

**LOWER WITHAM ENVIRONMENT SCHEME WORKS:
SECTIONS 11 AND 16 EVALUATION,
WASHINGBOROUGH PUMPING STATION
AND SANDHILL BECK, RIVER WITHAM, LINCOLNSHIRE**

**ARCHAEOLOGICAL EVALUATION
REPORT**

Site code LWES 04
NGR TF 0416 7138 – TF 0429 7109

Report prepared for Bullen Consultants Ltd.
on behalf of the Environment Agency

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INTERVENTION: L19764

EXCAVATION: L19765

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Summary

- *A programme of archaeological evaluation was undertaken for Bullen Consultants on behalf of the Environment Agency, to assess the potential of Sections 11, 16 and a compound area at Washingborough pumping station in advance of floodbank improvement works.*
- *Previous investigations had demonstrated the likelihood that a Late Bronze Age – Early Iron Age site existed within the vicinity of the pumping station.*
- *An initial detailed gradiometer survey of the fields either side of the Section 16 works highlighted several pit-like anomalies, former channels, possible ridge and furrow and modern land drains.*
- *The trenching exposed a series of peat horizons, including a layer containing substantial quantities of Late Bronze Age plain ware pottery, animal (and human) bone, and several worked objects, one of bronze and two of bone. This layer appeared to be associated with a number of posts and stakes, possibly forming a series of jetties that traversed alder carr and reed marsh to an open channel to the south.*
- *The evidence suggests that a settlement of some size and importance lay on a possible island to the north of a former channel. Based on previous fieldwalking results, it would appear that the site mirrors a similar settlement on the south bank of the river, suggesting the potential for a ferry crossing at this location in the Late Bronze Age.*
- *Evidence of peat desiccation within the trenches suggests that the site is gradually becoming de-watered. This will have a detrimental effect on the archaeology, if this situation is allowed to continue.*

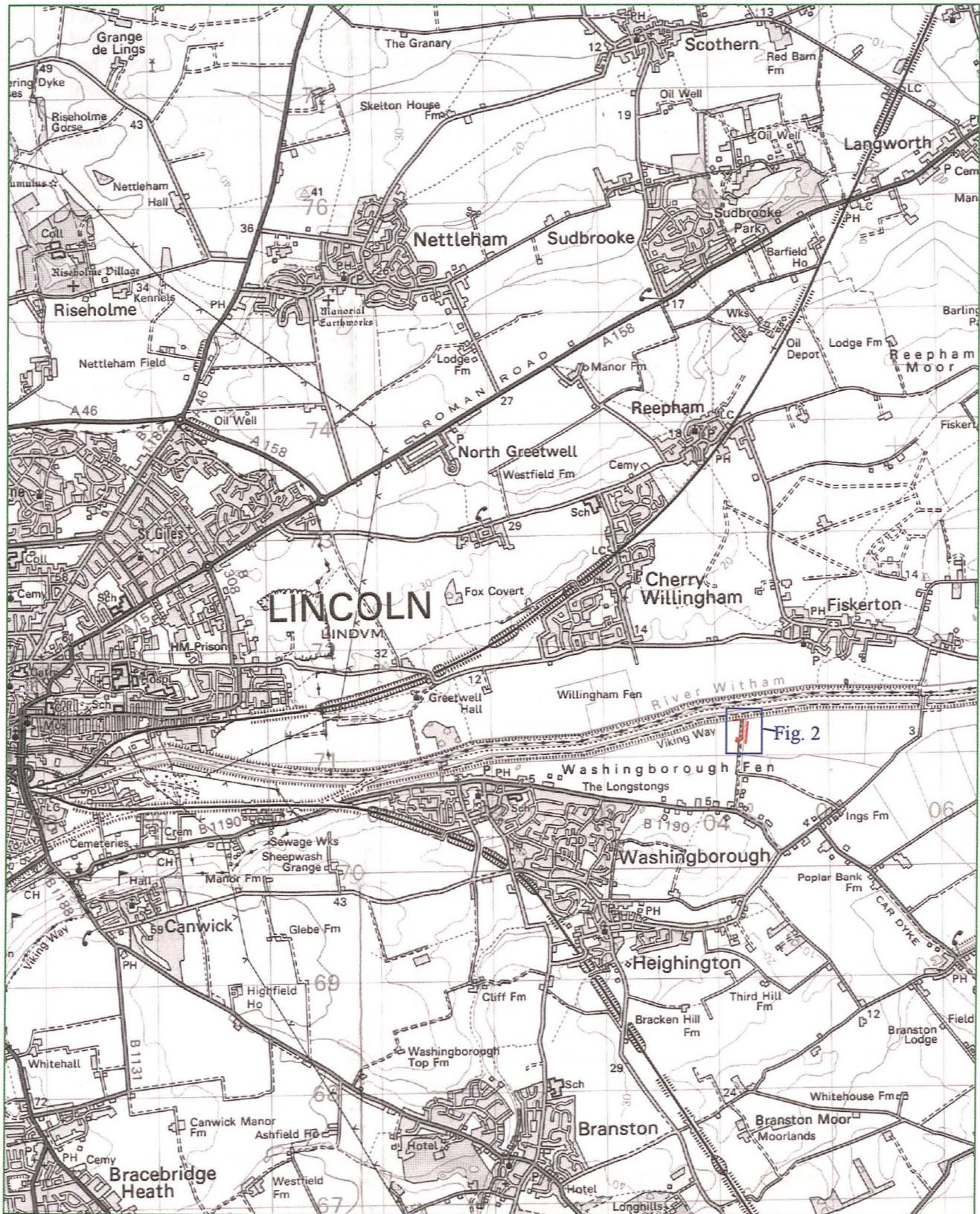


Figure 1: Location of the Section 11/16 evaluation works. The trenches are shown in red and the area reproduced in fig. 2 is outlined in blue). Image reproduced at 1: 50, 000.
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1.0 Introduction

Pre-Construct Archaeology (Lincoln) (hereafter PCA) was commissioned by Babbie Brown and Root on behalf of the Environment Agency to implement a programme of archaeological investigation associated with long-term flood bank reconstruction works along various sections of the Lower River Witham. These works were undertaken following consultations with the Senior Built Environment Officer at Lincolnshire County Council (hereafter LCC).

This report represents an impartial statement on the results of the evaluation works for the Sections 11/16 compound area and Sections 11 and 16 of the Lower Witham flood defence works. It complies with the recommendations of *Management of Archaeological Projects* (English Heritage, 1991), *Standards and guidance for archaeological evaluations*, (IFA, 1999), and the Lincolnshire County Council document *Lincolnshire Archaeological Handbook: a manual of archaeological practice* (LCC, 1998).

Copies of this report will be deposited with the Environment Agency, Bullen Consultants, May Gurney and LCC. PCA have retained a copy for their own records.

2.0 Site location and description

Washingborough is approximately 3km east of Lincoln in the administrative district of North Kesteven. The area being considered in this report lies to the south of the modern River Witham, south of the South Delph, and adjacent to Washingborough Pumping Station (fig 2).

The site lies on an alluvial drift geology with some peat lamination, the uppermost layer of which is degraded peat with occasional sand banks. This material is over a solid geology comprising Great Oolite Limestone and Upper Estuarine Beds (clays with limestone) (BGS 1973).

The National Grid Reference for the area investigated is TF 0416 7138 - TF 0429 7109 (northwest to southeast corners).

3.0 Background

The works at Sections 11 and 16 have been timetabled into the 2004 programme of a long-term scheme of flood bank regeneration that is being undertaken by the Environment Agency. An initial archaeological desktop assessment by PCA (Rylatt 2001) highlighted the two sections as being of high potential for containing archaeological deposits of importance.

Initially it was proposed that a watching brief during the associated groundworks would suffice, but following a meeting between Babbie Brown and Root, LCC, Bullen Consultants and PCA, this was revised to a series of trial trenches - to evaluate the actual archaeological potential in advance of works. A compound that would be constructed to the south of Section 16 (Section 11/16 compound) was also included within this evaluation.

4.0 Archaeological and historical background

A detailed report on the archaeological and historical background to the area has already been undertaken (Rylatt 2001); therefore only a précis of the evidence is presented.

The area was peopled from at least the Late Mesolithic period onwards, with flint tools and debitage recovered to the north-west of the pumping station, as well as at various locations within the surrounding fields. A polished stone axe from the village of Fiskerton and another from the flood bank to the west of Section 11 are indicators of activity during the Neolithic period. Flint scatters of Late Neolithic to Bronze Age date have also been recorded.

From the later Neolithic onwards, extensive cemeteries of round barrows began to appear throughout the Witham valley; with a cemetery of at least 30 barrows known in Washingborough Fen to the south. A further cemetery appears to lie to the north of the river.

By the Bronze Age, votive artefacts were being deposited within the floodplain; including an axe hammer from St Clement's Church graveyard in Fiskerton, a bronze dirk from the river itself, and a hoard of Late Bronze Age socketed axes and a stone axe mould from Washingborough Fen, some 400m to the south-east of Section 16.

An evaluation at the toe of the south bank of the South Delph, approximately 700m to the east of the pumping station, was carried out in advance of flood defence works by the Environment Agency in 2002. The trench revealed a single post of unknown date, along with a single sherd of Middle Bronze Age pottery and a late Neolithic worked flint (Allen 2002).

An evaluation was carried out at the Washingborough pumping station in 1973 (Coles, *et al.*, 1979) following the discovery of prehistoric pottery, animal bone, worked wood, and a decorated antler cheekpiece during drainage works in 1972. This site has been linked to the Fiskerton early Iron Age causeway; as a possible precursor to this votive site (Field & Parker-Pearson 2004). However the recovery of over 300 sherds of Late Bronze Age/Early Iron Age pottery from the three fields to the east of the pumping station raises the possibility that there was an adjacent settlement.

The causeway at Fiskerton, some 750m to the east (downstream) was discovered in 1980 when a local farmer recovered a number of objects, including bone points and a sword handle. Excavations in 1981 revealed a timber causeway associated with numerous prestigious artefacts dating from the Early Iron Age (built and rebuilt between 456 – 317BC) (*ibid*). In advance of floodbank works in 2001, PCA were invited by the Environment Agency to undertake the excavation of a further section of the causeway (Rylatt forthcoming). This recovered further artefacts, including two logboats (one of which had been pegged against the structure).

The structure seems to have been abandoned in the 4th century BC, although it was reused during the Roman period as a votive site; a number of whetstones, pottery vessels and bronze bowls were deposited immediately to the east of the causeway.

Other Romano-British material from the area (mostly recovered from the north of the present river channel) includes a rubble and roof-tile 'hard' for loading and unloading vessels, located 750m to the northeast along the side of a former channel of the Witham, at Perrins Cottages (Palmer-Brown 1994). Pottery of Roman date was also recovered during excavations at the site of the medieval manor of Fiskerton (Palmer-Brown 2000).

5.0 Methodology

Initially a fluxgate gradiometer survey was used to assess the potential using non-intrusive means (See Appendix 2) on fields to the west and east of the Section 16 works. Pre-Construct Geophysics undertook the survey on the 24th March, 2004. Probable former channels were recorded in both survey areas, and several pit-like anomalies were also noted. Possible ridge and furrow and modern land drains were recorded. Following completion of the survey, it was recommended that a programme of trial excavation should take place prior to both the compound and the flood bank works.

The excavations took place over four days (10th – 13th May) and were supervised by Simon Savage, assisted by Sean Jackson and Dave Bower. Alex Brett undertook the trenching for

Sections 11 and 16 with the assistance of both Sean and Dave, over six days (20th May – 27th May).

Archaeological trenches were stripped of topsoil and upper peat using a 360^o excavator with a smooth ditching bucket.

The archaeological fieldwork entailed a thorough inspection of the machine-excavated areas, and the production of plans at scale 1:20 or 1:50, as applicable. Archaeological deposits identified by this process were subjected to limited excavation in order to assess their nature, dimensions, and to attempt to recover datable materials. These investigations resulted in the production of written descriptions of each layer upon standard context recording sheets. Colour photographs and scale drawings, in both plan and section, compliment these accounts. All trenches were 3D located by May Gurney's surveyors using an Electronic Distance Measurer (EDM).

5.1 Sections 11/16 compound

Two trenches were excavated to evaluate the footprint of a proposed compound. These comprised a T-shaped trench measuring 32m north-west – south-east and 18m south-west – north-east, and a smaller trench orientated north-east – south-west, 7m long.

5.2 Section 16

The Section 16 works comprised the excavation of two trenches, both on the toes of the flood banks that straddle the north – south running Sandhill Beck. The westernmost trench was some 195m long, and the eastern trench was over 230m. The machine excavation works exposed a number of artefacts, including prehistoric pottery, animal / human bone and worked wood. Following a site meeting between representatives from Lincolnshire County Council, Bullen Consultants and Pre-Construct Archaeology (Lincoln), it was decided that some further investigation, in the form of hand-excavated slots, should take place to put the cultural materials exposed into a reliable context.

Four hand-excavated slots (Slots 1 – 4) were dug within the western trench, and two (Slots 5 and 6) within the eastern trench. The methodology of excavation and recording was revised following the results from Slots 1 – 2, and part excavation of Slot 3. Initially, all artefacts were recovered as bulk materials from each layer, however following a review of the volume and importance of the material the author advised the site supervisor to individually locate and 3-D record all subsequent artefactual remains.

5.3 Section 11

Three trenches were excavated within the area of the Section 11 works. The main trench, which was 55m long, ran east-north-east – west-south-west to the west of the pumping station. Two further trenches were added to the east of the pumping station (10m and 11m long) within areas disturbed by the construction of the existing pumping station, and its predecessor. A hand-dug slot (Slot 7) was excavated within the main trench, approximately 8m from the east end, to ascertain whether the archaeological horizon exposed within the Section 16 trenches extended into Section 11.

6.0 Results

6.1 Section 11/16, Compound (figs. 3 and 4)

Trench 1

This T-shaped trench was found to lie on the southern sand levee of a former channel of Bronze Age date. A single pit containing red deer antler pieces was exposed on the sandbank.

In this section, the topsoil 1100 consisted of a very dark brown sandy peat-derived loam, incorporating heavy root growth, and containing very occasional small rounded pebbles.

Sealed below the modern topsoil, was a very dark reddish brown humified peat 1102, the upper part of which was desiccated, and which contained small quantities of natural wood. This layer was present across most of the excavated area, excluding a thin strip along the northeast side of the trench. Here, the topsoil stripped onto clean mottled orange/yellow medium sand 1108, which contained very occasional small patches of blue clay.

In the south-west arm of the trench, sand 1108 was seen to drop steeply away to the southwest, and a series of peat horizons was present between this and 1102. Immediately below 1102, was 1103, a clean, mid-brown silty peat, which in turn sealed a similar peat 1104, which contained frequent small shell fragments. At the SW end of the trench, 1104 stripped onto a fine mid grey silty sand 1107 (in the centre of this arm of the trench health and safety reasons prevented the full removal of context 1104).

Two further layers were seen in this arm of the trench, both locally deposited above the yellow sand 1108 at the north-east end. Layer 1105 was a very woody dark brown peat, which appeared to represent the remains of tree roots growing on this side of the sandbank 1108. Layer 1106 was a fine, white-speckled mid grey mottled silty sand, the product of standing water in this area.

In the south-east arm of the trench, sand 1108 again dropped steeply away, this time in a south-easterly direction, and a similar series of peat horizons were present between this and 1102. Again, immediately below 1102, were 1103 and 1104; however below 1104 was 1112, mottled light grey silty sand containing frequent small bark fragments. Immediately above the sand 1108, and below 1112, was a thick layer, similar to 1105, but containing occasional sand lenses 1109. Like 1105, 1109 appeared to represent the roots of trees growing on the side of the bank, and removal of this material resulted in an extremely uneven surface, suggesting that the trees were well established and deeply rooted. Within this area, an oval pit was identified [1111], filled by 1110, a coarse woody peat similar to 1109, from which a large red deer antler fragment was recovered. Other large pieces of antler were recovered during the topsoil strip from this vicinity, probably from a higher level within the pit.

Trench 2

The small evaluation trench lay along the southern edge of the former Bronze Age channel, adjacent to the sandbank in Trench 1. A series of peat horizons were noted, and these were devoid of artefacts.

The same series of topsoil and peat layers were observed, at similar depths. However, at the south-west end of the trench a grey sand layer was exposed, context 1107 (the same as in Trench 1) Close inspection here showed this layer to be coarser and less silty than it was in Trench 1.

6.2 Section 16: west limb (figs. 5 – 8)

A total of four slots were excavated in the western limb of the Section 16 evaluation, all within the north half of the trench. Slots 1 – 3 were all approximately 3m long (north – south) and c.2m wide (east – west); Slot 4 measured 3m north – south and 1m east – west.

Slots 1 – 3 contained a layer of dumped material of Late Bronze Age date. A number posts may be evidence of structures or jetties crossing the marginal land to the channel to the south. Slot 4 lay within the probable contemporary channel and contained a later ditch of relatively modern date.

Slot 1 (fig. 5)

Directly below the flood bank deposits 1600 lay a brown reed peat horizon, 1604, which exhibited signs of desiccation in its upper levels. A band of cultural material within 1604 was noted, however the excavator failed to differentiate this layer during excavation. The layer contained prehistoric pottery, animal bone and fragments of wood (including worked and burnt pieces). A number of vertical timbers were also exposed, including worked posts and the bases of two trees (probably alder).

Slot 2 (fig. 6)

The flood bank 1601 was shown to overlie a desiccated peat horizon 1611, within which a dark linear band was observed. Although the presence of charred pieces of wood probably assisted the formation of this layer, it has been suggested that the dark spread reflects a dryer period, when soils were beginning to form over the wetter ground below (J. Rackham *pers. comm.*). A quantity of pottery (prehistoric) and animal bone was recovered from this context. 1611 sealed an earlier peat horizon 1612 which also contained pottery and animal bone. This overlay a further peaty horizon 1613, from which animal bone was recovered and a number of wooden stakes were observed. A peat containing abundant seed remains 1614 was exposed below 1613. A small slot was excavated into this horizon, but no artefacts were retrieved.

Slot 3 (fig. 7)

Similar results were obtained within Slot 3, with the flood bank 1600 overlying a peat horizon 1628, the uppermost levels of which were significantly dryer than the lower peat. Within the layer was a shelly lens that may be the remnant of a later, Iron Age, channel (J. Rackham *pers. comm.*). The majority of the cultural material was found below this layer, again mainly pottery and animal bone. Several other artefacts are worthy of note, including a long bronze pin, worked bone awl, worked bone weave beater and a human skull.

A number of posts and stakes were also found within this layer. The excavation of one post showed that it was driven through 1628 and into the layer below, 1632. Layer 1632 was brown – grey peaty silt that did not contain any artefacts.

Slot 4 (fig. 8)

The flood bank layer overlay 1633; a peat horizon containing sherds of prehistoric pottery and animal bone. Layer 1633 sealed an alluvial deposit of brown/grey silt 1636. Cutting both layers was a linear ditch running approximately north – south, [1635]. This ditch was backfilled with blue/grey clay silt with occasional sand lenses (1638) under a deposit of grey/brown clay silt 1634. A single (residual) piece of prehistoric pottery and a fragment of coal were recovered from the upper fill of the ditch.

6.3 Section 16: east limb (figs. 9 – 10)

Both hand-excavated slots measured c.3m north – south and 1m east – west. The northernmost slot (No. 5) contained numerous prehistoric artefacts, whilst Slot 6, some 100m to the south, contained but a few pieces of prehistoric detritus, and is likely to have been positioned within the contemporary channel.

Slot 5 (fig. 9)

The slot was hand-excavated from the base of the flood bank deposits down through a peat layer 1653 that contained the base of a former tree, probably alder. Although the majority of artefacts recovered from the slot were attributed to the base of this layer, it is the opinion of the author (and excavator) that they are more likely to be from the top of layer 1654. Layer 1654 comprised a peat horizon with frequent reeds, wood fragments (many burnt), animal bone and pottery.

Slot 6 (fig. 10)

Two peat horizons were exposed (1656 – 1657) overlying a series of more silty peat lenses (1658 – 1660). A total of five artefacts were recovered from peat horizon 1659 (two sherds of LBA pottery and three pieces of animal bone), and two pieces of wood (probably driftwood, rather than worked timbers) were also exposed within this layer. The deposits encountered suggest the slot was located within the former channel rather than the marginal carr and reed swamp.

6.4 Section 11 (fig. 11)

A single slot (Slot 7) was excavated to investigate whether the archaeological deposits exposed in Section 16 extended into the Section 11 works. The slot did indeed expose a similar cultural horizon, with a number of freshwater oyster shells present.

Slot 7 was excavated towards the east end of the trench, to the west of the pumping station. It exposed a series of peat horizons (1122 – 1124), all containing varying amounts of freshwater oyster shells. The lowest of these layers, 1124, contained some pottery and animal bone, along with oyster shells, and several heat-shattered stones. The presence of the shells within this layer of dumped material (similar to the cultural horizon exposed in Section 16) can be explained in two ways; either they are evidence of human discard, and therefore dietary habits, or they are evidence of a natural underwater shell bed, into which the refuse was thrown.

7.0 Discussion and conclusions

The evaluation works present an image of the local landscape during the Late Bronze Age, through a study of the palaeoenvironmental and archaeological evidence

Analysis of the pottery shows that the site, exclusively, appears to have been inhabited during the Late Bronze Age (approximately 3000 years ago). The pottery comprises entirely post-Deverel-Rimbury plain wares, characterised by thin-walled jars and bowls. At this time vessel types began to be more diverse and finer, suggesting functional changes and character and changes in its social use (Appendix 3). Dating is problematic; at Reading Business Park it has been shown that plain wares appeared between 1400 and 1200 BC, whilst excavations at Hibaldstow showed the vessels continued in use in the 8th century BC. Based on previous sites it is plausible to attribute a date in the earliest parts of the Late Bronze Age to the pottery, and by inference the site. The vessels are mainly of a domestic character, with large unabridged sherds present, which are unlikely to have been exposed for extended periods of time prior to deposition. It is likely, and this is born out by the palaeo-environmental evidence, that the material was thrown as waste directly into marginal wet ground adjacent to the focus of activity.

The dating of the pottery suggests that the site was inhabited for a relatively short period of time, perhaps several hundred years. Nearly 300 sherds of pottery were recovered from the small slots excavated; if this extended to cover the whole area of works, there is the potential for several tens of thousands of pottery sherds to survive.

The animal bone assemblage was large (360 pieces) and exhibited a bias towards cattle, with pig also present in some numbers (Appendix 4). Scarcer remains included sheep, red deer, horse, fish (such as pike) and bird (swan). There is considerable evidence for butchery cuts on the bones, reflecting the jointing and division of carcasses using sharp knives. Several pieces of bone seem to have been sawn. Although it was suggested these might be later, and therefore intrusive, saws have previously been dated to c.1300BC (Adkins and Adkins 1999).

Several finds of special interest were recovered from the cultural layer and sent to the LCC Conservation Laboratory at Lincoln: specifically a bronze object and two worked bone

objects. As these require stabilisation and conservation they were not available for specialist analysis at the time of reporting, and will be attached as an addendum at a later date. Some analysis / interpretation is possible however: the bronze object is a relatively long pin (c.10cm), with a flattened head. Such examples are relatively rare, the majority of this date being ring-headed (Adkins & Adkins 1999). The two bone objects appear to be a bone point or awl, and a spatula. The spatula may have functioned as a pottery-working tool (some of the pottery does exhibit signs of burnishing), a tool for softening and burnishing leather, or in archery (*ibid.*). An alternative is that the spatula may have been a weaving sword, used for flattening the weave on a vertical loom. DJ Rackham as part of the animal bone assessment examined several worked bones. These included a bone point and a piece of cattle-size long bone that appears to have been shaved down one side (suggesting that the fragment was discarded during the making of a tool). The tooth of a boar (possibly a wild boar) was highly polished, suggesting it may have been an artefact in its own right.

A number of heat-shattered river pebbles were recovered from the cultural horizon within the peat (Appendix 8). The heating of stones in a prehistoric context is indicative of heating of water, possibly for cooking purposes or for bathing (saunas).

The presence of human bone within the artefact corpus is unusual, especially as the other cultural material from the site is strongly suggestive of domestic waste. Elements of three individuals were recovered from the evaluation and sent to a human bone specialist (Appendix 5). The skull of a young woman (18 – 30), the right thigh bone of an adult, and a piece of skull from a juvenile or adult were found at various locations within the peat in the Section 16 western evaluation strip. A further six pieces of human bone were recorded within the animal bone assemblage (Appendix 4). These included two femurs, one from a juvenile and the second from an adult, a skull fragment, a metapodial and a tibia fragment. Normally one would expect human remains to be treated in a 'special' way, although the deposition of human remains, especially skulls, within watery contexts is known from at least the Neolithic period, and appears to become more prevalent in the Late Bronze Age – there are a number of radiocarbon dated skulls from the River Thames (Bradley 1998, 109).

The wood assemblage recovered is biased towards the selected posts and stakes extracted during the evaluation works (Appendix 6). Unusually, most of the pieces appear to be species other than oak, probably reflecting the local availability of species such as alder. This also agrees with current views that throughout the British Isles the majority of the oak woodland and mature alder had been destroyed by the Bronze Age period, making oak a relatively rare resource. A number of the posts recovered for analysis were probably coppiced. Once chopped down, alder grows swiftly from the hewn stump, shooting rapidly upwards, producing an unblemished trunk devoid of knots and twists (*M. Taylor pers. comm.*). This secondary growth, which may be over 100 years old at the time of felling, provides the perfect material for stakes or posts. The palaeo-environmental evidence complements this, indicating that the majority of the surrounding landscape comprised alder carr. Remnants of tree stumps (probably alder) within several of the hand-excavated slots provide direct evidence of tree growth during this period. A single timber had been radially split and trimmed to form a plank. The plank may be evidence of a superstructure associated with the posts, however it is also possible the fragment was simply deposited with the pottery and animal bone, having been removed from elsewhere; i.e. the proposed settlement site to the north of the pumping station. A note of caution however regarding the wood; it was noted during analysis that some posts were considerably harder than others, a sign they are more modern. Without a comprehensive programme of dating, it will prove very difficult to separate the Bronze Age posts from later examples.

The palaeoenvironmental work undertaken by James Rackham has been particularly useful in providing a landscape context for the site during its establishment and subsequent lifespan. The results indicated the main area of human influence lay to the north of the site, probably

between the areas of the North Delph and the modern-day canalised River Witham further north. This specified area was probably a sand levee to the north of the marginal land and open channel (see figure 12 for a schematic reconstruction of the former landscape). Section 11 probably also lies within this marginal land.

The trenching for the 11/16 compound exposed the southern levee for the contemporary channel within the centre of the compound area. North of this lay the Bronze Age channel, whilst to the south lay the lower floodplain that gradually became inundated during the Iron Age by the rising freshwater levels, forming reed marshland (and subsequently peat bogs). A potential later Iron Age channel, that has since been largely destroyed by de-watering and ground reduction (chiefly by ploughing) was evidenced by a shell bed; noted within the Section 16 (western limb) machine-excavated trench (*J. Rackham pers. comm.*). The exposure of a shell bed in Slot 7 may also be evidence of this proposed channel in Section 11, though this is more speculative.

The majority of the cultural material identified and retrieved from the site came from a specific layer; namely a peaty horizon sandwiched between further peat horizons to the north of the Bronze Age channel. This layer seems to represent a period of deposition within an area of marginal (or liminal) land to the south of the main area of activity (north of the modern pumping station). Although little material was recovered to the south of the former channel (compound evaluation works), scatters of pottery and animal bone perhaps indicate that the settlement near the pumping station was mirrored by a second settlement to the south of the former river. If this is the case, then it is likely that this was previously a ferry crossing point in the Late Bronze Age.

Rackham noted at the time of his site visit that desiccation of the peat was continuing and had not been halted by the flood bank construction. Although the process has been slowed, in time any organic material associated with the site will be compromised, and possibly destroyed. In the surrounding fields this process has been accelerated through modern ploughing and de-watering, to the point that the cultural horizon may have now disappeared, being incorporated into the plough zone.

A possible factor that contributed to the abandonment of the site was the rising water table, resulting in the formation of freshwater peat throughout the floodplain and fens to the south-east. Certainly, further south it has been noted that many low-lying islands, occupied during the Neolithic and Bronze Age, were inundated or severely diminished by the Iron Age period (Coles and Hall 1998).

From the available evidence it is clear that the Section 16 evaluation trenches crossed the former Bronze Age channel to the south, with more marginal land (reed swamp and alder carr) to the north, and a possible sand island north of the works (north of the pumping station). Timber posts and stakes that may be the remnants of jetties and structures crossing the wet, boggy ground to provide access to the open channel to the south covered the marginal land. Evidence of water transport, in the form of log boats and rafts, may be found adjacent to the jetties. Further north, on the inner bend of the Bronze Age channel, north of the pumping station, it seems likely that a settlement of some size and importance existed. The exposure of the southern bank of the channel indicates that in the Bronze Age the river was over 100m wide. It is likely there were two settlements facing each other across the watercourse at this time.

8.0 Effectiveness of methodology

This element of the scheme allowed a rapid and cost-effective means of evaluating the archaeological resource in advance of future flood bank defence improvements. The results have shown that significant archaeological deposits exist within the footprint of the works at

both sections, and that an ongoing de-watering process and future compaction associated with the bank improvements will be detrimental to this resource.

9.0 Acknowledgements

Pre-Construct Archaeology (Lincoln) would like to thank Bullens Consultants (on behalf of the Environment Agency) for this commission, in particular Mr Peter Senior, for his assistance throughout the works. May Gurney are thanked for their co-operation and assistance, especially for providing a 360⁰ excavator and surveyors who located the initial artefacts recovered during the machine excavation and mapped the various trenches. The various Project Officers and archaeologists involved are also thanked for all their hard work throughout the project. Jo Hambley of Heritage Trust for Lincolnshire is thanked for providing the archive for the 1973 evaluation works. Finally, the various specialists; namely Maisie Taylor (waterlogged wood), Dr Carol Allen (prehistoric pottery), James Rackham (animal bone and palaeoenvironmental remains), Alan Vince (special finds) Jim Rylatt (worked stone) and Mouli Start (human bone), are all thanked for their contributions and comments.

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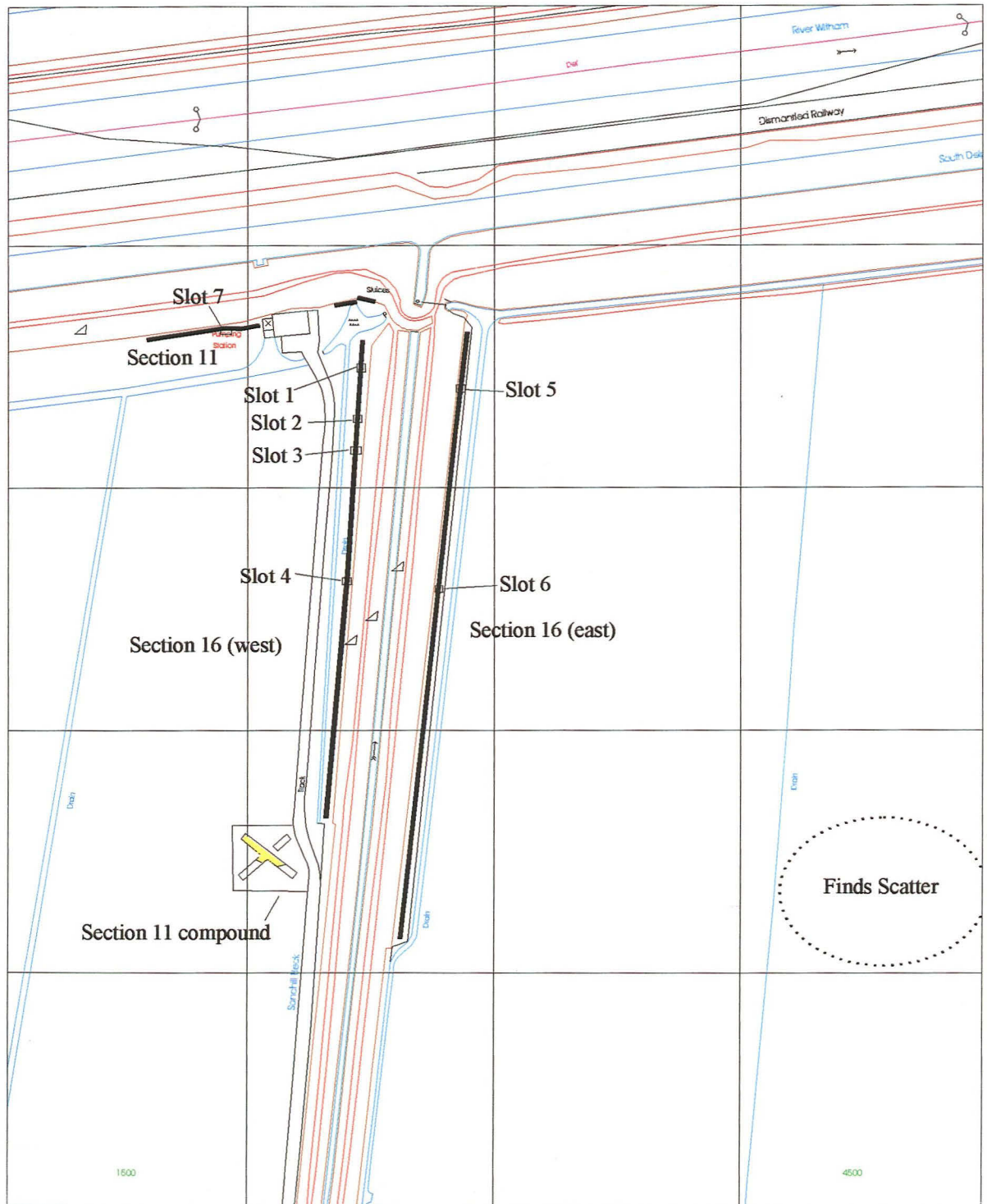


Fig. 2: Location of evaluation works at scale 1:2500. The finds scatter shown in the lower right quadrant consisted of pottery, animal and human bone dated to the Late Bronze Age - Early Iron Age (information courtesy of Peter Heykoop, Washingborough Archaeology Group)

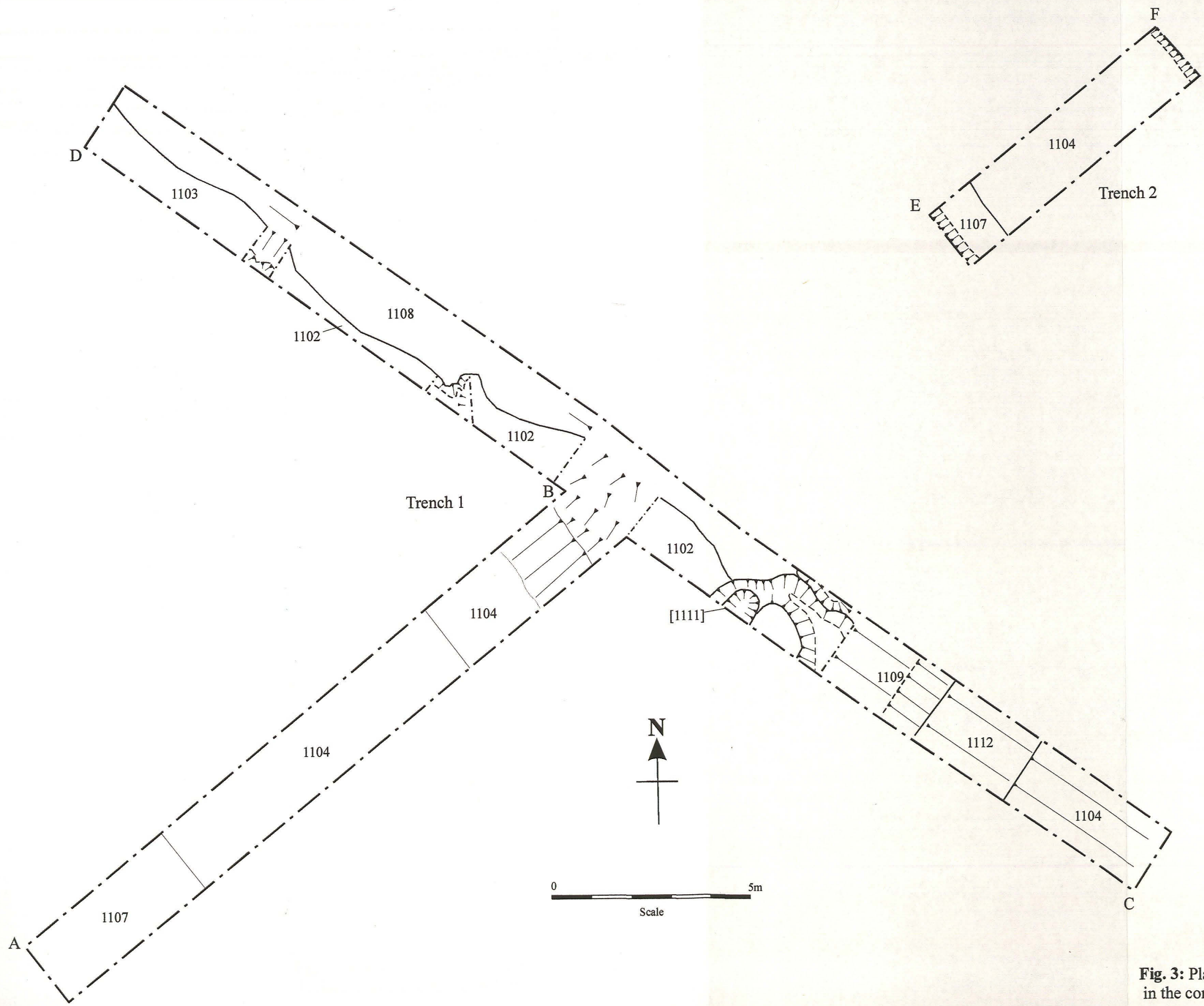


Fig. 3: Plan of the evaluation trenches excavated in the compound area. Scale 1:100

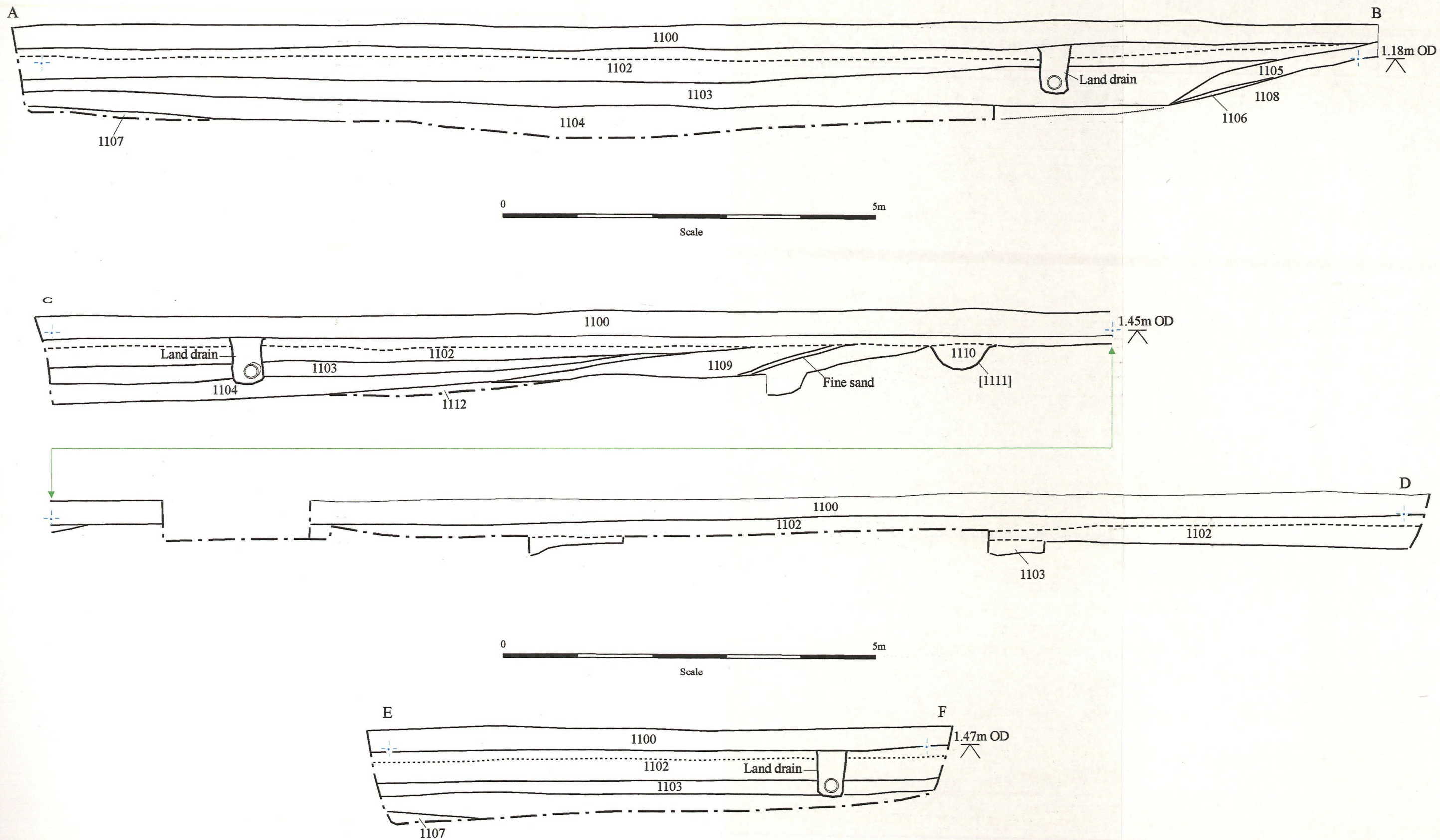


Fig. 4: Sections of the evaluation trenches excavated in the compound area. Scale 1:50

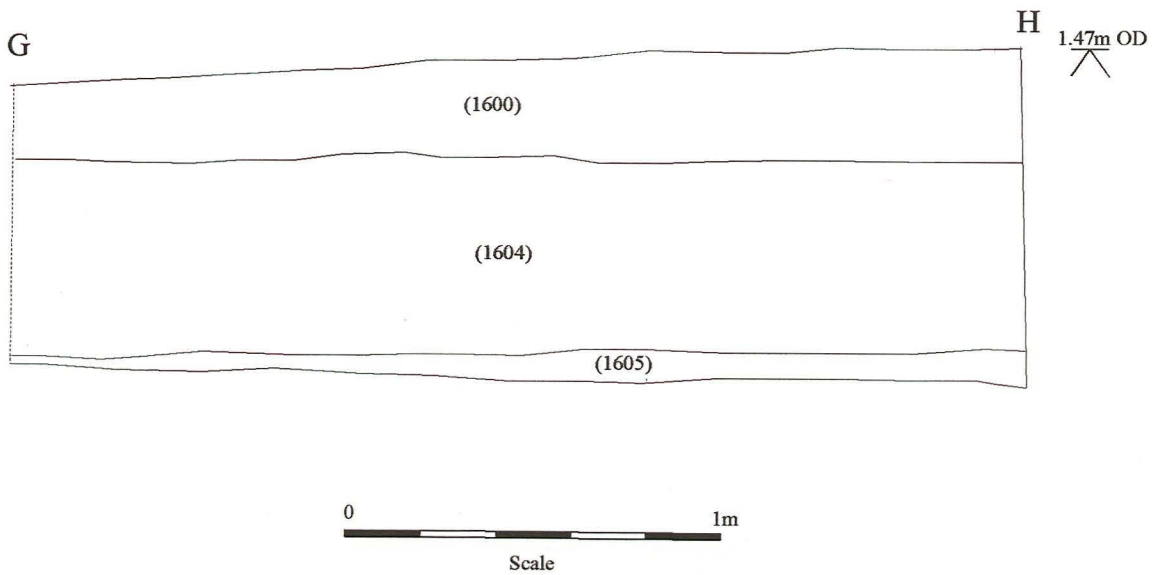
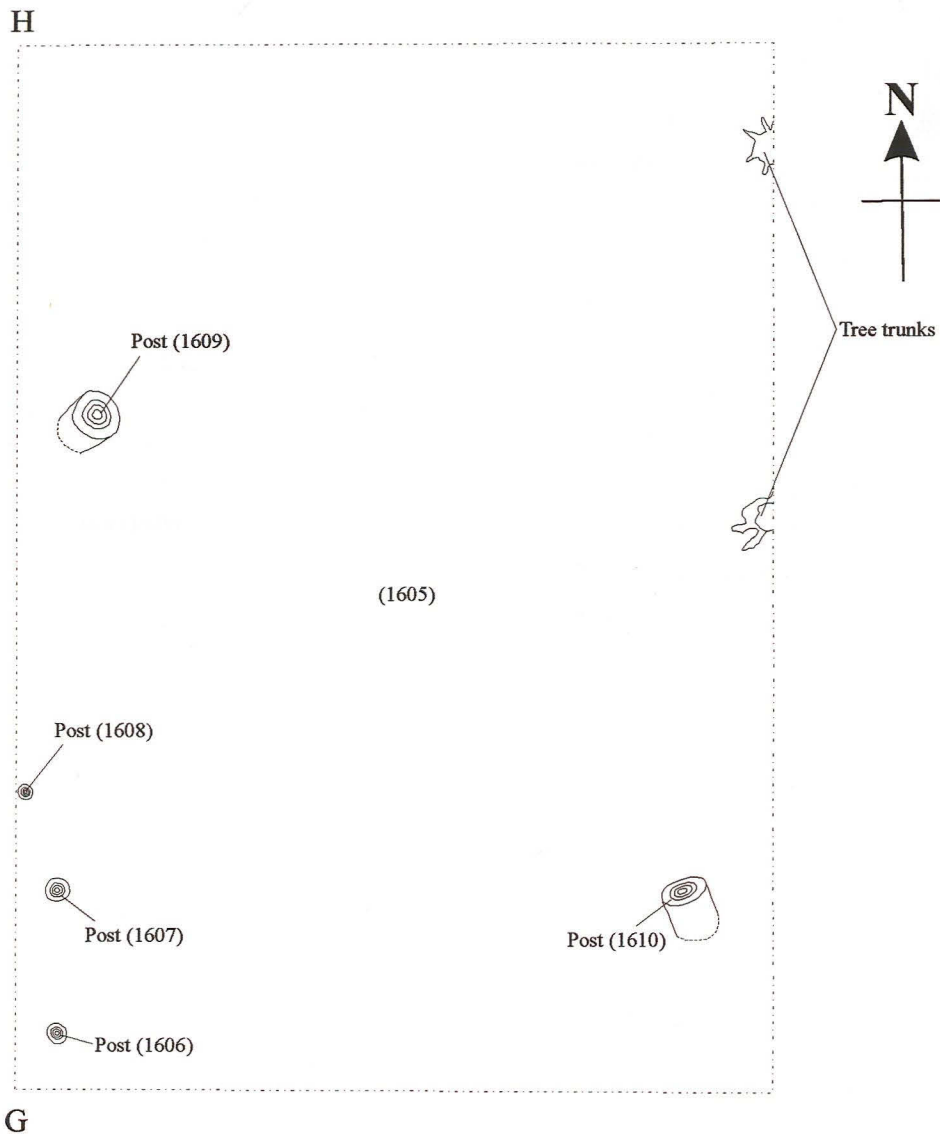


Fig. 5: Plan and east facing section, Site 16, Area 1.
Both at 1:20

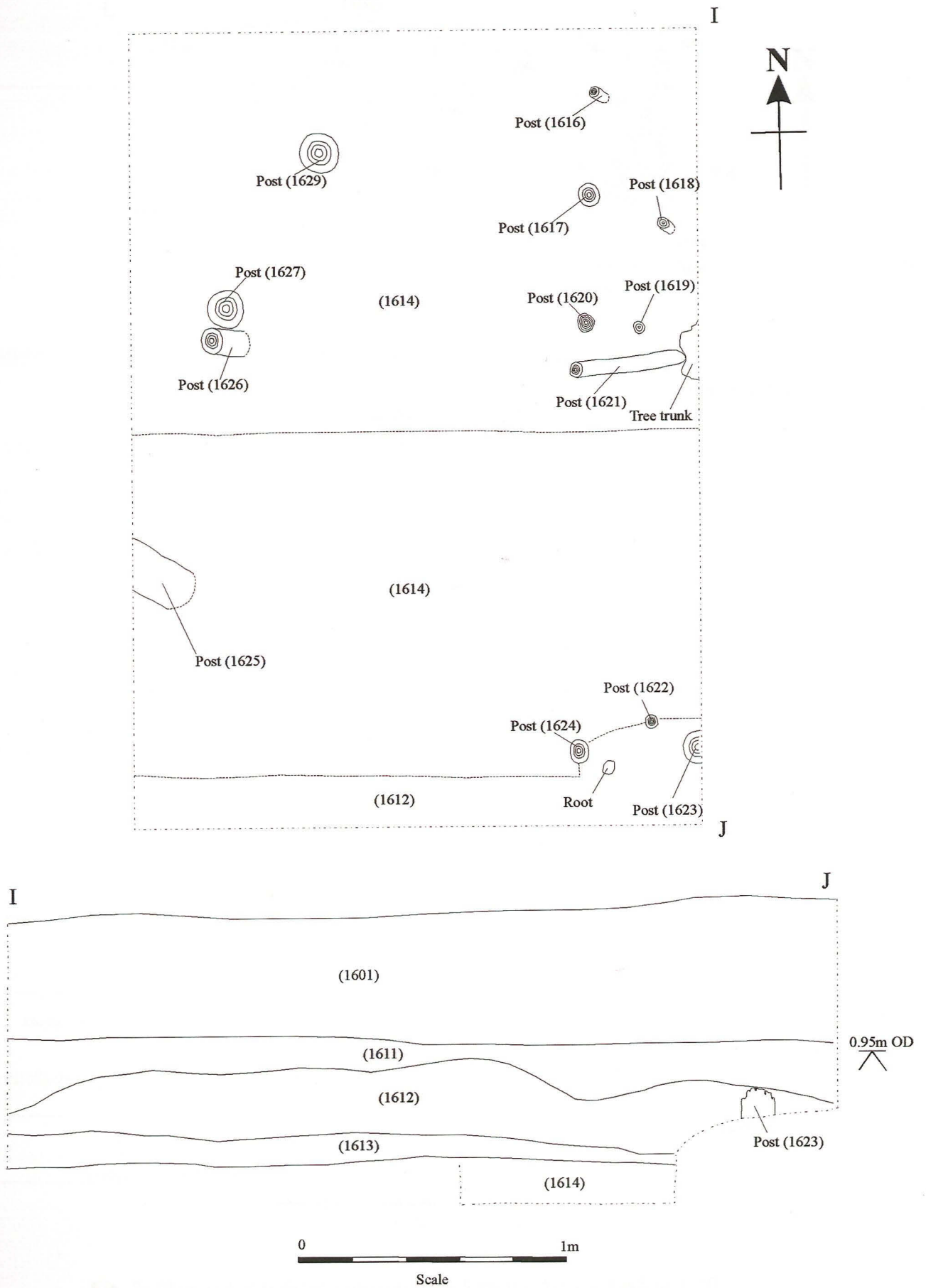


Fig. 6: Plan and west facing section from Site 16, Area 2. Both at 1:20

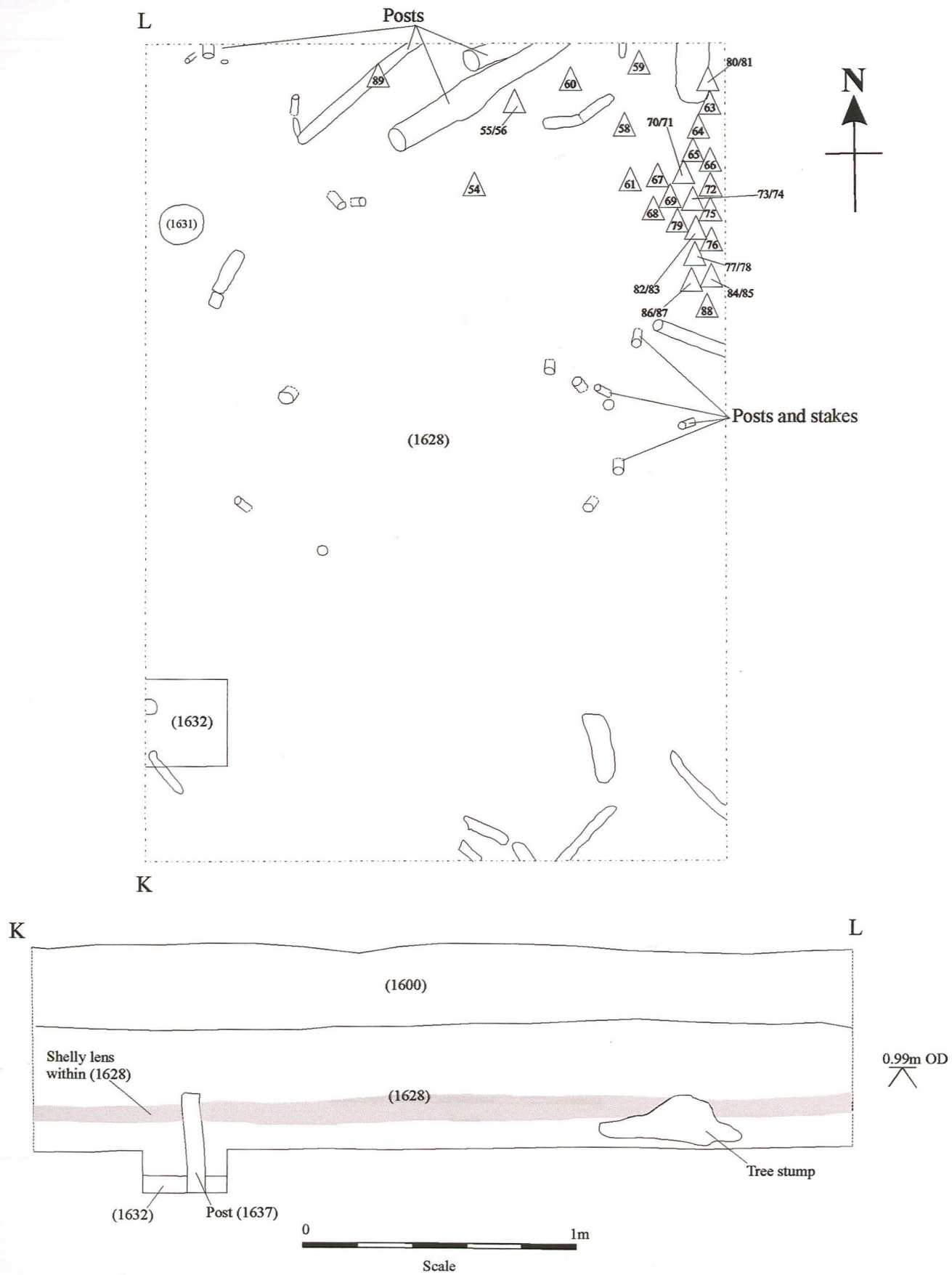


Fig. 7: Plan and east facing section from Site 16, Area 3, both at 1:20.
 NB: Only some of the finds from this trench were 3D plotted, so the finds shown here are only part of the total.

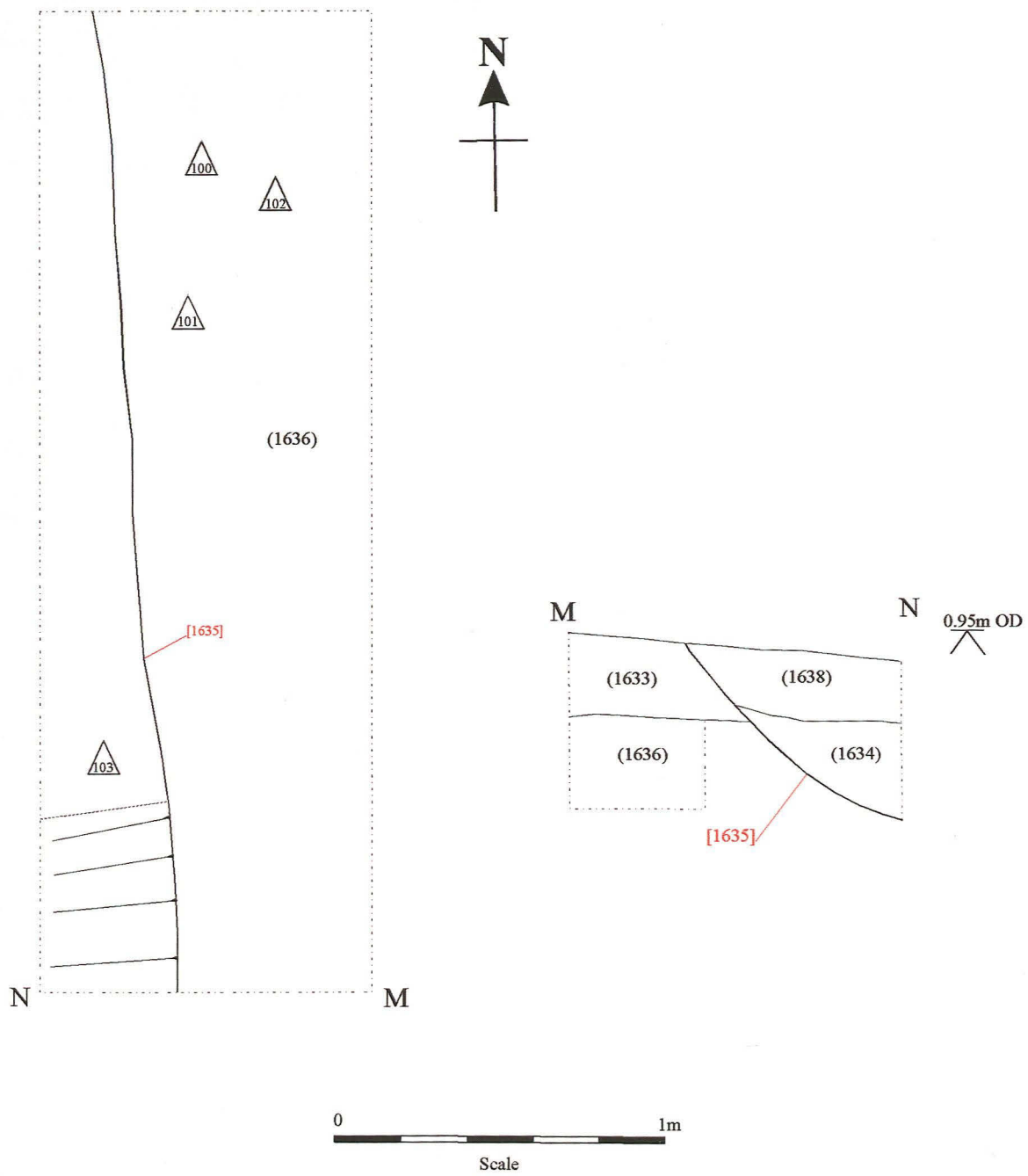


Fig. 8: Plan and north facing section from Site 16, Area 4.
Both at 1:20

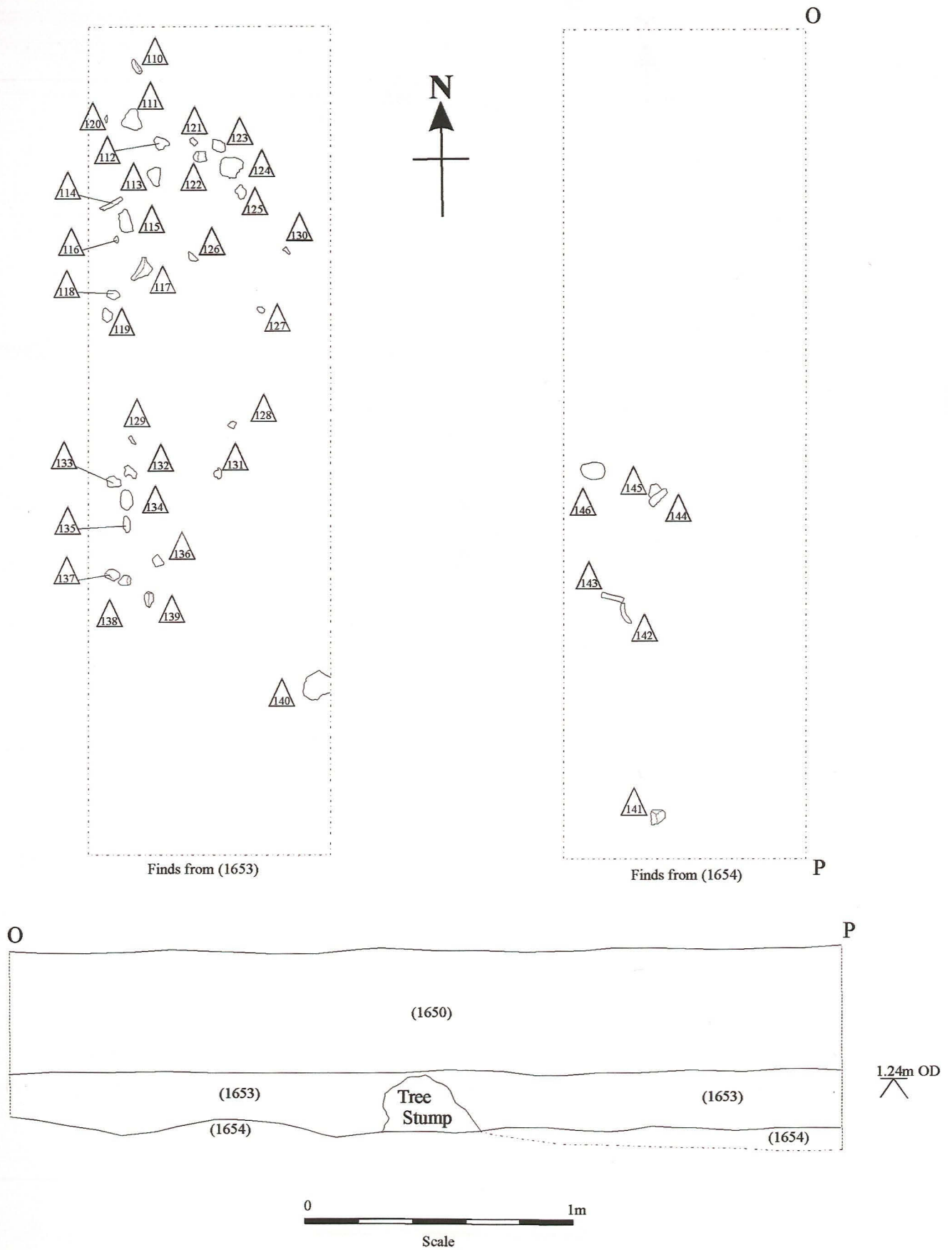


Fig. 9: Plans and west facing section from Site 16, Area 5. Location of small finds recovered from layers 1653 and 1654 shown. All at 1:20

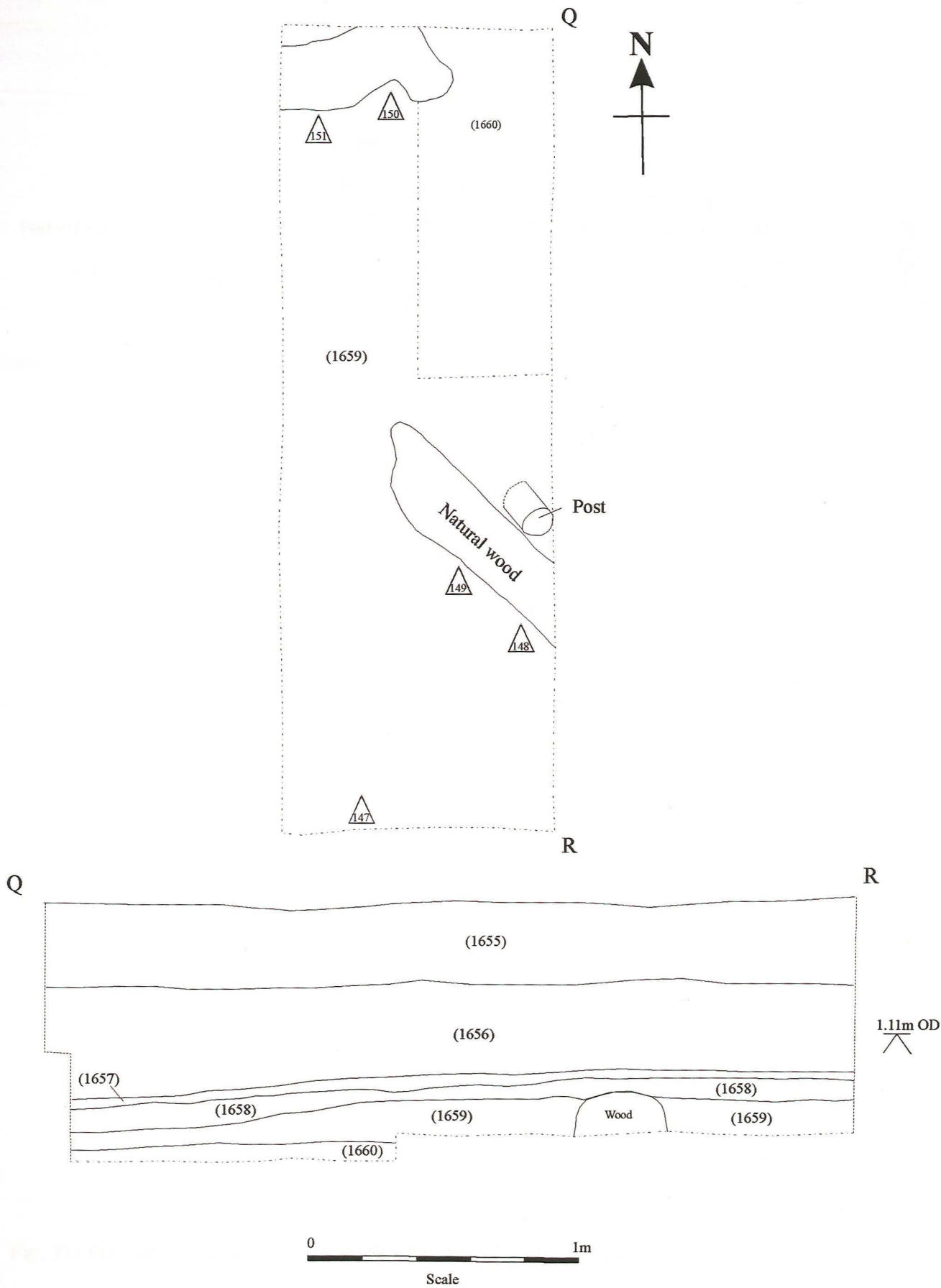


Fig. 10: Plan and west facing section from Site 16, Area 6. Both at 1:20.

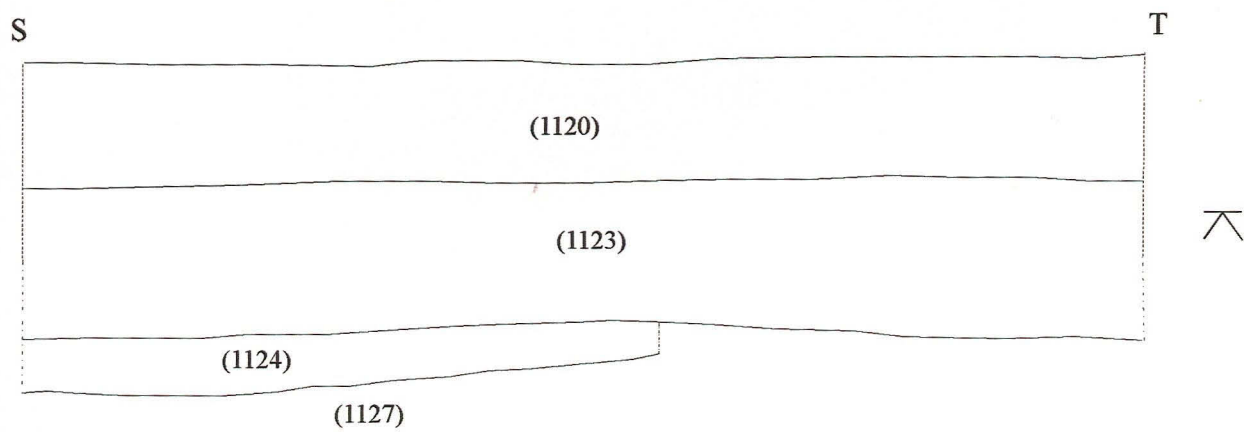
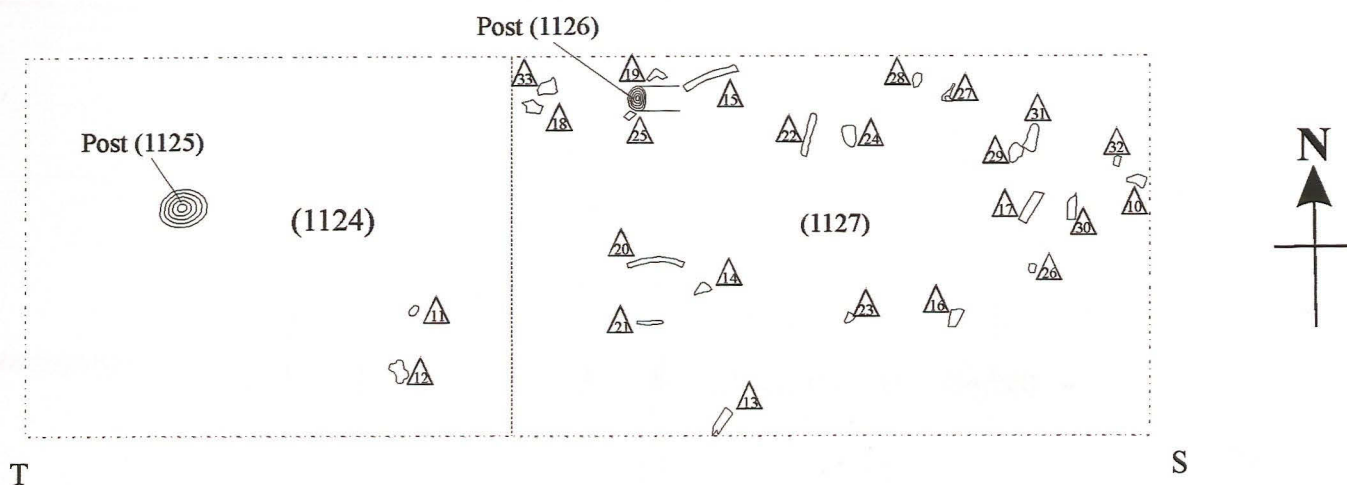
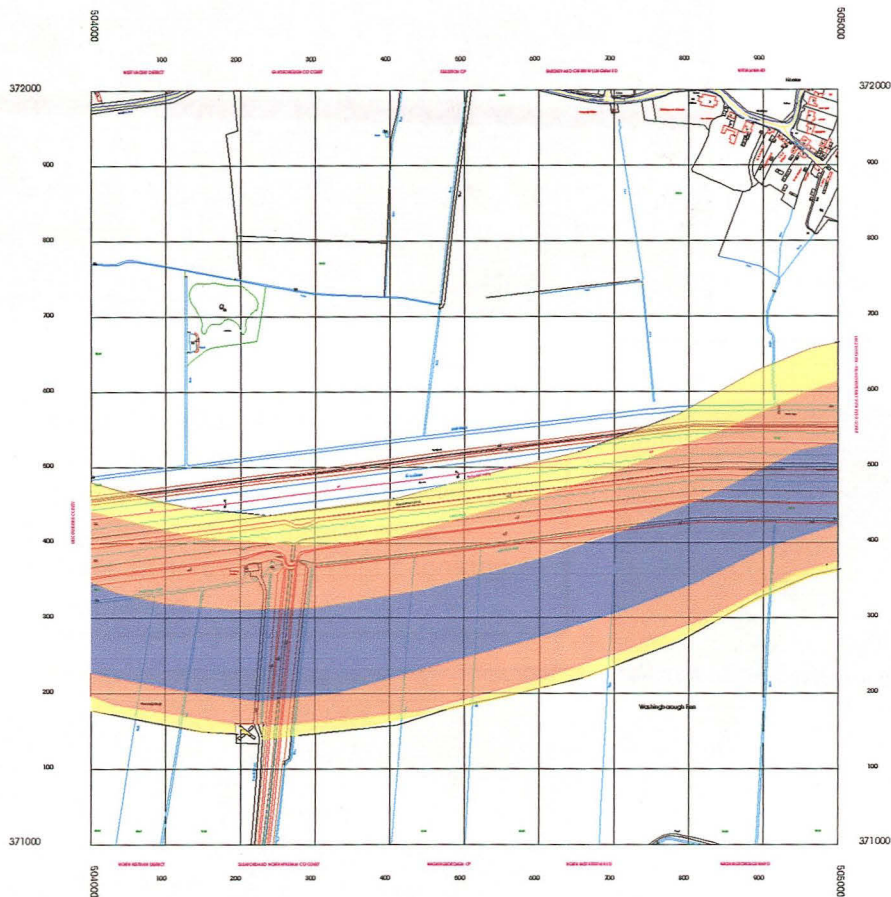


Fig. 11: Plan and north facing section, Site 11, Area 7. Both at 1:20



- Sand Levee
- Deep Channel
- Marginal ground

Fig. 12: Plan of local floodplain landscape during the Later bronze Age based on palaeo-environmental evidence.
 (Scale 1:10 000, Based on OS Landline, OS License no A1 515 21 A0001)

Appendix 1: Colour Plates



Plate 1 (left): General view of the evaluation trenches in the compound area, looking north-west.

Plate 2 (right): General view of evaluation Trench 1 in the compound area trenches, looking south-east. The sand levee can be clearly seen.
Plate 3 (below): Pit [1111], looking south-west.

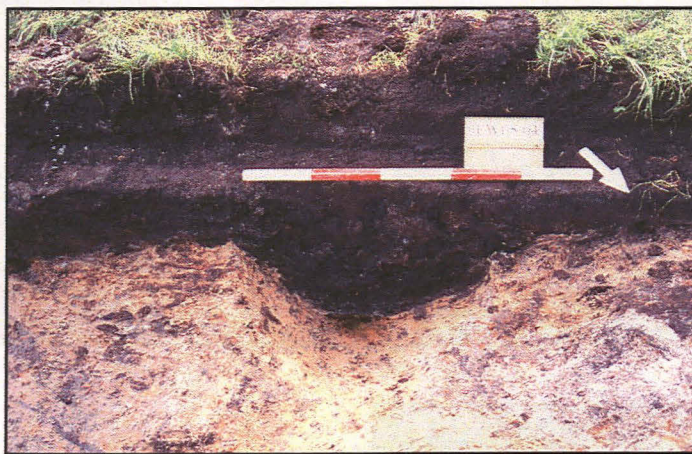
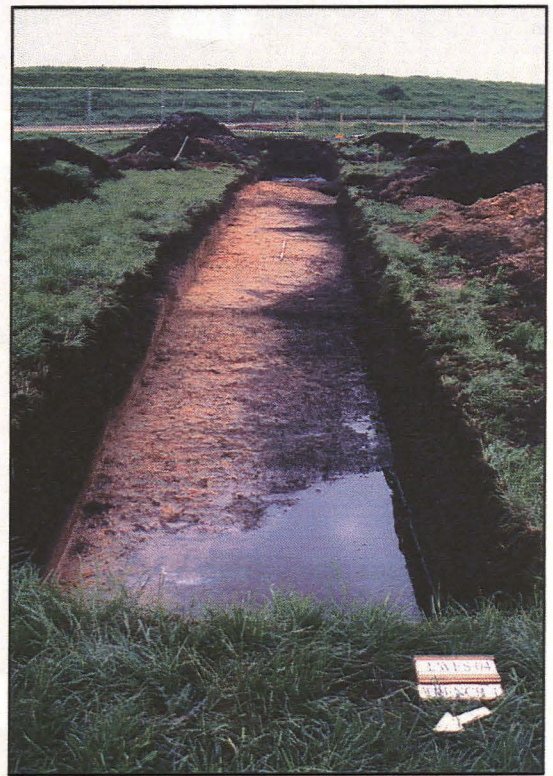


Plate 4 (right): General view of evaluation Trench 2 in the compound area, looking north.



Plate 5 (left): General view of the Section 16 evaluation trench on the east side of the Sandhill Beck, looking south. Clay embankment material can be clearly seen in a narrow strip along the right side of the trench.

Plate 6 (below): Posts and a brushwood horizon exposed in Section 16 area 1, looking south-west.



Plate 7 (left): Posts and reed peat exposed in Section 16 area 2, looking south.



Plate 8 (right): One of the coppiced posts recovered from the Section 16 evaluation slots.

Appendix 2

1.0 Methodology

Gradiometry is a non-intrusive scientific prospecting technique that is used to determine the presence/absence of some classes of sub-surface archaeological features (eg pits, ditches, kilns, and occasionally stone walls). By scanning the soil surface, geophysicists identify areas of varying magnetic susceptibility and can interpret such variation by presenting data in various graphical formats and identifying images that share morphological affinities with diagnostic archaeological remains.

The use of gradiometry should help to establish the presence/absence of buried magnetic anomalies, which may reflect sub-surface archaeological features, and therefore form a basis for a subsequent scheme of archaeological trenching, if required.

The gradiometer survey was undertaken using a Bartington Grad-601 Dual Fluxgate Gradiometer. Zigzag traverse method of survey was used, with 1.0m wide traverses across 30m x 30m grids (Table 1).

Data was downloaded in the field into Geoplot v.3.0. The results are presented as greyscale and trace plot images along with an interpretative plan (Figure 14).

Table 1

Instrument	Bartington Grad-601 dual fluxgate gradiometer
Grid size	30m x 30m
Sample interval	0.25m
Traverse interval	1.0m
Traverse method	Zigzag
Sensitivity	0.1nT
Processing Software	Geoplot v.3.0
Weather conditions	Fine and sunny
Area Surveyed	c.2.9ha
Date of survey	24 th March 2004
Survey personnel	Peter Heykoop
National Grid Reference	TL 5042 3712

2.0 Analysis and Interpretation of results (Figs. 13-14)

The survey recorded a range of magnetic anomalies. For the most part, the strongest appear to relate to existing wire fences (pink lines). Others (circled pink) could reflect miscellaneous ferrous objects, such as horseshoes and ploughshares.

Regularly spaced parallel linear anomalies in Area A almost certainly indicate land drains (blue lines).

A north to south straight linear anomaly in Area B corresponds to a modern plough furrow. At the time of survey, the area to the west of the furrow was unploughed pasture.

In both Areas, the survey detected anomalies (examples highlighted in green) that probably indicate palaeochannels (the site lies to the immediate south of the River Witham). The greyscale images include data sets that have not been destriped; an anomaly (probable palaeochannel) in Area B is removed as a result of this function. Other linear anomalies in Area A could reflect similar features, although it is also possible that they represent traces of ridge and furrow ploughing (shown as orange).

The survey recorded discrete and groups of pit-like anomalies (examples circled in red). The origin of these has not been clearly determined by the survey and it seems likely that some may be the result of natural processes, such as deposition of ferrous-rich minerals or residual pockets of peat. However, the archaeological potential of the site is high; a 1970s evaluation (1979, J. Coles et al) and more recent field walking by the Washingborough Archaeological Group (pers. comm. Peter Heykoop) have recovered substantial quantities of Late Bronze Age pottery sherds in the field that includes Area B.

3.0 Conclusions.

The survey has identified a range of magnetic anomalies, which predominantly appear to have modern or natural origins. Both areas revealed a series of linear and curvilinear anomalies, which are likely to represent a natural patterning of creeks and channels.

A number of discrete and groups of pit-like anomalies may be archaeologically significant considering quantities of Late Bronze Age pottery sherds were recovered in the area by the local archaeological group. Other anomalies detected include possible trace of ridge and furrow cultivation lines, land drains and a modern plough furrow.

4.0 References

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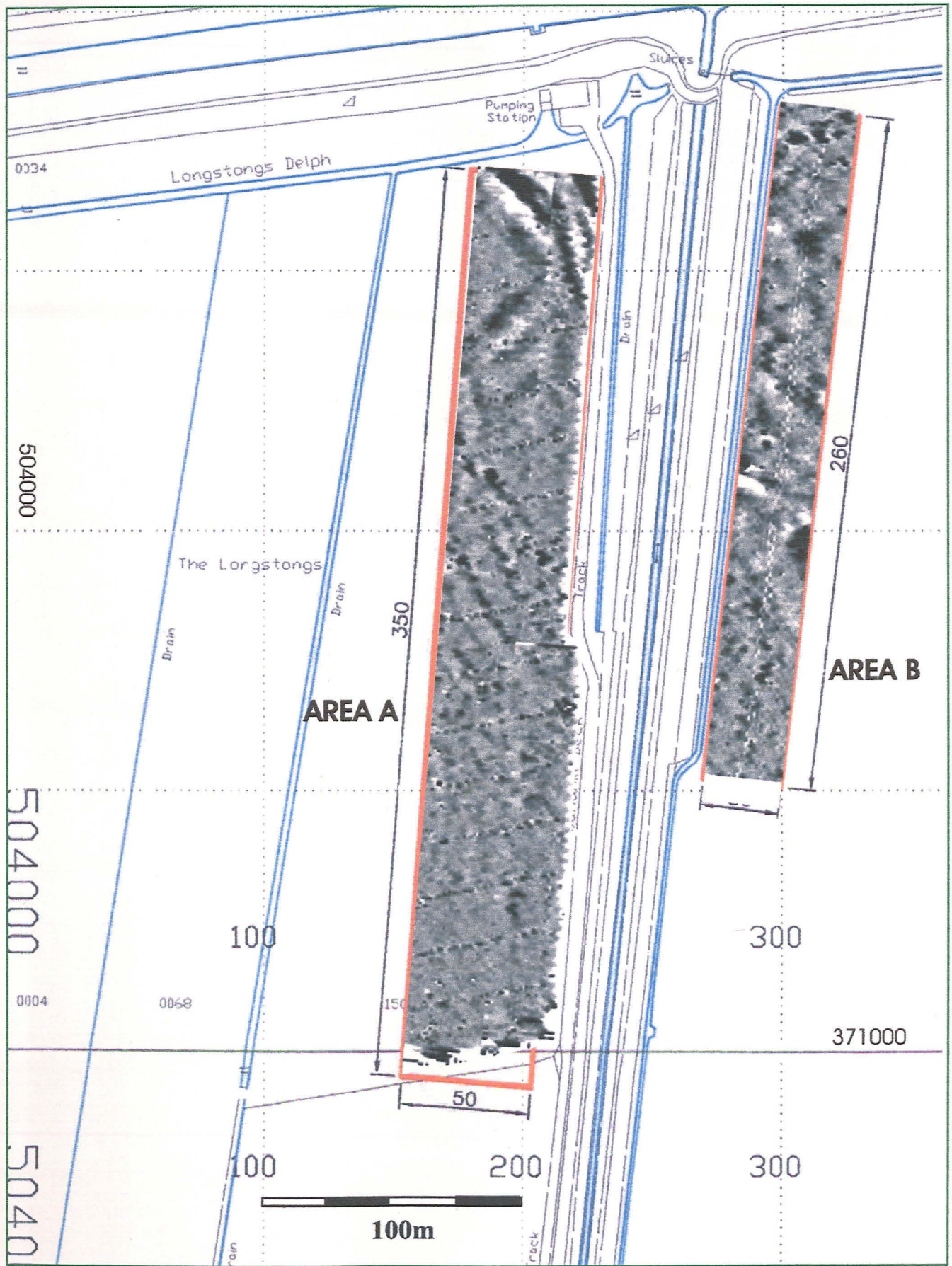


Fig.13: Location of survey 1:2000

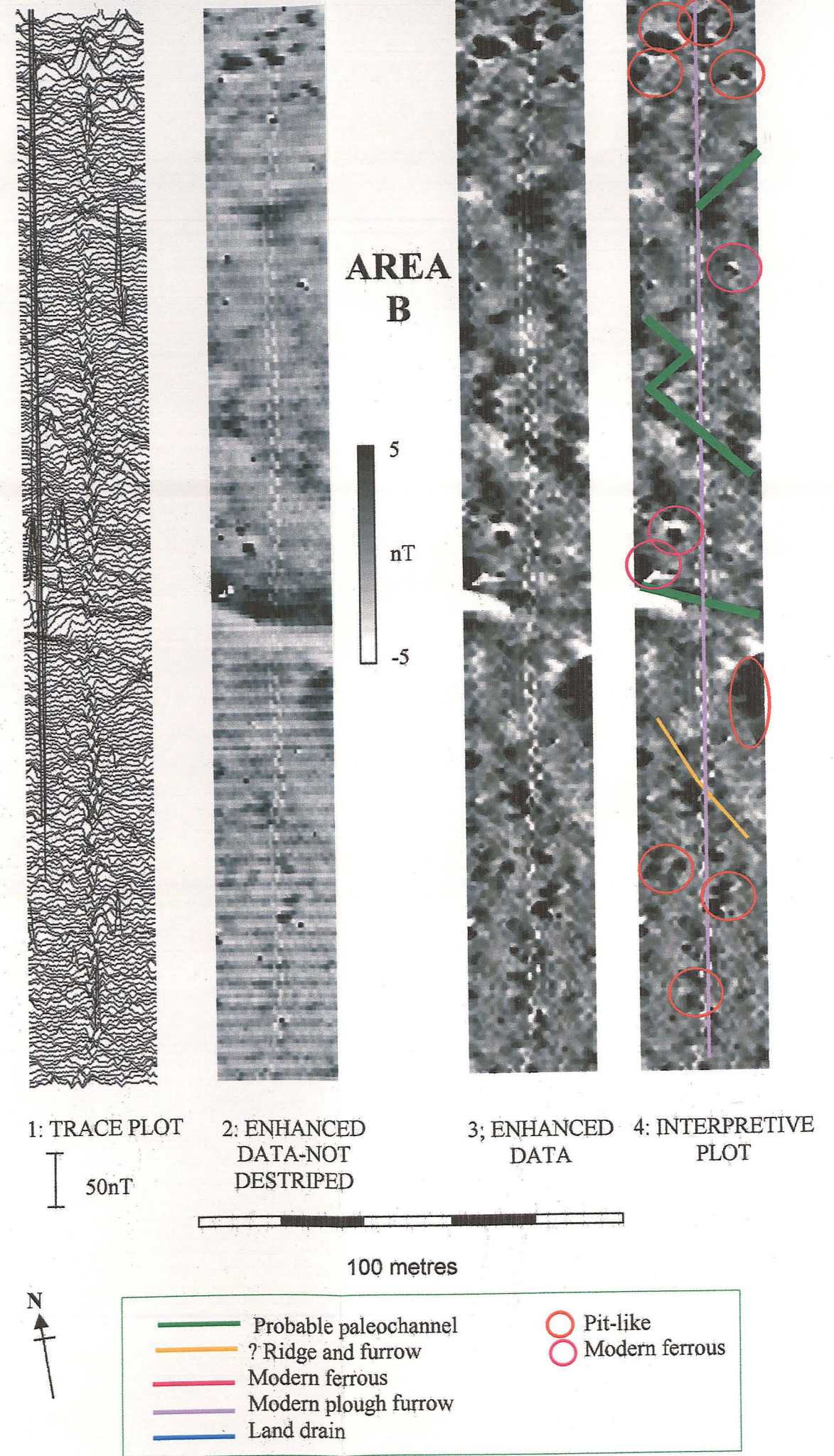
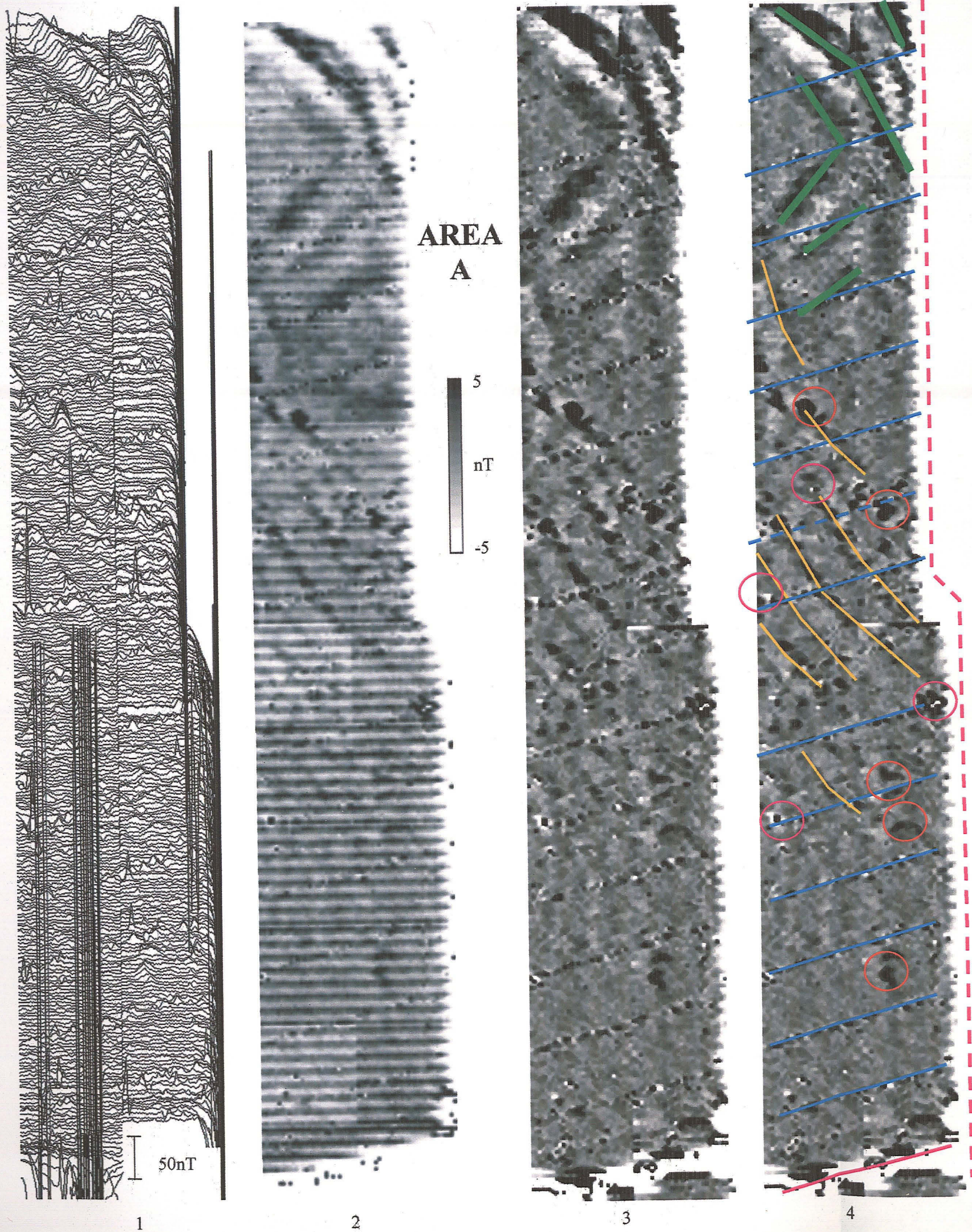


Fig.14: Trace and greyscale images with interpretive plan, scale - 1:1250

Appendix 3

WASHINGBOROUGH, LINCOLNSHIRE

LWES 04, NGR TF 0416 – TF 0429 7109

ASSESSMENT REPORT ON LATER BRONZE AGE POTTERY

FOR

PRE-CONSTRUCT ARCHAEOLOGY

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30 June 2004

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**WASHINGBOROUGH PUMPING STATION
Lower Witham Environmental Scheme Phase 4
LWES 04, NGR TF 0416 7138 – TF 0429 7109**

Assessment Report on Later Bronze Age Pottery

By Carol Allen

1 Introduction

1.1 An evaluation on this site for the Section 11 compound area and Sections 11 and 16 of the flood defensive works has uncovered an unusual assemblage of late Bronze Age pottery. This report presents an assessment of the pottery found, with a summary of the fabrics and an indication of the potential of the assemblage.

2 Quantifications and methodology

2.1 A total of 271 sherds, and a number of fragments were found on this site. The fragments have been included in each context and in the final weight but have not been quantified. The total weight of the assemblage is 3206 g. The pottery was found in a number of different horizons.

2.2 The pottery is detailed in Table 1 appended, and it is estimated that a minimum of 35 vessels are represented, although this would need to be refined on full analysis, once fabrics have been examined in detail. Where it is clear that a separate vessel is represented a pot number has been assigned in Table 1.

2.3 Some sherds were examined by use of a X2 microscope in order to allow the fabric types to be summarised. The fabric types are described below in section 3.

3 Fabric types

3.1 The tempering materials of the fabrics have been summarised the purpose of this assessment report but require more detailed study for a full analysis. The inclusions have been identified according to the PCRG guidelines (1997) but have not been quantified in detail at this stage. The fabric types are summarised in Table 1.

3.2 Three main types of inclusions are seen in the assemblage, shelly material or voids indicating the former presence of shell (S), quartz (Q) and flint (F). Most of the sherds are tempered with shelly material. The inclusions vary in size from fine (F, <0.25mm), to medium (M, 0.25 to 1.00mm), coarse (C, 1.00 to 3.00mm) or very coarse (V, >3.00mm).

3.3 The site lies on alluvial drift with underlying solid geology comprising Great Oolite Limestone and Upper Estuarine Beds, or clays with limestone (Swinerton and Kent 1976). The Great Oolite is not oolitic but is composed of abundant fossil shell of various species (*ibid*, 48), and many of the sherds from this site contain dense shell inclusions. The Estuarine Beds also contain fossil marine shell and although rarely exposed, in recent times these Beds were still visible at Heighington just to the south of Washingborough (*ibid*). The quartz sands and flint may be present in the drift geology.

3.4 The inclusions in these sherds need to be examined by thin section analysis in order to determine more accurately the exact nature and the source of the material, particularly the shell tempering which is likely, but not certain, to be fossil in origin.

4 Form, decoration and dating of the pottery

4.1 All the material is of late Bronze Age type, and of the tradition usually termed post-Deverel Rimbury plainwares (Knight 2002, 124-6). The assemblage comprises a number of jars and bowls, characterised by thin walls (mainly of 6 to 8mm in thickness and not over 10mm), and rims which are everted, rounded and flat with external rounding. A bowl of globular shape (1604/2) is apparent as well as a small ovoid bowl (1628/1), and a carinated bowl (1653-140). There is also a shouldered jar (1604/3) and an ovoid shaped jar (1628/3). This period is characterised by the change of vessel types towards finer vessels with a more versatile repertoire, which indicates a change in function and character of the pottery and in its social use. The different styles and sizes of bowls and ovoid and shouldered jars are typical of this period.

4.2 In this assemblage decoration is limited. A few pots have burnishing on the exterior surface, particularly on the bowls (1121-5), and there is some brushing (1653-119). One vessel only has a finger tipped cordon (1604/4). Applied cordons are seen on some vessels, one with a flat externally rounded rim (1604/1). Such cordons on these type of vessels are seen to be at the transition stage of the Deverel Rimbury and post-Deverel Rimbury plainware traditions, reflecting the cordons commonly seen on Deverel Rimbury pots..

4.3 Similar pottery was found on this site in 1972 when a buried peat deposit containing pottery and other artefacts was uncovered (Coles *et al* 1979). Pots with everted rounded rims, and jars with shoulders were found, and much of the pottery was again undecorated. The extent of the excavation and finds was quite limited, but provides useful comparisons and information for the current assemblage.

4.4 Comparable material has been found on the late Bronze Age site of Hibaldstow in north Lincolnshire, where similar rim shapes and brushed exteriors were apparent (Allen and Knight 2001). Similar pottery seen at Billingborough belongs to this late Bronze Age transitional phase (Chowne *et al* 2001). Further south at Welland Bank, Lincs (unpublished) it is thought that similar material has been found, and late Bronze Age plainwares have been excavated at March, Cambs (Allen 2004). Similar pottery is also well known at a number of well stratified and dated southern sites such as Runnymede Bridge (Needham 1991), and Green Park (Brossler *et al* 2004) both in Berkshire.

4.5 Dating of late Bronze Age pottery assemblages remains problematical, although more information is becoming available in the south of Britain. Dates from recent studies at Green Park (Reading Business Park) are indicating that late Bronze Age plainwares came into fashion between about 1400 and 1200 cal BC. However, it is unclear how comparable dates from the Thames Valley would be to those from this area. Dates from Hibaldstow in north Lincolnshire suggested that the plainwares were still in use in the 8th century cal BC (Allen and Knight 2001). Such pottery seems to have been in common use between about 1020 and 800 cal BC (Needham 1997, 93-8) in southern Britain. The lack of decorated material suggests that this site may lie in the earlier part of the late Bronze Age period.

5 Context

5.1 The pottery was found in a number of peat horizons which also contained animal bone, in one case human bone (1628) and in most contexts other artefacts, as indicated on Table 2 below.

5.2 Most of the pottery found on this site is unabraded or only slightly abraded. This indicates that the material had not travelled far before becoming incorporated into the horizons in which it was found. The pottery and its associated material, animal bone and a few other artefacts, including stone, metalwork and flint, indicate that this is likely to be refuse deposited from a settlement which lay close by.

Table 2: Pottery, animal bone and other finds by section and context

Context	LBA Pottery	Animal Bone	Other finds
<i>Section 11</i>	<i>Sherds – no</i>		
	+ fragments (+f)		
1121	1	yes	bone, worked bone
1123	3	yes	bone
1124	5	yes	burnt stone, bone, flint
<i>Section 16, west</i>			
1602	67+f	yes	bone, metal, wood, flint, stone, human bone
1604	65+f	yes	fired clay, wood
1611	13	yes	
1612	1	yes	flint
1628	77+f	yes	human bone, flint, snail shell, wood, worked stone
1633	1	no	fired clay,
<i>Section 16, east</i>			
16E us	3	no	
1652	1	yes	wood, bone
1653	27	yes	Stone
1654	5	yes	-
1659	2	yes	-
Total	271	-	-

6 Potential for further work

6.1 This type of pottery, in use about 1000 BC, is not common locally in the area of Lincoln, and is fairly rare regionally and nationally. This assemblage therefore can supply unusual information on this period in this location and the preparation of a detailed report is recommended. Other assemblages are known from the north and south of the region, but stratified and dated assemblages of this period are not common nationally.

6.2 Comparative material should be sought in the locality and region, in order to further understand this assemblage and place it within its local and regional perspective. The pottery originated in an interesting period of transition from the middle Bronze Age traditions through the late Bronze Age to the early Iron Age.

These traditions are not well understood or dated nationally, and certainly not regionally or locally. The material previously found on this site should be considered alongside this assemblage in order that this is better understood.

6.3 Little pottery of the late Bronze Age period is known in the Lincoln area, there is a lack of dating information for this period. It would be of immense contribution, therefore, to the information on the pottery on this site if radiocarbon dates could be obtained from some of the contexts containing pottery of recognisable form.

6.4 The fabrics of the assemblage should be investigated by thin section analysis, and it is recommended that 6 thin sections should be undertaken. This will clarify the type of shell used for tempering, and will elucidate the technology and potting tradition. It is possible that this could also indicate trading connections and patterns. As there are a number of different fabrics apparent in the assemblage these should be quantified and qualified. This would determine whether different fabrics relate to different styles of pots or to possible different functions on this site, and whether the pottery on this site fits within a regional pattern, or has an uncharacteristic tradition.

6.5 A number of vessels should be illustrated from this assemblage. The minimum required in order to represent the types of rims and profiles from this site, without duplication, is 15 illustrations. These are not complete vessels, and those for illustration are indicated on Table 1.

7 Costs of further work

7.1 For a report providing a full analysis of the assemblage suitable for an internal client report the cost would be 5 days work for CA at £175 days, a total of £875.00.

7.1.1 The cost of thin section analysis would be an additional £168.00.

7.1.2 A client report would include:

- Laying out and sorting the pottery. Checking information and plans are available.
- Sort the pottery into fabric types and record.
- Select sherds for thin section, despatch, liaise, incorporate results.
- Suggest contexts which would provide useful dating evidence if suitable material is available.
- Consider material from earlier excavations on this site and other sites nearby.
- Write report for client.
- Parcel up and return pottery.

7.2 If illustrations are required for either client or publication report, the extra cost for the 15 illustrations will be £395.00.

7.2.1 The illustrations would require the following work:

- Catalogue of illustrated material, figure captions and draft drawings of pots for illustrator, check drawings, 1 day of CA at £175.00.
- Illustrator to draw in pencil, check, ink and mount either manually or digitally as required, 2 days of illustrator at £110.00 per day.

7.3 For a report suitable for publication, 2.5 extra days at £175 would be required, making a total of £437.50.

7.3.1 This would include:

- Looking in more detail at the material previously excavated from this site.
- Providing a more full and detailed report on the assemblage from this site, and looking more widely at the post-Deverel Rimbury tradition and its relevance for developments in society in this area.
- Consultation with David Knight on details of the assemblage and its place within the post-Deverel Rimbury tradition, and affinities with later early Iron Age material in this region. This would assist in defining this poorly understood transition period in this area more clearly.

7.4 Table 3 below provides a summary of sections 7.1 to 7.3.

Table 3: Cost for client report, illustrations and publication report on LBA pottery

Description	Days/no	Rate £	Cost £
<i>Client report</i>			
Report on pottery	5	175	875.00
Thin section analysis	6 (no)	26.66	168.00
<i>Cost of client report</i>			<i>1043.00</i>
<i>Illustrations</i>			
Catalogue, captions, checking	1	175	175.00
Illustrator	2	110	220.00
<i>Client report with illustrations</i>			<i>1438.00</i>
<i>Publication report</i>			
Publication report additional info	2.5	175	437.50
<i>Publication report with illustrations</i>			<i>1875.50</i>

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CA/1/7/04

**WASHINGBOROUGH PUMPING STATION
Lower Witham Environmental Scheme Phase 4
LWES 04, NGR TF 0416 7138 – TF 0429 7109**

Assessment Report on Fired Clay

By Carol Allen

1 Introduction

1.1 A single piece of fired clay was found on this site. This was uncovered in Section 16, west strip, context 1604, the flood bank horizon. In the same context was found late Bronze Age pottery and some wood.

2 Description

2.1 The fired clay is an irregular amorphous piece which is fairly flat and weighs 49g. The fabric contains poorly sorted pieces of shell, which may have occurred naturally in the local clays of the Estuarine Beds which outcrop close to the site.

3 Interpretation

3.1 Fired clay is a good indicator of domestic settlement and is a common find on late Bronze Age settlement sites (Barclay 2004, 94), for example at Green Park (Reading Business Park) in Berkshire.

3.2 Such pieces may derive from hearths, ovens or from accidental burning of clay, perhaps when vegetation was cleared. In this case it seems likely that the material had been in domestic use and was deposited as refuse alongside pottery and artefacts.

4 Potential

4.1 The fired clay has no further potential, but the presence of fired clay in this context, as an indicator of domestic settlement, should be noted in a final report.

Reference

Barclay A, 2004 Fired clay, in A Brossler, R Early and C Allen, Green Park (Reading Business Park) Phase 2 Excavations 1995 – Neolithic and Bronze Age Sites, Thames Valley Landscapes Monograph 19

Carol Allen, 1 July 2004

Appendix 4: Washingborough Pumping Station – LWES04

A small collection of animal bones was recovered by hand during the evaluation excavation in advance of works on the beck banks and south delph at Washingborough Pumping Station. These were submitted for initial identification and assessment. The collection totals 360 pieces that were recorded as different bone fragments. Fragments identifiably from the same bone were recorded as one. A few fragments from different contexts or find spots were noted as joining other fragments and it is probable that with careful study several more joins would be recognised. The bones have been identified and recorded following the procedures of the Environmental Archaeology Consultancy (see key attached to archive catalogue) and an archive catalogue produced (see Appendix). The bulk of the assemblage is assumed to be contemporary with the late Bronze Age pottery recovered from the site but the occurrence of a few sherds of Roman and later pottery indicates that some contexts may contain later material.

The condition of the bones is very variable ranging from very good preservation to bones with severe post-burial corrosion and subsequent fragmentation (Table 1). The latter condition was typically associated with iron impregnated bones and it is evident that this erosion has taken place in the soil almost certainly consequent upon the deposits drying out. This has implications for the bone in good condition since if the deposits that these were recovered from were to dry out then the well preserved bone would also undergo corrosion and final destruction. Over 25% of the recovered bones are in a poor or very poor condition.

Table 1. Number of recorded fragments in each condition category by context (see Bone key for explanation of the condition – 1 is very poor; 5 is very good)

context	2	2/3	3	4
1101			4	
1110			1	
1121		1		4
1122				1
1123			2	
1124			2	8
1302	1			
1303			9	2
1309	1			
1311		1	4	
1313			1	
1602	2	4	25	27
1604		1		7
1611		1	6	
1612		3	1	
1613				2
1628			12	204
1631			1	
1652		1		1
1653		1	1	1
1654	1	1	1	
1659			1	2
1801				2
2203		1	1	1
36002			1	
unstratified		1	3	1
TOTAL	5	16	76	263

Although it has not been analysed in detail it is clear that the fragmentation of this assemblage is low. Many of the bones are of fairly large size, a number are complete, and the very low number of completely unidentifiable fragments indicates a low fragmentation. Furthermore most of the bone breaks are sharp and a very low proportion, 1.7%, of the bones have been gnawed. This all suggests that the bones have undergone little or no movement, have not been trampled or scavenged by dogs, and were not left lying around the site. Much of the bone may have been dumped or thrown directly into the muds and reed beds along the margin of the river.

Quite a number of the bones show evidence of chopping or cutting (Table 2). Some of these appear to reflect jointing and division of the carcass and were clearly carried out with sharp knives or cleavers. Two bones, a pig femur and a piece of red deer antler show evidence for having been sawn. Whether these pieces derive from later or intrusive bone or the marks made by other tools, should perhaps be investigated, since the author is not aware of any late Bronze Age saws. Some of these tool marks do suggest iron tools rather than copper alloy. Two bone fragments are worked. A splinter of cattle-size long bone appears to have been shaved down one side, perhaps in the process of making a tool, and a sheep tibia has been shaped into a point similar to the type found at Fiskerton (Field and Parker-Pearson 2003). A fragment of a very large lower canine of a boar, possibly a wild boar, is highly polished, a condition that suggests that it may have been an artefact since this level of polish is unlikely when in the jaw.

Table 2. Frequency of fragments of each species showing chop or cut marks or evidence for working and burnt bone.

	Burnt	Chopped	Cut	Sawn	Worked	Worked?
Cattle	3	9	1			
Red deer	2	4		1		
Cattle size	2	20	5		1	
Horse						
Human						
Sheep/goat					1	
Sheep		1				
Pike?						
Sheep size	1					
Pig			1	1		1
Swan						
Unidentified	2					

The identified assemblage includes human bones, horse, cattle, red deer, sheep, pig, swan and a probable pike (Table 3). The bulk of these were recovered from context 1628 and 1602. Most of the material from 1628 was in good condition, but in the dessicated deposits of 1602 over 50% of the bone fragments were in poor condition as a direct result of the dessication and the acidification of the deposits. The six human bones includes two femurs, one from a juvenile and the second from an adult, a skull fragment, a metapodial and a tibia fragment. Two pieces of the juvenile femur were recovered in different layers, 1602 and 1628. A pair of swan humeri occurred together in 1121. They are very closely matched left and right bones and may have come from the same bird. The pike bone is a large dentary, somewhat eroded. Six bones have been identified to horse and two of them were, or nearly were, intact and two

more may have been prior to burial but have since partially corroded. All except two of the eleven red deer finds are antler. Both of the antler bases found were shed and must have been collected for working at the site and one may have been used as a hammer. But fragments of a tibia and a radius indicate that deer were also hunted.

Of the main domestic species cattle bones far outnumber pig and sheep, and pig bones are five times as frequent as sheep. The sheep are small gracile animals typical of prehistoric sites. The pig bones all appear domestic except for the canine already mentioned. The cattle assemblage includes small animals and small skulls with the characteristic short horn previously described as the celtic shorthorn. However there are a few cattle bones from much larger animals although none suggest animals of the stature of the wild ox.

Table 3. Frequency of fragments assigned to each species of identification category by context.

	Cattle	Red deer	Cattle size	Horse	Human	Sheep /goat	Sheep	Sheep size	Pig	Swan	Pike	Un-identified	TOTAL
1101		4											4
1110		1											1
1121	1						1		1	2			5
1122			1										1
1123	1					1							2
1124	2		4			1		1	2				10
1302	1												1
1303	1		4	3								3	11
1309	1												1
1311	1					1						3	5
1313				1									1
1602	19		17	1	3	5	2	4	6			1	58
1604	2	3	2						1				8
1611	2		2					1	2				7
1612	3		1										4
1613	2												2
1628	65	2	101	1	2	9	2	6	21		1	6	215
1631					1								1
1652	1								1				2
1653	2		1										3
1654	1		1									1	3
1659			3										3
1801							2						2
2203	1		1						1				3
36002		1											1
999	3		2										5
TOTAL	109	11	140	6	6	17	7	12	35	2	1	14	360

This range of species broadly matches those found amongst the 113 bones recovered in 1972 from the excavations conducted when the pumping station was built (Coles *et al* 1979), although this group also included dog, duck and goose. Other species will almost certainly come to light if the deposits are sampled and wet sieved and any further work should incorporate a strategy for recovering the bones of smaller animals that may have been exploited at the site, including fish and shellfish.

While this assemblage is small it clearly indicates the potential of a much larger bone sample from this site and also that the buried bones still in the ground are almost certainly under threat if the deposits continue to dry out. The deposits become chemically and biologically active as they dry out having been relatively inert since their original deposition. In the dessicated layers this activity may have been enough to remove completely some of the more fragile and smaller bones from the deposits.

The low fragmentation suggests the evaluation trenches lay in a discard zone where little activity likely to break up or weather the bones took place. The condition of the material in the lower layers that are still waterlogged is excellent and this means that the tooth wear data, measurements, butchery marks, pathological features, evidence for age at death are all readily recoverable from the bones. A large sample of material in this condition from this late Bronze Age site would be of major importance for understanding the economy and patterns of exploitation of the animals at the site. It would also be of value in elucidating the taphonomy of the assemblage and the context or character of the deposits and their included finds. Such an assemblage would be regionally important and of major interest in the context of the prehistory of the Witham Valley.

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THE ENVIRONMENTAL ARCHAEOLOGY CONSULTANCY

Key to codes used in the cataloguing of animal bones and marine shells

SPECIES:

SPECIES CODE			SPECIES CODE	
MAN	human		DOVE	Dove species
EQU	Horse		FER	Feral dove
EQSZ	Horse size		PART	Partridge
BOS	Cattle		SWAN?	Swan?
BOSL	Cattle-large		WOOD	Woodcock
CSZ	cattle size		CURL	Curlew
SUS	Pig		WADE	wader
OVCA	sheep or goat		CROK	Crow or rook
OVI	Sheep		CORV	Crow or rook
CRA	Goat		JACK	Jackdaw
SSZ	sheep size		OWL	Owl indet.
FEL	Cat		BUZZ	Buzzard
CAN	Dog		GULL	Gull sp.
AUR	Aurochs			
AUR?	Aurochs?		TURD	Turdidae
CER	red deer		BIRD	Identifiable but not id'd
DAM	Fallow deer		PASS	Passerine
CLS	roe deer		LBIRD	Large bird
LEP	Hare		UNIB	Bird indet
ORC	Rabbit			
LAG	Lagomorph		FROG	Frog
CARN	Carnivore		FRTO	Frog or toad
FOX	Fox			
POLE	Polecat/ferret			
WEA	weasel		GAD	Gadid, cod family
BADG	Badger		LING	Ling
SEAL	seal		HADD	Haddock
SQU?	Squirrel?		RAY	ray
BEAV	Beaver		FISH	Fish
ROD	Rodent		UNIF	Fish indet
RAT	Rat			
AGR	Field vole		OYS	oyster
ARV	Water vole		COK	Cockle
MUS	House mouse		MUSS	Common Mussel
SORA	Common shrew		WHELK	Common whelk
MOLE	Mole		HEL	Helix aspersa
SMA	Small mammal		HELIX	Helix sp.
UNI	Unknown		HELN	Helix nemoralis
			SNAIL	snail
CHIK	Chicken			
CHKZ	Chicken size		FOSS	Fossil bone
GOOS	Goose, dom			
GOOS?	Goose, dom.?			
GSSZ	Goose size			
GSSP	Goose species			
GOSZ	Goose, poss. Wild			
DUCK	Duck, domestic sp.			
DUCK?	Duck?			
DKSP	Duck species			
DSP	Duck species indet			
MALL	Duck, dom.			
TURK	Turkey			

BONE ELEMENT:

BONE CODE		BONE CODE	
SKEL	skeleton	SCP	scapula
SKL	skull	HUM	humerus
ANT	antler	RAD	radius
ANT?	antler?	ULN	ulna
ATT	antler tine	RUL	radius and ulna
HC	horn core	C/T	carpus/tarsus
TEMP	temporal	C23	carpus 2+3
FRNT	frontal	CAR	carpus
PET	petrous	CPA	accessory carpal
PAR	parietal	CPI	intermediate carpal
OCIP	occipital	CPR	radial carpal
ZYG	zygomatic	CPU	ulna carpal
NAS	nasal	MTC	metacarpus
PMX	premaxilla	MC1-5	metacarpus 1-5
MAN	mandible	MTP	metapodial
MNT	mandibular tooth	MPL	lateral metapodial
DLI	deciduous lower incisor	INN	innominate
DLPM1-4	deciduous lower premolar 1-4	ILM	ilium
LI	lower incisor (and 1-3)	PUB	pubis
LC	lower canine	ISH	ischium
LPM1-LPM4	lower premolar 1-4	FEM	femur
LM1-LM3	lower molar 1 - molar 3	PAT	patella
MAX	maxilla	TIB	tibia
DUI	deciduous upper incisor	FIB	fibula
UI	upper incisor (1-3)	LML	lateral malleolus
UC	upper canine	AST	astragalus
DUPM	deciduous upper premolar	CAL	calcaneum
DUPM1-4	deciduous upper premolar 1-4	CQ	centroquartal
UPM1-UPM4	upper premolar 1-4	TAR3	tarsus 3
UM1-UM3	upper molar 1 - molar 3	T4	tarsus 4
MXT	maxillary tooth	TAR	tarsus
TTH	indeterminate tooth	MTT	metatarsus
INC	incisor	MT1-5	metatarsus 1-5
HYD	hyoid	MTL	lateral metatarsus
ATL	atlas	SES	sesamoid
AXI	axis	PH1	1st phalanx
CEV	cervical vertebra (and 3-7)	PH2	2nd phalanx
TRV	thoracic vertebra (and 1-13)	PH3	3rd phalanx
LMV	lumbar vertebra	PHL	lateral phalanx
SAC	sacrum	LBF	long bone
CDV	caudal vertebra	UNI	unidentified
VER	vertebra		
STN	sternum	CLV	clavicle
CC	costal cartilage	COR	coracoid
RIB1	first rib (2 etc)	CMP	carpo-metacarpus
RIB	rib	CMC	carpo-metacarpus
		WPH1-3	wing phalanges 1-3
URO	urostyle	WPH	wing phalanx
		LSA	lumbosacrale
DENT	dentary		
CLEI	cleithrum		
RAY	fin ray		
SHELL	shell		
UV	upper valve		
VAL	valve		

NUMBER: number of fragments in the entry

SIDE: W - whole L - left side R - right side F - fragment

FUSION: records the fused/unfused condition of the epiphyses
P - proximal; D - distal; E - acetabulum; N - unfused; F - fused; C - cranial; A - posterior

ZONES: records the part of the bone present.
The key to each zone on each bone is on page 4

BUTCHERY: records whether a bone has been chopped (CH), cut (KN), worked (W), burnt (C)

GNAWING: records if a bone has been gnawed by dogs (DG), cats (FEL) or rodents (RG)

TOOTH WEAR - Codes are those used in Grant, A. 1982 *The use of tooth wear as a guide to the age of domestic animals*, in B. Wilson, C. Grigson and S. Payne (eds) *Ageing and sexing animal bones from Archaeological sites*, 91-108.

Teeth are labelled as follows in the tooth wear column:

Deciduous	Permanent
f ldpm2/dupm2	F lpm2/upm2
g ldpm3/dupm3	G lpm3/upm4
h ldpm4/dupm4	H lpm4/upm4
	I lm1/um1
	J lm2/um2
	K lm3/um3

MEASUREMENTS :Any measurements are those listed in A. Von den Driesch (1976) *A Guide to the Measurement of Animal Bones from Archaeological Sites*, Peabody Museum Bulletin 1, Peabody Museum, Harvard, USA

Some measurements have been taken on juveniles. Measurements marked L1 are the greatest length of long bones lacking one unfused epiphysis – the measurement being taken from the epiphyseal junction. Measurements marked L2 are the greatest length of the long bones between epiphyseal junctions when both epiphyses are unfused.

PATHOLOGICAL: A 'P' indicates that the bone fragment carries a pathology

COMMENTS: This may include a short description of the fragments, any pathologies, butchery or gnawing evidence

PRESERVATION: records the condition of the bone in the following manner

- 1- enamel only surviving
- 2- bone very severely pitted and thinned, tending to break up; teeth with surface erosion and loss of cementum and dentine
- 3- surface pitting and erosion of bone, some loss of cementum and dentine on teeth
- 4- surface of bone intact, loss of organic component, material chalky, calcined or burnt
- 5- bone in good condition, probably with some organic component

ZONES - codes used to define the zones on each bone

SKULL	1. paraoccipital process	METACARPUS	1. medial facet of proximal articulation, MC3	
	2. occipal condyle		2. lateral facet of proximal articulation, MC4	
	3. intercornual protuberance		3. medial distal condyle, MC3	
	4. external acoustic meatus		4. lateral distal condyle, MC4	
	5. frontal sinus		5. anterior distal groove and foramen	
	6. ectorbitale		6. medial or lateral distal condyle	
	7. entorbitale			
	8. temporal articular facet		FIRST PHALANX	1. proximal epiphysis
	9. facial tuber			2. distal articular facet
	0. infraorbital foramen			
MANDIBLE	1. Symphyseal surface	INNOMINATE	1. tuber coxae	
	2. diastema		2. tuber sacrale + scar	
	3. lateral diastemal foramen		3. body of illium with dorso-medial foramen	
	4. coronoid process		4. iliopubic eminence	
	5. condylar process		5. acetabular fossa	
	6. angle		6. symphyseal branch of pubis	
	7. anterior dorsal ascending ramus posterior M3		7. body of ischium	
	8. mandibular foramen		8. ischial tuberosity	
			9. depression for medial tendon of rectus femoris	
VERTEBRA	1. spine	FEMUR	1. head	
	2. anterior central epiphysis		2. trochanter major	
	3. posterior central epiphysis		3. trochanter minor	
	4. centrum		4. supracondyloid fossa	
	5. neural arch		5. distal medial condyle	
SCAPULA	1. supraglenoid tubercle		6. lateral distal condyle	
	2. glenoid cavity		7. distal trochlea	
	3. origin of the distal spine		8. trochanter tertius	
	4. tuber of spine	TIBIA	1. proximal medial condyle	
	5. posterior of neck with foramen		2. proximal lateral condyle	
	6. cranial angle of blade		3. intercondylar eminence	
	7. caudal angle of blade		4. proximal posterior nutrient foramen	
HUMERUS	1. head		5. medial malleolus	
	2. greater tubercle		6. lateral aspect of distal articulation	
	3. lesser tubercle		7. distal pre-epiphyseal portion of the diaphysis	
	4. intertuberal groove	CALCANEUM	1. calcaneal tuber	
	5. deltoid tuberosity		2. sustentaculum tali	
	6. dorsal angle of olecranon fossa		3. processus anterior	
	7. capitulum			
	8. trochlea	METATARSUS	1. medial facet of proximal articulation, MT3.	
9. coronoid fossa	2. lateral facet of proximal articulation, MT4			
0. teres tubercle		3. medial distal condyle, MT3		
RADIUS	1. medial half of proximal epiphysis		4. lateral distal condyle, MT4	
	2. lateral half of proximal epiphysis		5. anterior distal groove and foramen	
	3. posterior proximal ulna scar and foramen		6. medial or lateral distal condyle	
	4. medial half of distal epiphysis			
	5. lateral half of distal epiphysis			
	6. distal shaft immediately above distal epiphysis			
ULNA	1. olecranon tuberosity			
	2. trochlear notch- semilunaris			
	3. lateral coronoid process			
	4. distal epiphysis			

Archive Catalogue of Animal bone from Washingbrough Pumping Station – LWES04

site	context	species	bone	no.	side	fusion	zone	butchery	gnawing	toothwear	measurement	pathological	comment	preservation
LWES04	1101	CER	ANT	1	F								PIECE OF BEAM CORTEX	3
LWES04	1101	CER	ANT	1	F								SHED-CORONET AND BROW TINE- 2 PIECES	3
LWES04	1101	CER	ANT	1	F								LARGE TINE AND PORTION OF BEAM-BEZ?	3
LWES04	1101	CER	ANT	1	F								PORTION OF LARGE CROWN WITH ONE TINE CHOPPED OFF	3
LWES04	1110	CER	ANT	1	L			CH					SHED BASE-BASE BROW-BEZ AND PART BEAM-ERODED-BEAM CHOPPED-POSS PED USED AS HAMMER	3
LWES04	1121/19	OVI	SKL	1	R								FRAG PARIETAL AND FRONTAL WITH BASAL FRAG HORN CORE	4
LWES04	1121/3	BOS	CAL	1	R	PF	123				GL-116.5		COMPLETE-BUT ERODED	2/3
LWES04	1121/4	SUS	LC	1	F			W?					MID SECTION OF LARGE MALE CANINE- 2 PIECES-WELL POLISHED-POSS BROKEN ARTEFACT	4
LWES04	1121/6	SWAN	HUM	1	L						GL-303 Bp-54 SD-16.5 Bd-37.5	P	COMPLETE-SLIGHT BONE GRWOTH ON POINT ON SHAFT	4
LWES04	1121/6	SWAN	HUM	1	R						GL-301 SD-17.2 Bd-37.8		COMPLETE-VERY SL DAMAGE-MAY BE PAIR TO ABOVE BUT MIGHT NOT BE	4
LWES04	1122/2	CSZ	LMV	1	F								TRANS PROCESS AND PART OF ARCH- 2 PIECES	4
LWES04	1123	OVCA	TRV	1	F	CNAN	145						CENTRUM ARCH AND SPINE-TINY-LAMB	3
LWES04	1123/1	BOS	MAN	1	R		45	CH					DORSAL HALF ASC RAMUS-CHOPPED ON LATERAL SIDE-ERODED	3
LWES04	1124/12	BOS	AST	1	L		1				L1-63.1 L2-57.9 Bp-45.2 Bd-40.2 Dd-31.2		COMPLETE-SL EROSION	4
LWES04	1124/13	SUS	HUM	1	L								MIDSHAFT	4
LWES04	1124/15	CSZ	RIB	1	L								PROX MIDSHAFT	4
LWES04	1124/17	BOS	TIB	1	R		4						PROX LATERAL SHAFT FRAGMENT	4
LWES04	1124/17	SSZ	LBF	1	F								SHAFT FRAGMENT-PIG SIZE?-IRON RICH	4
LWES04	1124/20	CSZ	RIB	1	F								MIDSHAFT-SL ABRADED	3
LWES04	1124/21	CSZ	RIB	1	F								SPLIT RIB FRAGMENT	3
LWES04	1124/22	CSZ	RIB	1	L			CH					MIDSHAFT-DISTAL END CHOPPED	4
LWES04	1124/27	OVCA	RAD	1	R	DF	44						FRAG DISTAL END WITH ULNA EPI FUSED ON	4
LWES04	1124/28	SUS	SKL	1	L								DORSAL FRAG PARIETAL AND OCCIPITAL-SUTURE OPEN-SMALL	4
LWES04	1302	BOS	MAN	1	R		123			K15			ERODED AND FRAGMENTED JAW- 24 PIECES INCLUDING M3	2
LWES04	1303	BOS	MTT	1	L								SHAFT-BOTH ENDS ERODED? OFF-IRON RICH-SMALL ANIMAL	3
LWES04	1303	CSZ	LBF	1	F								SHAFT FRAGMENT- IRON RICH	3
LWES04	1303	CSZ	SCP	1	L		5						CAUDAL MARGIN OF BLADE-ERODED-7 PIECES	3
LWES04	1303	CSZ	UNI	2	F								SHAFT FRAG?-IRON RICH-ERODED	3
LWES04	1303	EQU	INN	1	L		3						LIAL SHAFT-IRON RICH	4
LWES04	1303	EQU	RAD	1	R		3						WHOLE OF SHAFT-BOTH ENDS LOST-ERODED?	3
LWES04	1303	EQU	SAC	1	F	CF	14						CENTRUM OF 1ST SACRAL VERT	4
LWES04	1303	UNI	UNI	3	F								INDET-IRON RICH-ERODED	3
LWES04	1309	BOS	MAN	1	R		14						VERY ERODED JAW-18 PIECES	2
LWES04	1311	BOS	RAD	1	L	PF	1						FRAGMENT PROX END-IRON RICH-ERODED	2/3
LWES04	1311	OVCA	RAD	1	L		3						PROX SHAFT FRAG	3
LWES04	1311	UNI	UNI	3	F								INDET FRAGS-IRON RICH-ERODED	3
LWES04	1313	EQU	INN	1	L	EF	57						ACETAB FRAG WITH ISCHIAL SHAFT-9 PIECES-IRON RICH-ERODED	3
LWES04	153/114	BOS	MAN	1	L								VENTRAL FRAG DIASTEMAL REGION	3
LWES04	1602/10	MAN	FEM	1	F								PROX AND MIDSHAFT-JUV-POROUS-SMALL-3 PIECES	4
LWES04	1602/11	EQU	MTT	1	R	DF	123				GL-246 Bp-43.4 Dp-39.8 SD-27.9 Bd-45 Dd-33.5		COMPLETE	4
LWES04	1602/12	CSZ	RIB	1	F								MIDSHAFT FRAGMENT-SL POROUS	4
LWES04	1602/13	BOS	SAC	1	F								FRAGMENT OF CENTRUM AND ARCH OF 2 CENTRAL-POST VERTEBRAE	4
LWES04	1602/14	BOS	TIB	1	R	PNDP	4567				SD-38 Bd-58.8 Dd-41.5		DISTAL END AND SHAFT-MODERN DAMAGE	4
LWES04	1602/19	BOS	TIB	1	L	DF	567				SD-33 Bd-51.5 Dd-37		DISTAL END AND LARGE PART MEDIAL SIDE OF SHAFT-ERODED	2/3
LWES04	1602/20	CSZ	LBF	1	F								SHAFT FRAGMENT-ERODED	3
LWES04	1602/23	SUS	RAD	1	L	PFDN	1236						PROX HALF AND DISTAL SHAFT- 2 PIECES-IRON RICH-VERY ERODED	2
LWES04	1602/25	BOS	INN	1	R	EF	459						ACETAB WITH PARTS PUBIS AND ISCHIAL SHAFT	4
LWES04	1602/25	CSZ	CEV	1	F								POST FRAG OF NEURAL ARCH AND SPINE-ERODED	3
LWES04	1602/25	CSZ	RIB	1	R								DISTAL MIDSHAFT FRAGMENT	4
LWES04	1602/25	CSZ	UNI	1	F								INDET-ERODED	3

site	context	species	bone	no.	side	fusion	zone	butchery	gnawing	toothwear	measurement	pathological	comment	preservation
LWES04	1602/28	BOS	ATL	1	F								FRAGMENT OF ANT ARTICULATION- 2 PIECES	3
LWES04	1602/28	CSZ	UNI	1	F								INDET-VERT?	3
LWES04	1602/28	CSZ	VER	1	F								INDET ERODED FRAG	3
LWES04	1602/3	CSZ	UNI	1	F								INDET-RIB?	3
LWES04	1602/30	CSZ	TRV	1	F	CNAN	124						CENTRUM AND EPIS- 5 PIECES-ERODED-PROB BOS-LAST TRV?	3
LWES04	1602/32	BOS	TRV	1	F	CFAF	34	CH?					CENTRUM-POST CHOPPED-ERODED	3
LWES04	1602/32	SUS	SCP	1	F		4						SPINE-CHECKI	4
LWES04	1602/34	BOS	HC	1	L		1						BASE OF CORE AND PART SKULL-SHORT HONE	3
LWES04	1602/34	CSZ	RIB	1	F								SHAFT FRAG-POROUS-PIG SIZE- 2 PIECES	3
LWES04	1602/36	CSZ	CEV	1	F								ZYGAPOPYSIS	4
LWES04	1602/36	CSZ	SCP	1	F								PART OF BLADE	3
LWES04	1602/36	CSZ	TRV	1	F								PART SPINE	3
LWES04	1602/36	UNI	VER	1	F								PART SACRUM?	3
LWES04	1602/38	BOS	FEM	1	L		4		DG				MID AND DISTAL SHAFT-DISTAL END CHEWED-LARGE	4
LWES04	1602/38	CSZ	RIB	1	F								SHAFT FRAGMENT	4
LWES04	1602/38	SUS	SCP	1	R	DF	1235				GLP-39 SLC-24.9		DAMAGED PROX END-OTHERWISE COMPLETE-SPINE AT 1602/32	4
LWES04	1602/40	MAN	FEM	1	F								SHAFT-ERODED	3
LWES04	1602/43	BOS	RAD	1	L	PFDF	2456				GL-254 SD-34.4 Bd-59 Dd-38.6		DISTAL END-MOST OF SHAFT AND PART OF PROX END-ERODED	3
LWES04	1602/43	BOS	TIB	1	R	DF	4567				SD-34.9 Bd-54.1 Dd-39.8		DISTAL END AND MOST OF SHAFT	4
LWES04	1602/45	BOS	TIB	1	L		7						DISTAL SHAFT-HEAVILY ERODED	2/3
LWES04	1602/46	BOS	RAD	1	R	PF	3						ERODED PROX 2 THIRDS OF SHAFT WITH FRAGMENT OF PROX EPI	2/3
LWES04	1602/47	BOS	CAL	1	L	PF	123				GL-121.5 GB-27.2		COMPLETE	4
LWES04	1602/47	MAN	TIB	1	F								?PROX ANT FRAG LEFT TIBIA SHAFT AND BIT OF PROX END-FUSED	4
LWES04	1602/47	OVCA	SKL	1	L								PARIETAL WITH FRAG TEMP AND OCIP	4
LWES04	1602/47	OVI	SKL	1	L		6HC	CH					FRONTAL WITH HORN CORE-PROB CHOPPED DOWN MIDDLE-EWE OR WETHER	4
LWES04	1602/48	CSZ	RIB	1	F								SHAFT FRAGMENT	4
LWES04	1602/49	BOS	MAN	1	R		6						ANGLE	4
LWES04	1602/5	SUS	FEM	1	R		4	S					DISTAL HALF SHAFT-PROX EBNL SAWN THRU-ERODED	3
LWES04	1602/51	CSZ	RIB	1	F								SHAFT FRAGMENT	3
LWES04	1602/51	OVCA	FEM	1	L	PF	12						DAMAGED PROX END	4
LWES04	1602/51	OVCA	INN	1	R		3						ILIAL SHAFT-ERODED	3
LWES04	1602/51	OVCA	SKEL	1	P	CFAF							3 LUMBAR AND THE SACRUM-10 PIECES	4
LWES04	1602/51	SSZ	LBF	2	F								SHAFT FRAGMENT	3
LWES04	1602/51	SSZ	RIB	1	F								DISTAL SHAFT	3
LWES04	1602/51	SUS	LM3	1	W				K5				NO WEAR-WITH COUPLE OF PIECES OF BONE	4
LWES04	1602/51	SUS	SCP	1	L	DN	25						GLENOID-NECK AND PART BLADE-4 PIECES-GLEN UNFORMED-PIGLET	3
LWES04	1602/53	BOS	MTT	1	F								SPLIT PROX AND MID SHAFT-ERODED	2/3
LWES04	1602/53	BOS	TIB	1	R	DF	567						DISTAL END-HEAVILY ERODED	2
LWES04	1602/55	BOS	PH3	1	L		1						COMPLETE	4
LWES04	1602/55	BOS	SCP	1	L		23	C					GLENOID AND PART OF NECKPROX CHARRED	4
LWES04	1602/55	OVI	SKL	1	F		HCHC863						HORN CORES AND PARIETAL- 4 PIECES-EWE OR WETHER	4
LWES04	1602/55	SSZ	RIB	1	R								PROX HALF-ERODED	3
LWES04	1602/7	BOS	SCP	1	R		2345				SLC-59.6		GLENOID-NECK AND LARGE PART OF BLADE- 6 PIECES-LARGE	3
LWES04	1602/8	OVCA	RIB	1	R								ALMOST COMPLETE	4
LWES04	1602/9	CSZ	RIB	1	F								MIDSHAFT	4
LWES04	1604	BOS	MAN	1	R		123						SYMPHYSEAL AND DIASTEMA FRAGMENT	4
LWES04	1604	BOS	TIB	1	R		4						PROX LATERAL SHAFT FRAGMENT	4
LWES04	1604	CER	ANT	2	F			C					CHARRED FRAGMENTS OF ANTLER CORTEX AND MEDULLA	4
LWES04	1604	CER	ANT	1	F								SMALL FRAGMENT OF ANTLER CORTEX	4
LWES04	1604	CSZ	RIB	1	F			CH					DISTAL MIDSHAFT-PROX END CHOPPED	4
LWES04	1604	CSZ	RIB	1	F			CH					PART OF SHAFT-ONE END CHOPPED	4
LWES04	1604	SUS	SCP	1	R		235						GLENOID-NECK AND DISTAL BLADE-ERODED- 5 PIECES	2/3
LWES04	1611	BOS	ATL	1	L								ANT LATERAL FRAGMENT OF ARTIC FACET	3
LWES04	1611	BOS	SKL	1	F								SUPRA-ORBITAL FRAG OF FRONTAL- 2 PIECES	3
LWES04	1611	CSZ	LBF	1	F								SHAFT FRAGMENT	3
LWES04	1611	CSZ	UNI	1	F								INDET-ERODED	3
LWES04	1611	SSZ	RIB	1	F								MIDSHAFT-IRON RICH-ERODED	2/3

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LWES04	1611	SUS	CAL	1	R		23						PROX END LOST-ERODED	3
LWES04	1611	SUS	SCP	1	R	DF	1235						GLENOID-NECK AND DISTAL THIRD OF BLADE-2 PIECES	3
LWES04	1612	BOS	MTC	1	L		125		DG				PROX END AND SHAFT-PROX CHEWED-HEAVILY ERODED	2/3
LWES04	1612	BOS	TIB	1	F								DISTAL SHAFT- 4 PIECES-HEAVILY ERODED	2/3
LWES04	1612	BOS	TIB	1	L		4						PROX MIDSHAFT- 2 PIECES-HEAVILY ERODED	2/3
LWES04	1612	CSZ	LBF	1	F								INDET-ERODED	3
LWES04	1613	BOS	MAN	1	R		7			I15J14K11			PORTION OF HORI RAMUS WITH MOLAR ROW	4
LWES04	1613	BOS	RAD	1	L	PF	12				Bp-73.5 Dp-37.8		PROX END	4
LWES04	1628	BOS	CAL	1	L	PF	123	C			GL-113.2 Bp-28.4		DISTAL END BROKEN AND CHARRED	4
LWES04	1628	BOS	CAL	1	R	PF	123				GL-121.7 Bp28.3		COMPLETE-SL DAMAGE AND EROSION	4
LWES04	1628	BOS	CEV	1	L	AF	34	CH					CENTRUM AND TRANS PROCESS-CHOPPED THRU CENTRUM FROM BELOW	4
LWES04	1628	BOS	CEV	1	R		1						SPINE-ZYGA AND PART NEURAL ARCH	4
LWES04	1628	BOS	CQ	1	W		1						DAMAGED	4
LWES04	1628	BOS	FEM	1	F	DF	6	CH					DISTAL CONDYLE-CHOPPED FROM BONE	4
LWES04	1628	BOS	FEM	1	L	PC	1	CH					CAPUT-CHOPPED FROM BONE	4
LWES04	1628	BOS	HUM	1	F		0						MIDSHAFT FRAGMENT-ERODED	3
LWES04	1628	BOS	HUM	1	F	PN							PROX SHAFT FRAGMENT	4
LWES04	1628	BOS	HUM	1	R	PF							FRAG PROX SHAFT	4
LWES04	1628	BOS	INN	1	L	EF	7	CH					ISCHIAL SHAFT WITH PART ACETAB-POST CHOPPED	4
LWES04	1628	BOS	INN	1	R	EN							ISCHIAL SHAFT WITH PART ACETAB-CALF	4
LWES04	1628	BOS	INN	1	R		2						ANT FRAG ILIAL SHAFT	4
LWES04	1628	BOS	LMV	1	F	CFAF	2345						CENTRUM AND ARCH	4
LWES04	1628	BOS	LMV	1	F	CFAF	12345	CH					CENTRUM AND ARCH-CHOPPED AXIALLY DOWN RIGHT SIDE	4
LWES04	1628	BOS	LMV	1	F		15						SPINE AND NEURAL ARCH	4
LWES04	1628	BOS	LMV	1	F	CFAF	234						CENTRUM	4
LWES04	1628	BOS	LMV	1	F	CNAN	4						CENTRUM	4
LWES04	1628	BOS	LMV	1	L								PART TRANS PROCESS AND PART OF NEURAL ARCH	4
LWES04	1628	BOS	LPM3	1	R					G11			COMPLETE	4
LWES04	1628	BOS	MAN	1	F								VENTRAL FRAG HORI RAMUS	3
LWES04	1628	BOS	MAN	1	F								FRAG WITH MOLAR ALVEOLUS-CALF-POROS	4
LWES04	1628	BOS	MAN	1	L								POST VENTRAL FRAG HORI RAMUS	4
LWES04	1628	BOS	MAN	1	R					fgH8			M1 LOST PROB ERUTING THRU BONE	4
LWES04	1628	BOS	MAN	1	R					H1216J15			RAMUS FRAG WITH PART TOOTH ROW-ERODED AND FLAKING	3
LWES04	1628	BOS	MAN	1	R								VENTRAL PART OF HORI RAMUS	4
LWES04	1628	BOS	MTC	1	F	DF							SPLIT DISTAL SHAFT AND EPIPHYSIS FRAG	4
LWES04	1628	BOS	MTC	1	F								PROX SHAFT FRAGMENT	4
LWES04	1628	BOS	MTT	1	F	DF	6						DISTAL CONDYLE	4
LWES04	1628	BOS	PAT	1	R		1				GL-50.7 B-43.9		COMPLETE	4
LWES04	1628	BOS	PH1	1	F	PF			DG				CHEWED LATERAL HALF	4
LWES04	1628	BOS	PH3	1	R		1						COMPLETE	4
LWES04	1628	BOS	RAD	1	L	PFDf	123456		DG		GL-230 Bp67 Dp-33.5 SD-33.8		COMPLETE-SL DAMAGE TO DISTAL END-DISTAL CHEWED	4
LWES04	1628	BOS	RIB	1	L	PF	1						PROX HALF POST RIB	4
LWES04	1628	BOS	RIB	1	R								PROX HALF OF SHAFT	4
LWES04	1628	BOS	RIB	1	R	PF	1						PROX END	4
LWES04	1628	BOS	RIB	1	R			CH					PROX AND MIDSHAFT-CHOPPED	4
LWES04	1628	BOS	RIB	1	R								MIDSHAFT	4
LWES04	1628	BOS	SAC	1	F	CF	2						PART CENTRUM AND ANT EPIPHYSIS	4
LWES04	1628	BOS	SAC	1	F								MIDDLE PART OF SACRUM	4
LWES04	1628	BOS	SCP	1	L	DF	12345	K			GLP-56.8 LG-48.7 BG-40 SLC-43.1		GLENOID-NECK AND DISTAL BLADE-CUT MARKS ON VENTRAL EDGE OF GLENOID	4
LWES04	1628	BOS	SCP	1	L	DF	12				GLP-63 BG-42.2 LG-52.8		GLENOID AND PART NECK	4
LWES04	1628	BOS	SCP	1	L		4	CH					PART OF SPINE AND CAUDAL BLADE-CHOPPED VENTRALLY	4
LWES04	1628	BOS	SKL	1	F								BASI-OCCIPITAL	4
LWES04	1628	BOS	SKL	1	R					J15K11			MAXILLA FRAG WITH M2 AND 3- 2 PIECES	4
LWES04	1628	BOS	TIB	1	F								PROX POST SHAFT FRAGMENT	4
LWES04	1628	BOS	TIB	1	L								ANT PROX SHAFT FRAGMENT	4
LWES04	1628	BOS	TIB	1	L	PF			DG				SPINE-PROX CHEWED	4
LWES04	1628	BOS	TIB	1	L	DF							FRAGMENT OF DISTAL ARTICULATION	4

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LWES04	1628	BOS	TIB	1	R	PF							PROX SPINE	4
LWES04	1628	BOS	TIB	1	R	DF	6						SPLIT DISTAL END	4
LWES04	1628	BOS	TIB	1	R	PN							PROX PART OF SHAFT	4
LWES04	1628	BOS	TIB	1	R	PN	123						PROX EPI-SAME BONE AS TIB ABOVE	4
LWES04	1628	BOS	TIB	1	R	PJ	1234						PROX HALF	4
LWES04	1628	BOS	ULN	1	R	PF	1						OLECRANON-MODERN CHOPS?	4
LWES04	1628	BOS	ULN	1	R								PROX SHAFT FRAG-SMALL-POROUS-JUV	3
LWES04	1628	CER	ANT	1	F			CHS					FRAGMENT OF CROWN-SAWN AND CHOPPED	3
LWES04	1628	CER	TIB	1	R	PN							SPINE	4
LWES04	1628	CSZ	CDV	1	F	CNAN							SL DAMAGE	4
LWES04	1628	CSZ	CEV	1	F								ZYGAPOPHYSIS	4
LWES04	1628	CSZ	FEM	1	F	DN							DISTAL SHAFT FRAGMENT	4
LWES04	1628	CSZ	LBF	2	F								SHAFT FRAGMENT	4
LWES04	1628	CSZ	LBF	1	F								SHAFT FRAGMENT	4
LWES04	1628	CSZ	LMV	1	F								BASE OF TRANS PROCESS	4
LWES04	1628	CSZ	LMV	2	F								TRANS PROCESS	4
LWES04	1628	CSZ	LMV	1	F		15						SPINE AND NEURAL ARCH-ERODED	3
LWES04	1628	CSZ	LMV	1	F								FRAG NEURAL ARCH	4
LWES04	1628	CSZ	LMV	1	F		5						PART OF NEURAL ARCH	4
LWES04	1628	CSZ	LMV	1	F	CFAF	234	CH					CENTRUM-CHOPPED TRANSVERSELY ON EVNTRAL SIDE	4
LWES04	1628	CSZ	LMV	1	F	CNAJ	34						CENTRUM	4
LWES04	1628	CSZ	LMV	1	F	CFAF	234						CENTRUM	4
LWES04	1628	CSZ	LMV	1	F		1						SPINE AND PART NEURAL ARCH	4
LWES04	1628	CSZ	LMV	1	F	CNAN	4	CH					CENTRUM-CHOPPED LONGITUDINALLY	4
LWES04	1628	CSZ	LMV	1	F		15						SPINE AND NEURAL ARCH	4
LWES04	1628	CSZ	LMV	1	F	CNAN	4	CH					CHOPPED AXIALLY THRU CENTRUM	4
LWES04	1628	CSZ	LMV	1	F								PART NEURAL ARCH	4
LWES04	1628	CSZ	LMV	2	F	CFAF	234						CENTRUM	4
LWES04	1628	CSZ	LMV	2	F	CFAF	234						CENTRUM	4
LWES04	1628	CSZ	LMV	1	F	CFAF	234	CH					CENTRUM-CHOPPED AXIALLY ACROSS TOP	4
LWES04	1628	CSZ	LMV	1	F	AN	3						POST EPI	4
LWES04	1628	CSZ	LMV	1	F	CFAF	234	CH					CENTRUMCHOPPED AXIALLY ON DORSAL SIDE	4
LWES04	1628	CSZ	LMV	1	F	AF	3						POST FRAG CENTRUM	4
LWES04	1628	CSZ	LMV	1	F	CFAF	234	CH					CENTRUM-CHOPPED AXIALLY DOWN RIGHT SIDE	4
LWES04	1628	CSZ	LMV	1	F	AF	3	CCH					POST CENTRUM-CHOPPED OBLIQUELY AND CHARRED	4
LWES04	1628	CSZ	LMV	1	F	CF							ANT VENTRAL FRAG CENTRUM	4
LWES04	1628	CSZ	LMV	1	F	CJAN	24	CH					CENTRUM-CHOPPED DOWN MIDDLE	4
LWES04	1628	CSZ	LMV	1	F	CFAF	234					P	CENTRUM LARGE PIT IN POST FACET	4
LWES04	1628	CSZ	LMV	1	F		5						NEURAL ARCH	4
LWES04	1628	CSZ	LMV	1	F								POST HALF NEURAL ARCH WITH POST ZYGAS	4
LWES04	1628	CSZ	LMV	1	F	CNAN	4						CENTRUM-MOD? CHOP ON VENTRAL SURFACE	4
LWES04	1628	CSZ	LMV	1	F	CNAN	4						CENTRUM	4
LWES04	1628	CSZ	LMV	1	F	CN	2						ANT EPIPHYSIS	4
LWES04	1628	CSZ	LMV	1	F		5						PART OF NEURAL ARCH	4
LWES04	1628	CSZ	LMV	1	L								LATERAL FRAG WITH ANT ZYGA	4
LWES04	1628	CSZ	MAN	1	F								ANT FRAG ASC RAMUS? DEER?	4
LWES04	1628	CSZ	RIB	1	F								SPLIT SHAFT FRAGMENT	4
LWES04	1628	CSZ	RIB	1	F								SPLIT SHAFT FRAGMENT	4
LWES04	1628	CSZ	RIB	1	F			CH					SHAFT FRAGMENT-CHOPPED	3
LWES04	1628	CSZ	RIB	1	F								SHAFT FRAGMENT	4
LWES04	1628	CSZ	RIB	1	F								SPLIT SHAFT FRAGMENT	4
LWES04	1628	CSZ	RIB	1	F			K					DISTAL SHAFT-CUT ON LATERAL SURFACE	4
LWES04	1628	CSZ	RIB	1	F			CH					MIDSHAFT-PROX END CHOPPED	4
LWES04	1628	CSZ	RIB	2	F								SHAFT FRAGMENT	4
LWES04	1628	CSZ	RIB	1	L			K					MIDSHAFT WITH CUT MARK	4
LWES04	1628	CSZ	RIB	1	R								PROX SHAFT	4
LWES04	1628	CSZ	RIB	1	R			K					DISTAL MIDSHAFT FRAGMENT WITH CUT MARK	4

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LWES04	1628	CSZ	RIB	1	R			CH					MIDSHAFT-PROX END CHOPPED	4
LWES04	1628	CSZ	RIB	1	R			CH					PROX HALF SHAFT-DISTAL END CHOPPED	4
LWES04	1628	CSZ	RIB	1	R	PF	1						PROX THIRD	4
LWES04	1628	CSZ	SAC	1	F	CF	24	CH					1ST SACRAL CENTRUM-CHOPPED DOWN SIDE	4
LWES04	1628	CSZ	SAC	1	F		1	CH					CHOPPED SPINE FRAGMENT	4
LWES04	1628	CSZ	SAC	1	F								PART SPINE	4
LWES04	1628	CSZ	SAC	2	F								FRAG SACRAL SPINE	4
LWES04	1628	CSZ	SKL	1	F								INDET	4
LWES04	1628	CSZ	SKL	1	F								DORSAL FRAGMENT	4
LWES04	1628	CSZ	TIB	1	F			CH					SPLIT FRAG PROX END	4
LWES04	1628	CSZ	TIB	1	R								PROX MIDSHAFT FRAGMENT	4
LWES04	1628	CSZ	TRV	1	F	AF	3						POST HALF CENTRUM	4
LWES04	1628	CSZ	TRV	1	F		5						PART OF NEURAL ARCH	4
LWES04	1628	CSZ	TRV	1	F								TRANS PROCESS	4
LWES04	1628	CSZ	TRV	1	F		1						SPINE	4
LWES04	1628	CSZ	TRV	1	F		1	CH					DORSAL HALF SPINE-BASE CHOPPED	4
LWES04	1628	CSZ	TRV	1	F								BASAL FRAG OF SPINE	4
LWES04	1628	CSZ	TRV	1	F								SPINE FRAGMENT	4
LWES04	1628	CSZ	TRV	1	F		1						PART OF SPINE	4
LWES04	1628	CSZ	TRV	1	F		1						DORSAL HALF	4
LWES04	1628	CSZ	TRV	1	F		1						BASAL 2 THIRDS OF SPINE	4
LWES04	1628	CSZ	TRV	1	F								SPINE FRAGMENT	4
LWES04	1628	CSZ	TRV	1	R	CNAN							RIGHT SIDE CENTRUM WITH TRANS PROCESS	4
LWES04	1628	CSZ	UNI	1	F								INDET	4
LWES04	1628	CSZ	UNI	1	F								INDET	4
LWES04	1628	CSZ	UNI	1	F			C					INDET-CALCINED	4
LWES04	1628	CSZ	UNI	3	F								INDET	4
LWES04	1628	CSZ	UNI	1	F								INDET-SCAP?	4
LWES04	1628	CSZ	VER	1	F	CN	2						ANT EPI-LAST TRV/1ST LMV?	4
LWES04	1628	CSZ	VER	1	F								INDET	4
LWES04	1628	EQU	FEM	1	R	DF	34567						DISATAL END AND SHAFT-PROX BROKEN OFF	4
LWES04	1628	MAN	FEM	1	R	PN							PROX SHAFT-PART OF 1602/10-IMMATURE	4
LWES04	1628	MAN	MTP	1	W	PF							COMPLETE	4
LWES04	1628	OVCA	AXI	1	F		4						ANT HALF CENTRUM	4
LWES04	1628	OVCA	HUM	1	L	DJ	67890						DISTAL END AND SHAFT-SMALL-JUV	4
LWES04	1628	OVCA	HUM	1	R	DF	67890				SD-13.1 BT-29 HT-15.8		DISTAL HALF	4
LWES04	1628	OVCA	LM2	1	L				J9				COMPLETE	4
LWES04	1628	OVCA	MTC	1	R								SHAFT-VERY SMALL-GRACILE-JUV-LAMB?	4
LWES04	1628	OVCA	RIB	1	R								PROX HALF OF SHAFT	4
LWES04	1628	OVCA	SCP	1	R	DF	1235				GLP-30.8 BG-18.6 SLC-17.4		GLENOID-NECK AND DISTAL HALF OF SPINE	4
LWES04	1628	OVCA	SKL	1	L								PARIETAL AND TEMPORAL FRAG	4
LWES04	1628	OVCA	TIB	1	R			W					PROX SHAFT-END SHAVED OFF AND DISTAL SHAFT POINTED-BROKEN	4
LWES04	1628	OVI	MTC	1	L		25						SHAFT-GRACILE-SMALL	3
LWES04	1628	PIKE?	DENT	1	F								ERODED LARGE DENTARY	3
LWES04	1628	SSZ	LBF	1	F								SHAFT FRAGMENT	4
LWES04	1628	SSZ	RIB	1	F								DISTAL SHAFT FRAGMENT	4
LWES04	1628	SSZ	RIB	1	F								PROX SHAFT FRAGMENT	3
LWES04	1628	SSZ	RIB	1	R								PROX HALF OF SHAFT	4
LWES04	1628	SSZ	SCP	1	F			C					CHARRED FRAG CAUDAL MARGIN OF BLADE	4
LWES04	1628	SUS	ATL	1	R								RIGHT HALF	4
LWES04	1628	SUS	CAL	1	L	PN	23				L1-78.2		COMPLETE EXCEPT FOR PROX EPI	4
LWES04	1628	SUS	CAL	1	R	PF	123				GL-80/5 Bp-18.4		COMPLETE	4
LWES04	1628	SUS	FEM	1	R	DN	67						PART OF DISTAL EPI	4
LWES04	1628	SUS	HUM	1	R	DN	690						SHAFT	4
LWES04	1628	SUS	INN	1	R	EF	234579						PUBIS LOST AND SOME PERIPHERAL DAMAGE	4
LWES04	1628	SUS	LI	1	R								SL WEAR	4
LWES04	1628	SUS	MAN	1	L		6	K					ANGLE WITH TWO SMALL CUTS MARKS ON POST	4

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LWES04	1628	SUS	MAN	1	R		12378			FGH9113J11K7	7-121.5 M3-32.5		RAMUS WITH TOOTH ROW AND CANINE-FEMALE	4
LWES04	1628	SUS	MAN	1	R		27			H8113J8K3			RAMUS FRAG WITH MOLAR ROW	4
LWES04	1628	SUS	PH1	1	L	PF	12						COMPLETE	4
LWES04	1628	SUS	RIB	1	L	PN	1						PROX END AND MOST OF CSHAFT	4
LWES04	1628	SUS	SCP	1	L	DN	235						GLEWNOID-NECK AND DISTAL THIRD OF BLADE	4
LWES04	1628	SUS	SKL	1	L					GH7110J7			MAXILLA WITH PART TOOTH ROW- 2 PIECES	4
LWES04	1628	SUS	SKL	1	L		7			H9112J8K7	M3-31.5		MAXILLA WITH TOOTH ROW AND ZYGOMATIC ARCH	4
LWES04	1628	SUS	SKL	1	L		6						SUPRA-ORBITAL FRAG OF FRONTAL	4
LWES04	1628	SUS	SKL	1	L		5						ANT FRONTAL	4
LWES04	1628	SUS	TIB	1	L								PROX SHAFT FRAGMENT	4
LWES04	1628	SUS	TIB	1	R	DN	7						DISTAL HALF OF SHAFT	4
LWES04	1628	SUS	ULN	1	R		23						PROX HALF WITH OLECRANON BROKEN OFF	4
LWES04	1628	UNI	SKL	1	F								INDET-SUS?	4
LWES04	1628	UNI	UNI	1	F								INDET	4
LWES04	1628.87	SUS	TRV	1	R								TRANS PROCESS AND BASE SPINE	4
LWES04	1628/54	BOS	HC	1	R		1				MAXBDIAM-46.2 MINBDIAM-30.8		SHORT FORWARD CURVING & SL UPWARD CELTIC SHORTHORN TYPE	4
LWES04	1628/55	SSZ	LBF	1	F								SHAFT FRAGMENT	4
LWES04	1628/56	CSZ	RIB	1	F			CH					MIDSHAFT-PROX END CHOPPED	3
LWES04	1628/59	BOS	INN	1	R	EF	57						PART OF ACETAB WITH ISCHIAL SHAFT	4
LWES04	1628/59	CSZ	LMV	1	F		15						PART OF EURAL ARCH AND SPINE WITH POST ZYGA	4
LWES04	1628/60	CSZ	SAC	1	F								LATERAL FRAG OF A MIDDLE SACRAL VERT	4
LWES04	1628/61	BOS	CEV	1	L	AF							LEFT SIDE NEURAL ARCH-ANT AND POST ZYGAS	4
LWES04	1628/63	BOS	TIB	1	R		4						PROX LAT SHAFT FRAGMENT	4
LWES04	1628/64	OVI	RAD	1	R	PF	123						PROX END AND SHAFT-SMALL-GRACILE-ADULT	4
LWES04	1628/65	UNI	TRV	1	R								POST FRAG BASE OF SPINE AND OST ZYGA	4
LWES04	1628/66	BOS	HUM	1	R		9		DG				DISTAL SHAFT FRAGMENT-CHEWED	4
LWES04	1628/68	CSZ	RIB	1	F			K					MIDSHAFT FRAGMENT-CUT MARKS ON SURFACE	4
LWES04	1628/69	CSZ	SAC	1	F								FRAGMENT OF CENTRAL SACRAL CENTRUM	4
LWES04	1628/70	BOS	SAC	1	F		1						SPINE OF SACRUM	4
LWES04	1628/71	CSZ	UNI	1	F								INDET- 2 PIECES	4
LWES04	1628/71	CSZ	UNI	1	F								INDET	4
LWES04	1628/72	CSZ	LBF	1	F								SHAFT FRAGMENT-?DISTAL SHAFT BOS HUM?	4
LWES04	1628/73	CSZ	SKL	1	F								DORSAL FRAGMENT OF CRANIUM	4
LWES04	1628/75	CSZ	LMV	1	L								PART TRANS PROCESS AND ANT ZYGAOPHYSIS	4
LWES04	1628/76	UNI	UNI	1	F								INDET	4
LWES04	1628/77	CSZ	TRV	1	R	CF							ANT FRAGMENT OF CENTRUM AND EPI	4
LWES04	1628/80	BOS	CEV	1	F	CNAN	15						NEURAL ARCH AND SPINE	4
LWES04	1628/81	CSZ	UNI	1	F								RIB FRAGMENT?	4
LWES04	1628/82	CSZ	LMV	1	F								POST HALF NEURAL ARCH WITH POST ZYGAS	4
LWES04	1628/84	BOS	LMV	1	R								ANT ZYGAOPHYSIS	4
LWES04	1628/85	UNI	UNI	2	F			C					INDET CALCINED BONE	4
LWES04	1628/86	CSZ	TRV	1	F								TRANS PROCESS	4
LWES04	1628/88	BOS	TIB	1	R								SPLIT DISTAL SHAFT FRAGMENT	4
LWES04	1628/89	CSZ	RIB	1	F								SHAFT FRAGMENT- SLIGHTLY ERODING	3
LWES04	1631	MAN	SKL	1	F								ORBITAL FRAG- 2 PIECES	3
LWES04	1652/1	BOS	INN	1	L	EF	459						ACETAB WITH HEAVILY ERODED EDGES	2/3
LWES04	1652/3	SUS	SKL	1	R								ANT ZYGOMATIC ARCH- 2 PIECES	4
LWES04	1653/131	BOS	FEM	1	F	DF	67	C					CHARRED DISTAL CONDYLE	4
LWES04	1653/132	CSZ	SAC	1	F	CF	14						ERODED CENTRUM OF 1ST SACRAL	2/3
LWES04	1654/142	UNI	UNI	1	F								INDET-VERY ERODED AND FRAGMENTS- >10 BITS	2
LWES04	1654/143	CSZ	RIB	1	F								FRAGMENTED-ERODED	2/3
LWES04	1654/144	BOS	INN	1	L		3						ISCHIAL SHAFT-ERODED	3
LWES04	1659/148	CSZ	RIB	1	F			K					DISTAL SHAFT-PROX END CUT REPEATEDLY	4
LWES04	1659/149	CSZ	RIB	1	F								SHAFT FRAGMENT	4
LWES04	1659/150	CSZ	RIB	1	F								SHAFT FRAGMENT-ONE END CHOPPED	3
LWES04	1801	OVI	MTC	1	L	DF	12345				GL-123.8 Bp-19.9 Dp-14.3 SD-12.1 Bd-23.7 Dd-15.5		COMPLETE-SMALL AND GRACILE	4

site	context	species	bone	no.	side	fusion	zone	butchery	gnawing	toothwear	measurement	pathological	comment	preservation
LWES04	1801	OVI	SKL	1	L		569HC			GH12 12J11K7			FRONTAL WITH HORN CORE AND MAXILLA-YOUNG MALE- 3 PIECES	4
LWES04	2203	BOS	TIB	1	R	DF	4567				SD-29 Bd-52 Dd-39		DISTA END AND SHAFT-ERODED-CH48700	2/3
LWES04	2203	CSZ	LBF	1	F								SHAFT FRAGMENT-CH48700	3
LWES04	2203	SUS	TIB	1	R	PNDF	4567				L1-157 SD-17.8 Bd-27.3 Dd-22.2		PROX EPI LOST	4
LWES04	36002	CER	RAD	1	L		3	CH					MOST OF SHAFT-ERODED-ROOT ETCHED-DISTAL SHAFT CHOPPED- CH063	3
LWES04	999	BOS	INN	1	L	EF	4						PUBIC FRAG OF ACETAB	3
LWES04	999	BOS	MAN	1	R		678						ANGLE-ERODED	2/3
LWES04	999	BOS	RAD	1	F								MIDSHAFT FRAGMENT	3
LWES04	999	CSZ	LBF	1	F			W					SPLINTER OF SHAFT-ONE EDGE SHAVED	4
LWES04	999	CSZ	RIB	1	F							P	SHAFT FRAGMENT-PART HEALED BREAK	3

Washingborough Environmental Agency Works

Site visit 24th May 2004

PCA have opened two long evaluation trenches down either side of the beck leading down to the Washingborough Pumping Station on the south bank of the South Delph. The following observations were made on the basis of the present topography, the information revealed by the trenches and the results of a superficial auger transect down to a depth of three metres below the trench floor.

It is clear from the present landform, the results of the trial trenches in the compound area and the survey work on the north side of the River Witham that the long trenches from the compound area down to the pumping station cross the ancient course of the river from the south bank to the southern margin of the north bank.

In one of the evaluation trenches in the compound area natural sands were uncovered just beneath the modern soil. The sands fell away immediately beneath peats to the north and south. Observation of the present field surface shows that a low ridge of ground crosses the field at this point and can be assumed to reflect the underlying sand bank. Observation to the west and east shows that this ridge continues for several hundred metres in both directions angling slightly north-west and south-east. Survey work on the north side of the River Witham at Fiskerton has shown that the ancient river bank curves southwards in this area and might extend southwards beyond the South Delph. Observation of the present topography immediately east of where the beck enters the South Delph shows a slight ridge at the south end of the field and a definite rise in the ground immediately south of the South Delph bank, which upon augering was confirmed as a sand bank. These are consistent with the observations north of the river and suggest that the south side of the north bank of the ancient river did bend south beyond the present course of the river and the South Delph.

The initial conclusion was therefore that the whole of the ancient river channel, with both its north and south banks could be observed in the fields immediately east of the beck and may occur along the line of the evaluation trenches. A series of six auger holes were therefore sunk along the length of the trench on the west side of the beck and in the base of Trench 11 on the south side of the South Delph bank. The results will be reported in more detail by Simon Savage but the general conclusions are as follows.

The auger hole in the southern end of the trench revealed sands beneath an overburden of less than 2m of organic deposits. These clean medium sands probably represent the northern edge of the sand bank visible in the field and revealed in one of the evaluation trenches in the compound. This sand bank is a natural river levee. Approximately 50 metres north sands were recorded at a greater depth and were clay rich suggesting that they derive from the underlying glacial deposits and were not part of the levee. All of the remaining auger holes in this trench right up to the northern end produced organic deposits or silts for a depth of 3 metres. Augering was not taken to a greater depth in this exercise, although a more detailed survey would allow the reconstruction of the channel profile and the infilling deposits.

In the central area of this long trench the auger revealed what are probably two later channels within the deposits infilling the ancient channel. These are reflected by a change in the deposit sequence in two of the auger holes which showed that earlier deposits had been eroded by a channel and replaced by later infilling sediments. In one borehole these sediments were a non-fibrous rich brown oxidising organic mud or gyttja, in a second to the

north a siltier deposit that shows as a shell rich sediment on the trench floor and contains abundant freshwater mussels. This latter channel may be visible as a feature on the field surface to the east where a depression crosses the field in line with this proposed channel. This would suggest that this represents a relatively recent (archaeologically) channel and its infilling sediments may contain the most recent palaeoenvironmental sequence in the whole ancient channel system.

There is a visible change on the floor of the trench in both the northern and southern half which suggests that we are moving out at this level of the contemporary channels into the edging reed beds and woodland carr. In the southern half horizontal timbers in the upper layers which are very degraded suggest natural woodland carr fringing the channel edge on the south side. In the northern half one or two *in situ* small tree trunks and an increase in wood and brushwood indicates expansion of the woodland carr onto the reed bed margins of the river clearly reflected by the natural reed rich peats that underlie the trench floor. In this area the broad deposit sequence is a woody peat currently degrading badly through drying out and oxidation producing a very black horizon overlying rich brown unoxidised reed peats, overlying reedy grey brown and grey silts, over grey silts largely devoid of reed and larger organic fragments, over slightly laminated fine silty sands at 2.7-3.0 metres depth below the trench floor. Augering was not continued beyond a depth of 3 metres. The laminated character of this latter sand suggests that this channel may have been tidal in character.

The archaeological finds appear to be concentrated in the woody peat overlying the reed peats and the wooden stakes that have been lifted suggest that they have been knocked in from the level that has produced pottery and bone or from higher levels. One point of major note is that these levels in which the finds have been made are marginally higher than the present ground surface of the adjacent fields. This combined with the fact that the Washingborough Field Walking Team have recorded a pottery and find scatter in the north western strip of the field immediately to the east suggests that the contemporary archaeological horizon in the areas beyond the protection of the beck and delph banks may have been ploughed out.

To continue the auger transect a sixth auger hole was sunk in the base of Trench 11 on the south side of the South Delph bank and in line with the transect down the long trench. This hole is approximately 30-40 metres north of the most northern auger hole in the long trench. A similar sequence was revealed in this auger but the base of the sequence was becoming a coarse slight sandy silt at 3 metres which suggests that we may be close to the underlying sands rising up towards the north bank of the channel. The auger hole about 100 metres east (see above) in a similar position on the south side of the South Delph bank produced clean yellow sands at a depth of 0.75m below the present ground surface clearly indicating that the bank was present at this location and can have been no more than a few metres north of the auger hole in Trench 11.

These results and observations have some significant implications. The primary result is that the observations have given a context to the excavations conducted by John Coles at the Washingborough pumping station. Clearly the material from this site marks the riverside activity and southern extent of a settlement on the north bank of the ancient river. The central focus of the site is likely to have been to the north, under the present delph bank, and possibly the Witham bank, and presumably much of it was removed by the excavation of the south delph. It seems likely that the finds in the long trench and those recovered by the Washingborough Fieldwalking team relate to this site. The context for the timber work, posts, stakes and finds in the northern half of the long trench is probably a river margin where access to the river channel for the settlement was across an area of wet woodland and reed

bed to the open water. This margin is likely to have been a discard zone and the timber structural evidence is as likely to be related to structures that permitted access to the river, such as piers, mooring, *etc* as anything else. There is certainly no evidence in the evaluation trenches that the horizon that produced the archaeological finds was ever a dry terrestrial context, although it might have periodically dried out during the summer months.

The second implication relates to the survival of the archaeological deposits. The relative levels across the trenches and in the adjacent fields suggests that the archaeological horizons at this location have only been protected beneath the beck and delph banks, and beneath the river banks. In the fields beyond drainage and agriculture have so lowered the ground level that the archaeological deposits have now been incorporated into the ploughsoil, hence the finds by the Washingborough team, and it may be that only the lower portions of timber posts will still survive *in situ* in these areas. The degradation of the upper deposits in the evaluation trenches which contain the archaeological finds indicates that these deposits are currently degrading and over time further evidence will be lost.

Thirdly the recognition of two, and possibly a third, channel within the upper fills of the ancient channel system, one possibly still visible on the surface of the field to the east of the beck indicates that this location will contain sediments and a palaeoenvironmental sequence relating to periods that post-date the main infilling sequence of the ancient channel. The channel that appears to be visible on the surface may be a relatively late channel and contain sediments of much more recent date than those so far studied from the nearby site at Fiskerton. It would be of value to conduct a detailed auger transect across this ancient channel system to profile the whole channel, the sediments infilling it, including evidence for marine and intertidal sediments, and the later channels that cut into these infilling sediments. Radiocarbon dating of the deposits in these later channels would permit an assessment of whether they represent periods already studied at Fiskerton or later channels. This work may permit the recognition of the location of the Witham channel at different time periods in this area.

These comments should be taken as a preliminary view based on limited prospection and observation but the site visit appears to have:

1. Given a context for the site of the earlier excavations at the pumping station.
2. Identified the whole of the ancient channel system at this location.
3. Confirmed the presence of the north bank of the ancient river course south of the South Delph in the area immediately east of the beck.
4. Identified a number of different channels within the system including one of potentially more recent date than any recognised elsewhere.
5. Suggested a context (river margin) for the archaeology revealed in the evaluation.
6. Indicated that the survival of the archaeologically rich deposits may be restricted to beneath the modern river, delph and beck banks.
7. Identified that the deposits have a palaeoenvironmental potential and could extend the evidence already obtained from the studies at Fiskerton.
8. The deposits containing archaeological material and stakes and posts are degrading as are the upper parts of the channel fills.

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The Environmental Archaeology Consultancy
25/05/04

Mouli Start

July 2004

1. Introduction

This report details the osteological assessment of human skeletal remains from the Archaeological Evaluations at Washington Pumping Station, Lincolnshire during 2004. This evaluation forms part of the Lower Witham Environmental Scheme. These remains are particularly interesting because they originate from a cultural horizon which contains securely dated Late Bronze Age pottery and which appears to consist of deposits of domestic refuse. All of the human remains were well preserved with good cortical integrity although all were stained presumably due to their deposition in peat layers.

2. Materials

Three contexts were presented to the author for analysis. Table 1 below gives contextual information about each of these.

Table 1: Summary of materials

Context	Slot	Description
1602*	1-3	Human right femur
1628*	1-3	Fragment human cranial bone
1631	3	Human adult cranium with largely complete face and maxillary dentition

* in context listings 1628 is referred to as the same as 1602.

3. Methodologies

In total this sample contained a single cranium with most of its face and maxillary (upper) dentition present (LWES04 1631), a right femur (LWES04 1602) and a fragment of human cranial bone (LWES04 1628). Clearly such a small sample cannot have all osteological methodologies applied and therefore only those actually used during analysis are listed here.

3.1. Age-at-death estimation

Multi-factorial age-at-death estimates yield the most accurate results possible (Lovejoy *et. al.* 1985). However, where incomplete skeletons or bones are subjected to analysis fewer methods can be applied. Table 2 below lists those ageing techniques applied to this sample.

Table 2: Age-at-death estimation methodologies

Ageing method	Reference
Dental attrition	Miles 1963
Dental eruption	Smith 1991
Ectocranial suture closure	Meindl & Lovejoy 1985
Epiphyseal fusion	Schwartz 1995

The problems associated with assigning accurate age-at-death estimates, particularly for adults, are well known (Molleson & Cox 1993). In order to avoid introducing bias into the results produced by these problematic age-at-death estimation methods, in osteological analyses broad age categories were used. When dealing with adults it is preferable to discuss age-at-death in terms of biological rather than chronological age. For example, two individuals who are both chronologically

sixty years old may be vastly different in terms of their biological age with one severely affected by osteoarthritis with very limited movement, and the other a fit and active adult regularly walking long distances. Therefore descriptive terms are used in general. However, since most osteological age-at-death estimation techniques present suggested chronological age ranges this convention is also followed in this report. The table below presents the age categories used during this analysis with both biological descriptive age categories and suggested corresponding chronological year ranges.

Table 3: Age-at-death categories

Age Category	Biological Age	Chronological Age (years)
FE	foetal	9 - 39 weeks gestation
NE	neonate	birth-1 month
IN	infant	1 month-11 months
C1	younger child	1-6 years
C2	older child	7-12 years
JU	juvenile	13-17 years
YA	younger adult	18-25 years
PA	prime adult	26-45 years
OA	older adult	46+ years
AA	unaged adult	18+ years

3.2. Sex estimation

The determination of biological sex is based on the observation of morphological traits of the pelvis and cranium (cranium and mandible), and on metric data recording overall size and robusticity. Table 4 below presents details of sex determination methods employed in the analyses of the human remains from Washington.

Table 4: Sex determination methods

Sex Determination Method	Reference
Morphological observation of the cranium	Buikstra & Ubelaker, 1994; Steele & Bramblett 1988
Metric evaluation of post cranial elements	Steele & Bramblett 1988; Bass 1987

Five categories of biological sex based on the combination of some or all of the techniques in Table 4 are used for this analysis. These are M (male); M? (probably male); ? (indeterminate); F? (probably female); F (female).

3.3. Pathology

No skeletal pathology was observed among the human remains from Washington, however periodontal disease was observed and this is graded after Brothwell (1981).

3.4. Metric and non-metric analyses

Metric and non-metric analyses of human skeletal remains are applied in order to compare intra- and inter- population variations. Their application to individual human remains, apart from those measurements utilized in sex estimation, is done in order to form a complete catalogue particularly where remains are to be reburied. Often archaeological human remains are too fragmentary to be subjected to these analyses, however the remains from Washington are well preserved and the application of these techniques is appropriate. Therefore metric and non-metric recording is done following international osteological standards (Buikstra and Ubelaker 1994). These measurements and recorded traits can be found within the recording forms presented as Appendix A to this report.

4. Context LWES04 1602: adult (AA) right femur

This context contained a single human right femur (thigh bone). The bone was almost complete missing only its distal end, the part of the bone which forms the knee joint. The cortical integrity of the bone was good, although some areas had been damaged post-mortem including the margins of the femoral head and the trochanteric area.

The proximal head of the femur was fully fused making this an adult bone – fusion begins around age 18 and is usually complete by age 23. Much of the margins of the femoral head, which forms half of the hip joint, were absent through post-mortem damage although those areas present for observation did not show significant osteophytic new bone growth as often occurs with age due to wear and tear on this weight bearing joint. This observation may suggest that this individual was not an older adult, but given the post-mortem damage to this bone the age-at-death estimation must remain merely adult and cannot be made any narrower.

No evidence of pathological or human cultural processes was recovered from this isolated fragmentary bone.

5. Context LWES04 1628: juvenile to adult (JU-AA) fragment of occipital bone

This context consisted only of a single cranium fragment measuring 56.0mm by 54.1mm. The fragment originated from the right side of the occipital bone which forms the back part of the cranium and included part of the lamboid suture – the join between this bone and its neighbour. Observation of specific sites along the sutures (or joins) of cranial bones forms the basis for an age-at-death estimation technique, but unfortunately the section of suture preserved on this fragment does not correspond to a recognised site. However, the suture in this case was fully open, a tendency found in younger adults (and children). The size and robusticity of this bone fragment suggest an age somewhere between late adolescence (JU) and adult (AA).

The context list reveals that this cranial fragment was recovered from the same peat layer as the adult femur LWES04 1602.

6. Context LWES04 1631: female young to prime adult (YA-PA) cranium

This context contained the nearly complete adult cranium with maxilla recovered from the evaluations at Washington. Cortical integrity was good although a few areas of post-mortem root damage were observed on the upper vault of the cranium on the right parietal bone. In terms of completeness, the centre of the face was missing along with the incisor teeth and left zygomatic (cheek bone). No articulating mandible (lower jaw) was recovered.

6.1. Age-at-death estimation

Three age-at-death determination methods could be applied to this nearly complete cranium, two of them dental. In terms of dental eruption this individual had fully erupted third molars (wisdom teeth) making them adult. All six maxillary molars were present allowing the application of one of the most reliable ageing techniques, the pattern made by attrition to the dental occlusal surfaces. The first molars on both sides gave slightly older age-at-death estimates between 20 and 30. All of the second and third molars showed little if any dental wear giving younger estimates between 16 and 20. The sensible interpretation of these results is an age-at-death of 18-30.

The third ageing technique applied was that of ectocranial suture closure after Meindl & Lovejoy (1985). All ten suture sites were present and the final age-at-death estimate by this method was 28 to 44 years old. Age-at-death estimates from dental attrition patterns are more reliable than those based on ectocranial suture closure and therefore the final age-at-death estimate for LWES04 1631 is between 18 and 30 years old, or a young to prime adult.

6.2. Sex estimation

The completeness of the cranium of LWES04 1631 allowed the observation of all but one morphological trait used to estimate the sex of an adult cranium. Seven out of eight traits were strongly female and the remaining trait was probably female meaning that it can be securely stated that this individual was a young woman.

6.3. Dental pathology

In total 12 of a possible 16 maxillary teeth were recovered for LWES04 1631. All four incisor teeth had been lost post-mortem. The figure below presents the dental remains.

	Right								Left								Total
maxilla	8	7	6	5	4	3	/	/	/	/	3	4	5	6	7	8	12
mandible																	
alveolar resorption	s	s	s	s	s	s					s	s	s	s	s	s	12

Key

- # tooth and socket present (i.e. 8 or 7 or 6 etc.)
- / tooth lost post mortem (after death)
- periodontal disease graded as slight (s), moderate (m) and severe (g)

All of the 12 teeth present showed a slight degree of alveolar resorption. Alveolar bone is the thin bone that immediately surrounds a tooth at the top of a tooth socket within a living jaw. As part of the normal ageing process degenerative changes occur to the alveolar bone. However, alveolar resorption also occurs as the result of periodontal disease – the inflammation of gingival (gum) tissue – often accompanied by dental calculus – mineralised bacterial plaque. It is difficult to determine whether alveolar resorption is the result of periodontal disease or merely normal atrophic changes (Lukacs 1989), although the relatively young age of this woman might suggest that periodontal disease was the more important causative factor. However, no calculus, or mineralised plaque was recovered.

There were no carious lesions in the 12 teeth perhaps suggesting a diet low in sugars and/or good dental hygiene. Also absent from these dental remains was enamel hypoplasia, growth arrest lines that indicate a significant period of stress during childhood when tooth formation occurs.

7. Conclusions

The most interesting aspect of these remains is their dating to the late Bronze Age, a period that nationwide shows a paucity of human remains. Their recovery from a deposit that may be interpreted as domestic waste has the potential to add to our understanding of how human remains were treated in the Late Bronze Age. This is not an area of speciality of the author and interpretation must rest with the archaeologists with their greater wealth of knowledge. The osteological conclusions are summarised below.

1. Context LWES04 1602 consists of a largely complete adult right femur (thigh bone) which presents no evidence of pathology.
2. Context LWES04 1628 consist of a fragment of occipital bone with an age-at-death estimate of juvenile to adult.
3. Context LWES04 1631 consists of an almost complete female young to prime adult (18-45) cranium. Slight periodontal disease was recovered from an otherwise very healthy set of dentition.

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MAISIE TAYLOR
JULY 2004

APPENDIX 6

WATERLOGGED WOOD

LOWER WITHAM

WATERLOGGED WOOD FROM LOWER WITHAM

LWES 04

THE WATERLOGGED WOOD

QUANTITY OF MATERIAL

Material from 12 contexts was examined.

PROVENANCE

All the material came from sections 11 and 16 evaluations.

RANGE AND VARIATION

The material is mostly roundwood, with 2 timbers and 3 pieces of timber debris.

CONDITION OF MATERIAL

The material varies a great deal in condition and there is some suggestion that it is not all of the same date. Generally it is in reasonable to good condition. Using the table developed by the Humber Wetlands Project (Van de Noort, Ellis, Taylor and Weir 1995 Table 15.1) the wood from LWES 04 scores 4 or 5.

	MUSEUM CONSERVATION	TECHNOLOGY ANALYSIS	WOODLAND MANAGEMENT	DENDRO- CHRONOLOGY	SPECIES IDENTIFICATION
5	+	+	+	+	+
4	-	+	+	+	+
3	-	+/-	+	+	+
2	-	+/-	+/-	+/-	+
1	-	-	-	-	+/-
0	-	-	-	-	-

STATEMENT OF POTENTIAL

Because the wood is generally in good condition the worked surfaces are fresh and clear. The assemblage is not particularly large but there is a range of material.

ROUNDWOOD

There are several pieces which are probably coppiced (1606, 1617; 1621 etc.). These appear to be used as verticals in many cases.

TIMBER AND TIMBER DEBRIS

The timber and debris are not particularly large. Unusually, most of these pieces do not appear to be oak (*Quercus* sp.) and may be locally available species.

DEBRIS

There is very little debris: a small piece of thin bark (1602), and a small group of woodchips (1628). This is not enough for a statistical analysis but is an indicator that there may be material in the area.

NEW RESEARCH QUESTIONS AND POTENTIAL OF DATA

The importance of this assemblage lies partly in its place alongside wood from other sites in the immediate area: Washingborough, Fiskerton etc. This area is developing one of the most important data bases for prehistoric woodworking in the whole country.

There is very little detailed or statistical analysis that can be done on this assemblage as it is relatively small. Data on species selection, both for coppicing and timber working will be valuable, however, and the ring counts might indicate whether there is organised or casual coppicing.

RECOMMENDATIONS

A full catalogue must be compiled. The wood has all been sampled for species identification. These samples are also suitable for ring counts.

If further work is required on site it may be necessary to submit some material for dating as the different qualities of preservation suggest some material is not ancient.

REFERENCES

Van de Noort, R., Ellis, S., Taylor, M. and Weir, D. Preservation of archaeological sites. In Van de Noort, R. and Ellis, S. 1995 *Wetland Heritage of Holderness – an archaeological survey* Humber Wetlands Project

CATALOGUE

Cxt *Sample*

- 1602 Timber debris, too hard to sample for ID
L.205mm W.65mm Th.45mm
- Roundwood, with coppice curve, too hard to sample for ID
L.315mm D.35mm
- Roundwood, trimmed 1 end/rough and blunt, too hard to sample for ID
L.280mm D.35mm
- Roundwood, long, straight stem, trimmed 1 end/all directions (*Quercus* sp.)
L.315mm D.35mm
- Bark
L.35mm W.18mm Th.7mm
- 1604 Roundwood, partially charred, charring penetrates 15mm
D.100mm
- 1606 Roundwood, long, straight stem, trimmed 1 end/2 directions (straight blade)
L.300mm D.48mm
- 1610 Roundwood
L.380mm D.55mm
- 1617 Roundwood, long, straight stem, trimmed 1 end/2 directions
L.580mm D.70mm
- 1621 Roundwood, long, straight stem, trimmed 1 end/all directions
L.570mm D.50mm
- 1624 Roundwood, trimmed 1 end/1 direction
L.180mm D.70mm
- Roundwood, coppice curve, trimmed 1 end/1 direction
L.680mm D.40mm
- 1628 Radial woodchips (3), all charred, oak (*Quercus* sp.).
L.190-200mm W.70-100mm Th.20-30mm
- 1630 Timber, tangential
L.500mm W.155mm Th.30mm
- 1652 Timber, radially split and trimmed (sawn) square, 1 end/2 directions, too hard to
sample for ID
L.480mm W.50mm Th.30mm

Roundwood, trimmed 1 end/2 directions, too hard to sample for ID
L.360mm D.85mm

Timber debris, ¼ split and trimmed 1 end/all directions, too hard to sample for ID
L.230mm W.40mm Th.40mm

1654 Timber debris, ¼ split and trimmed 1 end/2 directions, oak (*Quercus* sp.)
L.290mm W.50mm Th.50mm

1704 Roundwood, long, straight stem, trimmed 1 end/1 direction, 1 end/blunt
L.530mm D.25mm

Unstrat. Roundwood, long, straight stem, trimmed 1 end/1 direction
L.600mm D.42mm

Roundwood, long, straight stem, trimmed 1 end/1 direction
L.420mm D.44mm

Roundwood, long, straight stem, trimmed 1 end/1 direction
L.570mm D.65mm