ARCHAEOLOGICAL EVALUATION
AT
STURTON LE STEEPLE,
NOTTINGHAMSHIRE

2004

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TRENT & PEAK
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SUMMARY

The study area (c.112ha) at Sturton le Steeple is within the County Replacement Minerals Local Plan (Revised Draft) as an allocated site, and comprises both gravel terrace and floodplain incorporating two small gravel islands.

Previous field investigation including fieldwalking, geophysical prospection and auger survey identified four areas of possible interest A, B, C and D, situated along the edge of the gravel terrace and site E, lying within the floodplain. Of further significance was the identification by the borehole survey of a substantial north-south trending palaeochannel along the terrace edge, of Late Neolithic to Iron Age date.

Seven trenches were excavated to examine the character, date and degree of preservation of archaeological remains. Initially this involved the excavation of trenches 01-04, located on the four areas A, B, C, and D, followed by three reserve trenches, one of which was to investigate site E in the floodplain.

No archaeological remains were present in site A, geophysical anomalies were shown to correlate with field-drains and a post-medieval ditch.

At site E the top of the gravel island was apparently denuded of archaeological features, with deposits containing Romano-British pottery instead surviving at the islands edge, dipping into the palaeochannel and floodplain.

Within the palaeochannel/floodplain to the west of the island a post alignment was discovered, establishing the existence of a Late Bronze Age landscape preserved below the alluvium. These remains could be of great significance if comparable to Late Bronze Age/Iron Age sites such as the trackway/causeway at Fiskerton or Flag Fen, with extensive environmental sampling and conservation implications.

Further remains of Neolithic and Bronze Age date are likely to survive buried under alluvium within the floodplain, which in parts encompasses over 4m of peaty deposits

On the terrace, sites B, C and D were confirmed to be large multi-phased Romano-British ditched enclosure complexes (at least two if not all over 100m across), rich in artefacts including 2098 pottery sherds. Features included ditches, gullies, pits, postholes, a possible stone oven, and stone post pads for at least one structure, while waterlogged deposits containing Romano-British material were present at each site running into the floodplain.

Further finds included quernstone and slag suggesting some limited cereal processing and metal working, while imported pottery and glass hint at the market influence of the nearby Roman town at Littleborough. Environmental sampling indicates those deposits running into the floodplain along with those feature fills on the gravel terrace below the water table (*c.* 1.7m) hold most potential for future sampling.

Post Roman activity included a lone stake 0098, radiocarbon dated to the 9^{th}-11^{th} century A.D recovered from deposits running into the palaeochannel at site B.

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1. INTRODUCTION

The study area is within the County Replacement Minerals Local Plan (Revised Draft) as an allocated site. The aim of the evaluation was to acquire a greater understanding of the archaeological resource prior to the submission of any planning application for sand and gravel extraction. The evaluation design was written to address objectives for the archaeological investigation of the study area, developed through discussion with Mr M Bishop, Nottinghamshire County Council Principal Archaeological Officer and monitored on site by Ursilla Spence, Nottinghamshire County Council Senior Archaeological Officer.

2. BACKGROUND

2.1. Desktop Assessment

In November 1999 Trent & Peak Archaeological Unit prepared a desktop assessment of the study area (Challis 1999), for Lafarge Aggregates Ltd, centred at SK810840, in the parish of Sturton le Steeple in Nottinghamshire (Figure 1). This highlighted the following key elements of the study area.

Geology & Topography

The study area encompasses the edge of the first gravel terrace of the Trent, running approximately north-south, with alluvial deposits of the River Trent Floodplain on the eastern side of the site and Mercia Mudstone toward the west. Within the floodplain are two small slightly raised islands of sand and gravel, orientated north-south. The floodplain is low-lying and for much of its history has formed poorly drained pasture and marshland. The gravel terrace is better drained and is given over to mixed arable farming and pasture.

Cropmarks & Segelocum/Littleborough

The area possesses a high potential for archaeological activity of prehistoric and Romano-British date. A large rectilinear enclosure cropmark of late prehistoric or Romano-British date, is present just to the north of the proposed extraction area, while immediately to the south-east is the former Romano-British small town of *Segelocum* modern Littleborough, (a protected Scheduled Ancient Monument). Other activity of this period was therefore considered likely given the location of the study area, with locally prevailing soil conditions (e.g. covering alluvial spreads), possibly preventing the formation of cropmarks indicating its presence.

Palaeochannel

Existing borehole data suggested a substantial buried palaeochannel of probable prehistoric date, marking an early course of the Trent, lay along the east edge of the terrace. Boreholes indicated that the channel fill contained peat and organic deposits, possibly of considerable archaeological significance.

2.2. Previous Fieldwork

Following the findings of the desktop assessment T.P.A.U was commissioned to carry out field investigations in an area of approximately 112ha (Figure 1) identified by Lafarge as a potential extraction area. The field investigation included fieldwalking, geophysical survey and auger survey.

Field walking

Field walking at 10m intervals was conducted across the gravel terrace and along two corridors to the gravel islands lying within the floodplain. From a total of 204 sherds of Romano-British Pottery significant results included the identification of three pottery clusters along the gravel terrace edge (B, C, D), indicating potential sites (Figure.2). The composition of the pottery clusters resembled that of urban centres (e.g. Derby and Lincoln), rather than typical rural sites. Perhaps reflecting their location, within the immediate hinterland of the Romano-British town at Littleborough.

Heat affected stones/fire cracked pebbles (FCP's), were wide spread further back on the gravel terrace, possibly representing domestic refuse scattered across former field systems (Figure.2). In contrast only fifteen flints were recovered, widely scattered along the gravel terrace (Figure.2). Of these only one object could be identified as a formal tool, that of a horse-shoe scraper.

Geophysical Survey

Topsoil magnetic susceptibility was tested at 10m intervals in a 100m wide transect north-south along the edge of the gravel terrace and over the two gravel islands within the floodplain (Figure.3). Following this fluxgate gradiometer survey was applied to the only two fields to show enhanced MS, which included one of the finds clusters detected by fieldwalking. Prior to excavation, two further blocks of fluxgate gradiometer survey were carried out on the other two Romano-British pottery clusters detected by field walking, in order to determine the presence of features and aid trench location. Several linear anomalies were discovered at clusters B (Figure.4) and D (Figure.5). Less successful were sites A and C, with the few anomalies detected found to be post medieval in origin. At C the many archaeological features later exposed by excavation were not detected at all. The results of the latter may have been affected by the wet ground conditions prevalent prior to the survey as well as the presence in parts of substantial sealing layers between the topsoil and archaeological deposits.

Auger Survey

An auger survey was carried out in order to determine the location, date and character of the palaeochannel along the terrace edge, as well as the depth of alluvium on the floodplain, which possibly sealed archaeologically significant horizons. This was carried out during the first phase of the evaluation excavations, as results were likely to affect the placement of reserve trenches. Drilling up to a maximum depth of 15m, 43 boreholes (their placement affected by water logging) were sunk mostly along three east-west transects (Figure.7), with four sites subsequently revisited for sampling of suitable organic sediments for palaeoenvironmental analysis and radiocarbon dating. This confirmed the presence below silt and clay alluvium of peat of variable thickness across the majority of the floodplain. The thickest deposit occurred with the north-south running depression along the terrace edge interpreted as a former main channel of the Trent. Amongst the peat were beds of blue grey silt and clay possibly suggesting the influence of tidal waters (meriting further investigation). Radiocarbon dating demonstrated the peat sediments were deposited from the Late Neolithic to at least the Iron Age. Furthermore, they hold significant potential for environmental remains, in aiding reconstruction of the former floodplain and gravel terrace landscape. A key find was the recovery of charcoal from borehole 36, close to

one of the sand and gravel islands within the floodplain. (Further details in Appendix B).

3. OBJECTIVES

The field walking and geophysics identified four areas of possible interest A, B, C and D, situated along the edge of the gravel terrace (Figure.8). This was later supplemented by site E, lying within the floodplain, detected during the auger survey. The sites were as follows:

Area A
East-west and north-south aligned possible ditches revealed by geophysics. A single Romano-British pottery sherd was recovered from the vicinity, to suggest a date for the activity.

Area B
North-east to south-west possible ditches and pits detected by geophysics, with an associated tight cluster of Romano-British pottery sherds, suggesting a ditched enclosure complex.

Area C
A cluster of Romano-British pottery sherds, potentially indicating a similar focus of activity to area B. Geophysics revealed only a single east-west linear anomaly.

Area D
Comprised the largest cluster of Romano-British pottery sherds, representing the focus of activity closest to the former Romano-British town of Littleborough. Geophysics revealed a complex ditched enclosure system.

Area E
Comprised charcoal within peat at a depth of 1.7m, near to one of the sand and gravel islands within the floodplain.

The aim of the evaluation was to enhance by excavation the archaeological evidence recovered from the previous means of investigation. In particular to determine if the areas of interest identified represent *foci* of past activity and whether they were suitable for preservation *in situ* or by record. Significant to this was the density, and degree of preservation of features present. Of further consideration was their relationship both to the palaeochannel at the floodplain edge (with its palaeoenvironmental potential) and the alluvium in the floodplain (with the potential for cultural archaeology buried beneath it).

4. METHODOLOGY

Trial Excavation
Seven trenches were to be excavated to examine the character, date and degree of preservation of any identifiable archaeological remains. Initially this involved the excavation of trenches 01-04, located on the four areas A, B, C, and D, (detected by field walking and geophysics). These comprised:

4.1. Trenches 01-04

Trench 01-Area A- (30m x 3m trench). Running approximately north-south, to cut at right angles to the possible east-west ditches detected by geophysics and associated Roman-British pottery sherd (Figure.8).

Trench 02-Area B- (comprising2*a* 43m x 4m, 02*b* 38m x 3m, 02*c* 21m x 3m, 02*d* 5m x 3m, 02*e* 17m x 3m). More extensive trenching over B was proposed in order to both expose the features on the gravel terrace and to investigate whether they extended into the floodplain where waterlogged deposits and buried surfaces were most likely to survive.

Trench *a* ran north-west to south-east to investigate (at right angles to) the possible north-east to south-west ditches and pits detected by geophysics (with associated cluster of Romano-British pottery). Trench *b* ran east-west to investigate the relationship with the floodplain margin/possible palaeochannel and any evidence of any waterside remains. Further trenches *c, d* and *e* were opened to investigate the presence of features on the gravel terrace.

Trench 03a/b- Area C- (30m x 3m trench). Located to investigate the cluster of Romano-British pottery sherds revealed by field walking. Following the results of geophysics, this was excavated in two parts of 15m x 3m. One (03b) was located north south, close to the floodplain to investigate a linear anomaly (found to be a field drain). The second (03a) was situated further back on the gravel terrace, running north-south directly over the finds cluster.

Trench 04- Area D- (30m x 3m trench). Orientated north-south to investigate the cluster of Romano-British pottery sherds and east-west enclosure ditches revealed by geophysics (*c*.350m to the north of former Roman Littleborough).

4.2. Reserve Trenches 05-07.

Three trenches (or the equivalent area) were held in reserve, to supplement the investigation of trenches 01-04, and pending the completion of the auger survey. These were located following a monitoring visit and consultation with Ursilla Spence, Nottinghamshire County Council Senior Archaeological Officer.

Trench 05 (30m x 3m). Orientated east west this trench investigated the relationship of site D and associated deposits with a shallow depression and rise to the east of it, within the floodplain.

Trench 06a/b (c.30m x 3m). Excavated in two parts of 15m x 3m. Trench 06a was orientated north south, to investigate the westwards extent of site C. Trench 06b was set further back on the gravel terrace to investigate a heat affected stone/fire cracked pebble cluster for evidence of any possible associated ditched field systems.

Trench 07a/b (c.30m x 3m). Excavated in two parts. Trench 07a was 5m x 3m trench excavated to a depth of up to 2m, to investigate the presence of charcoal within one of the auger survey boreholes close to one of the sand and gravel islands in the floodplain. Trench 07b was a 25m x 3m trench excavated east west across the top of

the nearby sand and gravel island, and partly into the floodplain to expose the relationship with surrounding alluvium.

4.3. Details of Excavation

Topsoil was stripped by machine using a toothless bucket, under the supervision of archaeological staff. This was often followed by further machine stripping in spits, of intermediate layers mainly colluvial/alluvial in origin, before archaeological deposits were exposed. Machine excavation of whole trenches was limited to a depth of 1.5m (which would have required the trench sides to be widened and battered), although a maximum depth of 2.4m was provided for smaller areas (accompanied by stepping) e.g. Trench 07a. Spoil was stored adjacent to the trenches, then re-used for backfilling. Within the floodplain due to depth, continual flooding from the base and sides of the trenches (notably 07a, 02b and 05) caused considerable difficulties in the identification and recording of the archaeological deposits present.

After the exposure of archaeological deposits, the trench bases and a minimum of one long section were hand cleaned and recorded. Features fully exposed within the trenches were sample excavated, where practical. Dated deposits were sampled for pollen, insects and plant macrofossils, where applicable and not contaminated by later activity, with the aim of selecting suitable samples to establish their palaeo-environmental potential. In total eight deposits were analysed for charred plant remains, three for evidence of pollen, while five samples were submitted for radio carbon dating. Each trench and adjacent spoil heap was investigated with the aid of a metal detector. All excavated deposits were recorded in written, drawn and photographic form, as specified in the TPAU recording manual.

All deposits identified during the excavation were given an individual four-digit context number e.g. 0001. Artefacts recovered from excavated deposits were given an individual three character finds code, starting from CAA and following on from those retrieved in field walking.

5. EXCAVATION RESULTS

SITE A

5.EXCAVATION RESULTS

5.1. SITE A

Trench 01
This revealed a basic stratigraphy of topsoil up to 400mm thick, a layer of grey to greyish brown clay loam (0401) up to 400mm thick and a yellow sand across the trench base (0402). Only post medieval features were found in the trench, including ceramic field drains and a field ditch 0400 (Figure.9, Plate 1,2). The location of the field drains and ditch appeared to coincide with those linear anomalies detected by the geophysics. No evidence of earlier remains were found.

Ditch 0400
Description: The field ditch was *c.*4m wide and *c.*0.86m deep, flat-bottomed with a clay fill.
Orientation: East to west.
Artefacts present: A clay pipe stem fragment and a sherd of black slipped earthenware pottery of *c.* $18^{th}/19^{th}$ century date.
Interpretation: A late post-medieval field ditch.

Conclusion
No archaeological remains or artefacts were present to indicate the existence of any site of significance within the vicinity warranting further investigation. However, it should be noted that the thick clay loam layer beneath the topsoil could still seal potential sites on this part of the gravel terrace.

SITE B

5.2. SITE B

Trench 02a,b, c, d, e

Basic stratigraphy on the gravel terrace comprised topsoil 0001 (0.26m-0.38m in depth) and 0002 a brown sandy silt loam subsoil (*c.*0.3m-0.4m in depth), which sealed numerous features as described below (Figure.10, 11). These were generally cut into yellow brown sand to sandy silt loam. Dry conditions in combination with plough and animal disturbance made it difficult to achieve a level at which archaeological features were clearly defined. Dense mottling from iron panning, particularly within 02c, d and e further complicated this. As trench 02b extended eastwards into the floodplain, the sealing deposits developed into substantial layers of alluvial clay, notably 0030, 0031, 0032, 0033, 0035 and 0037 (totalling up to 1.62m in depth), which were sterile of artefacts. Beneath these were several smaller sand and silt layers, (lying stratigraphically below 0002, e.g. 0061), many containing Romano-British artefacts, which extended down into the floodplain on to a layer of peat encompassing the substantial remains of at least one ancient log (Plate.3). Together these deposits represent part of the palaeochannel apparently running along the edge of the gravel terrace, as confirmed by the borehole survey.

Prehistoric Deposits

Peat Layer 0039

Description: Organic rich layer of peat present within the flood plain along the edge of the gravel terrace edge, increasing in thickness from 1.2m in box 3 to 1.4m in box 1 at the east end of trench 02b.

Artefacts present: Romano-British pottery (4 sherds from the surface of the peat), Alder log 0045 (of early Iron Age date), and stake 0098 (8^{th} –11^{th} century A.D).

Interpretation: Palaeochannel fill.

Alder Log 0045

Description: A partially exposed 2m length of alder log, minimum 0.75m wide. Found lying within peat 0039, apparently below the level at which Romano-British pottery was present. Offshoots for branches suggested it might be a crown, while no evidence for cut ends was observed. A small incomplete stake 0098 was found within the peat to the east of the alder log, although no direct link between the two was evident.

Orientation: North to south

Interpretation: Alder log dated by C14 at 95% probability to Cal BC 760 to 620 and BC 590 to 370. Orientation of the log lies along that of the north-south trending palaeochannel. Correlates with evidence from boreholes and samples of an alder carr wetland on the floodplain during this period.

Romano-British Deposits

Ditch 0003

Description: This possessed a 2.8m wide asymmetrical W-shaped profile, consisting of a 0.72m deep south side and 1.08m deep north side, both with rounded bottoms, apparently representing at least two ditch cuts. A smaller 1.2m wide and 0.4m deep cut, with flat to rounded base, was present to the north. Possible infilling for the main

part of the ditch may have been indicated from the south side by fill b, a brown loamy sand. Further substantial fills included e a dark brown black sandy silt loam, h an orange brown sandy loam, I a grey sand, and f a mid brown sandy silt loam. Disturbance from animal activity was present within the ditch, particularly affecting the south facing section.
Orientation: North-east to south-west.
Artefacts present: Romano-British pottery (293 sherds), heat affected stone, burnt clay, bone and an iron nail and blade like object.
Interpretation: Romano-British enclosure ditch, representing several phases of use. Pottery comprising late 1st-2nd century AD types was present in the lowest fills, accumulating until the mid-3rd century AD at the least.

Ditch 0009/0010
Description: L-shaped in plan terminating in a rounded butt-end, with a 1.25m wide by 0.26m deep profile with shallow steep sides and flat base. Contained homogeneous grey brown loamy sand, with abundant iron panning.
Orientation: Main section north-west to south-east, butt-end north-east to south-west.
Artefacts present: Romano-British pottery (23 sherds).
Interpretation: Romano-British enclosure ditch forming an apparent south-east entrance. Pottery late 1st-mid 2nd century AD in date.

Pit 0065
Description: 0065 sub rectangular in plan, 1.5m long by 0.85m wide, with a U-shaped profile and flat bottom.
Artefacts present: Romano-British pottery (14 sherds).
Interpretation: 0065 Romano-British pit with pottery of late 1st to mid 2nd century AD date.

Ditch 0006.
Description: 1.8m wide by 0.7m deep asymmetrical profile consisting of a steeply cut south side with U-shaped bottom, and a shallower stepped north side possibly indicating separate cut. The fill largely comprised grey brown loamy sand.
Orientation: North-east to south-west.
Artefacts present: Romano-British pottery (110 sherds), heat affected stone, burnt clay.
Interpretation: Romano-British enclosure ditch, representing at least two phases of use. Pottery was of a mixed group with some late 1st-mid 2nd century AD in the lowest fills, and late 2nd-3rd and late 3rd-4th AD in the upper fill.

Ditch 0060
Description: 1.4m wide and *c.*0.2m deep asymmetrical profile with flared, slightly deeper west side, and flat bottom. Contained a homogeneous grey silty sand fill.
Orientation: North to south.
Artefacts present: Romano-British pottery (15 sherds) and heat-affected stone.
Interpretation: Romano-British enclosure/boundary ditch, running parallel to terrace edge. Pottery suggests a 2nd century date.

Ditch 0066/67
Description: 0066 was 1.3m wide by 0.5m deep V-shaped profile with flat to rounded base, containing homogeneous dark grey brown sandy silt loam fill. Lying

parallel, immediately to the west was 0067, *c.*0.9m wide and 0.4m deep with a flat to rounded base. The relationship between the two was unclear, while the west side of 0067 was disturbed, leaving a red clay lump visible in the section. A homogeneous dark brown grey fill was present in both.
Orientation: North to south.
Artefacts present: Romano-British pottery (58 sherds).
Interpretation: Romano-British enclosure/boundary ditch, representing at least two phases of use. Pottery comprised late 1st- 2nd, with some 3rd – 4th century AD material.

Curvilinear Gulley 0063
Description: 0.7m wide and 0.18 deep symmetrical profile with flared edges and rounded base. Contained a homogeneous grey silty sand fill.
Orientation: Running north-east then curving back south-east.
Artefacts present: Romano-British pottery (49 sherds), heat-affected stone, bone and tile (2 fragments).
Interpretation: Romano-British property boundary or drainage gulley, possibly related to structure lying beyond trench limits. Pottery ranged from late 2nd-mid 3rd century in date.

Gulley 0014
Description: Linear in plan terminating in rounded eastern butt-end. Possessed a shallow asymmetrical profile with flat to rounded base, and a homogeneous grey brown sandy silt loam fill.
Orientation: East to west.
Artefacts present: Romano-British pottery (5 sherds).
Interpretation: Romano-British property boundary or drainage gulley. Pottery suggests a probable 3rd century AD in date.

Layers 0034, 0036, 0038, 0040
Description: Several layers of grey sand (0034, 0038, 0040) and grey brown sandy silt loam (0036), *c.*0.16m-0.22m thick, dipping eastwards into the floodplain and sealed by substantial clay alluvial layers.
Artefacts present: Romano-British pottery (259 sherds), heat affected stone, slag (1), daub (6 fragments), flint (1 flake) and animal bone (10 fragments).
Samples: 0034, ES23 charred plant assessed as good.
Interpretation: Alluvial-colluvial layers running into the palaeochannel/floodplain, contemporary with the Romano-British settlement activity on the gravel terrace and containing numerous artefacts from this source. Pottery ranged from 2nd to 4th century AD in date, with at least one possible Iron Age pottery sherd (prehistoric vesicular) also present. It was noted that some of the deposits were sealed by others containing pottery of an earlier date, suggesting that some degree of redeposition may have occurred within these layers.

Stone Feature 0005
Description: A concentration of un-bonded, flat skerry stones up to 0.40m in size. Some overlapping of stone suggests at least two courses were present, while some stones were set vertically in to the ground; together they resembled walls of a hollow structure. Although a general east west linear appearance was noticeable *c.*2 m long

by 0.7 m wide, the true nature and form of the structure was unclear due to later plough and animal disturbance.
Orientation: East to west
Artefacts present: Romano-British pottery (8 sherds).
Interpretation: Romano-British, possible corn dryer or oven. Associated pottery ranged from late 2nd – 4th century AD in date, while a large quernstone found in 0002 1.5m to the south, may also originate from this feature.

Stone Structure/Pad stones 0070, 0071, and 0072
Description: Three separate sets of flat skerry stones laid horizontally on the subsoil surface, along the same orientation *c.* 2.5m apart (for a total distance of 5m). Stones range up to 0.4m in size. Similar stones found during machining may represent associated stones displaced by later ploughing, suggesting the alignment may have stretched further east and west.
Orientation: East to west.
Artefacts present: Romano-British pottery (3 sherds).
Interpretation: Pad stones for Romano-British post built structure at least 5m in length. Associated pottery ranged from late 3rd – 4th century AD in date.

Ditch 0078
Description: Approximately 4.2m wide by *c.*1.4m deep asymmetrical profile with stepped east side, more steeply cut west side, flared edges and flat bottom. Several fills were present possibly representing at least two later cuts.
Orientation: North to south.
Artefacts present: Romano-British pottery (84 sherds), heat-affected stone and animal bone (well persevered).
Samples: ES30 charred plant assessed as poor, ES26 pollen assessed as excellent.
Interpretation: Romano-British enclosure ditch, representing several phases of use. Pottery from mid 3rd – 4th century AD suggests a 4th century date.

Ditch 0080
Description: 0.8m wide by 0.4m deep U-shaped profile with flat to rounded base. Two fills were present, an upper fill of grey brown sandy silt loam and a lower fill of grey brown loamy sand.
Orientation: North to south
Artefacts present: Romano-British pottery (2 sherds), and heat-affected stone.
Interpretation: Romano-British enclosure/boundary ditch. Pottery was not closely dated.

Layer 0061
Description: A layer of grey silty sand up to 0.28m thick, present along the east sloping edge of the gravel terrace. Lying below 0002, it appeared to resemble 0034, 0038, and 0040, from which it was separated by the presence of ditch 0060.
Artefacts present: Romano-British pottery (334 sherds) and quernstone fragments.
Interpretation: Colluvial-alluvial layer running into the palaeochannel/floodplain, possibly contemporary with the Romano-British settlement activity on the gravel terrace and containing numerous artefacts from this site. Pottery ranged from late 1st-2nd to early 3rd century AD in date.

Clay Lined Pit 0015
Description: 1.2m long by 1m wide sub rectangular in plan, with shallow flared sides and flat bottom. Lined with stiff red brown clay, containing homogeneous yellow brown sandy silt.
Orientation: North to south.
Artefacts present: None.
Interpretation: Storage pit, possibly for water. Stratigraphic sequence below 0002 suggests it is Romano-British in date.

Pit 0079
Description: Unexcavated feature, sub rectangular in plan, *c*.0.55m long by 0.45m wide
Artefacts present: None
Interpretation: The pit remains undated although its stratigraphic location suggests a Romano-British origin is likely.

Feature 0064
Description: Only a sub-rounded end was exposed in the trench, *c*.0.75m long by 0.65m wide.
Orientation: North to south.
Artefacts present: Romano-British pottery (2 sherds).
Interpretation: The true form of remained unclear due to the limited exposure. Romano-British in date.

Feature 0081
Description: Only a sub-rounded end was exposed, *c*.0.80m long by 0.75m wide.
Orientation: north to south.
Artefacts present: None
Interpretation: The true form remains unclear due to the limited amount exposed. The feature remained undated, although the stratigraphic location (below 0002) suggests a probable Romano-British origin.

Anglo-Saxon Deposits.

Stake 0098
Description: A small incomplete stake (*c*.0.5m in diameter and *c*.0.16 long) was found within the peat to the east of the alder log, although no direct link between the two was evident.
Orientation: None
Interpretation: Stake radiocarbon dated at 95% probability to Cal AD 790 to 1030 (Cal BP 1160 to 920). Appears to relate to Anglo-Saxon activity of undetermined nature within the vicinity, though no further associated remains were found during the excavation.

Conclusion

Site: A background scatter of residual flint (5 pieces) suggests that associated prehistoric activity may have occurred on site, while related features may still survive amongst the Romano-British remains, as found at other gravel sites (Elliott & Knight 1999, 2002). Numerous Romano-British features were present on the gravel terrace, including seven ditches, two gulleys, a possible stone corn dryer or oven, three pits including an example that was clay lined, and a row of apparent stone post pads for at least one structure. Pottery sherds were abundant (total 1447) and largely comprised material of 2nd-4th century AD date. Further finds included quernstone and slag tentatively suggesting some limited cereal processing (supported by samples from 0034) and metal working, while faunal remains indicated the presence of sheep and cattle on site. Of interest was a glass armlet, possibly from south-west Scotland (Stevenson 1956). Together these remains suggest the existence of a multi-phased Romano-British ditched enclosure complex, containing signs of domestic activity in an agricultural setting, with an abundant and varied range of artefacts. Geophysical survey indicates the site extends for at least 100m north to south, along the ridge of the gravel terrace, although it's extent westwards was unclear (due in part to the proximity of the modern drainage ditch), while to the east it was bounded by the palaeochannel.

Of further interest is stake 0098, which suggests both the presence of Anglo-Saxon activity and the existence of structures within the palaeochannel. The nature of the remains is unclear with settlement apparently absent in the immediate vicinity. It may be connected to such riverine functions as fish weirs, as found along the Trent at Colwick and Hemington. The only other artefact of this period is a possible sherd of pottery within ditch 0078, which remains tentative in its identification

Preservation: The presence of 0002 above the features on the gravel terrace, containing an abundance of Romano-British artefacts (including the substantial fragments of a quern, (Figure.11; Plate.21), indicates a degree of truncation from ploughing some time in the past, supplemented in parts by substantial animal disturbance. The build up of 0002 on the ridge along the gravel terrace edge may represent the presence of a former medieval headland. This may have aided preservation from more recent ploughing, including such shallow features as the stone post pad alignment. Within the floodplain preservation of deposits was excellent due to their presence below the water table, sealed by up to 1.62m of alluvial clay.

Environmental Potential: On the gravel terrace the sandy fills and shallowness of most features appeared to offer little palaeoenvironmental potential. However, the deep ditch 0078 *(c.*1.7m below ground surface) lying close to the water table revealed that at this depth features still hold significant potential, notably for pollen and faunal remains. Such evidence was considerably enhanced by the presence of deposits running into the floodplain where preservation of environmental remains was excellent, as shown by the charred plant and beetles present in layer 0034. This included other organic evidence, missing from the features on the gravel terrace, such as the alder log 0045 and stake 0098, which raises the possibility of surviving bog oaks suitable for dendrochronology. Due to the proximity of the site to the palaeochannel, palaeo-environmental evidence where lacking on the gravel terrace could be inferred from these remains. The floodplain/palaeochannel deposits provide

an added environmental aspect that both precedes and follows the Romano-British cultural remains, which can be therefore be presented within a context of long term landscape changes.

SITE C

5.3. SITE C

Apart from the topsoil (up to 0.42 in depth), the basic stratigraphy varied between the three trenches excavated across site C (03a, 03b and 06a). Features were present throughout trenches 03a and 06a situated on the gravel terrace, including ditches, pits, possible postholes and gullies as described below (Figures. 12 & 13). These were generally cut into a yellowish-brown sandy silt loam. Due to dry conditions in combination with plough and animal disturbance, as well as dense mottling from iron panning, the level at which the archaeological features were visible was initially hard to determine. In 03a on the ridge of the gravel terrace edge, clay filled medieval furrows and Romano-British features were present immediately below the topsoil, suggesting truncation of the latter features from both medieval and modern ploughing. As indicated by the Romano-British pottery cluster from field walking. In 06a further back on the gravel terrace, similar clay filled medieval furrows were again evident, though cut in to 0509 a brown sandy loam subsoil (c.0.38m in depth), which apparently sealed all the Romano-British features present. The presence of 0509, a possible colluvial/alluvial derived deposit, suggested these features had suffered less in recent times from modern ploughing than those in 03a.

Much further to the north-west on the gravel terrace, trench 06b excavated to investigate a concentration of heat-affected stone, revealed a basic stratigraphy of topsoil, intermediary sandy silt loam layer 0551 and an underlying natural of yellow to orange sand (0553). No archaeological features other than a post medieval drain 0552, were discovered (Figure.14). Of interest was the presence of six heat-affected stones from the east end of the trench. Their presence within 0551 suggests they are residual in nature, possibly originating from a plough-disturbed feature to the east of the trench.

Within 03b the linear anomaly highlighted by geophysics was found to be a modern clinker filled land-drain. Present below the topsoil were layers of alluvial clay 0255, 0256 and 0257 (totalling up to 0.66m in depth), containing no artefacts. This sealed several smaller sand and silt layers, dipping down into the floodplain. The most visibly extensive of these 0250, (along with 0259 and 0266) contained Romano-British artefacts and charcoal (Figure.15). Beneath these (only partially exposed in a 3m x 1.5m box cut) were a number of thin sand and silt deposits (0263, 0264 and 0265), devoid of finds. Together all these deposits appeared to form the west side of the palaeochannel found to run along the edge of the gravel terrace by the borehole survey.

Trench 06a

1st–mid 2nd century A.D.

Ditch 0502, Features 0504, 0505

Description: Linear in plan. Possibly contemporary with 0505, (forming an apparent junction or corner with this feature), which ran north to south at a *c.*90° angle to 0502. It possessed an asymmetrical 1.2m wide by 0.44m deep, flared U-shaped profile, with a slight rounded step on the south side. The fill largely comprised of an upper layer of orange brown sandy loam and a basal fill of light brown sandy silt loam. Within the upper fill of the west end of the ditch was deposit 0504, an apparently black silty

loam-like material and red-brown possibly burnt sandy clay. This may represent the remains of hearth or oven debris dumped within the ditch. However, samples submitted for charred plant analysis proved negative.
Orientation: East to west.
Artefacts present: Romano-British pottery (2 sherds).
Interpretation: Romano-British enclosure ditch *c.*1st–mid 2nd century A.D. in date, possibly forming junction or corner of enclosure with 0505.

Gulley 0500/0503
Description: Linear in plan, running largely along the base of the east section of the trench. Possessed a semi-circular profile with rounded base and a homogenous greyish brown sandy silt fill. Possibly continued to the south as 0503, from which it was separated by the presence of 0501. Relationship with 0501 was also unclear, due to the similarity in fills between the two features.
Orientation: North to south.
Artefacts present: Romano-British pottery (22 sherds) and heat-affected stone.
Interpretation: Romano-British gulley, *c.*late 1st-mid 2nd century A.D. in date, possibly for drainage or internal division of an enclosure.

2nd century A.D

Ditch 0501
Description: Linear in plan with asymmetrical 1.75m wide by 0.56m deep V-shaped profile. The north side was flared, while the south side was irregular with a rounded step mid way up, possibly indicating a later cut. The fill largely comprised of an iron-pan rich upper layer of mid yellow brown sandy loam, and a basal fill of grey brown silty sand loam. The relationship with the gulley or gulleys 0500 and 0503, was unclear due to the similarity in fills.
Orientation: East to west.
Artefacts present: Romano-British pottery (3 sherds) and heat affected stone.
Sample: ES95 charred plant assessed as poor, ES106 pollen assessed as poor.
Interpretation: Romano-British enclosure ditch (*c.*2nd century A.D. in date), representing at least two phases of use.

Late Romano-British to Medieval

Layer 0509
Description: Lying below 0508 and the apparent furrows 0510 and 0511, stretching across the whole of the trench as a layer varying between 0.25m to 0.40m in thickness. Comprised orange brown sandy loam, similar to the subsoil cut by the Romano-British features.
Artefacts present: Romano-British pottery (3 sherds).
Interpretation: A possible colluvial/alluvial deposit of apparently late Romano-British to Medieval date. It is possible that the Romano-British features may have cut through this deposit. However, the absence of stones lines from weathering and the dry conditions experienced during excavation made it difficult to discern differences between subsoil and similarly composed feature fills. If 0509 does seal these features, it may also represent a degree of disturbance and truncation of the underlying natural and the top of the features, possibly by 3rd – 4th century A.D. or post Roman activity.

Medieval

Furrows 0510, 0511
Description: Two shallow linear features, up to *c.*1 m wide by 0.18 m deep with a wide flat to round-bottomed profile, possessing a brownish grey silty clay fill. The features were spaced 5m apart. They were most clearly visible in the trench sections, lying below 0508.
Orientation: East to west.
Artefacts present: None
Interpretation: Ridge and furrow of Medieval open field system existing along the gravel terrace, similar to that exposed in 03a.

Layer 0508
Description: Lying immediately below the topsoil and present across the trench as a layer varying up to 0.22m in thickness, comprising brown silty clay loam.
Artefacts present: None.
Interpretation: A disturbed horizon of subsoil, possibly caused by medieval and post medieval ploughing, resembling the material within the furrows 0510 and 0511.

Trench 03a

2nd century AD

Pit 0203
Description: Oval in plan, *c.*1.5m long, a minimum 0.85m wide and 0.40m deep, with flat base. The profile of the feature was unclear due to a merging contextual difference with ditch 0202, leaving the edge between the two imperceptible.
Artefacts present: Romano-British pottery (5 sherds), heat affected stone and one iron nail. A further 37 sherds of Romano-British pottery found at the merging boundary with 0202 (3rd century A.D.) date to the 2nd century A.D.and therefore are also thought to originate from 0203.
Interpretation: Romano-British pit (2nd century AD).

Late 2nd –3rd century A.D

Ditch 0202
Description: Linear in plan ending in a rounded western but-end, and possessing a *c.*1.10m wide by 0.48m deep asymmetrical profile, with a stepped north side, steeply cut lower south side and flat bottom. A basic fill of mid-brown silty loam was present, with a possible re-cut indicated by a U-shaped fill of dark grey brown silty loam. Fill merged with pit 203 to the north and pit 0201 to the south, the relationship with both remaining unclear.
Orientation: East to West.
Artefacts present: Romano-British pottery (25 sherds), flint (1) and heat affected stone.
Interpretation: Romano-British enclosure ditch, representing at least two phases of use and possibly forming the east side of a south facing entrance. Pottery suggests a late 2nd –3rd century A.D. date.

Curvilinear Gulley 0200

Description: Semi-circular in plan, with a 0.29m wide by 0.15m deep asymmetrical profile, possessing a steeply cut east side, a more shallow flared west side and rounded to flat base. A homogeneous dark greyish brown silty loam fill was present throughout. Cut to the north by ditch 0202.

Orientation: From the south east curved round to the north east.

Artefacts present: Romano-British pottery (1 sherd) and heat affected stone.

Interpretation: Romano-British curvilinear gulley containing a single sherd of 3rd century A.D. pottery. Estimated diameter of 3m to 5m and absence of postholes suggests this may represent a drainage gulley for a stack stand rather than a roundhouse.

Gulley 0208

Description: Sinuous, slightly curving, linear feature with a 0.46 m wide by 0.23 m deep symmetrical U-shaped flat-bottomed profile, possessing brownish grey silty sand fill. The fall of the gulley increased to the south, with the higher north end suffering from truncation by modern ploughing.

Orientation: North west to south east

Artefacts present: Romano-British pottery (3 sherds) and heat affected stone.

Interpretation: Romano-British (3rd century A.D.), gulley of unclear function, possibly for drainage or marking internal divisions within an enclosure.

Pit 0201

Description: Only partly exposed in the trench, it appeared sub-rectangular in plan, *c.*1.05m wide and a minimum 0.1m deep, with an irregular, pitted flat base. The profile of the feature was unclear in the trench section, due to the presence of ditch 0202 to the north and merging contextual boundaries with layer 0211 to the south.

Artefacts present: Romano-British pottery (11sherds).

Interpretation: Romano-British pit (3rd century A.D.).

Gulley 0205, Pits/Postholes 0206,0207 & 0216

Description: Linear in plan with rounded to squared west end, with a symmetrical 0.6m wide by c.0.1m deep profile with steep shallow sides and flat base. Fill largely comprised of a brown sandy loam. The feature was cut by two (0206, 0207) possibly three (0000) pits/postholes. 0206 was a lozenge shaped pit 0.65m long, 0.28m wide and 0.16m deep with a rounded U-shaped profile and dark brown silty loam fill. 0207 was oval in plan *c.*0.42m long, 0.35m wide and 0.10m deep, with a shallow flat bottomed profile and dark greyish brown sandy silt loam fill. Partly exposed in 0205 at the east section with the trench, was a further possible pit/posthole feature 0000. This possessed a square flat bottomed profile, *c.*0.28m wide by 0.16m deep, with a dark grey bown sandy silt loam fill. It remained unclear whether these three features, (which cut through the base of 0205), were actually contemporary with the gulley.

Orientation: East to west.

Artefacts present: Romano-British pottery (0206 1 sherd, 0207 1 sherd) and heat affected stones.

Interpretation: Romano-British gulley, possibly representing post in trench feature, though this remains tentative, as 0206, 0207 and 0216 may represent later pits.

Gulley 0209
Description: Sinuous, slightly curving, linear feature with a *c.*1.4 m wide by 0.26 m deep shallow semi-circular profile, possessing brownish grey silty sand fill. The north end divided into a rounded terminal and a narrower, 0.2m wide continuation of the gulley visibly truncated in the east facing section of the trench.
Orientation: North-west to south-east
Artefacts present: Heat affected stone.
Interpretation: Gulley of unclear function, possibly for drainage or for boundary marker, similar to 0208. Presence of heat affected stone and alignment of feature suggests it is Romano-British in date.

Pit/Posthole 0204
Description: Circular in plan, U-shaped profile with near vertical sides and rounded base. Largely contained a brownish grey fill, above a thin layer mottled with orange, present along the base and east side of the feature.
Artefacts present: None
Interpretation: Undated possible posthole. Maybe related to gulley 0205 and pits 0206, 0207, and could therefore be Romano-British in date.

Pit/Posthole 0210
Description: Sub-round in plan, U-shaped profile with near vertical sides and rounded to flat base. Contained a brownish grey silty sand fill.
Artefacts present: None.
Interpretation: Undated possible posthole, location suggests it maybe related to the settlement activity present and therefore be Romano-British in date.

Medieval

Furrows 0213, 0214
Description: Two shallow linear features up to *c.*1 m wide by 0.23 m deep, with wide flat-bottomed profiles, possessing brownish grey sandy silt clay fills. The furrows spaced *c.*6m apart were most evident in the trench sections, due to truncation by machine to expose the archaeological remains below. Some truncation from modern ploughing was also evident in the trench sections.
Orientation: East to west.
Artefacts present: Medieval pottery (1 sherd).
Interpretation: Ridge and furrow of Medieval open field system existing along the gravel terrace.

Trench 03b

Mid 2nd–4th century A.D.

Sandy Layer 0259
Description: A pale brown loamy sand, minimum 0.14m thick. Only partially exposed in a 3m x 1.5m box cut across the centre of the trench. It dipped west to east into the floodplain, disappearing below the base of the trench before reaching the east section of the trench.
Artefacts present: Romano-British pottery (4 sherds).
Interpretation: Romano-British deposit stratigraphically below and apparently slightly earlier in date than 0250 (*c.*mid 2nd–4th century A.D. in date), possibly alluvial/colluvial in origin containing material contemporary with settlement activity evident in 03a and 06a, on the gravel terrace.

Sandy Layer 0266
Description: A grey sandy clay sub-round spread *c.*0.75m in diameter and 0.1m thick, exposed in a 3m x 1.5m box cut across the centre of the trench.
Artefacts present: Romano-British pottery (1 sherd).
Interpretation: Romano-British deposit, stratigraphically below 0250. Possibly alluvial/colluvial in origin.

Mid 3rd –4th century A.D

Sandy Layer 0250
Description: A grey sandy clay loam with visible charcoal, present across a large portion of the trench, is extending beyond its limits in most directions. Up to 0.16m thick it dipped west to east into the floodplain.
Artefacts present: Romano-British pottery (104 sherds), heat affected stone, tile (2 fragments) and one slag fragment a possible plano-convex hearth bottom.
Sample: ES98 charred plant assessed as poor.
Interpretation: Romano-British deposit (*c.*mid 3rd –4th century A.D. in date), possibly alluvial/colluvial in origin containing material contemporary with settlement activity evident in 03a and 06a, on the gravel terrace.

Trench 06b

Layer 0550
Description: Present across the trench as a spread or layer, comprising yellow to orange sand.
Artefacts present: Heat-affected stones.
Interpretation: Natural subsoil, with surface partly disturbed by modern ploughing.

Layer 0551
Description: Lying immediately below the topsoil and present across the trench as a layer varying up to 0.26m in thickness, comprising brown sandy silt loam.
Artefacts present: Heat-affected stones.
Interpretation: A disturbed horizon of subsoil possibly caused by medieval and post medieval ploughing, resembling 0508 in 06a.

Land Drain 0552
Description: Linear with vertical sides, *c.*0.25m wide, filled with a brown sandy clay.
Orientation: East to west.
Interpretation: Post medieval land drain.

Conclusion

Site: Romano-British features comprising eight ditches/gullies (one curvilinear in form), six pits and possible postholes were discovered on the gravel terrace. Artefacts included slag suggestive of smithing, while the quantities of pottery found (245 sherds) indicated activity from the 1st to 4th century A.D. Notably features further back on the terrace in 06a were of the 1st-2nd century A.D., compared to those in 03a of 2nd-3rd Century A.D, and up to 4th century A.D. in 03b, suggesting some movement between phases of activity. Together this evidence suggests the presence of a similar multi-phased ditched enclosure complex to that in site B.

The extent of the site is unclear from the geophysical survey. Excavation revealed deposits to stretch at least 60m to the west of the palaeochannel and at least 30m north to south. The presence of the heat-affected stone from field-walking suggests an associated field system may have lay further back on the gravel terrace, albeit now possibly severely truncated from the results of 06b.

Preservation: On top of the gravel terrace edge in 03a, features including furrows lay directly below the topsoil suggesting truncation by both Medieval and modern ploughing, leaving some features in parts less than 0.05m deep. Further back on the terrace the presence of layer 0509 (0.40m deep) may have provided some protection against modern truncation of the 1st-2nd century features in 06a, although this deposit in turn could represent disturbance of late Romano-British to Medieval date. Similarly the intermediary subsoil layer 0550 in 06b, set way back on the gravel terrace is likely to represent a less substantial (0.26m deep) plough-disturbed horizon. Within the floodplain preservation was greater due to the presence of the *c.*0.66m of covering alluvial sands and clays, above those deposits containing Romano-British finds.

Environmental Potential: In the absence of any features of comparable depth to 0078 from site B, the sandy fills and shallow nature of those encountered on the gravel terrace of site C present limited palaeoenvironmental potential. This was confirmed by the charred plant and pollen samples, while no faunal material appeared to survive. More promising were the waterlogged deposits in 03b sealed by alluvial clay. Although bone again was absent, charred remains in the form of charcoal were clearly preserved, however, only limited information regarding charred plant material was retrieved from sampling (ES98).

SITE D

5.4 SITE D

On the gravel terrace 04 revealed a basic stratigraphy of topsoil (0.38m), brown alluvial clay 0107 (*c.*0.26m) and a greyish brown sandy silt loam 0108 (*c.*0.32m), apparently sealing several ditches/gullies running east toward the floodplain, with the exception of the partially exposed feature 0106 (Figure.16). All were cut in to a sandy silt loam similar to 0108 in appearance. Below the topsoil in 05, the same brown alluvial clay 0107 (0605) was present above a further grey clay layer 0604, which in turn sealed several silt and sand deposits extending into the floodplain, a number of which contained Romano-British artefacts. Amongst these layers was a shallow dip or possible small channel incorporating a silty peat fill in parts (Figure.17).

5.4. Trench 04

Late 2nd century A.D

Feature 0106

Description: Only the curving east edge of the feature was exposed in the north end of the trench, the feature was therefore not excavated. It appeared to merge with the west end of 0105, to which it lay at *c.* 90°. It contained a similar greyish brown sandy silt loam fill to 0105, though the relationship between the two remained unclear, with pottery suggesting they were not contemporary.
Orientation: East to west, curving north eastwards.
Artefacts present: Romano-British pottery (13 sherds), metal and heat-affected stone.
Interpretation: Romano-British enclosure ditch, *c.*late 2nd century A.D. in date. Appears to coincide with large linear anomaly detected on geophysics survey

Late 2n–3rd century A.D.

Ditch 0105

Description: Linear in plan, the west end could not be discerned from 0106 (which continued northwards at 90 ° from 0105), while pottery suggests they are unlikely to be contemporary. It possessed an asymmetrical V-shaped profile, 2m wide by 0.66m deep, with flared upper edges narrowing to a rounded base. The fill largely comprised greyish brown sandy silt loam, and a smaller deposit of orange brown loamy sand present along the north side, possibly representing the weathering in of material cast up by original excavation of the ditch. These were sealed by an upper layer of grey brown sandy silt loam.
Orientation: East to West
Artefacts present: Romano-British pottery (60 sherds), tile (3 fragments) and heat-affected stone.
Sample: ES 91 charred plant assessed as poor, ES89 pollen assessed as some potential.
Interpretation: Romano-British enclosure ditch, *c.*late 2nd –3rd century A.D. in date.

Mid-Late 3rd century A.D

Ditch 0100

Description: Linear in plan, possessing a *c.*1.65m wide by 0.7 m deep, U-shaped profile with a stepped south side, and a rounded bottom. The fill included a basal

layer of brownish grey sandy loam, and an upper fill of greyish brown loamy sand. The relationship of the ditch to layer 0108 was unclear, as both appeared to merge.
Orientation: East to west
Artefacts present: Romano-British pottery (39 sherds), tile (1 fragment) and heat-affected stone.
Interpretation: Romano-British enclosure ditch, *c.*mid-late 3rd century A.D. in date. Profile suggests the possibility of re-cut on the south side, though little evidence exists within the fill to support this view.

Ditch/ Gulley 0102
Description: Linear in plan, with a *c.*1.25m wide by 0.42m deep, V-shaped profile. The fill comprised a homogeneous brownish grey sandy silt loam, which merged with 0108 above. Lay c.1.5m away from 0103, on the same alignment.
Orientation: Roughly east to west.
Artefacts present: Romano-British pottery (55 sherds), heat-affected stone, tile (3 fragments) and lead waste (one piece).
Interpretation: Romano-British shallow ditch or gulley *c.*3rd century A.D. in date (though some 2nd century pottery present). Possibly for drainage or internal division of enclosure. Orientation, date and location suggest it may be contemporary with 0103 and 0104.

Ditch/ Gulley 0103
Description: Linear in plan, with a *c.*1m wide by 0.2m deep profile, possessing shallow, flared sides and an irregular base. The fill comprised a homogeneous brownish grey sandy silt loam that merged with 0108 above. Lay between 0102 and 0104, all on the same alignment.
Orientation: Roughly east to west.
Artefacts present: Romano-British pottery (6 sherds),
Interpretation: Romano-British shallow ditch or gulley, possibly for drainage or internal division of enclosure. Orientation, date and location suggest it may be contemporary with 0102 and 0104.

Ditch/ Gulley 0104
Description: Linear in plan, with a *c.*0.9m wide by 0.24m deep shallow, round bottomed profile. The fill comprised a homogeneous brownish grey sandy silt loam that merged imperceptibly with 0108 above. Spaced from 0.5m to 1m apart from 0103.
Orientation: Roughly east to west.
Artefacts present: Romano-British pottery (8 sherds),
Interpretation: Romano-British shallow ditch or gulley *c.*3rd century A.D. in date. Possibly for drainage or internal division of enclosure. Orientation, date and location suggest it may be contemporary with 0102 and 0104.

Late 3rd–4th century A.D.

Ditch 0101
Description: Linear in plan, possessing a *c.*2.75m wide by 0.6 m deep, flat bottomed asymmetrical profile with a steeply cut lower north side and stepped south side, while upper edges flared out. The fill included an upper deposit of brown sandy silt loam

whose boundary with layer 0108 was imperceptible, leaving the relationship between the two uncertain. Lying centrally within the lower half of the ditch was further deposit of grey brown sandy silt loam, while below this were two smaller deposits of mid grey sandy silt loam, apparently weathering in from the north side and single deposit of grey brown sandy loam from the south side.
Orientation: East to west
Artefacts present: Romano-British pottery (54 sherds) and heat affected stone.
Interpretation: Substantial Romano-British enclosure ditch, *c.*late 3rd –4th century A.D. in date. Profile suggests the possibility of re-cut on the south side, though little evidence exists within the fill to support this view.

Layer 0108
Description: Layer of greyish brown sandy silt loam up to 0.32m thick, present across the whole trench, lying immediately below 0107. It appeared to seal the Romano-British features, though these could have been cut through layer 0108. However this relationship was unclear with the upper fill of the features apparently merging into layer 0108.
Artefacts present: Romano-British pottery (27 sherds).
Interpretation: Probable alluvial/colluvial deposit, containing Romano-British artefacts *c.*late 3rd-early 4th century A.D. (though these may be derived from features below, disturbed by post Roman agricultural activity).

Post Romano-British to Post medieval

Layer 0107
Description: Layer of brown clay up to 0.26m thick, present across the whole trench (with the exception of one area subject to modern agricultural disturbance), lying immediately below the topsoil and sealing 0108 below. This layer was also present in trench 05 excavated eastwards into the floodplain
Artefacts present: None
Interpretation: Probable alluvial formed deposit possibly indicating over bank flooding of the area of post Romano-British to post medieval date.

Trench 05

Late 2nd –4th century A.D

Layers 0602-0626
Description: These comprised several deposits of silt and sand, up to 0.52m in thickness, which dipped eastwards into the floodplain beneath the alluvial clay layers 0605 and 0604. Romano-British pottery was found in a number of the deposits.
Artefacts present: Romano-British pottery (132 sherds in total), animal bone (poorly preserved).
Sample: 0602 ES 93 charred plant assessed as poor.
Interpretation: Alluvial/colluvial formed deposits running into the palaeochannel detected along the edge of the gravel terrace (lying to the east of the site detected in 04). The presence of Romano-British artefacts (possibly representing tipped rubbish, *c.*late 2nd –4th century A.D. in date), suggests the palaeochannel was in part open during activity associated with the settlement recorded in 04.

3rd-4th century A.D.

Channel 0600
Description: Comprised a small dip within deposits below the alluvial clay layers 0604 and 0605. This largely included silts and clays as well as a layer of peaty clay. Lying below the water table, flooding of the trench collapsed the sections preventing any greater definition of this feature.
Orientation: North to south
Artefacts present: Romano-British pottery (2 sherds)
Interpretation: Possible small palaeochannel running within the larger palaeochannel along the gravel terrace. Pottery evidence though tentative suggested a 3rd-4th century A.D. date, similar to the other floodplain deposits 0602-0626 recorded in 05.

Post Romano-British to Post medieval

Alluvial clay layer 0604
Description: Layer of grey clay present across the whole trench, lying below 0605 and sealing the deposits containing Romano-British pottery. This dipped eastwards into the floodplain, increasing to a thickness of 0.42m.
Artefacts present: None
Interpretation: Probable alluvial deposit possibly indicating over bank flooding of the area of post Romano-British date.

Alluvial clay layer 0605
Description: Layer of brown clay, present across the whole trench, lying immediately below the topsoil and sealing 0604. Dipped eastwards into the floodplain, increasing to a thickness of 0.4m. This layer appeared to correspond with 0107 in trench 04.
Artefacts present: None
Interpretation: Probable alluvial deposit possibly indicating over bank flooding of the area of post Romano-British to post medieval date.

Conclusion

Site: The features exposed on the gravel terrace were comprised solely of ditches or gullies. These coincided with linear anomalies detected by geophysical survey as forming a large rectangular ditched enclosure complex extending *c.*110m north to south, with elements stretching at least 100m westwards. The excavated ditches all followed an east-west alignment. In contrast the unexcavated feature 0106 correlated with a north-south trending linear anomaly. This difference may indicate a realignment or extension of the enclosure after the 2nd century A.D. date of 0106, compared to the other features, which spanned the late 2nd-4th century A.D. Pottery of various wares were found including imported items such as the stamped sherd of Samian illustrated (Plate.18), while fragments of vessel glass and residual tile perhaps point to influence of Roman Littleborough and it's markets only 350m to the south.

Preservation: The absence of internal features to the ditches, may in part be due to the location of 04 along the eastern edge of the enclosure. The presence of layer 0108 containing 3rd-4th century A.D. pottery may constitute past disturbance to the top of the Romano-British features. This remains unclear although in combination with clay layer 0107 (totalling 0.5m), it may have minimised truncation from modern ploughing. Within the floodplain preservation was aided by the location of many deposits below the watertable, and the covering layers of up to 0.8m of alluvial clay.

Environmental Potential: The sandy fill of the ditches on the gravel terrace were neither waterlogged nor as deep as 0078 in site B. As a result evidence for pollen, charred plant material and faunal remains was poor, with the latter where present being poorly preserved and fragmentary (Plate.23). Once again better potential was offered by the conditions prevalent within the floodplain. However, within the silt and sand deposits here faunal remains were poorly preserved while the sample for charred plant material was assessed as poor (ES93). Greater potential may be held by deeper peaty deposits as inferred from samples in nearby borehole 30.

SITE E

5.5. SITE E

This comprised a sand and gravel island running north-south, measuring at least 115m long by 42m wide, with its east side dipping into the floodplain and its west side into the palaeochannel along the gravel terrace edge. To the west of the gravel island, trench 07a revealed the existence below the topsoil of substantial layers of alluvial clay (totalling *c.*1.5m). Beneath this was *c.*0.6m of peat 0300, lying above white sand 0301. Within the peat was found an alignment of upright posts 0302, 0303, and 0304. Some smaller round-wood pieces with cut ends and some charred wood were found residually within the peat. Apart from worked wood and two heat-affected stones, no artefacts were recovered in association with this apparent structure. Excavation of the deposits in trench 07a was hampered by its location below the water table, resulting in constant flooding from both the sections and base of the trench, despite continuous attempts to alleviate this.

No features were found within trench 07b, located east-west over the gravel island, though a number of heat-affected stones were found residually towards the east end of the trench. On top of the island modern ploughsoil was present lying directly on top of yellow sand subsoil 0351, with clear evidence of substantial plough disturbance. Along the west edge of the gravel island a series of layers including grey sandy loam 0350, grey clay 0553, sandy loam 0356 and brown clay 0355, emerged between the topsoil and subsoil 0351. Only 0350 contained Romano-British pottery and visible charred remains, possibly originating from former settlement activity on the gravel island.

Trench 07a

Grey-White Sand 0301
Description: A layer of grey-white sand exposed by small box excavations cut through the peat in the northeast corner of the trench and during excavation of the posts. The full depth and extent of the deposit is unknown.
Artefacts present: None
Interpretation: Natural alluvial deposit.

Bronze Age

Peat 0300
Description: Brown to black peat containing well preserved vegetation including branches with bark, twigs and hazelnuts. A small amount of roundwood within the peat was found to have cut ends. In addition three vertical timber posts in a north-east to south-west alignment were found *in-situ* within the peat. Lying along the south side of this was a small number of roundwood/branches laid horizontally on a roughly north-east to south-west alignment. Small box excavations revealed the peat to be 0.60m thick.
Artefacts present: Heat affected stone and cut roundwood/posts.
Interpretation: Peat lying within the top east side of the palaeochannel running along the gravel terrace edge. Carbon dating on the posts inserted into the peat suggests it is Late Bronze Age or earlier in date (confirmed by radiocarbon dating of boreholes, e.g. borehole 11a cal BC 1100-780). The presence of burnt timbers and heat-affected stone

may indicate settlement nearby or activity similar to that associated with burnt mounds.

Post Alignment 0302, 0303 and 0304, Roundwood 0305
Description: This comprised three vertical sharpened posts spaced 0.3m and 0.8m apart, on a north-east to south-west alignment. 0302(Alder) was 0.53m long by 0.12m in diameter, 0303 (Alder) 0.34m long by 0.12m in diameter and 0304 (Alder) 0.18m long with an incomplete diameter. All exhibited worked faceted ends displaying potential toolmarks. All three were inserted into the peat with only the tips of two 0302 and 0303 protruding into the white sand below. At which horizon the posts were inserted remains unclear. No evidence of them was observed within the overlying clay suggesting if present they had not been preserved within the clay. Possibly associated with the posts were a small number of alder and ash roundwood branches (with no visible cut ends), laid horizontally on a roughly north-east to south-west alignment. No direct physical connection between these and the posts was visible, with the exception of a Y-shaped branch 0305 (of yew), to which post 0303 lay centrally (Plate.14). Similar placement of supporting branches has been noted at fishweirs elsewhere in the Trent (pers.comms Dr.Chris Salisbury). Radiocarbon dating indicated post 0302 (cal BC 930 to 790) and 0303 (cal BC 810 to 410), along with the roundwood branch 0305 (cal BC 1020 to 800) were from the Late Bronze Age. The dates suggest branch 0305 was contemporary with at least 0302, if not both of the posts, while a slightly later date for post 0303 may imply a repair or rebuild of the structure. A small amount of apparently residual roundwood with cut ends was recovered from the peat, its connection with the post alignment, possibly as part of a brushwood mattress remained unclear.
Artefacts present: Heat affected stone and cut roundwood/posts.
Interpretation: An apparent linear timber structure of Late Bronze Age date within the eastside of the palaeochannel located along the gravel terrace edge. Possibilities of function may include trackway, causeway or fishweir. The relationship to the burnt timbers and heat-affected stone to the posts is unclear.

Post Roman

Grey Clay Layer 0306
Description: A layer of grey clay present across the trench, between peat 0300 and brown clay 0307. Comprised uniform thickness of 0.6m of clay sterile of finds and any stones. It appears to correspond with alluvial clay 0353 seen at the west end of 07b, which sealed deposit 0350 containing Romano-British pottery.
Artefacts present: None
Interpretation: Alluvial deposit of probable post-Romano-British date.

Brown Clay Layer 0307
Description: A layer of orange-brown clay present across the trench, lying between grey clay 0307 and the topsoil. Comprised uniform thickness of *c*.0.5m of clay sterile of finds and any stones. It appears to correspond with brown clay 0355 seen at the west end of 07b.
Artefacts present: None
Interpretation: Alluvial deposit of probable post-Romano-British date.

Trench 07b

Prehistoric to Romano-British

Layer 0351
Description: A layer of sandy subsoil, which at the top of the gravel island, lay directly below the topsoil. On the west side of the island, where 0351 dipped towards the palaeochannel (along the gravel terrace edge), a number of other deposits were present between it and the topsoil, including 0350, 0355, and 0356. At the top of the island, visible within the surface of 0351, was heavy disturbance from modern topsoil-filled plough-scrapes *c.*0.15m deep. At the east end of the trench some heat-affected stones were found on the surface of the 0351. However, no features were present, while mottling from iron panning was widespread.
Artefacts present Heat affected stone.
Interpretation: Natural alluvial deposit, with heat affected stone and Romano-British material imbedded in surface.

Layer 0350
Description: This grey sandy loam layer emerged between subsoil 0351 and the grey clay layer 0353, at the west end of the trench. It increased in thickness (up to 0.3m) as it dipped westwards towards the palaeochannel along the gravel terrace edge. Visible within the deposit was a concentration of charred fragments, which was sampled (ES 350), as well as a small quantity of Romano-British pottery.
Artefacts present: Romano-British pottery (8 sherds).
Interpretation: Alluvial/colluvial deposit, containing pottery and charred material, possibly originating from former Romano-British activity now denuded from the top of the gravel island.

Post Roman

Grey Clay Layer 0353
Description: A layer of grey clay present in the southwest corner of the trench, between 0350 and 0355. Increased up to 0.25m thick as it dipped towards the palaeochannel. It appears to correspond with alluvial clay 0306 seen above the peat in 07a.
Artefacts present: None
Interpretation: Alluvial deposit of probable post-Romano-British date.

Sandy Layer 0356
Description: A layer of brown sandy loam, which largely lay directly below the topsoil. The exceptions were the west end of the trench where it tapered to an end beneath the brown clay 0355, and the top of the gravel island where it was absent, possibly due to complete truncation. It was at its most substantial *(c.*0.4.m) as it dipped westwards with other deposits, towards the palaeochannel.
Artefacts present Heat affected stone.
Interpretation: Possible colluvial deposit of probable post-Romano-British date.

Brown Clay Layer 0355
Description: A layer of brown clay, (turning greyish towards the base), present at the west end of the trench between the topsoil and 0356/0350. Increased up to 0.5m thick as it dipped towards the palaeochannel. It appears to correspond with alluvial clay 0307 below the topsoil in 07a.
Artefacts present: None
Interpretation: Alluvial deposit of probable post-Romano-British date.

Conclusion

Site: The top of the gravel island was found to be apparently denuded of archaeological deposits. As discovered with 0350, remains are most likely to survive around the islands edges dipping into the palaeochannel and floodplain. The island comprises an area of roughly 115m by 42m. Of significance was the presence of the Late Bronze Age post alignment. This indicates the existence of structures within the palaeochannel, which if a trackway may stretch between the island and the gravel terrace, a distance of *c.*300m. A similar structure could lie to the east of the island spanning the floodplain as found at Fiskerton and Flag Fen (Field and Parker Pearson 2003, Pryor 2001). Further remains of Bronze Age to Romano-British date could lie preserved within the deposits surrounding both this island and the one further to the north.

Preservation: Archaeological deposits survived only around the edges of the gravel island, where preserved below the alluvial clay layers 0353,0355 and sandy loam 0356. Greater preservation existed within the peat of the palaeochannel/floodplain in 07a, similarly sealed by alluvial clay though up to 1.1m thick. However, although the posts survived within the peat (only 0.6m thick), no evidence of them remained within the clay above suggesting poor preservation or truncation. Posts recorded were therefore limited in size with their original length unknown. This implies the top of the structure does not survive at this point. If the structure is a linear trackway more substantial remains may exist in the deeper peat lying within the palaeochannel (*c.*4m thick in parts), although substantial damage will have been incurred by the presence of the Mother-drain.

Environmental Potential: The Romano-British layer 0350 was found to have charcoal of possible interest, although charred archaeobotanical material was assessed as poor, and animal bone absent. Greater evidence was offered by the remains in the peat, including timbers (potentially highlighting woodland management and woodworking techniques), and pollen, beetles and waterlogged plant remains as obtained from borehole samples which suggested an alder carr wetland with areas of standing pool and open fen.

6. ARTEFACTS

6. ARTEFACTS

6.1. Romano-British Pottery

Methodology

The pottery was examined in context groups. The fabrics were recorded in broad groups and source suggested where appropriate. Reference was made to the National fabric Collection where appropriate (Tomber and Dore 1998). The vessel forms were noted and spot dates given for each context group. The quantities of each fabric group are shown in Table. 1, and the provenances in Table 2.

Table.1: Fabrics

Fabric group	Fabric codes	Fabric	Count
Amphora Total	AMP, DR20		5
BB1 Total	BB1		4
Brick/Tile Total	BRCK,TILE		30
Central Gaulish black-slip Total	CGBS		2
Colour-coated ware Total	CC		6
Crucible Total			1
Dales ware Total	CTA2,CTA2?,GRB2 FINE		52
Derbyshire ware Total	DBY		2
Early shelly ware ?IA Total	CT,CTB		1
Fine grey ware Total	GRA		54
Fired clay Total	FC		36
Grey and shell ware Total	GRB2 FINE		16
Grey ware Total	GRB		1279
Grey ware with clay pellets Total	GTA10		5
Gritty dark grey ware Total	GRB4		3
Gritty grey ware Total	GRC		71
Gritty shelly ware Total	GRB2		66
GT group Total	GTA8, GTA5, GTA8/10, GTB		136
M Nene Valley mortarium Total	NVM		3
M Swanpool mortaria Total	SWMOR,SWN WS		3
Mancetter-Hartshill mortarium Total	MH, MH1,MORW		12
Nene Valley colour coated ware Total	NV, NV1/1/1G		68
North Gaulish grey ware Total	NGGW		1
Oxfordshire red colour-coated ware Total	ROX		1
Oxidised mortarium Total	OABM		1
Oxidised ware, fine Total	OAA, OBA,		9
Oxidised ware, medium sandy Total	OAB, OBB		48
Parisian type ware Total	GRA7		1
Pre? Total	PRE		1
Prehistoric or Anglo-Saxon HM Total	PRE/AS		1
Prehistoric quartz-tempered Total	PQ		3
Prehistoric vesicular Total	PCT		12
Shelly ware Total	CT, CTA/B,CTB, CTB2, CTOX, CTB1		103
Trier black colour-coated ware Total	TRIERCC		1
TS Total	TS		37
White ware Total	FLA, FLA/OBA		24
Grand Total			2098

Results

2098 ceramic fragments were recovered including a crucible sherd, 30 fragments of brick and tile, and 36 fragments of fired clay. The assemblage is dominated by jars and dishes with smaller numbers of beakers, flagons, mortaria, samian table wares and specialist types such as colanders and crucibles. Characterisation of the assemblage should be carried out by recording rim % values.

Range and variety of material

The assemblage includes a wide variety of ware groups with imported wares including the Baetican olive-oil amphora, Gaulish samian, and Central Gaulish fine wares. The amount of traded coarse wares other than BB1 is relatively low comprising a small amount of Nene valley colour-coated wares and mortaria, Swanpool coarse\wares and mortaria and Mancetter-Harthill mortarium. The bulk of the wares seem to be from the Trentside kilns at Little London, Lea, Knaith and Newton-on-Trent. The general composition of the assemblage is typical of a rural site with a significant number of traded/imported sherds suggesting access to high quality ceramics in keeping with the proximity of a small town.

Chronology

The assemblage ranged in date from the 2nd to the late 4th century. "Native" jars in GT and CT wares date from the 1st to about the mid 2nd century. There were one or two possible Iron Age sherds and one cordoned bowl sherd of possible Conquest period but no Iron Age features were identified. There was some difficulty distinguishing the early shelly wares from the late Dales ware type fabrics, which made dating difficult when only bodysherds were present. It is also not certain yet how early some of the "proto-Dales ware" types begin so some contexts may be spot-dated slightly too late. The dating of much of the coarse ware vessels is imprecise but current work on stratified deposits in South Yorkshire and Nottinghamshire is refining this chronology and will allow greater precision in dating these assemblages.

There appears to be some activity during the 2nd century with rather more in the third and fourth centuries. A small group of sherds suggest activity on the site at least as late as the mid-4th century, namely the Oxfordshire red colour coated wares and some possible pre-Huntcliff ware.

Conclusion

The pottery indicates a long sequence of occupation with potential for detailed phasing of features and assessment of changes in the nature of the occupation over several hundred years. Further analysis of the forms and fabrics in the light of local assemblages will certainly refine the chronology of the sites and allow more precise dating. Full recording of the pottery will allow the distribution of the pottery fabrics and vessel types to be examined for functional biases and may shed light on the use of areas of the site. Concentrations of brick, tile and fired clay may indicate the proximity of buildings, such as ditch 0250 and 0006.

Fabric analysis could be refined in reference to local fabric collections such as those at Lincoln, Doncaster and from local kilns such as Little London and by consulting specialists such as Kay Hartley in respect to the mortaria fabrics. The amphorae appear to be all Dressel 20 Baetican amphorae.

The site is significant in providing an assemblage from the fringes of an urban settlement which can profitably compared with assemblages from the colonia at Lincoln, forts at Doncaster and Brough-on-Humber, rural sites such as those on the brickwork-plan field system like Dunston's Clump, sites on the Trent such as Rampton and Hoveringham and local kilns such as Little London, Knaith, Newton-on-Trent and Lea. This will facilitate study of trade patterns to different types of site and investigation of trade up and down the Trent and along the Roman road system. It will also improve characterisation of the sites in this area in terms of their ceramics. Does this area on the fringes of urban settlement behave like an urban or rural site? Does it benefit from propinquity to the urban centre by receiving rare goods (such as the North Gaulish beaker)? Is there any indication that the status of the site changes through time?

This area of the middle Trent has some distinctive coarse ware forms for which the dating is rather imprecise. The excavations at Rampton have produced good stratified deposits of pottery which would refine the dating of these types and the assemblage from Sturton-le-Steeple will contribute usefully to their chronology. This will in turn improve the chronological precision of dating of Roman rural sites in the area.

The ceramics of this area of the Trent Valley are important nationally on account of the development of a lid-seated jar type known as Dales ware. This jar type was made at Little London and other sites in Yorkshire and Lincolnshire. Swan has suggested a foreign inspiration for the form in the Languedoc region of France but in the middle Trent it seems to develop ultimately from Iron Age types, although this could still be under the influence of foreign potters. The dating of this sequence is important for the dating of the introduction of true Dales ware since the form is widely used as a date indicator in Lincolnshire and Yorkshire.

Table.2 Fabric and sherd count by context and trench.

AREA	CONTEXT	Fabric	Count	Spot-dating and comments
		PM	1	
	0400		1	Post med
01 Total			1	
		GRB	1	
	*0002		1	As 0002
		GRB	1	
	*0004a		1	RB
		CT	2	
		DBY	1	
		GRB	9	
		GTA8	1	
		NSP	1	
		OAB	1	
	0002		15	L2-4
		GRB	2	
	0003		2	L2-4
		CT	3	
		GRB	3	
		GRC	1	
		MH1	1	
	0004		8	L2-4
		GRB	2	
	0004a		2	L2-4

		GRB	2	
	0005		2	L3-4
		BRCK	1	
		CC/TS/PM?	1	
		CTA2	1	
		CTOX	1	
		FC	2	
		GRA	1	
		GRB	61	
		GRB+SLAG	2	
		GRB2	9	
		GRB2 fine	1	
		GRB2?	1	
		GTA10	1	
		MOR	3	
		NV??	1	
		NV1	1	
		OAB	7	
		PCT	1	
		PQ	1	
		TILE	1	
		TS	1	
	0006		98	Mixed group with some L1-M2, L2-3 and L3-4. L1-m2 in lowest spits with L2-3 and L3-4 in upper fills
		BRCK/FC	1	
		CTB/CTA2	1	
		GRA	2	
		GRB	1	
	0014		5	Probably 3rd
		CTB	1	
		GRB	11	
		GRB/C	2	
		GRC	2	
		OAB	1	
	0034		17	L2-4
		GRB	6	
		MOR	1	
		NV?	3	
		NV1	1	
	0038		11	L2-4, probably L3-4
		GRB	4	
	0039		4	3-4
		CTB	2	
		GRB	4	
		GTA	1	
	0046		7	Uncertain
		CT	1	
		GRB	9	
		GTA8	0	
		NV1	1	
	0047		11	L1-m2 and L2-E3
		GRB	2	
		GRB4	1	
	0066		3	RB
		NV2	4	
	0066/0067		4	L3-4
		BB1/GRC	2	

		CTA2	1	
		FC	1	
		GRA	2	
		GRB	15	
		GRC	2	
		TS	2	
	0078		25	M3-4 with some 2nd samian
		GRA	1	
		GRB	1	
	0080		2	RB
02 Total			218	
		GRB	1	
	*0003		1	
		GRB	23	
		GRB2	1	
		NV1	2	
		NV1/2	1	
		OAB	3	
	0001		30	L1-m2 with 3-4th coarse wares and 3rd beaker sherds
		CTB	3	
		FLA	1	
		GRA	1	
		GRB	4	
		GRB2	2	
		NV1	1	
		NV2	1	
		OBB/GRB	1	
	0002		14	L2ff
		?	1	
		AMP	1	
		CT	6	
		CTA2	2	
		CTB	2	
		CTB/CTA2	1	
		CTOX	4	
		DBY	0	
		FC	9	
		FC/BRCK	3	
		FC/DAUB	1	
		FC?	1	
		FLA	4	
		FLA1	4	
		GRA	7	
		GRA/B	1	
		GRB	139	
		GRB +FC	2	
		GRB+CTA2	2	
		GRB2	17	
		GRB2 fine	3	
		GRC	10	
		GT?	1	
		GTA	1	
		GTA10	1	
		GTA5	3	
		GTA5/8	1	
		GTA8	4	
		GTA8?	1	
		NSP	1	

		NV1	2	
		NV1M	1	
		OAA	1	
		OAB	4	
		OABM	1	
		PCT	2	
		PCT/CTOX?	1	
		TILE	1	
		TS	1	
	0003		247	L1-M 2nd types in lowest fills and accumulating until mid-3rd at least
		CTA2	3	
		GRB	6	
		GRB2	1	
	0004a		10	L2-3
		GRB	2	
		OBB/GRB	1	
	0005		3	RB
		CTB	3	
		CTOX	1	
		GRB	3	
		GRB+OA/GRB	1	
		GRB2	1	
		OA/GRB	1	
		TILE	2	
	0006		12	RB
		NSP?/PRE?	1	
	0008		1	RB/IA
		GRA	2	
		GRB	10	
		GRB?	2	
		GRC	2	
		GTA8	1	
		PCT	1	
		PRE?	1	
		TS	1	
	0009		20	L1-M2
		BRCK	1	
		GRB	1	
	0009/0010		2	RB
		GRB2	1	
	0010		1	RB
		FLA	1	
		GRB	12	
		GRB2	1	
		GRB2 fine	1	
		NV1	1	
		NV2	4	
	0012		20	L1-M2 and 3rd and 4th century sherds
		GRB	2	
	0068		2	RB
		GRB	1	
		MH?	1	
		NV2	1	
	UNSTRAT		3	3-4
02a Total			366	
		CT	6	

		GRB	2	
	0004a		8	L2-4
		GRB	2	
		SWN WS	1	
	0073		3	L3-4
02a/c Total			11	
		NV1	1	
	*0034/0036		1	L2ff
		GRB	3	
	*0063		3	RB
		CT	1	
		CTA2	3	
		F/BRCK	1	
		FC	3	
		GRA	1	
		GRB	10	
		NV1	1	
	0001		20	3-4
		GRB	1	
	0002		1	RB
		GRB	1	
	0004a		1	L2-4
		GRB	2	
		NV1	1	
	0005		3	L2-4
		CTB	1	
		CTOX	1	
		FLA?	1	
		GRA	6	
		GRB	79	
		GRB2	2	
		GRB4	1	
		GRC	20	
		MOR	1	
		NV1	3	
		OAB	8	
		OBB	2	
		TS	6	
	0034		131	M2-3
		CTB	1	
		CTB2	1	
		FC	3	
		GRB	15	
		GRC	1	
		GTA8	1	
		OAB	1	
		OBA?	1	
		OBB	1	
	0034/0036		25	M3
		GRB	1	
		GRC	3	
		OBB	1	
	0034/0038		5	RB
		GRB	1	
		TS	1	
	0036		2	M-L2?
		DR20	1	
		GRA	2	

		GRB	15	
		GRC	18	
		NV1	1	
		OAB	1	
		TS	2	
	0038		40	M2-E3
		GRB	19	
		GTA10	1	
		GTA8	1	
		NV1	1	
		PCT?	1	
	0040		23	Pos some IA, L2-3?
		GRB	1	
	0046		1	RB
		GRA	1	
		GRB	9	
		GRB2	4	
		GTA8	1	
	0060		15	2
		BB1	4	
		CTB1	4	
		CTB2	1	
		CTOX	1	
		DR20	1	
		FLA1	1	
		GRB	195	
		GRB1	1	
		GRB2	10	
		GRB2 FINE	2	
		GTA10	1	
		GTA10/GRB	6	
		GTA8	15	
		GTA8/10	5	
		GTA8?	81	
		NV1	4	
		OBA	2	
	0061		334	L1-2 to early 3rd
		CT?	1	
		GRB	4	
		MH	1	
	0062		6	3-4
		CC	4	
		CGBS	2	
		CT	1	
		CTA2	1	
		CTB	1	
		CTOX	3	
		FLA	1	
		GRA	4	
		GRB	22	
		GRB2 fine	1	
		NV1G?	1	
		OBB	1	
		TILE	3	
		TS	1	
	0063		46	L2-M3
		GRB	1	
	0064		1	RB

		CT	1	
		GRB	10	
		GTA	2	
		NSP	1	
	0065		14	L1-M2nd
		GRB	19	
		NV1	1	
		NV1G	1	
		PCT	6	
		PQ	1	
		TS	1	
	0066		29	L1-m2 present and 4th from spit 3
		BRKCK/TILE	1	
		CT	4	
		GRB	8	
		GRB2	1	
		GRB4	1	
		NV1G	1	
		TILE	1	
		TS	1	
	0066/0067		18	L2ff
		GRB	3	
		TS	1	
	0067		4	2nd
		GRB	0	
	0078		0	RB
		CT/GRB2	1	
		GRB	2	
		NV1	4	
		TS	1	
	UNSTRAT		8	L2-3
02b Total			731	
		GRB	1	
	*0004		1	L1-E2
		GRB	1	
	*0095		1	RB
		FC	1	
		GRA	1	
		GRB	16	
		MOR	1	
	0001		19	L1-m2
		GRB	7	
		GRC/GTA?	3	
	0002		10	RB
		CT	6	
		CTA2	6	
		GRA	4	
		GRB	11	
		ROX	1	
		TS	1	
	0004		29	2-3 and L3-4
		BRCK?	1	
		CC	1	
		CT	2	
		CTA2	2	
		FC	2	
		FLA/OBA	3	
		GRB	40	

		GRC	7	
		PRE/AS	1	
		TS	1	
	0078		59	Sherds of M3-4, 4th
		GRB	3	
	0096		3	RB
		GRB	1	
		GTA8	1	
		GTA8?	1	
	0097		3	2nd
02c Total			126	
		BRCK/FC	1	
		CT	1	
		GRB	3	
	0001		5	RB
02d Total			5	
		GRB2 grey	1	
	0008		1	M2-E3
02e Total			1	
		CTOX	1	
	*0208		1	RB
		CTB/CTA2	1	
	0200		1	3ff?
		CTA2	2	
		GRB	8	
	0201		10	3ff
		GRB	7	
		GRB+CTB2	2	
	0202		9	L2ff
		GRA	2	
		GRB	4	
	0203		6	Prob Mid 2nd ff
		NSP	1	
	0206		1	RB
		GRB	1	
	0207		1	RB
		GRB	2	
		NGGW?	1	
	0208		3	3rd
		GRB	5	
	0211		5	RB
		GRB	3	
	0212		3	M2ff
03 Total			40	
		GRA	1	
	0004a		1	RB
		GRB	1	
	0201		1	L2ff
		CTB	1	
		CTB1	1	
		CTB2	7	
		GRB	6	
		GRB2	1	
	0202		16	3rd
		CTB	1	
		CTB8?	1	
		FC?	1	
		GRA	1	

		GRB	29	
		GRB?	1	
		GRB2	1	
		GTA	1	
		GTA?	1	
	0202/0203		37	?LIA /early RB bowl, L1-M2 grey ware and 2nd century bowl
		CTB2	1	
		GRB	3	
		TS	1	
	0203		5	M2ff
		CTB	2	
		GRB	2	
		GRB2	1	
	0211		5	RB
03a Total			65	
		BRCK	4	
		BRCK/TILE	2	
		CT	3	
		CT?	1	
		CTA2	1	
		CTA2?	1	
		CTB	6	
		CTOX	1	
		DBY	1	
		DR20	1	
		FC	3	
		FC/BRCK	1	
		GRB	54	
		GRB+OAB	4	
		GRB+WMOR	4	
		GRB2	1	
		GRB2 fine	2	
		GRBA	0	
		GTB	1	
		NV1	2	
		NV2	3	
		OAA/FLB	1	
		OAB	1	
		SWMOR	1	
		TILE	2	
		TILE/BRCK+OAB	3	
	0250		104	M 3rd-4th
		CT	1	
		GRB	1	
		NV2	1	
		TS	1	
	0259		4	2nd and 4th
		GRB	1	
	0266		1	RB
03b Total			109	
		GRB	1	
	*0100		1	RB
		GRB	2	
	*0106		2	RB
		CTB	1	
		FC	1	

		FLA	1	
		GRB	26	
		GRB2	1	
		GTA	1	
		NV1	1	
		NV2	2	
		RB	1	
		TS	3	
	0100		38	M-L 3rd in spit 3
		BRCK	1	
		BRCK/FC	2	
		CTA2	1	
		CTA2/GRB2	1	
		GRA	1	
		GRB	40	
		GRB2	1	
		GRB2 fine	1	
		NSP	1	
		NV2	2	
		NVM	1	
		NVMOR?	1	
		OAB	1	
	0101		54	L3-4 in spit 5
		CRUCIBLE	1	
		CTA2	1	
		CTA2?	1	
		GRA	1	
		GRB	39	
		GRB2	1	
		GRB2 fine	2	
		GRC	1	
		NV1	1	
		NV2	2	
		OAB	1	
		TRIERCC	1	
		TS	2	
		TS?	1	
	0102		55	Probably 3rdff tho' possibly 2nd century material included
		CTA2/CTB	1	
		GRA	2	
		GRB	3	
	0103		6	RB
		GRB	6	
		TS	2	
	0104		8	3rd
		A	1	
		CTA2	2	
		CTA2/CTB	1	
		CTA2?	1	
		CTB	1	
		FLA/?POT	1	
		GRA	2	
		GRB	38	
		GRB2 fine	1	
		GTA10	1	
		NV1	2	
		NV2	4	
		OBA	1	

		OBB	1	
		STONE	1	
		TS	2	
	0105		60	L2 and 3rd in spit 2
		CT	1	
		GRB	9	
		OAB	1	
	0106		11	L2ff
		CTA2?	3	
		FLA	6	
		GRB	14	
		MOR MH	1	
		NV2	1	
		OAB	2	
	0108		27	Includes 3rd century material, probably L3-early 4th
		CTA2/GRB2	1	3-4
	UNSTRAT		1	
04 Total			263	
		CTA2?	1	
		GRA	1	
	0600		2	3-4
		GRB	0	
	0602		0	RB
		GRB	3	
		GRB2	1	
	0602/0606		4	L4th
		CT	1	
		CT/CTA2	2	
		CTA2/CT	1	
		CTB	1	
		CTB/CTA2	1	
		FC	2	
		GRA	2	
		GRA7	1	
		GRB	39	
		GRB2	2	
		GRB2 fine	1	
		GRC	1	
		NV1	1	
		OBA	1	
		TS	2	
	0607		58	3rd
		CTA2	1	
		CTBCTA2	1	
		GRB	10	
		GRB2	2	
	0609		14	3rd
		CTB	2	
	0610		2	RB
		CTA/B	1	
		CTA2?	3	
		GRB	5	
		NV2	1	
	0611		10	
		GRB	2	3rd
		GRB?	1	
		NV1	1	
		TS	1	

	0612		5	RB
		GRB	1	
	0613		1	RB
		CT	1	
		FC	2	
		GRB	5	
	0614		8	3-4
		GRB	1	
		OBA	2	
	0615		3	RB
		GRB	4	
		TILE	1	
	0616		5	L2ff
		CT	1	
	0617		1	RB
		GRB	2	
	0618		2	RB
		CTA2	1	
		GRB	3	
	0619		4	3rd
		GRB	1	
		GRB2	1	
	0620		2	RB
		OAB	1	
	0621		1	L2-e3?
		GRC	1	
		SWMOR?	1	
	0622		2	L3-4
		GRB	1	
	0623		1	RB
		GRB	4	
	0625		4	3rd
		GRB	6	
	UNSTRAT		6	
05 Total			134	
		GRA	5	
		GRB	9	
		GRB2	1	
		GTA	1	
		MORW	1	
		OAB	5	
	0500		22	Possibly early 2nd
		CTB	1	
		GRB	1	
		TS	1	
	0501		3	2nd
		GRB	2	
	0502		2	L1-m2
		GRB	1	
	0506		1	
		GRB	3	
	0507		3	
06a Total			31	
		Grand	2098	
Grand Total			2098	

6.2.Flintwork

Eight pieces of flint were recovered from the site at Sturton-le-Steeple and are listed in Table.1 below.

The only tool is a broken scraper (EJW), which appears to have been made by steeply retouching a thick, cortical flake. The broken edge seems then to have been retouched to give two opposed, useable edges. A possible date in the Late Neolithic/Early Bronze Age seems most likely, but is far from certain.

DHZ is a blade struck from an opposed platform core, perhaps to correct an error in one striking platform. The platform to be corrected has been rubbed along the edge, a technique consistent with earlier, blade technologies in the Mesolithic and Early Neolithic. The other pieces of debitage are too fragmentary for conclusions to be drawn, but seem more likely to belong with this blade than with the broken scraper.

The pieces are all small and made of good quality, grey/brown translucent flint. Where cortex is present it is water-worn and abraded, indicating a source derived from a river deposit. The size of the pieces and nature of the raw materials used is entirely consistent with other collections from the Trent Valley in Nottinghamshire. These are considered to derive from the gravels of the Trent Valley and related drift deposits (Henson, 1989, 11). Since Sturton-le-Steeple is within a few kilometres of the River Trent, it is assumed that the raw materials were obtained locally.

Table.1. Flintwork

Findcode	Site/Trench	Context	Description
DFN	B/02	0002	Natural
CCN	B/02	0034	Bladelet fragment
DHZ	B/02	0063	Blade
DIM	B/02	0063	Spall
EZJ	C/03a	0202	Small Flake
EIO	E/07b	0351	Bladelet
EJW	D/05	0611	Broken Scraper
DOQ	B/02	U/S	Fragment of blade like flake

6.3.Miscellaneous Finds

Brick & Tile

A total of 24 brick and tile fragments (4.108kg) were found from sites B, C and D, in securely dated Romano-British deposits. These may originate from structures present at the sites they were recovered, particularly at 02 where possible structurally related post pads were found. Another possibility is they represent material brought from the nearby town at Littleborough and reused in a secondary role. Unfortunately all were incomplete and abraded with no other dimension than thickness surviving, forms remain unidentified.

Table.1.Brick & Tile fragments by site.

Site	Number of Tile fragments/Weight (g)
B	12 (2753)
C	7 (450)
D	5 (905)

Baked Clay

Nine small-abraded fragments of baked clay (72g) were recovered from site B deposit 0034/36 running into the floodplain. Whether they represent burnt daub from structures could not be determined in the absence of wattle impressions.

Spindle whorl

A single ceramic spindle whorl was recovered from 0202/0203 in 03a. This was in a brown-black fabric with sandy inclusions. It was sub-round in shape, being 40mm in diameter, 7mm thick and 16g in weight. A single hole 7mm in diameter was present set slightly off centre. The presence of the spindle in the 2nd to 3rd century AD deposit, suggests some cloth processing on site C during this period.

Glass

Four fragments of glass were recovered, two from each of trench 02 and 04. All were recovered from Romano-British deposits and are thought to be of this date. Those from 04 comprise transparent fragments recovered from ditches 0102 and 0105, no larger than 30mm in size. FCV from 0102 at 4g is 2.5mm thick, appearing flat. FCW 0105 at 2g is 1mm thick, with a visible curvature. Both are thought to represent vessel glass. Less recognisable is DJG from 0012 in 02, comprising an opaque heavily damaged irregular shaped fragment, 3.5mm in length and 3g in weight.

In contrast, FCX 0061 in 02, (at 10g in weight) represents part of a circular armlet, estimated at 50-60mm in diameter. The body is of transparent glass with a semi-circular profile, 11mm thick. Running along the top of the outer facing rounded profile is a 2mm wide alternate blue and white cable decoration (Plate.20). Such armlets are more commonly concentrated around South-West Scotland (Stevenson 1956). This represents an uncommon find within enclosure sites along the Trent, as such it possibly reflects the proximity of the site to the town of Littleborough and its markets.

Quernstone

A total of six fragments of quernstone were recovered. All appear to be of coarse-grained millstone grit. The querns indicate some degree of cereal processing on site though not necessarily production. The majority of the stone came from site B, including the two large joining fragments FCY/FCZ (Plate.21) recovered from layer 0002, which represents the upper stone of a flat rotary quern c.700mm in diameter and up to 120mm thick. This clearly displayed a pecked surface on onside and worn concentric grooves on the other. The other stones were too fragmentary to be diagnostic.

Table.1. Quernstone fragments by site

Site	Number of Quernstone fragments
B	5
C	1

Heat-Affected Stone

Several contexts from sites B, C, D and E were found to contain water-worn pebbles displaying heat affected characteristics, including angular fractures, cracked surfaces and bleaching. The stones are likely to derive from the local gravels. General interpretation for their use is water boiling (pot boilers). A total of 146 fragments were found distributed by site as shown in Table.1

Table.1. Heat-affected stone by site.

Site	Number of Heat-affected stones
B	55
C	44
D	12
E	2(07a) 33 (07b)

Iron

Fragments of fifteen iron objects (*c.*550g) were recovered, provisionally identified as two possible blades, twelve nails and one unknown. Due to the presence of heavy corrosion products the exact determination of their size and character is unclear. The nails ranged from *c.*31mm to *c.*81mm in length, some of which may be structural in function. The iron objects were found both in features on the gravel terrace and deposits running into the floodplain, in both cases preservation was very poor.

Table.1. Iron Objects by site

Site/Trench	Findscode/Context	Object
B/02	CQY/0003	Nail
B/02	CPH/0003	Unknown
B/02	CXL/0003	Blade
B/02	DEW/0004	Blade?
B/02	-/0014	Nail
B/02	DPA/0078	Nail
C/03a	EPQ/0203	Nail
C/03a	EQY/0202-3	Nail
D/04	-/0101	Nail
D/04	-/0102	Nail
D/04	-/0105	Large nail/bolt
D/04	EAM/0106	Nail
D/05	EFT/0607	Nail
D/05	EHM/0607	Nail
D/05	EGD/0607	Nail

Lead

Three small heavily corroded irregular shaped fragments of lead, were recovered. All were found residually within deposits and not features. Their presence most likely results from the functional use of lead, common in the Romano-British period, (rather than processing). However, given its low melting temperature, lead-melting of some form could be a possibility.

Table.1. Lead by site.

Site/Trench	Findscode/Context	Weight(g)
C/03a	EMV/0211	5
C/03b	ECY/0250	11
D/04	-/0102	32

Slag

Seven fragments of slag were provisionally identified. Two (EGP/EFW) were of the dark colour of iron-rich slags, but possessed no diagnostic surface morphology. Whether they represent iron-working in the form of smithing or smelting cannot be determined.

In contrast EBP, a dense dark iron-rich lump with pitted surface, is a possible piece of plano-convex hearth bottom, indicative of smithing. CTK, moderately magnetic and yellow-brown in colour is irregular in form with a surface of rivulets resembling lava flows, a characteristic of tap slag derived from the smelting process. However, this identification remains provisional until further analysis. Both EBP and CTK were found residually, within deposits running into the floodplain.

Three vesicular lightweight fragments (DTJ, EWE, DFK) are fuel ash slag. These are not indicative of a metallurgical process, but often derived at low temperatures from the reaction of ash from a fuel with silicates in clay and stone, or at high temperatures in which alkalis and silicates come in to contact.

Table.1. Slag by site

Site/Trench	Findscode/Context	Count/Weight (g)
B/02	DFK/0002	11
B/02	DTJ/0036	16
B/02	CTK/0061	54
C/03b	EBP/0250	956
D/04	EWE/0102	8
D/05	EGP/0602	37
D/05	EFW/0614	4

7. ENVIRONMENTAL REMAINS

7. ENVIRONMENTAL REMAINS

7.1. Faunal Remains

Collection

Faunal remains were largely absent in features, where present they were fragmentary and largely unrecognisable. All was collected by hand with no specific sieving of samples for small bones e.g. fish bones, although no such remains were detected within the plant macro/pollen samples to indicate their presence. Much of the material was of very poor condition; particularly those from the sandy filled features above the water table, exact counts and weight are therefore not possible. Notable exceptions were the deep enclosure ditch 0078 and deposits 0034, 0038, 0039, and 0040 running into the floodplain/palaeochannel (Plate.23). Overall only a small proportion of the bone could be identified by species (as presented in Table.1).

Table.1.Identifiable Bone

Context	Description	Species	Weight (g)
0034	Mandible	*Bos*/Cow	190
0038	Partial Vertebra	*Bos*Cow?	32
0038	Mandible	*Bos*/Cow	144
0039	Mandible	*Ovis*/Sheep	21
0039	Vertebra	*Bos*/Cow?	52
0040	Molar	*Bos*/Cow	31
0078	Molar	*Bos*/Cow	7
0078	Mandible	*Ovis*/Sheep	60
0078	Calcaneus	*Bos*/Cow	53
0078	Metacarpus	*Bos/Cow*	98
0078	Metatarsus	*Bos*/Cow	84
0078	Partial Mandible	*Bos*/Cow	81
0078	Partial Mandible	*Ovis*/Sheep	159
0100	Molar	*Ovis*/Sheep	4
0607	Molar	*Bos*/Cow	17

Conclusion

Little can be deduced regarding the animal husbandry regime from these data, apart from the presence of cattle and sheep, while evidence of charring and butchery marks was limited. These results suggest significant faunal assemblages appear unlikely to be recovered from the majority of features on the gravel terrace. The exception is those parts of deeper features that lie below the water table, and remain waterlogged. To this can be added some of the deposits extending down into the floodplain/palaeochannel. However, remains from these sources are likely to give only a limited sample of the past faunal activity on site.

7.2.Pollen

Three single samples, one from each of the RB enclosure sites identified (B, C and D), were submitted for analysis to assess the potential of the deposits at these locations for further palynological investigation. All were collected from ditches exhibiting silty fills, comprising contexts, 0078 (02-ES26-4th century AD), 0105 (04-ES89-late 2nd-3rd Century AD), and 0501 (06a-ES106-2nd century AD).

Methodology

Samples were prepared for pollen analysis following standard methods (e.g. Moore, Webb & Collinson 1991), including treatment with hot 5% Sodium Pyrophosphate and fine sieving (through a 10 µm mesh) to remove the clay fraction, 'sand swirling' to remove the coarse sand component and hot 40% hydrofluoric acid to remove other mineral components. Tablets containing a known quantity of *Lycopodium* spores were added at the start of the preparation process, to permit calculation of the palynomorph concentration within the sediments (Stockmarr 1972).

Residues in silicon oil were mounted onto microscope slides, and a small number of traverses of the cover-slip counted under x400 magnification. Identifications were carried out with the aid of standard keys (e.g. Moore *et al.* 1991) and reference to type slides, and pollen taxonomy follows Bennett *et al.* (1994).

During scanning, the presence or absence of other non-pollen palynomorphs was also recorded, including fungal spores and other structures (van Geel et al 1981, 1989), tests from rhizopoda, foraminfera test linings, Pre-Quaternary spores and microscopic charcoal fragments.

Results

Results are summarised in table 1. All samples contained some identifiable pollen grains and spores. 0078 (Site B-02-ES26) contained well-preserved, abundant pollen with an estimated concentration of 115000 grains cm^{-3}, and had 'cleaned up' well during processing. Ditches 0501 (Site C-06a-ES106) and 0105 (Site B-04-ES89) still retained a significant mineral component despite the comprehensive preparation strategy, which diluted the pollen grains on the slide, but could be removed with further chemical methods. However, both samples had a significant percentage of indeterminable grains, which could not be identified because of either mechanical damage (breaking and crumpling) or chemical damage (chemical erosion of the grain surface), and had low overall pollen and spore concentrations. Ditch 0501 (Site C-06a-ES106) had a total concentration below 3000 grains cm^{-3}, which Bunting & Tipping (2000) argue suggests that the pollen and spore assemblage has undergone significant post-depositional damage and biasing. All samples contained fungal spores and abundant microscopic charcoal, but no other non-pollen palynomorphs were observed.

0078 Site B-02-ES26

This sample contains abundant, well-preserved pollen and spores and microscopic charcoal fragments. A wide range of taxa were recorded, and suggest a varied landscape mosaic at the time when this sediment unit was deposited.

Trees are present in the landscape, as pollen from alder (*Alnus glutinosa*), birch (*Betula*), hazel (*Corylus*), lime (*Tilia*) and oak (*Quercus*) is recorded, but only comprise 27% of the total, which implies that stands of woodland were located in a predominantly open landscape. The alder may reflect wet floodplain woodland, and the oak and lime woodland on better drained soils. Fern spores were recorded, and may either reflect the woodland understorey or have colonised the moist, sheltered . sides of the ditch itself. The open component of the landscape mosaic seems to have been largely grassland, probably grazed (indicated by the presence of herbaceous plants like ribwort plantain - *Plantago lanceolata* - and dock - *Rumex*), although some moorland or heath is implied by finds of several heather (*Calluna vulgaris*) grains and bracken (*Pteridium aquilinum*) spores, and the two cereal-type grains recorded might reflect crop cultivation. However, they were both barley-type, which also includes sweetgrass (*Glyceria fluitans*), which may have grown in the ditch itself or in wet alder woodland. Further palaeoenvironmental investigation of this deposit is likely to produce valuable data on the landscape mosaics of the late Romano-British period.

0105 Site D-04-ES89

The pollen and spore concentration in this sample is above the 3000 grains cm^{-3} sample screening threshold advocated by Bunting & Tipping (2000), and grains observed were generally in good condition. The sample contained a reasonably large amount of microscopic charcoal, and the small assemblage is dominated by tree taxa, especially *Alnus glutinosa* (alder). This might suggest that at the time of deposition of this sediment, the ditch was close to an area of wet woodland, or possibly situated in a more open landscape but associated with a row of trees or shrubs. Further analysis of this deposit may well yield useful information though pollen is quite sparse.

0501 Site C-06a- ES106

The poor preservation and low concentration of pollen and spores in this sample suggest that post-depositional biasing may have occurred. The sample is rich in microscopic charcoal, and the small assemblage counted is dominated by tree pollen, which might imply a woodland setting. Overall, though, further investigation of this deposit is not likely to produce useful data.

Conclusions

The sample from 0078 (Site B-02-ES26) showed excellent pollen preservation and high pollen concentration and is highly suitable for further investigation. 0105 (Site D-04-ES89) contains sparse pollen, and preservation was not good, but is potentially suitable for further investigation. 0501 (Site C-06a- ES106) contained sparse, poorly preserved pollen and further investigation is not recommended.

The partial assemblages recovered suggest that the landscape around ditches 0105 (Site D) and 0501 (Site C), which began to accumulate sediment in the second and third centuries AD, was predominately tree covered. In contrast an open, an open cultivated mosaic with some woodland fragments dominated the landscape around ditch 0078 (Site B) where sediment accumulation began in the fourth century AD.

Table 1: Results of preliminary pollen analysis of samples from Sturton Quarry

	ES26 0078 02	ES89 0105 04	ES106 0501 06a
TAXA SEEN (counts)			
Alnus glutinosa	10	12	4
Betula	8	4	-
Corylus-type	9	3	1
Quercus	5	-	1
Tilia	1	-	-
Artemisia-type	1	-	-
Asteraceae (*Anthemis*-type)	1	-	-
Asteraceae (Lactuceae)	6	3	-
Asteraceae (*Solidago virgaurea*-type)	3	-	-
Brassicaceae	4	1	-
Calluna vulgaris	5	-	-
Caryophyllaceae	1	1	-
Cereal-type	2	-	-
Chenopodiaceae	1	-	-
Cyperaceae	9	-	1
Filipendula	1	-	-
Plantago lanceolata	4	-	-
Poaceae	34	-	-
Ranunculus acris-type	1	-	-
Rosaceae indet.	1	-	-
Rubiaceae	1	-	-
Rumex-type	5	-	-
Urtica dioica	3	-	-
Vicia cracca	1	-	-
Huperzia selago	1	-	-
Polypodium	1	-	-
Pteridium aquilinum	2	-	-
Pteropsida (monolete) indet.	3	-	-
Indeterminable grains	4	6	3
SUMMARY POLLEN DATA			
Total Land Pollen and Spores sum	126	24	7
% trees and shrubs	27%	79%	86%
% heaths, herbs and grasses	67%	21%	14%
% ferns and fern-allies	5%	-	-
% indeterminable	3%	20%	30%
Estimated pollen and spore concentration (grains cm^{-3})	115 000	7700	2300
NON-POLLEN PALYNOMORPHS SEEN			
Fungal remains	X	X	X
Microscopic charcoal	X	X	XX

7.3.Charred plant

Collection
Eight samples from Romano-British features at Sturton, Nottinghamshire were selected for archaeobotanical assessment. In all cases a 10L sub-sample was processed by flotation, with the coarse flot collected in a 5mm mesh sieve and the fine flot collected in a 0.5mm mesh sieve. The heavy residues were not available for this assessment, so the results presented here are based on the flots. For convenience, the results from both the coarse and fine flots from each sample are treated together.

Samples were assessed in order to determine:

1. If plant remains were present and of interpretable value
2. If the plant remains could provide information about the surrounding environment of the site
3. If the plant remains could provide information about activities carried out in and around the site

Laboratory Method
Charred plant remains from the flots were assessed using a low-power binocular microscope at magnifications between x12 and x40. The flots were rapidly scanned and, as a result, smaller seeds may have been overlooked. Unless otherwise stated in Table 1, the entire flot was scanned for charred plant remains. Comparative material was not consulted during this assessment. As a result, all of the identifications presented here should all be seen as highly provisional.

Results
The assessment results for charred plant remains from excavations are presented in Table 1, which also includes a semi-quantitative record of any other environmental remains (bones, molluscs or charcoal) observed during the assessment of this material. Nomenclature for economic plants follows Zohary and Hopf (2000) and nomenclature for indigenous taxa follows Stace (1997). The traditional binomial system for the cereals has been maintained here, following Zohary and Hopf (2000: Table 3, p.28 and Table 5, p. 65).

Discussion
Only one sample (Site B Layer 0034 ES 23) contains sufficient quantities of charred plant remains to be of possible interpretable value. This sample is dominated by cereal grain (primarily indeterminate wheat (*Triticum* sp.) and spelt (*Triticum spelta* L.) grains), but small quantities of spelt glume bases were also observed.

Two samples (0034 ES 23 and 0078L ES 30), both from site B, also contained substantial quantities of what appears to be dried-out waterlogged plant remains (and also clearly included dried-out insect remains). This material is of interpretable value and would provide information about the surrounding environment of the site, and possibly conditions within Ditch 0078 L.

Finally, four samples (Site C, Ditch 501 ES 95, Ditch 0504 ES 96 and Site D, Ditch 0105 ES 91 and Layer 0602 ES 93) all contained angular, clumps of sediment and

rounded quartzite crystals, although fully processed. A representative sub-sample of the angular, clumps of sediment were broken to determine if these contained any charred or mineralised plant remains, but nothing was observed. The material also was not magnetic. Why the sediment in these deposits is behaving in this way is not clear. Potentially some form of ancient residue (possibly slurry), may have binded the sediment in antiquity. However, it is possible that some more recent contamination of the sediment may be responsible (i.e. possible spillage/ dumping of agro-chemicals, etc...).

Conclusion
The recovery of charred plant remains from Iron Age and Romano-British deposits from rural sites in Nottinghamshire is still quite limited. Only two published sites, Gamston (Knight 1992) and Dunston's Clump (Garton 1987) are mentioned on the English Heritage environmental archaeology database (http://ads.ahds.ac.uk/catalogue/specColl/eab). In terms of the surrounding counties, Iron Age through Roman period deposits are also extremely limited from rural sites. Only six published sites have produced charred and/or waterlogged plant macrofossils from similar deposits (i.e. primarily ditch systems): Little Hay Grange Farm, Derbyshire (Palfreyman 2001), Swarkestone Lowes, Derbyshire (Elliott and Knight 1999), Grove Farm, Enderby, Leicestershire (Clay 1992), Dragonby, Humberside (May 1996), Melton, Humberside (Bishop 1999) and North Cave (Allison *et al.* 1990). As a result, although only one sample from Sturton contained sufficient charred plant remains to be of possible interpretable value, it still will make a contribution toward our limited understanding of rural Iron Age through Roman period agriculture in the area.

The recovery of dried out waterlogged plant remains in the samples from Site B (0034 ES23 and 0078L ES30), is also significant, this will greatly add to our understanding of the surrounding environment of the enclosures. In addition, it is clear that this material also contains well-preserved archaeoentomological remains.

Potential
Sediment from the two Site B samples (0034 ES23 and 0078L ES30). for both charred (only in the case of 0034 ES 23) and waterlogged plant remains, can add to our understanding of the nature of cereal cultivation and the surrounding environment within and around the ditch system. The limited recovery of Romano-British plant macrofossils from Nottinghamshire and its surrounding counties also means that these results will make a significant contribution to our understanding of the agricultural practices and settings of rural settlements in the region.

7.4.Insect remains.
Only one of the samples studied for plant macrofossils exhibited signs of archaeoentomological remains, this comprised deposit 0034 running into the palaeochannel. However, due to the proximity of the site to the floodplain evidence for insect remains can be inferred from the borehole samples within the palaeochannel. These revealed the presence of dung beetles (*Aphodius*) indicating nearby pasture, while woodland or forest is suggested by ash and lime feeding insects (*Lepresinus varius/ Ernoporus caucasicus*).

Table 1: Assessment of charred plant remains from Romano-British deposits at Sturton

Site	Context	Sample number	Sample Vol. (L)	Flot Vol. (ml)†	Context Type	Bone	Charcoal	Mollusc Or Marine Shell	Plant Remains (Flot only)			Further analysis	Comments on Flot (Unless otherwise stated, 100% of flot was scanned)
									Grain	*Chaff*	*Weed/ Wild*		
B	0034	ES 23	10 L	115 ml	Layer	-	+	-	++	+	-	?Yes	50% of flot scanned. Sample dominated by charred indeterminate cereal, wheat (*Triticum* sp.) and spelt (*Triticum spelta* L.) grain. Small quantities of spelt glume bases are also present and a few small grass (POACEAE) seeds were also noted. **Assessed as GOOD.** This sample also appears to contain abundant dried-out waterlogged plant remains.
B	0078L	ES 30	10 L	100 ml	Ditch	+	+	-	+	+	-	No	Small quantities of charred cereal grain, including hulled barley (Hordeum sp.) and spelt (Triticum spelta L.) were observed. A few fragments of cereal chaff, including an indeterminate cereal/ Large grass (POACEAE) culm base, as well as spelt spikelet forks and glume bases, were also noted. **Assessed as POOR.** This sample also appears to contain abundant dried-out waterlogged plant remains.
C	501	ES 95	10 L	630 ml	Ditch	-	-	-	-	-	-	No	Only 25% of flot scanned. This sample, although fully processed, appeared very dirty and consisted of angular, clumps of sediment and rounded quartzite crystals. No obvious charred plant remains were observed in a random selection of clumps, which were broken intentionally to determine if they contained charred plant remains. The material does not appear to be mineralised and was not magnetic. **Assessed as POOR.**
C	0504	ES 96	10 L	305 ml	Ditch	-	-	-	-	-	-	No	Only 25% of flot scanned. This sample, although fully processed, appeared very dirty and consisted of angular, clumps of sediment and rounded quartzite crystals. No obvious charred plant remains were observed in a random selection of clumps, which were broken intentionally to determine if they contained charred plant remains. The material does not appear to be mineralised and was not magnetic. **Assessed as POOR.**

Table 1: Assessment of charred plant remains from Romano-British deposits at Sturton continued...

Key: †flot volume is the combined volumes of the coarse (> 5mm) and fine sieve (> 0.5 mm) flots. All results are combined in discussion. + = < 50 items, ++ = > 50 items but less than 100 and +++ = > 100 items

Site	Context	Sample number	Sample Vol. (L)	Flot Vol. (ml)†	Context Type	Bone	Charcoal	Mollusc Or Marine Shell	Plant Remains (Flot only)			Further analysis	Comments on Flot (Unless otherwise stated, 100% of flot was scanned)
									Grain	*Chaff*	*Weed/ Wild*		
C	0250	ES 98	10 L	90 ml	Layer	+	++	-	-	-	+	No	One charred indeterminate large grass (POACEAE) was observed. No other charred plant remains were observed. **Assessed as POOR.**
D	0105	ES 91	10 L	475 ml	Ditch	+	-	-	-	-	-	No	Only 25% of flot scanned. This sample, although fully processed, appeared very dirty and consisted of angular, clumps of sediment and rounded quartzite crystals. No obvious charred plant remains were observed in a random selection of clumps, which were broken intentionally to determine if they contained charred plant remains. The material does not appear to be mineralised and was not magnetic. **Assessed as POOR.**
D	0602	ES 93	10 L	325 ml	Layer	+	+	-	-	-	-	No	Only 25% of flot scanned. This sample, although fully processed, appeared very dirty and consisted of angular, clumps of sediment and rounded quartzite crystals. No obvious charred plant remains were observed in a random selection of clumps, which were broken intentionally to determine if they contained charred plant remains. The material does not appear to be mineralised and was not magnetic. **Assessed as POOR.**
E	0350	ES 79	10 L	40 ml	Layer	-	++	-	-	-	-	No	Only charcoal, apparently partially mineralised, was observed. No other charred plant remains appear to be present. **Assessed as POOR for charred archaeobotanical material, but may be of interest in terms of the charcoal from the flots and heavy residues..**

Key: †flot volume is the combined volumes of the coarse (> 5mm) and fine sieve (> 0.5 mm) flots. All results are combined in discussion. + = < 50 items, ++ = > 50 items but less than 100 and +++ = > 100 items

8. SUMMARY & DISCUSSION

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The study area encompasses gravel terrace and floodplain, which offer distinct differences between the archaeological resource potential they contain and the ability to reconnoitre them. Crucial to this is the presence of up to 2m of alluvial clay sealing a potential prehistoric waterlogged landscape within the floodplain.

Significant to the study area was the identification by the borehole survey of a north-south trending former channel of the Trent, between the terrace edge and floodplain. Radiocarbon dating suggests sediments were deposited in the channel from the Late Neolithic into the Iron Age. Preliminary palaeoenvironmental sampling suggests alder carr wetland including areas of standing pools and open fen prevailed within the floodplain during this period. Considerably more environmental data could be recovered from these remains including diatom analysis to assess the influence of tidal water inferred from the presence of grey clay inter-bedded with the peat.

A small assemblage of largely undiagnostic flint found during excavation points to prehistoric activity on the gravel terrace, isolated features of which may still survive e.g. a Mesolithic pit at Hoveringham and Beaker pit at Rampton (Elliott and Knight 1999, 2002, Knight and Beswick 2000). More substantial remains of the Neolithic and Bronze Age are likely to survive buried under alluvium within the floodplain. Similar scenarios have been identified along the Trent including at Cromwell (Knight 1994). It is in the palaeochannel/floodplain that the earliest deposits were discovered by excavation in the form of the post alignment, which establishes the existence of a Bronze Age landscape below the alluvium. These remains could be of at least regional significance if found to be comparable to Late Bronze Age/Iron Age sites such as the trackway/causeway at Fiskerton or Flag Fen (Field and Parker Pearson 2003, Pryor 2001). Although preservation of the upper parts of the post structure and destruction from the Mother-drain are to be considered. The waterlogged conditions ensuring the survival of the posts hold the potential for further discoveries spanning the life of the channel, which in parts encompasses over 4m of peaty deposits. Elsewhere in riverine and wetland environments this has included trackways, causeways, bridges, votive deposits, logboats, human remains, riverbank features (e.g. revetting), fish weirs and burnt mounds (Darvil 1987, 66-71).

Wetland sites such as Fiskerton and Flag Fen (Field & Parker Pearson 2003, Pryor 2001) comprised extensive organic remains and votive metalwork, requiring substantial costs for sampling and conservation. The preservation of organic remains such as the posts in 07a, present the added opportunity to study past woodworking techniques and woodland management, while the alder log 0045 raises the possibility of bog oaks suitable for dendrochronological dating. The borehole samples for pollen, waterlogged plant remains and insects were generally assessed as good supporting environmental interpretation both for the floodplain as well as the adjacent gravel terrace. Preliminary results included evidence for broken woodland canopy and pasture on the gravel terrace.

In contrast, for the three Romano-British sites identified on the gravel terrace, palaeoenvironmental potential was limited to those features fills existing below the water table, such as 0078 (at a total depth of 1.7m below the ground surface). However, each site situated on the edge of the gravel terrace, possessed waterlogged

deposits containing dumped Romano-British material, running into the palaeochannel/floodplain. In 02 and 04 this included the potential for deeply stratified deposits, presenting a possible environmental dataset usually lacking for many Romano-British enclosures found on the gravel terraces of the Trent.

Each of the Romano-British sites comprised large multi-phased ditched enclosures (two if not all at least 100m across), which from the presence of internal features (at B & C) and quantity of artefacts, appear to a have served a domestic function within an agricultural setting. Notably, these sites appear to be roughly spaced equidistantly apart running northwards from Roman Littleborough, towards the enclosure cropmark just outside the study area (with the exception of an absence at site A). Their location on the terrace edge would possibly give them equal access to gravel terrace, river and floodplain. Realignment or movement within the enclosures was detected at site C (between trenches 03a and 06a) and possibly D (ditch 0106). However, the sites would appear to largely span the 2nd to 4th centuries A.D., with no apparent Iron Age component. Earlier sites may have comprised open settlement located further back on the gravel terrace, now possibly truncated as indicated by the disturbed horizon below the topsoil in 06b. This truncation may be represented by the heat-affected stone found in fieldwalking, although this could also originate from former field systems connected with the Romano-British enclosure sites. A further possibility is that earlier settlement occurred in the floodplain, with the enclosures representing a retreat from lowland to highland, as recorded elsewhere along the Trent (e.g. Besthorpe).

The apparent occupation period for the sites coincides with that known so far for Roman Littleborough, in whose hinterland they lie, and to which they may be closely in linked. Particularly economically from the quantity and range of artefacts found, including imported pottery (Samian, North Gaulish beaker, Baectian amphorae) and glass (including armlet from South-West Scotland), probably obtained via Littleborough's markets. The proximity and relationship between these sites and a Roman town such as Littleborough again distinguishes them from most other enclosure sites along the Trent Valley.

Post Romano-British activity within the study area remains unclear. During the evaluation the only definite evidence recovered was the lone stake 0098, radiocarbon dated to the 9th-11th century A.D. Its location in the top of the peat suggests the present covering of alluvial clay had at that point not built up to any great depth. The activity to which the stake pertains remains unknown.

Furrows within trenches 03a and 06a (site C) and the possibility of a headland along the edge of the gravel terrace in 02 imply the terrace was given over to arable farming by the later medieval period. The floodplain, with no evidence of furrows during trenching, as elsewhere along the Trent at this time, was most likely used as meadowland.

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FIGURES

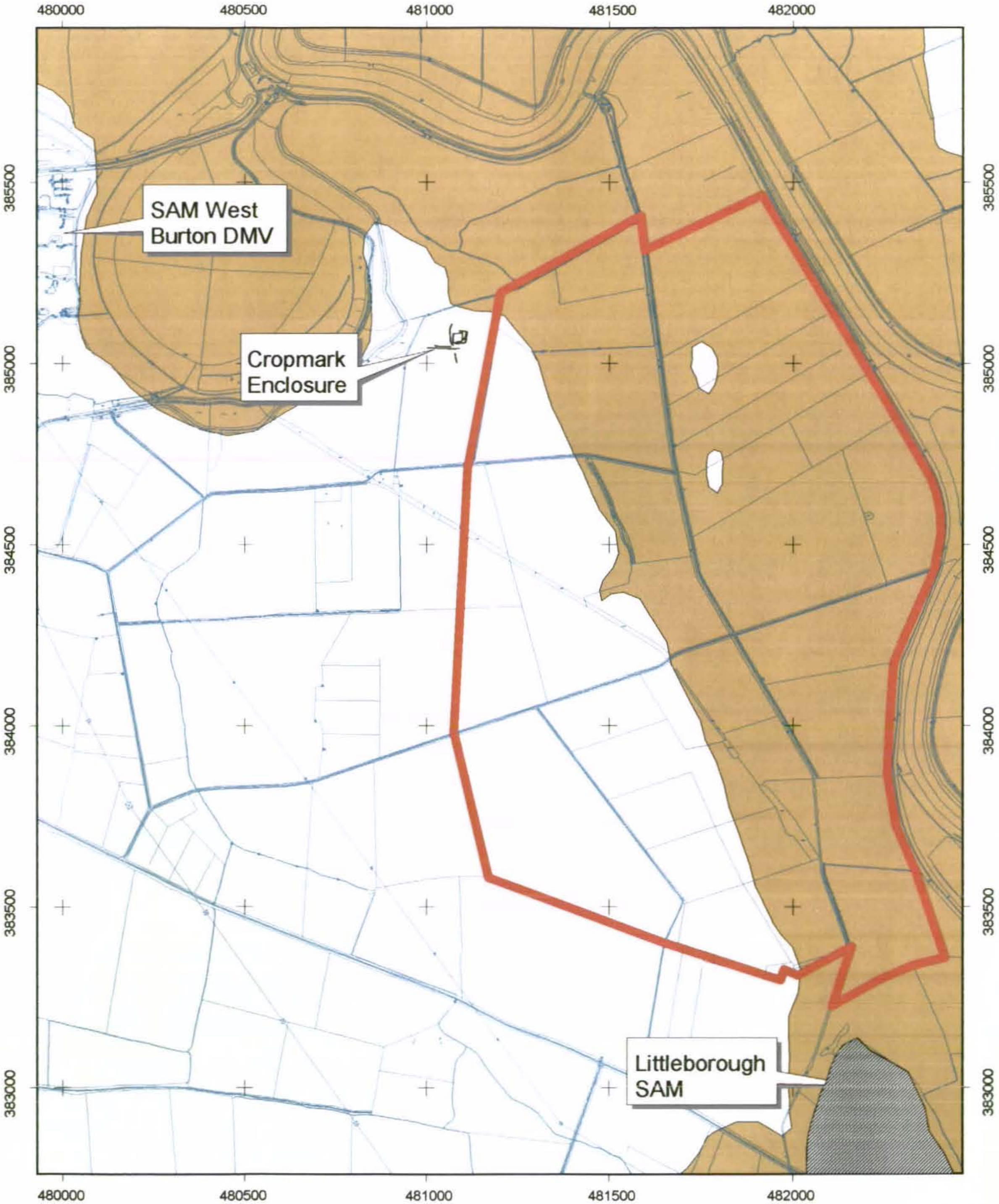
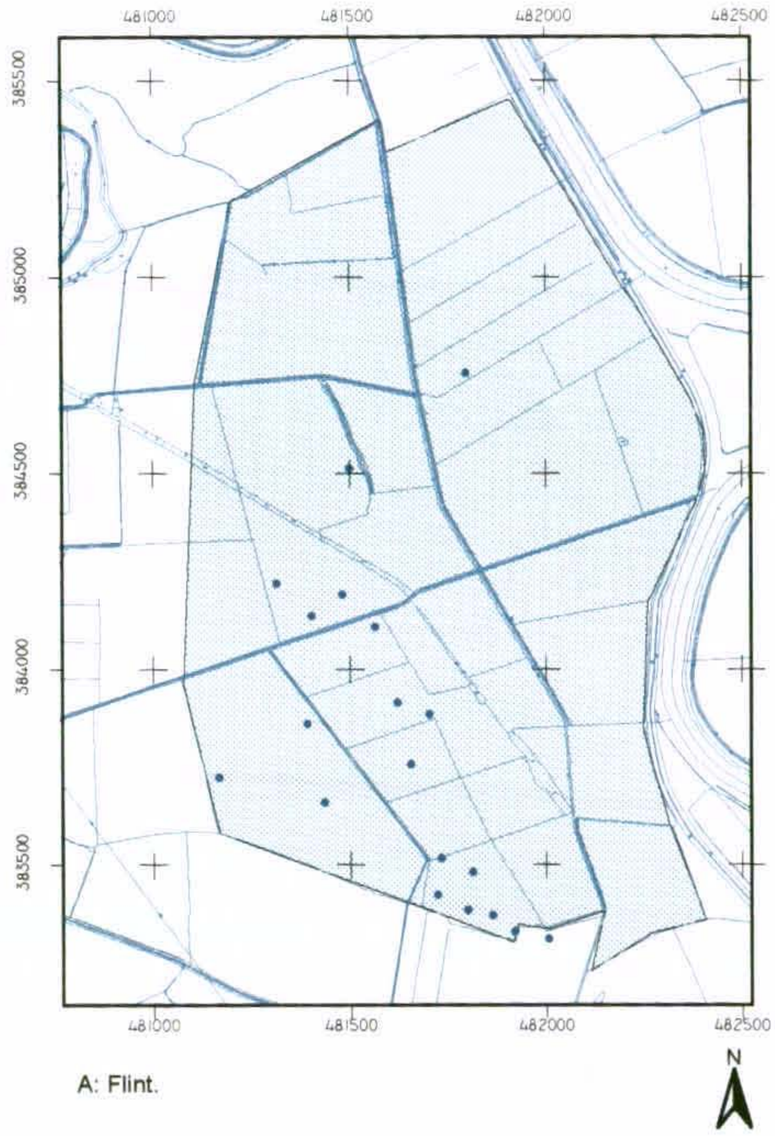
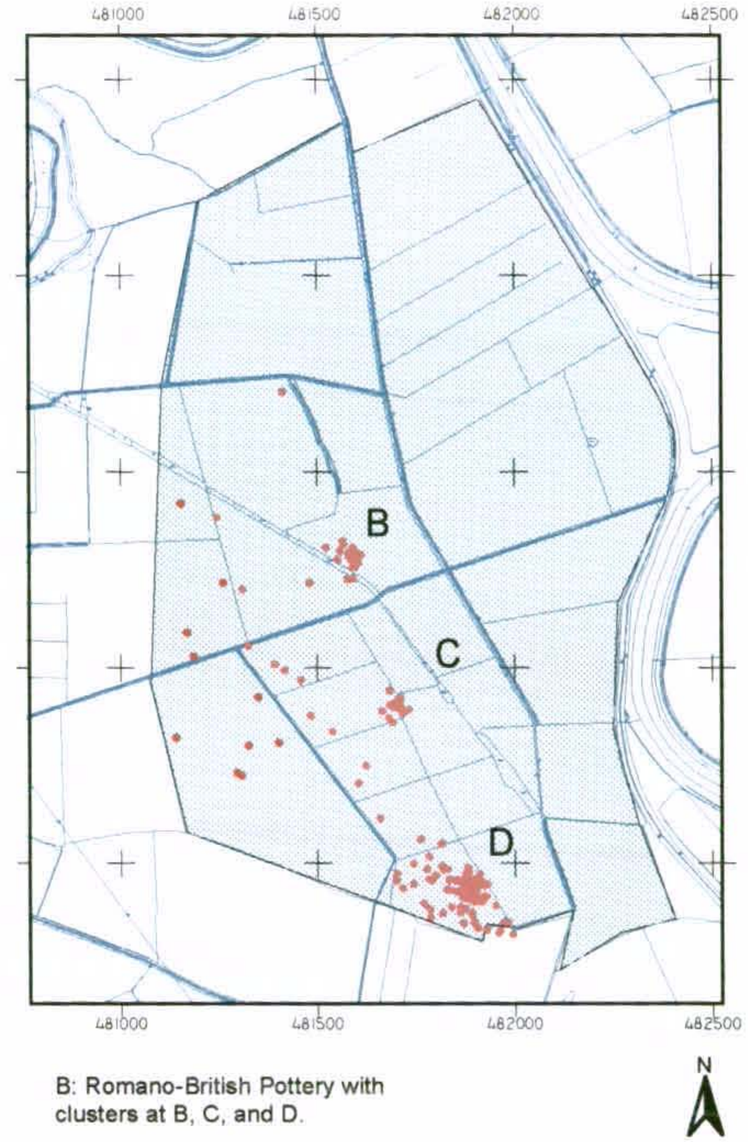


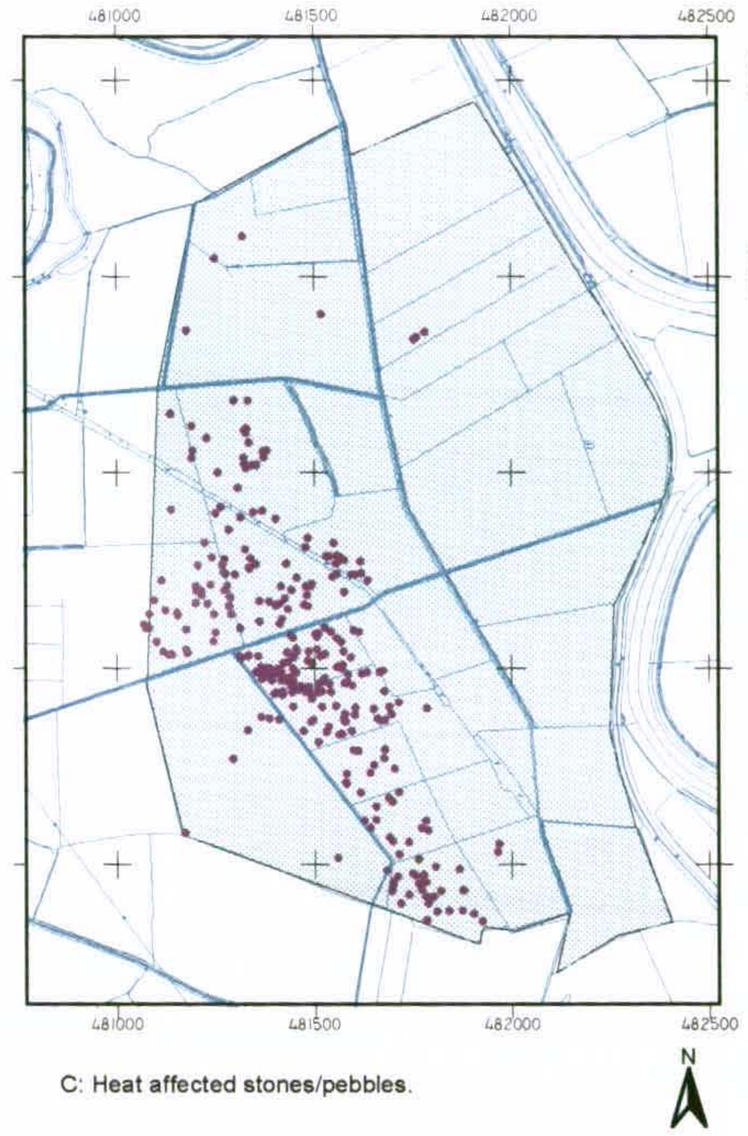
Figure 1: Plan showing the location of the study area (red outline). Floodplain shown by brown tone.



A: Flint.



B: Romano-British Pottery with clusters at B, C, and D.



C: Heat affected stones/pebbles.

Figure 2: Distribution of artefacts from fieldwalking.

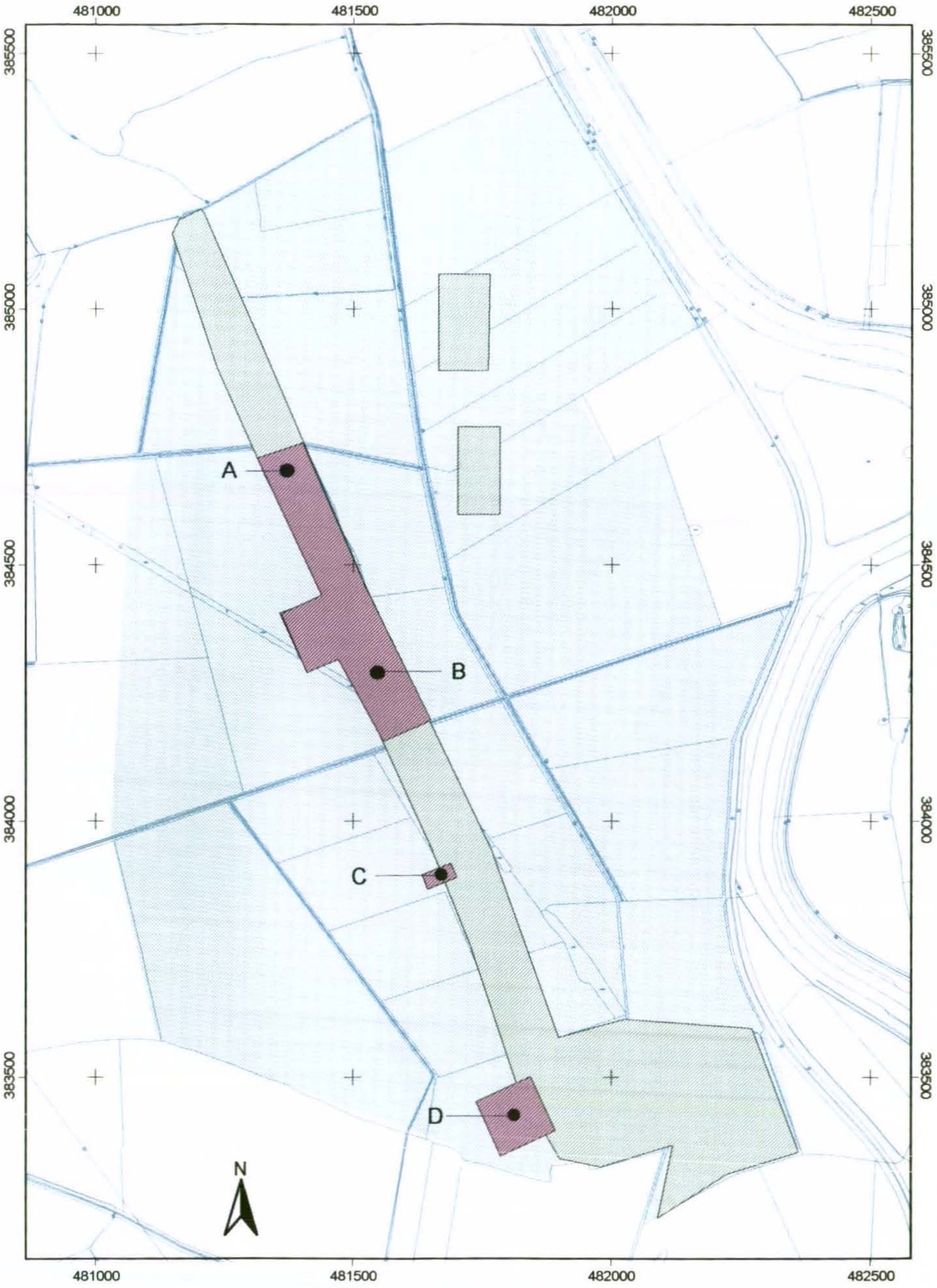
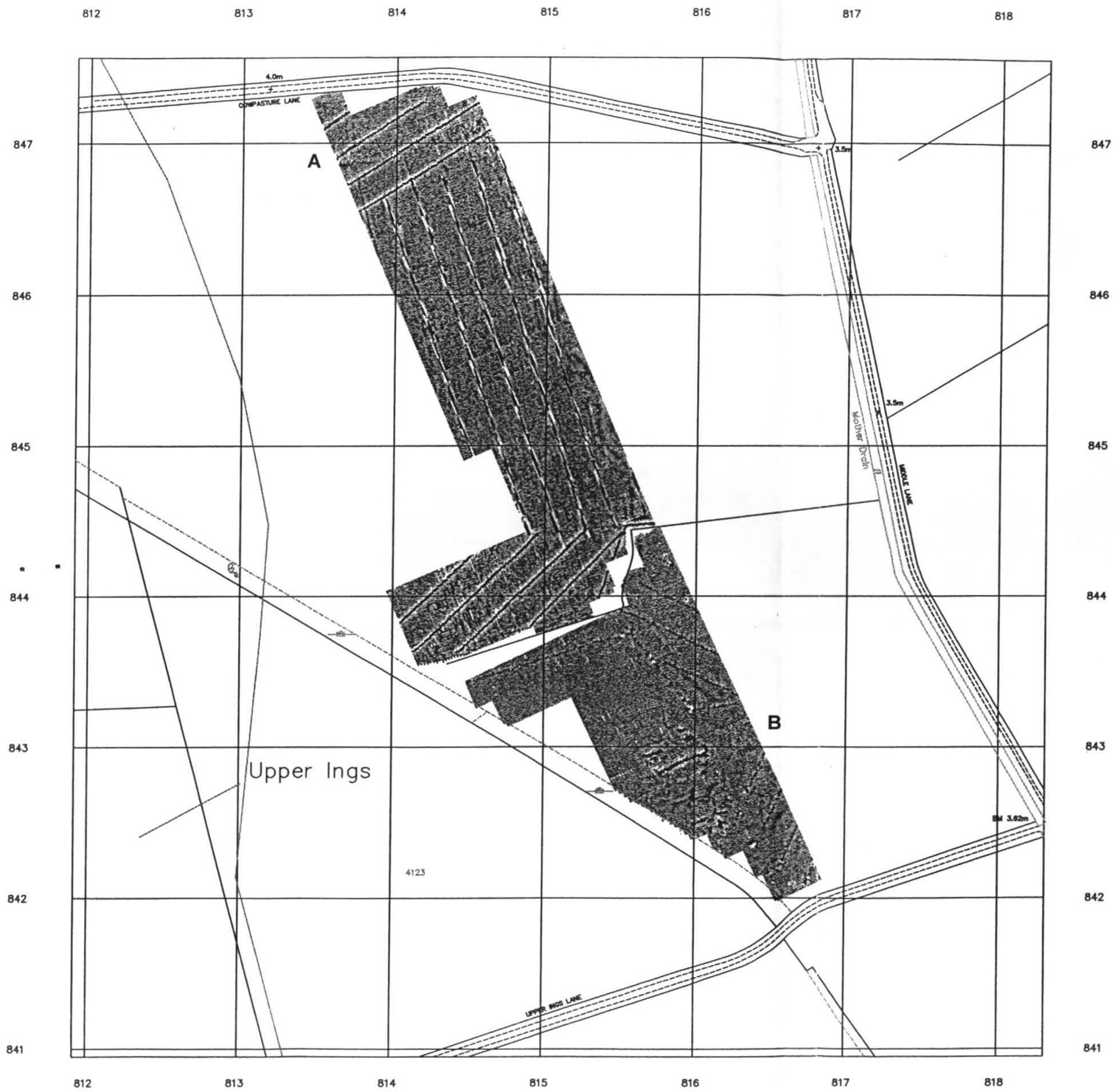


Figure 3: Plan showing the extent of topsoil MS (green) survey and the area also subjected to magnetometer prospection (purple), with potential sites indicated at A, B, C and D. 1:10000



This product contains data surveyed at one or more of the following scales: 1/1250, 1/2500 & 1/10000.

National Grid sheet reference at centre of this Superplan: SK8184

The representation of a road, track or path is no evidence of a right of way.

Heights are given in metres above Datum.

The alignment of tunnels is approximate.

Centre Coordinates: 481250 384500
Supplied by: National Map Centre
Serial Number: 04325785

20 0 20 40 60 80 100
Metres

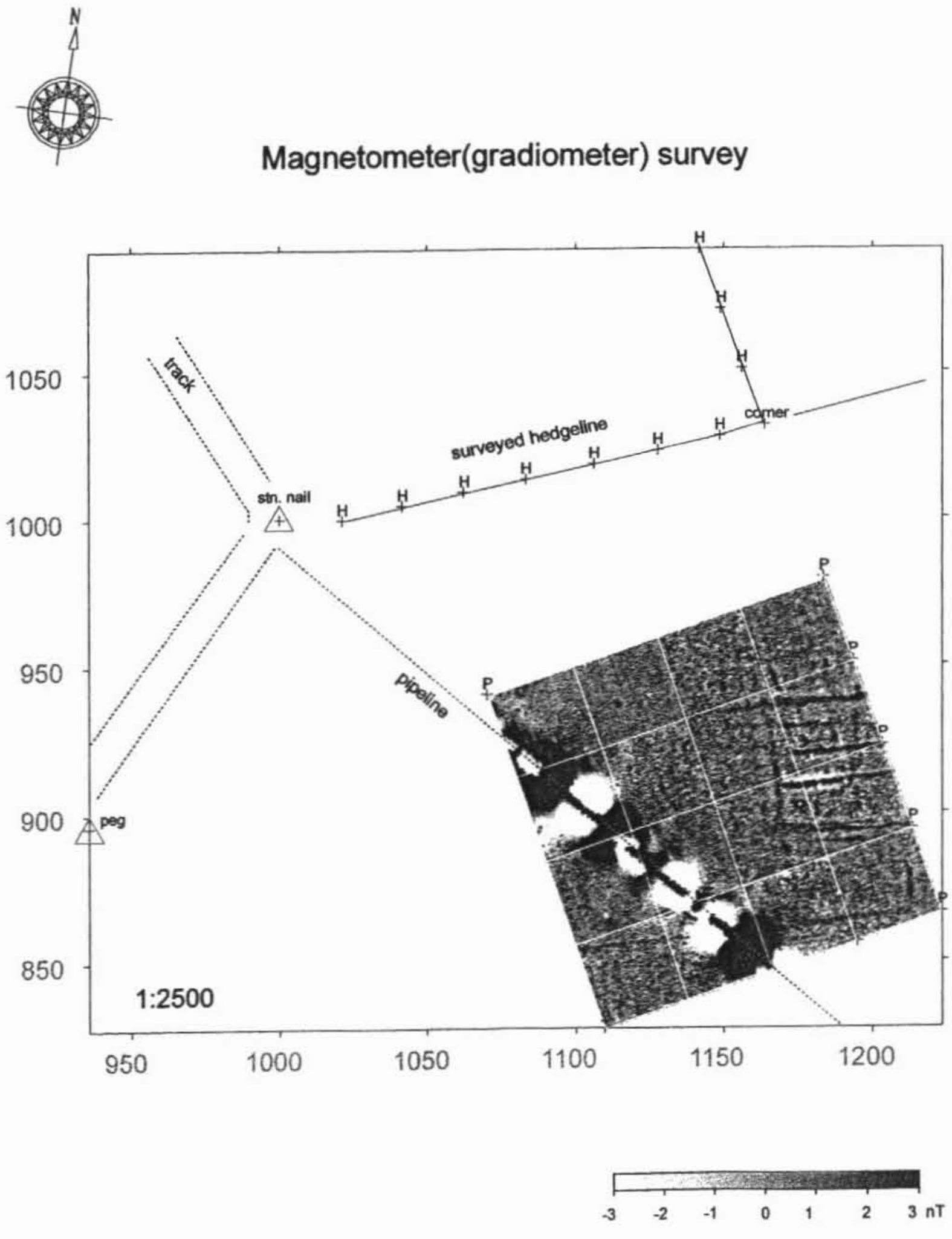
Gradiometer Results

−2.0 0.0 +2.0

Scale 1:2500

Figure.4: Gradiometer survey areas A and B

Littleborough (Sturton le Steeple) Notts.



note: position of track is sketch only

survey is to local grid: stn =1000E 1000N ref peg is 935.66E 895.91N

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Figure.5: Gradiometer survey area D

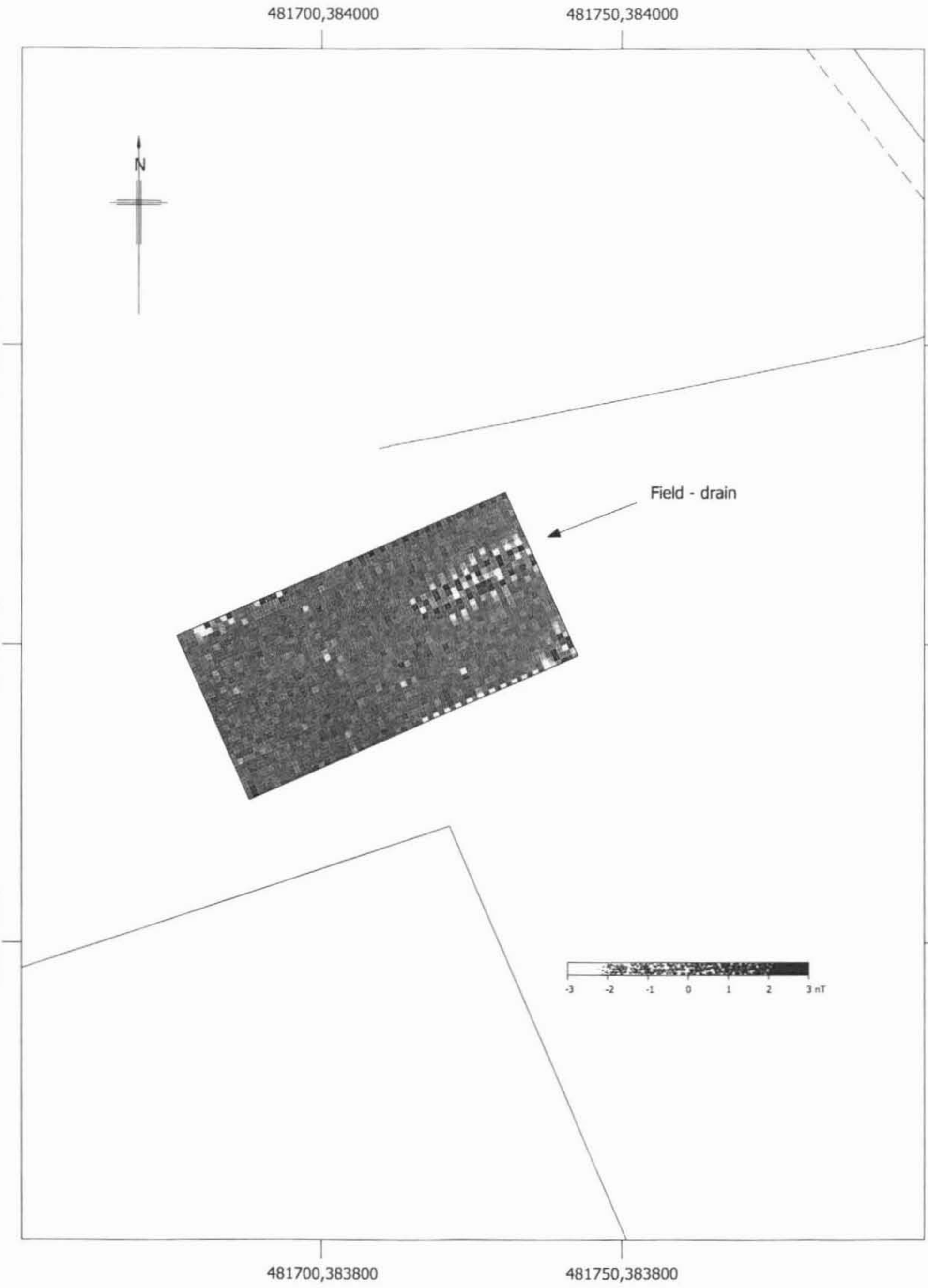
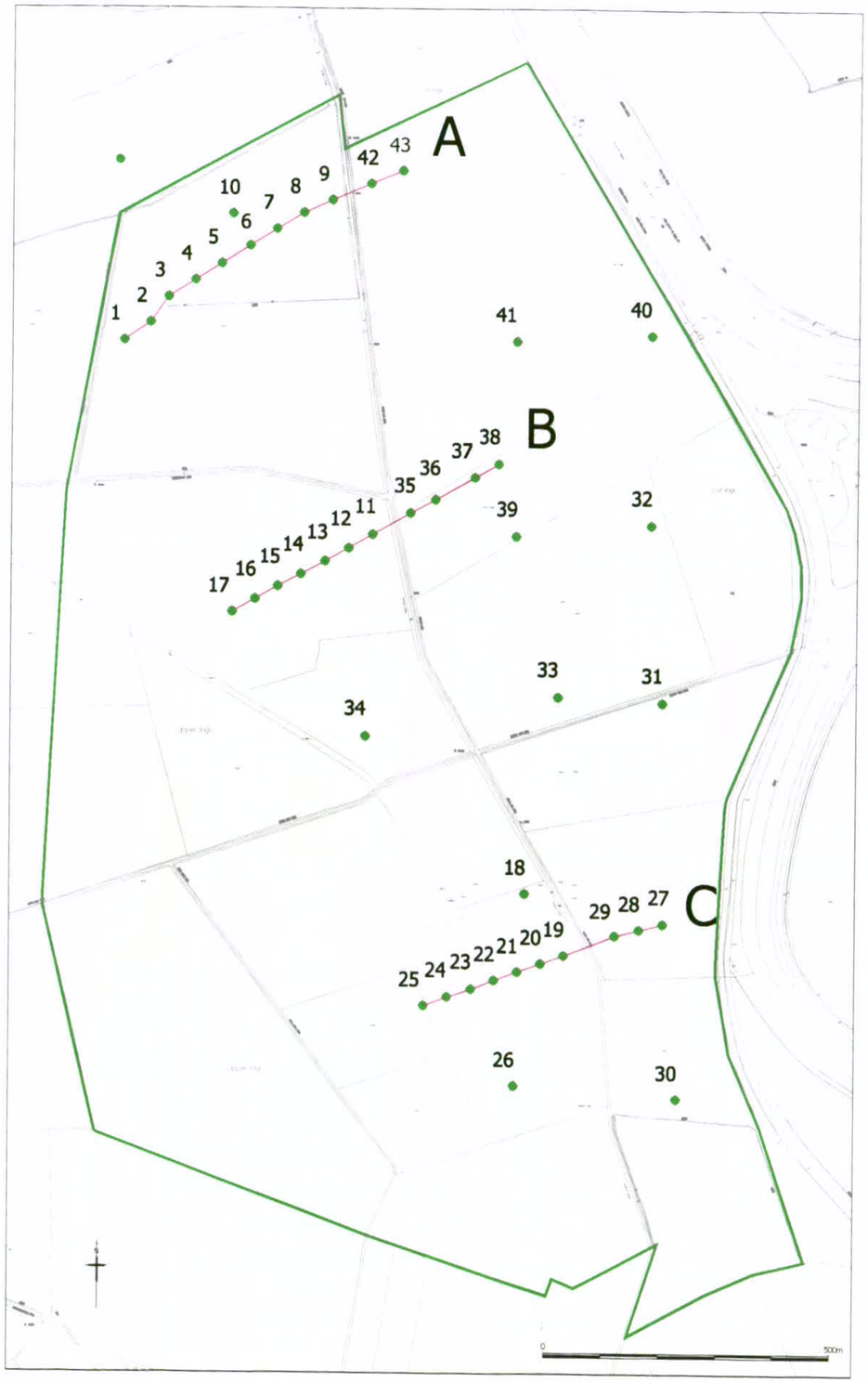


Figure 6: Magnetometer (gradiometer) survey Area C.



Plan of proposed quarry area with profile locations, 1:10,000.

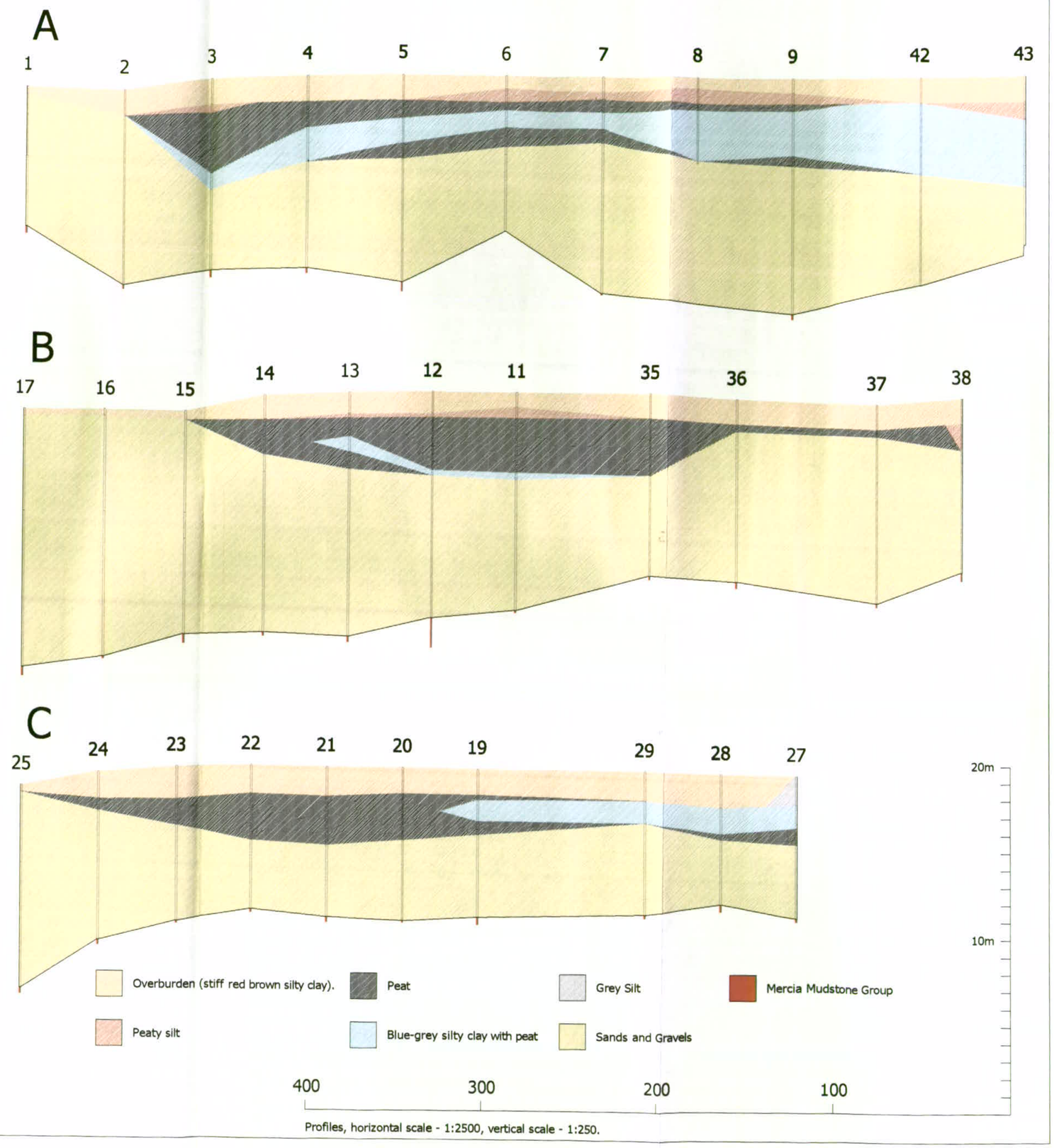


Figure 7: Borehole locations and profiles of Transects A, B and C.

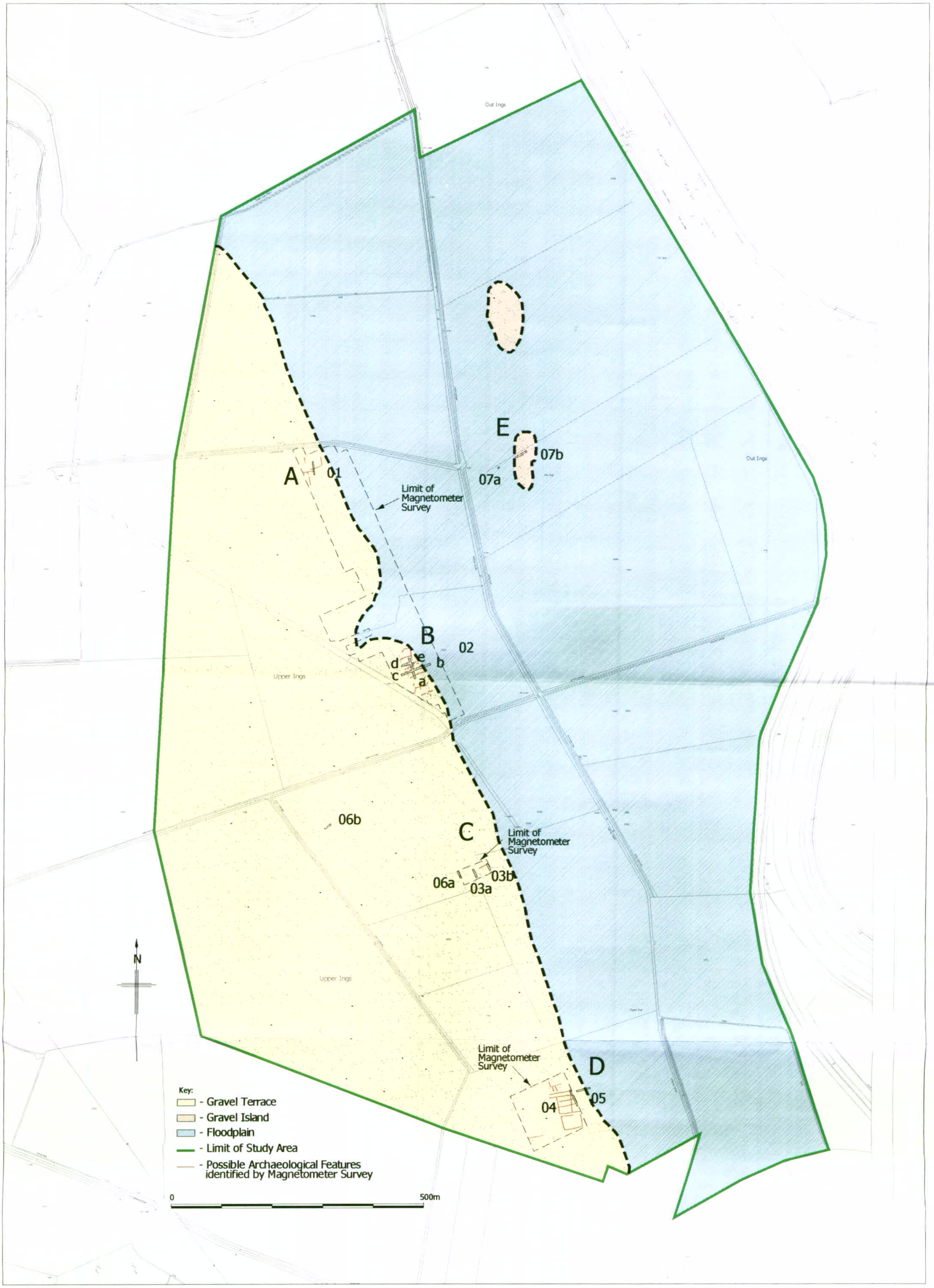


Figure 8: Location of sites identified, with geophysical results and excavated trenches.

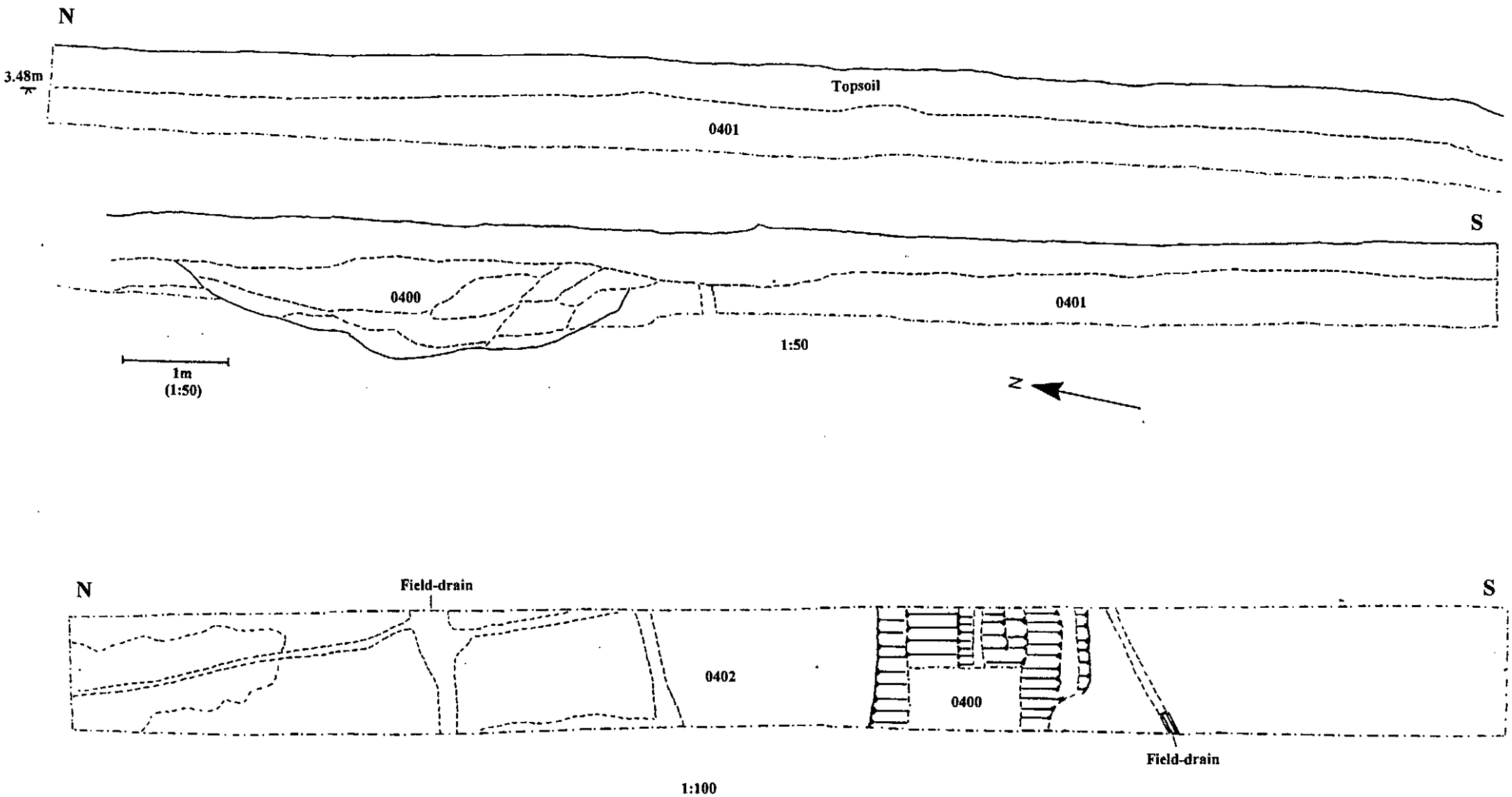


Figure.9: 01 Post-excavation Plan and west-facing section

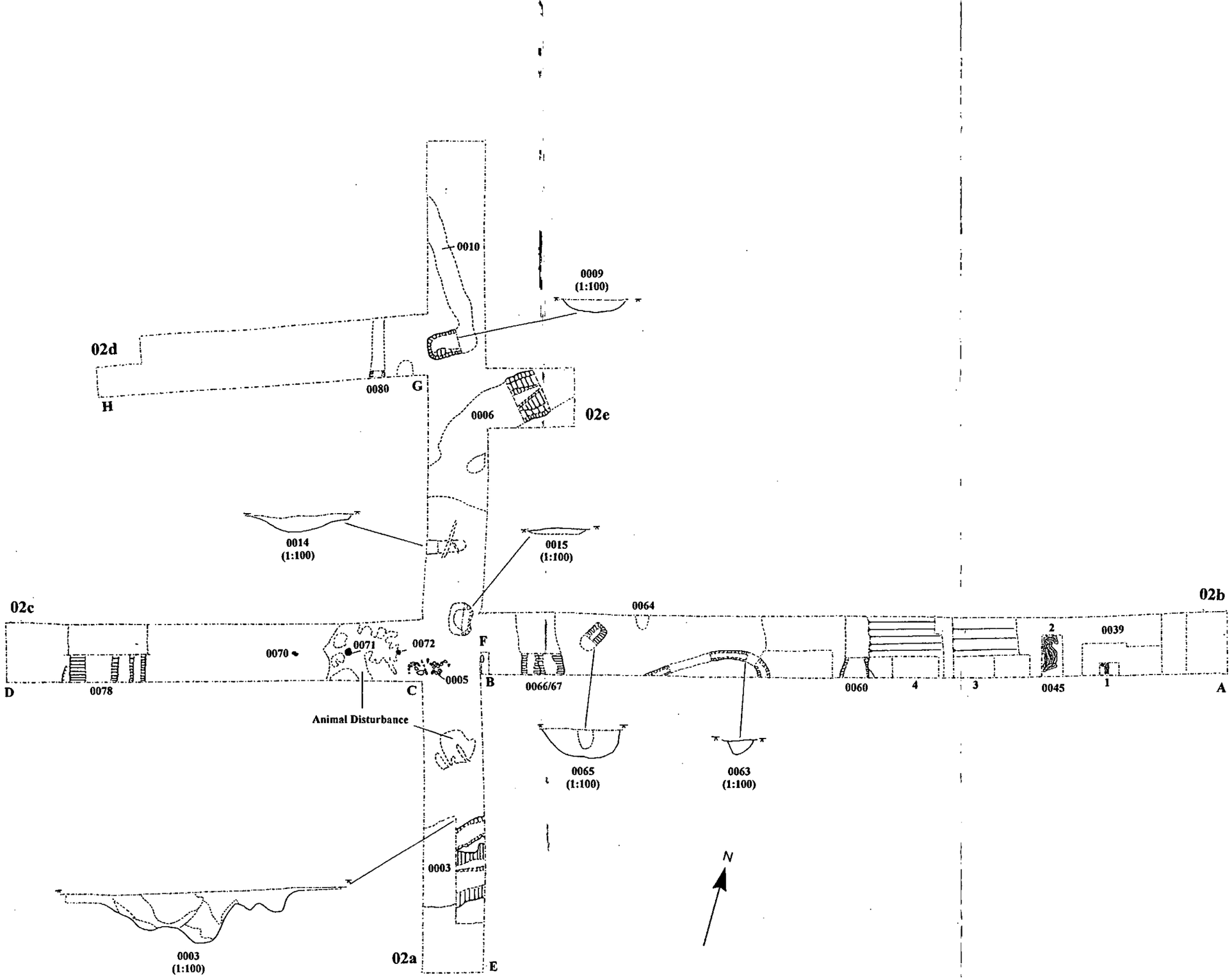


Figure.10: 02 Post-excavation plan (1:200)

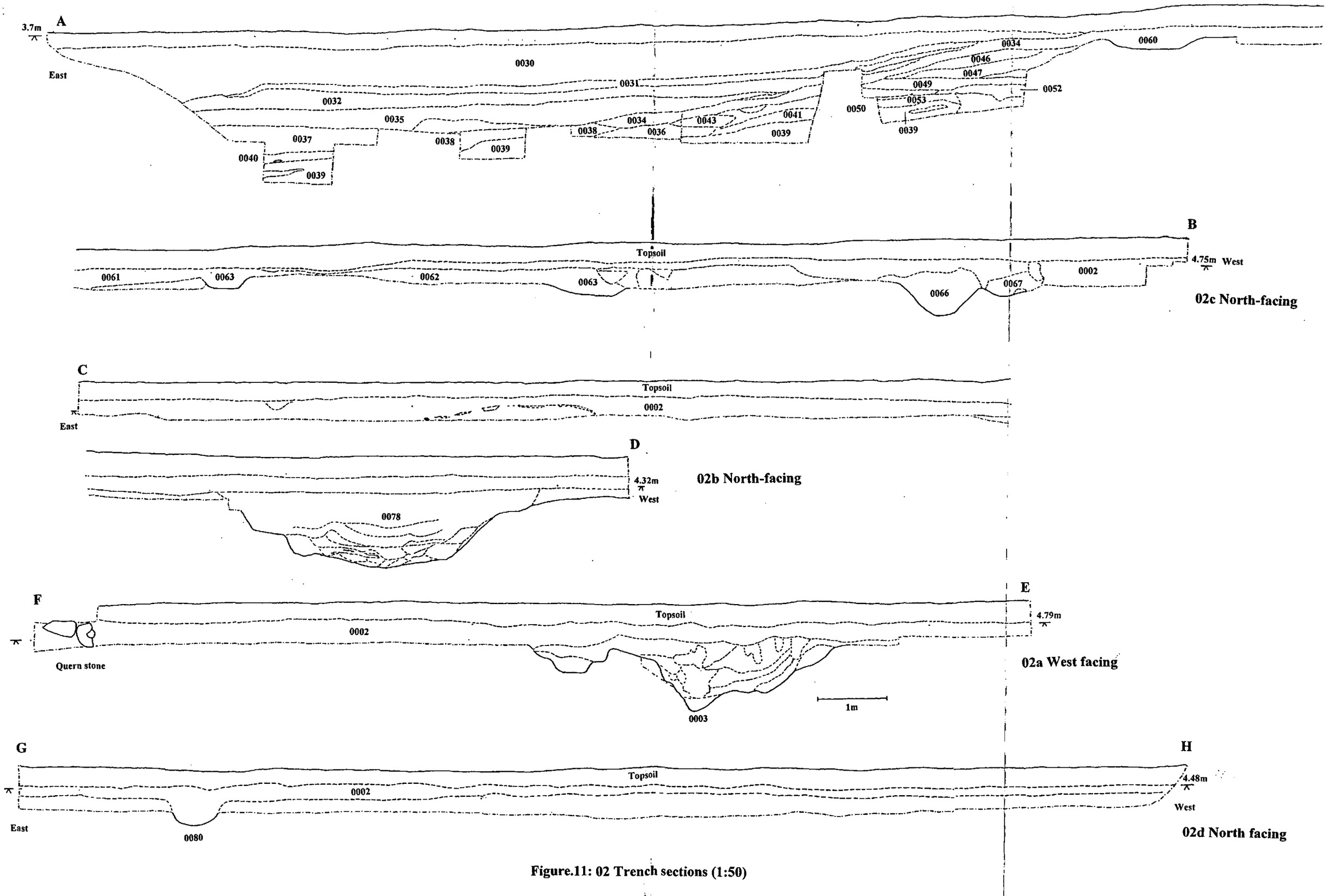


Figure.11: 02 Trench sections (1:50)

Figure.12: 06a Post-excavation plan (1:100) and west facing section (1:50)

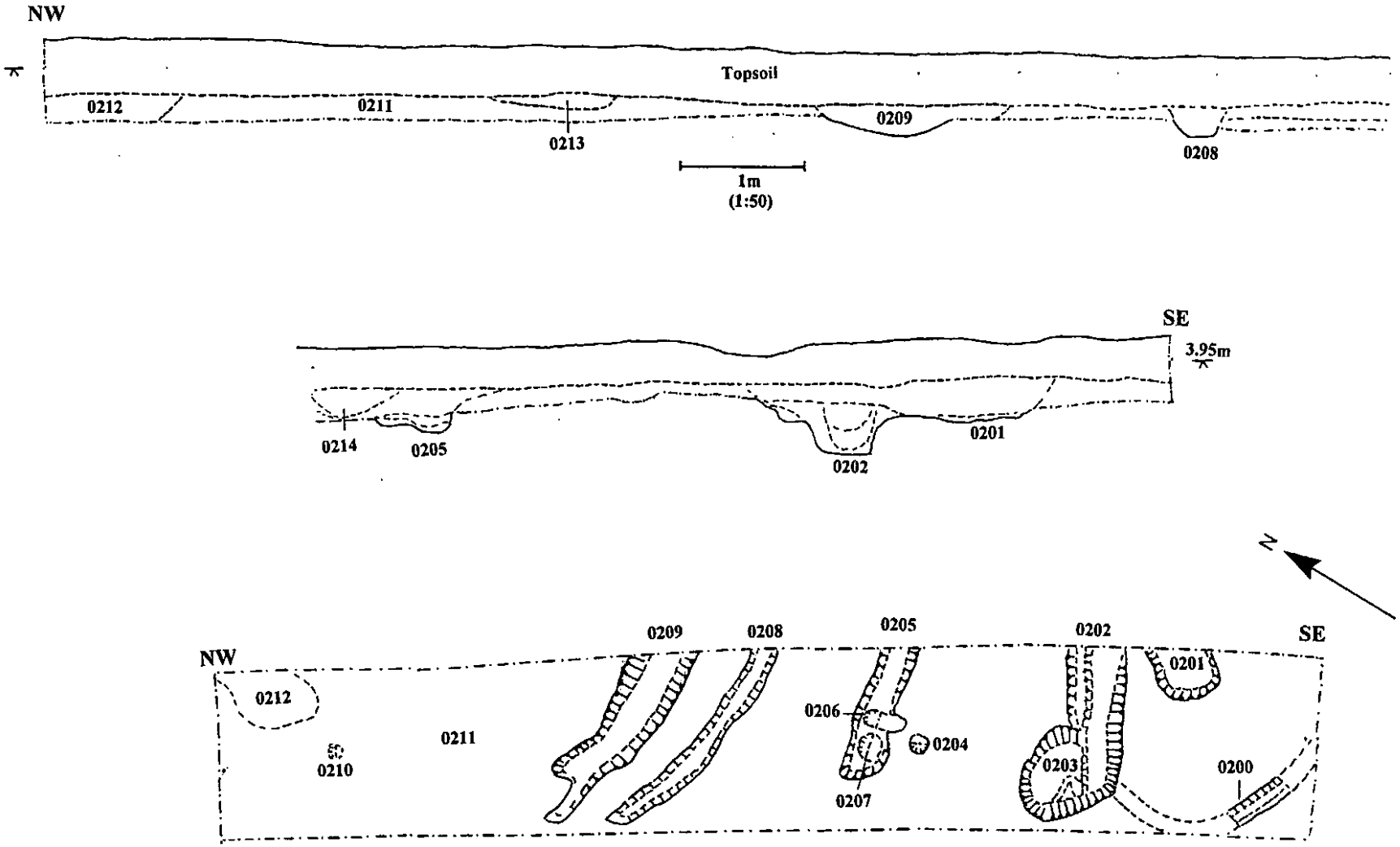
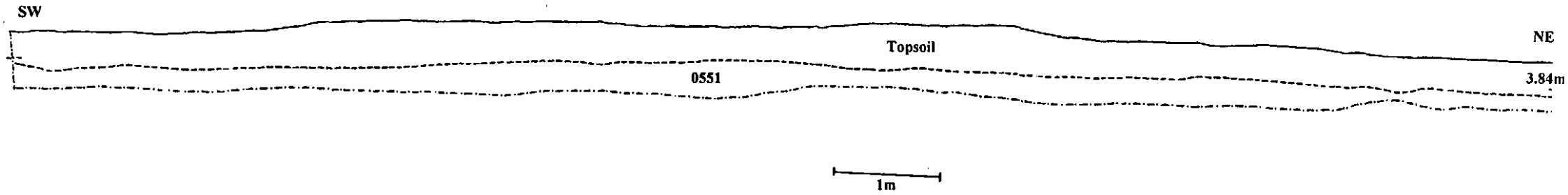


Figure.13: 03a Post-excavation plan (1:100) and west facing section (1:50)



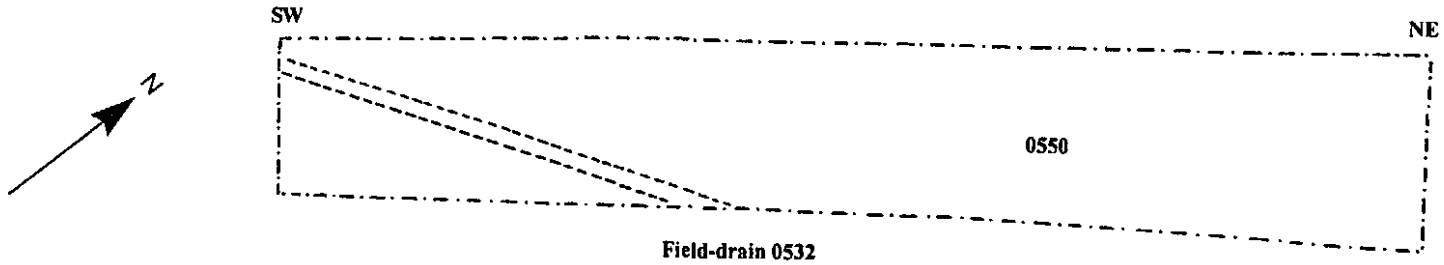
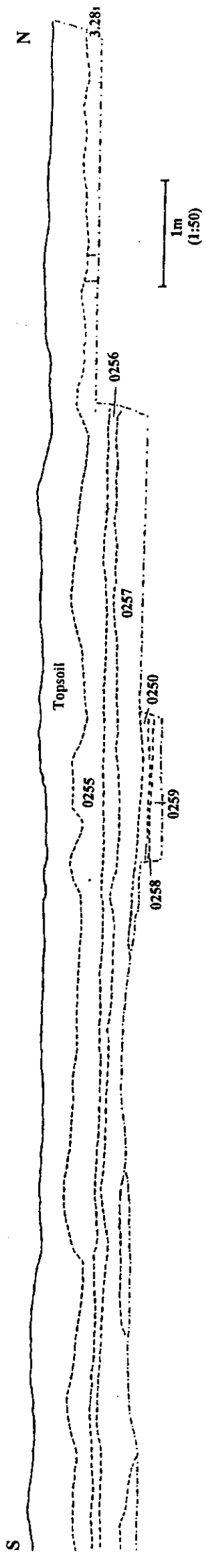


Figure.14: 06a Post-excavation plan (1:100) and south-east facing section (1:50)



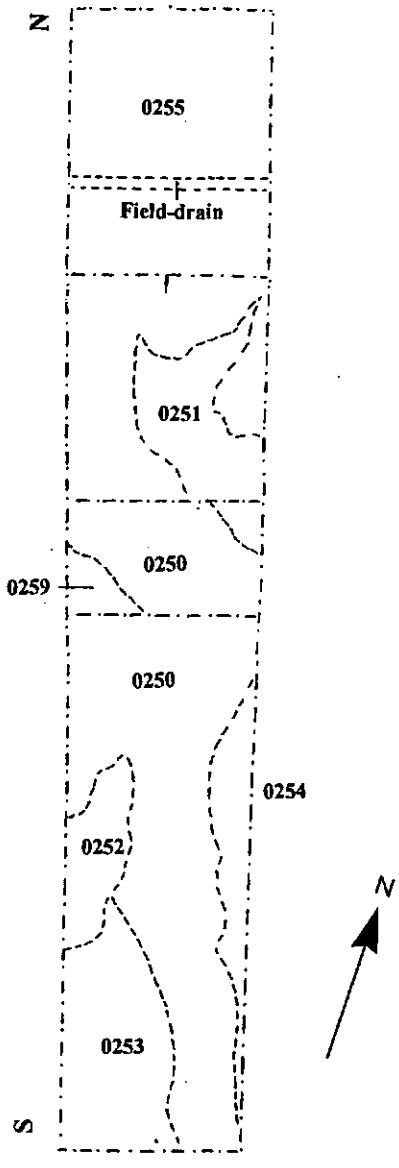


Figure.15: 03b Post-excavation plan (1:100) and east facing section (1:50)

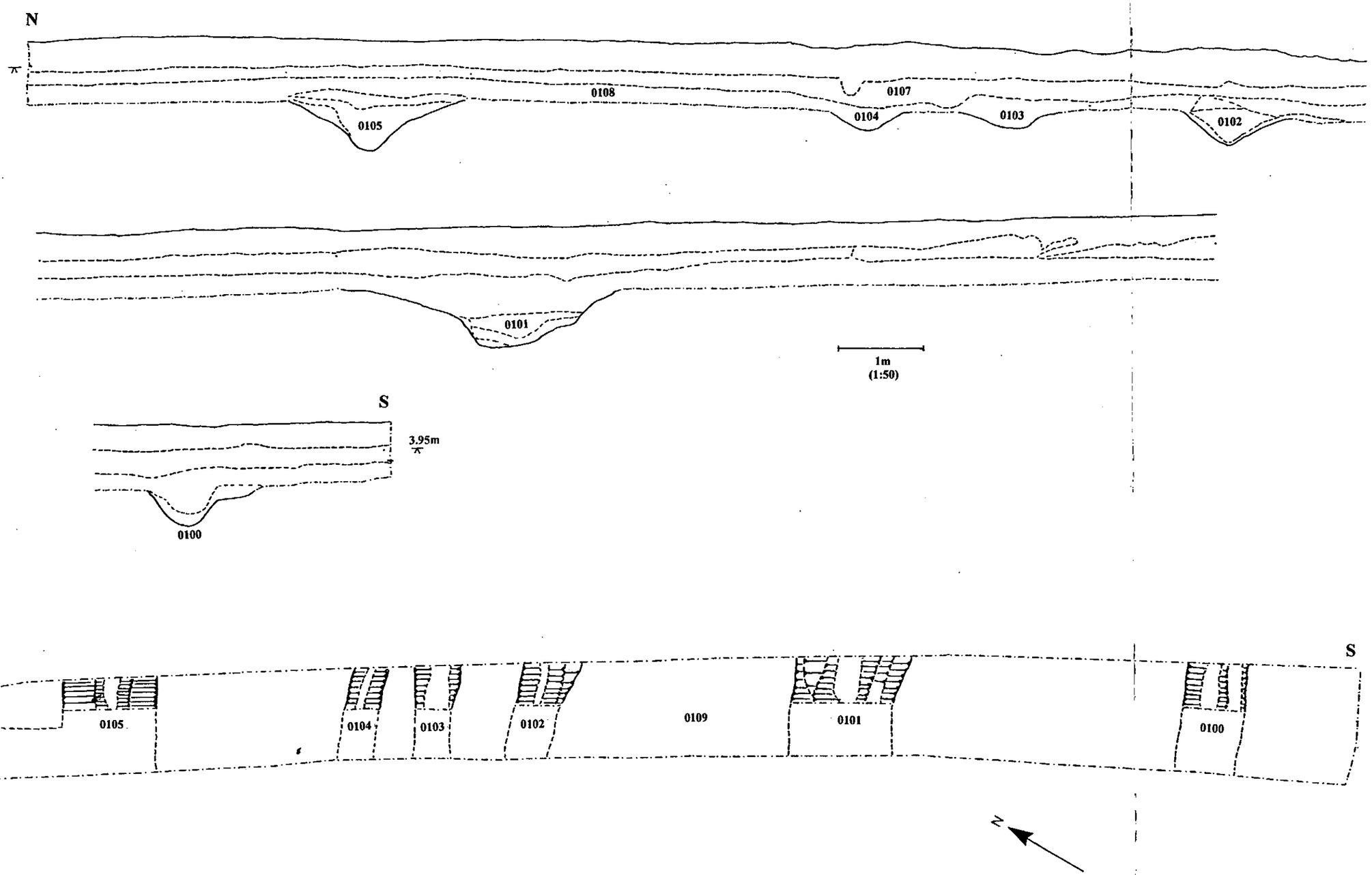


Figure.16: 04 Post-excavation plan (1:100) and west-facing section (1:50)

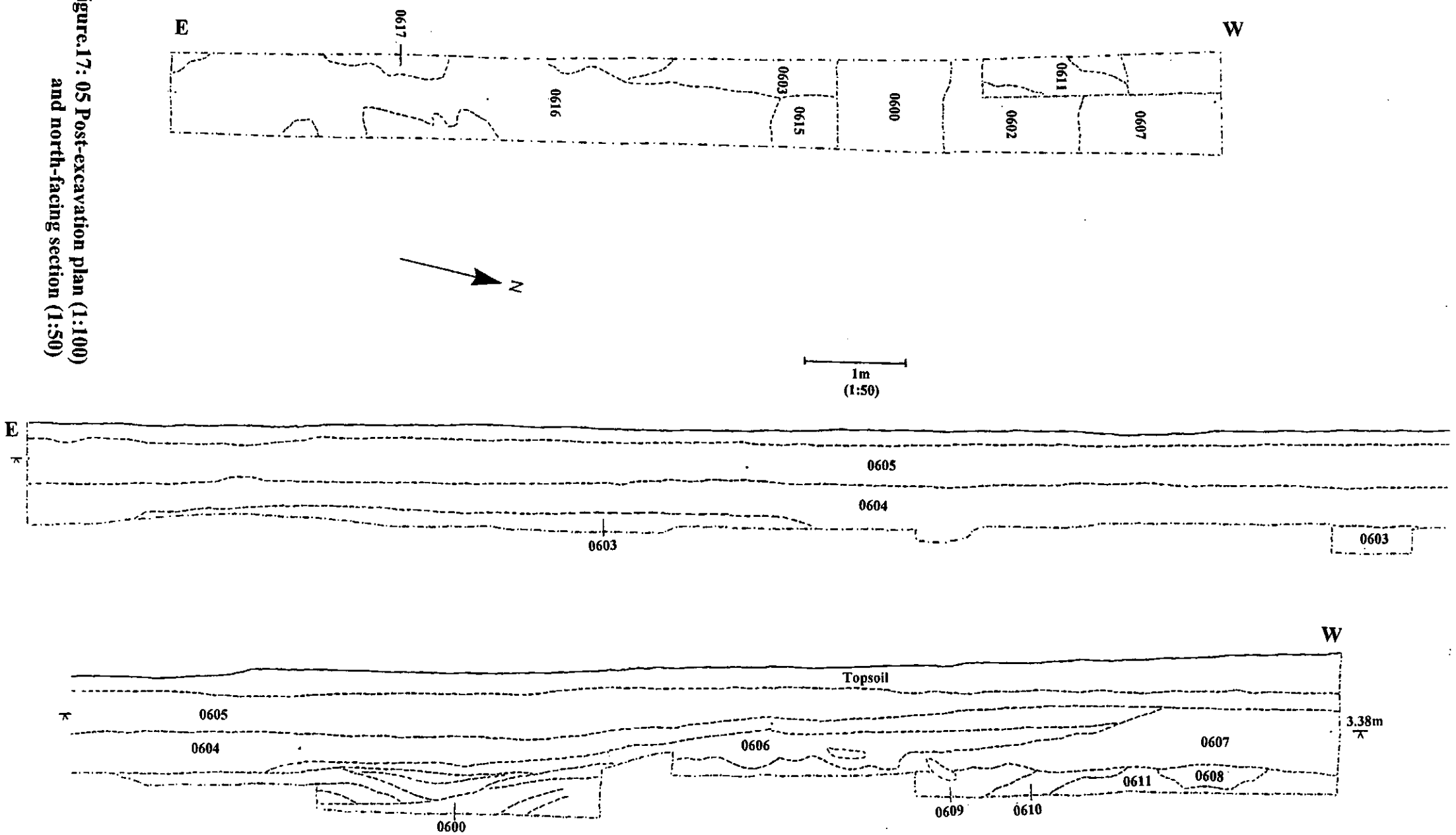
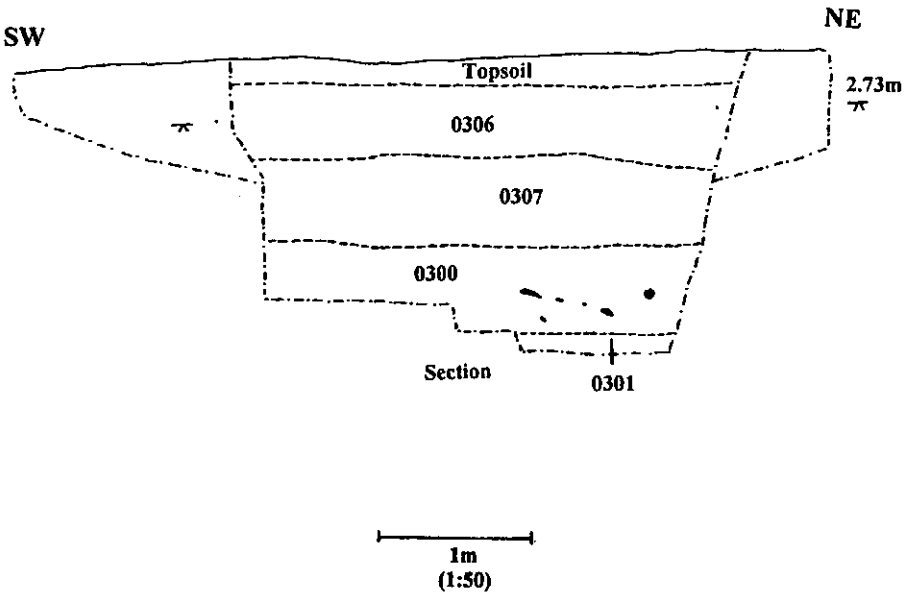
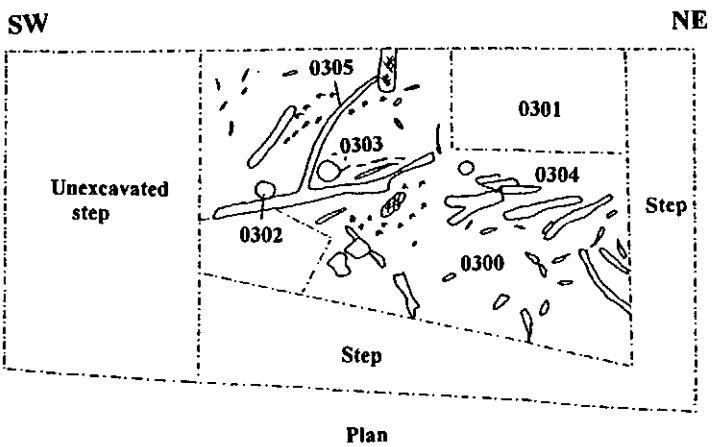


Figure.17: 05 Post-excavation plan (1:100) and north-facing section (1:50)





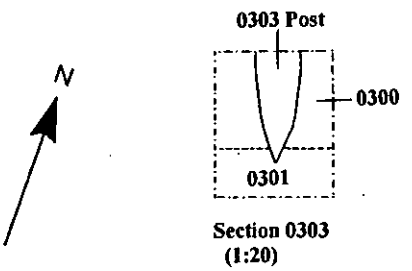


Figure.18: 07a Post-excavation plan and south-east facing section (1:50)

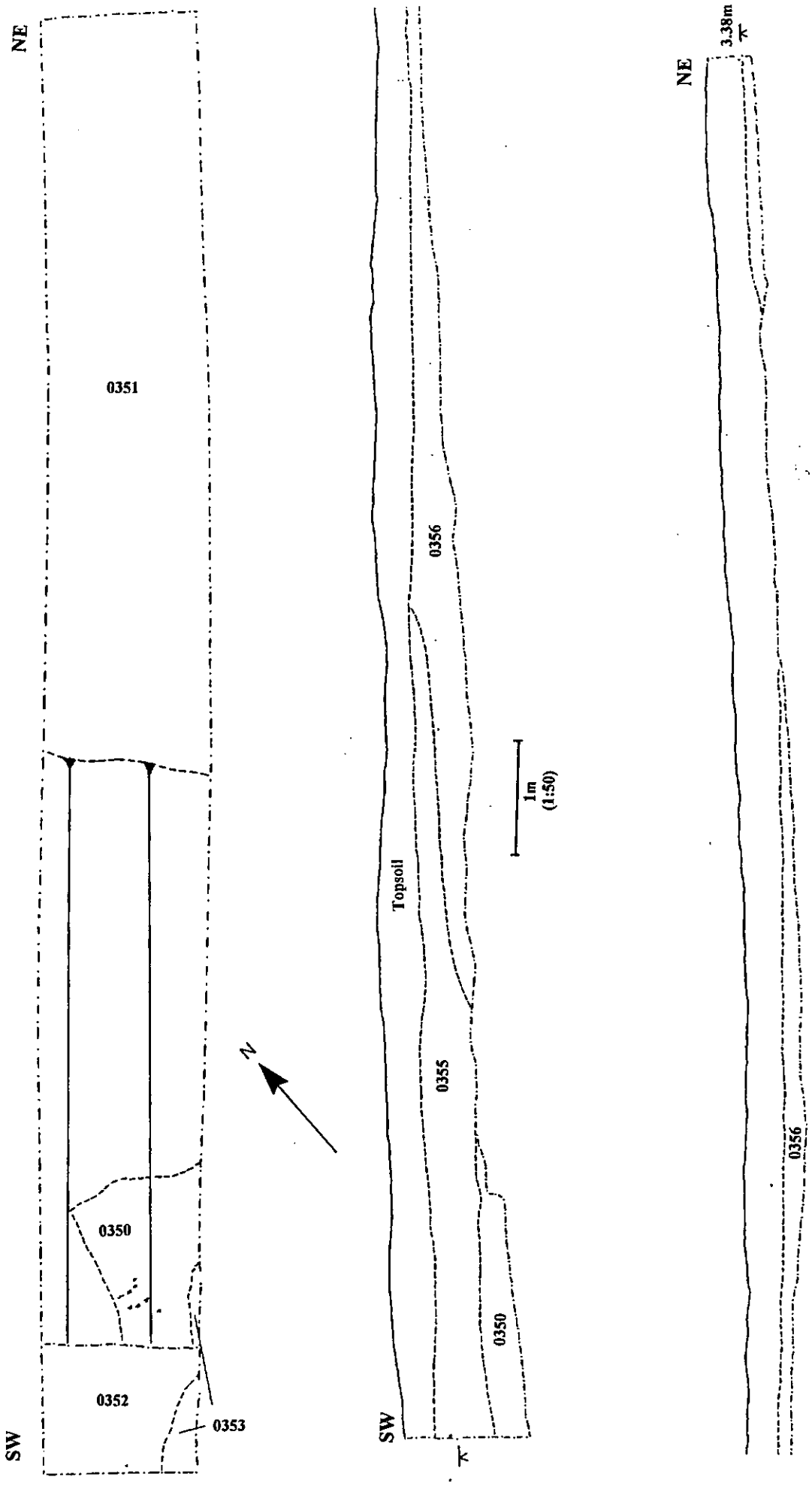


Figure.19: 07b Post-excavation plan (1:100)
And south-east facing section (1:50)

PLATES

Plate 1: 01 post-excavation, looking north

Plate 2: 01 west facing section of 0400

Plate. 3: Site B 02b, showing deposits present in the floodplain. (location of log arrowed).

Alder log 0045

North facing section of ditch 0078 with waterlogged base deposits

Plate. 4: Site B 02c, showing ditch 0078 on gravel terrace, looking east towards the floodplain (location of ditch arrowed).

Plate. 5: 06a post-excavation looking north

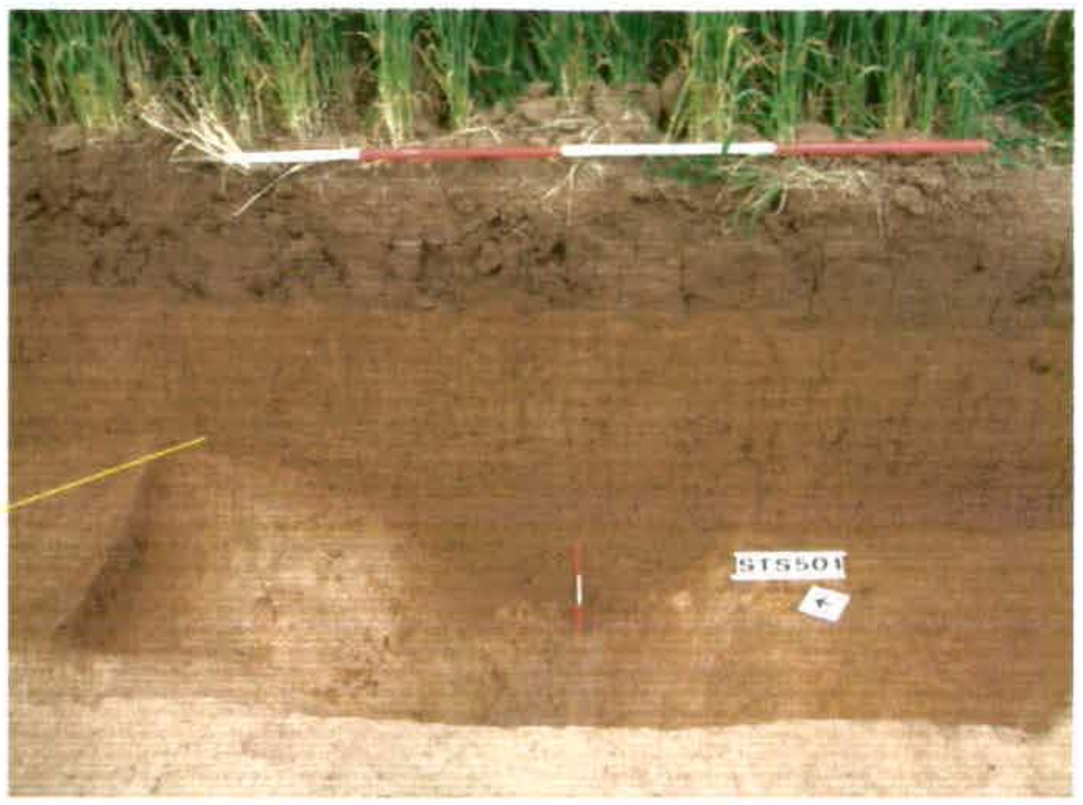


Plate.6: 06a 0501 west-facing section

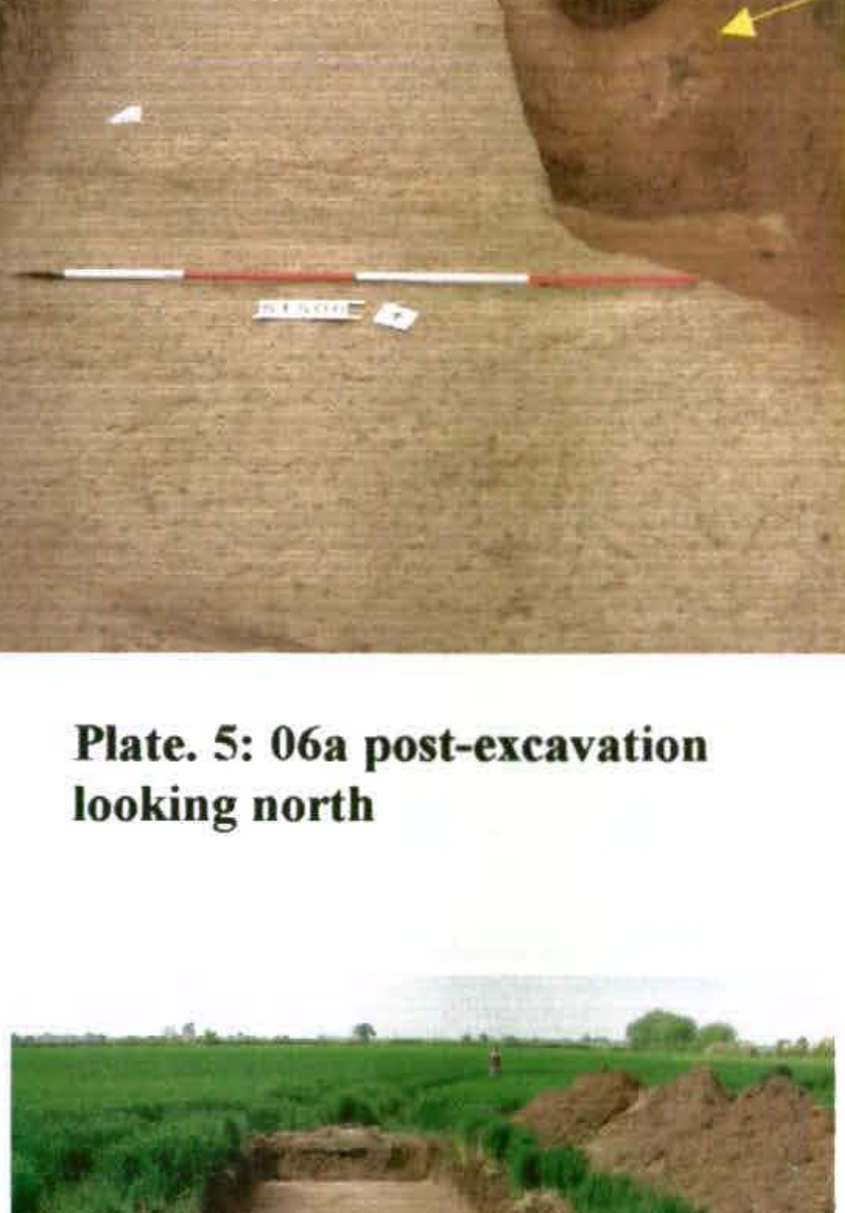


Plate.7: 03a post-excavation, looking north

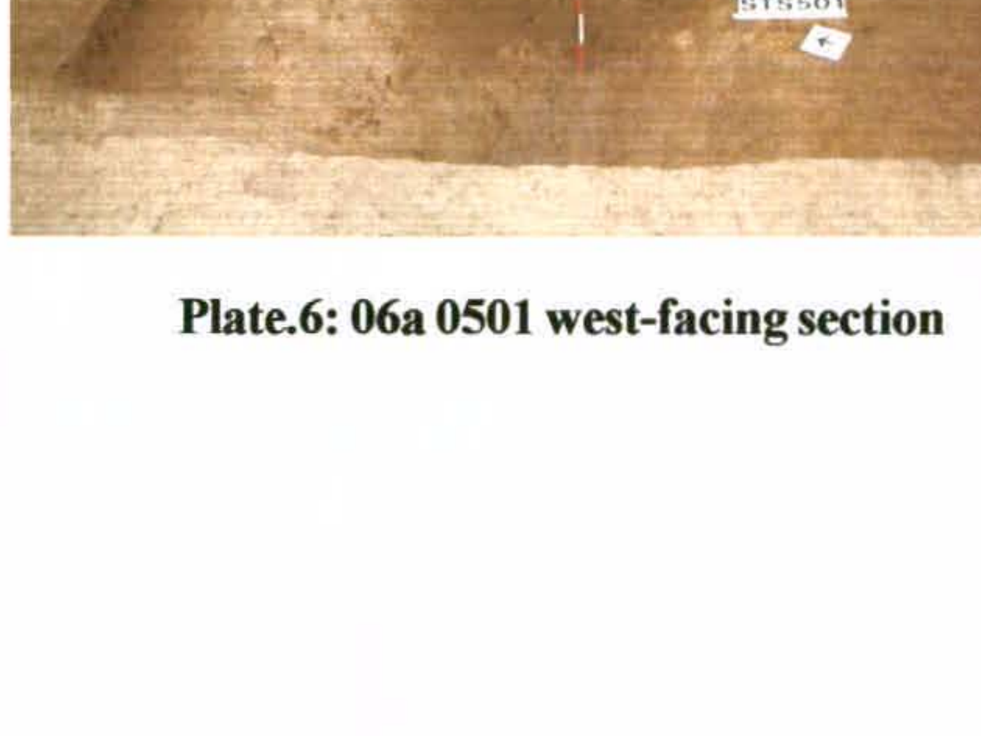


Plate.8: 03a 0202/0203 looking east

Plate.9: 03b showing extent of 0250, with finds, looking south-west

Plate.10: 06b post-excavation looking north-east

Plate.11: 04 post-excavation looking south-west

Plate.12: 04 0101 south-west facing section

Plate. 13: 05 post-excavation looking south-west showing alluvial clays

Looking north-east

Looking south-east

0303 *in-situ*

0303

0303

0304

Plate.14: 07a views during excavation and details of posts 0303 &0304

Plate.15: 07b post-excavation looking north-east

Plate.16: 07b south-west end of south-east facing section showing alluvial clays and layer 0250 at the edge of the gravel island.

Plate.17: Large rim sherds of same vessel from 0202/0203 in 03a

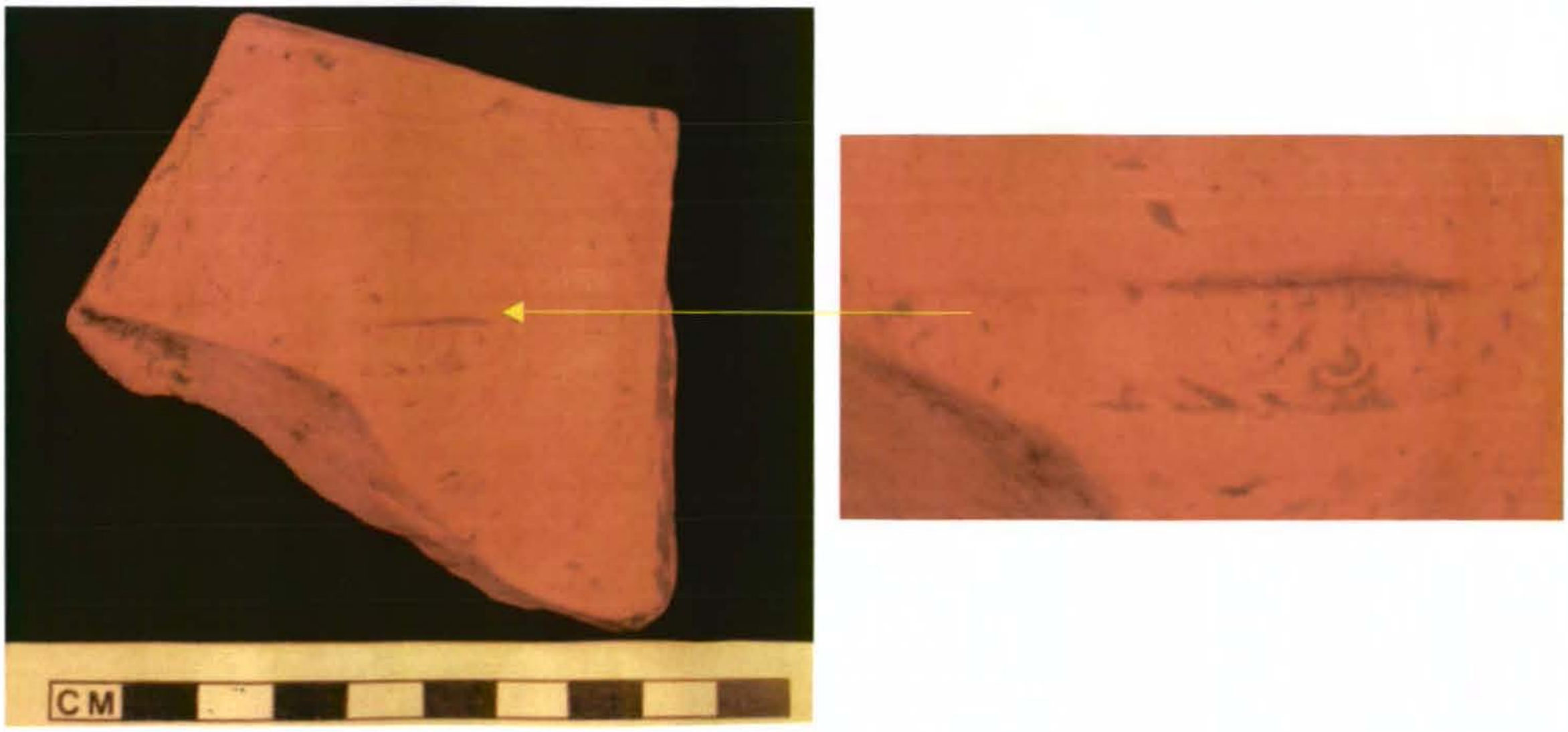


Plate.18: Stamped Samian from 0105 in 04

Plate.19. Spindle whorl from 0202/0203 in 03a

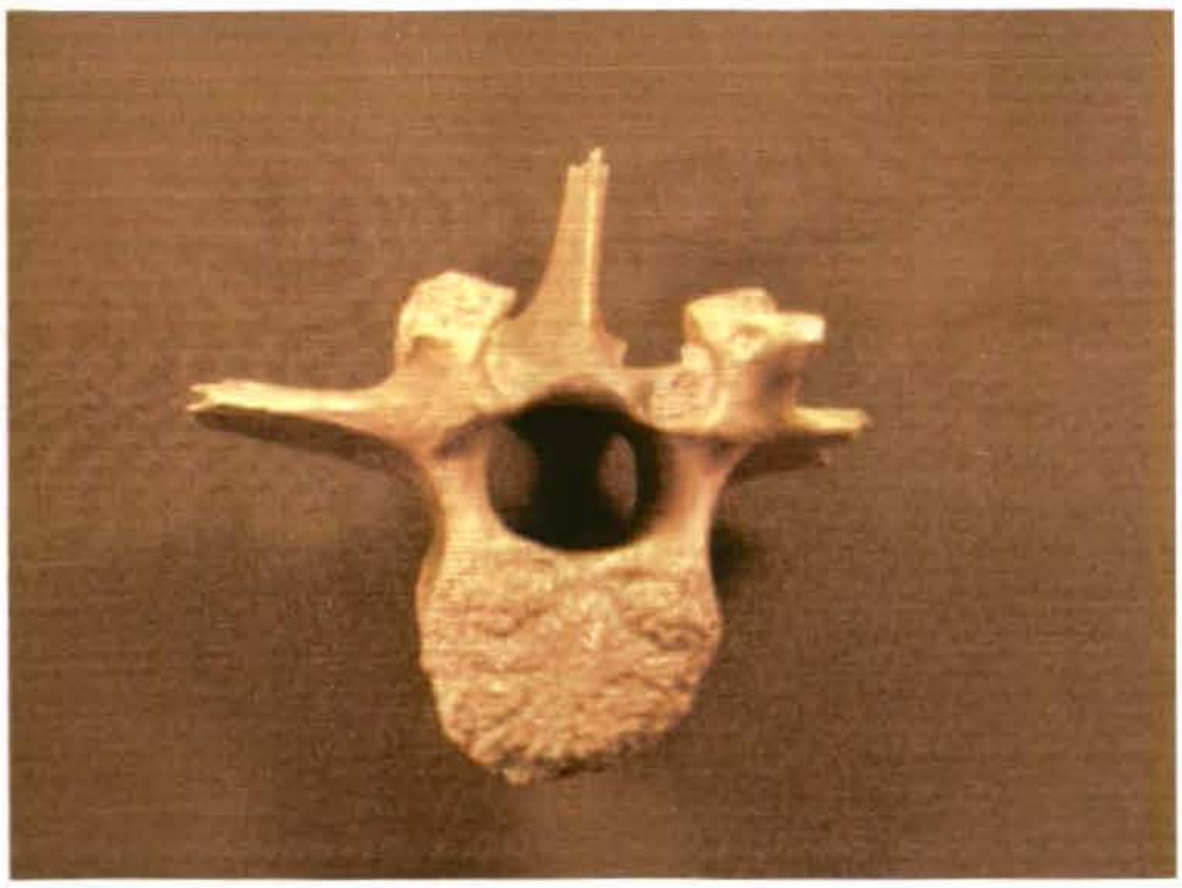
Plate.20: Glass armlet from 0061 in 02

Plate.21:Large quernstone from 0002 in 02.

Plate.22: Possible tap slag from 0061 in 02

05 Ditch 0105 gravel terrace

02 Ditch 0078 gravel terrace



02 Palaeochannel deposit 0039

Plate.23: Differences in bone preservation from various deposits

APPENDIX A: RADIOCARBON RESULTS

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 193778 SAMPLE: STS07A030200 ANALYSIS: Radiometric-Advance delivery MATERIAL/PRETREATMENT: (wood): acid/alkali/acid 2 SIGMA CALIBRATION: Cal BC 930 to 790 (Cal BP 2880 to 2740)	2730 +/ - 60 BP	-28.2 o/oo	2680 +/ - 60 BP
Beta - 193779 SAMPLE: STS07A030300 ANALYSIS: Radiometric-Advance delivery MATERIAL/PRETREATMENT: (wood): acid/alkali/acid 2 SIGMA CALIBRATION: Cal BC 810 to 410 (Cal BP 2760 to 2360)	2550 +/ - 60 BP	-26.8 o/oo	2520 +/ - 60 BP
Beta - 193780 SAMPLE: STS07A030500 ANALYSIS: Radiometric-Advance delivery MATERIAL/PRETREATMENT: (wood): acid/alkali/acid 2 SIGMA CALIBRATION: Cal BC 1020 to 800 (Cal BP 2970 to 2760)	2710 +/ - 60 BP	-22.5 o/oo	2750 +/ - 60 BP
Beta - 193781 SAMPLE: STS02B 004500 ANALYSIS: Radiometric-Advance delivery MATERIAL/PRETREATMENT: (wood): acid/alkali/acid 2 SIGMA CALIBRATION: Cal BC 760 to 620 (Cal BP 2710 to 2560) AND Cal BC 590 to 370 (Cal BP 2540 to 2320)	2400 +/ - 60 BP	-26.2 o/oo	2380 +/ - 60 BP
Beta - 193782 SAMPLE: STS02B 009800 ANALYSIS: Radiometric-Advance delivery MATERIAL/PRETREATMENT: (wood): acid/alkali/acid 2 SIGMA CALIBRATION: Cal AD 790 to 1030 (Cal BP 1160 to 920)	1120 +/ - 60 BP	-26.5 o/oo	1100 +/ - 60 BP

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-28.2:lab. mult=1)

Laboratory number: Beta-193778

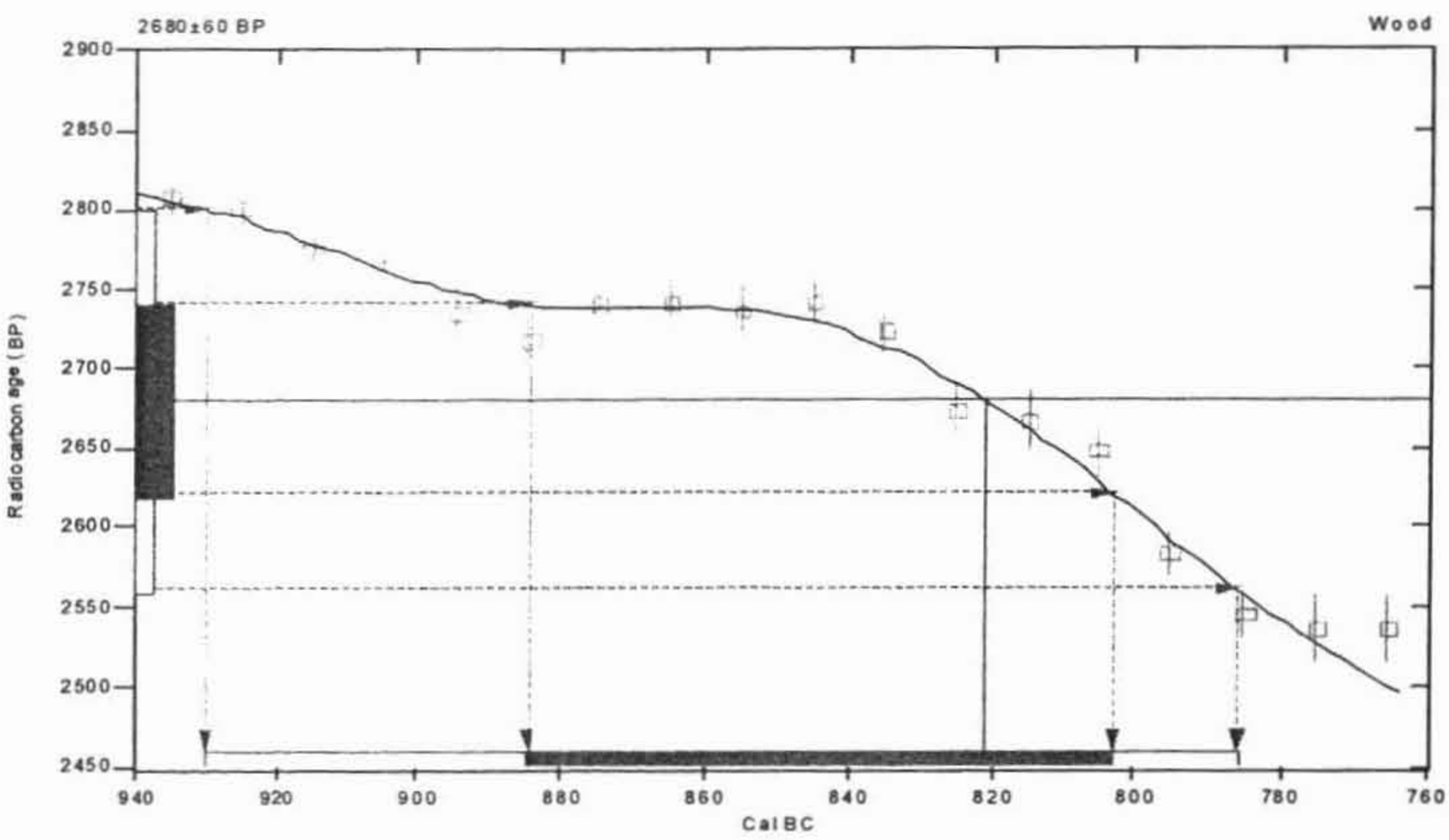
Conventional radiocarbon age: 2680±60 BP

2 Sigma calibrated result: Cal BC 930 to 790 (Cal BP 2880 to 2740)
(95% probability)

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 820 (Cal BP 2770)

1 Sigma calibrated result: Cal BC 880 to 800 (Cal BP 2840 to 2750)
(68% probability)



References:

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Calibration Database
Editorial Comment
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INTCAL98 Radiocarbon Age Calibration
Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083
Mathematics
A Simplified Approach to Calibrating C14 Dates
Talma, A.S., Vogel, J.C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.8:lab. mult=1)

Laboratory number: Beta-193779

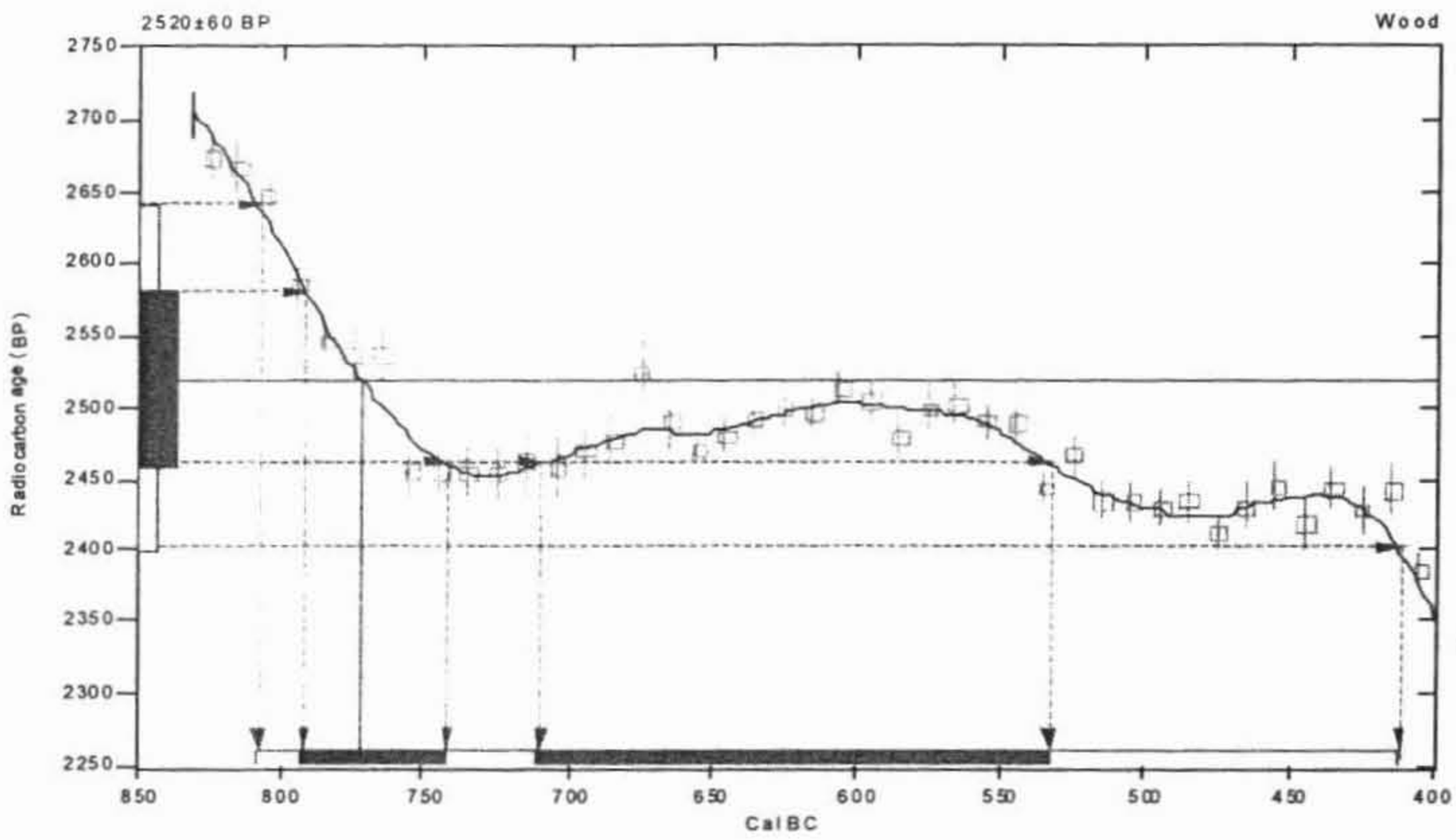
Conventional radiocarbon age: 2520±60 BP

2 Sigma calibrated result: Cal BC 810 to 410 (Cal BP 2760 to 2360)
(95% probability)

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 770 (Cal BP 2720)

1 Sigma calibrated results: Cal BC 790 to 740 (Cal BP 2740 to 2690) and
(68% probability) Cal BC 710 to 530 (Cal BP 2660 to 2480)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-22.5:lab. mult=1)

Laboratory number: Beta-193780

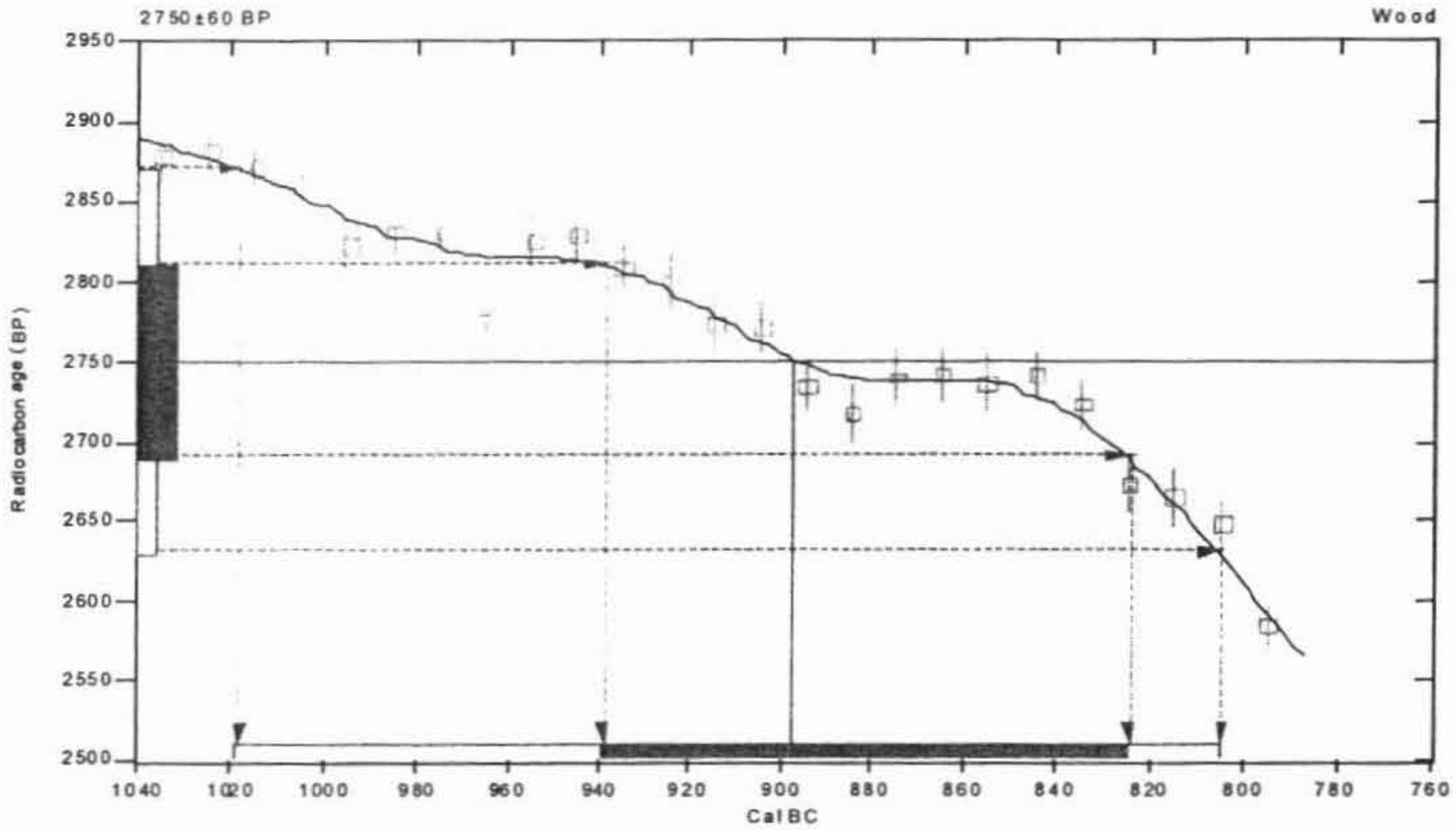
Conventional radiocarbon age: 2750±60 BP

2 Sigma calibrated result: (95% probability) Cal BC 1020 to 800 (Cal BP 2970 to 2760)

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 900 (Cal BP 2850)

1 Sigma calibrated result: (68% probability) Cal BC 940 to 820 (Cal BP 2890 to 2780)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.2:lab. mult=1)

Laboratory number: Beta-193781

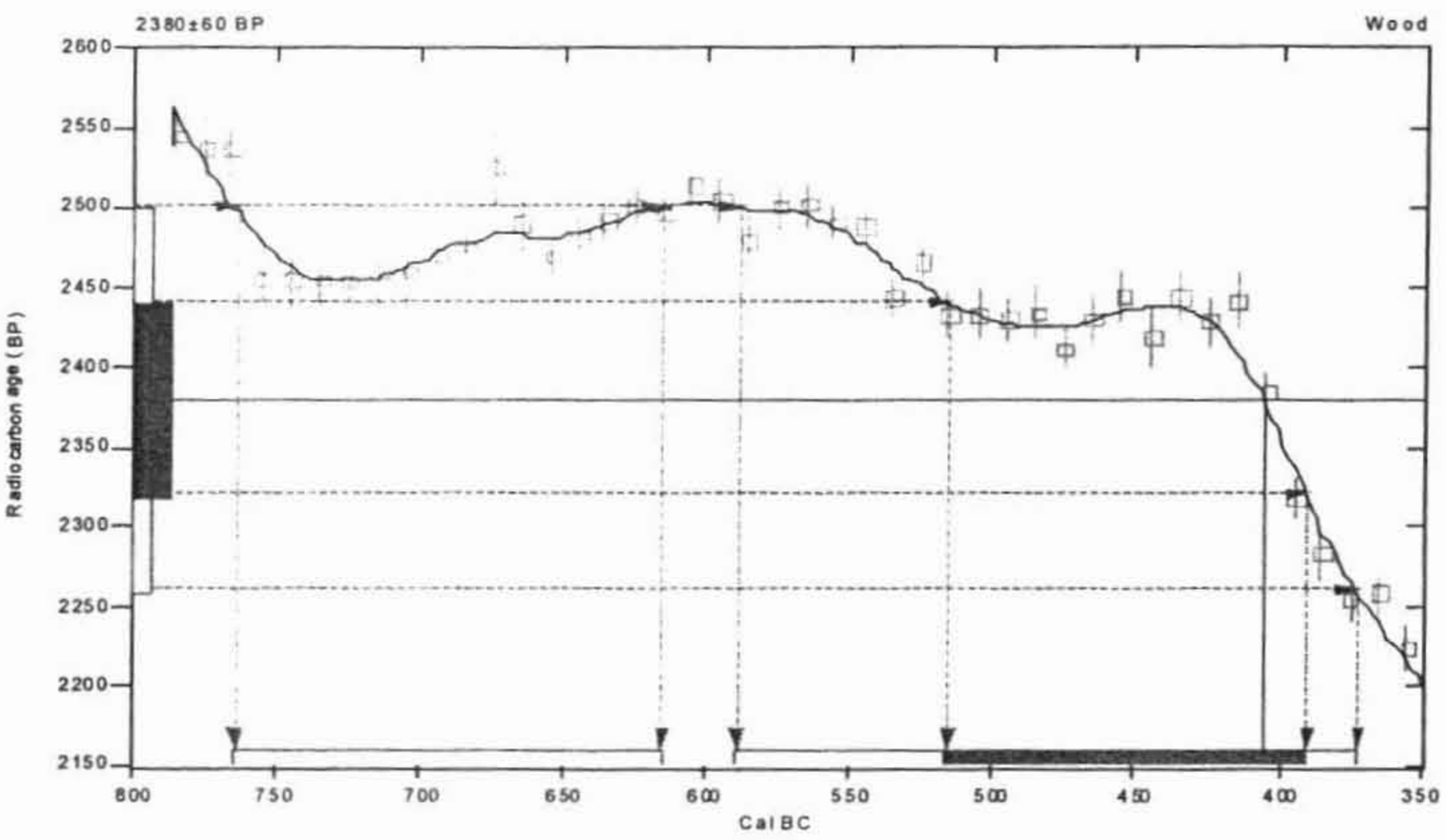
Conventional radiocarbon age: 2380±60 BP

2 Sigma calibrated results: (95% probability) Cal BC 760 to 620 (Cal BP 2710 to 2560) and Cal BC 590 to 370 (Cal BP 2540 to 2320)

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 410 (Cal BP 2360)

1 Sigma calibrated result: (68% probability) Cal BC 520 to 390 (Cal BP 2460 to 2340)



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Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.5:lab. mult=1)

Laboratory number: Beta-193782

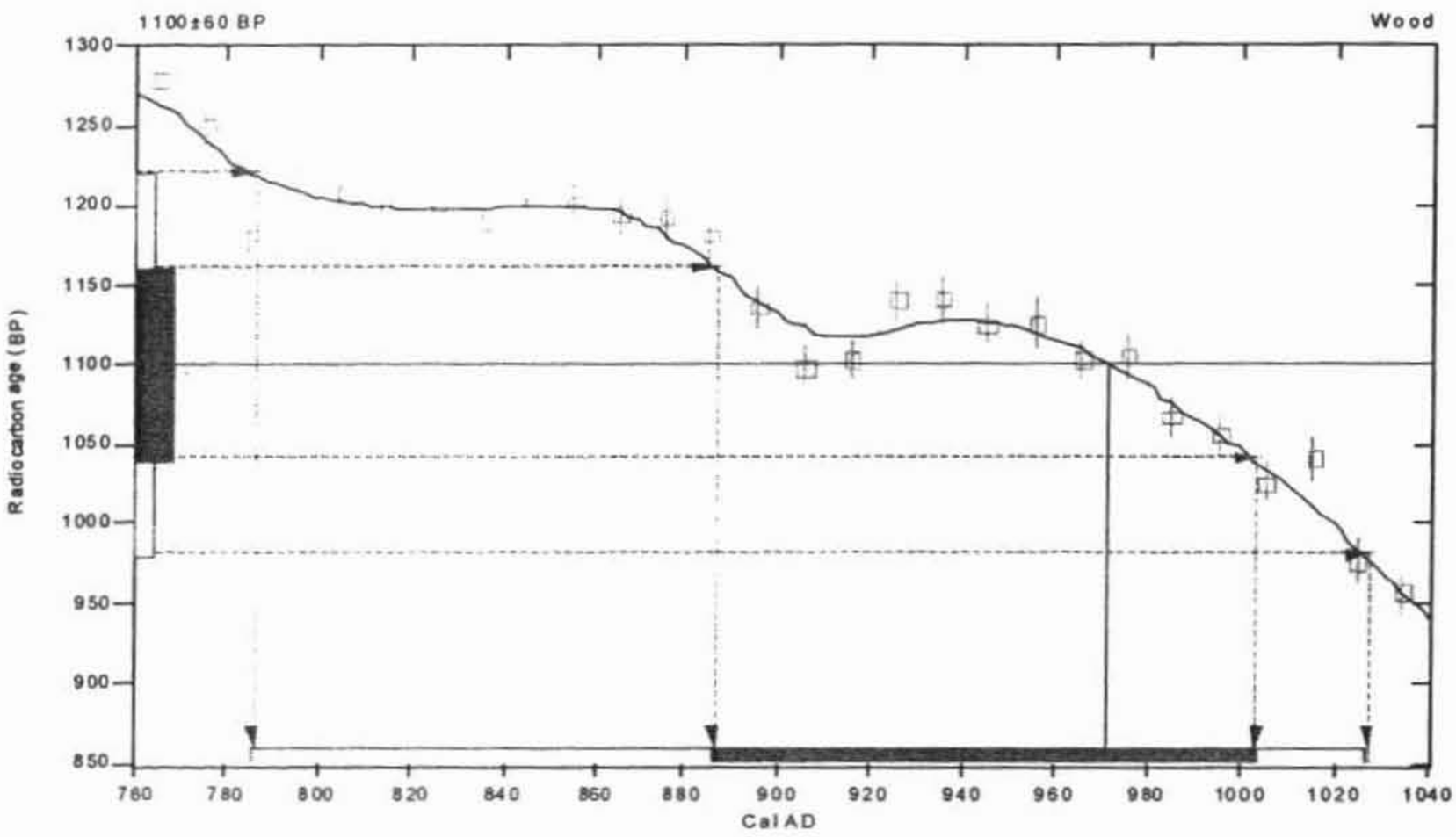
Conventional radiocarbon age: 1100±60 BP

2 Sigma calibrated result: Cal AD 790 to 1030 (Cal BP 1160 to 920)
(95% probability)

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 970 (Cal BP 980)

1 Sigma calibrated result: Cal AD 890 to 1000 (Cal BP 1060 to 950)
(68% probability)



References:

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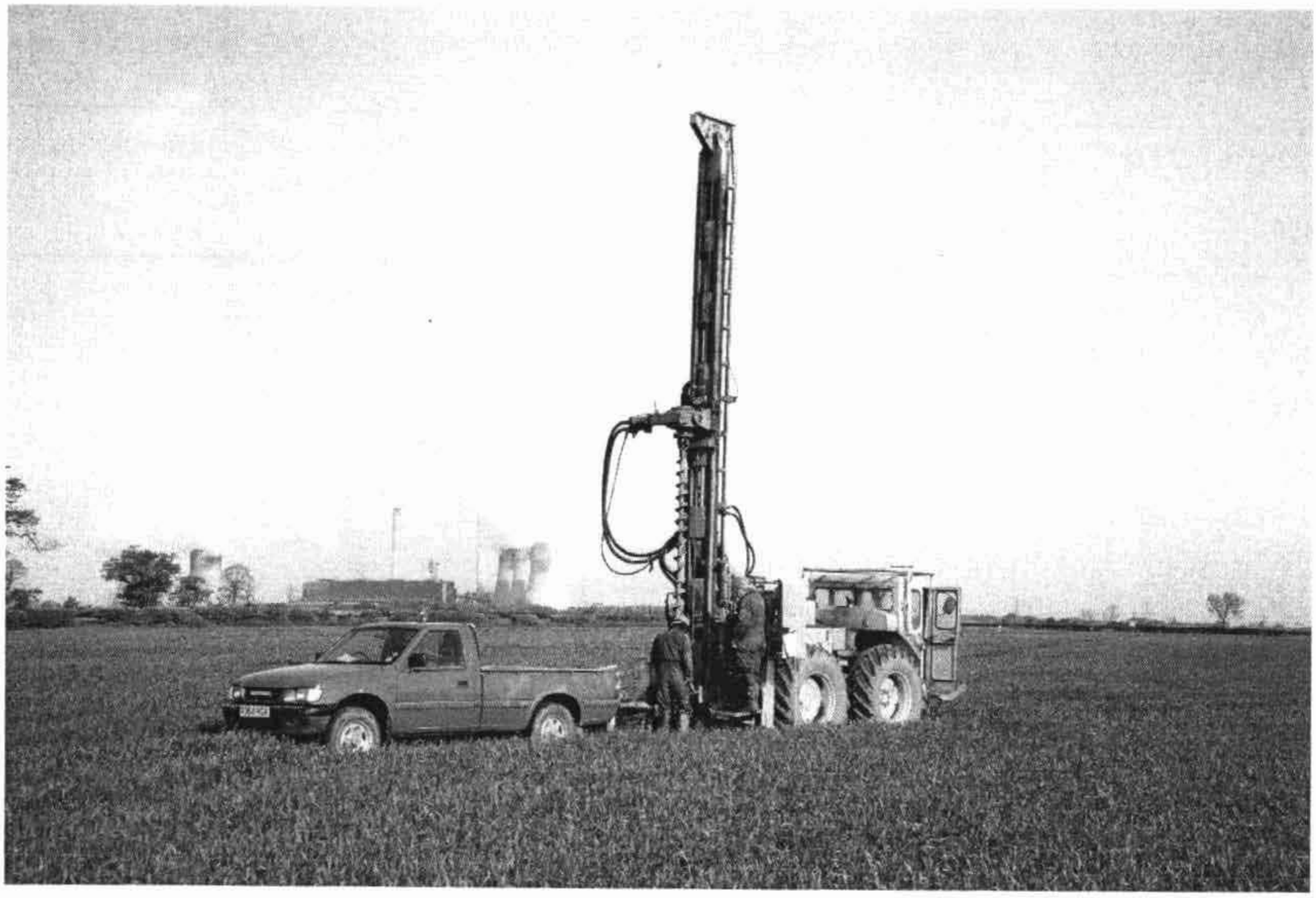
APPENDIX B: BOREHOLE SURVEY REPORT

Sturton Le Steeple, Nottinghamshire: Geoarchaeological Assessment of the Floodplain Deposits



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Summary

- Archaeological desktop assessment of the land around Sturton Le Steeple on behalf of Lafarge Redland Aggregates Ltd (Challis, 1999) identified significant peat deposits in a deep depression trending in a northerly direction across the central part of the study area. This report presents the results of further borehole drilling across the area commissioned by Lafarge Redland in order to record the riverine sediments and recover organic samples for palaeoenvironmental assessment and radiocarbon dating. In total, 47 boreholes were drilled across the area.

- The sediments can be broadly divided into three units. Fined grained silts and clays both overly and interdigitate with peats, which in turn, rest upon coarse grained sands and gravels. These new records broadly corroborate those supplied by Lafarge Redland Aggregates Ltd.

- The peats are well preserved and include abundant fragments of wood, sedge and occasional beetle remains. The thickest peat deposits infill a large north-south trending depression identified previously by Challis (1999) and interpreted in this report as a former main channel of the River Trent centered upon the Sturton Main Drain [SMD]. Samples of the organic remains were taken for environmental assessment and radiocarbon dating.

- Units of blue grey, silt and clay both below and inter-bedded between the peat deposits may indicate the influence of tidal waters in this area and is a hypothesis which merits further investigation.

- The combined investigation of pollen, insects and waterlogged plant remains preserved within the peats suggests an alder carr wetland including areas of standing pool and open fen. Away from the wetland environment, dryland woodland was present with herbaceous and ruderal (weedy) species suggesting that the (woodland) canopy was not completely closed; dung beetles provide evidence for some pasture and the presence of charcoal in the sediments suggests fire within the landscape further supporting the environmental interpretation.

- A mid Holocene age range for all the deposits suggested by pollen analysis is corroborated by radiocarbon dating which demonstrates that these organic sediments were deposited from the Late Neolithic, through the Bronze Age and almost certainly into the Iron Age.

List of Contents

1. Introduction

Archaeological desktop assessment of the land around Sturton Le Steeple on behalf of Lafarge Redland Aggregates Ltd (Challis, 1999) identified significant peat deposits in a deep depression (from company records) trending in a northerly direction across the central part of the study area (approximately aligned along a major drain here informally named the Sturton Main Drain [SMD]). This report presents the results of further borehole drilling across the area undertaken as part of PPG 16 planning conditions. The aim of this work was twofold:

- To recover buried organic deposits, primarily peats, for environmental assessment and radiocarbon dating.

- To provide a detailed understanding of the subsurface architecture (topography) of the sands and gravels, peats, and fine grained alluvial silts and clays. This may help to identify zones where human activity may have been focused in the past, such as the margins of former river channels, buried gravel islands and palaeolandsurfaces. This data will augment information used to locate future trial trenches excavated for archaeological prospection.

2. Drilling and Sampling Methodology

Drilling took place over five days during May 2004 (5th - 11th May 2004) and was undertaken by Blue Diamond Drilling Ltd of Barnstone, Nottinghamshire, under the supervision of Dr A.J. Howard. Drilling was undertaken using a flight auger with a maximum depth of penetration of 15m. During Phase 1 drilling, 43 boreholes were sunk along three broadly east-west transects, laid out by EDM Total Station (D. Gilbert, Trent & Peak Archaeological Unit). A limited number of slight amendments were made to the position of the boreholes to take into account issues of access and ground conditions (e.g. waterlogged ground). After recording of the 43 borehole cores was completed (Appendix 1), four of the drilled localities were revisited and additional boreholes 'put down' adjacent to the first cores to recover organic sediments suitable for palaeoenvironmental analysis and radiocarbon dating (Appendix 2). All sediment samples recovered for further assessment work were taken using U100 aluminum tubes.

3. Preliminary Results

At the time of drilling the area was under a mixture of wheat/barley, oilseed rape and a limited amount of set aside. The study area can be divided into two broad terrain units – river terrace of probable late Pleistocene age (i.e. pre-10 ka BP) across the western part of the site and a post-glacial floodplain (i.e. younger than 10 ka BP) to the east. The post-glacial floodplain is still regularly inundated by floodwaters. The difference in surface elevation between the Pleistocene terrace and Holocene floodplain is approximately 5-10 m.

Despite the evidence for meander migration immediately adjacent to the study area (Challis, 1999) no palaeochannel features are visible across the site and the Holocene floodplain forms a gently undulating surface as far as the present flood embankments immediately adjacent to the present river. However, two higher islands can be identified rising around 1-2m above the surrounding floodplain to the east of the SMD in the central part of the study area.

The results of borehole drilling allow the sediments of the study area to be broadly divided into four units: fined grained, red brown, alluvial silts and clays; blue grey alluvial silts and clays; peats; and coarse grained sands and gravels. This broadly corroborates the records supplied by Lafarge Redland Aggregates Ltd and analysed by Challis (1999).

Throughout drilling, no artefactual remains were recovered from the floodplain deposits.

3.1. Red Brown Silt and Clay Alluvium

These fine-grained silts and clays form an extensive blanket of sediment across the area, masking blue grey silts and clays, peats and coarser grained sand and gravel deposits. The sediment unit is typically around 1.5m thick and varies little in thickness across the study area.

The unit comprises a stiff, red brown silty clay in its upper part, which regularly passes downward into a grey silty clay, the latter reflecting the position of the contemporary water table and the effects of gleying. Red brown silty clay alluvium is common across the Holocene valley floor along the length of the Trent Valley and is generally suggested to be the product of enhanced sediment delivery to the river system due to forest clearance and agricultural intensification. The timing of this enhanced sedimentation across the valley floor is unknown, although a later prehistoric-Romano British date has been suggested (Buckland and Sadler, 1985).

3.2. Blue Grey Silt and Clay Alluvium

In the central and northern part of the study area, units of blue grey silt and clay were encountered both below and inter-bedded within the peat deposits (e.g. BH 9, BH13). The unit typically contained abundant woody remains and degraded shell fragments were recorded in BH4.

Although it is unclear precisely what this bluish tinge reflects, one possibility is that it is associated with sediments deposited by tidal waters. The current limit of saline water penetration along the Trent is Keadby Bridge, west of Scunthorpe, approximately 30km downstream (Van de Noort and Ellis, 1998), however it is probable that prior to large scale engineering of the river, the limit extended considerably further upstream.

3.3. Peat

Peat was preserved underlying red brown silt and clay in all boreholes drilled across the Holocene floodplain, but did not extend onto the river terrace deposits. The thickest peats were located in boreholes drilled in the immediate vicinity of the SMD; these peats were up to 4m thick (e.g. BH3, 4m; BH35, 3.21m). East of the SMD, the peat deposits thinned significantly and within approximately 100m of the SMD, the deposits were less than 1m thick (e.g. BH37, 0.39m; BH 27, 0.99m); however, these thinner peats were still well preserved.

The peat was notably woody and also contained visible fragments of sedge (common throughout), insects (BH 11) and hazelnut shells (BH 19). In BH36, large fragments of charcoal were recorded in the peat at a depth of 1.70m and an archaeological trial trench was opened over the borehole and onto the adjacent gravel island; the results of this excavation are reported elsewhere (Lee Elliott, TPAU, pers. comm.).

The recognition of thick peat deposits in the vicinity of SMD confirms the suggestion of Challis (1999) that a deep channel extends in a north-south direction across this area and it seems probable that these peat deposits infill a former main channel of the Trent. Whist the age of this channel is at present unknown, it should be noted that a major channel of the Trent of Mesolithic and Neolithic date was recorded immediately to the north of Sturton Le Steeple at Bole Ings in a similar context (i.e. in the central part of the Holocene floodplain); analysis of these deposits has produced a high quality palaeoenvironmental record (Brayshay and Dinnin, 1999).

The thinner peats recorded elsewhere across the Holocene floodplain probably reflect flood basins infilled during times of high river flow.

3.4. Sand and Gravel

With the exception of two boreholes (BH 8 and BH 43), drilling of the 43 boreholes was terminated when the Mercia Mudstone bedrock was encountered, at a depth of between *c.*6.31m (BH 31) and 15.01m (BH17) below the present ground surface. Drilling to the rockhead allowed the geometry and thickness of the basal sand and gravel to be determined and demonstrates that the thicknest sand and gravel deposits are recorded around the SMD and extend beneath the river terrace.

4. Sampling Programme and Environmental Assessment

Following Phase 1 drilling and recording, a second phase of drilling was undertaken to recover samples from four localities adjacent to boreholes 3, 11, 19 and 30. These samples were submitted for paleoenvironmental assessment to Dr D. Smith (Insects) and Dr W. Smith (plant remains) of the University of Birmingham, and Dr Ben Gearey (pollen) of the University of Hull. Samples for radiocarbon dating were submitted to Beta Analytic Inc., Miami, Florida, USA. Appendix 2 provides details of sample depth, number and analyses.

4.1. Pollen Analyses

Ten samples, three from borehole 3A, three from 11A, two from 19A and two from 30A were analysed to assess the potential of these floodplain deposits for palynological investigations. All samples had adequate or good pollen preservation, and pollen concentrations were generally high (20 000 - 300 000 grains cm^{-3}). Where pollen concentrations were lower, this does not appear to be the result of post-depositional damage to the assemblages.

All samples contain significant percentages of *Alnus glutinosa* (alder) pollen, and a range of other tree taxa are recorded. This suggests a mid-Holocene age range for all the deposits, since alder has already arrived in the area and is forming an important part of the local vegetation, yet the wider landscape supports a range of woodland taxa.

The high alder percentages imply that alder carr woodland was a feature of the landscape in contexts associated with a floodplain wetland complex, which probably included standing pools and open fen.. The depositional environment of the samples are considered briefly below, but it is important to note here that alder carr environments can be particularly tricky to interpret, since the relatively open canopy of wet carr communities encourages a range of ferns and understorey herbs, grasses and sedges to flourish and flower, contributing to the pollen signal. Increases in the pollen count of many of these elements (e.g. grasses, ferns) are often indicative of decreasing woodland cover in the wider landscape, and thus of changing patterns of human activity, but in the carr environment this signal can also be produced from small changes within the wetland community.

Borehole 3A

Results are shown in Table 1 (Appendix 3). Pollen concentration was high in the uppermost sample (2.7-2.8m), compared to the lower sample locations, which both contained large quantities of fine organic material. Microscopic charcoal fragments were seen in the lower samples, probably reflecting fires in the wider landscape. All three samples were apparently deposited within an alder carr context.

Borehole 11A

Results are shown in Table 2 (Appendix 3). Pollen and spore counts were relatively high, especially in the samples from 3.25m and 4.85-4.95m. The high proportion of *Alnus glutinosa* suggests a relatively dense local canopy, yet despite this, the proportions of *Ulmus* and *Tilia* are quite high (each at 2.2%). Both these pollen types are heavy grains, produced in relatively small quantities and poorly dispersed, so these data imply that these taxa were present abundantly in the dryland vegetation, and that the boundary between the local carr and the dry land areas where these taxa

grow, was located quite close to the sampling point (cf. Waller, 1998). The range of herbaceous taxa recorded, which includes ruderal (weedy) species typical of dry land disturbed places such as *Plantago lanceolata* and *Artemisia*-type, also supports this interpretation, and suggests that the dry land woodland was not completely closed.

These samples were apparently deposited in a wet area within an alder carr environment, possibly with standing water present for much of the year. The basal sample's rich tree flora suggests a pre-elm decline (pre-5000 ^{14}C years BP) age for this sample, although assessing the age of spot samples is not a reliable process.

Borehole 19A

Results are shown in Table 3 (Appendix 3). This sediment unit had well-preserved pollen with good concentrations. The sediments were deposited within an alder carr context with surrounding dryland woodland.

Borehole 30A

Results are shown in Table 4 (Appendix 3). Both samples contained well preserved pollen. The upper sample assemblage was similar to material from other boreholes. The lower sample, however, implies a different environmental context. Alder carr is still present nearby, but the sample itself may well come from a fen context, implied by the presence of a suite of fen-type taxa including *Sparganium emersum*-type (bur-reed) and *Phragmites*-type (reed), which are not recorded anywhere else in this sample set. Two Poaceae grains which, on size criteria, might represent early cereal varieties were also recorded. Given the context inferred above, these are more likely to originate from *Glyceria fluitans*, another characteristic component of fen vegetation. The presence of broken Foraminifera tests and a single Pre-Quaternary spore might imply that there is a link with the marine sediment transport system, perhaps via stronger influence of the main river channel at this location when the sample from 2.90-3.00m was deposited, although the data here do not suggest local salt marsh or regular inundation.

4.2. Insect Analyses

Preliminary assessment of the insect fauna was undertaken to address the following questions:

- Are there insects remains preserved in these deposits?
- Are the insect faunas of interpretative value?
- Would a more detailed sampling programme for insect remains have the potential to help reconstruct the environment and land use of this part of the floodplain?
- Would a more detailed sampling programme for insect remain have the potential to help reconstruct the nature of this past river channel and the water conditions in it?

In all cases where insect remains were encountered, they are well preserved. The insect taxa recovered are listed in Table 5 (Appendix 4). The majority of the taxa present are beetles (Coleoptera) though the cases and head capsules of both cased and caseless caddis flies (Tricoptera) were recovered in a few samples. Rather than discuss each sample and core individually, the nature and implications of each are outlined in Table 6 (Appendix 4).

The cores taken from the study area around sample points 11 and 30 have a high potential for the preservation of insect remains. Given that the volume of material studied in this assessment was often less that 500ml it would suggest that standard bulk samples of 10 litres of sediment, taken from an open face, would produce insect faunas containing hundreds of individuals. Faunas of this size should produce interpretive information allowing detailed reconstructions of water conditions, flow rates, channel side vegetation, the wider landscape and human land use.

The potential of this material is clearly demonstrated by the fact that, even given the limited size of the faunas from the cores, it is possible to estimate the general nature of the surrounding landscape. It is clear that the channel contained slow flowing water with stands of waterside vegetation. There is limited evidence for pasture (suggested by the *Aphodius* dung beetles recovered) and woodland or forest (suggested by the ash feeding *Lepresinus varius* and the lime feeding *Ernoporus causcasicus*).

4.3. Macroscopic Plant Analyses

The evaluation results for the waterlogged plant remains are presented in Table 7 (Appendix 5). Nomenclature for indigenous taxa follows Stace (1997). Samples from three of the five coring areas studied have produced well-preserved waterlogged plant remains of sufficient quantity to be of interpretable value. However, it was notable that the range of taxa encountered was fairly small. This may result from the small quantity of soil processed, but could also indicate that in these cases the alder (*Alns glutinosa* (L.) Gaertner)carr was not particularly species rich.

In addition to being dominated by alder seeds, one of the richer samples (BH 11A Core 1, 2.05 – 2.35 m) also contained birch (*Betula* sp.) seeds and another (BH 11A Core 3, 3.40 – 3.65 m) also contained a complete hazelnut (*Corylus avellana* L.), with evidence of rodent gnawing. All of these richer samples also contained substantial quantities of leaf, twig and wood fragments.

4.4. Radiocarbon Dating

Borehole	U100 #	Depth of Sample below Ground Level (m)	14C
3a	Core 2	2.35 – 3.00	2700 ± 60; cal. BC 970-790; Beta-193824
	Core 5	4.30 – 4.95	3480 ± 70; cal. BC 1960-1620; Beta-193825
11a	Core 1	1.70 – 2.35	2730 ± 90; cal. BC 1100-780; Beta-193826
	Core 5	4.30 – 4.95	4390 ± 60; cal. BC 3330-3220, cal. BC 3180-3160, cal. BC 3130-2890; Beta-193827
30a	Core 2	2.35 – 3.00	3050 ± 50; cal. BC 1420-1140; Beta-193823

The mid Holocene age range for all the deposits suggested by pollen analysis is corroborated by radiocarbon dating which demonstrates that these organic sediments were deposited from the Late Neolithic, through the Bronze Age and almost certainly into the Iron Age.

5. Preliminary Conclusions

The programme of geoarchaeological work undertaken at Sturton Le Steeple indicates a floodplain landscape with significant palaeoenvironmental potential. Silt and clay alluvium is shown to mask peat of variable thickness and quality across the majority of the area. The thickest peat deposits infill a large north-south trending depression interpreted as a former main channel of the River Trent centered upon the SMD. Blue grey silt and clay deposits both below and inter-bedded between the peats may indicate the influence of tidal waters in this area, a hypothesis tenuously supported by the palynofacies data and one which certainly merits further investigation.

The combined investigation of pollen, insects and waterlogged plant remains preserved within the peats suggests an alder carr wetland including areas of standing pool and open fen. Away from the wetland environment, dryland woodland was present with herbaceous and ruderal (weedy) species suggesting that the (woodland) canopy was not completely closed; dung beetles provide evidence for

some pasture and the presence of charcoal in the sediments suggests fire within the landscape further supporting the environmental interpretation.

A mid Holocene age range for all the deposits suggested by the pollen data is corroborated by radiocarbon dating which demonstrates that these organic sediments were deposited from the Late Neolithic, through the Bronze Age and almost certainly into the Iron Age.

5.1. Recommendations

- The deposits at Sturton le Steeple contain a valuable and well preserved record of mid-Holocene environments, and are highly suitable for further analysis. A spatially referenced multiple-core approach is recommended for environmental sampling.

- In addition to the usual suite of environmental analyses (pollen, insects and plant remains), diatom analysis should be used to assess the possible brackish water influence inferred at the base of Borehole 30A and evidence by the blue-grey clays.

6. References

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7.1. Appendix 1: Borehole Descriptions, Sturton Le Steeple

Borehole 1 (terrace)

0.00 – 0.50	Stiff, red brown silty clay, slightly gleyed at base.
0.51 – 1.60	Orange brown sand.
1.61 – 8.10	Orange brown coarse sand and gravel. Predominantly 'Bunter' pebbles.
8.11 – 8.50	Mercia Mudstone Group.

Borehole 2 (terrace)

0.00 – 1.50	Stiff, red brown silty clay, slightly gleyed at 1.0m depth.
1.51 – 11.30	Orange brown coarse sand and gravel.
11.31 – 11.50	Mercia Mudstone Group.

Borehole 3 (floodplain)

0.00 – 1.50	Stiff, red brown silty clay, gleyed at 1.2m depth.
1.51 – 2.00	Black peaty silt.
2.01 – 5.50	Dark black silty peat. Common woody fragments and sedge remains throughout.
5.50 – 6.40	Grey blue sandy clay.
6.41 – 11.10	Orange brown coarse sand and gravel.
11.11 – 11.50	Mercia Mudstone Group.

Borehole 4 (floodplain)

0.00 – 1.50	Stiff, red brown silty clay, gleyed at base.
1.51 – 1.90	Red brown fibrous peat with abundant woody and sedge remains.
1.91 – 3.00	Blue grey silty peat with abundant woody fragments.
3.01 – 5.00	Blue grey silty clay, woody with degraded shell fragments.
5.01 – 11.20	Orange brown coarse sand and gravel.
11.21 - 11.50	Mercia Mudstone Group.

Borehole 5 (floodplain)

0.00 – 1.50	Stiff, red brown silty clay, gleyed towards base.
1.51 – 2.50	Red brown fibrous peat with abundant woody and sedge remains.
2.51 – 3.00	Grey blue peaty silt with abundant woody fragments.
3.01 – 4.00	Grey blue silty peat.
4.01 – 4.90	Red brown fibrous peat with abundant woody and sedge remains.
4.91 – 12.00	Orange brown coarse sand and gravel.
12.01 – 12.50	Mercia Mudstone Group.

Borehole 6 (floodplain)

0.00 – 0.70	Stiff, red brown silty clay.
0.70 – 1.50	Red brown peaty silt with visible plant remains.
1.51 – 2.00	Red brown fibrous peat.
2.01 – 3.00	Blue grey silty peat.
3.01 – 4.10	Red brown fibrous peat.
4.11 – 4.50	Grey blue sand with woody fragments.
4.51 – 9.00	Orange brown coarse sand and gravel.
9.01 +	Mercia Mudstone Group.

Borehole 7 (floodplain)

0.00 – 0.90	Stiff, red brown silty clay.
0.91 – 1.30	Peaty silty clay.
1.31 – 2.10	Red brown fibrous peat.
2.11 – 3.00	Grey silt, woody.
3.01 – 3.90	Red brown woody peat.

3.91 – 4.50 Black pebbly sand, woody.
4.51 – 12.60 Orange brown coarse sand and gravel.
12.60 – 12.70 Mercia Mudstone Group.

Borehole 8 (floodplain)
0.00 – 1.10 Stiff, red brown silty clay.
1.11 – 1.50 Peaty silty clay.
1.51 – 1.90 Red brown fibrous peat.
1.91 – 4.80 Blue grey silty clay, woody and silty in places.
4.81 – 5.00 Black sand.
5.01 – 6.00 Orange brown coarse sand and gravel.

EOBH (water problems)

Borehole 9 (floodplain)
0.00 – 0.90 Stiff, red brown silty clay.
0.91 – 1.50 Peaty silty clay.
1.51 – 1.90 Red brown fibrous peat.
1.91 – 4.50 Blue grey silty clay, peaty and woody in places.
4.51 – 5.10 Red brown fibrous peat.
5.11 – 13.70 Orange brown coarse sand and gravel.
13.70 – 14.00 Mercia Mudstone Group.

Borehole 10 (floodplain)
0.00 – 1.10 Stiff, red brown silty clay.
1.11 – 1.50 Peaty silty clay.
1.51 – 4.70 Red brown fibrous peat, very woody.
4.71 – 12.10 Blue grey, becoming orange brown coarse sand and gravel.
12.11 – 12.50 Mercia Mudstone Group.

Borehole 11 (floodplain)
0.00 – 0.90 Stiff, red brown silty clay, gleyed with depth.
0.91 – 1.50 Peaty silt.
1.51 – 4.70 Red brown fibrous peat, woody with visible inset remains.
4.71 – 5.10 Blue olive silt.
5.11 – 12.70 Orange brown sand and gravel.
12.71 – 12.80 Mercia Mudstone Group.

Borehole 12 (floodplain)
0.00 – 1.30 Stiff, red brown silty clay.
1.31 – 1.50 Peaty silt.
1.51 – 4.60 Red brown fibrous peat.
4.61 – 4.90 Blue grey silt.
4.91- 13.20 Orange brown sand and gravel
13.21 – 14.90 Mercia Mudstone Group.

Borehole 13 (floodplain)
0.00 – 1.30 Stiff, red brown silty clay.
1.31 – 1.50 Peaty silt.
1.51 – 2.60 Red brown fibrous peat, woody.
2.61 – 3.50 Blue grey peaty silt, woody in places.
3.51 – 4.50 Red brown fibrous peat, woody.
4.51 – 14.20 Orange brown coarse sand and gravel.
14.20 – 14.50 Mercia Mudstone Group.

Borehole 14 (floodplain)

0.00 – 1.50	Stiff, red brown silty clay.
1.51 – 3.50	Red brown fibrous peat.
3.51 – 4.51	Grey blue sand.
4.51 – 13.80	Orange brown coarse sand and gravel.
13.80 – 14.00	Mercia Mudstone Group.

Borehole 15 (terrace)

0.00 – 0.60	Brown sandy loam.
0.61 – 6.00	Orange brown medium sand with coal fragments.
6.01 – 7.50	Orange brown medium pebbly sand.
7.51 – 13.00	Orange brown coarse sand and gravel.
13.01 – 13.50	Mercia Mudstone Group.

Borehole 16 (terrace)

0.00 – 0.50	Brown sandy loam.
0.51 – 6.00	Orange brown medium sand with coal fragments.
6.01 – 14.40	Orange brown coarse sand and gravel.
14.41 – 14.50	Mercia Mudstone Group.

Borehole 17 (terrace)

0.00 – 0.50	Brown sandy loam.
0.51 – 6.00	Orange brown medium sand with coal fragments.
6.01 – 15.00	Orange brown coarse sand and gravel.
15.01 – 15.50	Mercia Mudstone Group.

Borehole 18 (floodplain)

0.00 – 1.60	Stiff, red brown silty clay.
1.61 – 3.90	Red brown fibrous peat.
3.91 – 4.10	Grey blue peaty silt.
4.11 – 8.80	Orange brown coarse sand and gravel.
8.81 – 9.00	Mercia Mudstone Group.

Borehole 19 (floodplain)

0.00 – 1.50	Stiff, red brown silty clay, peaty at base.
1.51 – 1.80	Red brown fibrous peat.
1.81 – 3.00	Blue grey peaty silt, woody.
3.01 – 3.80	Red brown fibrous peat, hazelnut shells visible.
3.81 – 8.60	Orange brown coarse sand and gravel.
8.61 – 9.00	Mercia Mudstone Group.

Borehole 20 (floodplain)

0.00 – 1.50	Stiff, red brown silty clay.
1.51 – 4.20	Red brown fibrous peat.
4.21 – 8.90	Orange brown coarse sand and gravel.
8.91 – 9.00	Mercia Mudstone Group.

Borehole 21 (floodplain)

0.00 – 1.70	Stiff, red brown silty clay, gleyed towards base.
1.71 – 4.50	Red brown fibrous peat.
4.51 – 8.70	Orange brown coarse sand and gravel.
8.71 – 9.00	Mercia Mudstone Group.

Borehole 22 (floodplain)
0.00 – 1.60 Stiff, red brown silty clay.
1.61 – 4.30 Red brown fibrous peat.
4.31 – 8.30 Blue grey coarse sand and gravel.
8.31 – 8.50 Mercia Mudstone Group.

Borehole 23 (floodplain)
0.00 – 1.80 Stiff, red brown silty clay.
1.81 – 3.30 Red brown fibrous peat.
3.31 – 8.90 Orange brown coarse sand and gravel.
8.91 – 9.00 Mercia Mudstone Group.

Borehole 24 (floodplain)
0.00 – 1.50 Stiff, red brown silty clay.
1.51 – 2.20 Red brown fibrous peat.
2.21 – 3.00 Grey coarse pebbly sand.
3.01 – 9.70 Orange brown coarse sand and gravel.
9.71 – 10.0 Mercia Mudstone Group.

Borehole 25 (terrace)
0.00 – 0.40 Brown sandy loam.
0.41 – 4.50 Orange brown medium sand.
4.51 – 11.70 Orange brown coarse sand and gravel.
11.71 – 12.0 Mercia Mudstone Group.

Borehole 26 (floodplain)
0.00 – 1.90 Stiff, red brown silty clay.
1.91 – 4.80 Red brown fibrous peat.
4.81 – 8.00 Orange brown coarse sand and gravel.
8.01 – 8.30 Mercia Mudstone Group

Borehole 27 (floodplain)
0.00 – 1.50 Stiff, red brown silty clay.
1.51 – 3.10 Blue grey silt, woody.
3.11 – 4.10 Red brown fibrous peat.
4.11 – 7.80 Orange brown coarse sand and gravel.
7.81 – 8.00 Mercia Mudstone Group.

Borehole 28 (floodplain)
0.00 – 1.90 Stiff, red brown silty clay, gleyed towards base.
1.91 – 3.40 Grey silt, woody and peaty in places.
3.41 – 3.80 Red brown fibrous peat.
3.81 – 7.60 Orange brown coarse sand and gravel.
7.61 – 8.00 Mercia Mudstone Group.

Borehole 29 (floodplain)
0.00 – 1.70 Stiff, red brown silty clay.
1.71 – 3.00 Black silty peat, very woody with occasional sand.
3.01 – 8.30 Orange brown coarse sand and gravel.
8.31 – 8.50 Mercia Mudstone Group.

Borehole 30 (floodplain)
0.00 – 1.80 Olive grey silt.
1.81 – 3.00 Red brown fibrous peat, woody with hazelnut shells.

3.01 – 7.10 Orange brown coarse sand and gravel.
7.10 – 7.50 Mercia Mudstone Group.

Borehole 31 (floodplain)
0.00 – 1.50 Stiff, red brown silty clay, gleyed towards base.
1.51 – 2.50 Blue grey silt, woody.
2.51 – 3.40 Silty peat, mixed with sand.
3.41 – 5.50 Blue grey silt, woody.
5.51 – 6.00 Blue grey medium sand.
6.01 – 6.30 Orange brown coarse sand and gravel.
6.31 – 6.50 Mercia Mudstone Group.

Borehole 32 (floodplain)
0.00 – 1.50 Stiff, red brown silty clay, gleyed towards base.
1.51 – 4.50 Blue grey silt, woody.
4.51 – 5.20 Red brown fibrous peat.
5.21 – 5.60 Blue grey silt, woody.
5.61 – 6.70 Orange brown coarse sand and gravel.
6.71 – 7.00 Mercia Mudstone Group.

Borehole 33 (floodplain)
0.00 – 1.10 Stiff, red brown silty clay.
1.11 – 1.80 Red brown fibrous peat.
1.81 – 9.10 Orange brown coarse sand and gravel.
9.11 – 9.30 Mercia Mudstone Group.

Borehole 34 (terrace edge)
0.00 – 1.50 Stiff, red brown silty clay.
1.51 – 1.80 Blue grey silt.
1.81 – 3.50 Red brown fibrous peat.
3.51 – 10.70 Orange brown coarse sand and gravel.
10.71 –11.00 Mercia Mudstone Group.

Borehole 35 (floodplain)
0.00 – 1.50 Stiff, red brown silty clay, gleyed towards base.
1.51 – 4.80 Red brown fibrous peat.
4.81 – 10.60 Orange brown coarse sand and gravel.
10.60 – 10.80 Mercia Mudstone Group.

Borehole 36 (floodplain)
0.00 – 1.50 Stiff, red brown silty clay, peaty towards base.
1.51 – 1.90 Red brown fibrous peat, woody. Charcoal rich at 1.70m.
1.91- 10.60 Orange brown coarse sand and gravel.
10.60 – 11.00 Mercia Mudstone Group.

Borehole 37 (floodplain)
0.00 – 1.50 Stiff, red brown silty clay.
1.51 – 1.90 Red brown fibrous peat.
1.91 – 4.50 Orange brown pebbly sand.
4.51 – 11.50 Orange brown coarse sand and gravel.
11.51 – 11.70 Mercia Mudstone Group.

Borehole 38 (floodplain)
0.00 – 1.50 Stiff, red brown silty clay.

1.51 – 3.00 Red black silty peat, woody.
3.01 – 10.10 Orange brown coarse sand and gravel.
10.11 – 10.50 Mercia Mudstone Group.

Borehole 39 (floodplain)
0.00 – 1.50 Stiff, red brown silty clay, gleyed towards base.
1.51 – 2.30 Red brown fibrous peat, woody.
2.31 – 3.30 Grey silty clay, woody.
3.31 – 4.50 Grey sandy silt, woody.
4.51 – 9.40 Orange brown coarse sand and gravel.
9.41 – 9.50 Mercia Mudstone Group.

Borehole 40 (floodplain)
0.00 – 1.50 Stiff, red brown silty clay.
1.51 – 3.00 Grey silty clay.
3.01 – 6.50 Blue grey silty clay, very woody (esp. around 3.5m).
6.51 – 7.60 Orange brown coarse sand and gravel.
7.61 – 8.00 Mercia Mudstone Group.

Borehole 41 (floodplain)
0.00 – 1.50 Stiff, red brown silty clay.
1.51 – 4.70 Grey silt, peaty with woody fragments.
4.71 – 8.50 Orange brown coarse sand and gravel.
8.51 – 8.70 Mercia Mudstone Group.

Borehole 42 (floodplain)
0.00 – 1.50 Stiff, red brown silty clay.
1.51 – 4.50 Grey blue peaty silt, woody.
4.51 – 5.60 Red brown fibrous peat.
5.61 – 12.00 Orange brown coarse sand and gravel.
12.00 + Mercia Mudstone Group.

Borehole 43 (floodplain)
0.00 – 1.50 Grey silty clay.
1.51 – 4.50 Blue grey silty clay.
4.51 – 6.40 Blue grey silty clay, very peaty in places.
6.41 – 9.80 + Orange brown coarse sand and gravel.

EOBH (water problems)

7.2. Appendix 2: List of Samples Recovered and Specialist Analyses to be Undertaken on Deposits from Sturton Le Steeple.

Borehole	U100 #	Depth of Sample below Ground Level (m)	Pollen	Plants	Beetles	14C
3a	Core 1	1.70 – 2.35				
	Core 2	2.35 – 3.00	X	X	X	X
	Core 3	3.00 – 3.65				
	Core 4	3.65 – 4.30	X	X	X	
	Core 5	4.30 – 4.95	X	X	X	X
11a	Core 1	1.70 – 2.35	X	X	X	X
	Core 2	2.35 – 3.00				
	Core 3	3.00 – 3.65	X	X	X	
	Core 4	3.65 – 4.30				
	Core 5	4.30 – 4.95	X	X	X	X
19a	Core 1	1.50 – 2.15	X	X	X	
	Core 2	2.15 – 2.80				
	Core 3	2.80 – 3.45	X	X	X	
30a	Core 1	1.70 – 2.35	X	X	X	
	Core 2	2.35 – 3.00	X	X	X	X

Extra Notes

- Because of sample compression, a single U100 tube was typically pushed through 1m of soft sediment to get a complete U100 sample.

7.3. Appendix 3: Primary Pollen Count Data

Table 1: Results of preliminary pollen analysis of samples from Borehole 3A

	2.7-2.8m	4.25m	4.7m
TAXA SEEN (counts)			
Alnus glutinosa	18	2	7
Betula	3	-	-
Carpinus	1	-	-
Corylus-type	4	2	-
Pinus sylvestris	-	2	1
Quercus	2	-	7
Tilia	1	-	-
Hedera helix	1	-	-
Apiaceae	3	-	-
Cyperaceae	1	-	-
Poaceae	4	-	2
Rumex-type	1	-	-
Pteropsida (monolete) indet.	3	1	-
Indeterminable grains	1	-	2
SUMMARY POLLEN DATA			
Total Land Pollen and Spores sum	42	7	17
% *Alnus glutinosa* (alder)	43%	29%	41%
% other trees and shrubs	26%	57%	47%
% herbs and graminoids	21%	-	12%
% ferns and fern-allies	7%	14%	-
Estimated pollen and spore concentration (grains cm^{-3})	126 000	5250	19 800
NON-POLLEN PALYNOMORPHS SEEN			
Fungal remains	X	X	X
Microscopic charcoal	-	X	X

Table 2: Results of preliminary pollen analysis of samples from Borehole 11A

	3.25m	3.55m	4.85-4.95m
TAXA SEEN (counts)			
Alnus glutinosa	14	4	117
Corylus-type	1	1	9
Fraxinus	-	-	1
Pinus sylvestris	-	2	3
Quercus	6	1	21
Salix	-	-	1
Ulmus	1	-	4
Tilia	-	-	4
Hedera helix	1	-	1
Apiaceae	-	1	-
Artemisia-type	-	-	1
Asteraceae (Lactuceae)	-	-	1
Asteraceae (*Anthemis*-type)	-	-	1
Calluna vulgaris	-	-	1
Cyperaceae	9	2	1
Plantago lanceolata	-	-	1
Poaceae	-	1	-
Polypodium	-	-	1
Pteridium aquilinum	-	-	1
Pteropsida (monolete) indet.	62	7	9
Indeterminable grains	1	-	1
SUMMARY POLLEN DATA			
Total Land Pollen and Spores sum	94	19	178
% *Alnus glutinosa* (alder)	15%	21%	66%
% other trees and shrubs	10%	21%	25%
% herbs and graminoids	10%	21%	3%
% ferns and fern-allies	65%	37%	6%
Estimated pollen and spore concentration (grains cm^{-3})	282 000	33 250	311 500
NON-POLLEN PALYNOMORPHS SEEN			
Fungal remains	X	X	X
Rhizopod tests	X	-	-
Microscopic charcoal	-	-	-
Type 128	X	-	X

Table 3: Results of preliminary pollen analysis of samples from Borehole 19A

	1.90-1.95m	3.4-3.45m
TAXA SEEN (counts)		
Alnus glutinosa	23	15
Betula	3	1
Corylus-type	3	3
Quercus	5	3
Hedera helix	-	1
Cyperaceae	2	-
Filipendula	1	-
Poaceae	3	-
Rosaceae (indet.)	-	1
Polypodium	1	-
Pteridium aquilinum	1	-
Pteropsida (monolete) indet.	2	1
Indeterminable grains	4	3
SUMMARY POLLEN DATA		
Total Land Pollen and Spores sum	44	25
% *Alnus glutinosa* (alder)	52%	60%
% other trees and shrubs	25%	32%
% herbs and graminoids	14%	4%
% ferns and fern-allies	9%	4%
Estimated pollen and spore concentration (grains cm^{-3})	77 000	75 000
NON-POLLEN PALYNOMORPHS SEEN		
Fungal remains	X	X
Microscopic charcoal	-	X

Table 4: Results of preliminary pollen analysis of samples from Borehole 30A

	2.30m	2.90-3.00m
TAXA SEEN (counts)		
Alnus glutinosa	6	12
Betula	2	1
Corylus-type	4	4
Quercus	-	4
Tilia	1	-
Ulmus	1	1
Asteraceae (Lactuceae)	-	1
Caryophyllaceae	-	1
Cyperaceae	-	2
Filipendula	-	1
Large-pored Poaceae (> 8 µm annular diameter)	-	2
Phragmites-type Poaceae	-	3
Ranunculus acris-type	-	1
Pteridium aquilinum	1	2
Pteropsida (monolete) indet.	2	3
Sphagnum	-	1
Sparganium emersum-type	-	4
Indeterminable grains	-	-
SUMMARY POLLEN DATA		
Total Land Pollen and Spores sum	17	38
% *Alnus glutinosa* (alder)	35%	32%
% other trees and shrubs	47%	26%
% herbs and graminoids	-	29%
% ferns and fern-allies	18%	13%
Estimated pollen and spore concentration (grains cm^{-3})	11 500	66 500
NON-POLLEN PALYNOMORPHS SEEN		
Fungal remains	X	X
Microscopic charcoal	X	-
Foraminifera test linings	-	X
Type 128	-	X
Pre-Quaternary Spores	-	X

7.4. Appendix 4: Primary Insect Count Data

Table 5. The insect taxa recovered from the Sturton Le Steeple boreholes

	BH3A Core 4 4.1-4.3m	BH3A Core 5 4.35-4.75m	BH8A Core 2 2.4-2.8m	BH11A Core 1 2.05-2.35m	BH11A Core 3 2.4-2.65m	BH11A Core 5 4.55-4.95m	BH19A 2.25-3.45m	BH30A Core 1 2.15-2.35m	BH30A Core 2 2.65-3.0m
Trichoptera									
Coleoptera									
Carabidae									
Bembidion spp.	-	-	+	-	-	-	+	-	-
Pterostichus spp.	-	-	+	+	-	+++	-	++	-
Agonum spp.	-	-	-	++	-	-	-	+	-
Dytiscidae									
Hygrotus spp.	-	-	+	-	-	-	-	-	-
Hydroporus fuscipes (L.)	-	-	+	-	-	-	-	+	-
Colymbetes fuscus (L.)	-	-	+	-	-	-	-	-	-
Hydraenidae									
Hydraena spp.	-	+	+++	+++	-	++	++	-	+
Octhebius spp.	-	++	+++	+++	-	++	++	++	++
Limnebius spp.	-	+	+	+	-	-	-	+	+
Hydrophilidae									
Cercyon (aquatic) spp.	-	-	+	++	-	+++	-	+	+
Laccobius spp.	-	-	-	-	-	-	-	+	-
Hydrobius fuscipes (L.)	-	-	+	-	-	-	-	-	-
Cymbiodyta marginella (F.)	-	-	+	-	-	-	-	++	-
Staphylinidae									
Lesteva spp.	-	-	-	+	-	++	+	-	++
Olorphrum spp.	-	-	-	+	-	-	-	-	-
Oxytelus spp.	-	-	-	+	-	-	+	-	-
Stenus spp.	-	-	+	+	-	-	-	+	-
Paedarus spp.	-	-	+	-	-	-	-	-	-
Lathrobium spp.	-	-	++	+	-	-	-	+	-
Tachinus spp.	-	-	+	-	-	-	-	-	-
Aleocharinae gen. & spp. indet.	-	-	+	-	-	-	-	-	-
Elateridae									
Elateridae spp.	-	-	-	-	-	+	-	-	-
Helodidae									
Helodidae (?Cyphon spp.)	-	-	+++	++	-	+	-	-	-
Dryopidae									
Dryops spp.	-	-	-	+	-	-	-	-	+
Phalacridae									
Phalacurus spp.	-	-	-	-	-	-	-	+	-
Lathridiidae									
Lathridius spp.	-	-	-	-	-	-	-	-	-
Scarabaeidae									
Aphoidus spp.	-	-	+	-	-	+	-	+	-
Phyllopertha horticola (L.)	-	-	-	-	-	-	-	+	-
Chrysomelidae									
Donacia spp.	-	-	-	+	-	-	-	+	-
Plateumaris braccata (Scop.)	-	-	+	-	-	-	-	+	-
Phyllotreta spp.	-	-	+	-	-	-	-	-	-

Scolytidae									
Leperisinus varius (F.)	-	-	+	+	-	-	-	-	-
Erno	-	-	-	-	-	-	-	+	-
Curculionidae									
Apion spp	-	-	++	+	-	-	-	++	-
Bagous spp.	-	-	-	-	-	-	-	+	-
Notaris acridulus (L.)	-	-	-	-	-	-	-	+	-
Ceutorhynchus spp.	-	-	+	-	-	-	-	-	-

The numbers of individuals present for each taxa was estimated using the following scale: + = 1-2 individuals, ++ = 2-5 individuals, +++ = 10+. The taxonomy used for the Coleoptera (beetles) follows that of Lucht (1987).

Table 6. Summary of the nature of the insect faunas from Sturton Le Steeple

B'Hole number	Distribution in column	Degree of preservation	Comparative size of fauna	Water conditions	landscape	Overall potential of this location
BH3A	Only in bottom sample; preservation therefore partial	Poor throughout	limited	Slow flowing	No interpretable information produced	limited
BH8A	Single sample	Good	Large	Slow flowing	*Aphodius* dung beetles suggest grassland / pasture	good
BH11A	Throughout	Good	large	Slow flowing, muddy bank sides	*Aphodius* dung beetle suggest grassland / pasture. *Donacia* suggest sedges and burr reeds present in channels	Very good
BH19A	Single sample	Good	limited	Slow flowing	No interpretable information produced	moderate
BH30A	throughout	good	large	Slow flowing with muddy bank sides	*Aphodius* dung beetle suggest grassland / pasture. *Donacia* suggest sedges and burr reeds present in channels	Very good

Table 6 continued

Core number	Distribution in column	Degree of preservation	Comparative size of fauna	Water conditions	landscape	Overall potential of this location
BT 12/1	Throughout	Good	Limited	Slow flowing	*Apion* and *Sitona* 'clover' weevils suggest grassland or pasture: *Plateumaris* suggests reeds or sedges in channel	good
BT 10/2	Single sample	Good	Limited	No interpretable information	No indicators for surrounding landscape. *Donacia*, *Notaris* and *Limnobaris* suggest sedges and reeds in channel	good
BT 5/4	Insects only in bottom sample	poor	limited	No interpretable information	No interpretable information	poor
BT 5/3	Insects only in bottom sample	Good	large	Slow flowing water	*Aphodius* dung beetle and *Sitona* and *Apion* 'clover' weevils suggest grassland / pasture.	good
BT 5/2	Insets only in top sample	Poor	Single individual	No interpretable information	No interpretable information	poor
BT 5/1	Insects throughout	Moderate	Moderate	Slow flowing water	*Limnobaris* suggests sedges in channel	moderate
BT 2/4	Single sample	Moderate	Small	Faster waters (Elmid)	No interpretable information	moderate
BT 2/3	Throughout	Good	Large	Slow flowing waters	*Aphodius* dung beetle and *Sitona* 'clover' and Gynemtron 'plantain' weevils suggest grassland / pasture.	good
BT 2/2	Throughout	Good	Large	Slow and fast flowing	*Plateumaris* and *Doncia* indicate sedges and reeds in channel	good
BT 2/1	Throughout	Good	Large	Slow flowing	*Aphodius* dung beetle and *Sitona* 'clover' weevil suggest grassland / pasture	good
BT 12/2	No insect remains	-	-	-	-	poor
BT 12/1	No insect remains	-	-	-	-	poor
BT 6/2	Throughout	Good	Large	Slow flowing	No interpretable information	good
BT 6/1	Throughout	Good	Large	Slow flowing	Limited interpretable information but *Aphodius* may suggest grassland / pasture.	good

7.5. Appendix 5: Primary Waterlogged Plant Remains Data

Table 7

Core Code Depth (m)	BH 3A Core 4 4.10 – 4.30 m	BH 3A Core 5 4.35 – 4.75 m	BH 8A Core 2 2.40 – 2.80 m	BH 11A Core 1 2.05 – 2.35 m	BH 11A Core 3 3.40 – 3.65 m	BH 11A Core 5 4.55 – 4.95	Core 19A 1.95 – 2.15 m	Core 19A 3.25 – 3.45 m	BH 30A Core 1 2.15 – 2.35 m	BH 30A Core 2 2.65 – 3.00 m	Habitat Code	
LATIN BINOMIAL												**ENGLISH COMMON NAME**
Ranunculus subgenus BATRACHIUM (DC.) A. Gray	-	-	-	-	-	-	-	-	1	-	2, 3, 4	crowfoot
Urtica dioica L.	-	-	-	1	-	-	-	-	-	-	1, ~2	common nettle
Betula sp.	-	-	-	++	-	-	-	-	-	-	1, 2	birch
Alnus glutinosa (L.) Gaertner – seed	-	1	+++	+++	++	-	+++	+++	1	-	1, 2	alder
Alnus glutinosa (L.) Gaertner – stalk of inflorescence	1	-	++	-	-	-	-	+	-	-	4, 5	alder
Corylus avellana L. - nut	-	-	-	-	1	-	-	-	-	-	1, 6	hazel
Rubus sp.	-	-	-	-	-	-	1	-	-	-	4	bramble
Oenanthe cf. *fistulosa* L.	-	1	-	-	-	-	-	-	1	-	2	tubular water-dropwort
Lycopus europaeus L.	-	-	-	-	1	-	-	-	-	-	2, 7, 8	gypsywort
Sambucus nigra L.	-	-	1	-	-	-	-	-	-	-	1, 3, 4, 6	elder
Carex sp. – 2-sided	-	-	-	-	-	++	-	-	-	-	4, 5	sedge
Carex sp. – 3-sided	-	-	-	-	-	+	-	-	1	-	4, 5	sedge
Sparganium spp.	-	-	-	-	-	-	-	-	+	-	7	bur-reed
UNIDENTIFIED – buds[1]	-	-	-	-	-	-	-	+	-	-	1	-
UNIDENTIFIED – bud scars (detached)	-	-	-	++	-	-	-	+	-	-	1	-
UNIDENTIFIED – broad leaf fragments	-	-	-	-	-	-	-	-	-	-	1	-
UNIDENTIFIED – thorn (cf. Rosaceae type)	-	-	-	1	-	-	-	-	-	-	-	-

In all cases sample volume = 150 ml – typically between 25% – 50% of a flot was scanned for waterlogged plant remains

Key for semi-quantitative scores: 1 = 1-2, + = > 2 but < 10, ++ = >10 but <25, +++ >25 but less than 50

Key for habitat codes: ~ = can sometimes occur - = no particular specific habitat 1 = woodland 2 = wet places 3 = nitrogen rich soils 4 = waste places 5 = damp places 6 = scrub 7 = ponds, lakes and/ or rivers 8 = fens

Shading indicates those samples that appear to have good to high potential to produce waterlogged plant remains of interpretable value

[1]All unidentified buds, bud scars and broad leaf fragments are potentially identifiable – but were not investigated further for this evaluation.