

# Oughtershaw Moss, Langstrothdale, North Yorkshire

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## Landscape Survey and Palaeoenvironmental Assessment

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## EXECUTIVE SUMMARY

*This report documents the results of historic environment landscape survey and palaeoenvironmental assessment undertaken by Solstice Heritage and commissioned by the Yorkshire Peat Partnership (YPP) in advance of peat restoration works on Oughtershaw Moss, Langstrothdale, in the Yorkshire Dales National Park (YDNP). The work was monitored by the Historic Environment Team at the Yorkshire Dales National Park Authority (YDNPA) and was undertaken to ensure risk to the historic environment was assessed in advance of the commencement of works.*

*The survey area comprised 89.5 hectares of moorland on a limestone and sandstone geological base, ranging in height above sea level from c.380-490m. Initial data was obtained from the YDNPA Historic Environment Record (YDHER) detailing known heritage assets within and around the survey area, and from the YPP detailing areas of modern grips and peat exposure to be targeted during restoration work. The survey comprised walkover and GPS survey of historic environment features, with information about the feature entered directly into an attached data table. Following processing to an agreed format this digital data was to be supplied to the YPP and YDNPA, along with mapping of constraint areas abstracted from the survey data.*

*No historic environment features had been previously recorded within the survey area, and no features were identified during the course of the survey. Given this, no specific constraint areas in terms of known archaeological features have been identified for this work.*

*From the observed areas of peat exposure across the survey area it is considered that the overall palaeoenvironmental and archaeological potential of the peat is medium. The most significant peat development is on the higher ground to the southern extent of the survey area, though deep peaty soils can be found across the site, as observed in grip sections. Although no artefacts or significant ecofacts were recovered from the peat during this survey, the deposits have potential to contain palaeoenvironmental remains and some limited potential to seal archaeological artefacts and deposits within buried horizons. Caution should be exercised during the restoration work and, where possible, excavations should always aim to have a minimal impact on the peat in all parts of the survey area.*

## 1. INTRODUCTION

### 1.1 PROJECT OUTLINE

This report documents the results of historic environment landscape survey and palaeoenvironmental assessment in advance of peat restoration works at Oughtershaw Moss, Langstrothdale in the Yorkshire Dales National Park (YDNP), to be carried out under the management of the Yorkshire Peat Partnership (YPP). The peat restoration will take the form of blocking of 20<sup>th</sup>-century grips using cut peat plugs and re-grading and re-vegetation of areas of bare and hagged peat. The survey work was undertaken by Jim Brightman of Solstice Heritage in October 2015.

### 1.2 AIMS AND OBJECTIVES

The overarching aim of the project was:

- To provide a pre-intervention record of archaeological and palaeoenvironmental remains in order to inform the moorland restoration process.

Feeding into the successful delivery of the project aim were these specific objectives:

- To identify, locate, and provide a detailed record of the historic environment, and to assess the significance of historic features within the survey area
- To assess the palaeoenvironmental potential of the blanket peat within the survey area
- To indicate those archaeological and palaeoenvironmental remains which are vulnerable to damage through machine access, re-profiling or the cutting of peat plugs
- To provide an accurate, useable summary of this information in both report form (this document) and also in a digital form that can be integrated with the Yorkshire Dales National Park Historic Environment Record (YDHER).

### 1.3 PREVIOUS WORK

A search of the YDHER indicated no previously known heritage assets within the survey area and only scattered activity in the surrounding area. The known sites are typical of the signature of upland activity in the local area and include:

- A possible prehistoric enclosure with hut circles close to Oughtershaw on the north side of the beck and associated with the remains of a medieval or post-medieval walled enclosure.
- An area of peat cutting to the immediate east of the boundary wall that defines the eastern limit of the survey area, and remains of peat cutting to the south of the survey area beyond the crest of the Cocklee Fell.
- A late-19<sup>th</sup>-century sheepfold within an area of possibly earlier peat cutting and associated with an enclosure of unknown date in the valley bottom to the north-west of the survey area.
- The route of a post-medieval trackway following the line of the Oughtershaw Beck, ultimately connecting to the ancient route known as Cam High Road at the head of the valley.
- An enclosure of unknown date and a post-medieval washfold at Swarthgill Farm on the south-facing side of the valley opposite the survey area.

Figure 1 Location Plan



Figure 2 Known HER sites within 500m of the survey area



#### 1.4 CHRONOLOGY

Where chronological and archaeological periods are referred to in the text, the relevant date ranges are broadly defined in calendar years as follows:

- Palaeolithic (Old Stone Age): 1 million – 12,000 BP (Before present)
- Mesolithic (Middle Stone Age): 10000 – 4000 BC
- Neolithic (New Stone Age): 4000 – 2400 BC
- Chalcolithic/Beaker Period: 2400 – 2000 BC
- Bronze Age: 2000 – 700 BC
- Iron Age: 700 BC – AD 43
- Roman/Romano-British: AD 43 – 410
- Anglo-Saxon/Anglo-Scandinavian: AD 410 – 1066
- Medieval: AD 1066 – 1530
- Post-medieval: AD 1530 – 1750
- Industrial: AD 1750 – 1900
- Modern: AD 1900 – Present

#### 1.5 ASSUMPTIONS AND LIMITATIONS

Data and information obtained and consulted in the compilation of this report has been derived from a number of secondary sources. Where it has not been practicable to verify the accuracy of secondary information, its accuracy has been assumed in good faith. The information accessed from the YDHER represents a record of known assets and their discovery and further investigation. Such information is not complete and does not preclude the future discovery of additional assets and the amendment of information about known assets which may affect their significance and/or sensitivity to development effects. All statements and opinions arising from the works undertaken are provided in good faith and compiled according to professional standards. No responsibility can be accepted by the author/s of the report for any errors of fact or opinion resulting from data supplied by any third party, or for loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in any such report(s), howsoever such facts and opinions may have been derived.

#### 1.6 COPYRIGHT

Solstice Heritage will retain the copyright of all documentary and photographic material under the Copyright, Designs and Patent Act (1988).

## 2. METHODOLOGY AND SOURCES

### 2.1 PRE-FIELDWORK

Prior to commencement of field survey, contact was made with the Yorkshire Dales National Park Authority (YDNPA) Countryside Archaeological Advisor with the following aims:

- To obtain digital HBSMR data in a suitable format for integration into the project GIS and upload to the GPS unit for field survey
- Examine additional datasets held within the HER for the survey area
- Discussion of any specific archaeological, palaeoenvironmental or logistical issues
- Agreement of required fields for data collection to allow ease of data concordance at post-fieldwork stage
- Final confirmation of working methodology.

### 2.2 GPS SURVEY

The walkover survey involved surface identification of surviving features followed by recording as lines, polygons and points using a mapping-grade GPS. Recording also included high-resolution digital photography of surviving remains, along with notes on nature and extent of survival, dimensions, interpretation, setting and additional environmental information where relevant. As per the specification and tender, the survey followed the standards and guidance given in *Understanding the Archaeology of Landscapes - A Guide to Good Recording Practice* (Ainsworth *et al.* 2007).

Information about each heritage asset or area of palaeoenvironmental interest was recorded directly onto the GPS equipment as an attached data table, using categories and data-types that allowed easy integration into the YDHER. This also allowed for direct daily download of field data into the project GIS as UID-linked files without an extensive data entry exercise in the office. The GIS files and accompanying database recorded sites in accordance with the Thesaurus of Monument Types and core fields comprised (as a minimum) those necessary for records to be compliant with MIDAS Heritage to Level 1 (Basic).

To allow for an estimate of feature visibility, the level of peat and vegetation cover was recorded for each archaeological feature identified. The assessment of visibility is a score between 1-4 and the criteria used are outlined in the table below, though these were used as a guide and each feature was assessed on an individual basis. It should be noted that this score is not the equivalent of percentage of survival or monument condition.

Score	Criteria
1	No surface expression. Feature inferred from other sources or surrounding features.
2	Barely visible. Little surface expression and/or significant peat or plant cover.
3	Moderately visible. Some surface expression and/or only light peat or plant cover.
4	Prominently visible. Good surface expression/standing structure and or little to no peat or plant cover.

Table 1 Scoring and criteria for assessment of feature visibility.

In addition, an estimated percentage of different levels of peat and vegetation cover was made per square kilometre surveyed. For each km grid square which the survey area covered, a percentage was assigned to each of four 'scores' or criteria, as set out in the table below (closely related to the individual feature criteria above). This percentage could then be turned into an estimate of real hectareage within the project GIS, and overall estimates made about the relative visibility of monuments across the survey area. This is a subjective system and is intended as an illustrative guide only.

Score	Criteria
1	Poor visibility - plant cover over 1m in height and/or deep peat units.
2	Low visibility - plant cover 0.5-1m in height and/or small-moderate peat units.
3	Moderate visibility - plant cover less than 0.5m in height and/or very shallow peat units.
4	Good visibility - little or no plant cover and/or peat.

Table 2 Scoring and criteria for peat and vegetation cover.

The handheld DGPS unit offered real-time accuracy of at least 2-3m as specified in the project specification. The GPS also had the capacity to contain relevant additional datasets, such as historic Ordnance Survey mapping and ortho-rectified aerial photography, all of which can be used in the field to aid location and interpretation of archaeological features.

A digital photographic record was compiled to augment the survey record. This included digital photography of all historic environment and palaeoenvironmental features surveyed as well as any small finds. Digital photography was undertaken using a camera of at least 10 megapixel resolution and all image files have been archived as unedited TIFF files with embedded metadata and a full image catalogue/register.

### 2.3 PALAEOENVIRONMENTAL ASSESSMENT

Areas of exposed, hagged and bare peat were inspected and all archaeological features, small finds and also ecofacts within the peat were to be recorded and photographed, and where necessary and practicable, collected. A representative 30% of all grip sections to be blocked were examined to the same standard. Ecofacts were to be targeted to ensure that samples were suitably diagnostic, from a secure and recordable context and substantial enough to be identified and provide a radiocarbon determination.

Any large areas of tree remains preserved and exposed within peat sections were to be photographed and recorded within the GPS, as were small finds. Large lithic scatters or other small find concentrations were to be delimited within the GPS survey and a representative sample of the artefactual material was also to be recorded.

At a suitable location, an area of exposed peat face (up to 1.5m width) was cleaned with hand tools to provide a standing section through the peat horizons. These sections were drawn and photographed, and sampled where suitable, to provide a record of the peat stratigraphy, particularly in relation to the presence/absence of *grenzhorizonts*, archaeological and palaeoenvironmental features and deposits, and evidence of peat cutting or other intrusions.

### 2.4 ASSESSMENT OF VULNERABILITY

As part of the survey, features were to be assessed for their vulnerability to the moorland restoration. This is expressed as a simple 'traffic light' system relating to a buffer area around known heritage assets. Constraint areas were to be assigned either 'red', for those sites that meet one or more of a set of criteria relating to significance and threat, or 'amber', for those sites of a lower vulnerability but still of archaeological significance. Where HER sites recorded as points could not be located during the survey these would be given a 10m buffer to offset any potential error in the original recording of their position, and any lithic scatters (whether identified during this survey or previously) would be given a 50m buffer for point data or a 20m buffer for polygon data, in recognition of their specific characteristics. All other sites identified through survey were to be given either a buffer with a minimum radius of 10m depending on their particular characteristics.

Features requiring a 'red' constraint area were to be those assessed to meet one or more of the following criteria:

- A potential or known significance that could be classified as at least 'regional importance'
- Remains which are fragile and therefore particularly at risk from the proposed restoration activities
- Remains that are not immediately visually obvious and could therefore be impacted upon by the proposed restoration works unnoticed.

### 2.5 HEALTH AND SAFETY

All archaeological work was undertaken in a safe manner in compliance with the *Health and Safety at Work Act 1974*. A full risk assessment was undertaken in advance of the commencement of work, a copy of which was carried for the duration of the fieldwork. Solstice Heritage has a full Safety, Health and Environment Policy.

Solstice Heritage also has a Lone Working Policy and best practice system which was employed on this project. The policy and the records relating to its implementation on this project have been maintained and can be supplied to YPP on request.

## 2.6 SPECIALIST ASSESSMENT AND ANALYSIS

Where palaeoenvironmental sample were collected which required specialist assessment (particularly relating to species identification of wood samples), then this was to be undertaken by a suitably qualified specialist. Lists of all intended specialists were included in the initial Project Design and are not repeated here.

## 2.7 REPORTING

Following completion of fieldwork and any immediate assessment required, all information has been synthesised in a project report (this document), including as a minimum:

- Name of client
- A non-technical summary
- List of contents
- Project Outline
- Aims and Objectives of the project
- Plan(s) of the survey area(s) showing the position of all significant historic features and including the grips and hagged/bare peat areas supplied by YPP. All plans tied to OS grid at a suitable scale
- Themed constraint/risk plans in red/amber/green shades where there is an assessed vulnerability of historic features to the planned restoration work
- Descriptive gazetteer of all identified historic environment features
- Copies of any relevant documentary material
- Photographic catalogue and reproduced digital images of selected features, artefacts and ecofacts
- Catalogue of archive contents (where relevant)
- Notes and bibliography
- List and key to drawings and photographs
- List of staff involved in the survey work and dates of survey
- Assessment of significance of historic environment remains
- Palaeoenvironmental report, including an assessment of the significance of any palaeoecological remains and a characterisation of the palaeoenvironmental resource, with recommendations for any specialist analysis
- Acknowledgements

One bound paper copy and one digital copy has been supplied to the client and to the YDNPA. A further bound copy has also been provided to the client for submission to the landowner.

## 2.8 DATA TRANSFER

During the pre-fieldwork stage a final agreement was reached on the data fields to be recorded during survey. These related to existing HER data fields and MIDAS Heritage standards, and information was recorded against these headings directly onto the GPS unit during field survey. This ensured that the downloaded information is fully concordant with the YDHER with minimal post-processing. The survey processing has been undertaken in Quantum GIS.

In addition to the reporting and digital data transfer, all accompanying digital images and any drawn and written field records have been compiled into an orderly site archive for deposition with the YDHER. The archive has been compiled in accordance with the *Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives* (CIFA 2009), the *UKIC Guidelines for the Preparation of Excavation Archives for Long Term Storage* (Walker 1990), and *The Management of Research Projects in the Historic Environment* (HE 2006a) and the *MoRPHE Technical Guide 1 Digital Archiving and Data Dissemination* (HE 2006b).

It is intended that the archive will include:

- A copy of this report
- Primary field illustrations (peat sections where able to be accessioned)

- Digital versions of: all project reporting, digital photography, GIS files, survey data and illustrative material.

## 2.9 OASIS

Solstice Heritage is registered with the Online Access to Index of Archaeological Investigations (OASIS) Project and fully supports all project documentation and records being made available through the OASIS website. An OASIS record has been created for this project, and a copy of the project report will be uploaded. As per the project brief, the OASIS record will be accompanied by an index of sites in a readable format, characterising sites in terms of the current *Thesaurus of Monument Types* (Historic England 2014) and in a form compliant with MIDAS Heritage to Level 1 (FISH 2012). The OASIS record number for this project is: **solstice1-227657**.

### 3. LANDSCAPE CHARACTER

#### 3.1 SITE LOCATION

The Woodale survey area totals c. 89.5ha (centred at SD 8557 8148) and the peat restoration work is being undertaken through a Higher Level Environmental Stewardship Agreement in place with the landowner. The survey area comprises a single enclosed area of grassed peat moorland on the north-facing slopes above Nethergill, Langstrothdale. The highest point of the survey area is at its southern boundary at c. 490m (Cocklee Fell) and it descends to c. 380m close to the Oughtershaw Beck at its northern extent.

#### 3.2 GEOLOGY

The dominant geology of the survey area is the underlying Yoredale Series of interbedded limestone and sandstone members, the differential erosion of which gives the valley side its distinctive stepped appearance. The underlying bedrock results in less acidic conditions than would be found on the heather-clad Millstone Grit, though the sandstone members impede the natural permeability of the limestone and allow for the formation of extensive blanket peat, lowering the pH of the soil.

#### 3.3 LAND-USE

The survey area is a single allotment of grass-covered peat. It is currently used for grazing, though substantial portions of the downslope (northern) half of the area have been planted with trees and fenced to exclude livestock.

#### 3.4 SURVEY CONDITIONS

Unlike acid-soil heather moorland, which usually has significant variability of vegetation cover, the Oughtershaw Moss survey area has a predominant cover of relatively well grazed tussocky grass. As noted above in the methodology, an estimate of plant and peat cover affecting potential visibility of archaeological remains was undertaken for each square kilometre<sup>2</sup>. The results of this are shown in the table below:

Score	Criteria	Estimated % of survey area	Estimate area (ha)
1	Poor visibility – plant cover over 1m in height and/or deep peat units.	17.31	15.49
2	Low visibility – plant cover 0.5-1m in height and/or small-moderate peat units.	24.74	22.14
3	Moderate visibility – plant cover less than 0.5m in height and/or very shallow peat units.	37.10	33.20
4	Good visibility – little or no plant cover and/or peat.	20.85	18.66

Table 3 Estimate of feature visibility in relation to levels of peat and plant cover.

By weighting and averaging the estimated percentage, this provides a potential visibility index for the survey area as a whole of 2.61, indicating a moderate to high potential visibility of monuments. This recognises the fact that what little vegetation cover there is has been heavily grazed, but that deep peat units toward the southern limit have the potential to conceal buried deposits. The potential visibility index for this site is higher than most other recent peat surveys, and accords well with survey work undertaken at Park Fell, Ingleborough (Brightman 2015), on a similar geology to Oughtershaw Moss and also lacking the deep heather cover common to more acid geologies. A comparison between recent moorland survey visibilities is given in the table below:

Survey	Date of Survey	Dominant Geology	Potential Visibility Index
Middlesmoor, Nidderdale	Mar-Apr 2015	Millstone Grit	2.31
Fleensop Moor, Yorkshire Dales	Feb 2015	Millstone Grit	2.33
Westerdale, North York Moors	Oct 2014	Jurassic Sandstone	2.40
Woodale, Nidderdale	March 2015	Millstone Grit	2.45
Dallowgill Moor, Nidderdale	Aug-Sept 2014	Millstone Grit	2.48
Rosedale, North York Moors	Oct 2014	Jurassic Sandstone	2.53
Oughtershaw Moss, Yorkshire Dales	Oct 2015	Yoredale Series	2.61

Park Fell, Ingleborough, Yorkshire Dales	Feb 2015	Yoredale Series	3.03
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Table 4 Comparison of potential visibility indices across recent moorland survey

## 4. RESULTS

### 4.1 HISTORIC ENVIRONMENT SURVEY

No previously known historic environment features were recorded in the Historic Environment Record for the survey area, and no further features were identified during the course of the survey.

### 4.2 PALAEOENVIRONMENTAL ASSESSMENT

#### 4.2.1 GENERAL PEAT COVER

The BGS mapping (BGS 2015) shows the whole survey area is part of an extensive cover of blanket peat running west from the moss; it covers the north-facing slopes above the Oughtershaw Beck and extends west along Cam Fell, punctuated in places by deeply incised gullies draining northwards. In terms of general character, peat exposures suggest that the peat is deeper on the higher ground to the south.

Within the survey area there are few areas of bare or hagged peat, with the surface held relatively stable by an extensive grass/turf cover. The most notable areas of vertical peat exposures are along a line close to the top of the slope at the southern extent of the survey area (Fig. 3). Although the surface of the blanket peat appears relatively stable, the 20<sup>th</sup>-century grips are noticeably deeply cut across much of the survey area (Fig. 4). This will clearly result in extensive drying-out of the lower strata within the peat, and the outflow of water from the grips is demonstrably resulting in large-scale erosion at the downslope limit of the survey area (Fig. 5).



Figure 3 Principal vertical peat exposure at the summit of the hill.





Figure 4 Example of one of the 20<sup>th</sup>-century grips within the survey area showing the depth of peat exposure (scale = 1m).

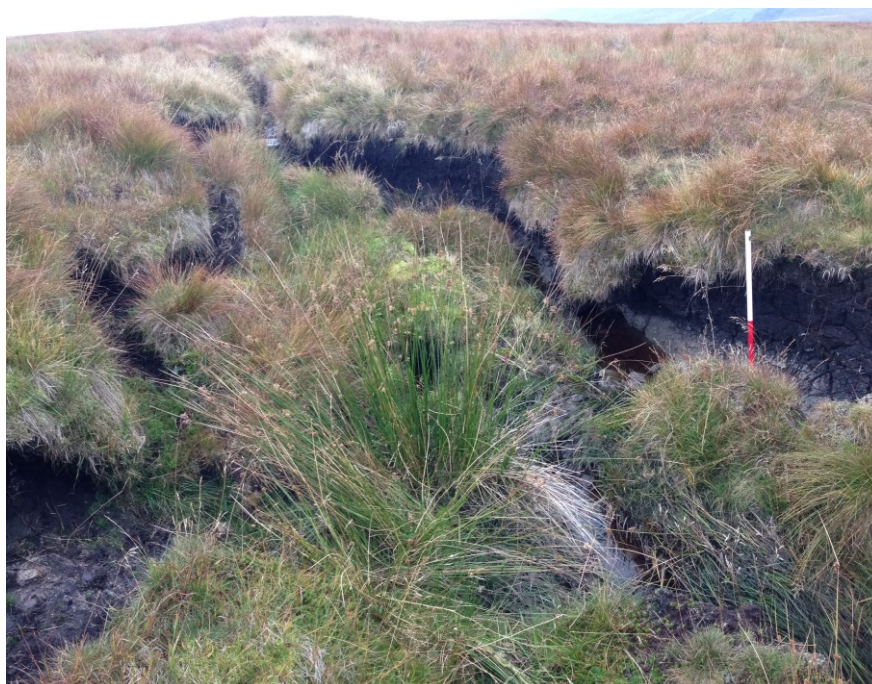


Figure 5 'Outflow' at the lower end of one of the deeply cut 20<sup>th</sup>-century grips. The depth of the grips has resulted in rapid flow of water and active drying-out and erosion of the downslope peat deposits (scale = 1m).

No artefactual material was recovered from the peat sequences within the survey area, though the surviving depth in places suggests some potential for the preservation of artefacts or sealed deposits in or beneath the peat. Equally, there were no clearly identifiable ecofacts noted that could provide a secure and stratigraphically meaningful sample.

#### 4.2.2 PEAT SECTION A (FIG. 6)

As per the specification, a section of standing stratigraphy including peat was cleaned, drawn and photographed.

Section A was recorded in the principal area of vertical peat exposure close to the summit of Cocklee Fell at the southern extent of the survey area, and at a height of 472m aOD, fixed by survey-grade GPS. The exposure at this point stands up to 1.65m in height with up to 1.52m of peat above the natural clay substrate. A relatively stable peaty soil turf horizon overlies a dark brown, organic-rich acrotelm. A more homogenous catotelm lies beneath this, though the interface between the two is graded, potentially due to the level of drying caused by the exposure of this standing section. Beneath the peat units the grey glacial till substrate is visible. A substantial band at the base of the catotelm and the upper portion of the till were noticeably drying out, causing some instability in the section.

Figure 6 Peat section A

## 5. CONCLUSIONS

### 5.1 CONSTRAINT AREAS

No historic environment features had been previously recorded within the survey area, and no features were identified during the course of the survey. Given this, no specific constraint areas in terms of known archaeological features have been identified for this work.

### 5.2 PALAEOENVIRONMENTAL RECOMMENDATIONS

From the observed areas of peat exposure across the survey area it is considered that the overall palaeoenvironmental and archaeological potential of the peat is medium. The most significant peat development is on the higher ground to the southern extent of the survey area, though deep peaty soils can be found across the site, as observed in grip sections.

The proposed peat restoration will, by necessity, impact on the peat resource, principally through re-profiling of vertical faces, cutting of plugs for grip blocking and damage associated with works vehicles tracking between areas of restoration. Whilst impact should be minimised, it is considered that minor impact in the course of the works is justified against the long-term benefits to the historic environment inherent in the preservation of a potentially significant palaeoenvironmental resource (see Gearey *et al.* 2010, 32).

Although no artefacts or significant ecofacts were recovered from the peat during this survey, the deposits have potential to contain palaeoenvironmental remains and some limited potential to seal archaeological artefacts and deposits within buried horizons. Caution should be exercised during the restoration work and, where possible, excavations should always aim to have a minimal impact on the peat in all parts of the survey area.

## 6. SOURCES

### 6.1 BIBLIOGRAPHY

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## APPENDIX 1 – PHOTOGRAPH REGISTER

No.	Feature UID	Facing	Scale	Description
1	-	NW	-	General view of the western part of the survey area including an example of the naturally undulating topography deriving from underlying solution hollows or similar bedrock features.
2	-	SE	1m	Example of one of the deeply cut grips within the survey area, here showing an exposure of at least 1m on each side of the grip.
3	-	S	1m	Standing peat exposure at the summit of the hill.
4	-	S	1m	Standing peat exposure at the summit of the hill showing the significant depth of peat with the underlying natural clay substrate.
5	-	E	-	General view looking east along the main peat exposure at the summit of Cocklee Fell.
6	-	NW	1m	Area of exposed, drying and eroding peat in the lower reaches of one of the 20 <sup>th</sup> -century grips.
7	-	SW	1m	The 'outflow' of one of the grips showing the extensive and active erosion in the lower-lying parts of the survey area.
8	-	SW	-	Sunken area of gully at the northern limit of the survey area, surrounded by newly planted trees.

Table 5 Photograph register