



STANAH EMBANKMENT SITE INVESTIGATION, THORNTON, LANCASHIRE

Watching Brief



Oxford Archaeology North

May 2006

The Environment Agency

Issue No: 2006-7/525

OA North Job No: L9681

NGR: SD 35284 43261 - SD 35468 43120

CONTENTS

SUMMARY	2
ACKNOWLEDGEMENTS.....	3
1. INTRODUCTION.....	4
1.1 Circumstances of the Project	4
1.2 Site Location and Geology	4
1.3 Historical and Archaeological Background.....	5
2. METHODOLOGY.....	7
2.1 Project Design.....	7
2.2 Archaeological Watching Brief	7
2.3 Borehole Monitoring	7
2.4 Archive	7
3. WATCHING BRIEF RESULTS.....	8
3.1 Introduction	8
3.2 Geotechnical Pits	8
3.3 Results of the Borehole monitoring.....	8
4. DISCUSSION.....	10
4.1 Conclusions	10
4.2 Impact	10
5. BIBLIOGRAPHY	11
6. ILLUSTRATIONS	12
6.1 Figures	12
6.2 Plates.....	12
APPENDIX 1: PROJECT BRIEF	13
APPENDIX 2: PROJECT DESIGN.....	17
APPENDIX 3: CONTEXT SUMMARY	23

SUMMARY

During the development of a Project Appraisal Report on the feasibility of improvement works on the existing flood defence embankment at Stanah, near Thornton, Lancashire (NGR SD 35284 43261 - SD 35468 43120), the Environment Agency (EA) Archaeologist identified the potential presence of peat deposits within the development area and, accordingly, recommended that an archaeological watching brief should be conducted during groundworks at the site. Following submission of a project design in response to a verbal communication with Lancashire County Archaeology Service (LCAS) and, in accordance with the EA Consultants Brief for the work, Oxford Archaeology North (OA North) were commissioned by EA to undertake the work. The monitored groundworks, undertaken on behalf of EA by Allied Excavation Geotechnical, comprised the machine-excavation of two inspection pits and the sinking of three shell and auger boreholes at regular intervals behind the 250m stretch of weakened embankment. In addition, two inspection pits, two 15m-20m deep shell and auger boreholes, and two dynamic probe boreholes were dug through the top of the embankment, but, they were not monitored owing to their proximity to those investigations behind the embankment. .

No archaeological deposits, features or finds were observed during the monitoring of the test pits and boreholes. Furthermore, none of the boreholes encountered evidence for buried peat horizons within the proposed development area.

ACKNOWLEDGEMENTS

Oxford Archaeology North would like to express thanks to Jonathan Farrar of the Environment Agency for commissioning the project and the staff of Allied Geotechnical for their support on site. OA North is also grateful to Phil Catherall and Jo Green of the Environment Agency for their assistance and information during the project.

The watching brief and report writing was undertaken by Andy Bates, OA North Archaeological Project Officer, who monitored the trial pits, and by Sandra Bonsall, OA North Palaeoenvironmentalist, who monitored the boreholes. The illustrations were compiled by Marie Rowland and the project was managed by Stephen Rowland, who also edited the report, together with Alan Lupton.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 As part of the development of a Project Appraisal Report on the feasibility of improvement works on the existing flood embankment at Stanah, near Thornton, Lancashire (NGR SD 35284 43261 - SD 35468 43120), the Environment Agency (EA) are undertaking a programme of site investigation in the area of the embankment. The EA Archaeologist identified the potential presence of peat deposits within the development area and accordingly, EA issued a brief (*Appendix 1*) for a programme of archaeological monitoring to be conducted during groundworks on the site. In response to the EA brief and in accordance with a verbal communication with Lancashire County Archaeology Service (LCAS), OA North compiled a project design (*Appendix 2*) for the archaeological works. These were to comprise monitoring of the excavation of two machine-excavated trial pits and the sinking of three shell and auger boreholes on the landward side of the embankment and of the drilling of two dynamic probes and two shell and auger boreholes through the embankment itself. There was no requirement to monitor two trial pits excavated by hand through the embankment, as these would have contacted made ground only. Following communication with EA prior to the commencement of the project, it was decided that there was a requirement for the monitoring only of the three boreholes and two trial pits that lay behind the embankment. The watching brief was conducted between 22nd and 24th March 2006 and this report sets out the results, followed by a brief discussion.

1.2 SITE LOCATION AND GEOLOGY

1.2.1 **Location:** the Stanah Embankment is located on the western bank of the river Wyre, c 5km upstream of Fleetwood Docks and within the Fylde area of western Lancashire. The area is currently used as a caravan park, with salt marsh associated with the river Wyre located to the east of the flood defence embankment. The embankment is currently used as a footpath and separates the estuary mudflats of the Wyre Site of Special Scientific Interest (SSSI), to the north, from the urban area of Stanah, including a caravan park and industrial estates, to the south.

1.2.2 **Physical Background and Topography:** although Permo-Triassic red mudstones, siltstones and sandstones ('New Red Sandstone') constitute much of the floor of the Lancashire lowlands, the solid rock geology rarely emerges from beneath its thick covering of glacial and post-glacial deposits, which is dominated by clay soils (Countryside Commission 1998, 87). Prior to the construction of the flood defence embankment, the site currently under investigation would have acted as part of the flood plains of the river Wyre. Indeed, before widespread reclamation of land during the last two centuries, the proposed development area was predominantly marshland formed by rising sea levels after the last glaciation. Retreating ice-sheets created many poorly-

drained hollows which soon became filled with post-glacial peat, giving rise to the mosses and meres which dominated the area until only recently (*op cit*, 88). Although many of the surface peat resources of the Central Fylde have been exhausted through extraction or lost to drainage schemes, those north of the Wyre, exemplified by the mosses around Pilling and Stalmine, are better preserved and are likely to have originated in, or shortly before, the Neolithic period. However, deposits of peat are often found at depth across the Fylde and, many such deposits are post-glacial in date (Elizabeth Huckerby *pers comm*).

1.3 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

- 1.3.1 **Introduction:** although scatters of Late Neolithic and Early Bronze Age flint artefacts are known from the Central Fylde, particularly on and around drier, raised areas, as are limited traces of Roman activity, and signs of medieval cultivation, archaeological evidence from this western part of the Fylde is sparse (Middleton *et al* 1995). This may in part relate to the fact that the local area is somewhat marginal.
- 1.3.2 **Prehistoric:** it is possible that archaeological remains in the area, particularly those of prehistoric date, have been buried beneath deep deposits of alluvium and marine sediments relating to rising sea levels. The potential for such deeply-stratified remains is indicated by Mesolithic finds from marine clays and silts beneath the local peat deposits, including a possible dug-out canoe from Well House Farm, Stalmine (Middleton *et al* 1995). Other post-glacial finds include the famous Poulton le Fylde elk skeleton, ‘Horace’, found with several barbed points embedded in its bones, indicating that the animal had escaped from hunters several weeks before finally dying in a marshy pool (*ibid*). Other finds within the general locality include Neolithic polished stone axes from Pilling and Stalmine Mosses, the Kate’s Pad Late Neolithic/Early Bronze Age wooden trackway, on Pilling Moss and several other, similar, examples on Stalmine Moss. There are also moderately large numbers of Bronze Age artefacts, often found collectively as hoards and even human remains, such as the Pilling Head (*ibid*).
- 1.3.3 **Roman:** the evidence for Roman occupation in and around the parish of Thornton is somewhat limited, but does seem to extend to a few other areas of the Fylde and Wyre estuary. A road of typically Roman design was uncovered when Fleetwood’s sea wall was constructed; indeed, Fleetwood is one of several conjectural candidates for the historically-referenced *Portus Setantiorum* (*ibid*). At Stalmine, a Roman wine strainer was reportedly found in 1708, and other chance finds have been made in the Over Wyre Mosslands (*ibid*).
- 1.3.4 **Medieval:** medieval evidence for settlement in the area is somewhat more significant. Thornton is referred to as “Torentum” in the Domesday book (Williamson and Martin (eds) 1992) and means “thorn tree enclosure” (Mills 1998). Poulton le Fylde also has medieval origins, most clearly demonstrated by the stocks and market cross within the town’s square (Wyre Borough

Council 2006a) and the parish church of St Chad is first mentioned in 1094, where Roger de Poitou granted the church one carucate of land (*ibid*)

1.3.5 **Post-medieval:** the industrial period heralded rapid development and population growth across much of the North West, exemplified in Thornton by the still-working Marsh Mill, built in 1794 as one of the largest mills in Europe and, later on, by The United Company's ammonia soda works, established in the 1890s (Wyre Borough Council 2006b). Demand for domestic fuel and agricultural expansion increased the scale of peat cutting, but more significantly, of drainage schemes to improve the quality of agricultural land, leading to a significant decrease in the mosslands, a feature that continues to the present day. On the back of such changes, Poulton le Fylde became an important farming centre in the eighteenth and nineteenth centuries, with a significant number of local craftsmen (Wyre Borough Council 2006a). Nineteenth century Fleetwood was a significant seaport, equipped with a lighthouse built in 1840 (Wyre Borough Council 2006c), and, in common with many similarly-placed towns such as Blackpool and St Anne's, became a popular holiday resort, complete with an Edwardian pier, erected in 1906 (*ibid*).

2. METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 The fieldwork was conducted in adherence with the project design compiled by OA North (*Appendix 2*) and with the EA brief (*Appendix 1*). The work was consistent with the relevant standards and procedures of the Institute of Field Archaeologists, and generally accepted best practice.

2.2 ARCHAEOLOGICAL WATCHING BRIEF

2.2.1 The two trial pits were excavated using a back-hoe mechanical excavator with a toothless ditching bucket. A complete record of all features and horizons was made using OA North *pro-forma* recording sheets, comprising a full description and preliminary classification of all horizons revealed. A photographic record in colour slide and monochrome formats was also compiled.

2.3 BOREHOLE MONITORING

2.3.1 Samples from each of the three shell and auger boreholes were recorded in 1m sections, with each sample examined by the OA North environmental archaeologist in the field. Observations of the sediment type, texture and potential for preservation of paleoenvironmental remains were noted.

2.4 ARCHIVE

2.4.1 A full professional archive has been compiled in accordance with the project design (*Appendix 2*) and with current IFA and English Heritage guidelines (English Heritage 1991). The archive will be deposited in the Lancashire Record Office and an index to the archive, along with a copy of this report, will be submitted to the Lancashire SMR.

3. WATCHING BRIEF RESULTS

3.1 INTRODUCTION

3.1.1 The excavation of two trial pits (TP1 and TP2) and drilling of two boreholes (BH3, BH4 and BH5), all located on the landward side of the embankment, was monitored during the course of the watching brief. No monitoring was required for BH1 and BH2 and dynamic probes WS1 to WS5, which were all excavated/drilled through the made ground of the embankment. A summary of the deposits encountered during the watching brief is presented below and detailed descriptions of contexts recorded during the watching brief appear in *Appendix 3*.

3.2 TRIAL PITS

3.2.1 **Trial Pit 1:** was excavated on an east/west orientation measuring 3m in length, 0.9m wide and *c* 2.5m deep, with the eastern end dug through the embankment for a distance of 1.3m. Topsoil **1** comprised a dark grey fine sandy clay silt and ranged from 0.5m deep at the western end of the trench to 1m deep at the eastern end. Below the topsoil horizon, two fluvial deposits, **2**, 0.4m thick, and **3**, extending below the limit of excavation, were located. No deposits of archaeological significance were present.

3.2.2 **Trial Pit 2:** was excavated on an east/west orientation and measured 3.2m in length, 1m in width and 3m deep. The eastern end of the test pit encroached onto the embankment by 1.2m. Upon the bank, topsoil **1** measured 0.4m thick and overlay the make-up of the bank, **4**, which comprised a mix of topsoil and fluvial deposit **2**.

3.2.3 Within the level area to the rear of the embankment, the first 0.6m of stratigraphy consisted of a gravel trackway and adjacent a drainage ditch, both of which ran parallel to the embankment and were associated with the nearby caravan park. Directly below this trackway, ditch, and the bank deposit **4**, was fluvial deposit **2**, measuring 0.4m thick and fluvial deposit **3**, measuring at least 2m thick and extending beyond the limit of excavation. No deposits of archaeological significance were present.

3.3 RESULTS OF THE BOREHOLE MONITORING

3.3.1 All of the extracted sediments observed were of alluvial and estuarine/marine origin, and are summarised in Table 1. BH3, at the north-west end of the site, produced very firm sediments and corresponded to an area of high ground on the river side of the embankment which extends almost to the river channel. The sediments from BH4 and BH5, towards the south-eastern end of the embankment, became increasingly wetter and this potentially relates to the drainage of the former freshwater or intertidal Hillyaid Pool in the area to the rear of the embankment. Drainage of this feature passes into an indented man-made channel running adjacent to the embankment before passing through its

south-eastern end and into a deep indented channel through the mud flats to the river. No deposits of archaeological or palaeoenvironmental significance were present.

Core no	Depth 1 (m)	Depth 2 (m)	Description
BH03	0	0.8	Topsoil and clay back-fill
BH03	0.8	1.9	Soft brown clayey silt
BH03	1.9	4.7	Soft grey silt
BH03	4.7	5.5	Silty clay
BH03	5.5	7	Sandy clay
BH03	7	8	Silty sand with small stones
BH03	8	9	Firm brown clay with dark grey silty patches and large stones
BH03	9	10.2	Firm brown clay with blue/grey clay patches
BH03	10.2	10.7	Silty blue/grey clay
BH03	10.7	11.5	Silty blue/grey clay - Hit obstruction
BH04	0	1.5	Gravel roadway with concrete waste hardcore underneath
BH04	1.5	4	Soft grey silt
BH04	4	4.7	Grey silt increasingly stonier-poorly sorted stones
BH04	4.7	7	Firm red clay
BH04	7	7.5	Firm red clay with large stones- obstruction
BH04	7.7	8	Firm red clay increasingly sandy
BH04	8	9.5	Red sand
BH04	9.5	13.5	Very wet red sand with gravel
BH04	13.5	15	Red clay
BH05	0	0.4	Topsoil
BH05	0.4	1.5	Grey clay
BH05	1.5	4	Grey silt
BH05	4	5	Firm grey clay
BH05	5	5.5	Firm grey/brown clay
BH05	5.5	7.5	Firm red clay
BH05	7.5	8.5	Red sand
BH05	8.5	13	Wet red sand becoming increasingly stony with depth
BH05	13	15	Red sand small amount of gravel

Table 1: Summary of sediment descriptions from monitored boreholes BH3-BH5

4. DISCUSSION

4.1 CONCLUSIONS

- 4.1.1 Peat deposits or evidence of old land surfaces were not encountered within the 15m depth of stratigraphy examined during the site investigation. Instead, the observed deposits, likely to have filled the natural depression of the Hillyaid Pool (the area now behind the embankment), were alluvial and marine/estuarine in origin, deriving from the adjacent Wyre estuary. It would appear, however, that despite the great depth of the investigations, neither solid nor drift geology was encountered, and such formations must lie at even greater depth.
- 4.1.2 In 1877 De Rance (cited in Middleton *et al* 1995, 86) described a number of shallow peat-filled basins between Blackpool and Poulton-le-Fylde, to the south-west of Stanah. A more recent study by the North West Wetlands Survey (NWWS) (*ibid*) identified no peat deposits within the immediate area of the proposed development, recording that the main concentration of such deposits was in the southern part of the Lytham-Skipool valley area. The NWWS concluded that the “shallow hollows” identified by De Rance (1877) could have been built on or have been very disturbed within the intervening 130 years. Although the Hillyaid pool is likely to be a natural depression, it is possible that the greater influence of estuarine deposits prevented the formation of a suitable mossland habitat. Alternatively, such deposits may lie beyond the 15m depth investigated.

4.2 IMPACT

- 4.2.1 The present watching brief would indicate that there is only limited potential for palaeoenvironmental deposits and, any development of the site would have little, if any, direct negative impact. If any peat deposits do survive at a depth greater than 15m, given that they are already subjected to considerable pressure from the overlying deposits, they are unlikely to be further impacted upon by development. Similarly, it seems likely that potential for archaeological remains is low, particularly given the damp conditions of the area prior to the construction of the embankment. However, because of the limited nature of the test pits, the possibility remains that intact archaeology may be preserved in uninvestigated areas of the site.

5. BIBLIOGRAPHY

Countryside Commission, 1998 *Countryside Character, Volume 2: North West*, Cheltenham

De Rance, CE, *The superficial geology of the country adjoining the coasts of south-west Lancashire*, Mem Geol Surv England and Wales, London

English Heritage, 1991 *The Management of Archaeological Projects*, 2nd edn, London

Middleton R, Wells CE, Huckerby E 1995, *The Wetlands of North Lancashire: North West Wetlands Survey 3*.

Mills, AD, 1998 *Dictionary of English Place-Names*, 2nd edn, Oxford

UKIC, 1990 *Guidelines for the preparation of archives for long-term storage*

Williamson, A and Martin, GH eds 1992 *Domesday Book, A Complete Translation*, London

Wyre Borough Council 2006a *History of the Wyre - Poulton-le-Fylde*
http://www.wyrebc.gov.uk/Council_Services/Tourist_Information/History_of_Wyre/Poulton-le-Fylde.asp

Wyre Borough Council 2006b *History of the Wyre - Fleetwood*.
http://www.wyrebc.gov.uk/Council_Services/Tourist_Information/History_of_Wyre/Fleetwood.asp

Wyre Borough Council 2006c *History of the Wyre - Thornton Cleveleys*
http://www.wyrebc.gov.uk/Council_Services/Tourist_Information/History_of_Wyre/Thornton_Cleveleys.asp

6. ILLUSTRATIONS

6.1 FIGURES

Figure 1: Site and Watching Brief Location Plan

6.2 PLATES

Plate 1: Working Shot

Plate 2: Test Pit 2, Post-Excavation

APPENDIX 1: PROJECT BRIEF

Consultants Brief – Stanah Embankment Site Investigation – Archaeological Watching Brief

Background

Description of the area/site to be examined:

The Environment Agency are currently in the process of developing Project Appraisal Report on the feasibility of embankment improvement works on the existing embankment at Stanah, near Thornton. The Stanah Embankment is located on the west bank of the River Wyre Estuary, some 5km upstream of Fleetwood Docks. A 250m length of tidal embankment has been identified at high risk of breach, in terms of protecting the mainly urbanised areas of Stanah and Thornton, from flooding.

Grid Ref.:

Northern Limit 335284, 443261

Southern Limit 335468, 443120



The Site Investigation (SI) works on the crest and behind the embankment will comprise: -

- Boreholes (shell & auger) on the crest and landward side of the embankment
- Hand dug trial pits
- Machine dug trial pits (behind the embankment only)

The SI works will determine the original construction of the embankment and determine the ground condition under and next to the embankment.

It is anticipated that there will be 2 No. boreholes from the top of the embankment to a depth of 15-20m. In addition, a dynamic probe may also be done from the crest of the embankment. Two hand dug trial pits may also be excavated on the crest of the embankment. As the trial pits are into what may be made ground, there may be little to learn from a watching brief on them.

There will be trial pits and boreholes at the toe of the landward side of the embankment. The trial holes at the rear of the embankment will be hand or machine dug. The boreholes on the landward side are likely to be 10-15m deep.

There will be no works on the seaward side of the embankment from the crest or toe due to the proximity of the Morecambe Bay SPA/Wyre SSSI.

The footpath on the crest of the embankment will need to be temporarily closed for the duration of the SI. The Agency Project Manager will progress this temporary closure with Wyre BC in due course. The embankment is also designated as a County Biological Heritage Site by Lancashire County Council so the consultant must be aware of the environmental sensitivities in the area.

The brief for the SI contractor is being developed in the week beginning 23/01/05.

SCOPE OF WORK – ARCHAEOLOGICAL WATCHING BRIEF

Oxford Archaeology (North) (OAN) is to provide an archaeological watching brief to cover the trial pits and borehole aspects of the Site investigation.

In consultation with Phil Catherall, NEAS Archaeologist, OAN are to determine by desk study whether there is a significant likelihood of peat deposits sitting directly underneath the proposed construction area. If the evidence shows that there is a strong likelihood of peat underlying the construction area OAN must price for carrying out peat analysis and C14 dating of both top and bottom of one of the boreholes on the landward side of the embankment.

Oxford Archaeology (North) will be employed as a consultant to the Environment Agency. The first point of contact for contractual issues will be the NCPMS Team of Jonathan Farrar and Stuart Martin.

The reporting as a result of the watching brief is to be incorporated into the report prepared by the SI contractor and should make reference to the SI Contractor's site location information to minimise repetition. OAN are to liaise with the SI Contractor to agree incorporating the Watching Brief Report into the SI report.

OAN are to supply copies of archaeology report 'PDF' format on CD-ROM as well as in hard copy to the County Archaeologist and the NEAS Archaeologist.

Previous work:

There are references to the archaeological information in the area in the Wyre Borough Council “Strategic Environmental Assessment” produced in April 2002 by Halcrow Group Ltd. The document is available from the Wyre Borough Council website.

Reasons for and circumstances of the project:

An understanding of the archaeological heritage of the area of the works is important in order to ascertain the risks to cultural heritage and mitigate any damage or obstruction of features during the design and construction of potential flood risk management works.

Also, the results of the SI watching brief will help to identify the need and justification for any further watching brief during the main construction works.

The SI works are due to start on 13th March 2006.

The exact details of the timing of the mobilisation to the various sites must be agreed with the the SI Contractor.

The Environment Agency will be issuing Notices of Entry to the landowners affected directly by the SI works.

Reinstatement will be the responsibility of the SI contractor.

Aims and objectives

The objective of the Site Investigation watching brief is to establish and make available information about the archaeological resources existing in areas related to our proposed flood defence works.

The Watching Brief will be carried out in accordance with the Institute of Field Archaeologists Codes, Guidelines and Procedures and any requirements from the Lancashire County Archaeologist.

METHODS STATEMENT

Oxford North will be expected to work in compliance with all relevant health and safety legislation and may be asked to provide method statements and risk assessments to the SI Contractor.

Budget:

Oxford Archaeology must provide details of the costs of undertaking the work programme described including salary scales, allowance for inflation and any other adjustments to the NCPMS Team. The costs to include site watching brief, peat analysis & C14 dating and reporting to be included in the Final Report issued by the SI Contractor for these works.

A copy of the report is to be provided separately to Phil Catherall, NEAS Archaeologist.

Project Contacts

Environment Agency

NCPMS Project Team

Address:

Jonathan Farrar/Stuart Martin

Environment Agency

Richard Fairclough House

Knutsford Road

Warrington

WA4 1HG

Tel:

01925 542405/01925 542175

NEAS Archaeologist

Address:

Phil Catherall

Coverdale House

Aviator Court

Amy Johnson Way

Clifton Moor

York

YO30 4U2

Tel:

01904 822680

NEAS Officer

Address:

Jo Green

As Agency Project Manager

Tel:

01925 542107

Brief Prepared by: Jo Green, NEAS Officer, 11 January 2006

APPENDIX 2: PROJECT DESIGN

**STANAH
EMBANKMENT
SITE
INVESTIGATION
STANAH,
THORNTON,
LANCASHIRE**

**ARCHAEOLOGICAL
WATCHING BRIEF:
PROJECT DESIGN**

Oxford Archaeology North



February 2006
The Environment Agency

OA North Job No: T2693
NGR: SD 352 432 - SD 355 431

1. INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 As part of the development of a Project Appraisal Report on the feasibility of improvement works on the existing embankment at Stanah, near Thornton, Lancashire (NGR SD 35284 43261 - SD 35468 - 43120), the Environment Agency (henceforth, the Client) has requested that Oxford Archaeology North (OA North) submit proposals and costs for the undertaking of a programme of archaeological recording during groundworks on the site. The Environment Agency Archaeologist has identified the potential presence of peat deposits within the development area and, accordingly, recommended that an archaeological watching brief should be conducted during groundworks at the site. The groundworks will be undertaken by Allied Excavation Geotechnical, on behalf of the Client, and will comprise the excavation of seven inspection pits and boreholes at several locations along the 250m stretch of weakened embankment. Two inspection pits, two 15m-20m deep shell and auger boreholes and two dynamic probe boreholes will be dug through the top of the embankment; the boreholes will be monitored, but the trial pits, excavated through known made ground, will not be. Three further shell and auger boreholes, excavated to a depth of 10m-15m, as well as two machine-excavated trial pits will be dug along the length of the landward side of the embankment. The following project design has been compiled by Oxford Archaeology North (OA North) in response to a verbal communication with Lancashire County Archaeology Service (LCAS) and in accordance with the Consultants Brief for the work, compiled by the Client and dated 11th January 2006.

1.2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

1.2.1 The development site at Stanah lies on a small promontory on the south-western bank of the Wyre Estuary, just to the north-east of Thornton, and about 5km to the south of Fleetwood, within the Central Fylde region of Lancashire. The embankment is currently used as a footpath, and separates the estuary mudflats of the Wyre SSSI, to the north, from the urban area of Stanah, including a caravan park and industrial estates, to the south. Geologically, the immediate area is characterised by deep deposits of glacial till, which overlie the mud- and silt stone bedrock (Middleton *et al* 1995). Although many of the surface peat resources of the Central Fylde have been exhausted through extraction or lost to drainage schemes, those north of the Wyre, exemplified by the mosses around Pilling and Stalmine, are better preserved and are likely to have originated in, or shortly before, the Neolithic period. Work within the area has also indicated that deposits of peat are often found at depth across the Fylde, and that many such deposits are post-Glacial in date (Elizabeth Huckerby *pers comm*).

1.2.2 Although scatters of Late Neolithic and Early Bronze Age flint artefacts are known from the Central Fylde, particularly on and around drier, raised areas, as are limited traces of Roman activity (indeed, Fleetwood is one of several conjectural candidates for the historically-referenced *Portus Setantiorum*) and signs of medieval cultivation, archaeological evidence from this western part of the Fylde is sparse (Middleton *et al* 1995). This may in part relate to the fact that the local area is somewhat marginal. It is also possible that archaeological remains, particularly those of prehistoric date, have been buried beneath deep deposits of alluvium and marine sediments relating to rising sea levels. The potential for such deeply-stratified remains is indicated by Mesolithic finds from marine clays and silts beneath the peat deposits, including a possible dug-out canoe from Well House Farm, Stalmine and a number of Neolithic polished stone axes from Pilling and Stalmine Mosses (*ibid*). Other finds within the general locality include the Kate's Pad Late Neolithic/Early Bronze Age wooden trackway, on Pilling Moss and several other examples on Stalmine Moss as well as moderately large numbers of Bronze Age artefacts, often found collectively as hoards and even human remains, such as the Pilling Head (*ibid*).

1.3 OXFORD ARCHAEOLOGY NORTH

1.3.1 Oxford Archaeology North (OA North) has considerable experience of undertaking watching briefs of all periods, having conducted a great number of small and large scale projects during

the past 25 years. Fieldwork has taken place within the planning process and construction programmes, to fulfil the requirements of clients and planning authorities, to very rigorous timetables.

- 1.3.2 OA North is an Institute of Field Archaeologists (IFA) **registered organisation, registration number 17**, and all its members of staff operate subject to the IFA Code of Conduct.

2. OBJECTIVES

2.1 *The following programme has been designed in accordance with the Lancashire County Archaeology Service document entitled General Conditions for Appropriate Archaeological Contractors in Lancashire.*

2.2 **Watching Brief:** in order to determine the presence, date, quality and state of preservation of archaeological features on the site, an archaeological and palaeoenvironmental watching brief will be maintained during the excavation of those trial pits on the landward side of the embankment and during all boreholing (*Section 1.1.1*).

2.3 **Report and Archive:** *a report will be produced for the Client within about eight weeks of completion of the fieldwork. The report will aim to summarise the results of the watching brief within the context of existing knowledge about the site and its surroundings. These results will provide the basis for any recommendations for further work, should this prove appropriate. A site archive will be produced to English Heritage guidelines (MAP 2) and in accordance with the Guidelines for the Preparation of Excavation Archives for Long Term Storage (UKIC 1990).*

3. WORK PROGRAMME

3.1 In line with the objectives and stages of the archaeological works stated above, the following work programme is submitted:

3.2 **Watching Brief:** to be maintained during any ground disturbing activities relating to excavation of trial pits and boreholes (see *Sections 1.1.1 and 2.2*).

3.3 **Report and Archive:** production of a suitably illustrated report and properly ordered archive.

4. METHODOLOGY

4.1 WATCHING BRIEF

4.1.1 A programme of field observation will accurately and systematically examine and record the location, extent, and character of any surviving archaeological and palaeoenvironmental features, horizons and/or deposits revealed during the course of ground disturbance, along with any artefacts, identified during observation.

4.1.2 During this phase of work, recording will comprise a full description and preliminary classification of features or materials revealed, and their accurate location (either on plan and/or section, and as grid co-ordinates where appropriate). Features will be planned accurately at appropriate scales and annotated on to a large-scale plan. A photographic record of archaeological features and general working shots, utilising monochrome print and colour slide will be undertaken simultaneously.

4.1.3 A plan will be produced of the areas of groundworks showing the location and extent of the ground disturbance and one or more measured sections will be produced, regardless of the presence of archaeology.

4.1.4 Putative archaeological features and/or deposits identified during groundworks, together with the immediate vicinity of any such features, will be cleaned by hand, using either hoes, shovel scraping, and/or trowels, depending on the subsoil conditions and, where appropriate, sections

will be studied and drawn. Any such features will be sample excavated (ie. selected pits and postholes will normally only be half-sectioned, linear features will be subject to no more than a 10% sample, and extensive layers will, where possible, be sampled by partial rather than complete removal).

- 4.1.5 It is assumed that OA North will have the authority to stop the works for a sufficient time period to enable the recording of important deposits. It may also be necessary to call in additional archaeological support if a find of particular importance is identified or a high density of archaeology is discovered, but this would only be called into effect in agreement with the Client and LCAS and will require a variation to costing.
- 4.1.6 Observations during the borehole drilling will be carried out by an OA North Environmental Specialist. It is anticipated that retrieval of sediments will very much depend on their cohesiveness, therefore it is likely that recording will be carried out both in the field and back at the soil engineers main offices. Soft sediments, such as sand or silt, which are likely to be bulk sampled in bags or buckets will be recorded in the field. Cohesive sediments, such as clay or peat are likely to be sampled with a windowless U100 tube, and will need to be recorded off-site at the time of opening.
- 4.1.7 The sediment descriptions of each borehole will be logged in a field notebook, and the data will be entered into an excell spreadsheet. Should any significant organic remains be identified within the deposits then recommendations will be put forward to the client for an assessment of their palaeoenvironmental potential. Depending on the survival of the extracted cores, it may be necessary to re-drill the deposits with a terrier-rig in order to provide intact and continuous palaeoenvironmental samples. In addition, at least two radiocarbon dates will be required in order to date the base and the top of the organic remains. Any significant sedimentary changes in the deposits sequence, such as a shift from peat to clay, may reflect changes in relative sea level, therefore, these may be recommended for radiocarbon dating also.
- 4.1.8 **Human Remains:** any human remains uncovered will be left *in situ*, covered and protected. No further investigation will continue beyond that required to establish the date and character of the burial. LCAS and the local Coroner will be informed immediately. If removal is essential, the exhumation of any funerary remains will require the provision of a Department of Constitutional Affairs (DCA) license, under section 25 of the Burial Act of 1857. An application will be made by OA North for the study area on discovery of any such remains and the removal will be carried out with due care and sensitivity under the environmental health regulations, and if appropriate, in compliance with the Disused Burial Grounds (Amendment) Act, 1981.
- 4.1.9 **Recording:** all information identified in the course of the watching brief works will be recorded stratigraphically, with sufficient pictorial record (plans, sections and both black and white and colour photographs or contact prints) to identify and illustrate individual features as well as the nature of the demolition work. Primary records will be available for inspection at all times.
- 4.1.10 Results of the field investigation will be recorded using a paper system, adapted from that used by the English Heritage Centre for Archaeology. The archive will include both a photographic record and accurate large-scale plans and sections at an appropriate scale (1:50, 1:20, and 1:10). Levels will be tied into the Ordnance Datum. All artefacts and ecofacts will be recorded using the same system, and will be handled and stored according to standard practice (following current Institute of Field Archaeologists guidelines) in order to minimise deterioration.
- 4.1.11 **Treatment of finds:** excavated soil will be searched as practicable for finds. The presence and nature of finds definitely dating to the nineteenth and twentieth centuries will be noted but they will not otherwise be retained. All other finds will be exposed, lifted, cleaned, conserved, marked, bagged and boxed, as appropriate, in accordance with the United Kingdom Institute for Conservation (UKIC) *First Aid For Finds*, 1998 (new edition) and the recipient museum's guidelines. Except where noted above, all identified finds and artefacts will be retained, although certain classes of building material can sometimes be discarded after recording if an appropriate sample is retained on advice from the recipient museum's archive curator.

- 4.1.12 **Treasure:** any gold and silver artefacts recovered during the course of the excavation will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act, 1996. Where removal cannot take place on the same working day as discovery, suitable security will be employed to protect the finds from theft.
- 4.1.13 **Environmental Remains:** following consultation with the client and with LCAS, where appropriate, environmental samples taken during the groundworks would be subsampled and subjected to palaeoenvironmental assessment of their potential for further analysis. The cost of this assessment (*Section 12*), and of further analysis, would be formulated in agreement with the client prior to any such work being undertaken.
- 4.1.14 **Contingency plan:** in the event of significant archaeological features or human remains being encountered during the watching brief, discussions will take place with the Planning Archaeologist, as to the extent of further works to be carried out, and in agreement with the Client. All further works would be subject to a variation to this project design.

5. REPORT

- 5.1 The results of the data gathered in *Section 4.1* above, will be collated and submitted in report format, illustrated with the relevant photographs and drawings. Where appropriate, the report will attempt to relate any findings to the known history and archaeology of the site, and to its local setting. In line with the Environment Agency Brief, the completed archaeological report will be passed on to the geotechnical subcontractor for inclusion within a final, integrated report.
- 5.2 One bound copy and one unbound copy of the report will be submitted to the Client, and a copy of the report in .pdf format on CD-ROM will be sent to the NEAS archaeologist. One bound copy, one unbound copy and one digital copy of the report will be submitted to the geotechnical contractor for incorporation into the final report and one bound copy and another in digital format will be submitted to LCAS and to the Lancashire Sites and Monuments Record together with an archive CD-ROM. Any subsequent work arising from this survey will be subject to separate consideration in liaison with LCAS and the Client.
- 5.3 The final report will include a copy of this project design, the relevant Environment Agency brief, and indications of any agreed departure from that design. It will present, summarise, and interpret the results of the programme detailed above, and will include details of the final deposition of the project archive. Illustrations will include a location map, trench location plan and plans and sections of trenches drawn at an appropriate scale.
- 5.3 A brief summary of the fieldwork will be prepared and submitted to the Council for British Archaeology North West *Archaeology North West* within 12 months of the completion of the project.

6. ARCHIVE

- 6.1 The results of the watching brief will form the basis of a full archive to professional standards, in accordance with current English Heritage guidelines (*Management of Archaeological Projects*, 2nd edition, 1991). The fully indexed project archive represents the collation and indexing of all the data and material gathered during the course of the project. It will include all the original records and drawings along with fully labelled and indexed slides and contact prints. It will include summary processing and analysis of any features and finds recovered during fieldwork, in accordance with UKIC guidelines. The deposition of a properly ordered and indexed project archive in an appropriate repository, is considered an essential and integral element of all archaeological projects by the IFA, and arrangement to this effect will be made with the museum curator prior to the commencement of the project.
- 6.2 All finds will be treated in accordance with OA North standard practice, which follows current IFA guidelines and will be deposited, along with a copy of the report and of the original site records, with the appropriate museum.

7. HEALTH AND SAFETY

- 7.1 OA North provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. All site procedures are in accordance with the guidance set out in the Health and Safety Manual compiled by the Standing Conference of Archaeological Unit Managers (1997). A written risk assessment will be undertaken in advance of project commencement and copies will be made available on request to all interested parties.
- 7.2 The client would be asked to determine the nature of any utility services to the properties and site prior to any fieldwork being carried out.
- 7.3 *OA North has professional indemnity to a value of £2,000,000, employer's liability cover to a value of £10,000,000 and public liability to a value of £15,000,000. Written details of insurance cover can be provided if required.*

8. CONFIDENTIALITY

- 8.1 The final report is designed as a document for the specific use of the Client, and should be treated as such; it is not suitable for publication as an academic report, or otherwise, without amendment or revision. Any requirement to revise or reorder the material for submission or presentation to third parties beyond the project brief and project design, or for any other explicit purpose, can be fulfilled, but will require separate discussion and funding.
- 8.2 Any proposed variations to the project design will be agreed with LCAS in co-ordination with the Client. OA North will arrange a preliminary meeting, if required, and LCAS will be informed of the commencement of the project in writing.

9. WORK PROGRAMME

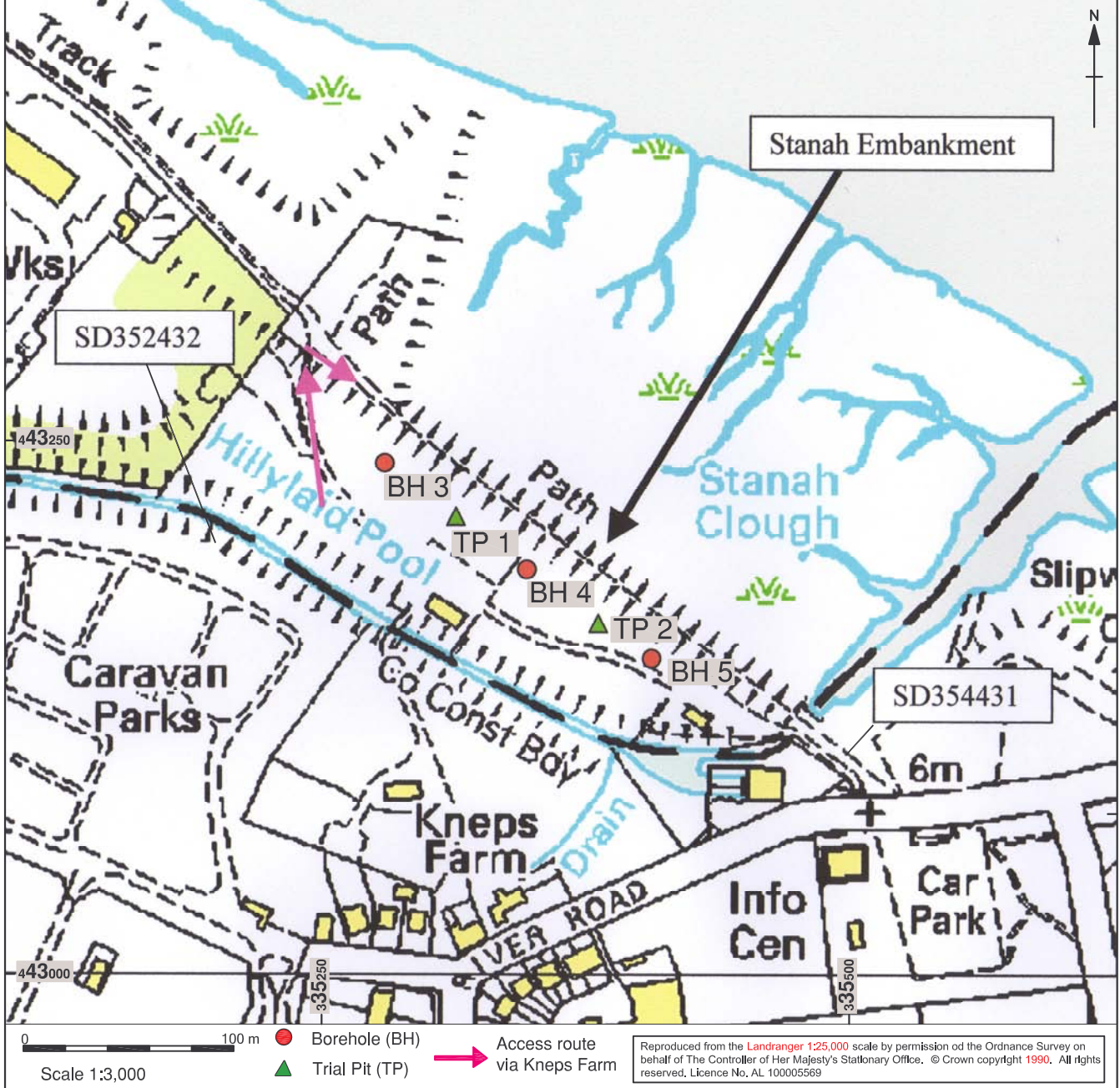
- 9.1 The following programme is proposed:
- 9.2 **Watching Brief:** the duration of the watching brief will be dependent upon the progress of the contractor.
- 9.3 **Archive/Report:** the report and archive will be produced following the completion of all the fieldwork. The final report will be submitted within about eight weeks of completion of the fieldwork and the archive deposited within six months. If desired, an interim statement could be produced within ten days of completion of the fieldwork.

10. STAFFING

- 10.1 The project will be managed by **Stephen Rowland** (OA North Project Manager) to whom all correspondence should be addressed.
- 10.2 The watching brief of the trial pits will be undertaken by an OA North Supervisor, suitably experienced in fieldwork techniques. The monitoring of the boreholes would be undertaken by an experienced OA North Environmental Archaeologist. Present timetabling constraints preclude detailing at this stage exactly who will be undertaking these elements of the project.
- 10.3 The archaeological work will be monitored by LCAS, which will be arranged accordingly.

APPENDIX 3: CONTEXT SUMMARY

Context	Trial Pit	Description	Depth
1	1	Topsoil, comprising fine sandy clay silt.	0-0.5m
	2		0-0.4m
2	1	Mid-orange-brown fine sandy silt	0.5-1.2m
	2		0.6-1m
3	1	Mid-grey fine sandy silt. Smell suggests element of decayed organic matter.	1.2-2.5m
	2		0.1-3m
4	2	Mid -orange/grey clay silt, formed the bank itself	0.4-0.6m



X:\Steve\Projects\L9681 Stanah\Illustrations\L9681 Stanah Embankment\MER*19_04_06

Reproduced from the Landranger 1:25,000 scale by permission of the Ordnance Survey on behalf of The Controller of Her Majesty's Stationary Office. © Crown copyright 1990. All rights reserved. Licence No. AL 100005569

Figure 1: Watching Brief, Borehole and Trial Pit Locations



Plate 1: Working Shot



Plate 2: Test Pit 2, Post-Excavation