Northern Archaeological Associates

HATFIELD COLLIERY, STAINFORTH,
SOUTH YORKSHIRE

AREA 4
ARCHAEOLOGICAL EVALUATION REPORT

prepared for

Powerfuel plc

NAA 06/135

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Marwood House, Harmire Enterprise Park, Barnard Castle, Co. Durham DL12 8BN

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ARCHAEOLOGICAL EVALUATION REPORT

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Summary

This document presents the results of a programme of archaeological evaluation at the site of the proposed development of the Hatfield Power Park, Stainforth, South Yorkshire (SE 6490 1150). An archaeological assessment of the site which included an auger survey, demonstrated that although no recorded archaeological remains exist within the proposed development area there was the potential for unrecorded archaeological remains to be concealed by extensive alluvial deposits on the site. The evaluation of the site proceeded in accordance with a Written Scheme of Investigation (NAA 2006) prepared by NAA and submitted to, and approved as an appropriate scheme of works by, South Yorkshire Archaeological Services. The project was undertaken in August and September 2006.

Seventeen trial trenches, located around the northern and western perimeter of the development area, in the area of highest archaeological potential, were excavated.

Of the seventeen trial trenches excavated, thirteen (1,2,3,4,5,6,8,9,11,14,16,17,18) were devoid of archaeological features. Natural features such as scour hollows and palaeo-channels, cut into the natural basal sands and in-filled with inorganic alluvial deposits were, however, encountered in many of the trenches.

The only archaeological feature identified during the evaluation was a field boundary shown on both the Stainforth Enclosure Map of 1826 and the First Edition Ordnance Survey map which took the form of a bank and associated ditch. Elements of this field boundary were recorded in four of the trial trenches (7,10,12 and 13). This feature was adequately recorded during the trial trenching programme which demonstrated that no significant archaeological or palaeoenvironmental remains survive within the development boundary. No further archaeological work is recommended.

1.0 INTRODUCTION

1.1 This document presents the results of a programme of archaeological evaluation at the site of the proposed development of the Hatfield Power Park, Stainforth, South Yorkshire (SE 6490 1150) (Fig. 1). This report has been prepared by Northern Archaeological Associates (NAA) for Powerfuel plc.

1.2 An archaeological assessment of the site of the proposed works was undertaken by Northern Archaeological Associates (2002). Although no recorded archaeological remains existed within the proposed development area the assessment concluded that there may be potential for unrecorded archaeological remains to be concealed by extensive alluvial deposits on the site. A scheme of works which included a site evaluation comprising an auger survey and intrusive evaluation in the form of trial trenching was proposed in order inform the preparation of a strategy that would mitigate against the loss of any archaeological remains which might exist within the area of the proposed development.

1.3 The evaluation of the site proceeded in accordance with a Written Scheme of Investigation (NAA 2006) prepared by NAA and submitted to, and approved as an appropriate scheme of works by, South Yorkshire Archaeological Services. The project was undertaken in August and September 2006.

2.0 LOCATION, TOPOGRAPHY AND GEOLOGY

2.1 The area of archaeological evaluation was situated to the northwest of the colliery buildings at Hatfield in the area designated as Area 4 within the Masterplan for the development of the Hatfield Colliery Power Park. The area is bounded by the suburbs of Stainforth village to the west and north and by Hatfield Colliery to the south and east. Area 4 is an open area of rough grassland that has been ploughed in the past.

2.2 The site lies within the Humberhead Levels about 1km south of the River Don. It is predominantly a flat, low-lying landscape situated at an elevation of 3m to 5m AOD. The underlying solid geology comprises the Triassic Sherwood Sandstone. Throughout Area 4, this is overlain by late-Devensian sands with occasional gravels, which in turn are overlain by a 0.4m to 1m plus thick alluvial unit comprising brown/grey silts and clays (Lillie et al 2006).

3.0 ARCHAEOLOGICAL BACKGROUND

3.1 A desk-based assessment of the archaeological potential of the proposed Power Park development was undertaken by NAA in October 2002. The detailed results of this assessment are set out in NAA report 02/107 *Masterplan for the Hatfield Colliery Power Park – archaeological assessment*. This assessment identified evidence for Mesolithic to Bronze Age activity on the sand ridge alongside the southern edge of

the River Don, approximately 0.6km to the north of Area 4. Early prehistoric finds had also been recorded from the northern margins of the exposed River Terrace deposits to the south of the site, around Hatfield. It also identified an extensive Roman settlement site producing 2nd to 3rd century AD material running along the low sand ridge adjacent to the River Don. Cropmark sites relating to late Iron Age / Romano British occupation were also recorded along this ridge and on the River Terrace deposits southwest of Stainforth and around Hatfield. It was considered that the lack of recorded archaeological remains within the area between the exposed sand terraces may be explained by the presence of extensive alluvial deposits which could be masking archaeological sites and finds.

3.2 The assessment concluded that whilst there was no recorded evidence for archaeological remains within Area 4, depending upon the date and rate of alluvium deposition, there may be potential for unrecorded prehistoric and Roman native remains to be concealed by the alluvial deposit, as well as the potential for important palaeoenvironmental remains relating to these periods.

3.3 The South Yorkshire Archaeological Service advised that further evaluation of this potential should be undertaken prior to development of Areas 4 and 6. Planning permission for the development was granted in 2003 subject to the condition that a scheme of archaeological field evaluation must be implemented (planning Condition 63). It was further stated that no development should take place until a scheme of archaeological investigation/mitigation, including (if appropriate) potential preservation *in situ*, had been approved in writing by the LPA having regard to the findings of the evaluation (planning Condition 64).

3.4 In May 2006, Powerfuel plc commissioned NAA to undertake a preliminary assessment of the palaeoenvironmental and archaeological potential of the area through auger survey. This work was undertaken on behalf of NAA, in June 2006, by Dr Malcolm Lillie and Claire Tweddle of the Wetlands Archaeology and Environments Research Centre, Department of Geography, University of Hull. The detailed results of this work are set out in appendix A.

3.5 The sequences obtained from the boreholes were comparable across the site. Most showed a general sequence of topsoil (0.2-0.3m thick), then an alluvial unit (0.3m to 0.7m+ thick) overlying late Devensian basal sands. These basal sands are comparable to the '25-Foot' drift deposits which were laid down during the late Devensian period by Lake Humber c.21,000 – 11,000 BP. Whilst it was considered that there was some potential for archaeological remains to be preserved at the surface of these basal sands, there was a sharp boundary between these deposits and the overlying alluvial unit which indicated that erosion of the sands had taken place prior to the alluvial deposition. The period during which this erosion occurred was not apparent nor was the agent of erosion, which could have been due to either fluvial or Aeolian activity. It was apparent, however, that the alluvium had been deposited by a slow moving body of water and hence it was unlikely to have been the eroding agent. Due to the lack of any identified organic deposits within the alluvium, it was also difficult to assess the date of alluvial deposition, although for a

number of reasons, it was considered that this was likely to have occurred either during the late prehistoric or early historic periods.

3.6 The report concluded that, whilst there was sufficient information to state that the alluvium had no palaeoenvironmental potential, it was difficult to assess the potential for any buried archaeological material. Whilst it was considered likely that with the evidence of erosion, any archaeology would have been disturbed or removed completely, it was advised that further work would be necessary in order for this to be established. Stratigraphically, the possibility existed that Roman and/or pre-Roman material could be buried beneath the alluvial sequences, although the erosion of the sands underlying the alluvium made it difficult to determine what age of material might be preserved with any degree of certainty.

4.0 AIMS AND OBJECTIVES

4.1 The trial trenching programme aimed to investigate whether there was any evidence for either Roman or pre-Roman archaeological remains within Area 4.

4.2 The aim of the evaluation was to gather sufficient information to establish the presence/absence, nature, date, depth, degree of survival and importance of any archaeological deposits. This would enable an assessment to be made of the significance of the archaeology within the site and the impact of the development on such remains. An informed decision could then be made regarding the future treatment of any remains, and, if appropriate, the need for any further mitigation measures either in advance of or during development.

4.3 The evaluation comprised the excavation of 17 trial trenches, one less than the eighteen trenches initially proposed. Due to changes in the development plans trench 15 was omitted from the evaluation. The location of the trenches is shown on Figure 2. Following discussion with Roy Sykes of SYAS it was agreed that in the first instance the trial trenching should target the areas of highest potential around the northern and western site perimeter boundary. It was agreed that if no archaeology was encountered during trenching within these areas, then no further work would be necessary. The location and extent of the trenches were determined in order to examine a reasonable sample area around the perimeter boundary.

4.4 The work was undertaken between 29th August and 6th of September 2006. The trial trenching was supervised by Jonathan Tabor and the project managed by Mary Lakin and Paul Johnson.

5.0 METHODOLOGY

Trench position

5.1 The location of each trench position was surveyed using Electronic Distance Measuring equipment (EDM) and tied into the Ordnance Survey National Grid.

Excavation and reinstatement

5.2 The trenches were stripped using a 360º excavator with a 2m wide toothless bucket, operating under archaeological supervision at all times. Topsoil was removed to the edge of each trench and kept separate from subsoil and material excavated from archaeological features. The trenches were backfilled in correct subsoil and topsoil order upon the conclusion of the work.

Site recording

5.3 All archaeological features were photographed and recorded at an appropriate scale. A written description of features and each trial trench was recorded on pro forma sheets using the NAA context recording system (a derivation of the MoLAS system).

5.4 A photographic record of the site was taken using monochrome prints and colour slide at a minimum format of 35 mm.

6.0 EVALUATION RESULTS

6.1 Seventeen trial trenches, located around the northern and western perimeter of the development area, in the area of highest archaeological potential, were excavated. The trench locations are shown in Figure 2.

Trench 1

6.2 Trench 1 was aligned north to south and measured 40m long by 2m wide. Late Devensian basal sands (102) were encountered at a maximum depth of 0.55m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (101) up to 0.25m thick. A dark brown clayey top soil (100) up to 0.35m thick sealed all deposits. No archaeological features or deposits were encountered in trench 1 and no artefactual material was recovered.

Trench 2

6.3 Trench 2 was aligned east to west and measured 20m long by 2m wide. Late Devensian basal sands (203) were encountered at a maximum depth of 0.6m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (202) up to 0.3m thick. A dark brown clayey top soil (200) up to 0.3m thick sealed all deposits. A natural scoured hollow, cut into the late Devensian sands (203)

and filled with alluvial material (202) was recorded within the trench. No archaeological features or deposits were encountered in trench 2 and no artefactual material was recovered.

Trench 3

6.4 Trench 3 was aligned east to west and measured 20m long by 2m wide. Late Devensian basal sands (302) were encountered at a maximum depth of 0.55m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (301) up to 0.2m thick. A dark brown clayey top soil (300) up to 0.4m thick sealed all deposits. Two natural scoured hollows, cut into the late Devensian sands (302) and filled with alluvial material (301) were recorded within the trench. No archaeological features or deposits were encountered in trench 3 and no artefactual material was recovered.

Trench 4

6.5 Trench 4 was aligned north to south and measured 40m long by 2m wide. Late Devensian basal sands (403) were encountered at a maximum depth of 0.55m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (401) up to 0.25m thick. A dark brown clayey top soil (400) up to 0.3m thick sealed all deposits. A number of natural scoured hollows and a palaeo-channel aligned east to west, were cut into the late Devensian sands (403) and filled with alluvial material (401). No archaeological features or deposits were encountered in trench 4 and no artefactual material was recovered.

Trench 5

6.6 Trench 5 was aligned north to south and measured 40m long by 2m wide. Late Devensian basal sands (502) were encountered at a maximum depth of 0.9m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (501) up to 0.45m thick. A dark brown clayey top soil (500) up to 0.4m thick sealed all deposits. A palaeo-channel aligned south-east to north-west, cut into the late Devensian sands (502) and filled with alluvial material (202), was recorded in the south end of the trench. A scour hollow, measuring approximately 5m across, was also recorded within the trench The hollow was found to be in-filled with alluvial deposits and the remains of a short length of oak tree trunk were preserved within the matrix of the alluvium (501) (Plate 1). No archaeological features or deposits were encountered in trench 5 and no artefactual material was recovered.

Trench 6

6.7 Trench 6 was aligned east to west and measured 20m long by 2m wide. Late Devensian basal sands (602) were encountered at a maximum depth of 0.9m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (601) up to 0.7m thick. A dark brown clayey top soil (600) up to 0.3m thick

sealed all deposits. No archaeological features or deposits were encountered in trench 6 and no artefactual material was recovered.

Trench 7

6.8 Trench 7 was aligned north to south and measured 40m long by 2m wide. Late Devensian basal sands (704) were encountered at a maximum depth of 0.9m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (703) up to 0.7m thick. A dark brown clayey top soil (702) up to 0.3m thick sealed all deposits. Trench 7 was positioned across the line of a former field boundary aligned south-west to north-east, depicted on the Stainforth Enclosure Map of 1825 and First Edition Ordnance Survey map (1854). It is still visible in places as a truncated bank. The bank did not survive in Trench 7 but the associated ditch to the north was recorded in section. The ditch (701), aligned approximately south-west to north-east, was cut into the alluvial silty clay (703) and measured 3m wide by 0.95m deep, extending across the width of the trench. The ditch (701) contained a mixed primary fill of dark brown clayey silt 0.4m thick and heavily disturbed by roots. A single shard of glass, dating to post-1850 was recovered from this fill. Overlying this, a mixed deposit of disturbed top soil (702) and modern domestic waste, the result of fly tipping, filled the upper part of the ditch cut.

Trench 8

6.9 Trench 8 was aligned east to west and measured 20m long by 2m wide. Late Devensian basal sands (802) were encountered at a maximum depth of 0.7m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (801) up to 0.45m thick. A dark brown clayey top soil (800) up to 0.3m thick sealed all deposits. No archaeological features or deposits were encountered in trench 8 and no artefactual material was recovered.

Trench 9

6.10 Trench 9 was aligned approximately north-east to south-west and measured 40m long by 2m wide. Late Devensian basal sands (902) were encountered at a maximum depth of 0.95m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (901) up to 0.6m thick. A dark brown clayey top soil (900) up to 0.3m thick sealed all deposits. No archaeological features or deposits were encountered in trench 9 and no artefactual material was recovered.

Trench 10

6.11 Trench 10 was aligned approximately south-east to north-west and measured 20m long by 2m wide. Late Devensian basal sands (1004) were encountered at a maximum depth of 0.8m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (1003) up to 0.6m thick. A dark brown clayey top soil (1002) up to 0.25m thick sealed all deposits. The cut of a ditch associated with the former field boundary recorded in Trench 7, visible as a truncated bank aligned

north-east to south-west, was encountered at the southern end of trench 10. The ditch cut (1001) measured 1.9m wide by 0.65m deep and contained a single, mixed dark brown clayey silt fill (1000), heavily disturbed by roots. No further archaeological features or deposits were encountered in trench 10 and no artefactual material was recovered.

Trench 11

6.12 Trench 11 was aligned approximately north-east to south-west and measured 40m long by 2m wide. Late Devensian basal sands (1102) were encountered at a maximum depth of 1.15m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (1101) up to 0.8m thick. A dark brown clayey top soil (1100) up to 0.3m thick sealed all deposits. No archaeological features or deposits were encountered in trench 11 and no artefactual material was recovered.

Trench 12

6.13 Trench 12 was aligned approximately south-east to north-west and measured 20m long by 2m wide. Late Devensian basal sands (1205) were encountered at a maximum depth of 1.05m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (1204) up to 0.8m thick. A dark brown clayey top soil (1100) up to 0.3m thick sealed all deposits. An upstanding bank and associated ditch representing the former field boundary recorded in Trenches 7 and 10, aligned north-east to south-west, were identified in the section of trench 12. The bank (1203), survived to a height of 0.68m and measured 2.64m across. The bank was composed of two deposits, a dark brown, sandy silt layer (1200), possibly a buried topsoil and the bank material itself (1203), a mid brown clayey silt. The bank material contained fragments of a polythene bag suggesting it had been heavily disturbed or remodelled. To the north of bank 1203 an associated ditch was recorded in section. The ditch cut (1201) was aligned north-east to south-west and measured 2.2m wide by 0.7m deep. It contained a single mixed clayey silt fill (1202) which had been heavily disturbed by modern dumping and root action. No further archaeological features or deposits were encountered in trench 12 and no artefactual material was recovered.

Trench 13

6.14 Trench 13 was aligned approximately north-east to south-west and measured 40m long by 2m wide. Late Devensian basal sands (1305) were encountered at a maximum depth of 1.05m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (1304) up to 0.75m thick. An upstanding bank and associated ditch representing a former field boundary aligned approximately north to south, were recorded in the section of trench 13 (Fig. 3, Plate 2). This bank is depicted on both the Stainforth Enclosure Map of 1824 and the First Edition Ordnance Survey map (1854). The bank (1302) (Fig. 3, section 1), survived to a height of 0.5m and measured 3m across and the bank material was composed of a mid brown clayey silt. To the west of bank 1302 an associated ditch was recorded in

section. The ditch (1301) was aligned approximately north to south and measured 3.1m wide by 1.35m deep. The ditch appeared to have been open until relatively recently and the majority of the ditch fill (1300) comprised material tipped recently by machine and waste material resulting from fly tipping. Traces of an earlier, silty clay primary fill (1306) 0.17m thick, were evident on the western edge of the ditch cut but no dating evidence was recovered. A dark brown clayey top soil (1303) up to 0.35m thick sealed all deposits No further archaeological features or deposits were encountered in trench 13 and no artefactual material was recovered.

Trench 14

6.15 Trench 14 was aligned approximately north to south and measured 20m long by 2m wide. Late Devensian basal sands (1402) were encountered at a maximum depth of 1.2m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (1401) up to 0.8m thick. A dark brown clayey top soil (1400) up to 0.4m thick sealed all deposits. No archaeological features or deposits were encountered in trench 14 and no artefactual material was recovered.

Trench 16

6.16 Trench 16 was aligned approximately east to west and measured 50m long by 2m wide. Late Devensian basal sands (1602) were encountered at a maximum depth of 1.15m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (1601) up to 0.95m thick. A dark brown clayey top soil (1600) up to 0.3m thick sealed all deposits. No archaeological features or deposits were encountered in trench 16 and no artefactual material was recovered.

Trench 17

6.17 Trench 17 was aligned approximately north to south and measured 30m long by 2m wide. Late Devensian basal sands (1702) were encountered at a maximum depth of 1.10m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (1701) up to 0.8m thick. A dark brown clayey top soil (1700) up to 0.45m thick sealed all deposits. No archaeological features or deposits were encountered in trench 17 and no artefactual material was recovered.

Trench 18

6.18 Trench 18 was aligned approximately north to south and measured 30m long by 2m wide. Late Devensian basal sands (1802) were encountered at a maximum depth of 1.2m below ground level. These deposits were overlain by a grey brown silty clay alluvial deposit (1801) up to 0.85m thick. A dark brown clayey top soil (1800) up to 0.40m thick sealed all deposits. No archaeological features or deposits were encountered in trench 18 and no artefactual material was recovered.

7.0 DISCUSSION

7.1 Of the seventeen trial trenches excavated, thirteen (1,2,3,4,5,6,8,9,11,14,16,17,18) were devoid of archaeological features. Natural features such as scour hollows and palaeo-channels, cut into the sand and in-filled with inorganic alluvial deposits were, however, encountered in many of the trenches. This together with the uneven interface between the alluvial deposit and late Devensian basal sands suggests that erosion of the sands by fluvial activity had taken place prior to alluvial deposition, as the auger survey indicated (Lillie *et al*, 2006). The remains of a short length of tree trunk preserved within the alluvial deposit 501 have been identified as oak. Despite the relatively good state of preservation of these remains dendrochronological analysis is not recommended. The remains were preserved within the matrix of the alluvium and as such any date obtained from the tree trunk remains would not necessarily provide an accurate date for the alluvial deposition.

7.2 The only archaeological feature identified during the evaluation was a field boundary shown on both the Stainforth Enclosure Map of 1826 and the First Edition Ordnance Survey map which took the form of a bank and associated ditch. Elements of this field boundary were recorded in four of the trial trenches (7,10,12 and 13). Both the bank and ditch were found to be heavily disturbed, the ditch having been largely in-filled by modern tipping. The bank survived in only two of the trenches (12 and 13) and had been badly damaged when the hedgerow, formerly situated on top of it, was removed.

8.0 CONCLUSION AND RECOMMENDATIONS

8.1 With the exception of the post-medieval bank and ditch field boundary, which was adequately recorded during the evaluation, no archaeological features or significant palaeoenvironmental remains were encountered during the trial trenching programme.

8.2 No further archaeological work is recommended.

Northern Archaeological Associates
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Project No: 494
Date: October 2006
Text: Jonathan Tabor
Illustrations: Dawn Knowles
Edited by: Mary Lakin
OASIS ID No. northern1-18632

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Appendix A

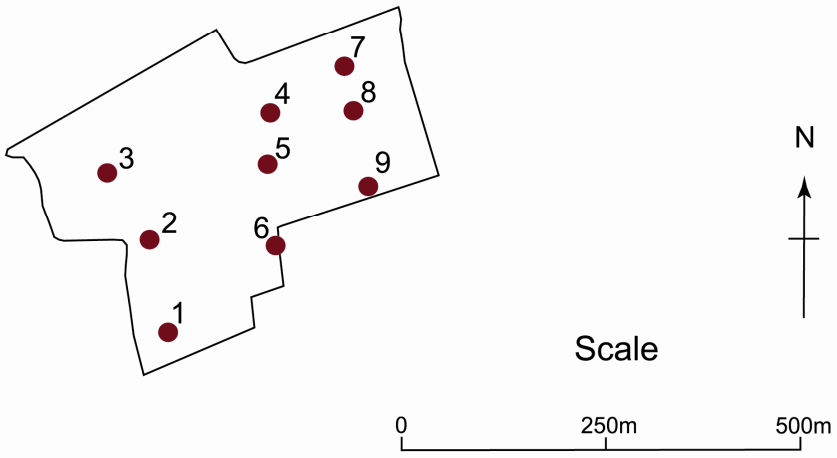
AUGER SURVEY

Dr. M. Liddle and C. Tweddle

Introduction

The location for the investigations is situated to the North West of the colliery buildings which has been designated as area 4. In total nine boreholes were excavated, each extending to 1 metre or more, to cover the full extent of the site, figure 1. Each core was logged and the location was recorded using a hand held Global Positioning System (GPS).

Figure 1: A map showing the location of the boreholes taken at Hatfield Colliery, Stainforth.



Results

Sequences obtained from the boreholes are comparable, as is shown in figures 2, 3 and 4, with most showing topsoil, alluvium and sands. The topsoil was present in all but one core, core 7, to depths of between 0.20m - 0.30m. Underlying this in all cores was the brown/grey alluvial silts and clays identified throughout the Humberhead Levels. This unit shows a generally thinning towards the south of the site with unit thicknesses decreasing from c. 0.60m in transect 1 to c. 0.30m in transect 3.

Sands were recovered below the alluvium in all but two of the cores (core 6 and 7). The colour, grain size and occurrence of quartzite gravel suggests that this unit is comparable with the '25 foot drift' deposits of Devensian date. The sharp transition to this unit reflects the erosion of the sediments prior to the deposition of the overlying alluvium by the river

Whilst insufficient data relating to the OD height of the points was obtained using the hand-held GPS, previous investigations have shown that the site ranges from 4.75 m OD to 5.60 m OD (Jacobs Gibb, unpublished). Area 4 did not show this degree of variation between the heights of the points over the site due to limited topographic variation.

Figure 2: Borehole logs from Hatfield Colliery - Transect 1

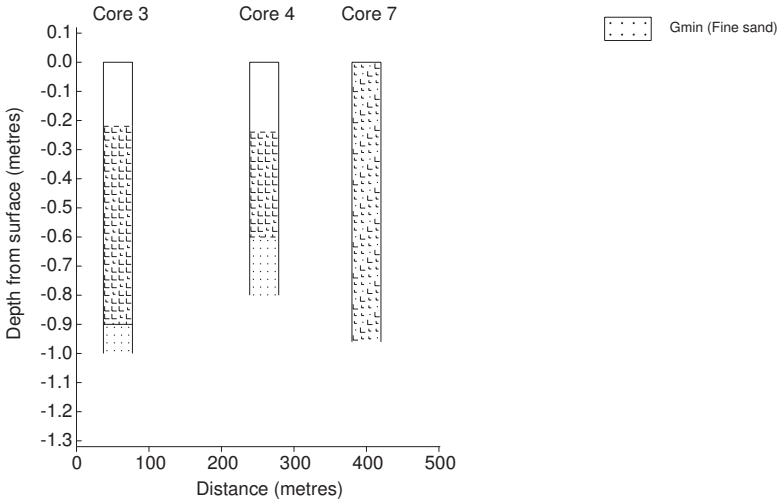
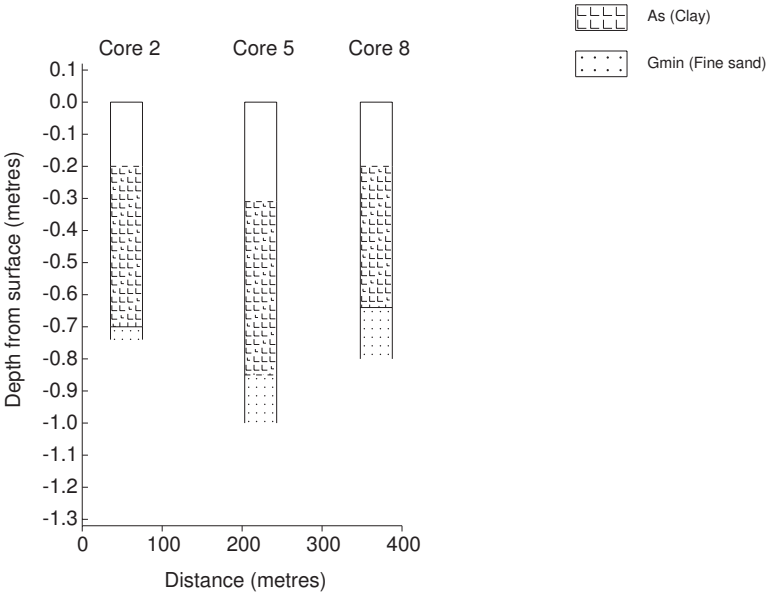
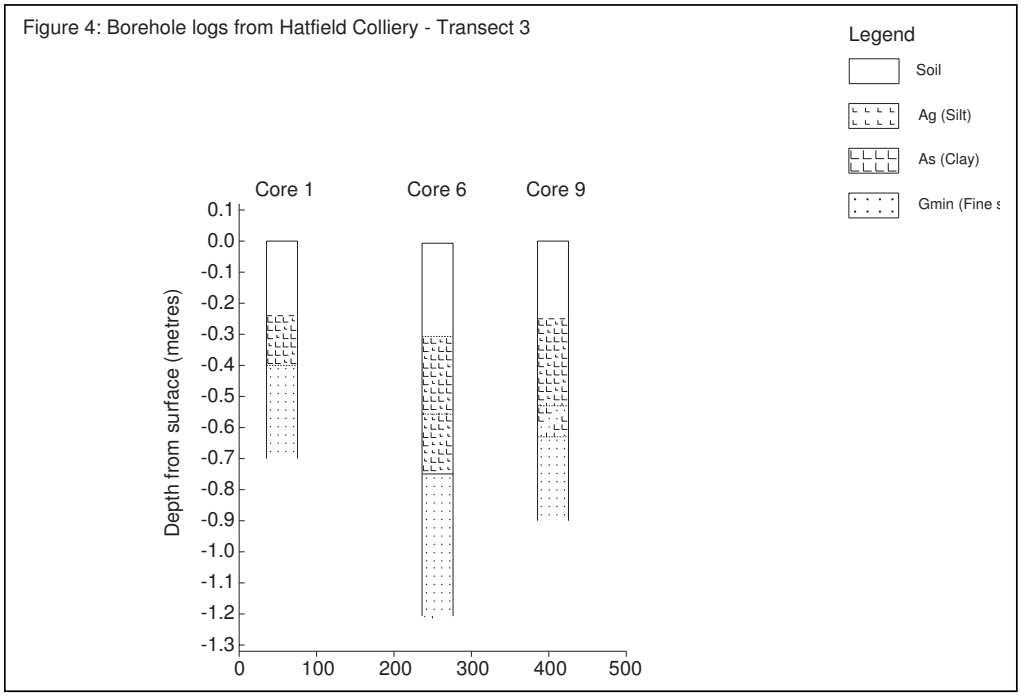


Figure 3: Borehole logs from Hatfield Colliery - Transect 2





Discussion

The basal sands with occasional gravels are regionally the deposits comparable to the '25-Foot' drift which were laid down during the late Devensian by Lake Humber, c. 21,000-11 000 BP (Dinnin 1997). These are found underlying most of the Ho,locene sequences in the Humberhead levels region and are distinctive due to their specific colour and composition.

The sharp boundary with the overlying alluvial unit at the Hatfield Colliery site indicates that erosion of the sands took place prior to the deposition of the subsequent alluvium. This could be the result of a number of processes, including erosion by fluvial or aeolian activity, both of which have occurred in the region since the last glacial period (Gaunt, 1994). Unfortunately, it is difficult to provide a direct cause for this truncation due to the limited information available and the lack of dating for the site with which we can determine when this event took place. Consequently, it is also difficult to determine how much material was removed from the ground surface prior to the deposition of the alluvium.

It is apparent that the alluvium would have been deposited by a slow moving body of water, due to the small grain size of the deposits i.e. silts and clays; and hence it is unlikely to have been the agent eroding the underlying sands. There have been numerous periods of alluvial deposition within the Humber region, with the main period of this occurring during the early-mid Holocene due to sea level rise and the associated infilling of previously eroded channels (Gaunt, 1994). These deposits are typically thick sands and silts fining to clays which is related to the decreasing energy as the channels infill (Gaunt, 1994).

Continued alluviation and peat formation took place throughout the mid-late Holocene due to fluctuating sea levels once OD had been reached around 3000 cal BC (Lillie and Neumann, 1998).

These are typically fine material with a high proportion of organics within them indicative of vegetation colonisation within the region.

Recent work carried out at Sandtoft has identified a period of accelerated alluviation with a rapid onset in the historic period (Buckland and Sadler, 1985). This has been attributed to the Roman period, due to a number of associated artefacts and sites within the region displaying evidence for an increased susceptibility to flooding. The general conclusion is that increased run-off in catchments during this period is mainly associated with changing agricultural practices. For example, a shift to deeper ploughing due to new technologies, and the changing of cultivation to a bi-annual cropping regime would result in a greater susceptibility to seasonal weathering. This would concomitantly lead to an increased erosion of the land surface within catchments, and associated increases in sediment supply (Buckland and Sadler, 1985).

Further to this, increased alluviation has been recorded at Littleborough on Trent during the 3rd Century and 4th Century, which has equally been attributed to changing agricultural practices associated with Roman activity, and other sites around the River Idle, River Torne and Old River Don all attest increasing arable exploitation (Lillie and Neumann, 1998). At Adlingfleet at the confluence of the Don and Trent at Trent Falls, excavation has shown that occupation occurred between c. AD 100-230 and c. AD 230-370, with occupation being interrupted by a significant flooding event. This caused the site to be moved eastwards in the second phase of occupation, away from the areas that were now susceptible to increased flood risk (Fenwick et al. 1998).

Due to the lack of organic deposits within the sedimentary sequence identified at Hatfield colliery it is difficult to assess the date of the alluvial deposition. It is likely that these are of later (late prehistoric or early historic) date due to the stratigraphic position and small grain size of the deposits, indicative of a lower energy environment, but again there is difficulty associated with this hypothesis due to the likely erosion of some of the underlying deposits.

Although there have been numerous finds relating to archaeological activity within the region of the site it is difficult, with the data presented here, to assess the potential for any buried archaeological material. It is likely that, with the evidence of erosion, any archaeology would have been disturbed or removed completely but further work will be necessary at sites of potential interest in order for this to be established. Stratigraphically, the possibility exists that Roman and/or pre-Roman material could be buried beneath the alluvial sequences in area 4, although the erosion of the sands underlying the alluvium makes it difficult to determine what age of material might be preserved with any degree of certainty.

Recommendations

Although alluvium was recovered from the site there is no palaeoenvironmental potential for these deposits. Therefore no further palaeoenvironmental work is recommended for area 4 of the Hatfield Colliery.

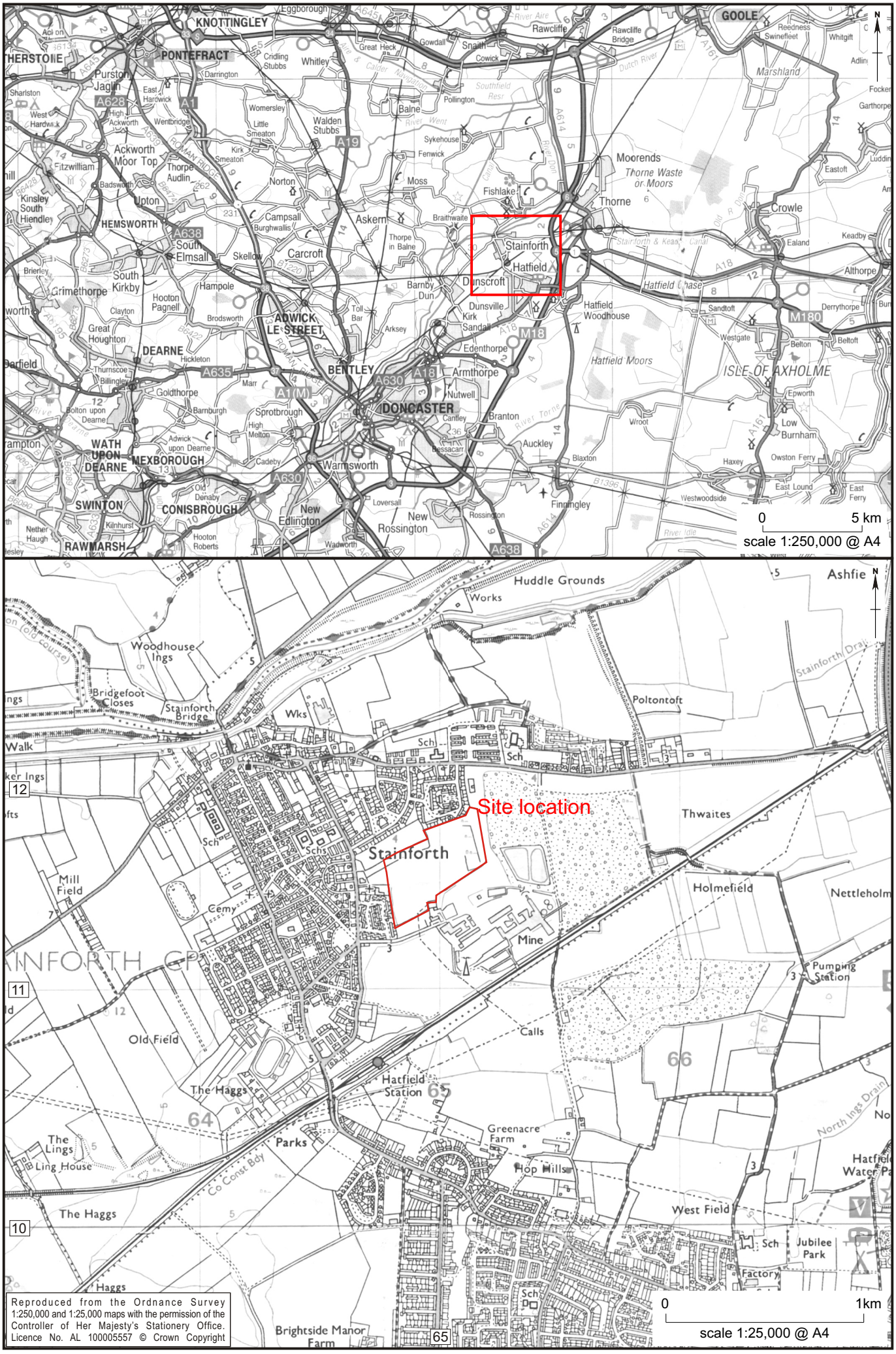


Figure 1 Hatfield Colliery: site location

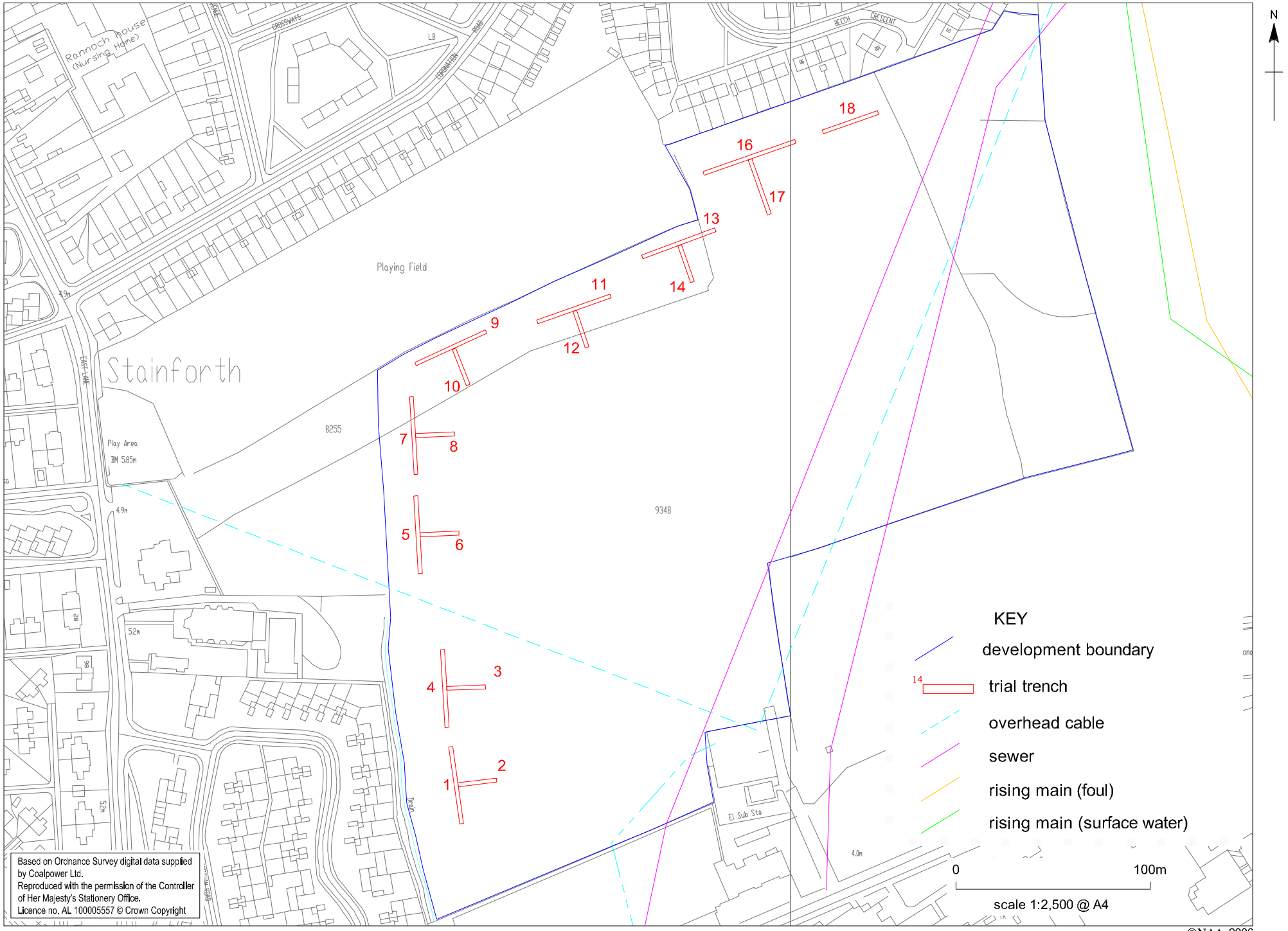


Figure 2 Hatfield Colliery, Area 4: location of trial trenches

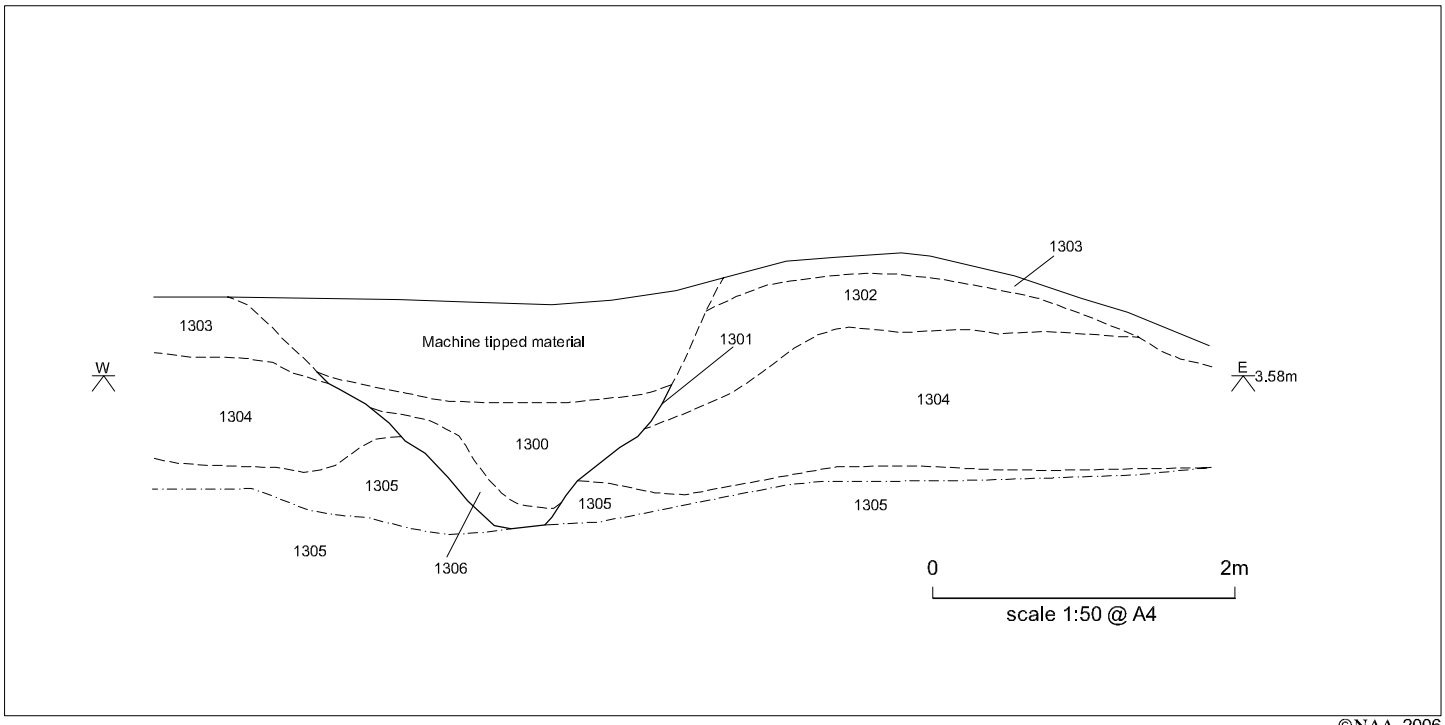


Figure 3 Hatfield Colliery: section 1

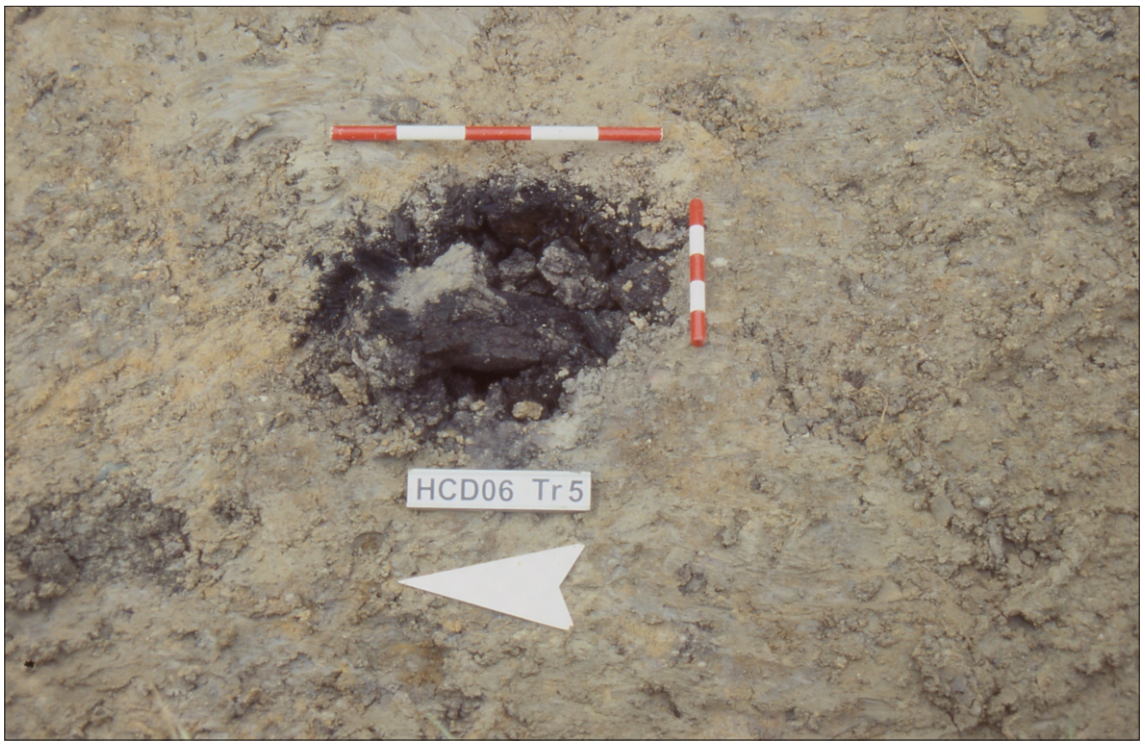


Plate 1 Remains of tree trunk preserved within matrix of alluvial deposit 501

Plate 2 Bank and ditch field boundary recorded in section of trench 13