



Pennant Walters

GLANLLYNFI GARTH WIND FARM

Draft Environmental Statement

Appendix 11B - Phase 1 Soil and Peat Survey Report



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1. INTRODUCTION

- 1.1.1 This Phase 1 Soil and Peat Survey Report has been prepared by WSP UK Ltd ('WSP') on behalf of Pennant Walters Ltd ('the Applicant') who is submitting an application for a Development of National Significance (DNS) for the proposed Glanllynfi Garth Wind Farm ('the Proposed Development').
- 1.1.2 The Phase 1 Soil and Peat Survey Report should be read in conjunction with the following documents:
- **Chapter 4: Development Description;**
 - **Chapter 10: Water Environment;**
 - **Chapter 11: Ground conditions;**
 - **Appendix 10A: Flood Consequence Assessment and Outline Drainage Strategy; and**
 - **Appendix 4A: Outline Construction and Environmental Management Plan (CEMP).**
- 1.1.3 As part of the submission of a planning application to construct and operate the Proposed Development under the Developments of National Significance (DNS) process, a Scoping Report was submitted (**Appendix 1A**) and Scoping Direction provided by Planning and Environment Decisions Wales (PEDW) (**Appendix 1B**). The Department for Land Quality and Soils (LQAS) advisors indicated that proposals where peat soils are a consideration should include the following as a minimum:
- Initial Desk based assessment using the Peatlands of Wales Evidence Score Map and consideration of probability of peat deposits on a site.
 - Phase 1 peat survey is undertaken conducted across a 100 m grid and supported by confirmatory coring.
 - Information expected to support the Environmental Statement (ES) should include mapped peat data with site location, interpolated peat depth (extended into survey area), probing location and cores/auger (to confirm the probing is reliable).
 - This data should be used to confirm if a Phase 2 peat survey is required, in the event of possible infrastructure overlap or other impacts on the soil resource possibly arising from development.
- 1.1.4 Natural Resources Wales (NRW) advocates that that if peat is present on site, it is requested that a Peat Management Plan is provided. NRW expects clear data be provided on volumes of peat excavated and/or compacted.
- 1.1.5 The purpose of this report is to satisfy the requirements of PEDW and LQAS by presenting details of the baseline soil and peat occurrence and condition at the Proposed Development as identified through the Phase 1 survey.
- 1.1.6 Soils with different texture and structure vary in their land use capability, sensitivity and environmental / ecosystem services offered. Losses and degradation of soil and its services can be a consequence of disturbance as well as the machinery and soil handling practices applied.

- 1.1.7 A key objective of this report is to ensure that there has been a systematic consideration of soil and peat management in developing both the design and construction methods to minimise disturbance to sensitive soils and associated ecosystems services.

2. METHODOLOGY

2.1 Regulatory Context

- 2.1.1 The regulatory context as well as peat policy and guidance are presented in **Chapter 10** and **Chapter 11** of the ES. The investigation and description of the baseline soil and peat conditions have been completed with reference to this policy and guidance.

Peat

- 2.1.2 For Welsh sites, the definition of “peat” as defined by the National Peatland Action Programme (NPAP)¹ is used:
- more than 40 cm of organic (O horizon) material within the upper 80 cm, excluding fresh litter (L) and living moss; or,
 - more than 30 cm of organic (O horizon) material resting directly on the bedrock (R or Cr) or extremely stony material; and,
 - no overlying non-humus material mineral horizon that has a colour value of 4 or more and extends below 30 cm depth.
- 2.1.3 Using a cautionary approach, the Phase 1 surveys used a threshold of ≥ 0.3 m to identify potential clusters of peat in probing data.
- 2.1.4 In this document, “peatlands” are defined in line with the Ramsar Convention², as ecosystems with a peat deposit that may currently support vegetation that is peat-forming, may not, or may lack vegetation entirely. This includes all peat, vegetated or otherwise, and all peaty soils supporting typical peatland vegetation. Shallow peaty soils that no longer support typical peatland vegetation are not considered peatland, though there may be opportunities through restoration to restore back to vegetation of higher quality.

Peaty Soils

- 2.1.5 Where soil conditions are predominantly organic but <0.3 m thickness resting on bedrock or <0.4 m thickness resting on other substrates such as clay, soils are referred to as “Peaty Soils”. The pedology and hydrological characteristics of these soils may be similar to “peat” but due to thickness, fail to meet the definition of peat according to NPAP.
- 2.1.6 Peaty soils may be present independent of, or on the margins of peat deposits. Peaty soils contribute to carbon storage, as well as providing other ecosystem services associated with hydrology and ecology.

Best and Most Versatile (BMV) Agricultural Land

- 2.1.7 The planning systems in England and Wales seek to conserve the ‘Best and Most Versatile’ (BMV) agricultural land. National planning policy defines the BMV agricultural land as land within grades 1, 2 and 3a. As described in Scoping Direction (**Appendix 1B**)

¹ Natural Resources Wales 2020, *National Peatland Action Programme 2020-2025*. Available at: [National Peatlands Action Programme, 2020-2025 \(cyfoethnaturiol.cymru\)](https://www.naturalresources.wales/national-peatland-action-programme-2020-2025)

² NatureScot. 2015. *Scotland's National Peatland Plan: Working for our future*, Section 3. Available at <https://www.nature.scot/doc/scotlands-national-peatland-plan-working-our-future> (accessed 09/01/2024)

for the Proposed Development, in Table 1 ID.62 LQAS confirms that no Best and Most Versatile Agricultural (BMV) Land is present on site and therefore can be scoped out of the assessment. Therefore, the Proposed Development is demonstrably not reducing access to BMV agricultural land.

Other Soils

- 2.1.8 Soils which are not peat or peaty soils will be identified on the basis of the primary textural characteristic, regardless of depth (see **Section 2.3**).
- 2.1.9 All soils represent natural capital and should be managed sustainably to protect associated environmental and ecosystem services as well as to improve soil health.

Definitions used for assessments

- 2.1.10 Definitions of identified soil types were based on soil coring and depth probing results following Phase 1 surveys across the Site and are defined in Table 11B.5.

Approach to surveys

- 2.1.11 At present, there is no published Welsh guidance on the requirements of a peat and soil survey for renewable energy projects. In the absence of this, soil and peat surveys at the Proposed Development have been undertaken with reference to Scottish Government guidance for peat surveys³. Further details on the survey approach are presented in **Section 2.3**.

2.2 Desktop Assessment

- 2.2.1 Published data was used to undertake a desk-based assessment of the potential presence, location and depth of peat, and to assess the likely soil types. This assessment has been used to design the field survey layout. Data sources used are presented in **Table 11B.1**.

Table 11B.1 Published information sources used in the Desktop Assessment

Data source	Description
Current and historic aerial imagery	Imagery reviewed to identify vegetation indications of peat/flush/wetlands. Landscape forms associated with peat, such as hags or gullies are also good indicators.
Current and historical mapping	Historical mapping may provide an indication of the presence of areas of marshy ground/wetland in the form of the “mire” symbology.
Topographical mapping	Used to assess the slope and topography of the Development Site. Where steep slopes are present, peat is generally less likely to be shallower.

³ Scottish Government. 2017. Peatland survey: guidance. Available at <https://www.gov.scot/publications/peatland-survey-guidance/> (accessed August 2024).

Data source	Description
Geology and soils mapping	There are various sources of soils mapping that can be used to identify peat including British Geological Survey 1:50,000 scale Solid Bedrock and Drift Maps ⁴ and UK Soil Observatory (UKSO ⁵).
Habitats information	Habitat information including Phase 1 Habitat data converted to National Vegetation Classification (NVC) communities obtained from ecological surveys at the Development Site has been considered with reference to blanket bog, mire and flush habitat types, where peat would typically occur.
Peatlands of Wales thickness (POWT)	The Welsh Government Peatlands of Wales thickness dataset was divided into thicknesses <40cm, 40-150cm and >150cm, which along with the other data sources listed, were used to define where peat may be present and should be targeted during surveys.
Peatlands of Wales evidence (POWE)	These data layers are created on a 50m grid whereby the presence and thickness of peat are estimated and designated from a range of sources for each 50m grid cell across Wales. A score is assigned depending on the level of confidence in the presence of peat in any given grid cell, with those cells scoring more than 2 on a scale of 1-10, captured in the 'Peatlands of Wales' peat distribution and displayed on the POWT. All layers from 1-10 were assessed, although only areas designated a score of 1 were assumed less likely to have peat present.

2.3 Field Survey

- 2.3.1 A soil and peat survey layout plan is presented in **Figure 11.6 Soil depths and soil coring** of the ES and summarised in the following sections.
- 2.3.2 Soil data will be applied to inform the design, with adjustments made, where possible and feasible technically, to reduce impacts on sensitive soils. Further details on the evolution of the design are presented in **ES Chapter 3**.

Preliminary (Phase 1) Surveys

- 2.3.3 A site-wide Phase 1 (100 m x 100 m grid) soil and peat survey was completed in July 2026. At each survey location, the following information was recorded:
- Depth of soil to refusal;
 - Coarse evaluation of type of soil (i.e. peat, mineral, etc);
 - Substrate texture (i.e. gravel, sand, silt and clay, etc); and
 - Peatland Condition Assessment⁶ (i.e. near-natural, modified, drained, and actively eroding; where depth $\geq$ 0.3 m was observed).
- 2.3.4 In total, 382 Phase 1 survey points were obtained.

⁴ British Geological Survey. GeoSure (Online). Available at: [BGS GeoSure - British Geological Survey](https://www.bgs.gov.uk/Geosure/) [Accessed June 2026]

⁵ UK Soil Observatory. Available at: <https://www.ukso.org/> [Accessed July 2026]

⁶ Peatland Condition Assessment. Available at <https://www.nature.scot/sites/default/files/2023-02/Guidance-Peatland-Action-Peatland-Condition-Assessment-Guide-A1916874.pdf> (accessed July 2026).

Detailed (Phase 2) Surveys

- 2.3.5 A Phase 1 Soil and peat survey was conducted to inform the decision whether further targeted probing and confirmatory coring is required as part of Phase 2 surveys. Such decision will be made following design freeze prior to final ES submission, with guidance of responses at pre-application consultation.

Soil Coring surveys

- 2.3.6 Soil coring was incorporated in the Phase 1 survey grid, providing confirmatory support to verify the nature of depth profiles observed.
- 2.3.7 Following completion of the Phase 1 grid survey, analyses of soil profiles was conducted at a 1 in 10 ha basis, using manual hand augers and observations from naturally occurring soil exposures across the Site. Photographs were also collected.
- 2.3.8 Confirmatory soil coring surveys primarily targeted areas where Phase 1 probing indicated a soil depth ≥ 0.3 m, or field observations suggesting areas that had vegetative character associated with peat formation.
- 2.3.9 The purpose of investigating soils and peat in adjoining areas not underlain or immediately adjacent to proposed infrastructure is to understand the wider baseline soil resource within the Development Site and how these areas could be affected by local construction activities.
- 2.3.10 As a result of the soil characteristics being predominantly thin and granular in nature, a Dutch auger was used to retrieve samples for field observation.
- 2.3.11 Soil cores were recorded using on-site hand-texture analysis to provide a description of the encountered soil type, including the following key soil attributes:
- General description of soil profile;
 - Soil wetness;
 - Colour;
 - Stoniness;
 - Soil texture; and
 - Substrate / subsoil.
- 2.3.12 The texture analysis flow chart used during the surveys was based on the approach prescribed by Natural England, Technical Information Note (TIN 037)⁷.
- 2.3.13 Soils composition from a total of 15 locations were collected, including 10 coring locations, four exposed soil faces (margins) and animal arisings associated with one mole hill, with the logs presented in **Annex A**.

⁷ Natural England. 2008. Soil texture (TIN037). Available at <https://publications.naturalengland.org.uk/publication/32016#> (accessed July 2026)

3. DESKTOP ASSESSMENT

3.1 Site Location

- 3.1.1 The Proposed Development comprises two upland land parcels and access tracks located approximately 1 km east of Maesteg, Wales:
- Pwll-yr-lwrch (hereafter 'Northern Array') – Grid Reference SS 87102 92887;
 - Cynhordy (hereafter 'Southern Array') - Grid Reference SS 88988 89854; and
 - Forestry access tracks through NRW land between the local highway and each array area.
- 3.1.2 The combination of the above elements form the Development Site. However, for this assessment, only data from the Northern Array and Southern Array were collected; hereafter referred to as the Survey Area. For the desk-based assessment, an extent of 250m beyond the Survey Area was considered, hereafter referred to as the Study Area. Where specific focus requires denomination of either part of the Development Site, arrays and/or the access track will be mentioned appropriately.

3.2 Topography

- 3.2.1 The land use within the Study Area is predominantly semi-improved grassland, marshy grassland, heathland, within a strongly rolling upland landscape.
- 3.2.2 Ground levels vary across the Development Site, with the Northern Array reaching approximately 425 m Above Ordnance Datum (AOD) and the Southern Array falling from around 348 m AOD in the north to approximately 147 m AOD in the south.
- 3.2.3 The Development Site is drained by a network of ordinary watercourses and local drainage features, including Nant Cwm-du, Nant Gwyn Bach and Nant Cedfyw, which generally follow the site's topography towards the surrounding valley systems and ultimately the River Llynfi.

3.3 Geology

Bedrock Geology

Northerns Array

- 3.3.1 Area is predominantly underlain by the Llynfi-Member Sandstone, with a band Of Llynfi-Member Mudstone/Siltstone in the northeast of the area. Both members belong to the Pennant Sandstone Formation (PES). The Llynfi-member comprises green-grey and blue-grey, feldspathic, micaceous lithic arenites with thin mudstone/siltstone and seatearth interbeds and mainly thin coals.
- 3.3.2 The South Wales Upper Coal Measures Formation, of the South Wales Coal Measures Group (SWCM) encroaches the western boundary of the area, comprising grey coal-bearing mudstones/siltstones with seatearths and minor grey, quartz-rich sandstones, coals and ironstones.

- 3.3.3 Several faults are present within the area. A number of faults are present at an approximate northwest-southeast orientation in the northeast corner of the area, along with a fault running north-south along the western boundary and another running east-west along the southern boundary. A fault is also present running northwest-southeast, demarcating the southwest corner of the area.
- 3.3.4 An inferred coal seam is also located around the south, west and north-west corner at the geological boundary between the Llynfi Member Sandstone and South Wales Upper Coal Measures Formation, as well as in the north-east area of the Site.

Southern Array

- 3.3.5 Area is almost entirely underlain by the Rhondda Member, of the PES. Member comprises green-grey, lithic arenites with thin mudstone/siltstone and seatearth interbeds and mainly thin coals. A thin seam of the Llynfi Member is present in the most northern extent of the area.
- 3.3.6 A fault running northeast-southwest is present in the most northern extent of the site. Two faults are present in the southwest of the of the area, running from northeast-southwest to east-west. Another two faults are present in the east of the site, running north-south.
- 3.3.7 The distribution of identified bedrock geology is shown in **ES Chapter 11, Figure 11.3**.

Superficial Geology

- 3.3.8 BGS superficial mapping does not show details for the Northern and Southern Array. Localised deposit of Hill Peat located ~20m north of the Development Site, and Devensian Till deposits are located 195m north of the Development Site.
- 3.3.9 Landslide deposits are noted in the northwest of the Site and off site to the southwest, south and southeast of the Site between 7m and 432m. Distribution of identified superficial geology is shown in **ES Chapter 11, Figure 11.2**.

Soils

- 3.3.10 The LandIS Soils map indicates that the soil type within the Development Site predominantly comprises very acid loamy uplands soils with a wet peaty surface, a peaty texture and high carbon content (Soilscape 16).
- 3.3.11 The National Soil Map shows three soil associations present within 250m of the Development Site: Gelligaer, Whitnell 1, and Wilcocks 1.
- 3.3.12 With reference to The National Soil Map⁸, soil associations and their locations are described in more detail below and depicted in Plate 11B.1 and 11B.2.
- 3.3.13 Gelligaer (map unit 654c) is comprised of peat to loam over sandstone. With Loamy permeable upland soils over sandstone with a wet peaty surface horizon and bleached subsurface horizon. Locally rock and scree in profiles. Associated with wet grass and heather moor with bog communities in wetter parts.
- 3.3.14 Whitnell 1 (map unit 611d) is comprised of well drained fine loamy soils over permeable sandstone, associated with steep slopes or rock outcrop locally. This unit is associated with acid upland pastures of dry heath and moor.

⁸ NatMap. LandIS mapping. Available at <https://www.landis.org.uk/data/natmap.cfm> (accessed 06/06/2026)

- 3.3.15 Wilcocks 1 (map unit 721c) is comprised of slowly permeable seasonally waterlogged fine loamy upland soils over clay, with a peaty surface horizon. Similar to Gelligaer, Wilcocks 1 is associated with wet grass and heather moor and bog communities in wetter parts.

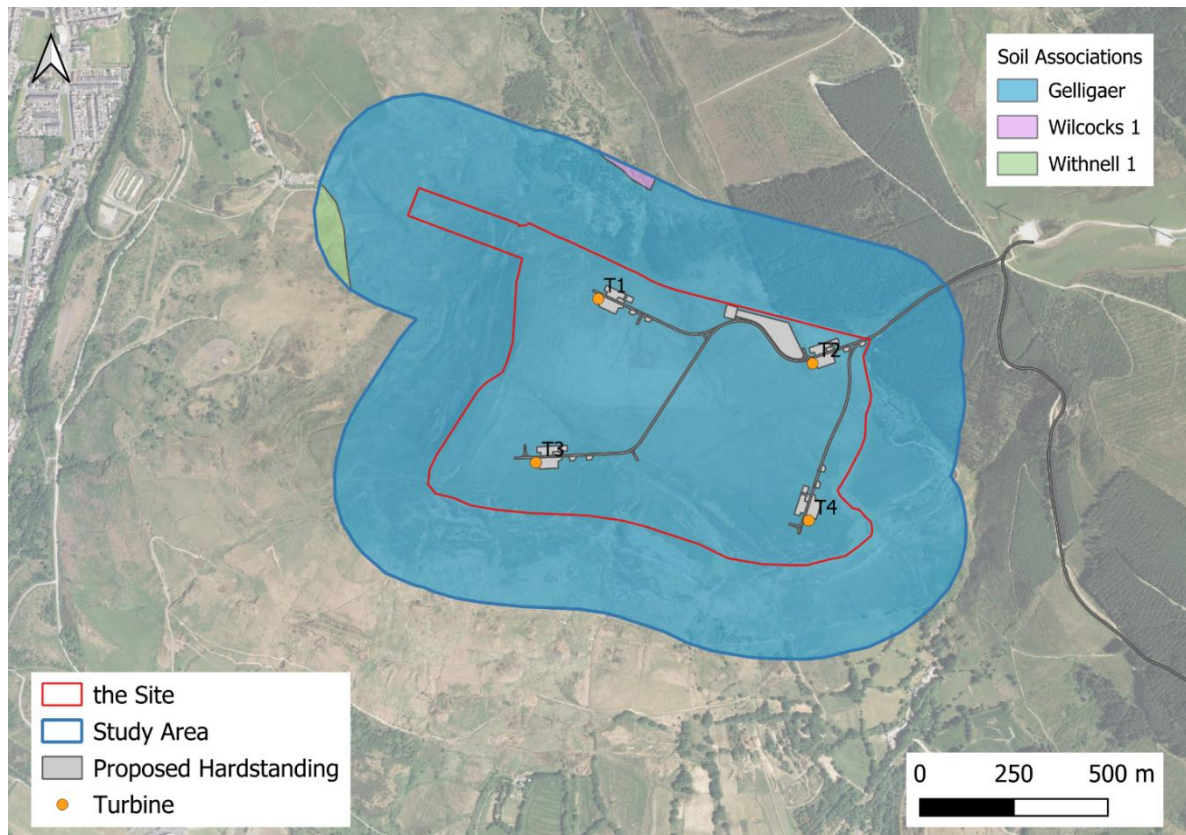


Plate 11B.1 – Primary soil associations according to NATMAP - the National Soil Map (LandIS & Cranfield University) in the Northern Array.

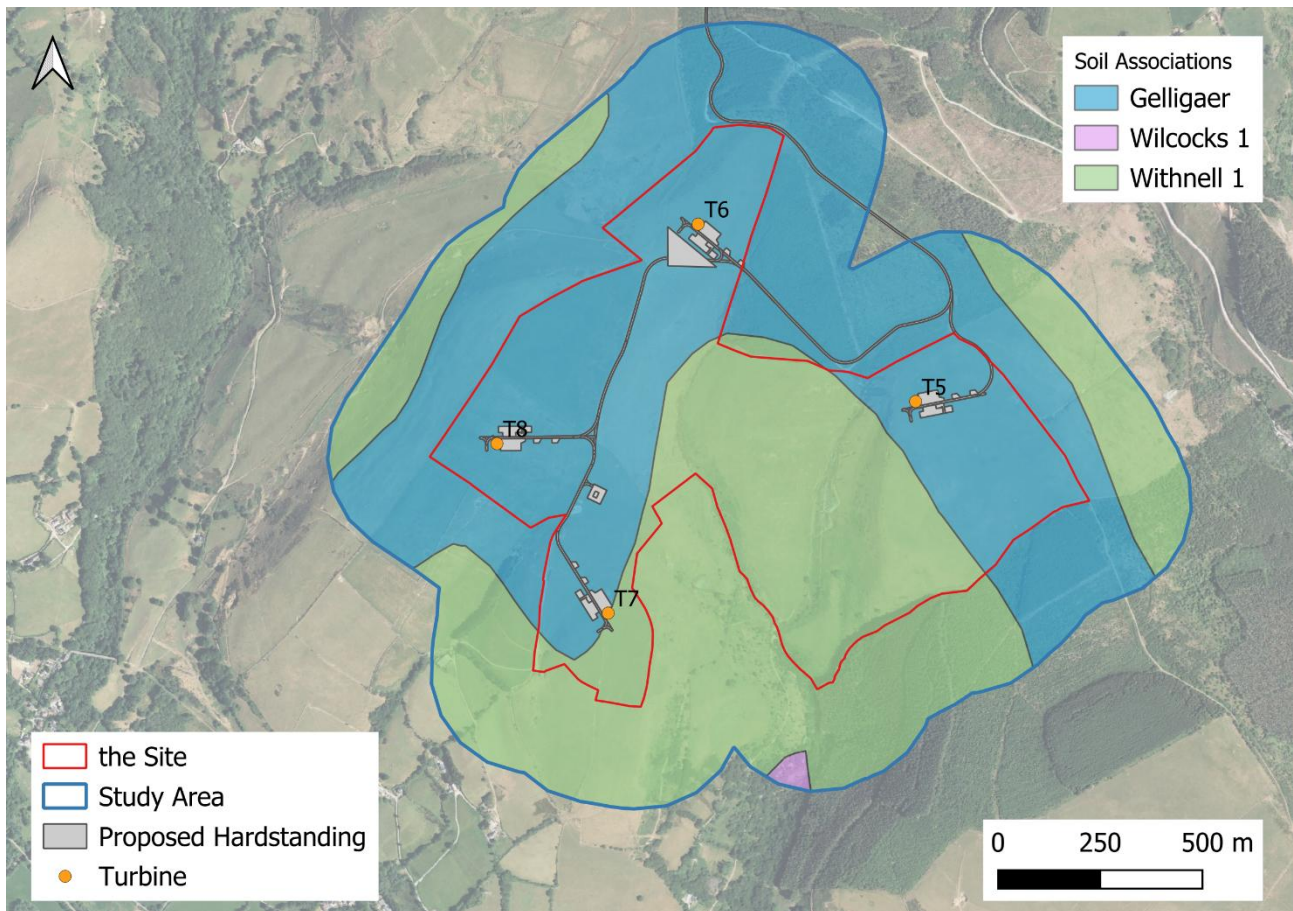


Plate 11B.2 – Primary soil associations according to NATMAP - the National Soil Map (LandIS & Cranfield University) in the Southern Array.

- 3.3.16 Detailed descriptions of these soil associations are available from Cranfield University⁹. Relevant information relating to the soil horizons, textures, colours and wetness based on this information, with reference to Soilscales and the National Soil Map, was used to inform soil handling considerations in this report.
- 3.3.17 The distribution of identified soil associations is shown in more detail in **ES Chapter 11, Figure 11.4**.

Peat

- 3.3.18 A definition of peat in accordance with the NPAP is presented in **Section 2.1**.
- 3.3.19 The Peatlands of Wales map shows no deep peat across the Development Site. Within 250m of the Development Site, one small deep peat area estimated by the Welsh Government as having 0.4m thickness and is shown 50m northwest of the Northern Array by a stream (the Nant y Fforest).
- 3.3.20 The Peatland of Wales Evidence (POWE) map was also consulted. The peatland evidence score used in the map defines the level of confidence in the presence of peat in any given grid cell, with a score of '1' showing there is one indicator to suggest peat might be present.

⁹ Cranfield University (2025) National Soil Map, 1:250,000 scale map for England and Wales.

- 3.3.21 The POWE map shows one area of peat with a score of '1' in the northwest of the Northern Array. In the Study Area (Survey Area + 250m), other areas with a peat evidence score of '1' are present, the largest being approximately 20m north of the Northern Array, within an area of plantation woodland. This area is also shown as peat on the BGS GeoIndex viewer and within the Groundsure report, as outlined in the superficial deposits section above.
- 3.3.22 POWE score 1 locations observed within the Study Area overlap with Gelligaer soil association (see **Plate 11B.1** and **Plate 11B.2**), located in the centre and northwest of both arrays, forming the headwater reaches of a number of the small watercourses.

4. FIELD SURVEY RESULTS

4.1 Probing Survey Results

- 4.1.1 A total of 188 probing measurements were undertaken across the Development Site, with 118 across the northern array and 70 across the southern array. A breakdown of surveyed depth distribution is presented in **Table 11B.2**.
- 4.1.2 The Phase 1 probing survey identified that the Development Site is dominated by shallow soils with 86.7 % of all survey locations being <0.3 m. A map illustrating measured soil and peat probing depths is presented in **Plate 11B.3** and **Plate 11B.4** below, and in ES Chapter 11 **Figure 11.6**.

Table 11B.2 Soil depth survey summary (all data)

Probed Soil Thickness (m)	Survey Points (count)	Average depth (m) in range	Percentage (of total points)
<0.30	163	0.11	86.7
0.30 - 0.39	5	0.38	2.66
0.40 - 0.49	9	0.45	4.79
0.50 - 0.99	10	0.60	5.32
≥1.00	1	1.04	0.53
Total	188	0.16	100

- 4.1.3 Probed depths ≥0.3 m were highly localised and restricted to discrete areas of the Development Site. These locations were subject to subsequent coring during the Phase 1 probing survey, to verify potential presence of peat.
- 4.1.4 Of the 188 probing measurements, approximately 89 were underlying or within 50 m of Proposed Development infrastructure locations. A summary of the measured soil and peat depths within these areas is presented below in **Table 11B.3**, which represents more targeted data where disturbance is expected.

Table 11B.3 Soil depth survey summary (within 50 m of Proposed Development infrastructure*)

Probed Soil Thickness (m)	Survey Points (count)	Average depth (m) in range	Percentage (of total points)
<0.30	76	0.12	85.39
0.30 - 0.39	2	0.39	2.25
0.40 - 0.49	5	0.45	5.62
0.50 - 0.99	6	0.58	6.74

Probed Soil Thickness (m)	Survey Points (count)	Average depth (m) in range	Percentage (of total points)
≥1.00	0		0
Total	89	0.18	100

**comprising of 50m buffer around the 150 m micrositings buffer for turbine foundations, proposed crane pad hardstanding, temporary laydown areas, compounds of substation/temporary construction, and new tracks (5m width).*

- 4.1.5 **Table 11B.2** demonstrates that a majority of the measured probed depths within the vicinity of Proposed Development infrastructure (~85.4%) were <0.3 m in thickness, therefore, largely avoiding areas of potential peat, in accordance with the Step-Wise approach. A total of 13 probing locations within the 50 m of the Proposed Development infrastructure encountered a soil depth ≥0.3 m.
- 4.1.6 To support infrastructure layout refinement, an indicative maximum soil depth grid was generated from the Phase 1 probing survey data collected on an approximately 100 m × 100 m sampling grid. Recorded probing depths were extrapolated onto a 50 m × 50 m grid across the Development Site using a standard geospatial approach. Each grid cell was assigned the maximum measured probing depth recorded within a 25 m radius, providing a spatial representation of the maximum penetrable depth observed during the survey.
- 4.1.7 This approach is commonly applied as it provides a conservative representation of the deepest ground conditions identified during reconnaissance surveys without introducing the assumptions inherent in interpolation methodologies. Interpolation techniques can imply continuous variation in soil depth between survey locations and may smooth localised areas of deeper soils, whereas the maximum soil depth grid retains a direct link to observed field measurements.
- 4.1.8 The use of maximum recorded values reflects a precautionary approach, ensuring that potentially deeper soil areas are captured during the initial screening and layout refinement process. The probing survey records the depth of penetrable subsurface strata and does not distinguish between peat and mineral soil. In representation of Phase 1 survey data, the term *strata depth* is therefore used where appropriate as an umbrella term to describe the total penetrable depth encountered during probing, irrespective of material type.
- 4.1.9 Where no probing data were available within 25 m of a grid cell, a background value of 0.29 m was applied, representing the upper threshold for average probing depth across the Survey Area. Aerial imagery was consulted to identify features such as open water or made ground, where probing data would not be representative of ground conditions.
- 4.1.10 The resulting maximum soil depth grid is intended solely as an indicative representation of maximum recorded strata depths and does not determine the presence, absence or extent of peat. Rather, it provides an initial screening tool to identify areas where deeper soils may occur and where further scrutiny may be warranted.
- 4.1.11 Interpretation of the maximum soil depth grid was subsequently refined through targeted soil coring and review of exposed soil profiles or mole hills, enabling the identification of localised areas of peaty and organic-rich soils and informing the delineation of Zones of Interest described in **Section 4.3**.
- 4.1.12 The maximum soil depth grids for the Northern Array and Southern Array, with measured strata depth locations (probe points) superimposed, are presented in **Plate 11B.3** and **Plate 11B.4**, respectively.

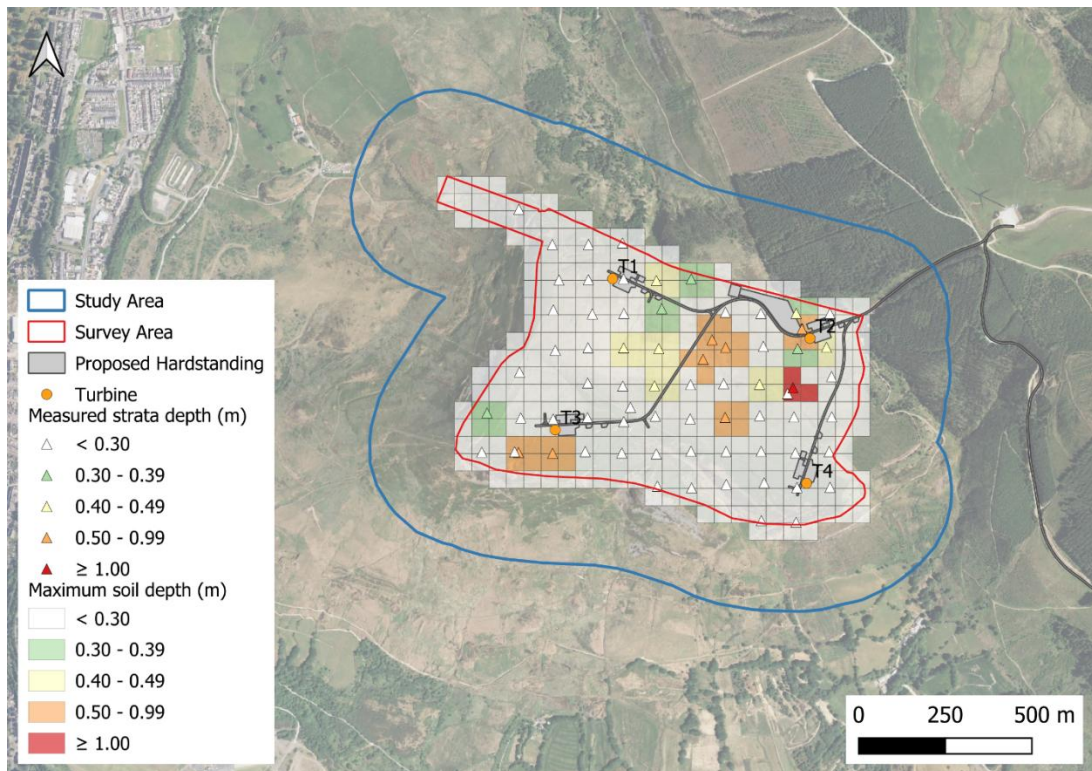


Plate 11B.3 - Maximum soil depth superimposed by measured strata depth locations (probes) within the Northern Array.

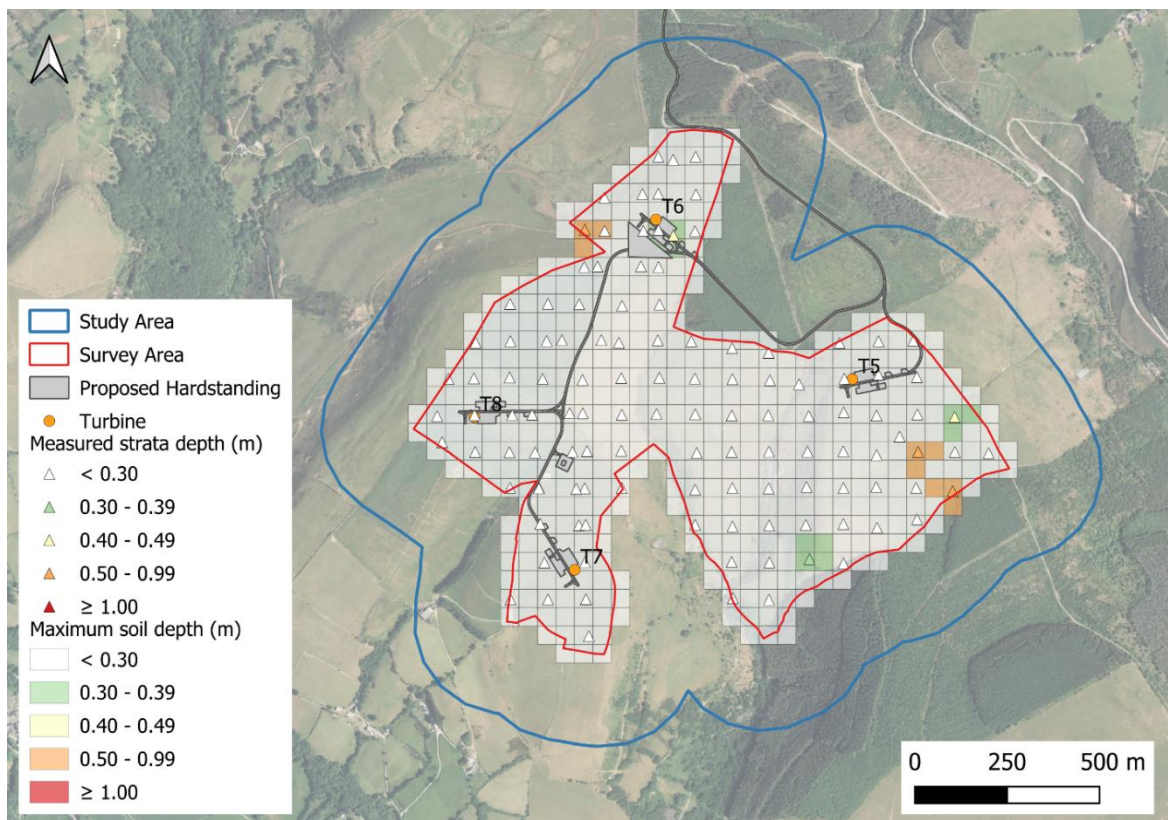


Plate 11B.4 – Maximum soil depth superimposed by measured strata depth locations (probes) within the Southern Array.

4.2 Soil and Peat Auger Survey Results

- 4.2.1 The collection and analysis of soil cores and exposed soil faces was undertaken in concert with probing measurements to determine the occurrence and extent of peat deposits. Dutch augers were completed to complement measured strata depths and verify whether recorded depths equal to or greater than 0.3 m coincided with the presence of peat. **Table 11B.4** summarises the 15 soil profiles assessed across the Survey Area, comprising of 10 hand-auger locations, four exposed soil margins and one mole hill, with eight observations in the Northern Array and seven in the Southern Array.
- 4.2.2 Soil descriptions for margins and mole hills were based on interpretation of photographic imagery, field notes, and expert judgement, following the same description structure as for cores (see **Section 2.3**).

Table 11B.4 Assessed soil profiles split to observation method

Observation method	Northern Array	Southern Array
Hand auger	6	4
Margins (soil faces)	1	3
Mole hills	0	1

- 4.2.3 Cored soil and peat profiles were described with reference to BS 5930:2015+A1:2020¹⁰ and standard field soil texture assessment methods.
- 4.2.4 Peat and organic-rich soils were described by reference to colour, fibre content, visible plant remains, degree of humification/decomposition (Von Post), moisture condition and mineral inclusions. Mineral soils were described by reference to texture, plasticity, consistency, colour, moisture condition, stoniness and inclusions.
- 4.2.5 For assessment purposes, medium-textured mineral soils were taken to include loamy or silty/clayey materials such as sandy clay, silty clay and clayey silt, where clay is present but does not dominate material behaviour. Heavy-textured mineral soils were taken to include clay-dominated materials, including clay, organic clay and gravelly clay, where plasticity, cohesion and low permeability are the dominant field characteristics.
- 4.2.6 Soil groupings were applied using the texture classes defined in **Table 11B.5**, using a cautionary approach for the depth of peat soils, and distinction between medium and heavy textured clays.
- 4.2.7 Soils information for the Survey Area is summarised as follows:
- Topsoil had an average depth of 0.18 m, with a maximum profile depth of 1.04 m.
 - Observed soil profiles show two distinct texture groups: peaty soils (peat material < 0.3m) and mineral soil profiles comprising of predominantly medium textured silty clays.
 - With reference to **Table 11B.5**, profiles containing peat material to a depth of equal or greater than 0.3 m were not observed on site.

¹⁰ BS 5930:2015+A1:2020 Code of practice for ground investigations. Available at: <https://doi.org/10.3403/30268443> [accessed July 2026]

- Organic-rich material was limited to localised peaty soils recorded at four auger locations, where peat or very organic horizons were thinner than the peat-soil threshold. These were generally confined to isolated pockets associated with natural depressions, flushes and localised wetter ground, rather than forming continuous peat deposits across the Survey Area. Peat material over rock was not observed.
- Profiles classes as peaty soils had 0.16 m of topsoil on average, with a maximum of 0.28 m peat depth at one auger location. Topsoil of peaty soils varied across the Development Site in colour and texture but generally showed spongy brown organics or soft dark organic silty clay. Subsoils of peaty soils had soft brownish black organic silty clay, often mottled, over firm pale grey mottled brown clay. Subsoils contained various degree of sandstone or siltstone bedrock.
- Profiles classed as medium textured mineral soil had 0.19 m of topsoil on average. A typical mineral profile for the site comprised of soft dark brown silty clay with rootlets, over firm mottled dark grey clayey silt or silty clay and stiff pale clay. Subsoils of mineral profiles were often underlain by parent material comprising of coarse sand or siltstone gravel.
- Inspection of natural exposures indicated the weathered bedrock regolith was ~30-40 cm below the surface (see **Annex 2: log photos**).
- Land in the Southern Array comprises of improved grassland primarily. In some locations, soil wetness was generally low but occasionally higher where soil material was finer of texture and coincided with depressions or flushes.

Table 11B.5 Definitions of identified texture classes

Texture class	Profile material	Number of observations
Peat soils	Any profile with peat material ≥ 0.3 m	0
Peaty soils	Any horizon description with “very organic” soils < 0.4 m or peat material < 0.3 m	4
Mineral soils – medium texture	Silty and/or sandy clay, or gravelly silt (analogue for loam)	11
Mineral soils – heavy texture	4.2.8 Clay (organic and/or gravelly)	0

4.2.9 **Plate 11B.5, 11B.6 and 11B.7** show typical soil profiles observed across the Survey Area.



Plate 11B.5 – Peaty profile at coring location N4 (Northern Array). Topsoil was classed as spongy brown peat to 0.3m, over subsoils comprising a soft dark brownish black very organic silty clay and firm pale grey clay with yellowish-brown mottles and abundant rootlets. Von Post classification was not performed as peat layer was not greater than 0.4m. NGR: SS 87110 92914.



Plate 11B.6 – Mineral profile at coring location S2 (Southern Array). Profile was recorded as a firm dark brownish black slightly organic slightly silty clay topsoil over firm to stiff light or pale grey dark silty clay subsoils, with orangish brown mottles, and occasional rootlets throughout the profile. NGR: SS 88717 90354.



Plate 11B.7 – Mineral profile at exposed soil margin location S4 (Southern Array). Topsoil was classed soft pale grey slightly organic slightly silty clay with rootlets, over upper subsoils comprising soft dark grey clayey silt with orangish brown mottles with lower subsoil characterised by soft orangish brown slightly gravelly clayey silt. Gravel content in subsoils increased with depth, of primarily medium sized sandstone fragments that are subangular in shape. NGR: SS 89311 89907.

- 4.2.10 **Plate 11B.8** and **Plate 11B.9** illustrate where soil profile assessments recorded peat material in the first horizons: three locations in the Northern Array and one location in the Southern Array. Profiles in these locations were classed as peaty soils, meaning peat material was not identified to depth equal or greater than 0.3m.

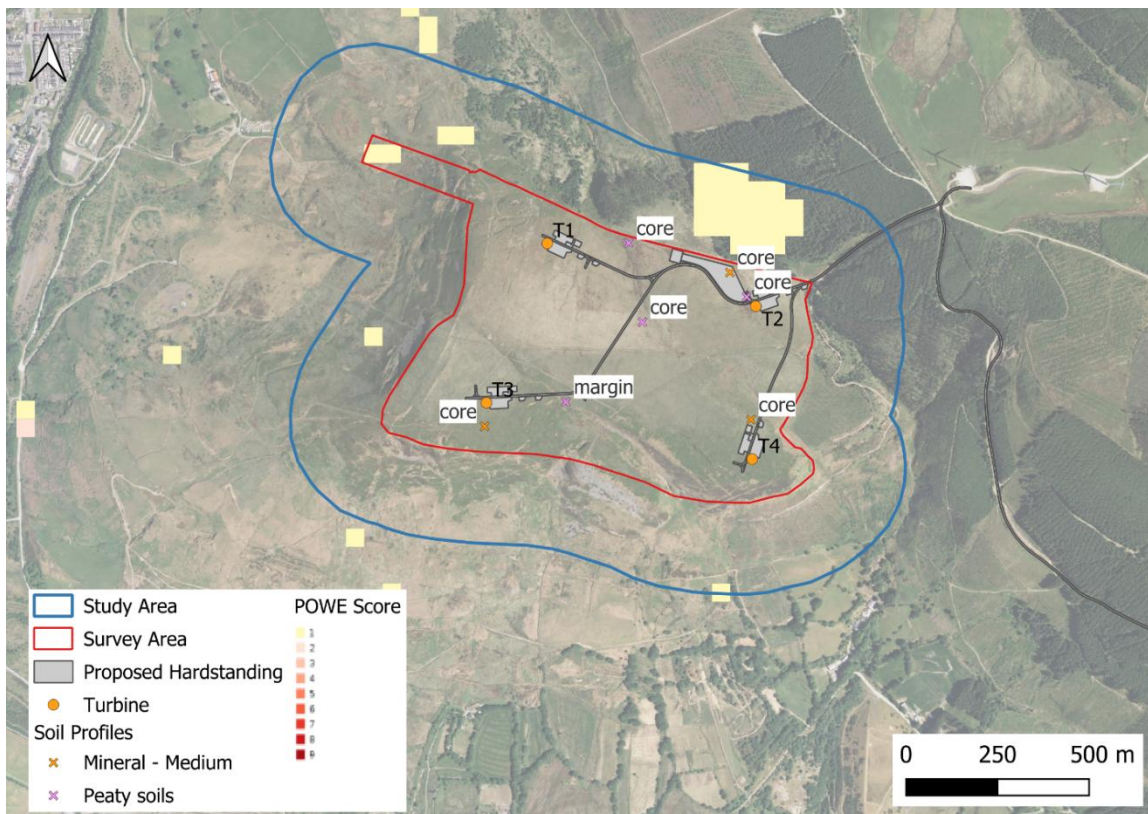


Plate 11B.8 – Areas of potential peat as Peatlands of Wales Evidence (POWE) superimposed by locations of soil profiles within the Northern Array.

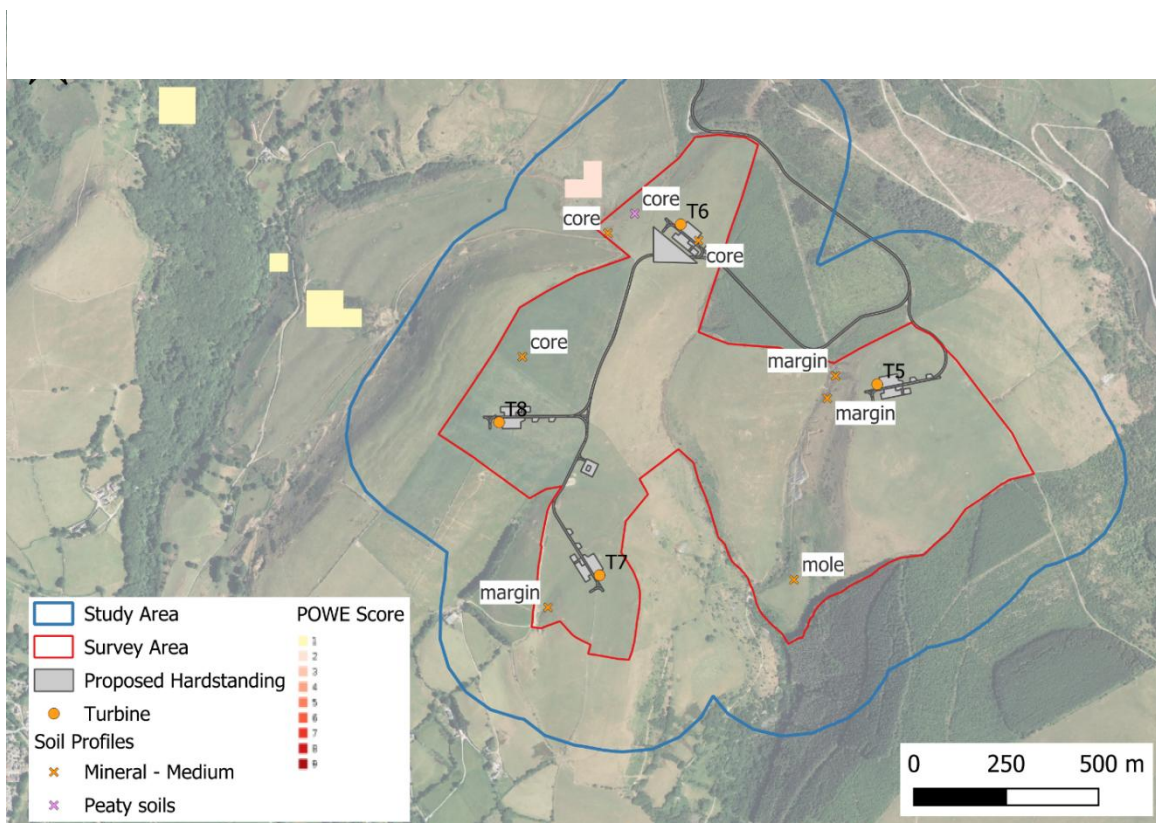


Plate 11B.9 – Areas of potential peat as Peatlands of Wales Evidence (POWE) superimposed by locations of soil profiles within in Southern Array.

4.3 Zones of Interest – High sensitivity soils

- 4.3.1 **Plate 11B.10 and Plate 11B.11** identify Zones of Interest for further assessment where soils have been classified as peaty soils, or where the presence of organic-rich soils is inferred from the combined interpretation of probing results, coring information, aerial imagery, vegetation indicators and landscape setting. These areas do not represent confirmed peat deposits as defined in **Section 2.1**; however, they have been identified on a precautionary basis as areas of potentially elevated soil sensitivity.
- 4.3.2 The presence of soils containing organic-rich, wet and structurally weak materials may increase vulnerability to physical disturbance, compaction, erosion, drainage modification and loss of soil function during construction, warranting further consideration in project design and mitigation planning.
- 4.3.3 Their identification within the Development Site therefore provides a basis for considering potential interactions with the Proposed Development and for informing any required avoidance, micro-siting, soil handling, drainage control or reinstatement measures during subsequent design and assessment stages.
- 4.3.4 A total of three high sensitivity soil zones has been identified within the Survey Area. These zones correspond to localised areas where peaty soils were recorded or where site conditions indicate an increased likelihood of organic-rich, wet or weak soils being present.
- 4.3.5 The high sensitivity soil zones are summarised as follows:
- Northern slopes of Northern Array, with overlap of T2;
 - Southern slopes of Northern Array, with overlap of T3;
 - Sections of access tracks within the Northern Array towards T1 and T3, surrounding an area of flow convergence with a low gradient; and
 - North-east section of Southern Array with overlap of T6.

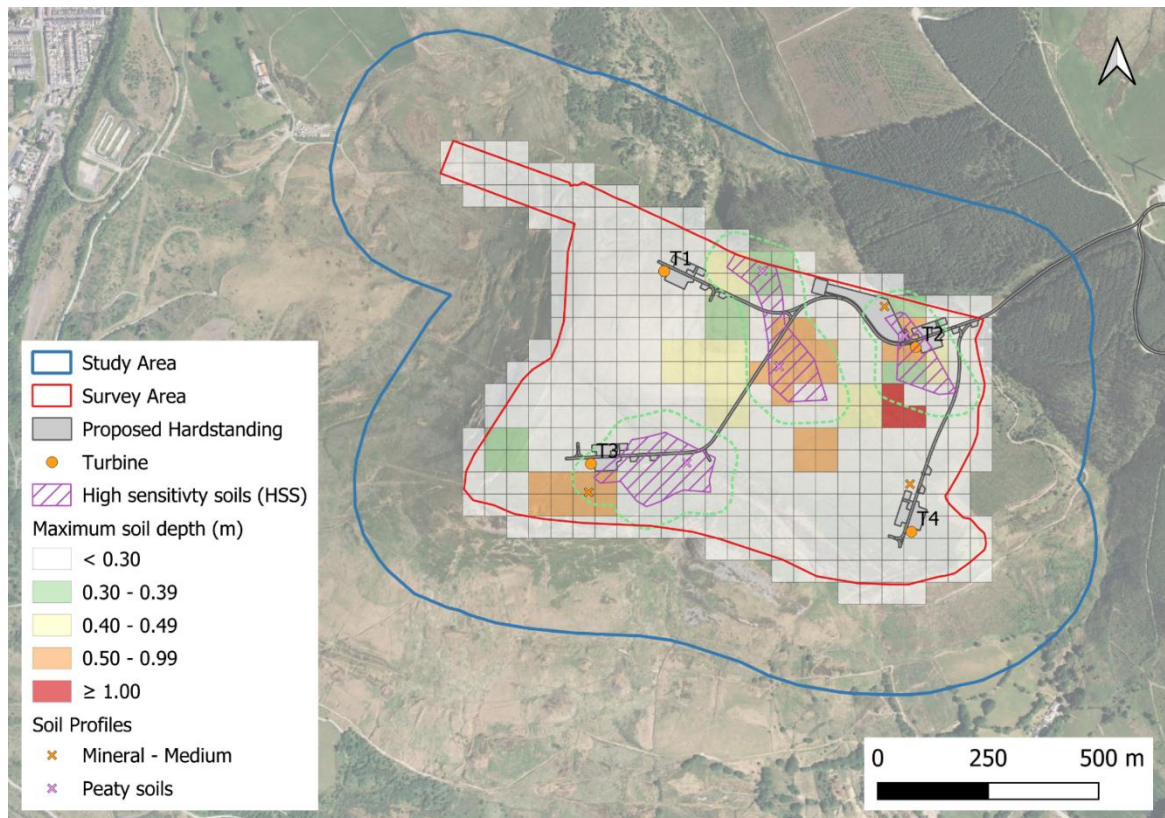


Plate 11B.10 – High sensitivity soils (including peaty soils) within the Northern Array.

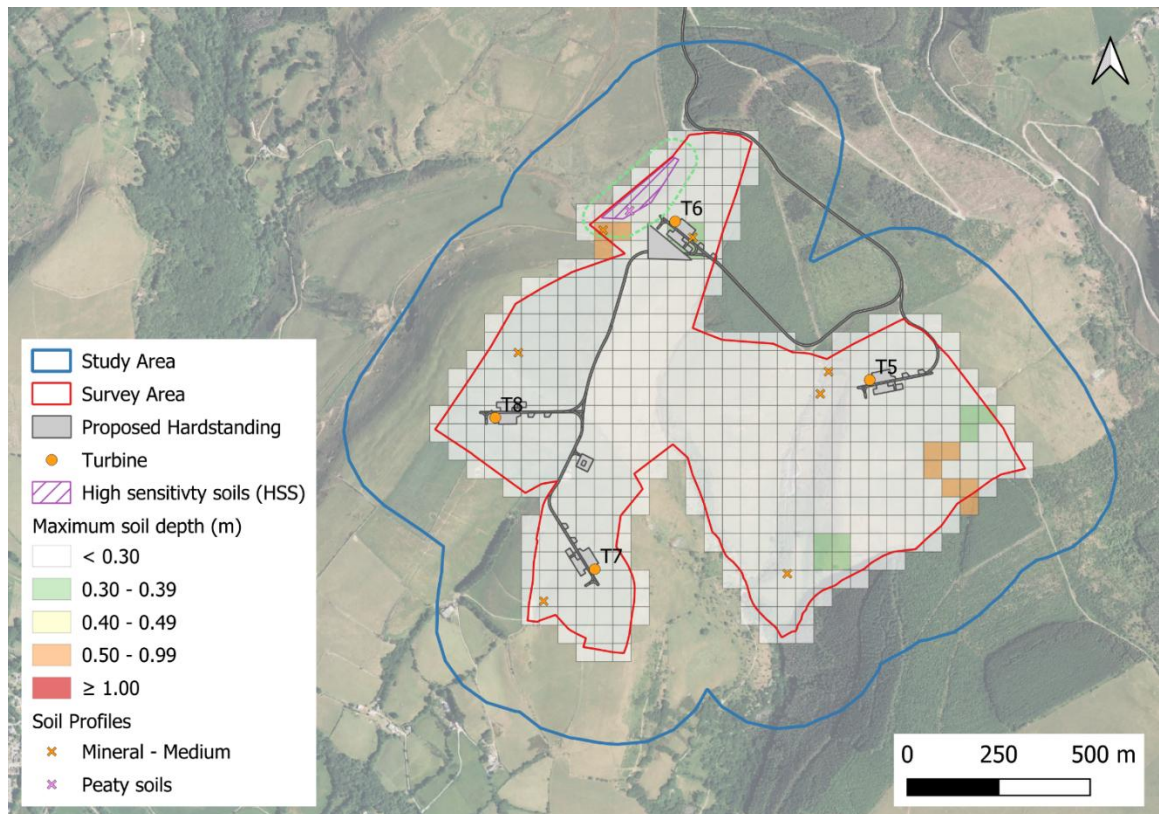


Plate 10A.11 – High sensitivity soils (including peaty soils) within the Southern Array.

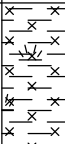
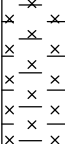
5. SUMMARY

- 5.1.1 This Phase 1 Soil and Peat Survey Report has been prepared to establish the baseline soil and peat conditions within the Proposed Development and to provide evidence to support the ES and identify requirement for further assessment of soils across the Development Site.
- 5.1.2 The Phase 1 Survey Report draws together the findings of the desk-based review, Phase 1 soil depth probing, targeted Dutch auger coring, review of exposed soil faces and interpretation of aerial imagery, vegetation indicators and landscape setting.
- 5.1.3 During the Phase 1 survey, soils were assessed in terms of their presence, depth, distribution and character, including confirmation of whether peat deposits are present within the Survey Area. This approach has enabled soils to be grouped into units based on physical characteristics and sensitivities, providing a basis for considering soil handling requirements, design constraints, potential drainage interactions and construction-related effects across the Northern Array and Southern Array.
- 5.1.4 The Phase 1 survey results demonstrate that the Development Site is predominantly underlain by shallow soils. Across the Survey Area, 86.7% of probing locations recorded soil thicknesses of <0.3 m, and with predominantly shallow soils < 0.3 m within 50 m of proposed infrastructure (85.4% of all probing records). The encountered profiles are dominated by thin topsoil over shallow medium-textured mineral subsoils, typically comprising silty clay or clayey silt materials over weathered sandstone or siltstone parent material.
- 5.1.5 No peat soils, as defined for the assessment, were confirmed within the Survey Area. Profiles containing peat material to a depth of ≥ 0.3 m were not observed, and deeper probed locations were generally associated with mineral soil profiles rather than peat.
- 5.1.6 Organic-rich material was limited to localised peaty soils recorded at four auger locations, where peat or very organic horizons were < 0.4 m over mineral subsoils. Peat material over rock was not observed. These peaty soils occurred as discrete and isolated features associated with depressions, flushes, localised wet ground or basin-like settings, rather than as continuous peat deposits or blanket peat within the vicinity of proposed infrastructure.
- 5.1.7 On the basis of the Phase 1 findings, the Proposed Development has largely avoided areas with soils containing peat material. However, the presence of localised peaty soils and wet organic-rich ground indicates that some areas may be more sensitive to disturbance than the wider mineral soil resource and should continue to be treated as constraints during design evolution and should be targeted during subsequent rounds of surveys.
- 5.1.8 Three Zones of Interest have been identified as high sensitivity soils, comprising the northern slopes of the Northern Array where there is overlap with T2, T3, and access track sections towards T1 and T3 around an area of flow convergence and low gradient, and the north-eastern section of the Southern Array where there is overlap with T6.
- 5.1.9 These zones should be carried forward into further design and assessment as precautionary constraints. It is recommended that further assessments focus on confirming the nature, depth and lateral extent of soils within each zone of interest where there is potential interaction with infrastructure or construction working areas, in accordance with the Step-Wise approach set out in Planning Policy Wales. Such assessments should include targeted Phase 2 probing and confirmatory coring at an

appropriate density around proposed infrastructure in these areas, with survey locations adjusted to reflect final design. The results should be used to refine the locations of high sensitivity soil mapping, and confirm whether avoidance or local micrositeing is required, to inform soil stripping and storage prescriptions, identify any drainage or erosion-control measures.

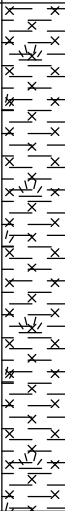
Annex A: Soil profile logs

 WSP UK Ltd 3 Wellington Place Leeds, LS1 4AP Telephone: 0113 395 6200 Email:	BOREHOLE LOG		Hole No. N1 - CORE
	Project Glanllynfi Garth Wind Farm		Sheet 1 of 1
Job No UK0045637.5484	Client Pennant Walters (Holdings) LTD		Date Start: 02-07-26 End: 02-07-26
Contractor/Driller WSP	Method/Plant Used Hand Tools	Logged By Taco Regensburg	Co-Ordinates () E: 287394.80 N: 192983.60
		Ground Level (m)	

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
								(0.12)	Soft dark brownish black silty CLAY with abundant organics. 0.00 - 0.72		NODATA	
								0.12				
								(0.25)	Soft dark grey clayey SILT with orangish brown mottles.		NODATA	
								0.37				
								(0.35)	Soft dark greyish black organic silty CLAY with orangish brown mottles and rootlets.		NODATA	
								0.72				
									Reached scheduled depth			

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks Below clay is visual shale, very weathered.					
From	To	Hours	Tool	From	To						
Scale 1:6.25		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

 WSP UK Ltd 3 Wellington Place Leeds, LS1 4AP Telephone: 0113 395 6200 Email:	BOREHOLE LOG			Hole No. N2 - CORE					
	Project Glanllynfi Garth Wind Farm			Sheet 1 of 1					
Job No UK0045637.5484		Client Pennant Walters (Holdings) LTD			Date Start: 02-07-26 End: 02-07-26				
Contractor/Driller WSP		Method/Plant Used Hand Tools		Logged By Taco Regensburg		Co-Ordinates () E: 287349.06 N: 193050.33		Ground Level (m)	

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
								(0.42)	Soft dark brown organic slightly silty CLAY with rootlets. 0.00 - 0.75		NODATA	
								0.42				
								(0.33)	Firm pale grey clayey SILT with yellowish brown mottles and rootlets.		NODATA	
								0.75				
									Refusal			

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks Some bedrock cobbles near base. Top layer consistent, no weathering.					
From	To	Hours	Tool	From	To						
Scale 1:6.25		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

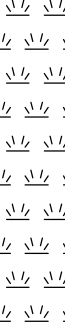
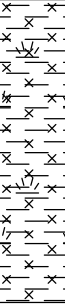
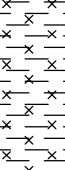
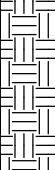
20 WSP BH LOG GLANLYNNFI GARTH WIND FARM, V8.01.GPJ WSP TEMPLATE 8.00.GDT 10/8/26

 WSP UK Ltd 3 Wellington Place Leeds, LS1 4AP Telephone: 0113 395 6200 Email:	BOREHOLE LOG		Hole No. N3 - CORE
	Project Glanllynfi Garth Wind Farm		Sheet 1 of 1
Job No UK0045637.5484	Client Pennant Walters (Holdings) LTD		Date Start: 02-07-26 End: 02-07-26
Contractor/Driller WSP	Method/Plant Used Hand Tools	Logged By Taco Regensburg	Co-Ordinates () E: 287072.57 N: 193130.88
		Ground Level (m)	

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
								(0.13)	Spongy brown PEAT . 0.00 - 0.60	   	NODATA	   
								0.13				
								(0.15)	Soft brownish black organic silty CLAY with rootlets.	   	NODATA	   
								0.28				
								(0.32)	Soft grey gravelly silty CLAY with orangish brown mottles. Gravel is subangular medium and coarse tabular of siltstone.	   	NODATA	   
								0.60				
									Refusal			

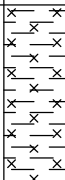
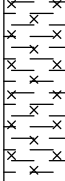
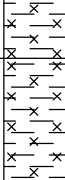
Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks					
From	To	Hours	Tool	From	To						
Scale 1:6.25		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

 WSP UK Ltd 3 Wellington Place Leeds, LS1 4AP Telephone: 0113 395 6200 Email:	BOREHOLE LOG		Hole No. N4 - CORE
	Project Glanllynfi Garth Wind Farm		Sheet 1 of 1
Job No UK0045637.5484	Client Pennant Walters (Holdings) LTD		Date Start: 02-07-26 End: 02-07-26
Contractor/Driller WSP	Method/Plant Used Hand Tools	Logged By Taco Regensburg	Co-Ordinates () E: 287110.30 N: 192914.36
		Ground Level (m)	

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppm V)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thickness)	Description	Legend	Geology	Install / Backfill
								(0.28)	Spongy brown PEAT. 0.00 - 0.90		NODATA	
							0.28					
								(0.25)	Soft dark brownish black very organic silty CLAY.		NODATA	
							0.53					
								(0.22)	Firm pale grey CLAY with yellowish brown mottles and abundant rootlets.		NODATA	
							0.75					
								(0.15)	Firm grey silty CLAY with yellowish brown mottles and slightly organics.		NODATA	
							0.90					
									Reached scheduled depth			

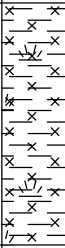
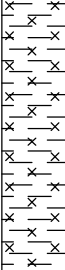
Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks					
From	To	Hours	Tool	From	To						
Scale 1:6.25		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

 WSP UK Ltd 3 Wellington Place Leeds, LS1 4AP Telephone: 0113 395 6200 Email:	BOREHOLE LOG			Hole No. N5 - CORE
	Project Glanllynfi Garth Wind Farm			Sheet 1 of 1
Job No UK0045637.5484	Client Pennant Walters (Holdings) LTD			Date Start: 02-07-26 End: 02-07-26
Contractor/Driller WSP	Method/Plant Used Hand Tools	Logged By Taco Regensburg	Co-Ordinates () E: 286678.82 N: 192629.45	Ground Level (m)

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppm V)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thickness)	Description	Legend	Geology	Install / Backfill
								(0.15) 0.15	Soft dark brownish black very organic silty CLAY. <i>0.00 - 0.70</i>		NODATA	
								(0.21) 0.36	Firm dark greyish brown silty CLAY with orangish brown mottles and occasional rootlets.		NODATA	
								(0.34) 0.70	Firm grey silty CLAY with orangish brown mottles. Some broken bedrock fragments, siltstone like.		NODATA	
									Refusal			

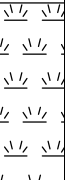
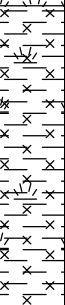
Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks					
From	To	Hours	Tool	From	To						
Scale 1:6.25		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

 WSP UK Ltd 3 Wellington Place Leeds, LS1 4AP Telephone: 0113 395 6200 Email:	BOREHOLE LOG			Hole No. N6 - CORE					
	Project Glanllynfi Garth Wind Farm			Sheet 1 of 1					
Job No UK0045637.5484		Client Pennant Walters (Holdings) LTD			Date Start: 02-07-26 End: 02-07-26				
Contractor/Driller WSP		Method/Plant Used Hand Tools		Logged By Taco Regensburg		Co-Ordinates () E: 287406.85 N: 192648.02		Ground Level (m)	

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
								(0.20)	Soft dark brown organic silty CLAY. 0.00 - 0.58		NODATA	
								0.20				
								(0.23)	Firm yellowish grey silty CLAY with orangish brown mottles. Fe Mn present.		NODATA	
								0.43				
								(0.15)	Firm dark grey silty CLAY with yellowish orange mottles.		NODATA	
								0.58	Reached scheduled depth			

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks					
From	To	Hours	Tool	From	To						
Scale 1:6.25		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

 WSP UK Ltd 3 Wellington Place Leeds, LS1 4AP Telephone: 0113 395 6200 Email:	BOREHOLE LOG				Hole No. N7 - MARGIN				
	Project Glanllynfi Garth Wind Farm				Sheet 1 of 1				
Job No UK0045637.5484		Client Pennant Walters (Holdings) LTD				Date Start: 02-07-26 End: 02-07-26			
Contractor/Driller		Method/Plant Used		Logged By		Co-Ordinates () E: 286901.00 N: 192696.00		Ground Level (m)	

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thickness)	Description	Legend	Geology	Install / Backfill
								(0.15)	Spongy brown PEAT.		NODATA	
								(0.25)	Soft brownish black organic silty CLAY with rootlets.		NODATA	
								(0.20)	Firm pale grey CLAY with yellowish brown mottles.		NODATA	
								0.60	Reached scheduled depth			

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks Exposed margin.					
From	To	Hours	Tool	From	To						
Scale 1:6.25		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

 WSP UK Ltd 3 Wellington Place Leeds, LS1 4AP Telephone: 0113 395 6200 Email:	BOREHOLE LOG			Hole No. S1 - CORE
	Project Glanllynfi Garth Wind Farm			Sheet 1 of 1
Job No UK0045637.5484	Client Pennant Walters (Holdings) LTD			Date Start: 01-07-26 End: 01-07-26
Contractor/Driller WSP	Method/Plant Used Hand Tools	Logged By Taco Regensburg	Co-Ordinates () E: 288716.98 N: 190354.12	Ground Level (m)

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppm V)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thickness)	Description	Legend	Geology	Install / Backfill
								(0.25) <				

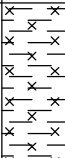
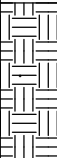
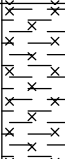
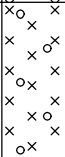
Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks					
From	To	Hours	Tool	From	To						
Scale 1:6.25		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

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Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added							
From	To	Hours	Tool	From	To	General Remarks					
Scale 1:6.25		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

 WSP UK Ltd 3 Wellington Place Leeds, LS1 4AP Telephone: 0113 395 6200 Email:	BOREHOLE LOG			Hole No. S3 - CORE	
	Project Glanllynfi Garth Wind Farm			Sheet 1 of 1	
Job No UK0045637.5484		Client Pennant Walters (Holdings) LTD			Date Start: 01-07-26 End: 01-07-26
Contractor/Driller WSP	Method/Plant Used Hand Tools	Logged By Taco Regensburg	Co-Ordinates () E: 288485.12 N: 190019.59	Ground Level (m)	

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
								(0.13)	Soft dark greyish black silty CLAY with slightly organics. <i>0.00 - 0.48</i>		NODATA	
								0.13				
								(0.13)	Soft dark greyish black silty CLAY with dark orangish brown mottles and slightly organics.		NODATA	
								0.26				
								(0.22)	Soft orangish brown slightly gravelly clayey SILT. Gravel is subangular medium of sandstone.		NODATA	
								0.48				
									Refusal			

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks					
From	To	Hours	Tool	From	To						
Scale 1:6.25		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

 WSP UK Ltd 3 Wellington Place Leeds, LS1 4AP Telephone: 0113 395 6200 Email:	BOREHOLE LOG			Hole No. S4 - MARGIN
				Project Glanllynfi Garth Wind Farm
Job No UK0045637.5484	Client Pennant Walters (Holdings) LTD			Date Start: 01-07-26 End: 01-07-26
Contractor/Driller	Method/Plant Used	Logged By	Co-Ordinates (E: 289310.92 N: 189907.08	Ground Level (m)

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (m)	Depth (Thickness)	Description	Legend	Geology	Install Backfill
								(0.20)	Soft pale grey slightly organic slightly silty CLAY with rootles		NODATA	
							0.20					
								(0.30)	Soft dark grey silty CLAY with orangish brown mottles.		NODATA	
							0.50					
								(0.10)	Soft orangish brown slightly gravelly clayey SILT. Gravel is subangular medium of sandstone.		NODATA	
							0.60					
									Reached scheduled depth			

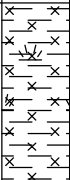
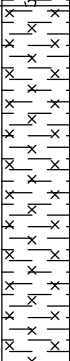
Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks Exposed margin, showing increased bedrock fragments from 0.4m, primarily pale silty clay.					
From	To	Hours	Tool	From	To						
Scale 1:6.25		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

 WSP UK Ltd 3 Wellington Place Leeds, LS1 4AP Telephone: 0113 395 6200 Email:	BOREHOLE LOG			Hole No. S6 - MARGIN
	Project Glanllynfi Garth Wind Farm	Sheet 1 of 1		
Job No UK0045637.5484	Client Pennant Walters (Holdings) LTD			Date Start: 01-07-26 End: 01-07-26
Contractor/Driller	Method/Plant Used	Logged By	Co-Ordinates (E: 289333.25 N: 189967.46	Ground Level (m)

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (m)	Depth (Thickness)	Description	Legend	Geology	Install Backfill
								(0.10)	Soft dark brown organic slightly silty CLAY with rootles		NODATA	
								(0.20)	Soft dark grey silty CLAY with orangish brown mottles.		NODATA	
								(0.20)	Soft orangish brown slightly gravelly clayey SILT. Gravel is subangular medium of sandstone.		NODATA	
								0.50	Reached scheduled depth			

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks Exposed margin, showing increased bedrock fragments from 0.4m, primarily pale brown silty clay.					
From	To	Hours	Tool	From	To						
Scale 1:6.25		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

 WSP UK Ltd 3 Wellington Place Leeds, LS1 4AP Telephone: 0113 395 6200 Email:	BOREHOLE LOG		Hole No. S7 - CORE	
	Project Glanllynfi Garth Wind Farm		Sheet 1 of 1	
Job No UK0045637.5484		Client Pennant Walters (Holdings) LTD		Date Start: 01-07-26 End: 01-07-26
Contractor/Driller	Method/Plant Used	Logged By	Co-Ordinates () E: 288962.32 N: 190334.17	Ground Level (m)

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
								(0.15)	Firm dark brownish black slightly organic slightly silty CLAY with occasional rootlets.		NODATA	
								0.15				
								(0.30)	Firm light greyish grey brown silty CLAY with dark orangish mottles and occasional rootlets.		NODATA	
								0.45				
								(0.05) 0.50	Stiff pale grey CLAY with yellowish orange mottles and occasional rootlets.		NODATA	
									Refusal			

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks Same profile as S1 CORE, but shallower. Photo misses					
From	To	Hours	Tool	From	To						
Scale 1:6.25		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

 WSP UK Ltd 3 Wellington Place Leeds, LS1 4AP Telephone: 0113 395 6200 Email:	BOREHOLE LOG		Hole No. S8 - MOLE
	Project Glanllynfi Garth Wind Farm		Sheet 1 of 1
Job No UK0045637.5484	Client Pennant Walters (Holdings) LTD		Date Start: 01-07-26 End: 01-07-26
Contractor/Driller	Method/Plant Used	Logged By	Co-Ordinates () E: 289220.57 N: 189415.78
		Ground Level (m)	

SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
								(0.10)	Soft pale grey slightly organic slightly silty CLAY with rootles.		NODATA	
								(0.50)	Unknown. see comments		NODATA	
								0.60	Reached scheduled depth			

Boring Progress						Water Strikes					
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing
Chiselling				Water Added		General Remarks Profile depth established based on nearby exposed soil faces.					
From	To	Hours	Tool	From	To						
Scale 1:6.25		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.									

Annex B: Soil profile pictures

Northern Array

N1 - core



0.12 m - Soft dark brownish black silty CLAY with abundant organics.

0.37 m - Soft dark grey clayey SILT with orangish brown mottles.

0.72 m - Soft dark greyish black organic silty CLAY with orangish brown mottles and rootlets.

N2 - core



0.42 m - Soft dark brown organic slightly silty CLAY with rootlets

0.75 m - Firm pale grey clayey SILT with yellowish brown mottles and rootlets.

N3 - core



0.13 m - Spongy brown PEAT.

0.28 m - Soft brownish black organic silty CLAY with rootlets.

0.60 m - Soft grey gravelly silty CLAY with orangish brown mottles. Gravel is subangular medium and coarse tabular of siltstone.

N4 - core



0.30 m - Spongy brown PEAT.

0.53 m - Soft dark brownish black very organic silty CLAY.

0.75 m - Firm pale grey CLAY with yellowish brown mottles and abundant rootlets.

N5 - core

0.15 m - Soft dark brownish black very organic silty CLAY.

0.36 m - Firm dark greyish brown silty CLAY with orangish brown mottles and occasional rootlets.

0.70 m - Firm grey silty CLAY with orangish brown mottles. Some broken bedrock fragments, siltstone like.

N6 - core



0.20 m - Soft dark brown organic silty CLAY.

0.43 m - Firm yellowish grey silty CLAY with orangish brown mottles. Fe Mn present.

0.58 m - Firm dark grey silty CLAY with yellowish orange mottles.

N7 - margin



0.15 m - Spongy brown PEAT.

0.40 m - Soft brownish black organic silty CLAY with rootlets.

0.60 m - Firm pale grey CLAY with yellowish brown mottles.

Southern Array

S1 - core



0.25 m - Firm dark brownish black slightly organic slightly silty CLAY with occasional rootlets.

0.5 m - Firm light greyish grey brown silty CLAY with dark orangish mottles and occasional rootlets.

0.80 m - Stiff pale grey CLAY with yellowish orange mottles and occasional rootlets.

S2 - core



0.10 m - Soft dark grey silty CLAY with very organics.

0.15 m - Soft grey silty CLAY with dark brown mottles.

0.50 m - Firm orangish brown slightly gravelly clayey SILT. Gravel is subangular medium of sandstone.

S3 - core



0.13 m - Soft dark greyish black silty CLAY with slightly organics.

0.26 m - Soft dark greyish black silty CLAY with dark orangish brown mottles and slightly organics.

0.48 m - Soft orangish brown slightly gravelly clayey SILT. Gravel is subangular medium of sandstone.

S4 - margin



0.20 m - Soft pale grey slightly organic slightly silty CLAY with rootles.

0.50 m - Soft dark grey clayey SILT with orangish brown mottles.

0.60 m - Soft orangish brown slightly gravelly clayey SILT. Gravel is subangular medium of sandstone.

S5 - margin



0.40 m - Soft pale grey slightly organic slightly silty CLAY with rootles.

0.50 m - Soft dark grey clayey SILT with orangish brown mottles.

0.70 m - Soft orangish brown slightly gravelly clayey SILT. Gravel is subangular medium of sandstone.

S6 - margin



0.10 m - Soft dark brown organic slightly silty CLAY with rootlets.

0.350 m - Soft dark grey clayey SILT with orangish brown mottles.

0.50 m - Soft orangish brown slightly gravelly clayey SILT. Gravel is subangular medium of sandstone.

S7 - core



0.15 m - Firm dark brownish black slightly organic slightly silty CLAY with occasional rootlets.

0.45 m - Firm light greyish grey silty CLAY with dark orangish brown mottles and occasional rootlets.

0.50m - Stiff pale grey CLAY with yellowish orange mottles and occasional rootlets.

NB: original photo missing, but profile showed strong similarities to S1 – core.

S8 - mole



0.10m - Soft pale grey slightly organic slightly silty CLAY with rootlets.