Knabs Ridge Wind Farm, Harrogate

North Yorkshire

Archaeological Watching Brief

Oxford Archaeology North

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NPower Renewables

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SUMMARY

OA North was commissioned by Npower Renewables to undertake a watching brief during the topsoil strip for the construction of eight wind turbine bases and access roads at Knabs Ridge (centred SE 232 558), near Harrogate, North Yorkshire. The work followed on from an archaeological evaluation undertaken by Archaeological Services of Durham (ASUD 2005b), which identified a series of vertical-sided post holes set in an arc. OA North submitted a project design for the archaeological programme of work in accordance with a project brief by Entec UK Ltd (Environmental Consultants).

The watching brief took place in March, July and August 2007. The area of greatest perceived potential around Turbine 8 (Area 3), in the event revealed no significant archaeological remains, and overall, the watching brief recorded only limited evidence for archaeological activity within the study area. Four discrete pit cuts (***13***, ***15***, ***19***, and ***21***) and a possible stakehole (***17***) were observed within Areas 6 and 8, but no archaeological finds were recovered from the associated fill deposits. As such, no direct link in function or age could be established between these outlying pits or to the features observed during the earlier phase of archaeological evaluation

The dearth of archaeological features within the area of the proposed wind farm suggests that human activity in the area has been of a non-intensive, probably agricultural in nature, much as it is today. Overall, the wind farm development has had little substantive impact on an identified archaeological resource.

ACKNOWLEDGEMENTS

Oxford Archaeology North (OA North) would like to thank Clare Wilson and Tim Daldry of NPower Renewables and Entec UK Ltd for commissioning the work and for their support in the course of the project. We would also like to thank John Unthank of Cumbrian Industrials for his help in the course of the watching brief. Gail Falkingham, North Yorkshire County Council is also to be thanked for her advice and guidance during the project.

Thomas Mace, Kelly Clapperton and Kathryn Levey undertook the watching brief during March, July and August 2007. Thomas Mace compiled the report, and Ann Stewardson produced the drawings. Jamie Quartermaine managed the project and edited the report.

1. INTRODUCTION

1.1 Circumstances of the Project

1.1.1 OA North was commissioned by Npower Renewables to undertake a watching brief during the topsoil strip for the construction of eight wind turbines and access roads at Knabs Ridge (centred SE 232558), near Harrogate, North Yorkshire (Fig 1). The work followed on from an archaeological evaluation undertaken at the site by Archaeological Services of Durham (ASUD 2005b), which identified a series of vertical-sided post holes set in an arc near the proposed Turbine 8. North Yorkshire County Council's Archaeology Service recommended that the topsoil strip along the access road for this turbine be subjected to careful cleaning to identify any other possible associated features. A watching brief was also required during the topsoil strip for the access roads and the remaining turbines. OA North submitted a project design for the archaeological programme of work (*Appendix 2*) in accordance with a project brief by Entec UK Ltd (Environmental Consultants) (Entec 2006) (*Appendix 1*). The project design was approved by the North Yorkshire County Council Archaeologist, and the works were undertaken in accordance with it.

1.1.2 This report sets out the results of the watching brief which was carried out during March, July and August 2007. It outlines the results, provides a statement of the archaeological potential, and an assessment of the impact of the development.

2. METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 An archaeological specification for the watching brief and topsoil strip (*Appendix 1*) was compiled by Entec UK Ltd (*Appendix 1*) and a project design, developing from the brief was prepared by OA North (*Appendix 2*). The project design was approved by the County Archaeologist, North Yorkshire County Council.

2.1.2 The project design allowed for an area of topsoil strip and cleaning across an area of *c*8250m^2 along the access corridor towards Turbine 8, with the intention of undertaking a full excavation if any archaeological features were identified. In the event no archaeological features were found within this area, and there was consequently no recourse to mitigative excavation. In all other respects the work was undertaken in accordance with the project design, and the work was consistent with the relevant standards and procedures of the Institute of Field Archaeologists, and generally accepted best practice

2.2 SUPERVISED TOPSOIL STRIP AND CLEANING

2.2.1 The project design required that a large area (*c* 8250m^2) along the access route of Turbine 8 (Fig 2), and including the footprint of Turbine 8, be subject to archaeological supervision during the topsoil strip, and then be carefully cleaned across the whole area. Around the other turbine bases, access tracks, site compound and sub-station site a watching brief was maintained during topsoil stripping (Plates 1 and 4); however, cleaning was only undertaken where possible features or anomalies were identified.

2.2.2 ***Topsoil Strip Supervision:*** the topsoil (***1***) was stripped in successive, level spits, down to the level of either a significant archaeological resource or to the top of undisturbed natural (***2***), whichever was first encountered (Plates 2-3); the underlying natural layers were typically at a depth of 0.20 - 0.35m below surface. For the most part, the topsoil strip was undertaken by a single 13-ton mechanical excavator with occasional use of a dumper to shift spoil (Plate 4). Three mechanical excavators stripped Area 6 (Fig 2) during the course of one day; each fitted with a toothless ditching bucket. All exposed soil horizons were examined and described and spoil heaps were carefully checked for any unstratified finds.

2.2.3 ***Cleaning:*** the ground revealed, following the removal of topsoil, was systematically cleaned along the access route of Turbine 8 (an area of *c* 8250m^2) and elsewhere was selectively cleaned by hand around any anomalies, features or soil colour changes. The weather conditions were very varied during the course of the watching brief; on occasion it was very bright, dry and dusty, which made observing features more difficult; at other times, the ground was very wet and easily churned by the tracks of machines.

2.3 WATCHING BRIEF RECORDING

2.3.1 Hand excavation, following the mechanical clearance, was intended to be sufficient to identify the form and date of features; where possible, pits and postholes were

subject to a 50% by volume controlled stratigraphic excavation before being removed by machine. The level of the water table prevented the full excavation of pit ***15*** which was restricted to a depth of excavation not exceeding 1.0m (Fig 4). Pit ***21*** was manually excavated to a depth of 0.69m to confirm the homogeneity of the associated fill-deposit (***20***) before being half-sectioned by machine; the cross-section was found to be 0.80m deep (Fig 6).

2.3.2 The location, extent, and character of surviving archaeological features exposed during the course of the site works were recorded on OA North's *pro-forma* sheets, using a system adapted from that used by the Centre for Archaeology Service of English Heritage. A monochrome and colour slide photographic record was maintained throughout and, where appropriate, scale drawings were produced to identify and illustrate individual archaeological features. Surviving features were planned in detail at a scale of 1:20 and were annotated on to a large-scale plan at 1:50 (Figs 3 and 7). Sections were drawn at a scale of 1:10.

2.3.3 ***Finds:*** no archaeological finds were recovered during the course of the watching brief.

2.4 Archive

2.4.1 The results of all archaeological work carried out, including a copy of this report, will be provided in the English Heritage Centre for Archaeology format. In this instance the archive will be submitted to the County Record Office (Northallerton). The paper archive for the archaeological work undertaken at the site will be deposited with the Harrogate Museums and Arts Service (Royal Pump Room Museum, Crown Place, Harrogate, HG1 2RY (LG12@harrogate.gov.uk) (tel 01423 556188)). Copies of the report will be sent to NPower Renewables, Harrogate Borough Council, North Yorkshire County Council and OASIS.

2.4.2 The Arts and Humanities Data Service (AHDS) online database *Online Access to index of Archaeological Investigations* (OASIS) has been completed as part of the archiving phase of the project.

3. BACKGROUND

3.1 Topography and Geology

3.1.1 Knabs Ridge is located adjacent to the A59 Skipton Road, approximately 5km west of Harrogate in North Yorkshire. The site occupies approximately 80ha of generally level ground on a gently sloping ridge. It is currently in agricultural use for livestock grazing and is divided by a series of fence lines and dry-stone walls.

3.1.2 The area of the proposed wind farm site was covered by a peaty topsoil (***1***), which overlay a boulder clay (***2***) on top of sandstone bedrock.

3.2 History and Archaeology

3.2.1 ***Previous Investigations:*** previous studies have shown that there is considerable archaeological potential for the site and these include the Dacre Pasture Project (2004) which was a community-based project examining the archaeology of the wider area. A geophysical survey and an archaeological evaluation was undertaken by Archaeological Services University of Durham, and was intended to inform the present development (ASUD 2005a and b). Despite these investigations, there is a marked absence of sites recorded within the development area in the North Yorkshire Historic Environment Record (HER).

3.2.2 ***Prehistoric and Roman Potential:*** the Dacre Pasture Project (2004) has yielded evidence of long-term human activity, including potential settlement within the environs of the study area, that dates back to the prehistoric period. This includes the discoveries of rock art that has been incorporated into dry-stone walling (NYCC 2005).

3.2.3 The HER records potential rectilinear enclosures and track-ways within the wider area (NYM 14991, 14996, 15003, 14977, 13379). The possible enclosures, which have been identified by crop marks, are located on either side of the A59 (NYM 14991 and 14961). Those to the south of the A59 (NYM 14961) are orientated along a north-east/south-west trackway that potentially extends into the study area, and there is a possibility that there may have been further enclosures within the study area (ASUD 2005b). However, in the event no features were discovered.

3.2.4 The geophysical survey (ASUD 2005a) identified some potentially significant anomalies around the proposed site of Turbine 8 (Area 3). An archaeological evaluation (ASUD 2005b) followed on from this, entailing the excavation of a 'T'-shaped trench (Trench 3) and a small 10m long trench (Trench 4) to the north-east of the proposed turbine to examine some faint geophysical anomalies. The evaluation examined the whole of the development, concentrating on the sites of the proposed turbines and areas of geophysical anomalies, but, only in the area around proposed Turbine 8 (Trench 4), were any archaeological features identified (ASUD 2005b). These comprised a series of vertically-sided post holes set in an arc, each was 0.9m in diameter and was no more than 3m from its neighbour. They contained a fill of yellow clay, with lenses of peat. The maximum depth of the putative post holes was 1.55m from the surface. Nearby in Trench 3 was a shallow linear, flat-bottomed gully feature. No finds were recovered from any of the features and there was no direct connection between the linear feature and the arc of putative

postholes; however, a prehistoric date was very tentatively postulated for these features (*ibid*).

3.2.5 Near to the site are the Bank Slack Camp earthworks (SM NY133), which were possibly of Iron Age date (Entec 2004). The only feature of Roman date identified from the environs of the present development was a Roman road, known as Watling Road, which lies to the north of the study area (NYCC 2005).

3.2.6 ***Medieval Potential:*** the name Knabs Ridge probably derives from the Old Norse word of 'Nabbi' meaning land by a hillock (Entec 2004). From at least the Norman period Knabs Ridge was a part of the former Forest of Knaresborough, and to the south of the site is Haverah Park, which was a deer park created in the late twelfth century, that formed part of the forest (*ibid*). Within this park, and *c* 1.5km to the south-west of the study area, was a former hunting lodge, called John of Gaunt's Castle that was first documented in 1333 (NYCC 2005; Entec 2004). This survives as a ruined stone and earthwork structure (SM 29547), and took the form of a stone tower standing on a square-shaped platform surrounded by a moat with a large outer bank.

4. WATCHING BRIEF RESULTS

4.1 INTRODUCTION

4.1.1 All ground disturbances were monitored as part of the watching brief, which included the locations of the proposed eight turbines, their access roads and the works compound. The development area is divided into nine working areas (Fig 2), which, for the most part, each contain a single turbine, although Area 2 contains two turbines (TP 6 and 7) and Areas 4 and 8 contain no turbines. The watching brief results are presented in accordance with these areas (*Section 4.2*) and the results of the topsoil stripping and systematic cleaning along the access route to Turbine 8 are presented as part of Area 3.

4.1.2 ***General Stratigraphy:*** at the majority of the excavation areas the topsoil (***1***) was a friable, dark-brown silty clay deposit (with slight variation); it was between 0.2m and 0.35m thick, but mostly of 0.2m-0.25m thickness. The topsoil directly overlay the natural subsoil which was a mottled mid-yellowish-brown and grey firm, boulder clay (***2***) (with some limited variation across site). In places this layer comes down onto a sandstone bedrock at approximately 0.95m depth from the surface, but elsewhere it forms a layer approximately 0.90-1.00m thick on top of a dark bluish-grey clay layer (***22***). The detailed description of archaeology and stratigraphy within each area is presented below (*Section 4.2*) and in the context list (*Appendix 3)*.

4.2 RESULTS

4.2.1 ***Area 1:*** Area 1 incorporates Turbine 5 and the access track to it and is in a field at the south-west corner of the proposed development area, immediately to the north of Penny Pot Lane. A 1.82m wide field boundary ditch (***5***) and an associated earth and stone-built bank structure (***7***) were observed at the eastern limit of Area 1. Plastic baling twine and other plastic items recovered from the fill (***6***) of the boundary ditch (***5***) demonstrate that the feature is of modern date. No other features of archaeological interest were observed across the area.

4.2.2 ***Area 2:*** Area 2 is a field at the southern part of the study area adjacent to Penny Pot Lane (Fig 2). It includes Turbines 6 and 7, the main compound area, parts of the access tracks leading to Turbines 3, 6 and 8, and the site of the transformer and switchgear.

4.2.3 Within the area of the main compound (Fig 2), a dark-brown silty-clay topsoil (***1***) was removed to a depth of between 0.02 - 0.25m to reveal a light orange-yellow variation of the underlying boulder clay (***2***). The maximum depth of excavation along the access tracks was 0.35m, which was overlain with hardcore to make up the road surface. The natural had 10% medium-large stone inclusions and patches of gravel. Two field drains were uncovered but no significant archaeological features were observed.

4.2.4 Excavation for the base for Turbine 7 showed that the yellow-grey clay layer (***2***) was *c* 0.9-1.0m thick and overlay a well-compacted, dark-bluish-grey clay with no inclusions.

4.2.5 ***Area 3:*** Area 3 is at the south-eastern part of the study area (Fig 2) and incorporates Turbine 8 and its access track. Because of the discovery of the arc of putative post-holes at the original proposed location of Turbine 8 (ASUD 2005b), an extensive area of the proposed Turbine base 8 and access track were subject to an archaeologically supervised top-soil strip and systematic cleaning. The topsoil was a dark-brown silty clay, which was between 0.15m and 0.25m thick and overlay a natural, light-orange-yellow clay. Despite the earlier promise of the area, no further significant archaeological features were identified during the present investigation.

4.2.6 ***Area 4:*** Area 4 is in the centre of the study area and includes the north-west/ south-east aligned access track between Turbines 3 and 7. The topsoil was a heavily peaty, silt deposit (***1***) on top of a variable light-yellowish-grey /greyish-yellow compacted boulder clay (***2***). No archaeological features were observed.

4.2.7 ***Area 5:*** Area 5 is the field to the north of Area 4, and includes Turbine 3 and the access track to Turbines 2 and 4 (Fig 2). The topsoil comprised a 0.30m thick blackish, peaty-silt deposit (***1***), overlying a light-mid-yellow-grey clay subsoil (***2***), which was *c* 1.0m thick in the area of the base for Turbine 3. This overlay a slightly different natural subsoil, which was a light brownish-grey clay with <2% large sub-angular and angular stone and sandstone inclusions (up to 0.27m long) (***22***). The yellowy clay layer (***2***) comes down onto a sandstone bedrock at *c* 0.75m depth in this area.

4.2.8 Some field drains were observed; each was silted up with a blackish-brown deposit (the same as topsoil ***1***) and was heavily rooted. They cut the underlying clay natural (***2***) at less than a few centimetres depth below the topsoil and on excavation filled quickly with water. They were visible above ground as lines with differential height of vegetation (crop marks) and were recorded on the site plan. Towards the east of the area there were some very large erratic angular stones visible on the surface; but these showed no signs of working or had any evident relationship to each other. It was considered that they were glacial erratics. No significant archaeological features were observed.

4.2.9 ***Area 6***: this is the field to the east of Area 5 at the north-east corner of the study area (Fig 2); it includes Turbine 4 and the access track to it. An old access road (***23***) to the A59, was aligned approximately north-west/south-east, and was observed directly below a thin layer of topsoil (0.02-0.04m) immediately to the east of the fence line between Areas 5 and 6. The road is marked on the OS 1:10,000 mapping and provided access for the now derelict farm buildings to the south-east of Area 6. The road was <2.2m wide, and comprised two strips of lesser quality tarmac, each *c* 0.6-0.8m wide, on top of a broad base layer made up of unworked stones of varying sizes (average 0.20 x 0.15 x 0.10m) and rubble, including frogged machine-made brick. The road was raised approximately 0.20m above the natural clay layer.

4.2.10 A large pit (***15***), 1.1m diameter, was observed at the north-eastern end of the access track to Turbine 4 (Figs 3 and 4). The pit was almost circular with an extension (not an additional cut) on the south-south-western side. It was found to have almost vertical sides to a depth of slightly greater than 1.0m and contained a dark-bluish-grey shale-type fill (***14***). A small stake hole (***17***), with a similar shale type fill (***16***), was observed near to pit ***15*** (Fig 4 and Plate 5) and is thought likely to be associated with it. No finds were recovered. Pit ***15*** has similar dimensions to those of the arc of putative post-holes (up to 1.5m deep) located in Area 3, almost directly to the south (ASUD 2005b).

4.2.11 A second large pit (***21***) (Figs 3 and 6; Plate 6), was found *c* 16m to the east of pit ***15***. It was *c* 1m diameter and had a flat base at a depth of 0.8m; it was of a similar size and shape in both plan and profile to pit ***15*** (Fig 4). The pit also contained a similar shale-type fill (***20***) but otherwise there was no direct association with pit ***15***. No finds were retrieved from the fill of pit ***21***. Some decayed grass was observed within the clay layer beneath the cut of the pit, suggesting that the clay had, at some stage been recently re-deposited. A ceramic pipe field drain was observed to cut / enter the pit at its northern edge at a depth of 0.40m. The purpose of the pit is unclear, but may possibly have served as a soak away.

4.2.12 A small shallow pit (***19***), 0.6m diameter and 0.1m deep, (Figs 3 and 5, Plate 7) was observed in the north-east corner of Area 6, within a possible area of burning. No finds were recovered.

4.2.13 ***Area 7:*** Area 7 is the field between Areas 5 and 8 in the northern part of the study area, and includes Turbine 2 and its access tracks. A dark brown to mid-blackish-brown, heavily rooted, silt-topsoil (***1***) was removed to a depth of 0.15-0.20m to reveal a well-compacted mid greyish-yellow clay subsoil, which is a variation of the natural subsoil (***2***). There is some variation in the topsoil between Area 7 and Area 5, as in places the topsoil (***1***) here is less peaty than further to the east. This is probably due to variations in drainage and the vegetation growing on the surface; the area to the west drains better and is drier than the area to the east. The yellow clay subsoil was found to be approximately 1.0m thick and overlay a dark-grey clay layer (***22***). No archaeological features were observed.

4.2.14 ***Area 8:*** Area 8 is the field to the west of Area 7, in the north-western part of the study area, and includes the access track between Turbines 1 and 2. A small sub-square pit (***13***) (Figs 7 and 8, Plate 8) with an irregular base was observed approximately 26m from the fence line to the western edge of Area 8. No finds were recovered from the dark-blackish-brown friable silt fill (***12***).

4.2.15 ***Area 9:*** Area 8 is in the north-western corner of the study area and includes Turbine 1. A *c* 0.20m thick topsoil (***1***) was removed to reveal the underlying clay natural (***2***). Initial stripping in this area did not exceed 0.30m, but the area was subsequently further levelled to a depth of 0.70m under archaeological observation. No archaeological features were observed.

5. CONCLUSION

5.1 DISCUSSION

5.1.1 The watching brief recorded only limited evidence for archaeological activity within the study area. This included a ow disused access road (***23***), which formerly connected the derelict farm buildings to the south-east of Area 6 to the A59. Also four discrete pit cuts (***13***, ***15***, ***19***, and ***21***) and a possible stakehole (***17***) were observed within Areas 6 and 8 (Figs 3-8). Great care was taken during the watching brief to establish if there were any other pits in the immediate environs of those that were identified, and therefore we can be reasonably confident that there were no groups of pits.

5.1.2 Pits (***15***) and (***21***) (Figs 4 and 6), in Area 6, had a similar size and shape in both plan and profile, were *c* 40m apart and contained a similar shale-type fill (***20***). Some rotting grass was observed within the clay layer beneath the cut of pit (***21***), suggesting that the clay had at some stage been re-deposited and possibly recently. A ceramic pipe field drain was observed to enter/cut pit ***21*** through its northern edge. While the purpose of the pit is unclear, it has been suggested that it may have served as a soak away, but because of the lack of a direct connection between this and pit ***15***, this interpretation does not necessarily apply to the latter. These two pits were also similar in size and shape to the arc of post-holes/pits that were located in Area 3 during the evaluation (ASUD 2005b), located to the south. These pits / post-holes in Area 3 were thought to be potentially prehistoric in date but no dating evidence was recovered during the evaluation (*ibid*). No finds were recovered from the associated fill deposits (***12***, ***14***, ***16***, ***18***, and ***20***) and, as such, no direct link in function or age could be established between these scattered pits and the arc of pits/ post-holes from the evaluation.

5.1.3 The dearth of archaeological features within the area of the proposed wind farm suggests that human activity in the area has been of a non-intensive, probably agricultural in nature, much as it is today.

5.2 IMPACT OF THE DEVELOPMENT

5.2.1 The construction of the turbine bases has not impacted upon any identified archaeological resource. The construction of the access roads have impacted on a limited number of scattered pits; however, their date or archaeological significance are unknown. While there was a potentially significant arc of pits/post-holes identified during the evaluation, the turbine and access tracks were remote from this site. The absence of archaeological deposits and features may, in part, reflect that there was no impact, or investigation, in the area of greatest sensitivity, but may also suggest that the features identified during the evaluation were of only localised extent. Overall the wind farm development has had little substantive impact on an identified archaeological resource.

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APPENDIX 1: PROJECT BRIEF

APPENDIX 2: PROJECT DESIGN

June 2007

Oxford Archaeology North

KNABS RIDGE WIND FARM

NORTH YORKS

ARCHAEOLOGICAL EXCAVATION PROJECT DESIGN

Proposals

The following project design is offered in response to a request from NPower Renewables for an archaeological excavation on the site of the proposed wind farm at Knabs Ridge, near Harrogate, North Yorkshire.

1. INTRODUCTION

1.1 CONTRACT BACKGROUND

1.1.1 Oxford Archaeology North (OA North) has been invited by NPower Renewables to submit a project design and costs for an archaeological excavation at Knabs Ridge Wind Farm, Nr Harrogate, North Yorks, in advance of a proposed wind farm development. This follows on from and is informed by an archaeological evaluation undertaken by Archaeological Services of Durham (ASUD) in August 2005 (ASUD 2005b). The project design is in accordance with a brief by Entec UK Ltd (Entec 2006), and has been approved, subject to comments, by the Archaeologist, North Yorkshire County Council.

1.2 ARCHAEOLOGICAL BACKGROUND

1.2.1 A geophysical survey and archaeological evaluation was undertaken across the extent of the proposed wind farm site (ASUD 2005b). The evaluation examined the potentially significant anomalies from the geophysical survey and only in the area around proposed turbine 8 (Area 3) were there any archaeological features identified. These comprised a series of vertical sided post holes set in an arc and a nearby shallow linear feature. No finds were recovered from any of the features and there was no direct connection between the linear feature and the arc of putative post holes. A prehistoric date can not be excluded for these features and therefore there is a requirement for a programme of excavation to determine if there are further archaeological remains within the area. The arc of putative post-holes is outside the area of development impact and will not be further investigated.

1.3 OXFORD ARCHAEOLOGY NORTH

1.3.1 OA North has considerable experience of the evaluation and excavation of sites of all periods, having undertaken a great number of small and large scale projects during the past 18 years. Evaluations and assessments have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables. OA North and all its members of staff operate subject to the Institute of Field Archaeologists (IFA) Code of Conduct.

2. OBJECTIVES

2.1 The following excavation programme has been designed in accordance with a brief by Entec UK Ltd, which has been approved by Gail Falkingham of North Yorkshire County Council. It provides for a topsoil strip and excavation. The required stages to achieve these ends are as follows:

2.2 SUPERVISED TOPSOIL STRIP AND CLEANING

2.2.1 A watching brief will be maintained in the course of a topsoil strip of an area of 8250m^2 that follows the access corridor for Turbine 8 and includes the area around Turbine 8. Following the topsoil strip the area will be subject to selective manual cleaning, which will concentrate on features or colour changes revealed by the mechanical clearance and it is anticipated that approximately 10% of the area will be manually cleaned.

2.3 WATCHING BRIEF

2.3.1 A watching brief will be maintained on soil stripping around the other turbine bases, access tracks, site compound and sub-station site.

2.4 EXCAVATION

2.4.1 Excavation of features identified in the area of the topsoil strip by means of manual techniques.

2.5 EXCAVATION REPORT

2.5.1 A written report will assess the significance of the data generated by this programme within a local and regional context.

3. METHODS STATEMENT

3.1 The following work programme is submitted in line with the stages and objectives of the archaeological work summarised above.

3.2 SUPERVISED TOP-SOIL STRIP AND CLEANING

3.2.1 The area around Turbine 8, an area of *c*8250m^2, will be topsoil stripped, using plant to be provided by the client, down to the level of a significant archaeological resource or to the top of undisturbed natural. Excavation of the uppermost levels of modern overburden material will be undertaken in successive, level spits, by a machine fitted with a toothless ditching bucket to the top of the first significant archaeological level. The work will be supervised by a suitably experienced archaeologist. The arc of putative post-holes, Trench 4, is outside the area of development impact and will not be further investigated; the area around the post holes will be fenced off to prevent inadvertent disturbance.

3.2.2 Thereafter, the area will be selectively cleaned by hand and subsequent excavation of any identified features and/or deposits will for the most part be manual. The cleaning will be undertaken around any anomalies, features or soil colour changes revealed following the topsoil removal. It is anticipated that this would involve the cleaning of one tenth of the stripped area (825m^2). Following both the initial stripping, and cleaning, the area will be left for a number of days to allow the ground to weather which will improve the possibility of soil marks. The ground will be checked at intervals to identify any sub-surface features. If there is a requirement for further cleaning then provision is allowed for as a contingency.

3.3 WATCHING BRIEF

3.3.1 ***Methodology:*** a programme of field observation will accurately record the location, extent, and character of any surviving archaeological features within the areas of proposed top-soil strip around the other turbine bases, access tracks, site compound and sub-station site. This work will comprise the observation of the process of excavation for these works, the systematic examination of any subsoil horizons exposed during the course of works, and the accurate recording of all archaeological features and horizons, and any artefacts, identified during observation.

3.3.2 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 coordinates where appropriate). All archaeological information collected in the course of fieldwork will be recorded in standardised form, and will include accurate national grid references. Features will be planned accurately at appropriate scales and annotated on to a large scale plan provided by the Client. A photographic record will be undertaken simultaneously. The recording techniques and procedures employed by OA North for such detailed recording represent current best practice.

3.3.3 It is assumed that OA North will have the authority to stop works for up to one hour to enable the recording of important deposits, and to call in additional archaeological support if a find of particular importance is identified. This would only be called into effect in agreement with the Client and North Yorkshire County Council and will require a variation to costing. In normal circumstances, field recording will also include a continual process of analysis, evaluation, and interpretation of the data, in order to establish the necessity for any further more detailed recording that may prove essential.

3.4 EXCAVATION

3.4.1 Following the cleaning of the site and the identification of the archaeological resource a programme of excavation will be implemented. The costs and time on site for this element are totally reliant on the extent of the features identified during the topsoil strip. It is therefore proposed to cost for this element following the site cleaning.

3.4.2 Excavation will be by manual techniques. Pits and postholes will be subject to a 50% by volume controlled stratigraphic excavation, with the remainder of the feature, should it prove necessary to be removed in entirety, excavated quickly keeping only that dating evidence which is securely derived from the feature in question.

3.4.3 Linear cut features, such as ditches and gullies, will be subject to up to a maximum of 10% by volume controlled stratigraphic excavation, with the excavation concentrating on any terminals and intersections with other features which would provide important stratigraphic information. As with pits and postholes, should it prove necessary to remove the remainder of the feature to expose underlying features and/or deposits, it will be excavated quickly keeping only that dating evidence which is securely derived from the feature in question.

3.4.4 Extensive linear deposits or homogeneous spreads of material will be sample excavated by hand to a maximum of 10% by volume (the size of the sample to be agreed following consultation with the

Archaeologist, North Yorks County Council). If features/deposits are revealed which need to be removed and which are suitable for machine excavation, such as large-scale dump deposits, or substantial linear cut features, then they would be sample excavated to confirm their homogeneity before being removed by machine.

3.4.5 Structural remains will be excavated manually to define their extent, nature, form and, where possible, date. Any hearths and/or internal features will be 100% sample excavated to provide information on their date and function, and the extent of any associated floor surfaces will be determined.

3.4.6 It should be noted that no archaeological deposits will be entirely removed from the site unless their excavation is necessary to reveal other features and/or deposits. If the excavation is to proceed below a depth of 1.2m then the sides will be stepped in. Cut features identified against the edges of the excavation will not be excavated below a safe working limit of 1.2m unless it is confirmed by the Archaeologist, North Yorkshire County Council, that they are of exceptional importance.

3.4.7 Any cremations and inhumations that are discovered will be subject to a 100% by volume controlled stratigraphic excavation (it should be noted, however, that should intact cremations be revealed then the vessels will be lifted whole for excavation later under laboratory conditions). All human remains will be recorded using OA North's skeleton recording forms. The grave cut and/or coffin and contents will be recorded in plan at 1:20. Significant details of any grave goods, should they be discovered, will be planned at 1:10. Photography will be used to provide a further detailed record of the skeleton. The removal of such remains will be carried out with due care and sensitivity under a Department for Constitutional Affairs Licence (http://www.dca.gov.uk/corbur/buriafr.htm) as required by the *Burials Act 1857*.

3.4.8 **Finds:** finds recovery and sampling programmes will be in accordance with current best practice (following IFA and other specialist guidelines) and subject to appropriate expert advice. OA North employs a wide range of in-house finds specialists and palaeoecologists, providing considerable expertise in the investigation, excavation, and finds management of sites of all periods and types, who are readily available for consultation and site visits.

3.4.9 Environmental samples (bulk samples of 40-60) litres volume, to be sub-sampled at a later stage) will be collected from every securely stratified deposit. If particularly rich deposits of bone are encountered then 100 litre plus coarse-sieved samples will be taken.

3.4.10 Samples will also be collected for technological, pedological and chronological analysis as appropriate. If necessary, access to conservation advice and facilities can be made available. OA North maintains close relationships with Ancient Monuments Laboratory staff at the Universities of Durham and York and, in addition, employs artefact and palaeoecology specialists with considerable expertise in the investigation, excavation and finds management of sites of all periods and types, who are readily available for consultation.

3.4.11 ***Recording:*** all information identified in the course of the site works will be recorded stratigraphically, using a system, adapted from that used by the Centre for Archaeology Service of English Heritage, with sufficient pictorial record (plans, sections and both black and white and colour photographs) to identify and illustrate individual features. Primary records will be available for inspection at all times.

3.4.12 Results of all field investigations will be recorded on pro forma context sheets. The site 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). All artefacts and ecofacts will be recorded using the same system, and, following on-site processing, will be handled and stored according to standard practice (following current Institute of Field Archaeologists guidelines) in order to minimise deterioration.

3.4.13 The position of the excavation and the archaeological features will be recorded using a total station. The information will be tied in to OD.

3.5 POST-EXCAVATION ASSESSMENT

3.5.1 ***Archive:*** the results of the fieldwork will form the basis of a full archive to professional standards, in accordance with current English Heritage guidelines (*The Management of Archaeological Projects, 2nd edition, 1991*) and the *Guidelines for the Preparation of Excavation Archives for Long Term Storage* (UKIC 1990). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. 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 in that organisation's code of conduct.

3.5.2 The paper and finds archive for the archaeological work undertaken at the site will be deposited with the Harrogate Museums and Arts Service (Royal Pump Room Museum, Crown Place, Harrogate, HG1 2RY (LG12@harrogate.gov.uk) (tel 01423 556188)). The archive will be deposited with the Museum within six months of the completion of the overall project. Except for items subject to the Treasure Act, all artefacts found during the course of the project will be donated to the receiving museum (Society of Museum Archaeologists 1993; Walker 1990).

3.5.3 The archiving of the digital data arising from the project will be undertaken in a manner consistent with professional standards and guidance (Richards and Robinson 2000). Liaison will be undertaken with ADS to establish their detailed requirements and discuss the transfer of the digital archive.

3.5.4 Liaison will be undertaken with the HER Officer, North Yorkshire County Council, to make arrangements for digital information arising from the project to be submitted to the North Yorkshire Historic Environment Record for HER enhancement purposes; however, the North Yorkshire Historic Environment Record is not an appropriate repository for digital archives arising from projects.

3.5.5 The archive will be formed of all the primary documentation, including the following:

- Context Records
- Finds Records
- Sample Records
- Field / Inked Drawings and digital copies of CAD data
- Photographic negatives, prints and colour transparencies
- Written report
- Administrative records
- Conservation records.

3.5.6 ***Assessment:*** OA North accords with best practice for the analysis of the excavation results in accordance with the guidelines of English Heritage MAP2 (Canti 1996). This would involve a brief assessment of the dataset generated by the excavation, followed by a review of the excavation archive to establish the potential for further analysis. This assessment will take place in close consultation with the client and the format for the final report will also be agreed at this stage of the work. The Harris Matrix, largely produced during the excavation programme will be completed and checked as part of the assessment. The assessment will involve the compilation of an archive report, detailing the stratigraphic history of the site, and outlining the significance of the structural, artefactual and environmental evidence. A copy of the assessment report will be submitted to Andy Hammon, Regional Science Advisor for English Heritage. The assessment report will include the following:

- A non technical summary
- Background to the project
- Summary of the aims and objectives of the project
- Description of the methodology
- Summary results of the excavation
- Assessment of the stratigraphy
- Assessment of the finds / samples and summary of the project archive
- Assessment of the sites potential significance, set within a local and regional context
- Figures showing the site location and the site plan
- Appropriate photographs and sections

- Revised Project Design

3.6 POST EXCAVATION ANALYSIS

3.6.1 An appropriate programme of analysis should then be undertaken to prepare a research archive, as detailed in Appendix 6 of *Management of Archaeological Projects (MAP2).* It is not possible to provide a finite quotation of costs for the final analysis and reporting until the results of the assessment are known, but a costs are typically 50% of the excavation costs. A provisional programme of post-excavation analysis is proposed, on the basis of the anticipated recovery of material from the excavation; however, the extent of the programme can only be reliably assessed on completion of the fieldwork. The proposed programme anticipates analysis of the artefactual evidence and of the site stratigraphy leading to the production of a final report.

3.6.2 ***Client Report:*** following the analysis of the excavation results, a report will be written which will present, summarise, and interpret the results of the programme and will incorporate specialist reports on artefact assemblages and environmental reports. It will include an index of archaeological features identified in the course of the project, with an assessment of the site's development. It will incorporate appropriate illustrations, including copies of the site plans and section drawings all reduced to an appropriate scale. The report will consist of a statement of acknowledgements, lists of contents, executive summary, introduction summarising the brief and project design and any agreed departures from them, methodology, interpretative account of the site and associated structures, gazetteer of features, a complete bibliography of sources from which data has been derived, and a list of further sources identified during the programme of work. A copy of the client report will be submitted to Andy Hammon, Regional Science Advisor for English Heritage.

3.6.3 ***Publication:*** subject to the findings of the excavation the results of the programme of works detailed above should be placed in the public domain by a number of routes, firstly by publication and secondly by deposition of the archive in an appropriate museum. The cost implication of this element of the programme will be subject to the assessment and review.

3.7 OTHER MATTERS

3.7.1 ***Health and Safety:*** full regard will, of course, be given to all constraints (services etc) during the excavation of the trenches, as well as to all Health and Safety considerations. 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 (1991) and risk assessments are implemented for all projects. As a matter of course the Unit uses a U-Scan device prior to any excavation to test for services. It is assumed that the client will provide any available information regarding services within the study area, if available.

3.7.3 During the course of the top-soil stripping, hand signal protocols between the machine driver and the supervising archaeologist will be agreed, to ensure both the safety of all personnel and also for the protection of archaeological remains. There will not be a need for a separate banksman.

3.7.4 To prevent risk to staff from machine operations working areas for manual cleaning of the stripped ground will be clearly defined with barrier tape, and there will be an adequate separation (*c*20m) between these areas and where the machine is working.

3.7.5 ***Security:*** it is presumed that the Client will have responsibility for site security. In addition, any deep sections of open trench would be fenced off to prevent any accidents occurring to OA North/client staff.

3.7.6 ***Project Monitoring*****:** OA North will consult with the Client regarding access to land within the study area. This consultation will include, if required, the attendance of the Archaeologist, North Yorkshire County Council and Andy Hammon, Regional Science Advisor for English Heritage. Any proposed changes to the project brief or the project design will be agreed with the Archaeologist, North Yorkshire County Council, in conjunction with the client.

4. WORK PROGRAMME

4.1 The work can be undertaken within eight days and OA North can execute projects at very short notice once an agreement has been signed with the client.

4.2 The project will be under the management of **Jamie Quartermaine, BA, Surv Dip, MIFA** (Unit Project Manager) to whom all correspondence should be addressed. All Unit staff are experienced, qualified archaeologists, each with several years professional expertise.

APPENDIX 3: CONTEXT LIST

Context Number	Location	Category	Description
1	Full extent of site (Areas 1-9)	Layer	Dark-brown topsoil layer (with slight variation) extending across the site. It is a friable, clayey-silt with 2% sub-rounded pebbles (5-10mm diameter). Maximum thickness 0.35m.
2	Full extent of site	Layer	The natural, underlying boulder clay beneath the Topsoil (***1***). It is a mottled mid-yellowish-brown and grey, firm, clay with some variation across the site. There is *c* 5% sub-angular stone inclusions (0.05-0.20m diameter). In places this layer comes down onto sandstone bedrock at approximately 0.75m but elsewhere it forms a layer approximately 0.90-1.00m thick on top of a dark bluish-grey clay layer with no inclusions.
3	Area 3 - in the area of Turbine 8	Deposit	A rocky outcrop below the Topsoil (***1***), on a slight ridge, *c* 3.0m wide by 0.40m high, to the south of the spoil heap to the north of Turbine 8. It is a mid-dark orange-brown, friable, sandy-clay, with >50% small-large sub-angular sandstone fragments probably including disturbed bedrock. It is probably a ridge created by the dump of glacial material - a form of moraine.
4	Area 1 - access road to T.5	Layer	A mottled light-brownish-yellow with light bluish-grey, soft clay and fine sand natural below the topsoil (***1***). It has moderate, large sub-angular sandstone pieces (<10%).
5	Area 1 - access road to T.5	Cut	A 1.82m wide, linear cut; maximum depth: 0.25m, with an undulating bowl shaped profile. The break of slope at the top is sharp. The sides are sloping and undulating and slightly stepped. The break of slope at the base is gradual. The base is undulating yet flat in the centre with an average depth of 0.22m. It is filled by deposit ***6***. It is a cut for a field boundary ditch. The upcast forms bank ***7***.
6	Area 1 - access road to T.5	Deposit	The homogeneous mid-dark-brown, firm, sandy-silt fill of ditch ***5***. It was probably the result of silting over time and material from the bank eroding back into the ditch. Stones have been placed along the base and are there either for drainage or have rolled in from the bank ***7***. It has large sub-angular stones that comprise <25% of the deposit. Finds of plastic baling twine and other plastic fragments suggest that the fill is quite recent. Although animal burrowing has disturbed this deposit, no re-cuts or re-depositions were observed.
7	Area 1 - access road to T.5	Structure	Approximately 2.00m wide earth and stone-built field boundary bank the length of Area 1 and up to 0.45m high created from the up-cast from ditch (***5***). It

			comprises an earth and re-deposited clay (***4***), turf (***8***) and topsoil (***10***). No finds were recovered from any of the deposits but the plastic found in (***6***) suggests a recent date. No evidence of re-modelling of the bank was observed indicating that it was created during a single event.
8	Area 1 - access road to T.5	Layer	A heavily rooted, mid-dark-brown, friable, sandy-silt turf layer (<0.13m thick) covering bank ***7.*** It was either formed naturally over time or purposefully using turfs from the excavation of ditch ***5***. It has >30% sub-rounded and sub-angular stones varying in size from large to small. The stones that cover the deposit are probably the result of stone clearance from the field.
9	Area 1 - access road to T.5	Deposit	A firm, mid-dark-grey-brown, re-deposited topsoil silt deposit less than 0.20m thick forming the lower western part of bank ***7***. It was probably re-deposited from the excavation of ditch ***5*** and used as part of the make-up for boundary bank ***7***. There is <1% small rounded pebbles and no finds.
10	Area 1 - access road to T.5	Deposit	A firm mid-grey-orange clay with >2% small sub-rounded pebbles. A re-deposited natural clay deposit <0.32m thick, probably excavated from ditch ***5***, was used to make the field boundary bank ***7***. This deposit runs the length of the field boundary along its eastern side and was either purposefully or naturally covered in turf (**8)**.
11	Area 1 - access road to T.5		A dark brown, friable, clay silt deposit <0.05m thick with <1% small rounded pebbles. It is an old ground surface, beneath bank ***7***, and probably the same as topsoil (***1***).
12	Area 8	Deposit	The dark-blackish-brown, friable, silt fill of pit cut ***13***. There are no inclusions. It is below topsoil ***1***.
13	Area 8	Cut	A sub-square pit cut, cutting ***2***, with a u-shaped section *c* 26m from the westernmost fence line of Area 8. The pit measures 0.79 x 0.72m in plan and has a depth <0.19m. The longest axis is aligned approximately north/south. The break of slope at the top of the cut is sharp and the sides are irregular and concave. The break of slope at the base is gradual and the base is irregular. The pit is not truncated. It was filled by ***12***.
14	Area 6	Deposit	The shale-type fill of pit cut ***15***. It is a dark, bluish-grey, well compacted, silty-clay with 90% angular shale (<0.04m) inclusions. It is below topsoil (***1***).
15	Area 6	Cut	A sub-circular pit, cutting the natural (***2***). It measures: 1.52 x 1.10m and has almost vertical sides to a depth >1.0m. The pit was not fully dug because the high water level in this area prevented further excavation. The pit is aligned north-north-east/south-south-west. It was filled by ***14***.

16	Area 6	Deposit	A dark bluish-grey well compacted, silty-clay matrix with 90% angular shale inclusions (<0.04m). It is the fill of possible stake hole ***17***. It is Below topsoil ***1***.
17	Area 6	Cut	A sub-circular cut with a u-shaped profile located a short distance to the north of pit cut ***15***. It cuts the natural ***2***. The break of slope at the top is sharp. The sides are concave and almost vertical but the slope of the sides breaks gradually at the base, which is concave. The cut measures 0.10 x 0.08m, with the longest axis aligned approximately north-west/south-east, with a maximum depth <0.07m. It was possibly a stakehole associated with pit cut ***15***.
18	Area 6	Deposit	The dark black, friable silt fill of pit cut ***19*** with possible charcoal inclusions. There were No finds. It is below topsoil (***1***).
19	Area 6	Cut	A round / sub-circular pit cut, with a u-shaped profile, cutting the natural (***2***). The break of slope at the top is sharp. The south-west edge is almost vertical whereas the north-east edge is more shallow, sloping at an angle of less than 30° to the horizontal. The break of slope at the base is sharp and the base is almost flat. The pit measures *c* 0.42 x 0.38m and has a depth of<0.08m. There is a possible area of burning, extending <0.20m to the north and east of the cut where the natural clay has changed to a whitish colour.
20	Area 6	Deposit	The fill of pit cut ***21***. It is a well compacted, dark bluish-grey silty-clay matrix with 90% angular shale (<0.04m) fill. It is below topsoil (***1***).
21	Area 6	Cut	An almost circular pit cut measuring 1.07 x 1.03m in plan. The pit cuts the boulder clay (***2***) with almost vertical sides to a maximum depth of <0.80m. There is some undercutting to the southern edge. The break of slope to the base is sharp and the base is flat. It is filled by ***20***. The pit is not truncated. Once the pit had been half-sectioned, some rotting grass was observed in the section below the level of the cut, suggesting the clay had been re-deposited and that the pit was possibly recent. A ceramic pipe field drain entered the pit to the north at *c* 0.40m depth suggesting that the cut acted as a possible soak-away?
22	Full extent of site	Deposit	A bluey-grey clay natural subsoil, which was a variant of the principal subsoil (***2***), and was beneath it in selected locations.
23	Former Access Road	Structure	A <2.2m wide road comprised two strips of lesser quality tarmac, each *c*0.6-0.8m wide, on top of a broad base layer made up of unworked stones of varying sizes (average 0.20 x 0.15 x 0.10m), and rubble, including frogged machine made brick. The road was raised approximately 0.20m above the

			natural clay layer.

ILLUSTRATIONS

List of Figures

List of Plates

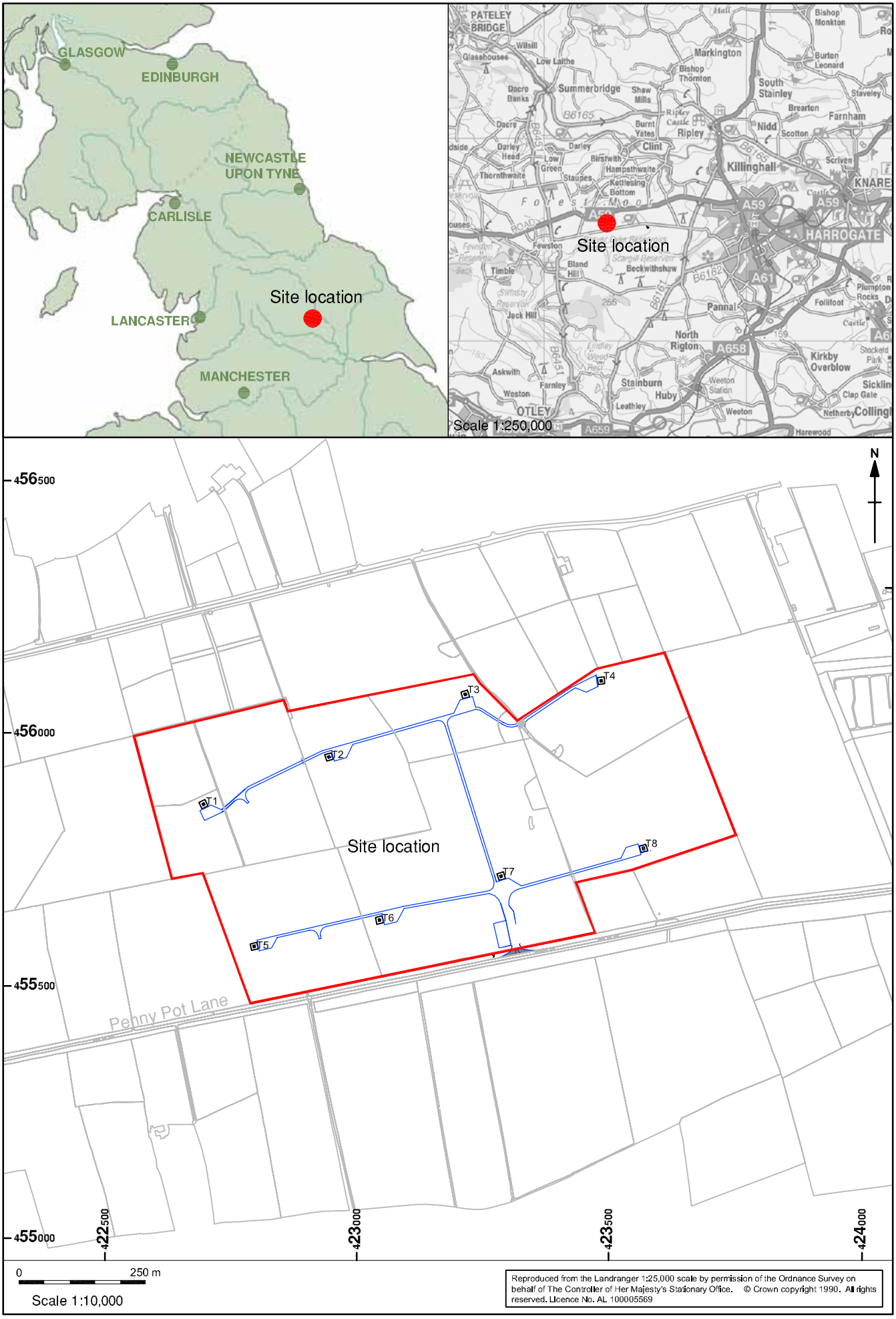

Figure 1: Knabs Ridge Site Location

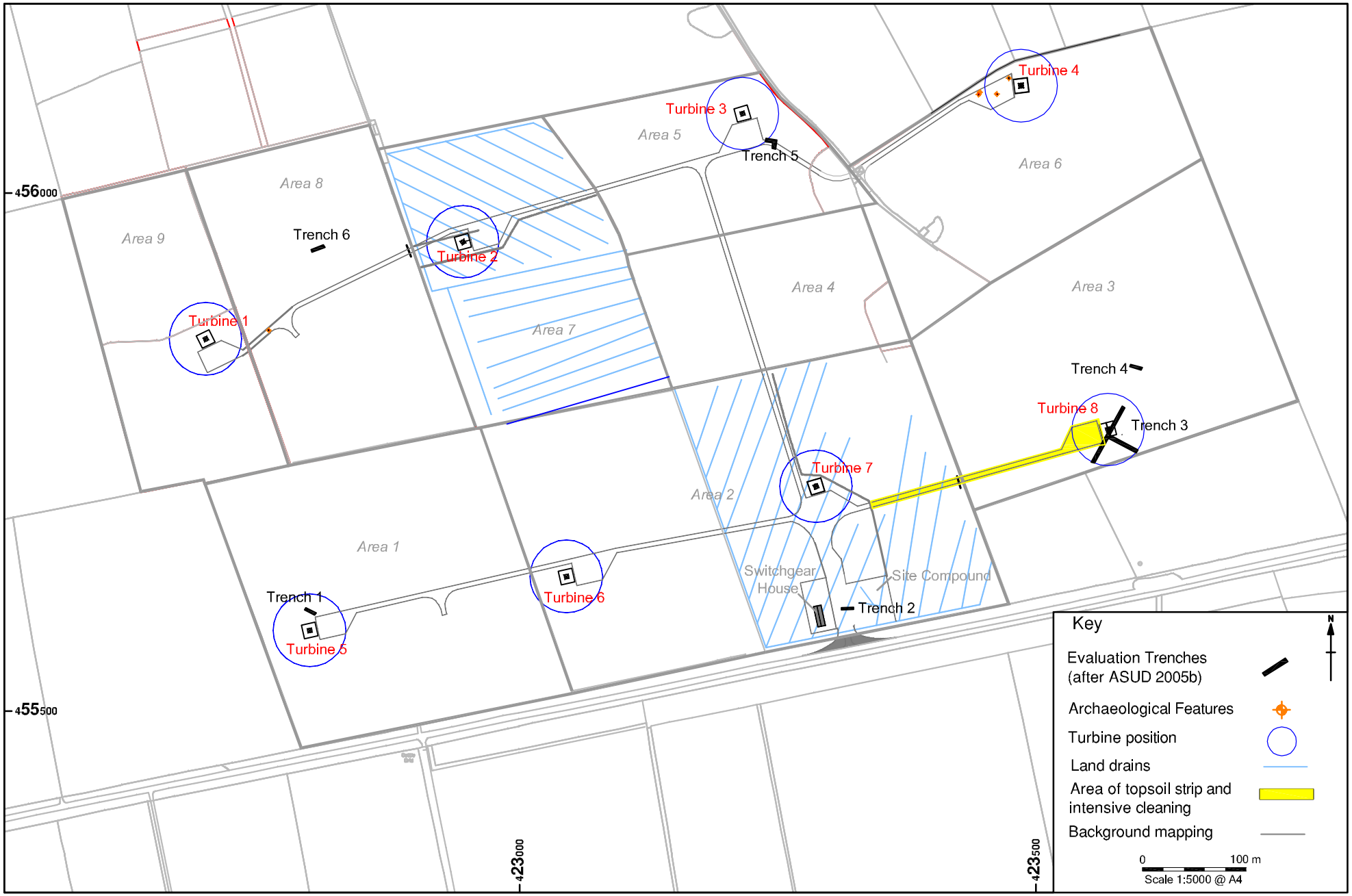

Figure 2: Detailed map of windfarm, showing location areas

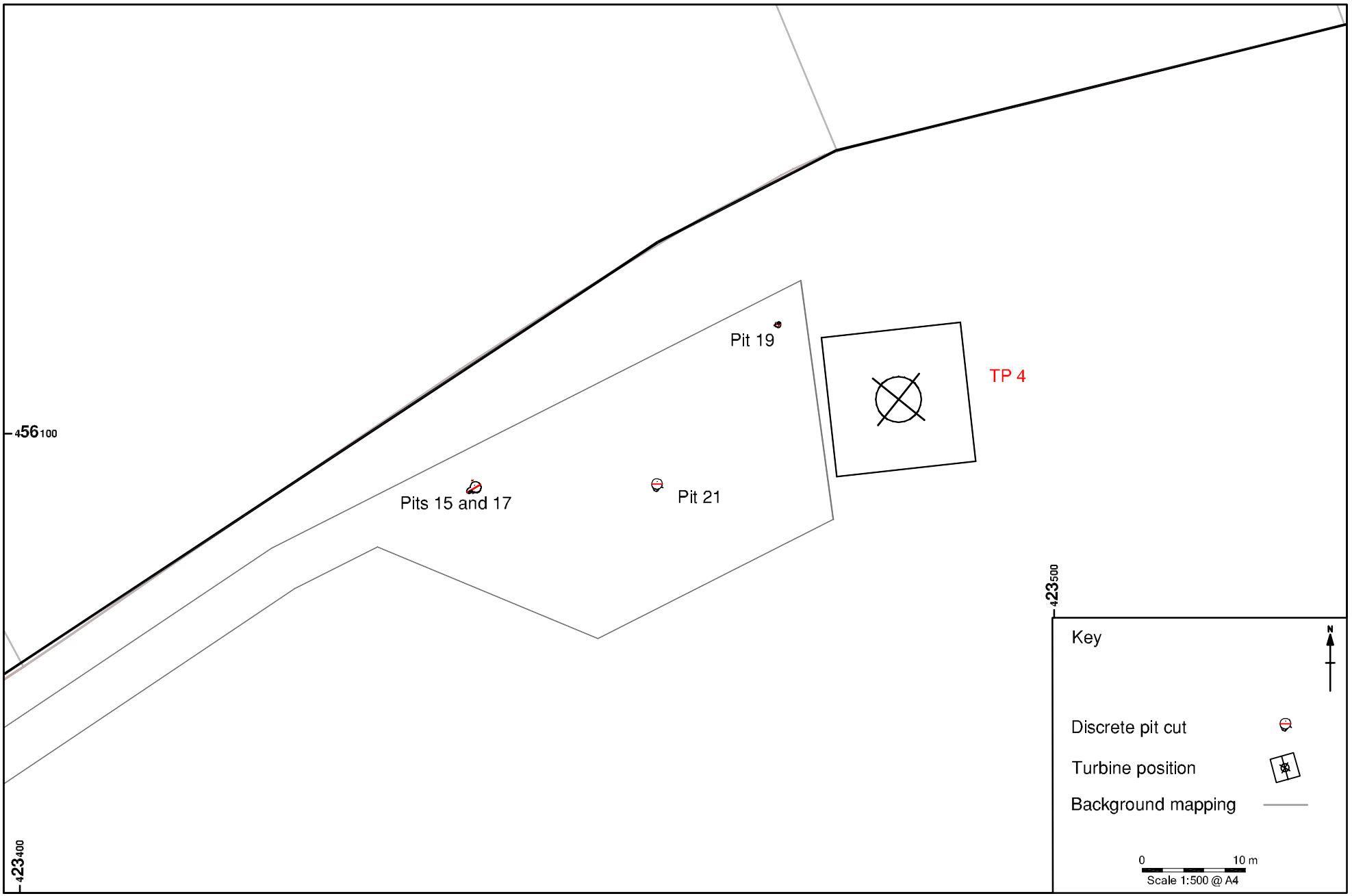

Figure 3: Detailed plan of Area 6

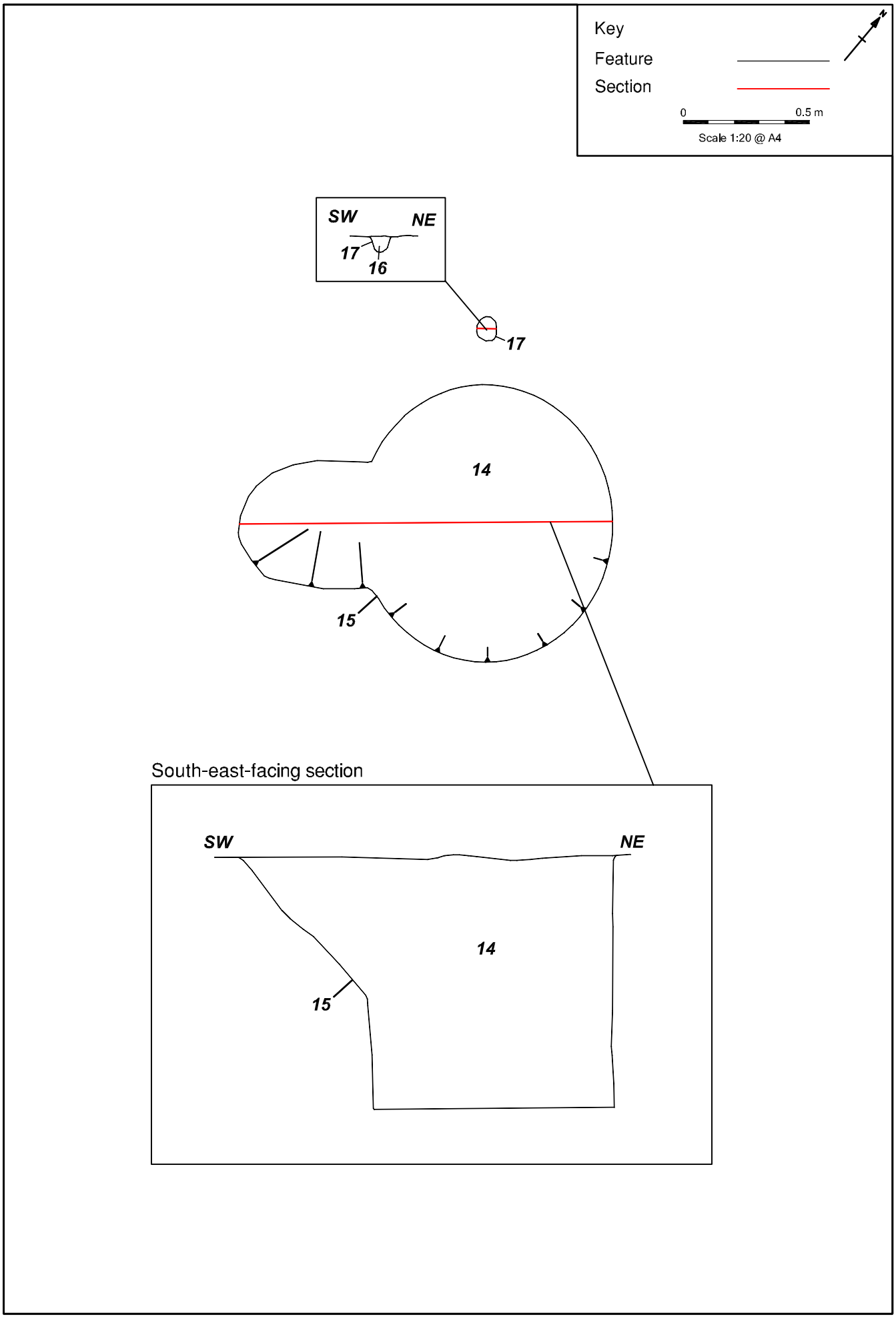

Figure 4: Plan and sections of pit cut ***15*** and stakehole ***17***

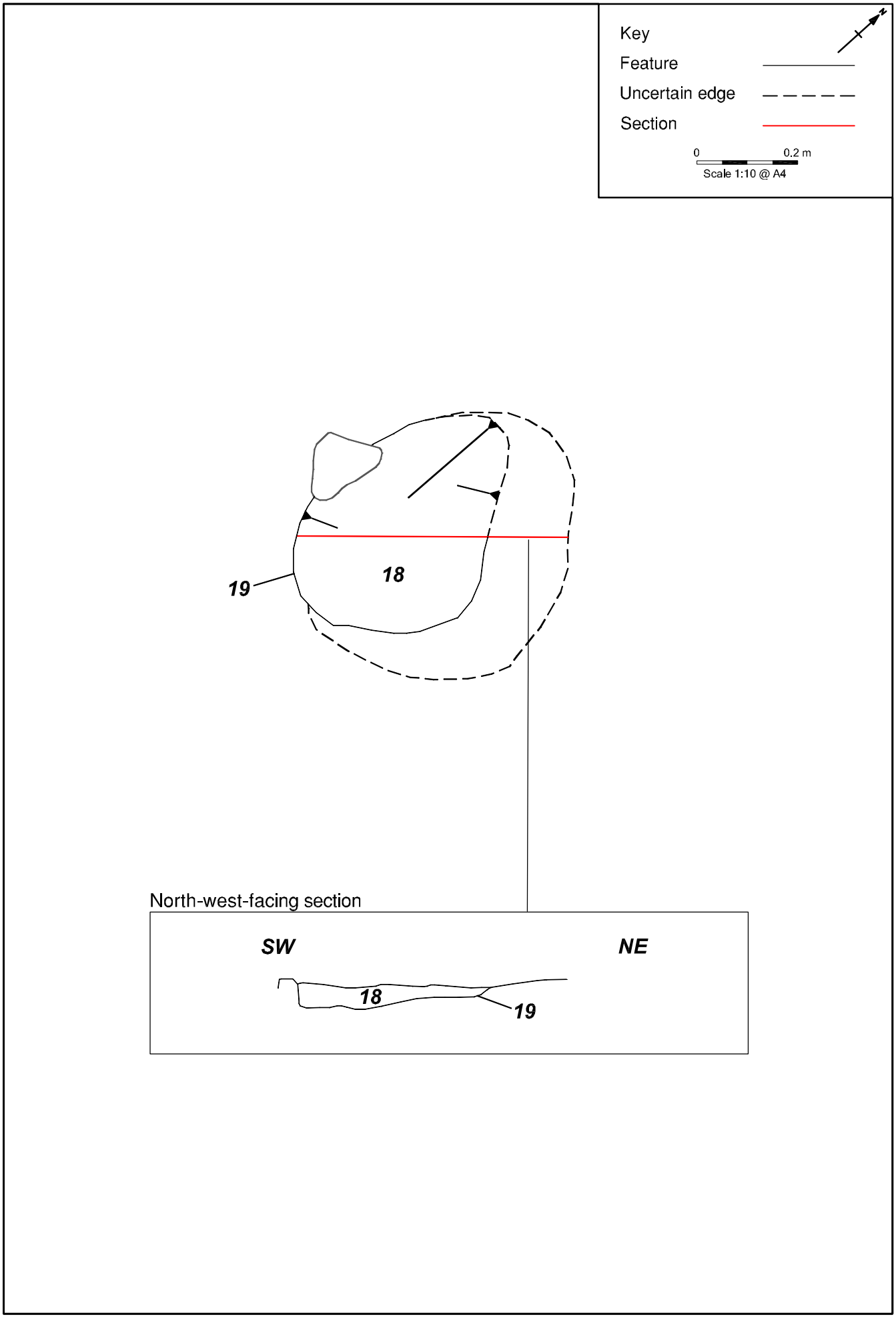

Figure 5: Plan and section of pit cut ***19***

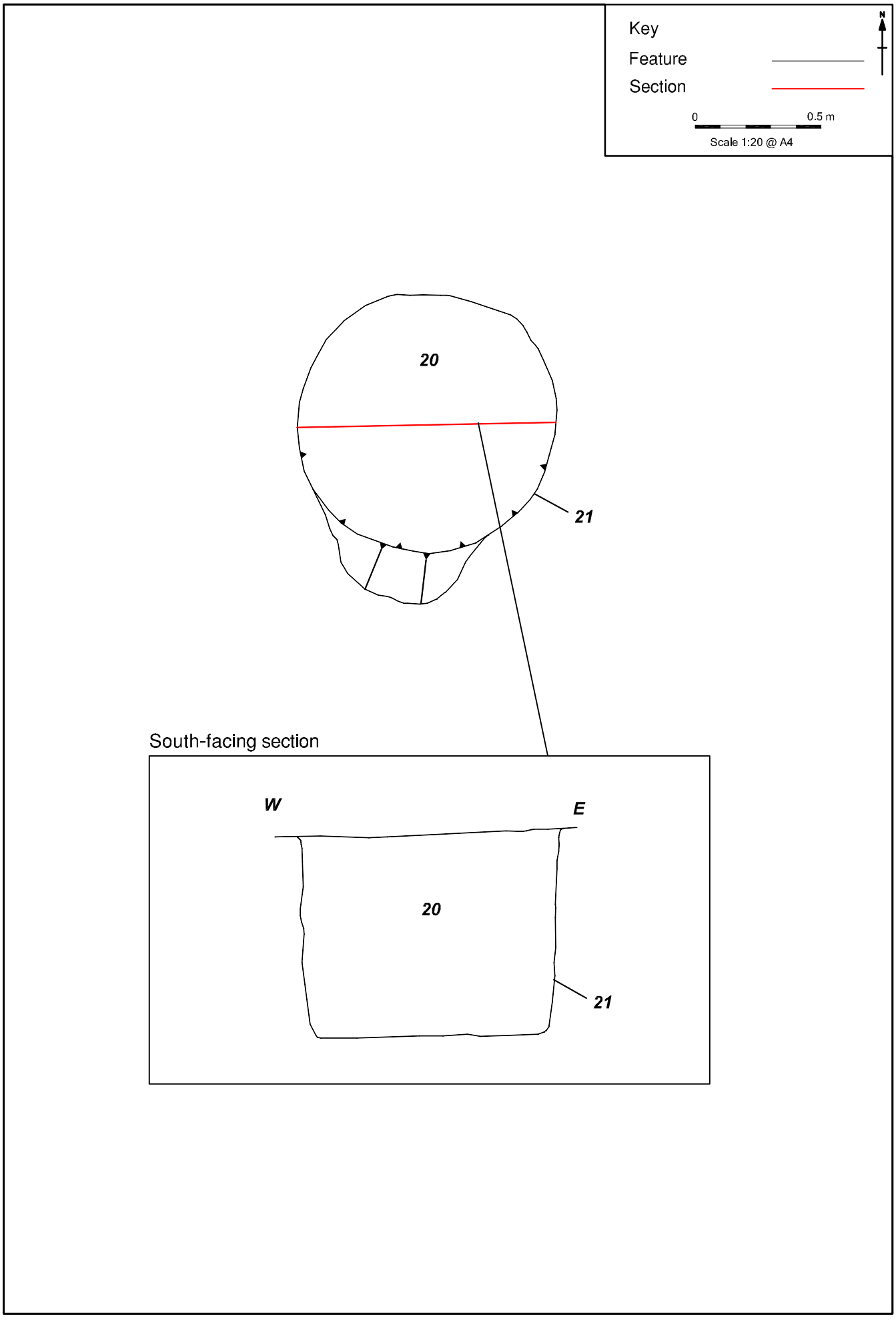

Figure 6: Plan and section of pit cut ***21***

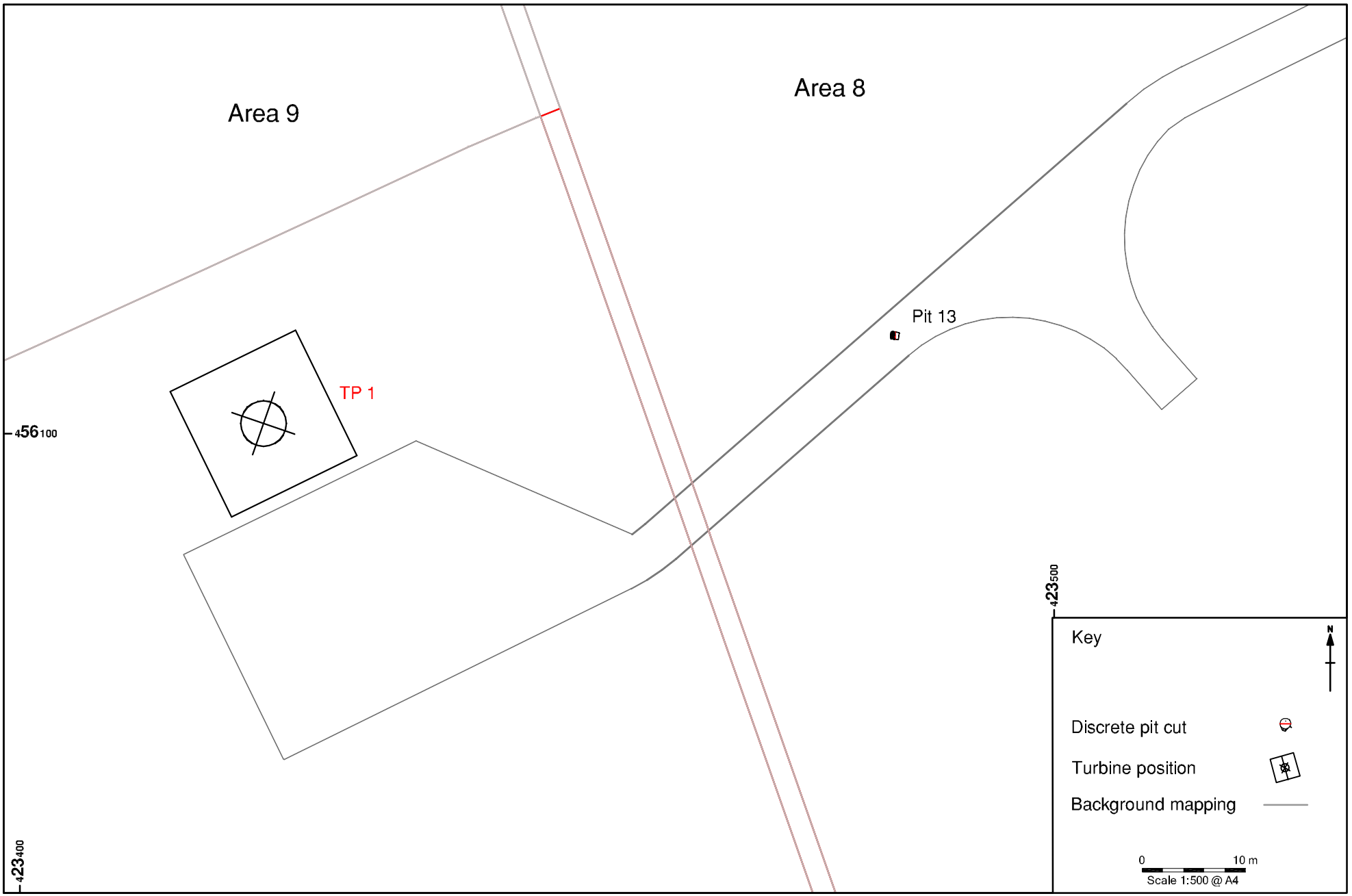

Figure 7: Detailed plan of Areas 8 and 9

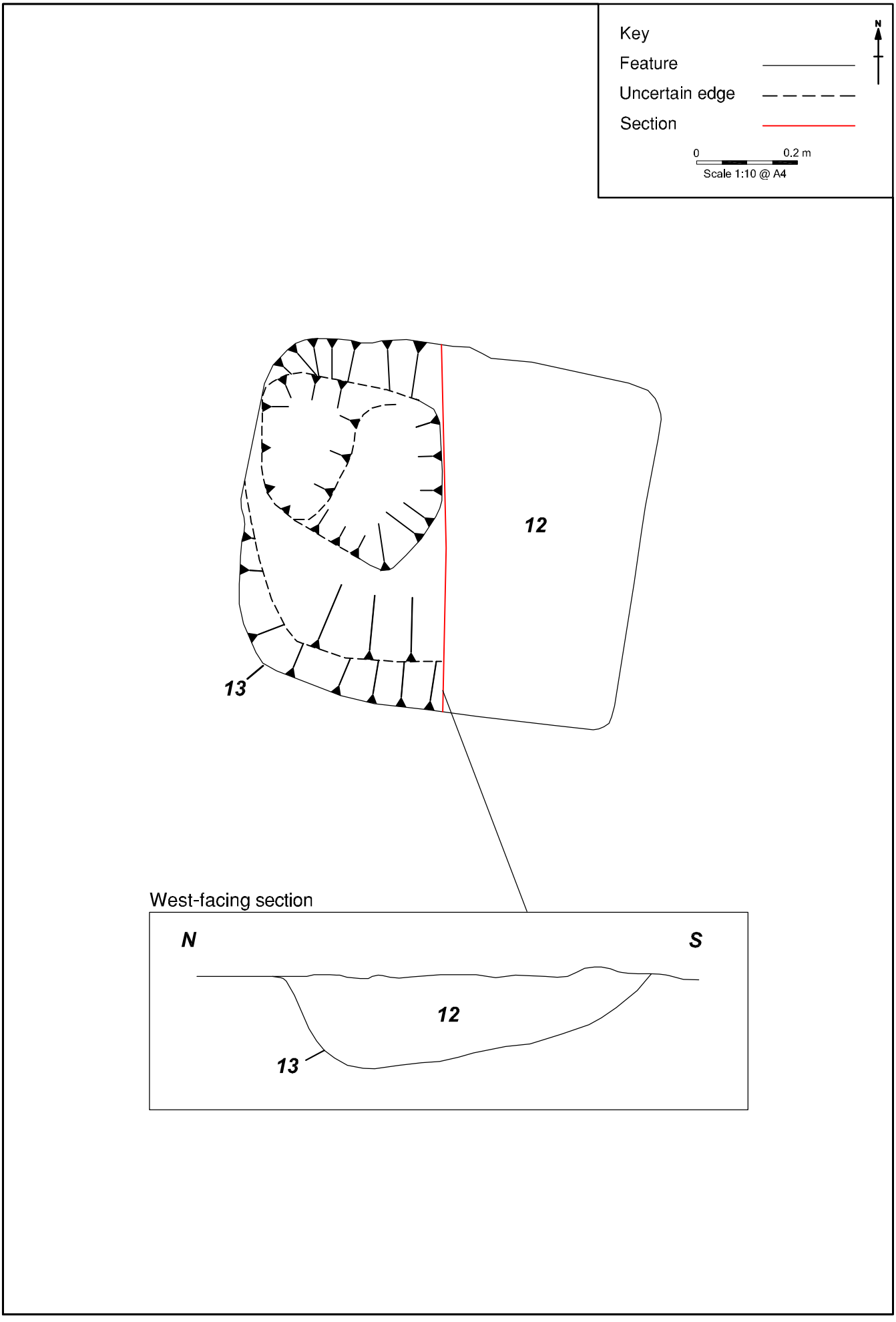

Figure 8: Plan and section of pit cut ***13***

Plate 1: Working shot of topsoil strip

Plate 2: The natural clay layer exposed in Area 3

Plate 3: Topsoil stripped near Turbine 8, Area 3

Plate 4: Working shot

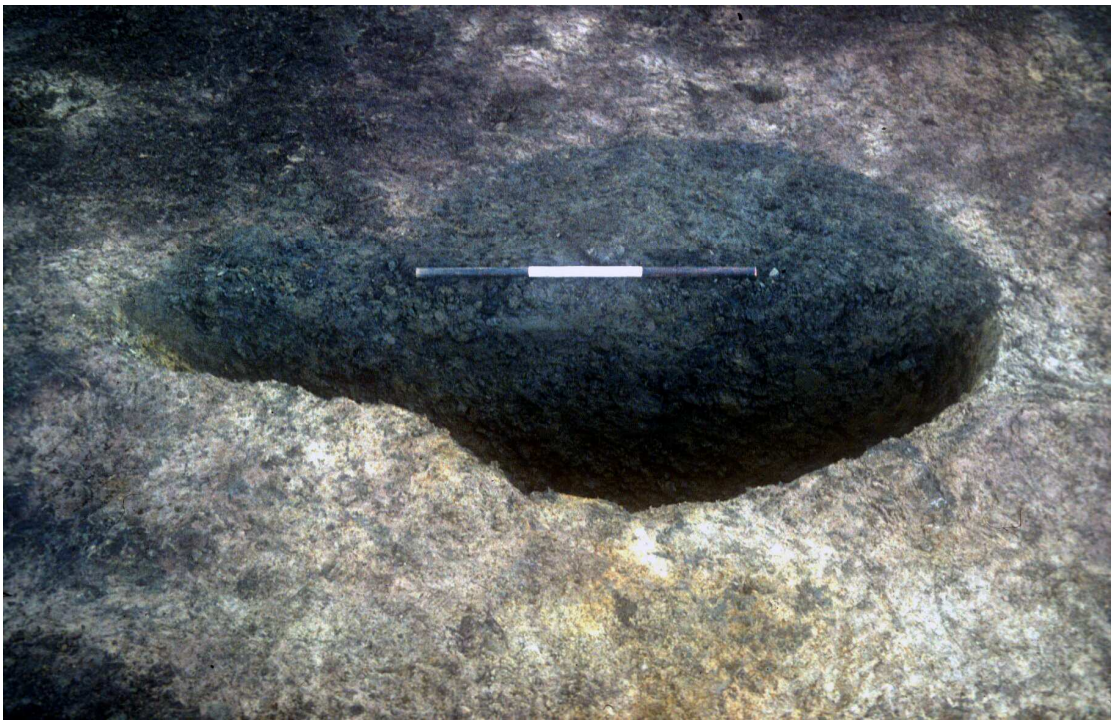

Plate 5: South-east-facing section of pit cut ***15*** and possible stakehole ***17***

Plate 6: South-facing section of pit cut ***21***

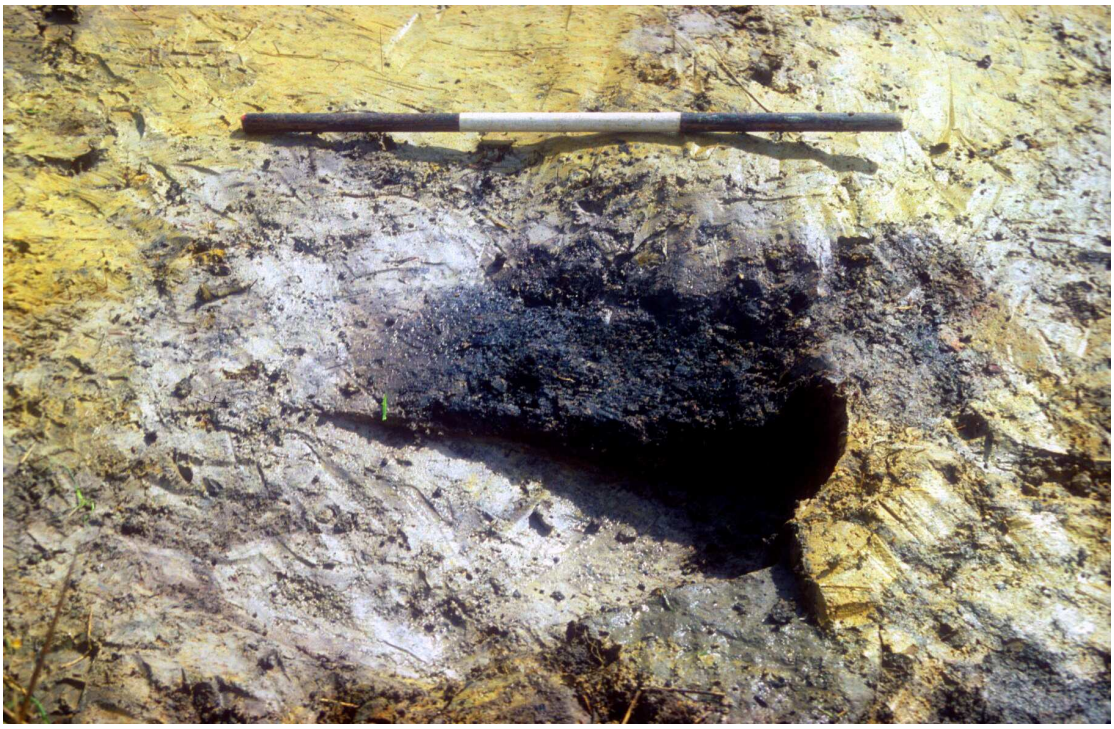

Plate 7: North-west-facing section of pit cut ***19***

Plate 8: West-facing section of pit cut ***13***