Heron Renewable Energy Plant

ARCHAEOLOGICAL TRIAL TRENCHING

- Issue Final
- January 2010

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Main Plant Area

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1. Abstract

This report comprises the findings from a programme of archaeological trial trenching at a site at Humber Road, South Killingholme, undertaken from 21st September to 1st October 2009. The work was undertaken in connection with the proposed development of the Heron Renewable Energy Plant and was commissioned on behalf of the client (Drax Power Limited) by Sinclair Knight Merz (SKM). This report provides supplementary information to the Cultural Heritage Chapter of the Heron Renewable Plant Environmental Statement (SKM 2009). The trenches followed a geophysical survey of the area and were within the Main Plant Area of the *Inner Study Area.* The trenching established the presence of archaeological features, which appear to relate to a later prehistoric (Iron Age/Romano-British) settlement located near to the former western edge of an estuarine environment. The pottery assemblage suggests that salt-making may have occurred near to this settlement. An early Bronze Age ditch was also recorded in the vicinity. To the east trenches encountered deep alluvial deposits and sondages excavated through these encountered some spreads of burnt material within this alluvial sequence. Radiocarbon dating of this burnt material suggested that it originated at different times during the Bronze Age. The surrounding area contains extensive evidence for Iron Age/Romano-British settlement and the remains add to our knowledge of the landscape during the later prehistoric period. The remains are assessed as of regional sensitivity. A programme of mitigation (archaeological recording of any affected remains) will be designed to address the impacts of the proposed development.

2. Archaeological Investigations

2.1. Introduction

Headland Archaeology (UK) Ltd was commissioned by Sinclair Knight Merz to evaluate the archaeological potential of the Main Plant Area within the Cultural Heritage Chapter's *Inner Study Area* (Heron Renewable Energy Plant Environmental Statement, SKM 2009). This area will be directly impacted by the proposed construction and operation of the Renewable Energy Plant. The evaluation of the site has already comprised an initial phase of geophysical survey (reported separately) and the trenching was based on the results of this. The scope of the works and locations of trenches were agreed in advance with the archaeological advisor to North Lincolnshire Council (Alison Williams) and detailed in a Written Scheme of Investigation (September 2009). The work was monitored by Alison Williams and was designed to provide sufficient information to allow the planning authority to determine the associated planning application.

2.2. Archaeological Background

The underlying geology of the site is chalk, providing an environment that is naturally rich in flint. The site is situated in greenfield with a large drainage ditch around two sides of the field's perimeter.

Within the Inner Study Area, there are four previously known cultural heritage features, two of which are visible only as cropmarks; a suspected palaeochannel and Second World War aircraft obstruction ditches. The third site Barton and Immingham light railway line (HA4) is still in active use as a railway.

2.2.1. Prehistoric Evidence

Evidence for early prehistoric activity in the area is relatively scant and is restricted to finds of artefacts rather than sites. The largest assemblage was recovered during work at Conoco CHP plant (HA8) and comprised worked flint, possibly dating to the Mesolithic or Neolithic, and pottery dating to the Late Bronze Age. A scraper probably of Neolithic date was found in 1966 1 km to the west of the Inner Study Area. Further finds of early prehistoric material have been made in the area to the west and north of the Middle Study Area

Evidence relating to later prehistoric and Romano-British activity in the area is more substantial. Excavations in advance of the Conoco CHP Plant (HA8) revealed several phases of settlement from the early Iron Age through to the Romano-British period. Environmental evidence from these excavations suggests a mainly pastoral landscape, with some evidence of cereal cultivation.

Further evidence of Iron Age activity was revealed during the archaeological evaluation in advance of work at the Lindsey Oil Refinery. These excavations uncovered an Iron Age ditch running parallel and to the south of Rosper Road for over 400 m. This ditch was considered to date to the early to mid Iron Age and to represent either a drainage ditch or boundary marker. Other smaller Iron Age drainage or boundary features were found during this evaluation, leading the excavators to conclude that these represented the remains of an Iron Age field system.

The high level of activity during prehistory in the vicinity of the application area suggested a moderate to high potential for features of this period within the application area.

2.2.2. Medieval Evidence

There is little evidence from the medieval period recorded within the surrounding area. One site, a possible homestead, is recorded in the North Lincolnshire SMR. However, this site is only identified from place-name evidence so its exact location is unknown. One feature was identified as a medieval ditch during fieldwork in advance of the construction of the Lindsey Oil Refinery. This shallow ditch was dated on the basis of a single sherd of 13-15th century pottery. Evidence of medieval agricultural activity was also recorded during the excavation in advance of the Conoco CHP Plant in the form of medieval furrows truncating earlier features.

Examination of the enclosure plan shows that the application area is in the areas known as the Summergates and Marsh within South Killingholme parish. These were very wet marginal areas used as permanent pasture prior to the Enclosure Act of 1776. Following the Enclosure Act this area was enclosed and drained to be used as arable farm land.

Due to the limited medieval evidence in the surrounding area and as the application area would have been very wet marshland in the medieval period; it is considered that there is very limited potential for previously unrecorded features of a medieval date.

3. Methodology

The objective of the trial trench evaluation was to determine whether there were any archaeological features that might be affected by the proposed development; in particular to determine the location, character, extent and quality of any archaeological remains identified within the application area.

22 trenches were excavated across the site, twenty-one 30m trenches and one 50m trench, orientated in locations overlying geophysical anomalies and to test blank areas (See Illus 4). This equated to an area of approx 680m^2 of linear trenching, the locations of which can be seen in Illus 2. Fifteen of the trenches targeted geophysical anomalies, whilst 7 targeted the areas where no anomalies were detected. Overall this represented a 1.9% sample of the total Main Plant Area. The trenches were stripped of topsoil using a 360° mechanical excavator fitted with a flat-bladed ditching bucket under direct archaeological control. Every trench had an approx 2m long sondage excavated at one end in order to examine the sequence of deposits across the site. These varied in depth from 0.8 to c.2m.

All contexts and environmental samples were given unique numbers. Context numbers were numbered with the trench number followed by a unique number. Finds were collected by context. Colour transparencies and black and white prints were taken with a graduated metric scale visible in all photographs. All recording was undertaken on *pro forma* record sheets. Individual features were planned at 1:20 and sections were drawn at 1:10. An overall site plan was recorded using a Total Station and related to the National OS Grid; the digital survey was related to the absolute levels contained in a Digital Terrain Model (provided by SKM).

3.1. Environmental sampling

A total of 24 samples were taken during the evaluation, each sample being a minimum size of 40 litres, with those of particular interest having 80 litres sampled. A total of 15 of these were processed using a standard flotation method.

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4. Results

A full description of deposits is provided in Appendix 1. Trench plans and plans and sections of all features are contained within the site archive. Summary descriptions are provided below.

Topsoil in all of the excavated trenches comprised dark brown clay silt clay, with varying depths between 0.3 and 0.55m. The underlying deposits varied across the site which can be split into three main areas – the south-western area, the central-eastern area and a northern area. The deposits in the first area comprise topsoil overlying thin (c.0.3m) alluvial deposits which overly a natural orange sand with frequent chalk and flint inclusions. The north-eastern area contains a more complicated soil structure, with deep alluvial deposits (noted up to 1.2m) overlying bluish grey clay. Within these alluvial deposits several archaeological deposits were uncovered. In the northern area alluvial deposit became too deep to dig through and no archaeological deposits were encountered. For a more in-depth deposit description and discussion of formation processes see Section 5.1.

The results of the evaluation will be discussed in relation to the geophysical anomalies encountered during previous works.

4.1. South Western Area

A total of 3 trenches (numbers 1-3) were excavated within this area and overlying a series of geophysical anomalies that were assessed as of *Medium Archaeological Potential* (Heron Renewable Energy Plant: Geophysical Investigations SKM, 13/8/09). These anomalies comprised a series of possible features occupying an area of approx 80m x 35m that were orientated predominantly east-west. A curvilinear feature lying approximately 35m east from the main cluster was also regarded as of possible significance. The evaluation confirmed the presence of archaeological remains in the vicinity of every anomaly (Illus 3). Within Trench 1 a single ditch [101] was identified, orientated E-W. Some 2.16m length of the ditch was exposed in the trench and it was 2.38m in width and had a depth of 0.86m. The feature had four separate fills, the lowest two consisted of dense grey clay, with the upper middle fill orange silty clay, and the uppermost dark brown silty clay. This sequence may suggest that the ditch was deliberately backfilled after a period of silting. The lower middle (104) contained fragments of prehistoric pottery, which have been identified as typically Iron Age in date (Appendix 4). A small bone artefact that has been identified as a bone awl was also discovered within context (104), which is a common find on Iron Age sites (Appendix 2). The upper middle fill (103) of the ditch contained pottery dating to the Iron Age/Romano-British period and some remains interpreted as metal –working debris (see Section 5.2.1) and the latter may indicate smelting activity within the vicinity. According to the

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geophysical survey ditch [101] extends both east and west of the trench, and it is tentatively interpreted as a boundary ditch. Truncating [101] a furrow (106) was excavated; it is likely to be post medieval and part of general agricultural use after the field enclosure act.

In Trench 2 both linear features suggested by geophysical survey were identified, excavated and recorded. The most southerly of these [208] was initially interpreted as a land drain, however further excavation revealed that the later ceramic drain had re-used an infilled ditch containing pottery dated as Iron Age (Appendix 4; Illus 7). Within the lowest fill an almost complete base of pot was uncovered which was dated as Middle-Late Iron Age (Appendix 4). This ditch measured 1.4m wide, 0.46m deep and extended beyond the trench on either side (Illus 8). The feature contained one fill (207), which comprised grey-brown silty loam and was truncated by pipe cut [201], which was filled by (209). This latter disturbed fill contained a small pottery group, including a finger tip jar rim dating from the mid-late Iron Age (Appendix 4), The geophysical information suggests that this particular linear feature extends approx 37m east and 17.5m west.

To the north of this ditch a small circular pit [202] (Illus 9) was excavated (L 0.83 x W 0.7 x D 0.28), which had a spread (213) of burnt bone and charcoal to the east. This material lay directly south of a large double ditch [210] and [214] (Illus 5 & 6) orientated E-W. This feature correlates with an anomaly from the geophysical data. The two ditches appeared contemporary in date as each lowest fill (212 & 216) consisted of grey silty clay, suggestive of gradual accumulation. Ditch [214] was backfilled first, whilst leaving [210] open. The upper fill (215) of [214] was interpreted as deliberate backfill, perhaps using material from a former bank. Ditch [210] was clearly infilled after [214], but the time span between these two phases in unclear. The upper fill of [210] was (211), which included several pottery fragments dating from the late second century AD (Appendix 4). Ditch [214] and uppermost fill (215) contained a small group of probable Iron Age pottery. The extent of ditches [210] and [214] is unclear but according to geophysical data they extend further east and west.

Another linear feature [205], measuring 2.3m wide and 0.68m deep, was excavated at the northern end of Trench 2 and was not identified during the geophysical survey (Illus 3). This ditch was orientated NW-SE and had stepped sides, with a sharp break of slope and flat base. It was filled with a sterile grey reddish brown clay (206) within which one Romano-British pottery fragment was discovered.

Trench 3 was positioned to test a curvilinear feature identified by geophysics. Within this trench two shallow ditches [302 & 304] were excavated, the most southerly of which appears to correlate

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roughly with the geophysical anomaly. Both features were very subtle in plan with fills similar to the subsoil into which they were cut. No artefacts were retrieved from either of these features.

In summary, trenching in the south western area has identified a number of archaeological features, which are likely to be Iron Age/Romano-British in date. However, as the features in Trench 3 remain undated there is a possibility that these could be Bronze Age as they are located close to archaeological features that have been ascribed this date by radiocarbon dating (contexts 402 and 503 – see below).

4.2. Central – Eastern Area

A total of 14 trenches were excavated (trenches 4, 5, 6, 7, 8, 9, 10, 11,12, 13, 14, 17, 20 & 22), within the central – eastern area of the Main Plant Area, some of which overlay anomalies identified as of *Low Archaeological Potential* in the geophysical survey; others were situated in blank areas. The trenches exposed several archaeological features, some of which contained Iron Age/Romano-British pottery.

The anomaly interpreted as a possible linear feature that ran discontinuously through trenches 4, 8, 10 & 11 and shown in Illus 2 was not identified as a continuous feature but three separate archaeological features were identified close to its location. These will primarily be described within their trench then discussed together.

Trench 4 was orientated N-S across the western part of the putative linear anomaly. A charcoal rich spread (402; Illus 3) was identified sealed by 0.4m of alluvial clay and was curvilinear in plan. One end of the deposit appeared to terminate in the trench but the other extended outside it the NW. The deposit included burnt stones and frequent charcoal flakes and was 0.02 m deep. As no datable pottery was found within this deposit a sample of charcoal was sent for radiocarbon dating. This identified the feature to be later Bronze Age in date (1010-840BC; see Appendix 6).

Trench 8 was similarly orientated and positioned approximately 74m further east (Illus 2). A shallow ditch [802] was excavated in the approximate location of the linear anomaly. The ditch was orientated NE –SW, measured 1.35m wide and 0.2m deep and contained one fill (801) which included frequent charcoal, chalk and flint fragments, and prehistoric-Iron Age pottery fragments (Appendix 4).

In Trench 10 a large silty sandy deposit was identified in the vicinity of the anomaly. Excavation established this to be a large spread of material (1001; Illus 10). The trench was extended in order to find the limits of the spread. The deposit covered some 8m x 5m with a maximum depth of 0.12m and contained frequent inclusions of daub, burnt clay, charcoal flecks and fragments of Late Bronze Age –Iron Age pottery (Appendix 4). This pottery assemblage was of particular interest in

that it contained ceramic trays and pottery vessels commonly associated with saltmaking. The deposit appeared uneven in depth and had been disturbed in places by roots, as it directly underlay topsoil.

In Trench 11 no archaeological features were noted. This trench had particularly deep alluvial deposits comprised of dark greyish brown silty clay. The findings of this trench will be discussed further in Section 5.1.

Trench 13, orientated E-W across another linear anomaly running parallel and to the east of the one discussed above, contained no archaeological features below the topsoil. However, during excavation of a sondage at the western end a black charcoal rich deposit was noted in section. The trench was extended in order to determine its extent and allow closer examination. The spread (1301) (Illus 11) appeared to cover approximately 5.2m x 3.34m with a depth of 0.2m and consisted of frequent charcoal flecks and burnt stone. As no datable artefacts were recovered from this spread, and due to its considerable depth under alluvial clay, a sample was sent for radiocarbon dating. This confirmed the date of this feature as middle Bronze Age (1500-1380BC; Appendix 6). An extension to the trench uncovered the extents of the deposit (please see further discussion on the stratigraphic sequence of this trench in Section 5.1).

Further linear anomalies were investigated in both Trench 20 and 17 and no corresponding archaeological features were encountered. Deep alluvial deposits were identified in both trenches.

A number of isolated geophysical anomalies were targeted with trial trenching. These included Trenches 6, 7, 14 and 22. Within Trenches 6 and 14 no archaeological remains were encountered. Trench 22 targeted a small anomaly and a corresponding feature was found in the approximate location. On excavation the feature [2203] was interpreted as possibly geological in origin due to its apparently sterile fills and irregular nature. This interpretation was tested by retrieving a sample from one fill (2202) and environmentally processing it; this confirmed that the deposit was archaeologically sterile (see Appendix 3, Environmental tables).

Trench 7 was orientated over 3 parallel linear anomalies (Illus 2). Box slots were excavated to attempt to locate these linear anomalies as they appeared distinctly on the survey. Only the southern feature was located, which comprised a feature interpreted as an elongated pit or ditch terminal [704]. This feature measured L 1.3m x W 1.0m x D 0.24m and contained mid brown silty clay fill (703). No finds were discovered within this deposit. To the north of this feature a linear ditch [702] orientated E-W, measuring W 1.10 x D 0.23, was excavated which was filled by orange brown silty clay, similar in composition to the natural subsoil and containing no dating evidence.

Trenches 5, 9 and 12 were situated across apparently blank areas of the site. Trench 12 was backfilled quickly as it began to fill with water and no archaeological remains were noted within its extents. Within the other two trenches archaeological features were identified. Trench 5 contained a linear feature [502] underneath a band of 0.2m of alluvial clay. This feature [502] measured W 1.3 x D 0.32 and contained several fills; the primary deposit (503) contained moderate charcoal and burnt stone inclusions (Illus 3). The primary fill was interpreted as an accumulation and it is possible that upper fill (502) represents deliberate backfilling using an associated bank as it was very similar to the surrounding subsoil into which the feature was cut. No pottery fragments were recovered from this feature and a sample of charcoal from the primary fill was sent for radiocarbon dating. This indicated that the feature dated from the early Bronze Age (2280-2030 BC; Appendix 6).

Within Trench 9 a small irregular shaped black deposit (901) was excavated. Despite its colour it contained very little charcoal and may be a result of natural staining.

4.3. Northern Area

A total of 6 trenches were excavated in the northern area of the site (15, 16, 18, 19 and 21). Only trench 19 was located over a possible anomaly – which appeared on the geophysical survey as a probable natural feature. Within all of these trenches no archaeological remains were identified.

The subsoil within this area was dark greyish brown silty clay, and from sondage sections it became apparent that this was deep throughout. This deposit may have accumulated during flooding or when the site was occupied by marsh. This is discussed further in the following Section 5.1.

5. Specialist Contributions

5.1. Alluvial Geoarchaeology

Dr Stephen Lancaster

5.1.1. Introduction

The area discussed here is sited close to the current Humber estuary. Estuarine landscapes are highly dynamic environments, and this raises issues with respect to the preservation of archaeological and palaeoenvironmental remains and the likely character of any such remains. As part of the evaluation trenching sondages were dug in each trench in order to gain a fuller understanding of the local sedimentary regime, with a view to assessing how this is likely to affect the formation and preservation of archaeological remains on the site.

5.1.2. Method

Sondages were machine excavated in all of the evaluation trenches. The depth of the sondages varied according to the nature of the underlying deposits and for health and safety considerations: in some place the underlying till deposits were reached relatively rapidly, in other parts of the site depths over 2 m were excavated.

Sediment sequences within the sondages have been recorded using the standard descriptive method of the Soil Survey (Hodgson 1978).

5.1.3. Results

Full descriptions of the sondage profiles are included in Appendix 1 of this report. The main trends to be noted were; the variations in the depth at which glacial till was encountered and the variation in depth and character of the alluvial deposits.

The area where the till is closest to the current surface forms a small projection from the line of Rosper Road, encompassing the sondages in Trenches 7, 8 and 22. Here till is encountered at depths between 0.5 and 0.6 m below the current land surface. The till falls away rapidly on all sides to a depth in excess of 0.9 m. In the area of Trenches 9, 20 and 21 till depth is at approximately this depth, but is surrounded by an area where till depths exceed 1.1 m. On the eastern edge of the site till runs from 1.3 m below ground level in the south, to 2.35 m moving to the north, before rapidly becoming too deep to safely dig down to.

The soft sediments that blanket the entire site are mainly composed of silt, though varying quantities of clay and sand, including occasional lenses of sand, are thought to be of alluvial origin,

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specifically to represent deposits resulting from the estuarine setting (see below). Few sedimentary structures within the soft sediments that might have given further indications of the depositional environment were observed. The contact between the base of the alluvium and the underlying deposits appears to be an erosive one in at least four cases (Trenches 6, 9, 11, 12), with possible channel cutting noted in Trench 5 and 15, and a least 6 erosive contacts within the different deposits forming the alluvium, where sand lenses had been deposited as part of the overall alluvial sequence (Trenches 2, 9, 10, 11, 12, 20).

The deepest alluvial deposits are waterlogged and appear to preserve organic material (peat in the case of Trench 15). The issues that this raises with regard to the palaeoenvironmental potential of these deposits will be discussed below.

5.1.4. Discussion

The variable depth of the underlying till contrasts with the current relatively flat landscape, indicating a process of alluvial infilling. Prior to the area becoming part of an estuarine environment, the landscape would have been more undulating, with a considerable fall off to the east and north of the site.

The process of alluvial deposition would principally have been the result of tidal action, with rising sea levels over the course of the Holocene changing the area from being fully terrestrial to being either high salt marsh or intertidal mud flats. Although the broad history of sea level change on the outer Humber Estuary is relatively well known, small scale variations due to local topographic variation are not well understood for the site. It should also be noted that sea level change is not a simple progressive trend: the sea level curves that have been modelled are based on long term trends. Shorter term oscillations in sea level may occur. These have a periodicity measured in a few centuries, long enough to have a significant effect on human activity. The combination of changing overall rates of relative sea level over the Holocene combined with shorter term oscillations means that the environmental history of the site, specifically in terms of when it was terrestrial and when it occupied different parts of the estuarine environment is relatively complex.

The broad trend of relative sea level change would suggest by around two thousand years ago that the site would have been within the tidal range of the contemporaneous sea level, somewhere between the high salt marsh and the upper part of the tidal flats. However a relative low stand in sea level during the late Iron Age/Romano-British period is known from the Humber (and elsewhere in Britain) (Lillie 1999), allowing greater use of the area during this period. It is notable that the Iron Age and Romano/British features are essentially restricted to areas where till is encountered at depths of 1 m or less, in the south western part of the site. During this period these

areas would have been the driest, and thus most suitable for 'terrestrial' activity, such as settlement or farming.

The effect of sea level oscillation and the effect on the sedimentary regime of the area may also explain the sediment sequence in which the burnt spread (Context 1301) in Trench 13 was formed. The burnt spread sits on a buried soil that had formed approximately half way through an accumulation of alluvium, indicating that the process of accumulation ceased long enough for a soil to form (a period of a few decades) and to allow the use of the site by humans. Sea level rise resumed and the site was buried under alluvium, presumed to be of estuarine origin. Despite the complicating factor of sea level oscillation the date, 3155 ± 30 BP (SUERC-26237) derived from this context forms a good match with the sea level curve for the area once it has been corrected for changes in tidal range (Shennan and Horton 2002).

The erosive contacts and possible channel beds noted should be considered with regard to the possible implications for the survival of archaeological deposits. Few unequivocal cases of buried soils associated with the till were observed. This suggests that some archaeological features may have been lost or at least significantly damaged during the deposition of the alluvium. A similar case may apply to the archaeological deposits formed on the aggrading alluvium, where later deposition during high energy events such as flooding or channels down cutting through the alluvium may have removed archaeological remains. The survival of the buried soil noted in Trench 13 indicates that this has not been the case across the whole of the site.

The relationship between depth and age of archaeological sites occurring within and under the alluvium is likely to be relatively complex. Some basic trends may, however, be posited. Terrestrial sites, i.e. essentially those cut into the till or any associated buried soil, closer to the Humber would have been buried sooner, so that any earlier sites will be found closer to the Humber and more deeply buried. Sites that formed within the alluvium, either as a result of human activity within the intertidal zone or as a result of temporary falls in sea level making the area dry enough for a wide range of activities, may be found at any depth within the alluvium, but are likely to be relatively widely separated in terms of depth and that separation will increase towards the Humber as the total depth of sediment accumulated increases. Some indication of this process is given by the different deposits from the later to middle Bronze Age that have been recovered from the increasingly deep alluvium, going from west to east, across the site. The complexity of the situation may be seen from the early Bronze Age date (3745 ± 30 BP SUERC-26235) of charcoal recovered from a shallower level on the western edge of the site.

The deepest alluvial deposits encountered are waterlogged. In the case of Trench 15 a possible channel fill was identified, with a preserved top infill of peat (a monolith sample was retrieved

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from this deposit and has been retained). The prospect of other organic materials surviving in the deeper alluvial deposits in the east and particularly the north of the site is significant.

5.2. General Finds

Please note that specialist pottery and animal bone reports can be found in Appendices 4 and 5 respectively.

5.2.1. Finds Summary

Julie Lochrie & IM Rowlandson

The finds consist of one possible iron object, 42 pieces of chipped stone, 60 sherds of pottery, 1 piece of worked bone and 353.5g of metalworking debris. Please see Appendices 3-5 for further find information.

All chipped stone artefacts are flint, which are in many cases patinated. None of the pieces have undergone secondary modification and most are poor quality flakes, small chips or indeterminate pieces.

The worked bone consisted of a bone awl which was very worn and smoothed, with surface slightly laminating.

The possible iron object (context 1001) is in small fragments and unidentifiable. The metalworking debris (context 103) consists of a plano-convex hearth bottom and a small fragment of possible iron slag. The size and density of the hearth bottom points towards smelting.

The ceramics totalled 60 sherds of pottery, weighing 1367g, RE 0.75, and 26 fragments of fired clay weighing 253g from 12 contexts. The pottery is generally fresh with a large proportion of a handmade jar from context 207 increasing the average sherd weight. Three vessels from Trench 2 showed evidence of sooting. A vessel link was evident between contexts 208 and 210 from Trench 2.

The group contains a range of pottery similar to Iron Age and Roman groups from recent excavations along the foreshore at North Killingholme. The majority of the pottery dates to the Iron Age and is mostly tempered with erratic rock filler from the local Boulder clay deposits. Most notable in this group is a small collection of fired clay trays or pans. Similar vessels are often found associated with salt production in southern Lincolnshire and it is possible that the trays from this site represent rare evidence for salt production in northern Lincolnshire during this period. A full report is presented in Appendix 4.

5.3. Environmental Remains

SJ Haston

5.3.1. Introduction

A total of fourteen samples, ranging in size from 40 to 80 litres, were collected for the recovery of small finds and palaeoenvironmental remains. The samples were taken from a series of features including spreads of burnt material and the fills of pits and ditches.

5.3.2. Methods

The soil samples were subjected to a system of flotation in a Siraf style flotation tank. The floating debris (flot) was collected in a 250 μm sieve and, once dry, scanned using a binocular microscope. Any material remaining in the flotation tank (retent) was wet-sieved through a 1mm mesh and air-dried. This was then sorted by eye and any material of archaeological significance removed. All plant macrofossil samples were analysed using a low power binocular microscope with x10 and x40 magnifications. All identifications of weed seeds (used throughout to include fruits, seeds etc) and cereals were confirmed using modern reference material and seed atlases including Cappers *et al* (2006). Botanical nomenclature used in the text follows that of Stace (1997).

5.3.3. Results

The results for individual features or contexts are presented in Tables 1 (retent samples) and 2 (floatation samples) in Appendix 3. One sample was found to be archaeologically sterile.

Charred plant remains

The concentration of archaeological remains recovered from the samples was low. All the flots were dominated by modern plant remains. The carbonised material recovered from both flot and retent samples only amounted to small to large quantities of wood charcoal and the occasional charred cereal grain/weed seed.

Charred cereal grain was present within only one of the floatation samples, (see Table 2). The grain assemblage includes two poorly preserved grains of hulled barley (*Hordeum vulgare*) and four cereal grains in such a poor state of preservation that identification was not possible; these are shown as Cereal indet (see Table 2). Weed seeds were sparse, found in limited amounts in two samples (Samples 10 and 13) (see Table 2). The taxa present are typical ruderal/segetal species of the British Isles, i.e. species associated with agricultural fields and disturbed ground including fat-hen (*Chenopodium album*), knotgrass (*Polygonum aviculare*) and common fumitory (*Fumaria officinalis*).

Wood charcoal fragments were present in the majority of the floatation samples and in five of the retent samples. In all five of the retent samples the charcoal was of a size and condition suitable for identification and radiocarbon dating (see Tables 1 and 2). Other charred plant remains of interest include a charred leaf bud found in one of the floatation samples (Sample 12) (see Table 2).

Other finds

Finds such as pottery fragments and lithics were recovered from the retent samples (See Table 1). For more information on these, please refer to the finds reports. Unburnt mammal bone was found in rare to abundant quantities in three of the retent samples.

5.3.4. Discussion

The collective assemblage from the samples is indicative of the re-working and re-depositing of domestic material. The grain was observed to be in a poor state of preservation being largely broken and abraded. The poor preservation of the grain in Sample 6 (Context 204) indicates that it had been exposed to, and moving around on, the surface for a period of time before being blown and/or washed into the sampled deposit.

The quantities of wood charcoal fragments present in a range of sizes are suggestive of *in-situ* or deliberately dumped fire debris. The smaller sized fragments (e.g. less than 1.0cm) may have been transported across the site by mechanisms such as windblow and surface run-off and may originally have been part of the deposits containing the larger fragments.

5.3.5. Recommendations

The primary value of the charred cereal grain and charcoal fragments recovered from the samples will be as a source of dating evidence. If wood charcoal were selected, identification of the species represented would need to be undertaken prior to dating. Identification of the charcoal fragments that relate directly to the primary dumps of burnt material and any other features will identify what types of arboreal taxa were being utilised for fuel.

For more information please see environmental tables located in Appendix 3.

5.4. Animal Bone Analysis

Catherine Smith

The bone fragments were of variable preservation. Bone from Contexts [102] and [103] (upper ditch fills) showed relatively more surface abrasion than the bone from the rest of the site. Most of the fragments had become dry and brittle and showed signs of recent splitting and flaking of external surfaces. However, at least half of the fragments were identifiable to species level.

Because of the surface abrasion and fragile state of the bones, as well as the damage done by gnawing by carnivores, butchery evidence was limited. However, one of the horse bones has possibly been cut with a knife [211], indicating that the meat was removed for consumption by people or dogs. This is not at all unusual in an Iron Age/Romano-British context, and does not conflict with the domestic nature of the assemblage. At this stage, the general impression of the bone collection is that it represents the end-products of domestic activities.

Please see Appendix 5 for a full report on Animal Bone.

6. Discussion

6.1. Bronze Age features

Due to the undated nature of several of the features found on site three samples were sent for radiocarbon dating (see Appendix 6). The sampled contexts included (402), (503) and (1301). All were physically lower than the Iron Age/Romano-British dated features, sealed by alluvial clay and it was unclear from which period they originated. The radiocarbon dates confirm these three features date from the early to late Bronze Age (Appendix 6). Context (402), a charcoal spread, is indicative of late Bronze Age activity (1010-840 BC). Context (503) is difficult to interpret given the constraints of evaluation. Its form and shape suggest it may be a ditch, and the radiocarbon date from charcoal suggests early Bronze Age activity (2280-2030 BC). Context (1301) was the deepest deposit discovered, and may be associated with a buried soil. This large charcoal spread is another indicator of activity and presumably relates to exploitation of the estuarine edge from the middle Bronze age (1500-1380 BC). No pottery or bone was retrieved in association with any of these deposits and they do not appear to reflect midden waste from a typical domestic settlement. They are all tentatively interpreted as relating to exploitation of this coastal area from the early to late Bronze Age.

During the evaluation the trenches were generally excavated to the top of the first alluvial deposit, (the level of Iron Age activity) and therefore the potential for discovering further Bronze Age archaeological features covered by alluvium is high. Marine ingression and the resulting accumulated alluvial deposits have provided a "barrier" of material between occupation phases.

6.2. Iron Age/ Romano-British Features

Analysis of the pottery remains uncovered from the site (see Appendix 4) suggested that it was in use throughout the Iron Age and early Roman Periods, with domestic settlement indicated by the bone and pot assemblages. The small metal working assemblage gives some suggestion of smelting (103) in the vicinity during the Romano-British period. Perhaps most notably the finds assemblage also contained ceramics thought to be associated with salt-making processes (from context 1001). The pottery assemblage contained possible tray "briquetage" corresponding well with known salt-making pottery in the local area. Salt making has been identified in the late Bronze Age and Iron Age elsewhere in Lincolnshire (for example, Chowne, Cleal, Fitzpatrick & Andrews 2001). The evidence has been assessed as abundant for the Middle and Late Iron Age (Cooper 2006, 115) but as noted in Appendix 4 it is more common to the south of the site discussed here. The identification of spreads of burnt material and the coastal location of this site are consistent with salt making.

All the Romano-British/Iron Age features seen on the site were cut into an upper horizon of alluvial deposits. Although the composition of this alluvium varied across the area these features all appeared at approximately the same level within the trenches. The Iron Age/Romano-British remains were concentrated in the west and the majority corresponded with geophysical anomalies. It is therefore likely that the large linear features excavated in the evaluation ([101], [208] [210] and [214]) follow the anomalies interpreted from the geophysics and represent several large ditches continuing towards the centre of the area. These are likely to have been Iron Age enclosure ditches associated with a phase of occupation. The occupation appears to have been concentrated on the driest ground to the west of the area; perhaps with other activities (including salt making) exploiting the wetter areas to the east.

6.3. Other

The evaluation uncovered some evidence of agricultural use, in the land's more recent past. This included a furrow and several ceramic field drains, all orientated approx E-W. No extensive pattern of rig and furrow was found, but it is likely this field was thoroughly utilised after the Field Enclosure Act. Possible anti-glider trenches identified from aerial photographs were not identified during the evaluation.

7. Conclusion

In conclusion the evaluation has identified regionally sensitive archaeological remains. The features represent a range of activity across a broad period of later prehistory, although their full nature remains unclear. The Bronze Age evidence occurs beneath alluvium in several parts of the site, and is indicative of some type activity involving burning or heating in an estuarine environment. The Iron Age/Romano-British activity was concentrated at the western side of the field where the presence of a settlement is suggested. Further east, and closer to the estuarine edge, deposit (1001) contained some fragments of pottery that may have been connected to salt-making activities, probably in the Iron Age. The prospect of organic materials surviving in the deeper alluvial deposits in the east and particularly the north of the site is also significant.

A suitable programme of mitigation (likely to combine palaeoenvironmental analysis and open area excavation) will be required if construction work is proposed in the Main Plant Area.

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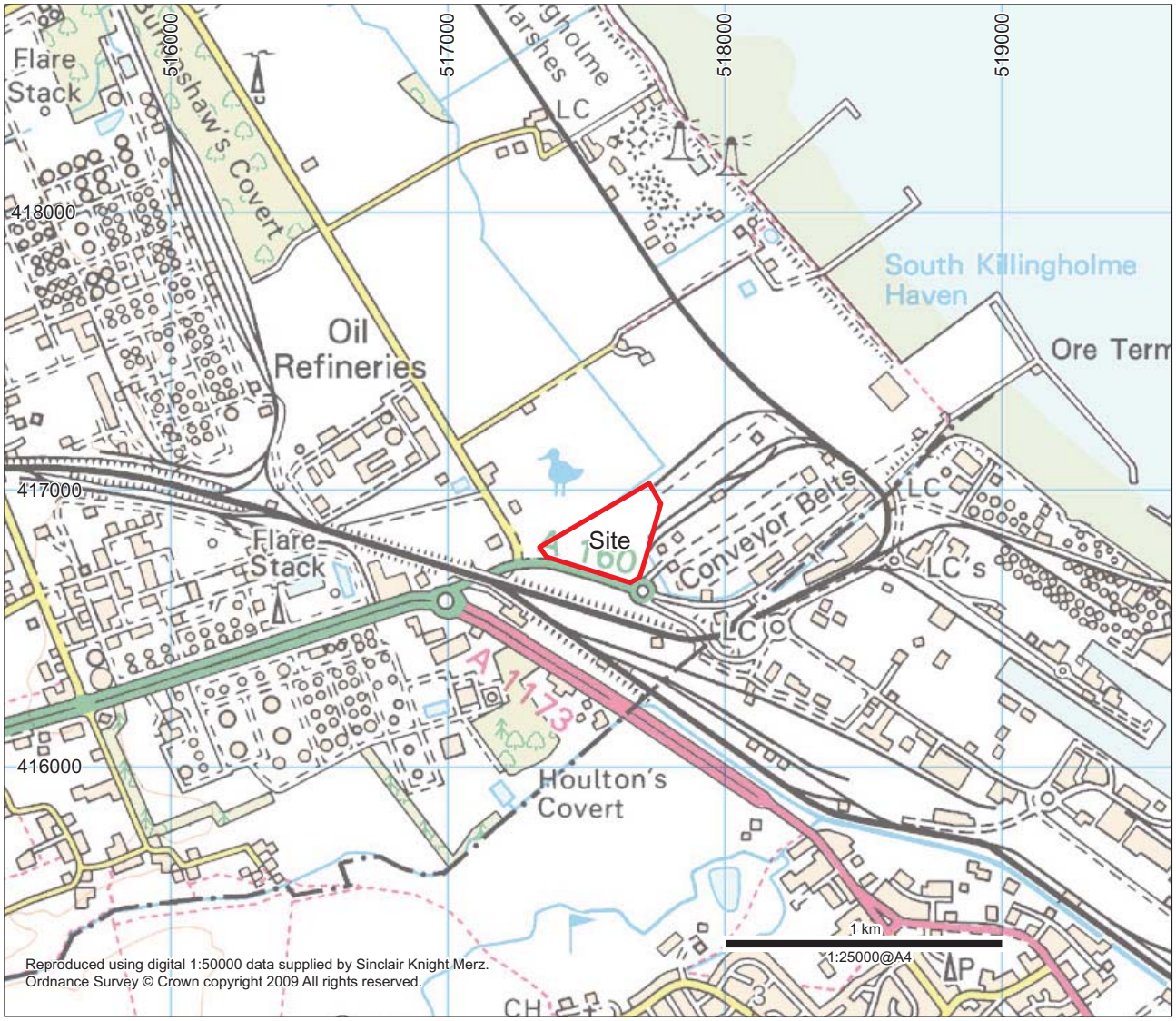
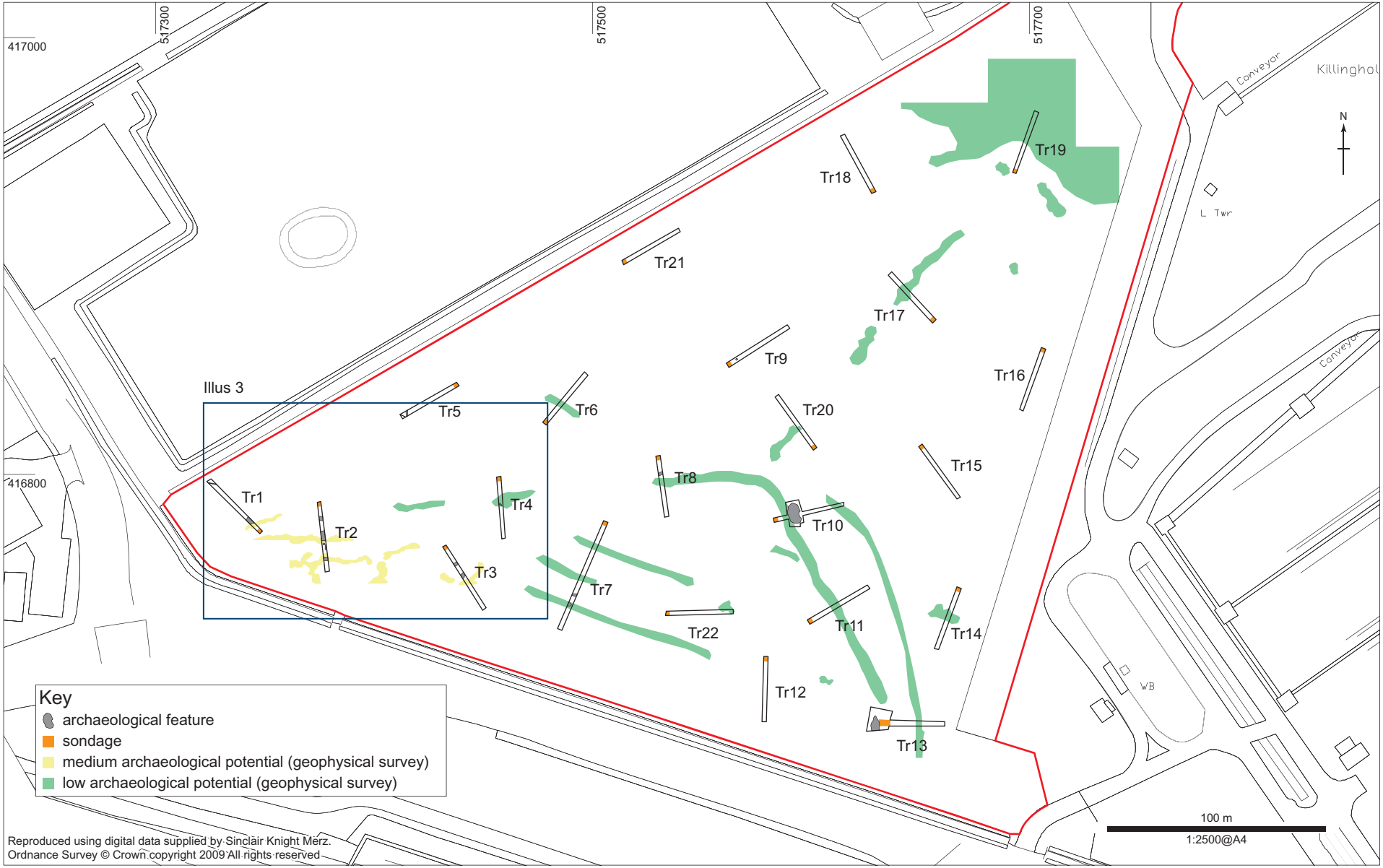
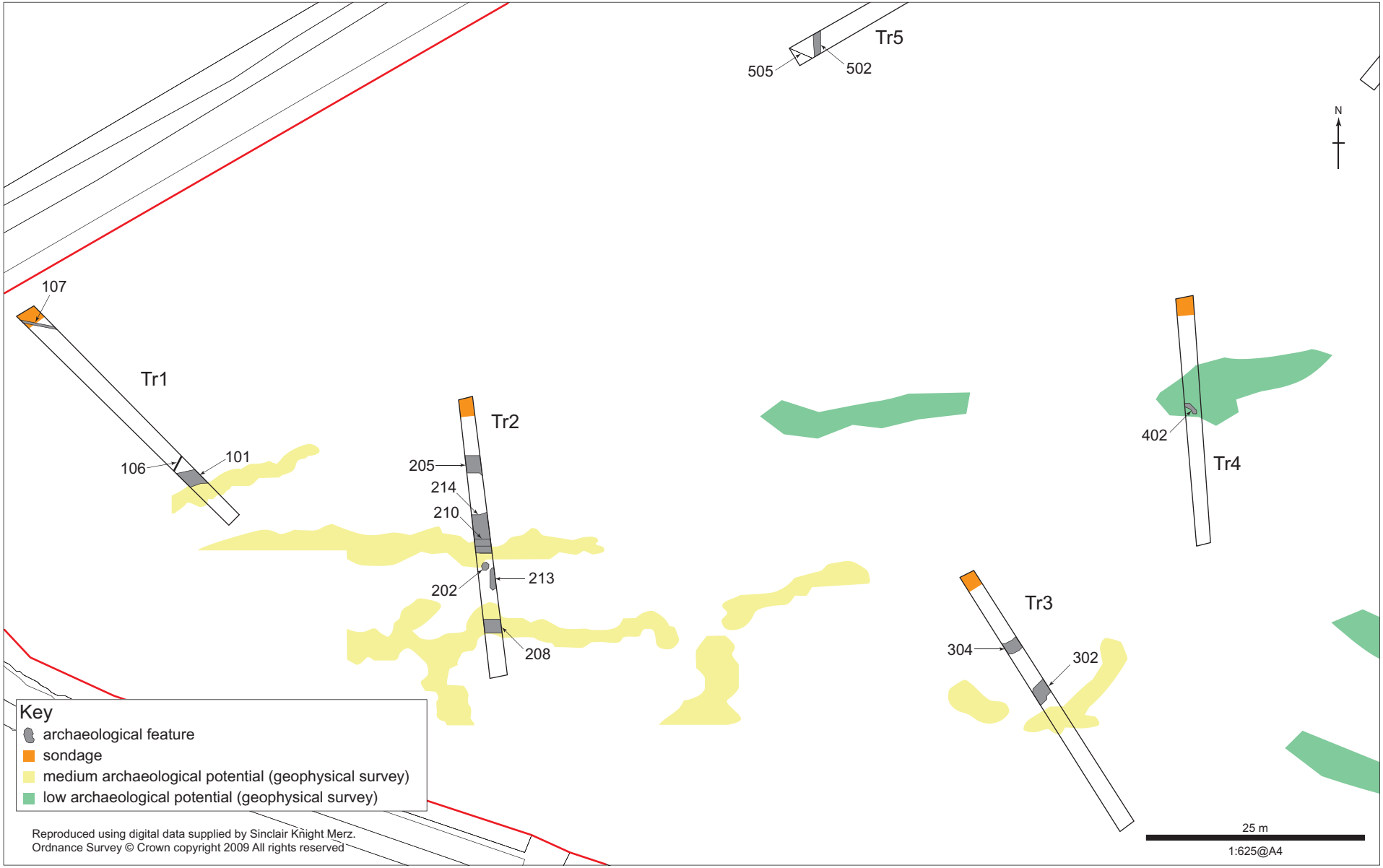


Illus 1- Site location



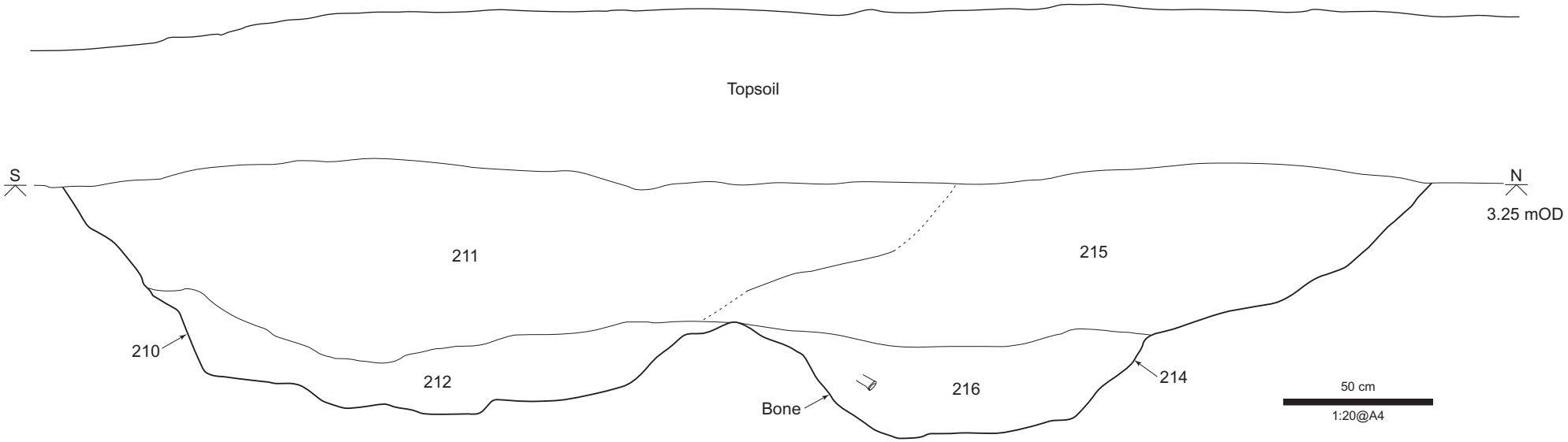
Illus 2- Evaluation trench plan overlying geophysical anomalies



Illus 3- Western area of site showing archaeological features

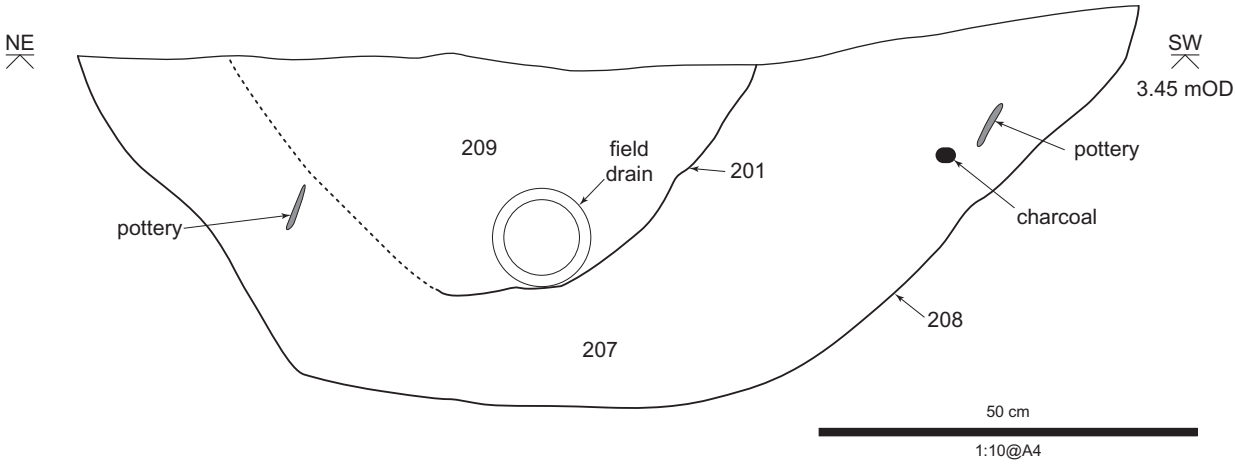
(Photography courtesy of Drax)

Illus 4- Aerial photo of evaluation



Illus 5- Section of ditches 210 and 214

Illus 6- Working shot of ditches 210 and 214



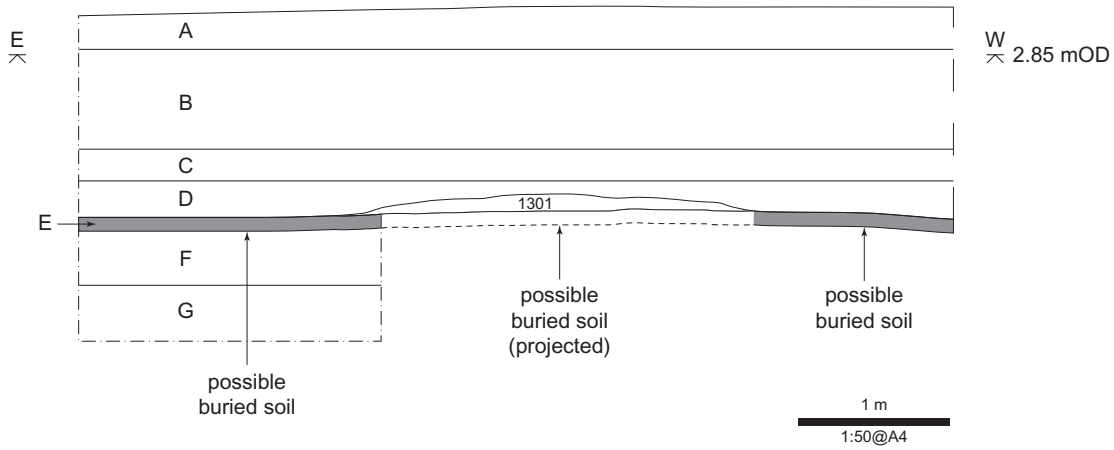
Illus 7- Northwest facing section through ditch 208

Illus 8- Northwest facing section of ditch 208 showing pot in situ

Illus 9- Shot of section of pit 202

Illus 10- Shot of spread 1001

Illus 11- Shot of section through 1301



A (0-28 cm)	Dark yellow brown humic silt loam
B (28-94 cm)	Dark red brown and grey brown silty clay loam to clay loam
C (94-115 cm)	Grey soft clay silt to silt clay, stone free
D (115-135 cm)	Orange brown sandy clay loam
E (135-147 cm)	Dark yellow brown sandy clay loam
F (147-184 cm)	Orange brown sandy clay loam
G (184-221 cm)	Grey stiff clay silt loam

Illus 12- North facing section through spread 1301

APPENDIX 1: **Context Register**

Context no.	Trench No.	Description	Dimensions (m)
101	1	Cut of ditch, orientated E-W	L 2.16 x W 2.38 x D 0.86
102	1	Upper fill of [101] dark brown silty clay	W 1.25 x D 0.23
103	1	2nd upper fill of [101] mid orange silty clay	W 2.38 x D 0.31
104	1	Middle fill of [101] grey silty clay	W 1.42 x D 0.19
105	1	Primary fill of [101], grey clay	W 1.06 x D 0.13
106	1	Possible furrow, orientated N-S	-
107	1	Ceramic land drain	-
201	2	Cut for ceramic land drain	W 0.7 x D 0.3
202	2	Cut of circular pit, function unknown	L 0.83 x W 0.7 x D 0.28
203	2	Upper fill of [202], dark brown silty clay	L 0.83 x W 0.7 x D 0.22
204	2	Primary fill of [202], light grey clay, charcoal rich	W 0.51 x D 0.06
205	2	Cut of ditch, orientated NW-SE	W 2.3 x D 0.68
206	2	Fill of [205], grey silty clay	W 2.3 x D 0.68
207	2	Fill of ditch [208], grey-brown silty loam	W 1.4 x D 0.46
208	2	Cut of ditch, orientated NW-SE	W 1.4 x D 0.46
209	2	Fill of [201] - land drain cut	W 0.7 x D 0.3
210	2	Cut of ditch, orientated E-W	W 2.5 x D 0.9
211	2	Upper fill of ditch [210], grey brown silty clay	D 0.66
212	2	Primary fill of [210], grey silty clay	D 0.30
213	2	Spread of burnt bone and charcoal located east of cut [202]	L 0.7 x W 0.5 x 0.08
214	2	Cut of ditch, orientated E-W	W 2.2 x D 1.0
215	2	Upper fill of [214], red brown silty clay	D 0.64
216	2	Primary fill of [214], blue grey silty clay	D 0.40
301	3	Primary fill of [302], red brown silty clay	W 1.8 x D 0.3
302	3	Cut of ditch, orientated NE-SW	W 1.8 x D 0.3
303	3	Primary fill of [304], mid red brown silty clay	W 2.58 x D 0.43
304	3	Cut of ditch, orientated NE-SW	W 2.58 x D 0.43
401	4	Alluvial clay deposit, across W of trench 4	-
402	4	Charcoal spread, appears curvilinear in plan	L 1.5 x W 0.24 x D 0.02
403	4	Ceramic land drain	-
501	5	Alluvial clay deposit, orange-brown clay	L 32 x W 2 x D 0.17
502	5	Cut of ditch running N-S under (501)	W 1.3 x D 0.32
503	5	Primary fill of ditch [502], dark grey sandy clay	W 0.93 x D 0.15
504	5	Upper fill of [502],blue grey sandy clay	W 1.34 x D 0.16
505	5	Ceramic land drain	-
701	7	Fill of ditch [702],orange-brown silty clay	W 1.10 x D 0.23
702	7	Cut of ditch, orientated E-W	W 1.10 x D 0.23
703	7	Fill of ditch [704], mid-brown silty clay	W 1.0 x D 0.24
704	7	Cut of possible ditch, orientated NW-SE	L 1.3m x W 1.0m x D 0.24m
801	8	Primary fill of [802], Brown grey silty clay	W 1.35 x D 0.20
802	8	Cut of shallow ditch, orientated NE-SW	W 1.35 x D 0.20
901	9	Black silty deposit, infrequent charcoal inclusions	L 0.7 xW0.6 D 0.03

1001	10	Occupation spread, mid brown-orange silty loam	L 8 x W 5 x D 0.12
1301	13	Charcoal rich, burnt stone deposit	L 5.2 x W 3.34 x D 0.2
2201	22	Upper fill of [2203], mid-brown silty clay	D 0.40
2202	22	Lower fill of [2203], light-brown silty clay	D 0.55
2203	22	Number ascribed to a possible geological feature	W 1.9x D 0.95

APPENDIX 1: **Photo Register**

Photo no.	Colour slide	B&W print	Digital	Direction facing	Description
1	V	V	V	-	ID shot
2	V	V	V	NW	Shot of Trench 1
3	V	V	V	SW	Shot of sondage in Trench 1
4	V	V	V	NW	Shot of Trench 12
5	V	V	V	W	Shot of sondage in Trench 12
6	V	V	V	NW	Shot of Trench 2
7	V	V	V	W	East Facing section of Trench 2
8	V	V	V	NW	Shot of Trench 3
9	V	V	V	E	W facing section of Trench 3
10	V	V	V	NNE	Shot of Trench 4
11	V	V	V	SSW	NEE Facing Section of Trench 4
12	V	V	V	E	Shot fo Trench 5
13	V	V	V	S	N Facing section of Trench 5
14	V	V	V	N	S Facing section of Trench 6
15	V	V	V	W	Shot of Trench 6
16	V	V	V	NE	Shot of Trench 7
17	V	V	V	NW	SE Facing section of Trench 7
18	V	V	V	N	Shot of Trench 8
19	V	V	V	W	E Facing section of Trench 8
20	V	V	V	W	Shot of Trench 22
21	V	V	V	S	N Facing seection of Trench 22
22	V	V	V	W	Shot of Trench 13
23	V	V	V	E	Shot of Trench 13
24	V	V	V	N	S Facing section in Trench 13
25	V	V	V	NNE	Shot of Trench 14
26	V	V	V	SWW	Shot of Trench 11
27	V	V	V	NW	Shot of Sondage - Trench 11
28	V	V	V	SWW	Shot of Trench 10
29	V	V	V	NW	Shot of Sondage -Trench 10
30	V	V	V	SE	Shot of Trench 20
31	V	V	V	NE	Shot of Sondage- Trench 20
32	V	V	V	W	Shot of Trench 9
33	V	V	V	N	Shot of Sondage- Trench 9
34	V	V	V	SW	E facing section of ditch [101]
35	V	V	V	NE	W facing section of ditch [101]
36	V	V	V	-	ID Shot- Film 2
37	V	V	V	E	Shot of [201] - Pipe Trench
38	V	V	V	E	Shot of Trench 21
39	V	V	V	S	N facing section of Trench 21
40	V	V	V	SSE	Shot of Trench 18
41	V	V	V	E	W facing section of Trench 18
42	V	V	V	SE	Shot of Trench 17
43	V	V	V	NE	SW Facing section of Trench 17
44	V	V	V	SSW	Shot fo Trench 19

45	V	V	V	SEE	NWW Facing section of Trench 19
46	V	V	V	S	Shot of Trench 16
47	V	V	V	E	Shot of sondage in Trench 16
48	V	V	V	NW	Shot of Trench 15
49	V	V	V	NE	Shot of sondage in Trench 15
50	V	V	V	NNW	Shot of section of pit [202]
51	V	V	V	N	S Facing section of [502]
52	V	V	V	S	S Facing section of [502]
53	V	V	V	N	Spread (402)
54	V	V	V	S	Section through (1301)
55	V	V	V	E	General shot through (1301)
56	V	V	V	N	General shot through (1301)
57	V	V	V	SE	NW Facing section of ditch [205]
58	V	V	V	SE	NW Facing section of ditch [207]
59	V	V	V	SE	Half pot & bone in base of ditch [207]
60	V	V	V	NE	SW facing section of ditch[302]
61	V	V	V	SW	NE Facing section of ditch [304]
62	V	V	V	S	Bone -rich deposit (213)
63	V	V	V	W	Deposit (1001)
64	V	V	V	S	Deposit (1001) - east
65	V	V	V	S	Deposit (1001) - west
66	V	V	V	E	Deposit (1001)
67	V	V	V	NE	SW Facing section of ditch [802]
68	V	V	V	W	E Facing section of ditch [210]
69	V	V	V	W	E Facing section of ditch [214]
70	V	V	V	SE	Ditches [214] & [210]
71	V	V	V	S	Deposit (213) - half sectioned
72	V	V	V	-	ID SHOT Film 3
73	V	V	V	N	Deposit (901) in Trench 9
74	V	V	V	E	W Facing section of ditch [702]
75	V	V	V	NE	SW Facing section through feature [704]
76	V	V	V	NW	Section through [2203] - possible geological feature
77	V	V	V	SE	Section through [2203] - possible geological feature
78	V	V	V	E	Shot of spread [1001]
79	V	V	V	N	Shot of spread [1001]

APPENDIX 1: **Drawing Register**

Drawing no.	Scale	Description
1	01:10	NW facing section of ditch [205]
2	01:10	NW facing section of ditch [101]
3	01:10	S facing section through pit [202]
4	01:10	NW facing section of ditch [208]
5	01:10	NE facing section of ditch [302]
6	01:10	NE facing section of ditch [304]
7	01:10	N facing section of deposit (1001)
8	01:10	N facing section of deposit (1001)
9	01:10	SW section through ditch [802]
10	01:10	E facing section of ditches [210] & [214]
11	01:10	N section through deposit (213)
12	01:10	S facing section through deposit (901)
13	01:10	W facing section through ditch [702]
14	01:10	SW facing section though [704]
15	01:10	SE facing section through [2203]
16	01:10	N facing section though (1301)

APPENDIX 1: **Sample Register**

Sample no.	Context no.	Description
1	102	Fill of [101] -sample voided
2	103	Fill of [101]
3	104	Fill of [101]
4	105	Fill of [101]
5	203	Fill of [202] - upper deposit
6	304	Fill of [202] - lower deposit
7	503	Primary fill of [502] -charcoal rich
8	504	Upper fill of [502]
9	402	Charcoal Spread
10	206	Fill of [205]
11	207	VOID
12	1301	Black "burnt mound" deposit
13	207	Fill of [208]
14	301	Fill of ditch [302]
15	303	Fill of ditch [304]
16	211	Upper fill of ditch [210]
17	215	Upper fill of ditch [214]
18	216	Lower fill of ditch [214]
19	1001	Occupation spread
20	801	Fill of ditch [802]
21	213	Deposit (213)
22	701	Fill of ditch [702]
23	703	Fill from oval pit [704]
24	2202	Fill, possible geological feature

APPENDIX 1: Sondage Soil Descriptions
Dr Steve Lancaster

Trench 1
0-35 cm Dark yellow brown humic silt loam to humic clay silt loam, occasional stones, sub-rounded to rounded, 2-3 cm. Moderately developed blocky structure, boundary sharp, smooth.
35-47 cm Yellow brown to orange brown sandy silt loam, stone free. Massive to weakly developed blocky structure, boundary sharp, smooth to wavy.
47-67 cm Yellow brown compact silt loam, rare to occasional chalk fragments, 1-2 cm. Weakly developed blocky to massive structure, boundary smooth, diffuse.
67-150+ cm Dense grey brown silt loam, frequent to abundant chalk fragments, .5-6 cm, fragment frequency increasing with depth.

Trench 2
0-25 cm Dark yellow brown humic clay silt loam, rare stones, sub-rounded to rounded, 1-2 cm. Well developed blocky structure, boundary abrupt, smooth.
25-36 cm Pale grey brown clay silt loam, very rare stones, sub-rounded to rounded, 2-3 cm. Well developed blocky to prismatic structure, boundary sharp, smooth.
36-40 cm Yellow fine sand, stone free. Massive structure, boundary sharp, smooth.
40-72 cm Dark grey brown to pale grey clay loam, stone free. Weakly developed prismatic structure, boundary abrupt, smooth.
72-91 cm Yellow and grey fine sand, stone free. Massive structure, boundary sharp, wavy to undulating.
91-150+ cm Grey brown clay loam to silt clay loam, frequent chalk fragments, .3-6 cm. Structure massive.

Trench 3
0-25 cm Dark yellow brown humic silt loam, moderately developed blocky structure, rare to occasional stones, 2-8 cm, sub-angular to rounded. Weakly developed crumb and moderately developed blocky structure, boundary clear, smooth.
25-60 cm Grey brown silt loam, very rare stones, sub-rounded to rounded, 1-2 cm. Moderately blocky structure grading with depth to a weakly developed prismatic structure, boundary abrupt, smooth.
60-90 cm Dull orange and grey silt loam to clay silt loam, stone free. Moderately developed blocky grading with depth to a moderately developed prismatic structure, boundary sharp, smooth.
90-140+ cm Grey brown stiff clay to silt clay loam, with frequent to abundant chalk, .2-3 cm, size and frequency of chalk fragments increasing with depth. Massive structure.

Trench 4
0-25 cm Dark yellow brown humic silt loam, rare to occasional stones, 2-8 cm, sub-angular to rounded. Weakly developed crumb and moderately developed blocky structure, boundary clear, smooth.
25-64 cm Grey brown silt loam, very rare stones, sub-rounded to rounded, 1-2 cm. Moderately blocky structure grading with depth to a weakly developed prismatic structure, boundary abrupt, smooth.
64-90 cm Dull orange and grey silt loam to clay silt loam, stone free. Moderately developed blocky grading with depth to a moderately developed prismatic structure, boundary sharp, smooth.
90-153 + cm Grey brown stiff clay to silt clay loam, with frequent to abundant chalk, .2-3 cm, size and frequency of chalk fragments increasing with depth. Massive structure.

Trench 5
0-20 cm Dark yellow brown humic silt loam, stone free. Well developed blocky structure, boundary abrupt, smooth.
20-55 cm Dark grey brown silt loam, stone free. Well to moderately developed blocky structure, boundary abrupt, smooth.
55-69 cm Grey and yellow sandy silt loam, single fragment of peat, 6 cm, at base of unit. Weakly developed blocky structure, boundary sharp, wavy.
69-90 cm Grey brown sand loam with occasional stones, sub-angular to sub-rounded, .5-5 cm. Massive to weakly developed blocky structure, boundary abrupt, wavy.
90-102 cm Brown slightly sandy silt loam, rare chalk fragments, .2-.5 cm. Massive to weakly developed blocky structure, boundary sharp, smooth.
102-157+ cm Brown slightly sandy silt loam, frequent chalk fragments, .5-3 cm. Massive structure.

Trench 6
0-30 cm Dark grey and yellow brown humic silt clay loam, stone free. Well developed blocky structure, boundary sharp, smooth.
30-70 cm Dark grey brown to dark grey silt clay loam, stone free, heavily mottled, mottles oranges, forming on ped surfaces. Structure grades with depth from well developed blocky to weakly developed blocky, boundary abrupt, wavy.
70-82 cm Yellow brown clay loam to silt clay loam, stone free. Structure massive, boundary sharp, wavy.
82-92 cm Grey clay loam to silt clay loam, stone free. Structure massive, boundary sharp, wavy.
92-120 cm Grey and dull yellow clay loam, heavy orange mottling, occasional stones, sub-angular to sub-rounded, 1-2cm. Structure massive, boundary abrupt, wavy.
120-162+ cm Red brown and grey clay loam to silt loam, frequent chalk fragments, .3-6 cm. Structure massive.

Trench 7
0-31 cm Dark yellow brown humic silt loam, rare stones, 1 cm, sub-angular to rounded. Well developed blocky structure, boundary sharp, smooth.
31-50 cm Dark grey brown silt loam, rare to occasional stones, sub-rounded to rounded, 1 cm. Well to moderately developed blocky structure, boundary abrupt, smooth.
50-121+ cm Red brown silt loam, frequent to abundant chalk fragments, .5-3 cm, sub-angular to sub-rounded, abundance increases with depth. Massive to weakly developed blocky structure.

Trench 8
0-27 cm Dark yellow brown humic silt loam, rare stones, 1-4 cm, sub-rounded to rounded. Well developed blocky structure, boundary sharp, smooth.
27-33 cm Yellow brown silt loam, rare stones, 1-2 cm, sub-rounded to rounded. Weakly developed blocky structure, boundary sharp, smooth.
33-45 cm Yellow well-sorted fine sand, rare stones, 2-7 cm. Structure massive, boundary sharp, smooth.
45-55 cm Red brown compact silt loam. Structure massive, boundary abrupt, smooth.
55-120+ cm Red brown grading to grey silt loam, frequent to abundant chalk fragments, .5-5 cm, sub-angular to sub-rounded, abundance increases with depth. Massive to weakly developed blocky structure.

Trench 9
0-30 cm Dark yellow brown humic silt loam, moderately developed blocky structure, locally moderately developed crumb structure, stone free, boundary sharp, smooth.
30-70 cm Red brown and grey brown stiff silt loam to silty clay loam, weakly developed blocky to weakly developed prismatic structure, stone free, boundary sharp, smooth to wavy.

70-74 cm Yellow and grey sand, massive, stone free, boundary sharp, wavy.
74-99 cm Yellow/orange brown silt loam, massive, locally moderately developed crumb structure, boundary sharp, wavy.
99-134+ cm Red brown (grey from 128 cm) stiff silt loam, massive, abundant chalk fragments, .5-3 cm.

Trench 10
0-30 cm Dark grey brown and dark yellow brown silt loam, with rare stones, sub-rounded to rounded. Abundant orange mottling of ped surfaces and channels. Well developed blocky structure, boundary abrupt, smooth.
30-40 cm Dark grey brown silt loam, with rare stones, sub-rounded to rounded. Abundant orange mottling of ped surfaces and channels. Weakly developed blocky structure, boundary abrupt, smooth.
40-80 cm Grey brown to grey stiff sand silt loam with occasional grit, .2-.4 cm. Massive structure, boundary abrupt and smooth.
80-109 cm Dark grey sand loam, stone free. Massive structure, boundary sharp, wavy to irregular.
109-122+ cm Red brown to grey stiff silt loam abundant chalk fragments, .5-3 cmm. Massive structure.

Trench 11
0-27 cm Dark yellow brown humic silt loam, rare stones, sub-angular to sub-rounded, 2-4 cm. Well developed blocky structure, boundary abrupt, smooth.
27-74 cm Dark red to grey brown silt loam, weakly developed blocky to weakly developed prismatic structure, boundary abrupt and wavy.
74-108 cm Grey brown sandy clay loam grading with depth to sandy clay loam, rare stones, sub-rounded to rounded, 1-2 cm. Weakly developed blocky to massive structure, boundary abrupt, undulating.
108-142+ cm Red brown and grey clay loam, occasional to frequent chalk fragments, .3-6 cm. Massive structure.

Trench 12
0-30 cm Dark yellow brown humic silt loam, rare stones, sub-rounded to rounded, 2-4 cm. Well developed blocky structure, boundary sharp, smooth.
30-77 cm Dark grey and yellow silt loam, rare stones, sub-rounded to rounded, 2-4 cm. Moderately to weakly developed blocky structure, boundary sharp, smooth.
77-130 cm Yellow orange silt sand loam, stone free. Structure massive, boundary sharp, wavy.
130-180+ cm Red brown loam to silt loam, frequent chalk fragments, .5-1.5 cm. Massive structure.

Trench 13
0-28 cm Dark yellow brown humic silt loam, occasional stones, sub-rounded to rounded, 2-8 cm. Moderately developed blocky structure, boundary abrupt, smooth.
28-94 cm Dark red brown and grey brown silty clay loam to clay loam, rare stones, sub-rounded to rounded, 2-6 cm. Weakly developed blocky to weakly developed prismatic structure, boundary abrupt, smooth.
94-115 cm Grey soft clay silt to silt clay, stone free. Structure massive, with possible incipient crumb structure at base, boundary sharp, smooth.
115-135 cm Orange brown sandy clay loam, occasional grit and stones, .1-.7. Massive structure, boundary abrupt, smooth.
135-147 cm Dark yellow brown sandy clay loam, occasional stones, massive to weakly developed blocky structure, boundary sharp, smooth.
147-184 cm Orange brown sandy clay loam, occasional grit and stones, .1-.7. Massive structure, boundary abrupt, smooth.
184-221 cm Grey stiff clay silt loam, abundant chalk, .2-20cm. Structure massive.

Trench 14
0-30 cm Dark yellow brown humic silt loam, rare stones, sub-rounded to rounded, 1-2 cm. Well developed blocky structure, boundary abrupt, smooth to wavy.
30-165 cm Red brown clay loam to silty clay loam, weakly developed blocky to massive structure, boundary abrupt to smooth.
165-185 cm Dark grey brown organic rich silt, stone free. Massive structure, boundary sharp, flat.
185-235 cm Yellow and grey sandy silt loam with occasional grit, .2-.4 cm. Structure massive, boundary abrupt, flat.
235-255+ cm Red brown silt loam, abundant chalk fragments, 2-6 cm. Weakly developed blocky structure.

Trench 15
0-30 cm Dark yellow brown humic silt loam, very rare stones, sub-rounded to rounded, 1-2 cm. Moderately developed blocky structure, boundary abrupt, smooth to wavy.
30-110 cm Red brown to greyclay loam to silt loam, rare cockle fragments. Weakly developed blocky to massive structure, boundary sharp, smooth.
110-114 cm Light grey silt to clay silt, massive, boundary sharp, smooth.
114-117 cm Dark grey organic clay silt, massive, boundary sharp, smooth.
117-121 cm Brown humified peat.
121-129 cm Grey well sorted silt, heavily mottled (orange), massive, boundary abrupt, smooth.
129-149+ cm Yellow clay silt, massive.

Trench 16
0-35 cm Dark yellow brown humic silt loam to silt clay loam, well developed blocky structure, stone free, boundary abrupt, smooth.
35-75 cm Dark grey brown silt loam to silty clay loam, weakly developed blocky structure, boundary abrupt, smooth.
75-97 cm Red brown silt clay loam, massive, stone free, boundary abrupt, smooth.
97-142 cm Red brown clay loam, massive, stone free, boundary clear, smooth.
142-180+ cm Grey clay loam, massive, stone free, abundant rootlets.

Trench 17
0-30 cm Dark yellow brown humic silt loam, rare to very rare stones, sub-rounded to rounded, 1-2 cm. Well developed blocky structure, boundary abrupt to clear, smooth.
30-110 cm Red brown silt clay to silt loam, stone free. Weakly developed blocky structure through weakly developed prismatic structure to massive, sequence proceeding with increasing depth. Boundary sharp, smooth.
110-140cm Red brown well sorted fine silt, stone free. Massive, boundary clear.
140+ cm Grey well sorted fine silt, stone free. Massive.

Trench 18
0-28 cm Dark yellow brown humic silt loam, rare to very rare stones, sub-rounded to rounded, 1-2 cm. Well developed blocky structure, boundary sharp, smooth.
28-60 cm Dark grey brown to dark grey silt to silty clay loam, stone free. Moderately developed blocky to weakly developed prismatic structure, boundary abrupt, smooth.
60-160 cm Red brown soft clay silt loam, stone free. Massive.
160-170 + cm Grey brown to red brown silt loam, rare chalk fragments, massive structure.

Trench 19
0-26 cm Dark yellow brown humic silt loam, rare to very rare stones, sub-rounded to rounded, 1-2 cm. Well developed blocky structure, boundary sharp, smooth.
26-70 cm Dark grey brown to dark grey silt to silty clay loam, stone free. Moderately developed blocky to weakly developed prismatic structure, boundary abrupt, smooth.

70-153+ cm Red brown soft clay silt loam, stone free. Massive.

Trench 20
0-26 cm Dark yellow brown humic silt loam, rare to very rare stones, sub-rounded to rounded, 1-2 cm. Well developed blocky structure, boundary sharp, smooth.
26-65 cm Dark grey brown silt to silty clay loam, stone free. Weakly developed blocky to weakly developed prismatic structure, boundary sharp, smooth.
65-84 cm Yellow silty sand loam, stone free, massive structure, boundary sharp, wavy.
84-144+ cm Grey brown to red brown silt loam, rare chalk fragments, massive structure.

Trench 21
0-20 cm Dark yellow brown humic silt loam, rare to very rare stones, sub-rounded to rounded, 1-2 cm. Well developed blocky structure, boundary abrupt, smooth.
20-60 cm Dark grey brown silt loam, stone free. Weakly developed blocky to weakly developed prismatic structure, boundary abrupt, smooth.
60-90 cm Red brown soft clay silt loam, stone free. Weakly developed blocky to massive structure, boundary sharp, smooth to wavy.

Trench 22
0-32 cm Dark yellow brown humic silt loam, rare stones, sub-rounded to rounded, 1-7 cm. Weakly developed blocky structure, boundary sharp, smooth.
32-60 cm Dark grey brown silt loam, very rare stones, sub-rounded to rounded, 1-4 cm. Weakly developed blocky to weakly developed prismatic structure, boundary sharp, smooth.
60-100+ cm Sandy silt loam to silt clay loam, frequent to abundant chalk fragments, .1-8 cm. Massive structure, locally well developed crumb structure.

APPENDIX 2: FINDS LIST & ASSESSMENT

Julie Lochrie & Andrea Smith

Summary

The finds consist of one possible iron object, 42 pieces of chipped stone, 60 sherds of pottery, a worked bone object and 353.5g of metalworking debris. The pottery is dealt with in Appendix 4.

All chipped stone artefacts are flint, which are in many cases patinated. None of the pieces have undergone secondary modification and most are poor quality flakes, small chips or indeterminate pieces.

The possible iron object is in small fragments and unidentifiable. The metalworking debris consists of a plano-convex hearth bottom and a small fragment of possible iron slag. The size and density of the hearth bottom points towards smelting.

Finds such as the worked bone point are very common on prehistoric sites and change very little over time from the Bronze Age through to the Iron Age (such as the examples from Billingborough, Lincs in Bacon 2001). The absence of metal tool marks on this piece is not conclusive as to date. The scratching on the point indicates that it was used perhaps as a burnisher with a sideways rubbing motion, or alternatively with a twisting motion, possibly to make suspension holes in clay objects such as whorls or loomweights.

Conclusions

The finds assemblage should be retained and deposited in the relevant museum to allow future study.

The finds analysis should be included in that of any larger assemblage recovered if further fieldwork is undertaken. No further work on the possible iron object is recommended. Consideration should be given to drawing the worked bone if the site progresses to further fieldwork.

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Finds List

Context	Sample No	Material	Qty	Description
215	-	Fe	1	Small degraded fragments of possible iron object
103	-	Lithics	3	Flint. Two flakes and a chunk (poss core); all patinated
103	002	Lithics	3	Flint chips and indeterminate piece
104	-	Worked animal bone	1	Point, sheep-sized long bone. Very worn and smoothed, surface slightly laminating. No cut marks visible from manufacture – may have been split and ground rather than using metal tools to cut point. Broken mid-shaft. Numerous small transverse scratches on the point and for 30 mm up from tip indicate use-wear from a twisting or sideways rubbing motion. L69 mm Dia 11 x 13 mm
105	004	Lithics	2	Flint flake and indeterminate piece
201	020	Lithics	8	Flint flakes, indeterminate and chips
206	010	Lithics	4	Flint flakes and chip
207	015	Lithics	4	Flint flakes
211	016	Lithics	3	Flint flake, indeterminate and chip
213	021	Lithics	1	Flint chip
215	-	Lithics	1	Flint flake
215	017	Lithics	2	Flint chips
301	014	Lithics	6	Flint flakes and indeterminate pieces
503	007	Lithics	1	Flint flake
1001	019	Lithics	4	Flint. Two flakes and two chips
103	-	MWD	353g	Plano-convex hearth bottom
1001	019	MWD	0.5g	Small fragment of possible iron slag

APPENDIX 3: Environmental remains from samples

Table 1: RRIH08 Retent Sample Results

Context Number	Sample Number	Retent Vol (l)	Pottery	Lithics	MWD	Unburnt Bone	Charcoal Quantity	Charcoal max size (cm)	Material available for AMS	Comments
103	2	8		+						
105	4	5	+	+						
204	6	4								Archaeologically sterile
206	10	5		+		+				
207	13	7		+						
211	16	4		+		+				
213	21	5		+		++++			uncharred bone	
215	17	5		+						
402	9	5					+	1.4	charcoal	
503	7	5		+			+++	2	charcoal	
801	20	10		++			+	1.2		
1001	19	8	+	+	+		+	1	charcoal	
1301	12	20		+			++++	3	charcoal	
2202	24	5								Archaeologically sterile

Key: + = rare, ++ = occasional, +++ = common and ++++ = abundant
NB charcoal over 1cm is suitable for identification and AMS dating

Table 2: RRIH08 Flotation Sample Results

Context Number	Sample Number	Total flot Vol (ml)	Cereal grain:	*Hordeum vulgare*	*Cerealia* indet.	Other plant remains	Charcoal Quantity	Charcoal Max size (cm)	Material available for AMS	Comments
103	2	20				modern root debris +++	++	<0.5		
105	4	2					+	<0.5		
204	6	4		+	+		+	<1	charred cereal grain	
206	10	4				*Polygonum aviculare* + modern root debris ++	++	<0.5		
207	13	10				*Chenopodium album* + *Fumaria officinalis* L.+	+	<0.5	charred seed	
211	16	4					+	<0.5		
213	21	30				modern root debris +				Archaeologically sterile
215	17	15					+	<0.5		
402	9	2					+	<0.5		
503	7	8				modern root debris ++	+++	<1		Sample contains coal fragments
801	20	30				modern straw and root debris +++	+	<0.5		
1001	19	40				modern straw and root debris +++				Archaeologically sterile
1301	12	40				charred bud indet. +	++++	<0.5	charred bud	
2202	24 20					modern root debris +				Archaeologically sterile

Key: + = rare, ++ = occasional, +++ = common and ++++ = abundant

NB charcoal over 1cm is suitable for identification and AMS dating

APPENDIX 4: Report on Iron Age Roman Pottery and fired clay

I.M. Rowlandson

The pottery has been archived using count and weight as measures according to the guidelines laid down for the minimum archive by *The Study Group for Roman Pottery* (Darling 2004) using the codes developed by the City of Lincoln Archaeological Unit- CLAU (see Darling and Precious *forthcoming*) and the fabric series currently under development for North Lincolnshire (Rowlandson *forthcomming*). Rim equivalents (RE) have been recorded and an attempt at a 'maximum' vessel estimate has been made following Orton (1975, 31) but this is especially difficult with irregularly fired ceramics. The pottery has been bagged by fabric and vessels selected as suitable for illustration have been bagged separately for ease of future reference. The archive record (Appendix 1) is an integral part of this report. A copy will be curated in an Access database, available from the author in a digital format. Expansions of the main abbreviations used in the archive are included in Appendix 2. The report was produced on the basis of site information provided by Headland Archaeology.

CONDITION

The ceramics presented totalled 60 sherds of pottery, weighing 1367g, RE 0.75, and 26 fragments of fired clay weighing 253g from 12 contexts. The pottery is generally fresh with a large proportion of a handmade jar from context 207 increasing the average sherd weight. Three vessels from Trench 2 showed evidence of sooting. A vessel link was evident between contexts 208 and 210 from Trench 2.

The group contains a range of pottery similar to Iron and Roman groups from recent excavations along the foreshore at North Killingholme. The majority of the pottery dates to the Iron Age and is mostly tempered with erratic rock filler from the local Boulder clay deposits. Most notable in this group is a small collection of fired clay trays or pans. Similar vessels are often found associated with salt production in southern Lincolnshire and it is possible that the trays from this site represent rare evidence for salt production in northern Lincolnshire during this period.

Much of the Iron Age pottery is fragile and should be carefully wrapped for storage. All ceramics should be deposited with the relevant local museum.

DATING

The detailed archive is presented as Appendix 1. Table 1 provides a quantified spot dating summary by context. It should be noted that nearly all of the groups are dated on a small number of vessels. The dating boundaries used are as shown by Knight 2002, Fig 12.2 who highlights the shortcomings of the existing chronologies (p120-123) as such the 'spot dates' relate to stylistic developments. It is also noteworthy that some of the earlier, simple forms may have a long currency. The date ranges used broadly relate to chronological values as follows-

PREHIST-	Neolithic to Bronze Age broadly up 800BC
LBA-IA-	Broadly the first millennium BC
IA-	Iron Age- broadly 800BC to the Roman conquest AD43
MLIA-	Mid to late Iron Age 450BC to the Roman conquest AD43
LIA-	Late Iron Age- AD150 to the Roman conquest AD43
M1-E2-	From the Roman conquest until c.AD125
L1-2-	Late 1st to 2nd century c.AD75- 125
L2-	Late Second century c.AD170-200

Table 1- Dating summary

Context	Feature Type	Spot date	Comments	Sherd	Weight (g)	RE % total
0103	Ditch	M1-E2	Small group- dated on a shell- tempered jar rim	5	74	6
0104	Ditch	IA	Small group including erratic tempered ware	4	33	0
0105	Ditch	PREHIST+	Fired clay only	2	5	0
0201	Land drain	MLIA	Small group with a finger tipped jar rim	5	77	5
0203	Pit	IA	Small group	4	9	0
0206	Ditch	L1-2	Single sherd- early Roman storage jar body sherd	1	98	0
0207	Ditch	MLIA	Small group- one erratic tempered jar	22	505	20
0208	Ditch	IA	A small group	9	242	0
0210	Ditch	IA+	Small group- thick walled shell tempered sherds	1	55	0
0211	Ditch	L2	Small group containing second century forms and fired clay	9	184	38
0215	Ditch	IA	Small group	2	59	0
0801	Ditch	PREHIST-IA	Small group	3	52	0
1001	Layer	LBA-IA	Small group containing an inturned	19	227	6

Table 1- Dating summary						
Context	**Feature Type**	**Spot date**	**Comments**	**Sherd**	**Weight (g)**	**RE % total**
			rimmed jar and fired clay trays, probably of an Iron Age date possibly relating to salt processing			

Trench 1

A small group of pottery was retrieved from this trench including erratic tempered ware dating to the Iron Age and a small early Roman group (103).

Trench 2

Trench 2 produced the most pottery nearly all of Iron Age date with some small Roman groups.

Trench 8

Trench 8 produced a single small group of grog tempered pottery including a trimmed base. A broad date of later Bronze Age to Iron Age would fit this group.

Trench 10

The ceramics from Trench 10 are difficult to date and the small scrap of inturned rim with finger tip decoration provides a Late Bronze Age to Iron Age date (see below).

OVERVIEW OF FABRICS & FORMS

Table 2- Fabric overview						
Fabric	**Fabric details**	**Sherd**	**Sherd %**	**Weight (g)**	**Weight %**	**RE total %**
ETW	Erratic rocks broken up as temper	30	34.88%	637	39.32%	31
FCLAYS1	Fired Clay Site fabric 1- see archive	13	15.12%	53	3.27%	0
FCLAYS2	Fired Clay Site fabric 2- see archive	1	1.16%	8	0.49%	0
FCLAYS3	Fired Clay Site fabric 3- see archive	7	8.14%	154	9.51%	0
FCLAYS4	Fired Clay Site fabric 4- see archive	5	5.81%	38	2.35%	0
GREY	Miscellaneous grey wares	1	1.16%	51	3.15%	15
GREY?	Miscellaneous grey wares	1	1.16%	13	0.80%	0
GROG	Grog-temprered wares	3	3.49%	52	3.21%	0
IASA	IA type sandy wares	5	5.81%	58	3.58%	0
SHCM	Shell- common medium	8	9.30%	263	16.23%	0
SHGR	NE Lincs Shell and Grog fabric	7	8.14%	228	14.07%	23
SHSC	Shell- sparse coarse shell	2	2.33%	51	3.15%	6

Table 2- Fabric overview						
Fabric	**Fabric details**	**Sherd**	**Sherd %**	**Weight (g)**	**Weight %**	**RE total %**
SHSF	Shell- sparse fine shell	2	2.33%	5	0.31%	0
VESIC	Vesicular fabric	1	1.16%	9	0.56%	0

Table 3- Form overview							
Form	**Form Type**	**Form Description**	**Sherd**	**Shed %**	**Weight (g)**	**Weight %**	**RE total %**
BWM1	Bowl	Wide-mouthed; D&P No.1225-7	1	1.16%	51	3.15%	15
CLSD	Closed	Form	1	1.16%	13	0.80%	0
JFN	Jar	Inturned rim as 'Barrel shaped jars'	1	1.16%	2	0.12%	6
JEV	Jar	Everted rim	22	25.58%	505	31.17%	20
J?	Jar	Unclassified form	1	1.16%	12	0.74%	5
JBL	Jar/Bowl	Large	1	1.16%	98	6.05%	0
JBHER	Jar/Bowl	Rim as Rigby and Stead 1976 Fig 64.4	5	5.81%	118	7.28%	23
JBBR	Jar/Bowl	Bead rim	1	1.16%	47	2.90%	6
TRAY	Misc	Tray	13	15.12%	219	13.52%	0
OPEN?	Open	Open form	1	1.16%	51	3.15%	0
OPEN	Open	Form	10	11.63%	297	18.33%	0
-	Unknown	Form uncertain	29	33.72%	207	12.78%	0

The pottery

Much of the pottery is similar to that found at Weelsby Avenue, Grimsby. A jar from context 0215 (D2) is similar to an example illustrated from Phase 1 with finger tipped decoration on the rim, considered to be of earlier Iron Age date by Elsdon (1996, C6). A scrap of an inturned jar rim with finger tipped decoration from context 1001 is similar to examples illustrated by Elsdon (1996 C.3b) from saltern site at Tetney. The Tetney site is considered to be of late Bronze Age to Early Iron Age. The rim sherd from South Killingholme is very small and the dating of the vessel should be viewed with caution. Also of note is a jar from context 207 (D3) with an erratic tempered fabric. This vessel has a short everted rim and a slightly slack shoulder similar to an example illustrated by Elsdon from Weelsby Avenue Phase (1996, C6) and similar forms occur in the middle Iron Age. All of these vessels are all tempered with angular erratic rock fragments,

mostly basic igneous types, derived from the local Boulder Clay. Grog tempered sherds from Trench 8 are probably also of a similar date.

A transitional late Iron Age to Early Roman form (D1) present similar to examples from South Cave, East Yorkshire suggests continued activity on the site. The shell tempered fabric of this vessels suggest it has been brought from west of the chalk wolds. The Roman pottery present contained the typical local GREY fabric notably a deep wide mouthed bowl form. Also present are sherds of the early Roman shell and grog tempered fabric probably made to east of the River Ancholme and to the west of the Cretaceous chalk scarp (SHGR) with the typical hooked everted rim form. No fine wares are present and this small assemblage has an extremely functional feel to it.

The fired clay 'trays'

The fired clay from context 1001 represent at least 3-4 distinct trays. These forms have been paralleled to examples of briquetage from the Iron Age Saltern at Cowbit, South Lincolnshire. It is possible that the fragments from this site also represent the remnants of salt making. There is no evidence of sooting or any concretions on the fragments present but the presence of such deposits is dependant upon the trays used over a fire. Tray D4 has both rim and base sherds which suggest a shallow profile typical of many of the evaporating pans. It is notable that none of the typical supports or pedestals are present from this site and it is possible that these fired clay trays may have been used for a different purpose. Given the location of the site a salt making function would appear to be the most likely explanation for these trays.

DISCUSSION

This group has a range of pottery typical of many other sites in the area such as South Killingholme (Darling 2008 & 2006 Didsbury 2001) and Weelsby Avenue, Grimsby (Elsdon 1996 & Ellis et al 2001). The pottery suggests that this coastal area was exploited for much of the Iron Age and Roman periods. The presence of the fired clay trays is much more unusual as the main focus of salt production in the Lincolnshire Marsh area is mostly around the Ingoldmells area and at Tetney (Thomas and Fletcher 2001). These fragments might suggest that similar activities were undertaken in the vicinity of this site as well.

CONCLUSIONS

All of these ceramics should be retained and deposited in the relevant museum to enable future scrutiny.

The selected vessels (D1-6, Appendix 1) have been paralleled to existing corpora but ought to be considered for illustration if further fieldwork is undertaken.. Fired clay trays D4-6 ought to be considered by any future research into salt making in the region

The pottery from the site raises the possibility of industrial activity on the site, possibly relating to salt production. Although salt working sites are known from further south at Tetney and Ingoldmells understanding of salt making north of the modern day town of Grimsby during this period is scant. Many sites may survive buried under alluvium but so far few have been located or excavated.

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Appendix 1- RRIH08 Pottery and fired clay archive											
Context	**Fabric**	**Form**	**Decoration**	**Vessels**	**Alt**	**Drawing**	**Comments**	**Join**	**Sherd**	**Weight (g)**	**Rim diam**	**Rim eve**
0103	GREY?	CLSD	WM?	1	ABR		BS; EARLY ROMAN?		1	13	0	0
0103	SHSC	JBBR	HM	1		D1	RIM SHLDR; REDUCED; WEDGE RIM GLOBULAR JAR; FORM AS LATE IRON AGE TYPE AT SOUTH CAVE SEE C&H 1975 FIG36.2		1	47	32	6
0103	SHSC	-	HM	1	ABR		BS; REDUCED; THIN WALLED SCRAP		1	4	0	0
0103	FCLAY S1	-		1			FLAT SURFACE FLAKE		1	4	0	0
0103	FCLAY S1	-		1			FLAT SURFACE 0.9MM THICK		1	6	0	0
0104	IASA	-	HM	1	ABR		BS; OX/R;		3	24	0	0
0104	VESIC	-	HM	1	ABR		BS; REDUCED/BLACK; ?SHELL VESICULES?		1	9	0	0
0105	FCLAY S1	-		1			FORMLESS; OX/R/OX; FINE FABRIC SPARSE FINE MICA; SPARSE VESIC- VEG?; SPARSE QU C. 0.3MM; SAMPLE 4		1	2	0	0
0105	FCLAY S1	-		1			FORMLESS; OX/R/OX; SAMPLE 4		1	3	0	0
0201	ETW	-	HM	3			BS; IRF		3	45	0	0
0201	ETW	-	HM	1	SOOT INT		BS; IRF OX EXT SURFACE		1	20	0	0
0201	ETW	J?	HM; FT ON RIM	1		D2	RIM; IRF; OX SURFACES; FORM AS WEELSBY AVE ELSDON 1996 C6 TOP RIGHT		1	12	20	5
0203	SHSF	-	HM	1			BS SCRAPS		2	5	0	0
0203	FCLAY	-		1			FORMLESS SCRAPS		2	4	0	0

Appendix 1- RRIH08 Pottery and fired clay archive												
Context	**Fabric**	**Form**	**Decoration**	**Vessels**	**Alt**	**Drawing**	**Comments**	**Join**	**Sherd**	**Weight (g)**	**Rim diam**	**Rim eve**
	S1											
0206	SHGR	JBL	HM?	1			BS LOWER WALL; LARGE STORAGE JAR?		1	98	0	0
0207	ETW	JEV	HM; WIPE EXT	1	SOOT EXT	D3	RIM- BASE; REDUCED; SCRAPED/WIPED EXTERNAL SURFACE; SHORT EVERTED RIM SLIGHTLY SLACK SHOULDER SEE WEELSBY AVE ELSDON 1996 C6. PHASE2 TOP MIDDLE		22	505	10	20
0208	SHCM	OPEN	HM	1			BS; OX/R; VESSEL LINK TO CONTEXT 210	210	7	208	0	0
0208	IASA	OPEN	HM	1			BS; OX/R		2	34	0	0
0210	SHCM	OPEN	HM	1	SOOT INT?		BS; OX/R; LARGE BOWL? VERY SLIGHT CURVATURE	208	1	55	0	0
0211	FCLAY S1	-		1			FORMLESS		2	3	0	0
0211	GREY	BWM 1		1	SECOND		RIM; NECK; SLIGHT WARPED RIM SECOND; SIMILAR FABRIC TO MARKET RASEN GREY		1	51	28	15
0211	SHGR	JBHER	WM	1			RIM; SHLDR		1	74	30	16
0211	SHGR	-		1			BS; OX SURFACE		1	12	0	0
0211	SHGR	JBHER	WM	1			RIM; SHLDR; RIM AS R&S 1976 FIG64.4		4	44	26	7
0215	ETW	OPEN?	HM	1			BS; IRF WITH OX EXT SURFACE; BASIC IGNEOUS ROCK ERRATICS ANGULAR >5MM		1	51	0	0
0215	FCLAY S2	-		1			SCRAP; FLAT SURFACES 1.2CM THICK; OX/R; VESSEL?; OX/R; ABUNDANT FINE QU SAND 0.2MM; RARE QU 0.3-0.6MM		1	8	0	0

Appendix 1- RRIH08 Pottery and fired clay archive												
Context	**Fabric**	**Form**	**Decoration**	**Vessels**	**Alt**	**Drawing**	**Comments**	**Join**	**Sherd**	**Weight (g)**	**Rim diam**	**Rim eve**
0801	GROG	-	HM	1	ABR		BS; ?GROG- CLAY PELLETS		2	29	0	0
0801	GROG	-	HM	1			BASE; OX/R; SIMILAR BASE TO D3		1	23	0	0
1001	FCLAY S1	-		1			SCRAPS		3	1	0	0
1001	FCLAY S3	TRAY	HM	1		D4	RIM AND BASE; IRF; PLAIN RIM AS MORRIS 2001 FIG 17.3 'ROUNDED'; BASE AS FIG 17.7 'SPURRED FLAT'; FABRIC AS FCLAYS1 OCC CLAY PELLETS UP TO 3MM		7	154	0	0
1001	FCLAY S1	TRAY	HM	1		D5	BASAL ANGLE WITH A SLACKER PROFILE THAN D4; OX/R		1	27	0	0
1001	FCLAY S4	TRAY	HM	1		D6	RIM; AS D4; FABRIC- AS S1 WITH MODERATE VEG VESSICULES		2	18	0	0
1001	FCLAY S4	TRAY	HM	1			BASAL ANGLE		2	9	0	0
1001	FCLAY S1	-	HM	1			SCRAP		1	3	0	0
1001	ETW	-	HM	1			BS; SCRAP OX; SAMPLE 19		1	2	0	0
1001	ETW	JFN	HM	1			RIM SCRAP FUNNELED/ INTURNED RIM AS BARREL JAR TYPES? TINY SCRAP; SAMPLE 19		1	2	12	6
1001	FCLAY S4	TRAY	HM	1			BASAL SCRAP WITH WHIPE MARKS; SAMPLE 19		1	11	0	0

Appendix 2- Other codes used	
Code	**Expansion**
ABR	Abraded
VAB	Very abraded
HM	Handmade
HM/WF	Handmade/ Wheel finished
WM	Wheel made
BS	Body sherd(s)
QU	Quartz
OX/R	Oxidised external, reduced internal
OX/R/OX	Oxidised with a reduced or black core
R/OX/R	Reduced/Black with an oxidised core
IRF	Irregular firing colour
VESIC	Vesicules
SOOT	Sooting
INT	Internal
EXT	External
SECOND	Warped/ with firing fault
WIPE	Wipe marks

APPENDIX 5: Evaluation of animal bone
Catherine Smith

Introduction

Animal bone recovered during the archaeological evaluation of the Main Plant Area within the Inner Study Area of Site RRIH08 was subjected to initial inspection, recording and analysis.

The bone fragments were of variable preservation. Bone from Contexts [102] and [103] (upper ditch fills) showed relatively more surface abrasion than the bone from the rest of the site. Most of the fragments had become dry and brittle and showed signs of recent splitting and flaking of external surfaces. However, at least half of the fragments were identifiable to species level.

Method

The bones were identified by direct comparison with a modern reference collection. Where it was not possible to identify bones as far as species, the terms *large ungulate*, *small ungulate* and *indeterminate mammal* were used: thus all large vertebrae other than the atlas and axis were described as large ungulate, while small vertebrae were described as small ungulate. Ribs were similarly allocated depending on their size. Large ungulate bones were most likely to have come from cattle or horse, but could also have come from red deer. Similarly, small ungulate bones were most likely to have come from sheep, but could possibly have originated from goat, pig or roe deer. All other mammalian fragments for which neither species nor bone could be ascertained were described as indeterminate mammal. Mandibular tooth wear and eruption patterns were assessed using Grant's (1982) scheme for cattle and sheep/goats, as well as Payne's (1973) scheme for sheep/goats.

Species present

A catalogue of bone fragments is presented in **Table 1** by context and species. Predominant in the assemblage were bones of large mammals: cattle, horse and sheep/goat. One fragment tentatively identified as part of a rabbit tibia was also recovered. This is presumed to be intrusive. One worked bone was recovered from Context [104].

Worked bone

A worked bone awl was recovered from the middle fill of ditch [101]. Fashioned from a sheep/goat tibia, the implement showed numerous tool marks and polishing at the more proximal end of the bone, which had been cut obliquely in order to form a point. The marrow cavity was exposed by this process. Modification of the more distal end of the bone was also apparent, although the tool was broken in this area.

Nature of the assemblage

Because of the surface abrasion and fragile state of the bones, as well as the damage done by gnawing by carnivores, butchery evidence was limited. However, one of the horse bones has possibly been cut with a knife [211], indicating that the meat was removed for consumption by people or dogs. This is not at all unusual in an Iron Age/Romano-British context, and does not conflict with the domestic nature of the assemblage. At this stage, the general impression of the bone collection is that it represents the end-products of domestic activities.

Conclusions

The animal bone assemblage should be retained and deposited in the relevant museum to allow future study.

The animal bone data should be included in that of any larger assemblage recovered if further fieldwork is undertaken.

References

Grant, A 1982 'The use of tooth wear as a guide to the age of domestic ungulates' in Wilson, B, Grigson, C and Payne, S (eds) *Ageing and Sexing Animal Bones from Archaeological Sites* (=Brit Archaeol Rep Brit Ser 109), 91-107. Oxford.

MacGregor, A G 1985 *Bone, Antler, Ivory and Horn*. London.

Payne, S 1973 'Kill-off patterns in sheep and goats - the mandibles from Aşvan Kale' *Journal of Anatolian Studies*, 23, 281-303.

Table 1 Animal Bone Catalogue

Context no	Sample no	Trench no	Description	Species	Bone	L/R	Details	Evidence of age	Condition
102	-	1	Upper fill of [101], Dark brown silty clay	Cattle	Tooth	-	lower premolar 3/4; in wear	-	poor, abraded
102	-	1	-	IM	LBSF	-	unburnt fragment	-	poor, abraded
103	-	1	2nd upper fill of [101], Mid orange silty clay	Cattle	Mandible	L/R	ascending ramus	-	poor, abraded
103	-	1	-	Sheep/goat/SU	Humerus	L/R	shaft (distal)	-	poor, abraded
103	-	1	-	Sheep/goat/SU	Radius	R	shaft (distal)	-	poor, abraded
103	-	1	-	LU	Rib	-	shaft	-	poor, abraded
104	-	1	Middle fill of [101], Grey silty clay	LU	LBSF	-	2 fragments; recently split; conjoin	-	fair
104	-	1	-	Sheep/goat/SU	Tibia	L/R	Worked point/awl	-	fair

203	-	2	Upper fill of [202], dark brown silty clay	Cattle/LU	?tibia	L/R	shaft	-	fair
203	-	2	-	LU	Vertebra	-	dorsal fragment	-	possibly gnawed
203	-	2	-	IM	LBSF	-	chopped; parallel tool marks	-	fair
203	-	2	-	IM	LBSF		15 fragments	-	fair
206	-	2	Fill of [205], grey silty clay	Cattle	Ulna	R	2 conjoining fragments articulation	-	fair
206	-	2	-	?Cattle	?ulna	-	shaft; ?part of above	-	fair
206	10	2	-	IM	-	-	3 fragments	-	poor
207	-	2	Fill of Romano British Ditch [208]	Cattle	Calcaneum	R	entire	proximal epiphysis fused	fair
207	-	2	-	IM	LBSF	-	2 conjoining fragments	-	fair
207	-	2	-	IM	LBSF	-	1 fragment	-	fair

211	-	2	Upper fill of ditch [210], greyish brown silty clay	Cattle	Tooth	-	lower M1/2	tooth wear stage (tws) = b	fair
211	-	2	-	Sheep/goat	Tooth	-	3 lower molars; 2 lower premolars	tws = gge, MWS = 34	fair
211	-	2	-	Sheep/goat	Mandible	?R	probably associated with above teeth	-	poor
211	-	2	-	Horse	Humerus	R	conjoining distal fragment and shaft fragment	-	gnawed
211	-	2	-	Horse	Innominate	R	2 conjoining ilium fragments; knife cut?	-	poor
211	-	2	-	LU	Vertebra	-	sacral fragment	-	fair
211	-	2	-	LU	Vertebra	-	lateral fragment	-	fair
211	-	2	-	LU	Rib	-	Shaft	-	fair
211	-	2	-	IM	Pelvis	-	5 fragments; ?horse	-	fair
211	-	2	-	IM	LBSF	-	1 fragment, extensively gnawed	-	fair; gnawed

211	-	2	-	?Rabbit	?tibia	?L	proximal fragment	-	poor
211	-	2	-	Mollusc	-	-	Cerastoderma valve fragment	-	fair
211	16	2	-	IM	?LBSF	-	1 fragment	-	fair
213	-	2	Bone rich deposit	Sheep/goat	Metatarsal	L/R	2 conjoining fragments (anterior & posterior)	-	fair; gnawed
213	-	2	-	Dog	Radius	L	2 shaft fragments (not conjoining)	-	fair
213	-	2	-	LU	Vertebra	-	5 caudal fragments	-	fair
213		2	-	LU	Vertebra	-	1 neural spine	-	fair
213	-	2	-	LU	Vertebra	-	4 fragments	-	poor
213	-	2	-	IM	-	-	17 fragments	-	poor
213	21	2	-	LU	Vertebra	-	1 neural spine	-	poor

213	21	2	-	IM	-	-	56 small fragments	-	poor
215	-	2	Upper fill of [214], reddish brown silty clay	Horse	Tibia	L	2 conjoining distal fragments; fused	distal epiphysis fused	poor
215	-	2	-	Horse	Tibia	L	3 conjoining shaft fragments	-	poor
215	-	2	-	LU/Horse	LBSF	-	15 fragments	-	poor
215	-	2	-	LU/Cattle	Skull	-	2 parietal fragments	-	very poor
216	-	2	Primary fill of [214], bluish grey silty clay	Cattle	Radius	L	proximal fragment	proximal epiphysis fused	poor; gnawed
216	-	2	-	LU	LBSF	-	3 conjoining shaft fragments	-	poor
216	-	2	-	LU	LBSF	-	1 shaft fragment	-	poor

Key to abbreviations

LU	large ungulate
SU	small ungulate
IM	indeterminate mammal
LBSF	long bone shaft fragment
L	left
R	right

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APPENDIX 6: RADIOCARBON DATING CERTIFICATE

11 November 2009

Laboratory Code	SUERC-26235 (GU-20182)
Submitter	Sarah-Jane Haston Headland Archaeology Ltd 13 Jane Street Edinburgh EH5 6HE
Site Reference	Heron Renewable Energy Plant, North Lincolnshire
Sample Reference	Context 07, Sample 503
Material	Charcoal : Corylus avellana (Hazel)
$\delta^{13}C$ relative to VPDB	-27.2 ‰
Radiocarbon Age BP	3745 ± 30

N.B.

1. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

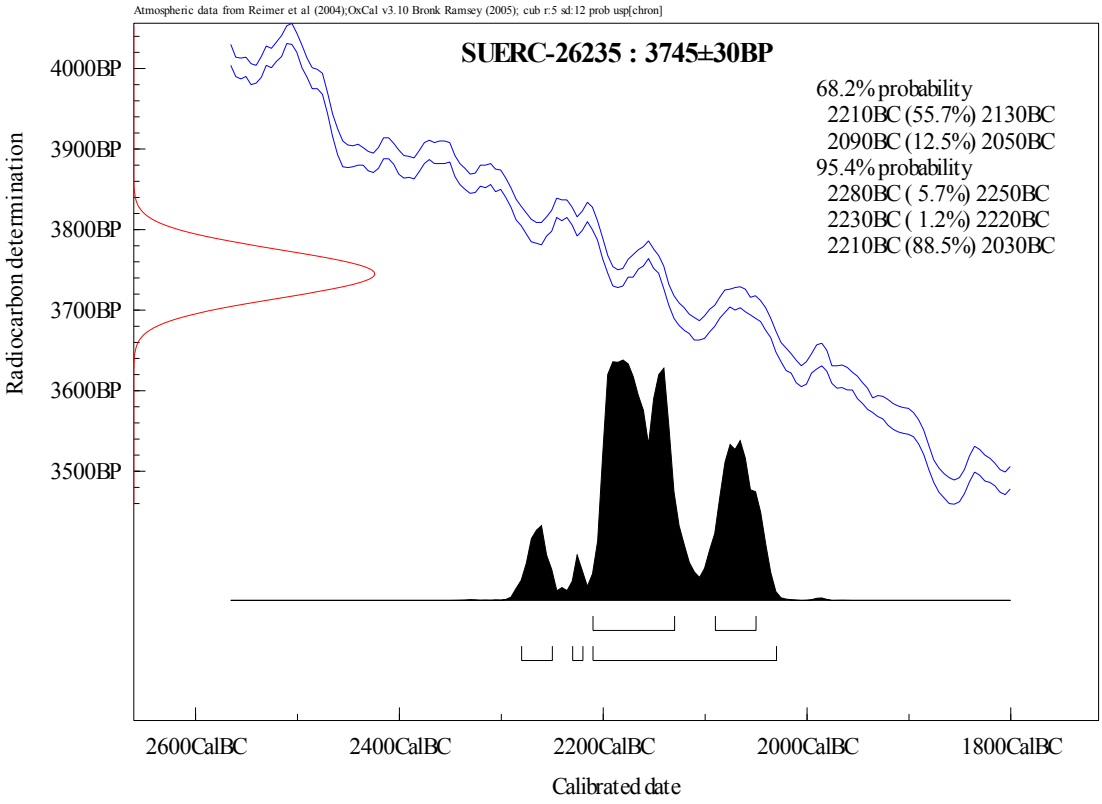
2. The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal3).

3. Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or Telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- Date :-

Checked and signed off by :- Date :-

Calibration Plot



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APPENDIX 6: RADIOCARBON DATING CERTIFICATE

11 November 2009

Laboratory Code	SUERC-26236 (GU-20183)
Submitter	Sarah-Jane Haston Headland Archaeology Ltd 13 Jane Street Edinburgh EH5 6HE
Site Reference	Heron Renewable Energy Plant, North Lincolnshire
Sample Reference	Context 402, Sample 09
Material	Charcoal : Quercus (Oak)
$\delta^{13}C$ relative to VPDB	-25.0 ‰
Radiocarbon Age BP	2780 ± 30

N.B.

1. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

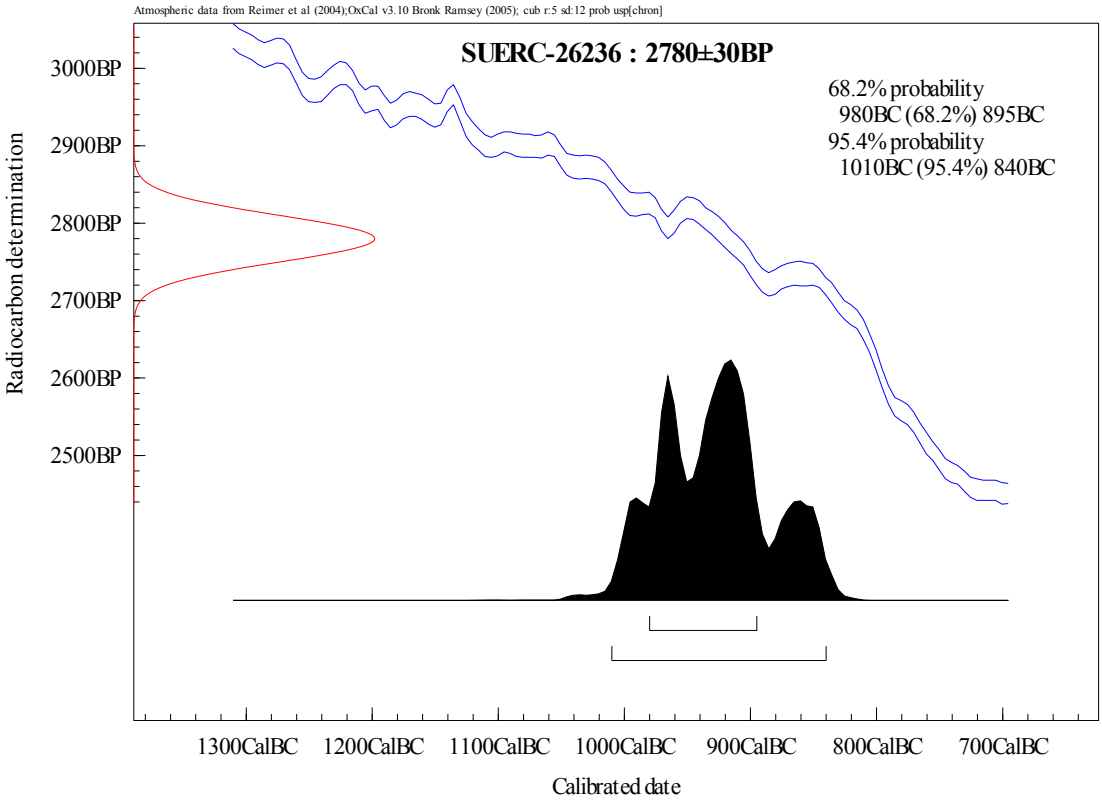
2. The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal3).

3. Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or Telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- Date :-

Checked and signed off by :- Date :-

Calibration Plot



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APPENDIX 6: RADIOCARBON DATING CERTIFICATE

11 November 2009

Laboratory Code	SUERC-26237 (GU-20184)
Submitter	Sarah-Jane Haston Headland Archaeology Ltd 13 Jane Street Edinburgh EH5 6HE
Site Reference	Heron Renewable Energy Plant, North Lincolnshire
Sample Reference	Context 1301, Sample 12
Material	Charcoal : Alnus glutinosa (Alder)
$\delta^{13}C$ relative to VPDB	-26.1 ‰
Radiocarbon Age BP	3155 ± 30

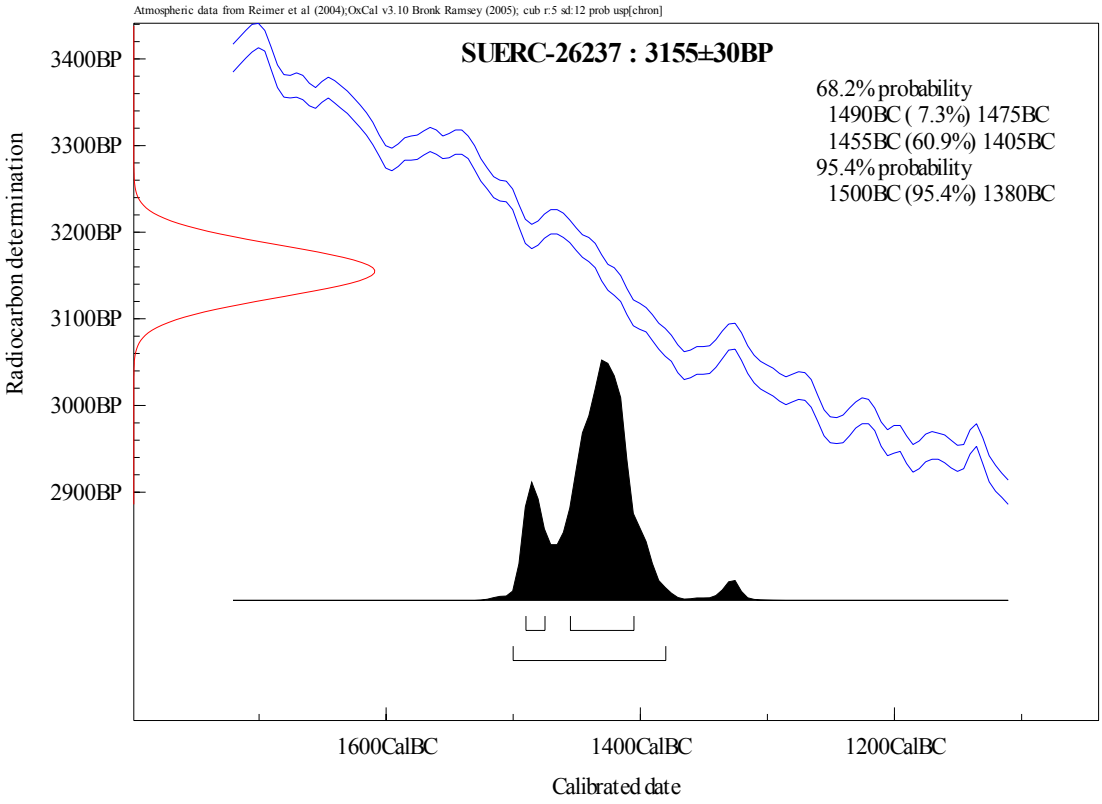
N.B.

1. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.
2. The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal3).
3. Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or Telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :- Date :-

Checked and signed off by :- Date :-

Calibration Plot



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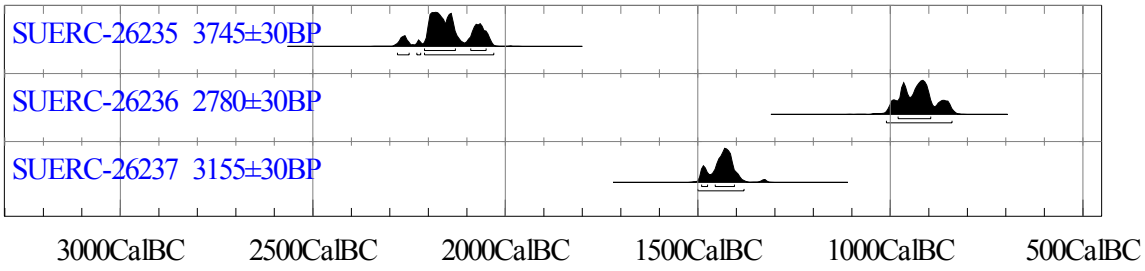

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