than or equal to 1 m depth. This is summarised as follows:

- 1321 no. samples (48.8%) located on land with no peat present;
- 965 no. samples (35.7%) located on land with > 0.0 m and ≤ 0.5 m depth of peat or organo-mineral soil;
- 294 no. samples (10.9%) located on land with > 0.5 m and ≤ 1.0 m depth of peat;
- 62 no. samples (2.3%) located on land with > 1.0 m and ≤ 1.5 m depth of peat;
- 44 no. samples (1.6%) located on land with > 1.5 m and ≤ 2.0 m depth of peat; and
- 20 no. samples (0.7%) located on land with >2.0 m depth of peat.

8.4.5.5 The mean depth of peat recorded during the surveys was 0.27 m with a standard deviation of 0.42 m. The maximum peat depth recorded was 3.0 m in the southwest of the Site.

8.4.5.6 The peat depth interpolated contours are shown on **Figure 8.10 (EIAR Volume 3a)**. It can be seen that most of the infrastructure of the Proposed Development has been located in areas where the peat depth is expected to be 0.5 m or less. This includes all of the turbines and their associated hardstanding areas, with the exception of Turbines 1, 10 and 12, where the peat depth is expected to be up to 1.5 m for Turbine 10 and up to 1 m for Turbines 1 and 12. The peat depth beneath the proposed substation and BESS compound is expected to be up to 1 m in depth. The proposed borrow pits and borrow pit search areas are located in areas with peat depths of 0.5 m or less.

8.4.5.7 As shown in **Figure 8.10 (EIAR Volume 3a)**, there are areas of deep peat within the Site that interface with sections of the proposed permanent access tracks. This includes the proposed access track between Turbines 7 and 8, which interfaces with a large area of deep peat where peat depths can be expected to be up to 2.5 m in places. It is proposed to use floated track in this area to minimise the need to excavate and disturb deep peat in this section.

8.4.5.8 Land where peat depth is greater than 0.5 m is classified as 'blanket bog' by NatureScot (MacDonald *et al*., 1998)[7] and JNCC (JNCC, 2010)[8]; however, some areas with a peat depth of less than 0.5 m can still form part of the wider hydrologically connected mire, or macrotope. As per above, much of the peatland or organo-mineral soil habitats within the Site have less than 0.5 m of peat/soil present.

Core Sample Results

Depth of Acrotelm

8.4.5.9 The acrotelm and catotelm represent two distinct layers within undisturbed peat that control the hydrological regime. The catotelm is the bottom layer of peat that is mostly below the water table. The acrotelm overlies the catotelm and is the 'living' layer in which most water table fluctuations occur. The thickness of the acrotelm usually varies up to around 50 cm, but it largely depends upon the habitat. Anaerobic and aerobic conditions alternate periodically with the fluctuation of the water table, favouring more rapid microbial activity than in the catotelm. The acrotelm consists of the living parts of mosses and dead and poorly decomposed plant material. It has a very loose structure that can contain and release large quantities of water in a manner that limits variations of the water table in peat bogs.

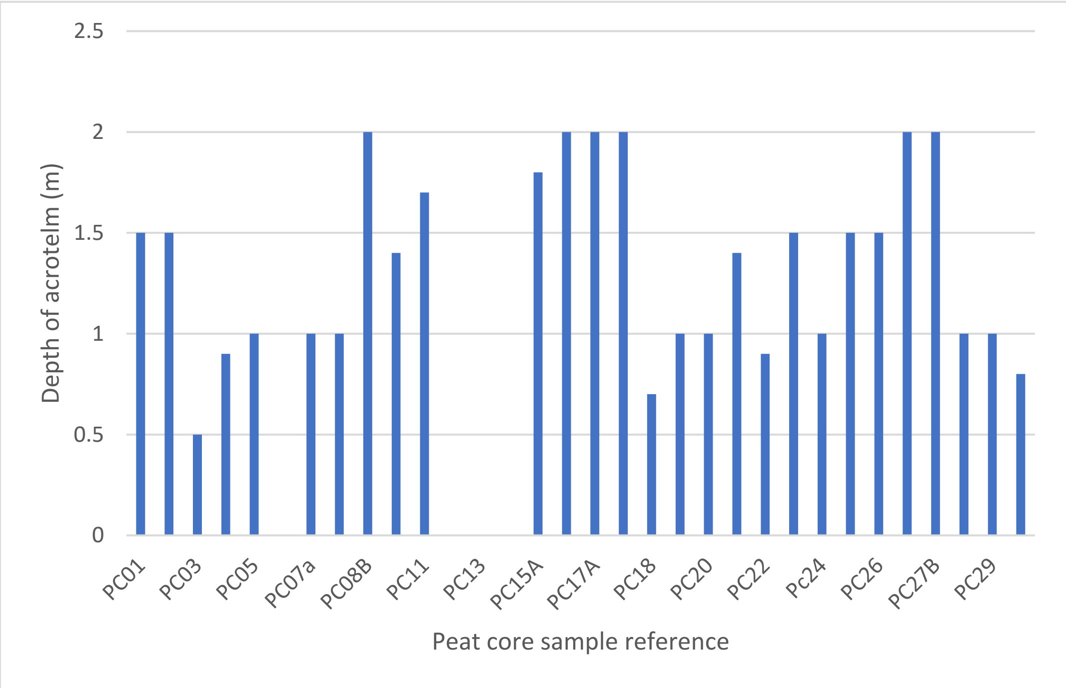
8.4.5.10 **Graph 3** shows the depths of the acrotelmic layer of peat recorded in each of the peat core samples. The mean depth of acrotelm recorded was 1.18 m. Three peat core samples indicated no discernible acrotelm.

8.4.5.11 In the context of any development, it is recommended that for the purposes of construction and subsequent reinstatement, that where a sufficient peat depth exists, the top 50 cm of material should be treated as acrotelm. This approach will allow excavation of intact turves for reinstatement purposes where they are present, which will in turn facilitate quicker regeneration of disturbed areas. Even if little vegetation is present within this top layer it should still be treated as acrotelmic material as it may contain a seedbank, particularly in open habitats, which will aid re-vegetation of reinstatement areas. Whilst the mean depth of acrotelm is recorded >0.5 m, this is considered to be a conservative approach for the assessment of reuse and handling of peat and peaty soils.

[7] MacDonald, A. Stevens, P., Armstrong, H., Immirzi, P. and Reynolds, P. (1998). A Guide to Upland Habitats: Surveying Land Management Impacts (Volume 1). NatureScot/Scottish Natural Heritage, Edinburgh

[8] JNCC (2010) Handbook for Phase 1 Habitat Survey, Joint Nature Conservation Committee, Peterborough.

Graph 3: Depth of Acrotelm

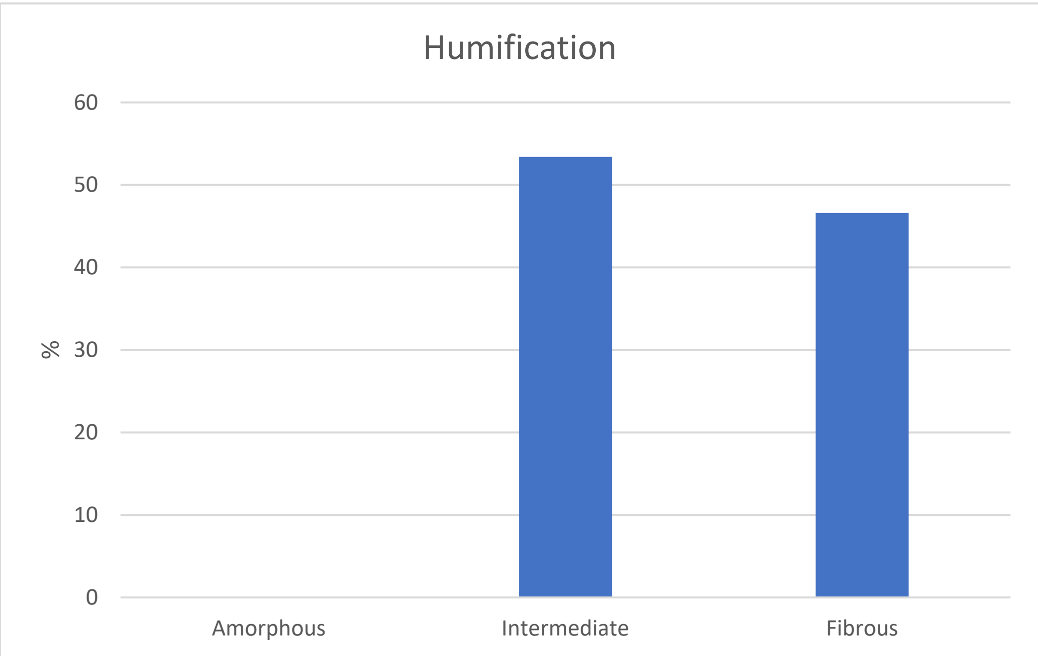


Degree of Humification

8.4.5.12 The degree of humification was recorded in the field. With each peat core sample analysed, the percentage of the sample classed as fibrous, intermediate and amorphous peat was recorded.

8.4.5.13 Graph 4 summarises the degree of humification for the peat cores sampled. Peat cores sampled were recorded as a mixture of intermediate and fibrous peat, with no core samples recorded as partially comprising amorphous peat.

Graph 4: Degree of Humification

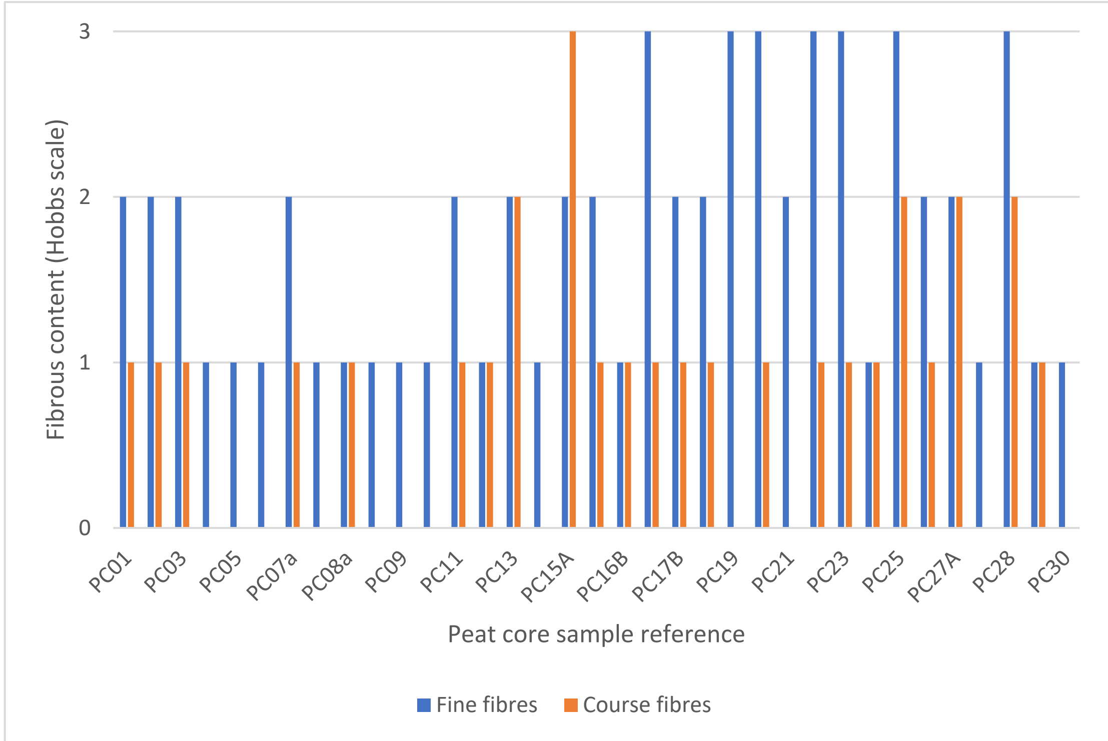


Fibrous Content

8.4.5.14 The proportions of coarse and fine fibres within the peat samples were derived in the field according to the Hobbs[9] scale, where F0/R0 indicate no fine/ coarse fibre content to F3/R3 which are indicative of high fine/coarse fibre respectively.

This indicates that the majority of the samples were assessed as having low to moderate fine fibre content (80% of peat core samples were F1 or F2), with seven samples (20% of the peat core samples) having a high fine fibre content (F3). The majority of the sample locations were assessed as having a low coarse fibre content (86% of samples were R0 to R1), with four samples having a moderate coarse fibre content (R2) and one a high course fibre content (F3). These results are summarised in **Graph 5**.

Graph 5: Fibrous Content



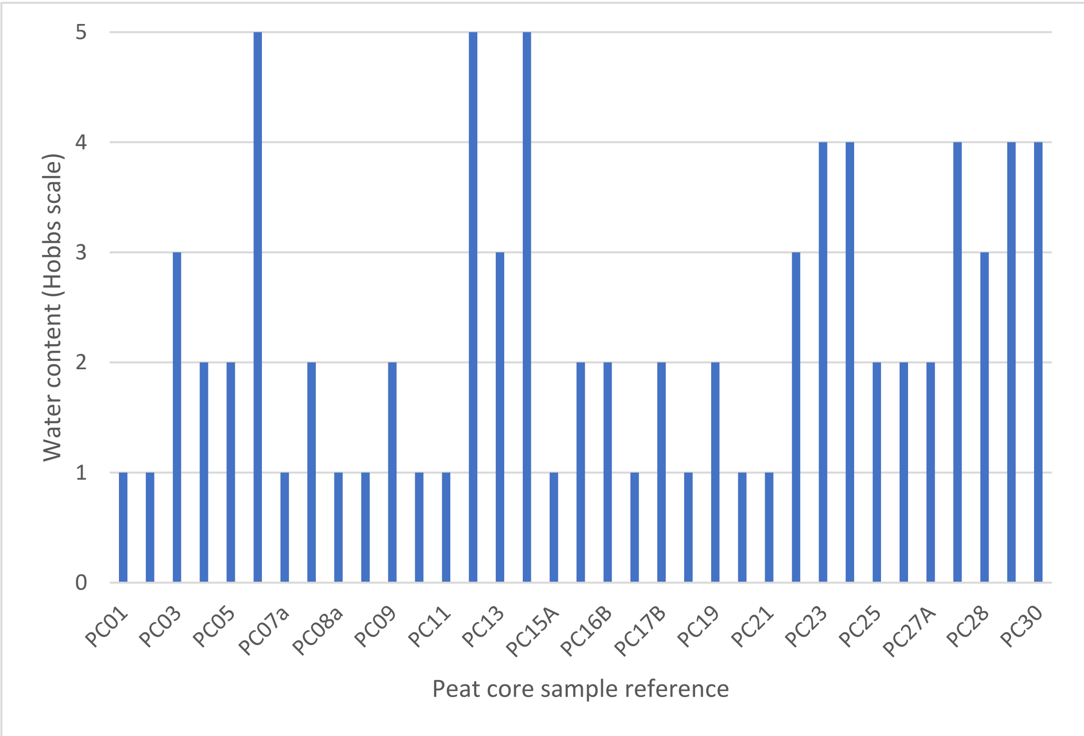
Water Content

8.4.5.15 The water content of the samples was determined in the field using the Hobbs[9] scale, where B1 is dry and B5 is very wet. The results are summarised in **Graph 6**.

8.4.5.16 Approximately two thirds of the peat core samples were recorded as B1 or B2 for water content, indicating dry peat. Eight core samples were recorded as B4 or B5 indicating some wet to very wet peat.

[9] Hobbs, N.B. (1986).Mire morphology and the properties and behaviour of some British and foreign peats. QJEG, London

Graph 6: Water Content



Von Post (Degree of Humification)

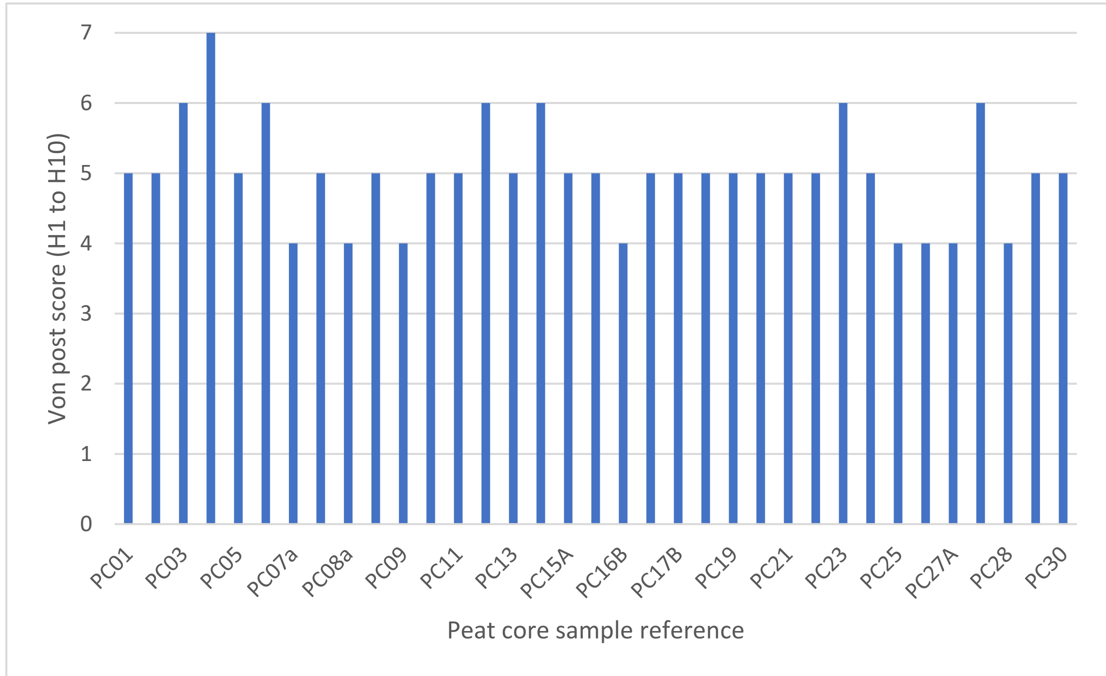
8.4.5.17 An estimate of the degree of humification according to the Von Post scale was carried out on samples at all core locations. The criteria associated with the Von Post scale is included in **Table 8.4.1**.

Table 8.4.1: Von Post Scale of Humification

Von Post Scale	Humification Description (Decomposition, Plant Material Present, Water Content, Character)
H1	Completely undecomposed peat free of amorphous material. On squeezing, clear colourless water is pressed out.
H2	Nearly undecomposed peat, free of amorphous material, yielding only yellowish brown water on pressing.
H3	Very slightly decomposed peat, containing a little amorphous material. On squeezing, muddy brown water but no peat passes between the fingers. Residue is not pasty.
H4	Slightly decomposed peat containing some amorphous material. Strongly muddy brown water but no peat passes between the fingers. Residue is somewhat pasty.
H5	Moderately decomposed peat containing a fair amount of amorphous material. Plant structure recognisable though somewhat vague. On squeezing, some peat but mainly muddy water issues. Residue is strongly pasty.
H6	Moderately decomposed peat with a fair amount of amorphous material and indistinct plant structure. On pressing, about one third of the peat passes between the fingers. Residue is strongly pasty, but shows the plant structure more distinctly than in unsqueezed peat.
H7	Strongly decomposed peat with much amorphous material and faintly recognisable plant structure. On squeezing, about one half of the peat is extruded. The water is very dark in colour.
H8	Strongly decomposed peat with much amorphous material and very indistinct plant structure. On squeezing, two thirds of the peat and some water passes between the fingers. Residue consists of plant tissues capable of resisting decomposition (roots, fibres, wood, etc.).
H9	Practically fully decomposed peat with almost no recognisable plant structure. Nearly all the peat squeezed between the fingers as a uniform paste.
H10	Completely decomposed peat with no discernible plant structure. On squeezing, all the peat, without water, passes between the fingers.

8.4.5.18 The results are shown in **Graph 7** below, where the vertical axis refers to the Von Post scale of peat decomposition (on a scale of H1 to H10).

Graph 7: Von Post Scale of Humification



8.4.5.19 The majority of the peat core samples scored between H4 and H6 on the Von Post scale indicating the peat to be slightly to moderately decomposed across the peat core sample locations. One sample was recorded as H7, indicating the peat to be strongly decomposed in that particular sample location.

Underlying Substrates

8.4.5.20 At each location, where possible, a broad characterisation was made of the underlying substrate below the peat horizon. For the peat core samples, which were taken in areas where deep peat is present, the underlying substrate beneath the peat was predominately recorded as being granular.

8.4.6 Summary

8.4.6.1 Stage 1 and Stage 2 peat surveys were carried out at the Site including peat depth probing and coring. A combined total of 2,706 peat depth probes were taken across the Site and, in selected areas recorded to have deep peat, 35 peat core samples were taken and analysed.

8.4.6.2 The peat depth survey results indicate that the Site is predominately underlain by areas with no peat or where a shallow depth of peat is present (approximately 85% of peat depth probes recorded peat depths less than or equal to 0.5 m in depth). Further, approximately 95% of the peat depth probes recorded peat depths less than or equal to 1 m in depth.

8.4.6.3 The mean depth of peat recorded during the surveys at the Site was 0.27 m and the maximum peat depth recorded was 3 m in the southwestern area of the Site.

8.4.6.4 The peat interpolated contours are shown on **Figure 8.10 (EIAR Volume 3a)**. It can be seen that most of the infrastructure of the Proposed Development has been located in areas where the peat depth is expected to be 0.5 m or less. This includes all of the turbines and their associated hardstanding areas, with the exception of Turbines 1, 10 and 12, where the peat depth is expected to be up to 1.5 m for Turbine 10 and up to 1 m for Turbines 1 and 12. The peat depth beneath the proposed substation and BESS compound is expected to be up to 1 m in depth. The proposed borrow pits and borrow pit search areas are located in areas with peat depths of 0.5 m or less.

8.4.6.5 As shown in **Figure 8.10 (EIAR Volume 3a)**, there are areas of deep peat within the Site that interface with sections of the proposed permanent access tracks. This includes the proposed access track between Turbines 7 and 8, which interfaces with a large area of deep peat where peat depths can be expected to be up to 2.5 m in places. Floating track has been proposed in this area to minimise disturbance and excavation of peat in this section.

8.4.6.6 The mean depth of the acrotelm from the peat core sample locations was 1.18 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.

8.4.6.7 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 low course fibre content.

8.4.6.8 The water content of the peat across the peat core samples was recorded to be variable with approximately two thirds of the peat core samples consisting of dry peat (B1 or B2 on the Hobbs scale) and one third being wet to very wet (B4 to B5 on the Hobbs scale).

8.4.6.9 The majority of the peat core samples scored between H4 and H6 on the Von Post scale indicating the peat to be slightly to moderately decomposed across the peat core sample locations.

Annex 8.4.1: Peat Coring Data

Peat Core Sample Reference	Substrate	Peat Depth (m)	Acrotelm Depth (m)	Amorphous (%)	Intermediate (%)	Fibrous (%)	Fine Fibre Content	Coarse Fibre Content	Water Content	Von Post Scale
PC01	Granular	1	1.5	0	0	100	F2	R1	B1	H5
PC02	Granular	1	1.5	0	0	100	F2	R1	B1	H5
PC03	Granular	1.4	0.5	0	40	60	F2	R1	B3	H6
PC04	Granular	0.9	0.9	0	60	40	F1	R0	B2	H7
PC05	Granular	1.2	1	0	80	20	F1	R0	B2	H5
PC06	Granular	1.3	0	0	100	0	F1	R0	B5	H6
PC07a	Granular	1.9	1	0	20	80	F2	R1	B1	H4
PC07B	Granular	1.9	1	0	100	0	F1	R0	B2	H5
PC08a	Granular	1.8	-	0	0	100	F1	R1	B1	H4
PC08B	Granular	1.9	2	0	100	0	F1	R0	B1	H5
PC09	Granular	1.7	-	0	80	20	F1	R0	B2	H4
PC10	Granular	1.4	1.4	0	40	60	F1	R0	B1	H5
PC11	Granular	1.7	1.7	0	0	100	F2	R1	B1	H5
PC12	Cohesive	0.8	0	0	100	0	F1	R1	B5	H6
PC13	Granular	1.5	0	0	0	100	F2	R2	B3	H5
PC14	Granular	1	0	0	100	0	F1	R0	B5	H6
PC15A	Granular	1.7	1.8	0	80	20	F2	R3	B1	H5
PC16A	Granular	2	-	0	0	100	F2	R1	B2	H5
PC16B	Granular	2	2	0	60	40	F1	R1	B2	H4
PC17A	Granular	2	2	0	0	100	F3	R1	B1	H5
PC17B	-	0	2	0	40	60	F2	R1	B2	H5
PC18	Granular	1	0.7	0	0	100	F2	R1	B1	H5
PC19	-	1	1	0	0	100	F3	R0	B2	H5
PC20	Granular	1	1	0	0	100	F3	R1	B1	H5
PC21	Granular	1.4	1.4	0	50	50	F2	R0	B1	H5
PC22	Granular	0.9	0.9	0	60	40	F3	R1	B3	H5
PC23	Granular	1.5	1.5	0	100	0	F3	R1	B4	H6
PC24	Granular	1	1	0	100	0	F1	R1	B4	H5
PC25	Granular	1.5	1.5	0	100	0	F3	R2	B2	H4
PC26	Granular	1.5	1.5	0	70	30	F2	R1	B2	H4
PC27A	Granular	2	2	0	40	60	F2	R2	B2	H4
PC27B	Granular	2	2	0	100	0	F1	R0	B4	H6
PC28	Granular	1	1	0	50	50	F3	R2	B3	H4
PC29	-	1	1	0	100	0	F1	R1	B4	H5
PC30	Granular	0.8	0.8	0	100	0	F1	R0	B4	H5

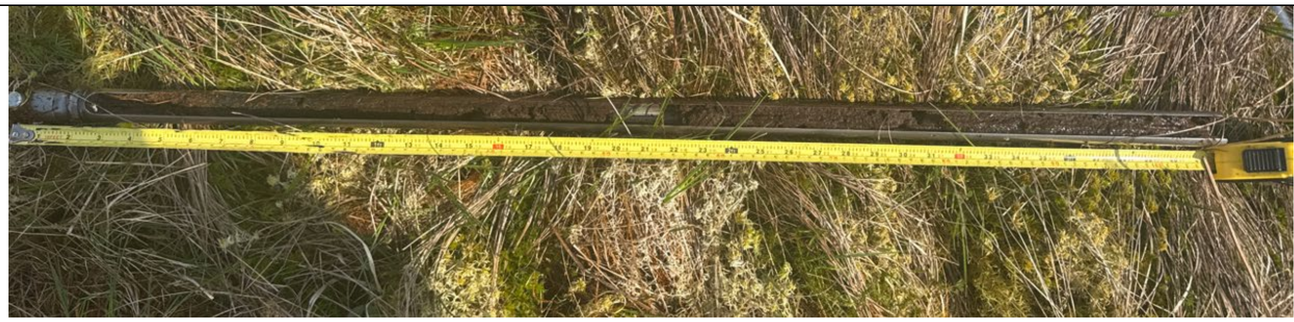
Annex 8.4.2: Peat Coring Photographs

PC03	
PC04	
PC05	
PC06	
PC07A	

PC07B	
PC08A	
PC08B	
PC09	
PC10	
PC11	

PC12	
PC13	
PC15A	
PC16A	
PC16B-1	
PC16B-2	

PC17A	
PC17B	
PC19	
PC20	
PC21	

PC22	
PC24	
PC26	
PC28	
PC30	

Technical Appendix 8.5: Outline Peat Management Plan

Technical Appendix 8.5: Outline Peat Management Plan

8.5.1 Introduction

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

8.5.1.2 This Outline PMP should be read in conjunction with the Outline Construction Environmental Management Plan (CEMP) (**Technical Appendix 2.1, EIAR Volume 4**) and the various other reports that contribute to it, including the Peat Depth Survey Report (**Technical Appendix 8.4, EIAR Volume 4**) and Peat Landslide Hazard Risk Assessment (PLHRA) (**Technical Appendix 8.6, EIAR Volume 4**).

8.5.1.3 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 would be developed by the Contractor post consent, prior to construction. A final PMP would be produced by the Applicant's infrastructure Contractor.

8.5.1.4 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.

8.5.1.5 'Organo-mineral soils' are defined as soils containing more than 20% organic matter and not exceeding 0.5 m in depth. The design recommendation (refer to **Chapter 3: Design Evolution and Alternatives, EIAR Volume 2**) was to locate infrastructure outside areas of peat greater than 1 m in order to avoid impacts to deep peat. This is in line with guidance provided from SEPA in their scoping consultation response (refer to **Technical Appendix 1.2, EIAR Volume 4**). The design of the Proposed Development has largely avoided areas of deep peat across the Site, however, due to other design considerations and constraints, it has not been possible to fully avoid these areas.

8.5.1.6 The overarching aim of the PMP is to provide guidance and a framework for the Contractor to effectively reuse peat excavated during construction in order 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 time the peat is in temporary storage and avoiding double-handling of peat.

8.5.2 Summary of Peat Depth

8.5.2.1 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 reduce, as far as practicable, the potential direct and indirect effects on peat and carbon rich soils.

8.5.2.2 The following surveys were undertaken by Ramboll:

- Stage 1 peat probing in June 2024; and
- Stage 2 peat probing and coring in April 2025 and August 2025.

8.5.2.3 A combined total of 2,706 peat depth probes were taken during the peat surveys. This included 883 peat depth probes during Stage 1 survey and 1,823 peat depth probes during the Stage 2 surveys.

8.5.2.4 The Stage 1 survey is a preliminary, low density survey and was carried out on a 100 m grid across the Site within areas of likely peatland. The probing was carried out using collapsible avalanche probes, allowing for probing in excess of 6 m. However, such depths were not reached. This peat depth data along with other environmental and engineering constraints were used to inform the initial layout of the Proposed Development.

8.5.2.5 The high-density probing during the Stage 2 survey was carried out along the access tracks, and in the planned turbine, crane pad, borrow pit search areas, substation and BESS compound locations, known at the time of the survey. The sampling pattern comprised:

- Proposed turbine locations: peat probing was undertaken at 10 m intervals along cardinal points from the central point of the infrastructure to a distance of 50 m; and
- Proposed new tracks: the alignment was probed at 50 m intervals along the track and at points every 10 m perpendicular to the centreline on either side of the proposed track.

8.5.2.6 The peat depth survey results indicate that the Site is predominately underlain by areas where either no peat is present or a shallow depth of peat is present (approximately 85% of peat depth probes recorded peat depths less than or equal to 0.5 m depth). Further, approximately 95% of the peat depth probes recorded peat depths less than or equal to 1 m depth. This is summarised as follows:

- 1321 no. samples (48.8%) located on land with no peat present;
- 965 no. samples (35.7%) located on land with > 0.0 m and ≤0.5 m depth of peat or organo-mineral soil;
- 294 no. samples (10.9%) located on land with >0.5 m and ≤1.0 m depth of peat;
- 62 no. samples (2.3%) located on land with >1.0 m and ≤1.5 m depth of peat;
- 44 no. samples (1.6%) located on land with >1.5 m and ≤2.0 m depth of peat; and
- 20 no. samples (0.7%) located on land with >2.0 m depth of peat.

8.5.2.7 The mean depth of peat recorded during the surveys was 0.27 m with a standard deviation of 0.42 m. The maximum peat depth recorded was 3.0 m.

8.5.2.8 The peat depth interpolated contours are shown on **Figure 8.10 (EIAR Volume 3a)**. It can be seen that most of the infrastructure of the Proposed Development has been located in areas where the peat depth is expected to be 0.5 m or less. This includes all of the turbines and their associated hardstanding areas, with the exception of Turbines 1, 10 and 12, where the peat depth is expected to be up to 1.5 m for Turbine 10 and up to 1 m for turbines 1 and 12. The peat depth beneath the proposed substation and BESS compound is expected to be up to 1 m in depth. The proposed borrow pit areas are located in areas with peat depths of 0.5 m or less.

8.5.2.9 As shown in **Figure 8.10 (EIAR Volume 3a)**, there are areas of deep peat within the Site that interface with sections of the proposed permanent access tracks. This includes the proposed access track between Turbines 7 and 8, which interfaces with a large area of deep peat where peat depths can be expected to be up to 2.5 m in places. The alignment of this track has sought to reduce the length of track crossing this area of deep peat as far as practicable, but this area of deep peat cannot

[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.

be fully avoided. It is proposed to use floated track in this area to reduce the need to excavate and disturb deep peat in this section.

8.5.3 Limitations

8.5.3.1 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 final design and the extent of the peat survey results based on design changes made through this process, as a result of refinement of infrastructure design etc.

8.5.3.2 However, the peat survey probing points do provide high resolution coverage of the Site. 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 and are sufficient to inform a robust Peat Landslide Hazard Risk Assessment (refer to **Technical Appendix 8.6, EIAR Volume 4**) and this outline PMP.

8.5.3.3 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.

8.5.3.4 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 micrositing of wind turbines away from any pockets of deeper peat into the shallowest areas, thereby minimising impacts on peatland within the micrositing 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.

8.5.4 Peatland Condition

8.5.4.1 The mean depth of the acrotelm recorded from the peat core sample locations was 1.18 m, however the depths recorded across the samples were variable. A precautionary approach has therefore been used to assume an acrotelm depth of 0.5 m and it is recommended that the upper 0.5 m of excavated peat is used as peat turves/the top layer as part of the reinstatement programme as this captures much of the underlying seed bank material, which would aid vegetation regeneration and reduce the risk of erosion.

8.5.4.2 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 low course fibre content.

8.5.4.3 The water content of the peat across the peat core samples was recorded to be variable with approximately two thirds of the peat core samples consisting of dry peat (B1 or B2 on the Hobbs scale) and one third being wet to very wet (B4 to B5 on the Hobbs scale).

8.5.4.4 The majority of the peat core samples scored between H4 and H6 on the Von Post scale indicating the peat to be slightly to moderately decomposed across the peat core sample locations.

8.5.5 Estimated Peat Balance

8.5.5.1 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 detailed in the Outline Biodiversity Enhancement Management Plan, **Technical Appendix 6.7, 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;
- Up to two borrow pits are 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.

8.5.5.2 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 2: Description of Proposed Development (EIAR Volume 2)**. A concrete foundation slab of approximately 25 m diameter would sit on the underlying rock or suitable substratum with a founding depth of 3.5 m (dependant on ground conditions). 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 3.5 m, however for the majority of the Site it has been assumed a depth of up to 2.0 m can be used as an approximation to backfill excavations to ground level;
- It has been assumed a restoration area of 650 m² per turbine 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;
- A Substation Compound with a total footprint up to 8,000 m^2 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;
- A BESS Compound with a total footprint of 9,500 m^2 would be required. Within this area, it has been assumed that two lengths and one width would be available for peat reinstatement, with verges 3 m in width; and
- New access tracks would be flanked by low angle landscaped verges that would seek to provide visual continuity and topographical tie-in between the access tracks and the surrounding peatland.

The verges used for finishing and landscaping of the new access tracks would be extended to 2.5 m either side of the full track width (e.g., running width and track shoulders).

8.5.5.3 **Table 8.5.1** provides estimates of the volumetric peat balance for the Proposed Development. These volumes would be subject to review and updated following detailed ground investigation, detailed design and micrositing as part of the post-consent process, prior to construction.

Table 8.5.1: Estimated Peat Volume to be Excavated

Element	Estimated Peat Volume to be Excavated (m^3)	Estimated Acrotelmic Peat Volume to be Excavated (m^3)	Estimated Catotelmic Peat Volume to be Excavated (m^3)
Turbine 1 foundation, crane pad and hardstanding	2,824	2,824	0
Turbine 2 foundation, crane pad and hardstanding	510	510	0
Turbine 3 foundation, crane pad and hardstanding	64	64	0
Turbine 4 foundation, crane pad and hardstanding	451	451	0
Turbine 5 foundation, crane pad and hardstanding	109	109	0
Turbine 6 foundation, crane pad and hardstanding	0	0	0
Turbine 7 foundation, crane pad and hardstanding	743	743	0
Turbine 8 foundation, crane pad and hardstanding	457	457	0
Turbine 9 foundation, crane pad and hardstanding	95	95	0
Turbine 10 foundation, crane pad and hardstanding	2,839	2,693	146
Turbine 11 foundation, crane pad and hardstanding	1,209	1,209	0
Turbine 12 foundation, crane pad and hardstanding	2,848	2,848	0
Turbine 13 foundation, crane pad and hardstanding	238	238	0
Permanent substation compound	4,088	4,088	0
BESS site compound	6,237	6,237	0
New cut access tracks	22,984	22,984	0
Borrow pit area 1 (temporary)	1,032	1,032	0
Borrow pit area 2 (temporary)	244	244	0
Construction compound (temporary)	1,508	1,508	0
TOTAL	**48,480**	**48,334**	**146**

8.5.5.4 The estimated peat excavation volumes in **Table 8.5.1** are considered to be conservative and include peaty/organo-mineral soils. **Table 8.5.2** provides an estimate of the potential reinstatement opportunities for the Proposed Development.

Table 8.5.2: 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)
Turbine foundation - surface	8,450	0.2	1,274
Turbine foundation - backfill	8,125	2.0	13,000
Crane and hardstanding verges	13,487	0.5-1.0	24,050
Permanent substation compound and BESS verges	1,770	0.5	885
Access track verges	69,850	0.5	43,425
Borrow pit restoration	26,960	0.6	16,176
Construction compound reinstatement	7,540	0.76	5,730
TOTAL	**149,670**	**N/A**	**99,707**

8.5.5.5 The assessment indicates that the potential opportunities for re-use of peat on the Proposed Development exceeds the potential peat excavation estimate. Therefore, it is anticipated that no excess peat generated from the Proposed Development would require off-site disposal.

8.5.5.6 Additional opportunity for peatland restoration is described in the Outline Biodiversity Enhancement and Management Plan (OBEMP) (**Technical Appendix 6.7, EIAR Volume 4**), whereby 124.72 ha are identified for peatland restoration activities including reprofiling and drain blocking.

8.5.6 Classification of Peat

8.5.6.1 Peat was characterised as part of the Stage 2 peat surveys which considered the physical properties of peat cores taken across the Site. The key measures of peat condition, which are important to establishing the appropriate type of reuse, are noted in **Table 8.5.3**. Overall, the sample results suggest that the acrotelm layer is variable in depth and it is recommended that the upper 0.5 m should be reused as part of the reinstatement programme, where this depth of material is available. Excavation of 0.5 m ensures that the acrotelm remains as intact as possible and captures much of the underlying seed bank material which would aid vegetation regeneration. With regards to the catotelm material within the Site, the results indicate that all material is mostly intermediate and fibrous in nature.

Table 8.5.3: Peat Classification

Peat Type	Key Measure and Survey Summary – Survey Results
Acrotelm	Depth – the mean depth of peat recorded during the surveys was 0.27 m with a standard deviation of 0.42 m. The maximum peat depth recorded was 3.0 m. The mean depth of the acrotelm from the peat core sample locations was 1.18 m but this was recorded to be variable across the samples. A precautionary approach has therefore been used and the depth of the acrotelm has been assumed as 0.5 m for the purpose of ensuring acrotelmic peat is used as peat turves/the top layer during peat reinstatement.
Acrotelm and Catotelm	Humification and fibrous content - 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 low course fibre content.
	Water content - the water content of the peat across the peat core samples was recorded to be variable with approximately two thirds of the peat core samples consisting of dry peat (B1 or B2 on the Hobbs scale) and one third being wet to very wet (B4 to B5 on the Hobbs scale).

Table 8.5.3: Peat Classification	
Peat Type	**Key Measure and Survey Summary – Survey Results**
	Von Post - the majority of the peat core samples scored between H4 and H6 on the Von Post scale indicating the peat to be slightly to moderately decomposed across the peat core sample locations.

8.5.7 Requirements for the Detailed Peat Management Plan

8.5.7.1 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 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 seasons for protected species). 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.

8.5.8 Project Phasing

8.5.8.1 There are three distinct project phases, construction, operation, and decommissioning. Key activities for each phase are described in the following sections.

Construction

8.5.8.2 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; 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

8.5.8.3 During this phase no peat excavation is anticipated.

Decommissioning

8.5.8.4 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 this would be confirmed as part of the wider Decommissioning Plan.

8.5.8.5 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 the main tracks would remain in place to facilitate ongoing access to the Site. However, this would be subject to further appraisal of the best environmental option and discussions with landowners and other users of the Site.

8.5.9 Monitoring and Record Keeping

8.5.9.1 An Ecological Clerk of Works (ECoW) 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.

8.5.9.2 The Contractor and the ECoW 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.

8.5.10 Peat and Mineral Soil Handling Methods

8.5.10.1 This section provides guidance to help the Contractor in both planning and executing the construction works at the Proposed Development. 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.

8.5.10.2 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 ECoW);
- Means of access to areas of work and to areas where peat would be reused;
- 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 ECoW.

8.5.10.3 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 in order 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; 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.

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

Reducing Damage to Existing Vegetation

8.5.10.5 To reduce damage to the existing vegetation, construction plant required for reinstatement and landscaping works would be positioned on constructed access 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.

8.5.10.6 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.

8.5.10.7 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

8.5.10.8 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.

8.5.10.9 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.

8.5.10.10 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

8.5.10.11 It is anticipated that during construction, on most occasions, peat and peaty soil would only be handled once and would be directly 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.

8.5.10.12 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.

8.5.10.13 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 ECoW;
- Peat turves should be stored in wet conditions where possible (e.g., within waterlogged former excavations) or irrigated in order 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.

8.5.11 Reinstatement of Peat

Access Tracks

8.5.11.1 The reinstatement would be carried out progressively with peat excavated from other areas placed directly on the sides of the tracks. This would take place everywhere where the cut 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.

8.5.11.2 The construction of the 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.

8.5.11.3 Following construction of the section of access 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

8.5.11.4 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 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

8.5.11.5 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

8.5.11.6 As part of the borrow pit restoration, it is assumed that a thickness of 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). 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

8.5.11.7 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.

8.5.11.8 The ECoW 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 ECoW 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.