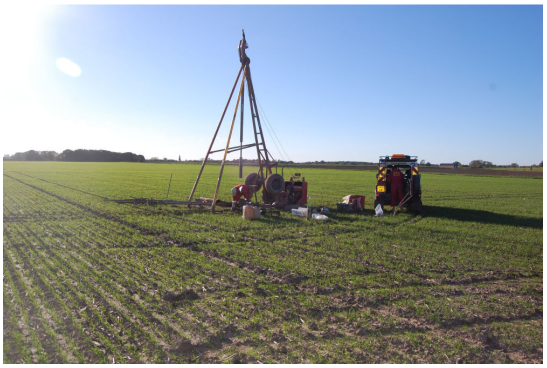
CLEEK HALL WIND FARM, SELBY, NORTH YORKSHIRE



WATCHING BRIEF REPORT

CP. NO: 1251/10

06/12/2010

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Quality Assurance

This report covers works as outlined in the brief for the above-named project as issued by the relevant authority, and as outlined in the agreed programme of works. Any deviation to the programme of works has been agreed by all parties. The works have been carried out according to the guidelines set out in the Institute for Archaeologists (IfA) Standards, Policy Statements and Codes of Conduct. The report has been prepared in keeping with the guidance set out by North Pennines Archaeology Ltd on the preparation of reports.

REVISION SCHEDULE			
	01	**02**	**03**
PREPARED BY: **POSITION:** **DATE:**	David Jackson Project Supervisor 12/11/10		
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SUMMARY

North Pennines Archaeology Ltd were commissioned by Wardell Armstrong International to undertake an archaeological watching brief during site investigations on land to the southeast of Selby, North Yorkshire (centred on NGR SE 64555 30397). The work followed an Environmental Statement, which included an archaeological desk-based assessment, produced by Wardell Armstrong International and provided to Selby District Council as part of a planning application for the erection of five 127m high wind turbines and associated infrastructure and cabling. Prior to determination of the current planning application, North Yorkshire County Council have requested that an archaeological evaluation is undertaken in order to allow an informed planning decision to be made and if necessary, to assist in identifying mitigation options as a condition of planning consent.

The archaeological desk-based assessment concluded that a programme of geophysical survey may not be an appropriate evaluation technique in the vicinity of the proposed development site given its location on the floodplain of the River Ouse and the potential for deep alluvial build-up. Therefore, North Yorkshire County Council recommended that a borehole survey should be undertaken to confirm whether alluvial levels are too deep to make geophysical survey effective.

The Archaeological Watching Brief was undertaken over ten days between the 18th October and the 29th October 2010. The watching brief monitored the excavation of ten boreholes strategically placed in the location of the proposed wind turbines and associated infrastructure. The five boreholes within the vicinity of the proposed wind turbines, and an additional borehole at the northern end of the site, were investigated to the level of the natural sandstone bedrock at a depth of 18.5 – 20.8m. The remaining four boreholes were investigated to a maximum depth of 10m.

The borehole survey revealed that the solid sandstone bedrock was overlain by a series of mixed alluvial deposits. The survey also revealed the presence of buried peat and several alluvial deposits with organic elements at a depth of between 2.2m to over 10m. However, the peat and organic alluvial deposits were restricted to the northern half of the site. Based on these results, it is possible to suggest that the southern half of the site appears to have always been an active floodplain, whilst the northern half of the site appears to have avoided continuous flood events, allowing the preservation of significant deposits of peat.

The southern half of the proposed development site could also be of potential interest as several alluvial deposits contained wood fragments at a depth of between 2m and 7m. However, it is unclear as to whether this wood was *in-situ*, or whether the material had washed in during specific flood events.

Environmental analysis demonstrated that identifiable plant remains are preserved within the peat. It can also be shown that differences in peat composition are noted at different depths, suggesting that the peat deposits preserve a record of the changing vegetation cover in the region during the phases of mire development.

The borehole survey confirmed that, given the depths of alluvial deposits at the site, a programme of geophysical survey would be inappropriate, as early features are likely to be too deeply buried to be detected by the usual geophysical methods.

ACKNOWLEDGEMENTS

North Pennines Archaeology Ltd would like to thank Wardell Armstrong International for commissioning the project. Additional thanks are due to Helen Martin-Bacon and Michael Kelly of Wardell Armstrong for their assistance throughout the work.

North Pennines Archaeology Ltd would also like to extend their thanks to Nigel Thompson and David Robson, and all the staff of J B Site Investigations at the site, for their help during this project.

The archaeological watching brief was undertaken by David Jackson. The report was written by David Jackson, who also produced the drawings. The environmental analysis was undertaken by Don O' Meara, Environmental Specialist for NPA Ltd. The project was managed and edited by Martin Railton, Project Manager for NPA Ltd.

1 INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 In October 2010, North Pennines Archaeology were invited by Wardell Armstrong International to maintain an archaeological watching brief on land to the southeast of Selby, North Yorkshire (centered on NGR SE 64555 30397; Figure 1), during site investigations as part of a planning application for the erection of five 127m high wind turbines and associated infrastructure and cabling. Prior to determination of the current planning application, North Yorkshire County Council have requested that an archaeological evaluation is undertaken in order to allow an informed planning decision to be made and if necessary, to assist in identifying mitigation options as a condition of planning consent.

1.1.2 A previous desk-based assessment produced by Wardell Armstrong International concluded that geophysical survey may not be an appropriate evaluation technique in the vicinity of the proposed development site given its location on the floodplain of the River Ouse and the potential for deep alluvial build-up. As a result, North Yorkshire County Council recommended that a borehole survey should be undertaken to confirm whether alluvial levels are too deep to make geophysical survey effective. This is in line with government advice as set out in the DoE Planning Policy Guidance on Archaeology and Planning (PPG 16) and its successor, PPS5: Planning for the Historic Environment (Policy HE 6).

1.1.3 All groundworks associated with the present site investigation were conducted under full archaeological supervision and all stages of the archaeological work were undertaken following approved statutory guidelines (IfA 2008), and were consistent with the specification provided by Wardell Armstrong International (Martin-Bacon 2010) and generally accepted best practice.

1.1.4 This report outlines the monitoring works undertaken on-site, the subsequent programme of post-fieldwork analysis, and the results of this scheme of archaeological works.

2 METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 A Written Scheme of Investigation (WSI) was produced by Wardell Armstrong International, in response to a request by North Yorkshire County Council for a programme of archaeological investigation associated with the proposed construction of a new wind farm.

2.1.2 Following acceptance of the Written Scheme of Investigation by North Yorkshire County Council, North Pennines Archaeology Ltd was commissioned by the client to undertake the work. The project design was adhered to in full, and the work was consistent with the relevant standards and procedures of the Institute for Archaeologists (IfA), and generally accepted best practice.

2.2 THE WATCHING BRIEF

2.2.1 The overall aim of the archaeological work was to inform upon the alluvial depths within the proposed site boundary, in order to establish the effectiveness of using geophysical survey on those elements of the proposed wind farm which could impact upon any buried archaeological or palaeoenvironmental remains within the vicinity.

2.2.2 The aims and principal methodology of the watching brief can be summarised as follows:

- to determine the presence or absence of buried archaeological and/or palaeoenvironmental remains within the proposed development site;
- to determine the underlying stratigraphy of the proposed development site; in particular, the presence of waterlogged peat deposits which could contain organic remains resulting from natural and/or anthropogenic processes;
- to determine potential levels of disturbance to any archaeological deposits from the proposed development;
- to establish a general deposit model for the proposed development site;
- to inform upon the nature and scope of any further evaluation work;
- to accurately tie the area watched by the archaeologist into the National Grid at an appropriate scale, with any archaeological deposits and features adequately levelled;

- to sample environmental deposits encountered as required, in line with English Heritage (2002) guidelines;
- to recover artefactual material, especially that useful of dating purposes;
- to produce a site archive in accordance with MAP2 (English Heritage 1991) and MoRPHE standards (English Heritage 2006).

2.3 THE ARCHIVE

2.3.1 A full professional archive has been compiled in accordance with the specification, and in line with current UKIC (1990) and English Heritage Guidelines (1991) and according to the Archaeological Archives Forum recommendations (Brown 2007). The archive will be deposited within The Yorkshire Museum, with copies of the report sent to the County Historic Environment Record at the North Yorkshire County Council Historic Environment Record, available upon request. The archive can be accessed under the unique project identifier **NPA10, CLE-A, CP/1251/10**.

2.3.2 North Pennines Archaeology, and the North Yorkshire County Council, support the **O**nline **A**cces**S** to the **I**ndex of Archaeological Investigation**S** (**OASIS**) project. This project aims to provide an on-line index and access to the extensive and expanding body of grey literature, created as a result of developer-funded archaeological work. As a result, details of the results of this project will be made available by North Pennines Archaeology as a part of this national project.

3 BACKGROUND

3.1 LOCATION AND GEOLOGICAL CONTEXT

3.1.1 The proposed development site is located approximately 2.7km southeast of Selby, in Hemingsborough, North Yorkshire (Figure 1). The site is comprised of large, relatively flat arable fields and is surrounded on three sides by a loop in the River Ouse. The site is bound to the northeast by Turnham Lane (Martin-Bacon 2010).

3.1.2 The underlying geology of the area is comprised of Sherwood (Bunter) Sandstone of the Permo-Triassic period (British Geological Survey 1:50000 map sheet 79, 1971). The solid geology is overlain by a series of alluvium deposits.

3.2 HISTORICAL CONTEXT

3.2.1 *Prehistoric:* there is no evidence for prehistoric activity within the vicinity of the proposed development site. However, the Humber Wetland Project suggests that the site may contain well-preserved organic deposits of Mesolithic to Bronze Age date (Martin-Bacon 2010).

3.2.2 *Roman:* there is no evidence for Romano-British activity within the vicinity of the proposed development site.

3.2.3 *Medieval:* it is probable that drainage of the marshland within the area of the development site started during the medieval period. It is also possible that some of the riverside embankments and drainage ditches are of medieval origin (Martin-Bacon 2010). The proposed development site is likely to have been laid down to pasture and arable cultivation at this time and ridge and furrow cropmarks are visible in the northern part of the site. Turnham Hall immediately north of the proposed development site was a manorial settlement during the medieval period and it is possible that the 17th century Cleek Hall farmstead also originated in the medieval period (*ibid*).

3.2.4 *Post-medieval and Modern:* three 17th century halls were located within the site boundary, all located adjacent to the loop in the River Ouse. Cleek Hall and Barlow Lane End farms were demolished in the 20th century, whilst Micklehurst Hall was demolished in the second half of the 18th century. The removal of field boundaries during the 20th century has almost eradicated the historic field pattern (*op cit*).

3.3 PREVIOUS WORK

3.3.1 In 2009, Wardell Armstrong International conducted an archaeological desk-based assessment of the proposed development site as part of an Environmental Statement for Selby District Council. The desk-based assessment concluded that further archaeological investigations might not benefit from geophysical techniques based on the site's location on the floodplain of the River Ouse, which prompted North Yorkshire County Council to request the current programme of work.

3.3.2 No further archaeological investigations are known to have taken place within the immediate vicinity of the proposed development site.

4 ARCHAEOLOGICAL WATCHING BRIEF

4.1 INTRODUCTION

4.1.1 The archaeological watching brief took place between the 18th October and the 29th October 2010, and monitored the excavation of ten boreholes across the proposed development site (Figure 2). Boreholes 1-5 were located within the vicinity of five proposed turbine bases, whilst Boreholes 6, 8 and 10 were within the proposed location of three bridges. Boreholes 7 and 9 were located within the vicinity of a temporary compound and substation respectively.

4.1.2 All ten boreholes measured approximately 0.25m in diameter, and were bored-out using a Dando 2000 Mk.2 cable percussive rig.

4.1.3 The results of the watching brief are outlined below.

4.2 RESULTS

4.2.1 ***Borehole 1:*** Borehole 1 was located toward the southeastern edge of the site boundary (Figure 2, Plate 1) and was excavated to a maximum depth of 20.5m, revealing the natural sandstone bedrock **(101)**, which measured over 2.1m in depth. The natural bedrock was sealed by a *c*.10.5m deposit of soft grey sand **(120)**, which was further sealed by a 1.1m deposit of soft grey clayey silt **(119)**. The clayey silt **(119)** was below a 1.9m deposit of coarse grey sand **(118)** and a 2.7m deposit of firm grey clayey silt **(117)**. This was further below a 1.8m deposit of firm brown/grey sandy clay **(116)**, which was further sealed by a *c*.0.3m deposit of mid-brown silty clay ploughsoil **(100)**.

4.2.2 ***Borehole 2:*** Borehole 2 was located within the centre of the proposed development site, approximately 500m northwest of Borehole 1 (Figure 2). Borehole 2 was excavated to a maximum depth of 19.5m, revealing natural sandstone bedrock **(101)**. The sandstone bedrock was sealed by a 1.6m deposit of compact reddish brown weathered rock and sand **(108)**, which was further sealed by a 3.15m deposit of soft reddish brown sand **(115)**. The reddish brown sand **(115)** was below a 4.55m deposit of reddish brown laminated clay **(114)**, which was further below a 1.4m deposit of grey/brown organic clayey silt **(113)**. This was further below a 2.8m deposit of soft reddish grey silty sand **(112)** and a 2.7m deposit of soft blue/grey sandy clay **(111)**. The blue/grey sandy clay **(111)** was sealed by a 1.9m deposit of grey/dark brown clayey silt mixed with peat **(110)** (Plate 2), 1.1m of brown/grey sandy clay and *c*.0.3m of mid-brown silty clay ploughsoil **(100)**.

4.2.3 ***Borehole 3:*** Borehole 3 was located toward the southwest corner of the proposed development site, approximately 500m southwest of Borehole 2 (Figure 2). Borehole 3 was excavated to a maximum depth of 18.5m revealing natural sandstone bedrock **(101)** below a 0.7m deposit of compact reddish brown weathered rock and sand **(108)**. The weathered rock/sand **(108)** was sealed by a 2.8m deposit of soft grey sand **(126)**, which was further sealed by a 6.2m deposit soft brown/grey clayey silt **(125)**. This was further below a 3.8m deposit of coarse grey sand **(124)** and 2.4m of soft blue/grey sandy clay **(123)**. The blue/grey sandy clay **(123)** was sealed by 0.8m of firm grey clayey silt **(122)**, 1.4m of firm brown/grey sandy clay **(121)** and *c*.0.4m of mid-brown silty clay ploughsoil **(100)**.

4.2.4 ***Borehole 4:*** Borehole 4 was located approximately 470m northeast of Borehole 3 (Figure 2) and was excavated to a maximum depth of 20.5m, revealing natural sandstone bedrock **(101)** below a 3.3m deposit of compact reddish brown weathered rock and sand **(108)**. The weathered rock/sand **(108)** was sealed by 5m of soft reddish brown laminated clay **(133)** and a 3.7m deposit of soft grey sand **(132)**. This was below a 0.9m deposit of soft brown/grey clayey silt **(131)**, which was further below a 2.8m deposit of coarse grey sand **(130)**. The coarse sand **(130)** was sealed by 1.1m of soft blue/grey sandy clay **(129)** and 1.5m of firm grey/brown clayey silt **(128)**, which was further below a 1.75m deposit of firm brown/grey sandy clay **(127)** and *c*.0.4m of mid-brown silty clay ploughsoil **(100)**.

4.2.5 ***Borehole 5:*** Borehole 5 was located within the south central area of the proposed development site, between Borehole 1 and Borehole 3 (Figure 2). Borehole 5 was excavated to a maximum depth of 20m, revealing natural sandstone bedrock **(101)** below a 1.8m deposit of compact reddish brown weathered rock and sand **(108)**. The weathered rock/sand **(108)** was sealed by a 15.6m deposit of soft/moderate grey/brown sandy silt **(136)**. However, the grey/brown sandy silt may have actually represented several similar deposits which were not noted under the working conditions. The sandy silt **(136)** was sealed by a 0.4m deposit of firm grey clayey silt **(135)**. This was further below a firm brown/grey/yellow sandy clay **(134)**, which contained wood fragments at a depth of *c*.2m, and *c*.0.3m of mid-brown silty clay ploughsoil **(100)**.

4.2.6 ***Borehole 6:*** Borehole 6 was located toward the eastern edge of the proposed development site, approximately 325m northeast of Borehole 1 and 340m south-southeast of Borehole 2 (Figure 2). Borehole 6 was excavated to a maximum depth of 10m, revealing a deposit of dark brown buried peat **(138)**, which measured over 7.2m in depth. The buried peat was sealed by a 0.6m deposit of moderately compacted grey/brown organic silty clay **(137)**.

This was further sealed by 1.8m of firm brown/grey sandy clay **(139)** and *c*.0.4m of mid-brown silty clay ploughsoil **(100)**.

4.2.7 ***Borehole 7:*** Borehole 7 was located approximately 155m northeast of Borehole 4 (Figure 2) and was excavated to a maximum depth of 10m, revealing a deposit of soft grey clayey silt and sand **(148)**, which measured over 7m in depth. However, like the sandy silt deposit **(136)** noted in Borehole 5, the grey clayey silt and sand **(148)** possibly represented several discreet deposits which were not noted. The clayey silt and sand **(148)** was sealed by a 2.65m deposit of firm brown/grey/yellow sandy clay **(134)** and *c*.0.35m of mid-brown silty clay ploughsoil **(100)**.

4.2.8 ***Borehole 8:*** Borehole 8 was located toward the northern end of the proposed development site (Figure 2) and was excavated to a maximum depth of 20.8m, revealing the natural sandstone bedrock **(101)**, which measured over 1.9m in depth. The natural bedrock was sealed by a 3.1m deposit of compact reddish brown weathered rock and sand **(108)** and a 6.2m deposit of soft reddish brown laminated clay **(107)**. The laminated clay **(107)** was further below a 1.5m deposit of soft reddish grey silty sand **(106)** and 1.3m of soft blue/grey sandy clay **(105)**. The sandy clay **(105)** was below a 4.7m deposit of dark brown buried peat **(104)**, which was further sealed by a 0.5m deposit of firm grey clayey silt **(103)**. The grey clayey silt **(103)** was below 1.25m of firm brown/grey sandy clay **(102)** and *c*.0.35m of mid-brown silty clay ploughsoil **(100)** (Plate 3).

4.2.9 ***Borehole 9:*** Borehole 9 was located within the northern area of the proposed development site, approximately 300m southwest of Borehole 8 (Figure 2), and was excavated to a maximum depth of 10m, revealing a deposit of dark brown buried peat **(146)**, which measured over 5.1m in depth. The buried peat **(146)** was sealed by a 1.8m deposit of soft grey/dark brown clayey silt mixed with peat **(145)**, which was further below a 0.8m deposit of moderately compacted brown/grey laminated clay **(144)**. This was below 1.9m of firm brown/grey sandy clay **(143)** and *c*.0.4m of mid-brown silty clay ploughsoil **(100)**.

4.2.10 ***Borehole 10:*** Borehole 10 was located toward the southern end of the proposed development site, approximately 170m northwest of Borehole 5 (Figure 2, Plate 4). Borehole 10 was excavated to a maximum depth of 10m, revealing a deposit of soft grey sand **(142)**, which measured over 4.5m in depth and contained wood fragments, noted at a depth of *c*.7m. The grey sand **(142)** was sealed by a 2.4m deposit of moderately compacted grey/brown clayey silt **(141)**. This was further below 2.7m of firm brown/grey sandy clay **(140)** and *c*.0.4m of mid-brown silty clay ploughsoil **(100)**.

Plate 1: Borehole 1 during excavation

Plate 2: Core sample (110) <3>

Plate 3: Borehole 8 after excavation

Plate 4: Borehole 10 during excavation

5 ENVIRONMENTAL ANALYSES

5.1 INTRODUCTION

5.1.1 During the excavation 14 contexts were considered for environmental sampling. Each sample was recovered from deposits recovered during drilling of the boreholes. Samples **(146) <14>** and **(104) <1>** were examined in detail in order to assess the composition of the peat, particularly the nature of the macroplant material which may be preserved within its matrix. The material was identified by disaggregating it in water to dissolve the inorganic component into a solution then sieving the material through a 250-micron sieve. The recovered remains were then assessed for content by examining under a low power microscope. The remaining 12 samples were sterile.

5.1.2 A rapid scan at this stage will allow further recommendations to be made as to the potential for further study by entomologists or palaeobotanists, with a view to retrieving information from the samples which may pertain to human activity and occupation in the area. Favourable preservation conditions can lead to the retrieval of organic remains that may produce a valuable suite of information in respect of the depositional environment of the material, which may include anthropogenic activity, climate and elements of the economy. Nomenclature follows Stace (2010), with identification undertaken with Stace (2010) and Cappers et al. (2006).

5.2 GEOLOGICAL BACKGROUND

5.2.1 The area covered by the borehole survey is located on an interesting transitional point between the terrestrial and marine deposits of the Yorkshire region. This region includes the confluence of a number of rivers that flow to form the Humber Estuary further east. The site is located within the Humberhead Levels, a broad area of flat landscape characterised by deposits laid down during the early Holocene, during a period of glacial melt at the end of the last Ice Age. The site is located on the bed of the former glacial lake, Lake Humber, formed c.18,000 BP (before present) by large volumes of trapped melt water being impounded behind the Humber Gap by an ice front which had not melted by that period. Infilling of the lakebed by silts and clays from glacial outwash, which caused the lake to disappear by c.11,400 BP, form the current drift geology located over the bedrock of this site. These deposits formed in a waterlogged condition and this impeded drainage leading to the formation of peat mires, in a similar process to that seen in the great areas of Fenland in Cambridgeshire and East

Anglia. After the establishment of a new drainage pattern over the deposits of the former Lake Humber in the early Holocene the low lying character of the landscape allowed the deposition of alluvial silts during periods of flooding, a process which continues to this day. This has created the current surface deposits of loamy and clay soils characteristic of coastal flats which are deposited within the meander of the Ouse where the current scheme of works took place. To the northeast the site is bordered by naturally wet very acid sandy and loamy soils and the to southwest the site is bordered by slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils. The soils of coastal flats cover a relatively thin corridor over this site but expand to cover a much broader area in the southeast towards Goole (Jarvis *et al* 1984).

5.3 ASSESSMENT RESULTS

5.3.1 Sample **(104) <1>** was observed to have much fewer of the woody fragments seen in sample **(146) <14>**. Seeds of a *Carex* species, probably *Carex pendula* were identified. As this plant is suited to heavy, rich clay soils and damp woodlands it would have been suited to growing on the deposits observed upon drilling. A fragment of hazelnut shell was also recovered, suggesting that hazel may have formed at least some of the cover under which the *Carex* grew.

5.3.2 Sample **(146) <14>**. Upon physical examination it was noticed that the peat has a high silt/clay content as well as numerous small (>3mm thick) woody stems, possibly of heathers. Samples of the material were disaggregated and examined under a microscope for further examination. Stems and nodes of reeds (possibly *Phragmites*) were noted within the sample as well as a seed of a *Rubus* species (possibly *Rubus chamaemorus*, or cloud-berry). Cloud-berries are suited to wet and peaty marshland and thus can be expected in deposits such as these.

5.3.3 Samples **(138) <11>**, **(137) <10>**, **(145) <13>** and **(110)** <**3**> were also examined for macrobotanical evidence. All contained low amounts of lignified and non-lignified plant fragments, though no seeds were identified. The similarity between the macroplant materials recovered from all four samples suggests a similar mechanism of transport and deposition for the organic component of these sediments. It is suggested here that this material originated from flood wash deposits which built up over the peat during the flooding of the River Ouse. This material may have been carried some distance before it was deposited on the flood plain and thus may not directly reflect the local vegetation cover of the immediate site area.

5.4 DISCUSSION

5.4.1 The two samples analysed seem to represent two different phases of the mire development. Sample **(146) <14>** was taken from core number 9 at a depth of 5.1 metres and was the deeper of the two cores, sample **(104) <1>** coming from core number 8 from a depth of 4.7 metres. This tentatively suggests that sample **(146) <14>** represents the phase of fen development where the open body of water was being encroached by the reed swamp. Later as the mires became enclosed by the build-up of dead organic matter plants such as the *Carex* and the hazel may have been able to colonise areas of the mire which were at least partially about the permanent water table.

5.4.2 An accurate interpretation of the deposits is hindered by the disturbed nature of the samples taken, however based on previous work in the region (Van de Noort and Ellis 1997) it is clear that the deposits examined here form part of a sequence of deposits which can be observed over a wide area of the Humberhead region. The absence of peat within the bend of the meander, where most of the samples were taken, may be due to previous river downcutting. The very low topographic relief in this region and meandering nature of the Ouse at this point suggest that the river course as now observed has been liable to shift since the development of the riparian drainage system after the silting up of the ancient Lake Humber.

5.5 DATING

5.5.1 It was not thought necessary to carry out any scientific dating methods for the contexts recovered from this site at this time as general chronologies have been established for the region by previous research (Van de Noort and Ellis 1997).

6 CONCLUSIONS

6.1 CONCLUSIONS

6.1.1 A total of ten boreholes were monitored during the watching brief at Cleek Hall wind farm, Selby, North Yorkshire.

6.1.2 The borehole survey revealed the presence of solid sandstone bedrock at a depth of approximately 18m overlain by a series of mixed alluvial deposits. The survey also revealed the presence of buried peat and several alluvial deposits with organic elements at a depth of between 2.2m to over 10m. However, the peat and organic alluvial deposits are restricted to the northern half of the site, being present in substantial quantities within Boreholes 6, 8 and 9, and only sparsely represented as mixed deposits within Borehole 2. Based on these results, it is possible to draw a provisional line which extends northwest to southeast, effectively separating the proposed development site into two distinct areas; a southern area which appears to have always been an active floodplain, and a northern area which at some point has avoided continuous flood events, allowing the preservation of significant deposits of peat.

6.1.3 The southern half of the proposed development site could also be of potential interest as several alluvial deposits contained wood fragments at a depth of between 2m and 7m. However, it is unclear as to whether this wood was *in-situ*, or whether the material had washed in during specific flood events.

6.1.4 The borehole survey also confirmed that, given the depths of alluvial deposits at the site, a programme of geophysical survey would be inappropriate, as early features of archaeological interest are likely to be too deeply buried to be detected by the usual geophysical methods.

6.1.5 Environmental analysis demonstrated that identifiable plant remains are preserved within the peat. It can also be shown that differences in peat composition are noted at different depths, suggesting that the peat deposits preserve a record of the changing vegetation cover in the region during the phases of mire development.

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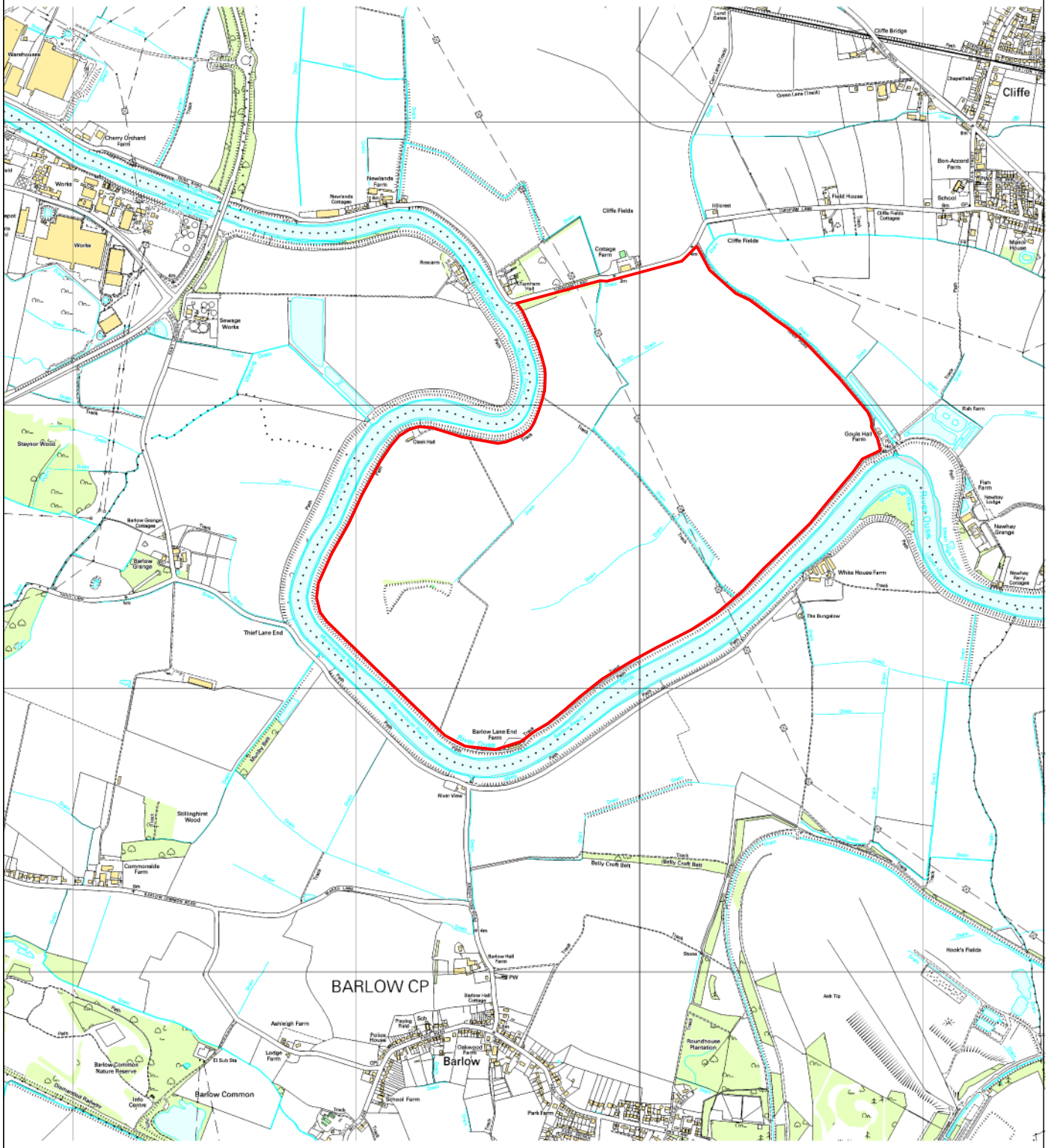
APPENDIX 1: CONTEXT TABLE

Context Number	Context Type	Borehole Number	Description
100	Deposit	All	Topsoil
101	Geological	1-5, 8	Sandstone Bedrock
102	Deposit	8	Sandy Clay
103	Deposit	8	Clayey Silt
104	Deposit	8	Buried Peat
105	Deposit	8	Sandy Clay
106	Deposit	8	Silty Sand
107	Deposit	8	Laminated Clay
108	Deposit	2-5, 8	Weathered Rock/Sand
109	Deposit	2	Sandy Clay
110	Deposit	2	Clayey Silt Mixed with Peat
111	Deposit	2	Sandy Clay
112	Deposit	2	Silty Sand
113	Deposit	2	Organic Clayey Silt
114	Deposit	2	Laminated Clay
115	Deposit	2	Sand
116	Deposit	1	Sandy Clay
117	Deposit	1	Clayey Silt
118	Deposit	1	Coarse Sand
119	Deposit	1	Clayey Silt
120	Deposit	1	Sand
121	Deposit	3	Sandy Clay
122	Deposit	3	Clayey Silt
123	Deposit	3	Sandy Clay
124	Deposit	3	Coarse Sand
125	Deposit	3	Clayey Silt
126	Deposit	3	Sand
127	Deposit	4	Sandy Clay
128	Deposit	4	Clayey Silt
129	Deposit	4	Sandy Clay
130	Deposit	4	Coarse Sand
131	Deposit	4	Clayey Silt
132	Deposit	4	Sand
133	Deposit	4	Laminated Clay
134	Deposit	5	Sandy Clay
135	Deposit	5	Clayey Silt
136	Deposit	5	Sandy Silt
137	Deposit	6	Organic Silty Clay
138	Deposit	6	Buried Peat
139	Deposit	6	Sandy Clay
140	Deposit	10	Sandy Clay
141	Deposit	10	Clayey Silt
142	Deposit	10	Clayey Sand
143	Deposit	9	Sandy Clay
144	Deposit	9	Laminated Clay
145	Deposit	9	Clayey Silt
146	Deposit	9	Buried Peat
147	Deposit	7	Sandy Clay
148	Deposit	7	Clayey Silt

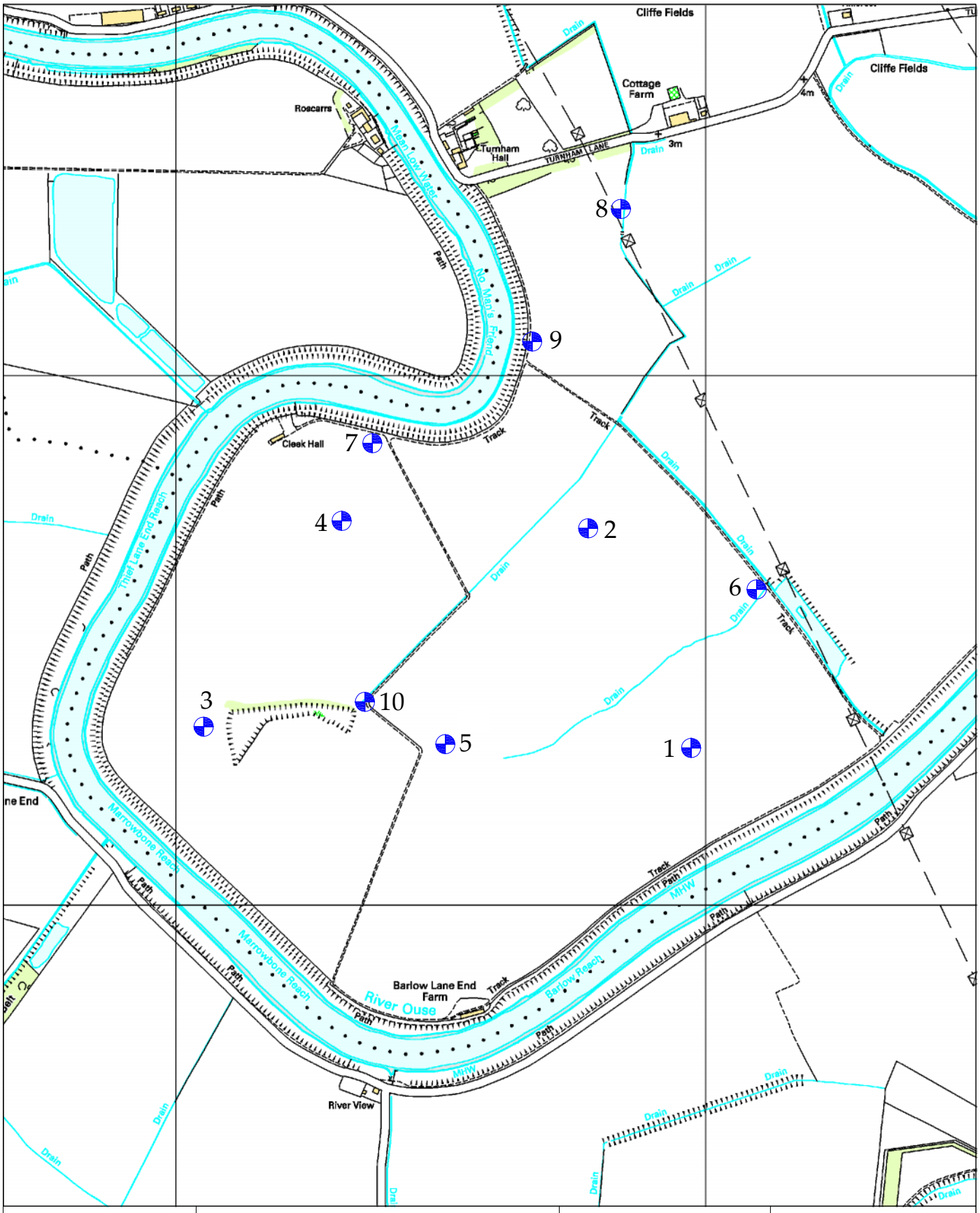
Table 1: List of Contexts issued during Watching Brief

APPENDIX 2: FIGURES



North Pennines Archaeology Ltd 2010	PROJECT: Cleek Hall Wind Farm, Selby SCALE: 1:20,000 at A4 REPORT No: CP1251 CLIENT Wardell Armstrong International DRAWN BY: DJ DATE: November 2010 FIGURE: 1	KEY: site boundary

Figure 1 : Site location



PROJECT:	Cleek Hall Wind Farm, Selby
SCALE:	1:10,000 at A4
REPORT No:	CP1251
CLIENT	Wardell Armstrong International
DRAWN BY:	DJ
DATE:	November 2010
FIGURE:	2

KEY:

borehole location

North Pennines Archaeology Ltd 2010

Figure 2 : Borehole location plan