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Herringswell SEW 10830

Archaeological Evaluation and Excavation Report

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Summary

Between the 12th and the 20th of September 2018, Oxford Archaeology East (OA East) was commissioned by Anglian Water to carry out a 17 trench archaeological evaluation along the route of a new pipeline, which was to run broadly from west to east for a distance of 2.1km between the parishes of Herringswell and Tuddenham, Suffolk (centred on TL 731 702). Due to constraints arising from ongoing agricultural activity along parts of the route, six of the 17 planned trenches (two at the westernmost end of the route and four in the central part) were not opened, with the client carrying out direct drilling of the pipeline in these areas, avoiding disturbance and removing the need for archaeological evaluation.

Trenches 1 to 5, at the western end of the route, revealed several linear features which produced a small amount of Romano-British pottery, whilst Trenches 10 to 15, toward the eastern half of the route, revealed a number of discrete pits of Late Bronze Age date.

Following on from the evaluation phase, four sections of the pipeline easement (Areas 1-4) were designated for excavation by Suffolk County Council Archaeological Service (SCCAS). Between the 23rd of October and the 30th of November 2018, an easement up to 8m wide was machine stripped to reveal a pit dominated Late Bronze Age site in Areas 1 and 2. A series of Early Roman ditches and some discrete features were revealed in Areas 3 and 4; in the latter area these overlay a sequence of earlier but undated ditches. A number of medieval features including ditches and pits were also recorded in Area 3.

The Late Bronze Age pits produced a number of significant artefacts including a fragment of a ceramic metalworking mould, a decorated chalk weight, pottery, fired clay and wattle impressed daub. Charred plant remains from the pit included substantial assemblages of cleaned, chaff-free charred wheat and barley grain, providing evidence for the possible cultivation of a maslin crop. The evidence from this site has provided regionally significant evidence relating to Late Bronze Age settlement, craft activity, economy and depositional practise.

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The project was managed for Oxford Archaeology by Nick Gilmour. The fieldwork was directed by Neal Mason, who was supported by Rona Booth and Edmund Cole. Survey and digitising were carried out by Sarita Louzolo and illustrations were produced by David Brown. Thanks are extended to the teams of OA staff that cleaned and packaged the finds under the management of Natasha Dodwell, processed the environmental remains under the direction of Rachel Fosberry, and prepared the archive under the supervision of Katherine Hamilton.

1 INTRODUCTION

1.1 Location and scope of work

- 1.1.1 Oxford Archaeology (OA) East was commissioned by Anglian Water to carry out archaeological investigations close to the historic settlement of Herringswell, Suffolk.
- 1.1.2 The work was undertaken prior to the installation of a new pipeline from Herringswell (HGW025) to a treatment works in Tuddenham (TDD036), Suffolk (centred on TL 731 702). A Written Scheme of Investigation (WSI) was produced by OA East (Gilmour 2018; reproduced here as Appendix F) detailing the methods by which OA East proposed to meet the requirements of a Brief set by Rachael Abraham of SCCAS.
- 1.1.3 The works comprised a 17 trench evaluation (of which 11 were opened) along the pipeline route (Figs 1 and 3) followed by targeted excavation of four areas identified during the evaluation phase.
- 1.1.4 The site archive is currently held by OA East and will be deposited with SCCAS under the site codes HGW025 and TDD036 in due course.

1.2 Topography and geology

- 1.2.1 The site lies across arable farmland between Herringswell to the west and Tuddenham to the north-east (Fig. 1). The pipeline easement was just over 2.1km long and between 6 and 8m wide, running broadly west to east.
- 1.2.2 The bedrock geology consists of chalk (Holywell Nodular Chalk Formation and New Pit Chalk Formation), with superficial deposits of sand and river terrace gravels in places (<http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html> Accessed 06/06/2018). Just to the north, numerous springs emerge from the chalk aquifer including the eponymous Herringswell springs (see Figs 1-3).
- 1.2.3 The pipeline crosses relatively flat land, between 15m and 17m OD. Almost all the route is currently arable land and some of it passes across the Breckland Farmland SSSI.

1.3 Archaeological and historical background

- 1.3.1 The archaeological and historical background of the site is based on information derived from the Suffolk Historic Environment Record (HER) centred on a 1km search area along the pipeline route (Fig. 2).

Prehistoric

- 1.3.2 Little Neolithic activity is known from the area; however, a polished flint adze or chisel was found on the surface of a ploughed field, c.300m to the south of the pipeline route at the eastern end of the scheme (TDD 007)
- 1.3.3 Approximately half way along the length of the pipeline route two possible ploughed out barrows are recorded (TDD 004). These were seen in spring 1981 as two chalky circles with surrounding dark rings; one just under 30m in diameter, the other smaller.

- 1.3.4 Two fragments of an Early Bronze Age dagger were recovered from a field c.200m south of the western end of the scheme (HGW 010).
- 1.3.5 A flint transverse arrowhead was found in a field in Herringswell, some 400m west of the western end of the pipeline route (HGW 019).
- 1.3.6 Late Bronze Age struck and burnt flint were recovered as residual finds during monitoring work in Herringswell village (HGW 018).

Late Iron Age and Roman

- 1.3.7 A scatter of Roman metal objects has been recovered by metal detecting from Field Farm, c.250m south of the pipeline route (TDD 013). Further Roman activity in the general area is attested to by a scatter of pottery found in a field c.300m to the west of the western end of the pipeline (HGW 007).
- 1.3.8 Roman coins (TDD003, TDD 015) are also recorded on the HER to the north and east of the pipeline route.

Anglo-Saxon, Medieval and Post-medieval

- 1.3.9 Close to the eastern end of the pipeline route an Anglo-Saxon cemetery was found during gravel quarrying (TDD 001). This site, known as 'The Basin', is located c.100m to the south of the route.
- 1.3.10 A silver sceat was found within a field that the pipeline route passes through close to the eastern end of the scheme (TDD 014). A scatter of medieval artefacts, including silver pennies, was found c.150m south of the route at this eastern end (TDD 012) and a further scatter was found 600m north of the route (TDD 015).
- 1.3.11 The western end of the route is adjacent to the historic core of Herringswell, the location of several listed buildings (275774, 275775, 275776, 275777), as well as the church (HGW 008) and medieval artefact scatters (HGW 024). This village is of Late Saxon origin. The eastern end of the pipeline route is close to the historic core of Tuddenham (275796, TDD 025).
- 1.3.12 A medieval square moat is located c.260m to the north of the pipeline route, close to its western end and Hall Farm (HGW 011).

Modern

- 1.3.13 The eastern end of the pipeline route is extremely close to the site of the World War II Tuddenham airfield (TDD 019). This was constructed in 1942 and went out of use as an airfield in 1946. It operated as a nuclear missile site between 1959 and 1963.

Undated cropmarks and earthworks

- 1.3.14 An undated possible ring ditch was seen on 1986 aerial photographs (HGW 017).
- 1.3.15 A mound of uncertain status (TDD 023) lies some 200m east of the pipeline route.
- 1.3.16 Undated cropmarks of field systems and trackways (HGW 021, HGW 022) lie approximately 500m to the north of the pipeline route.

2 EXCAVATION AIMS AND METHODOLOGY

2.1 Aims

2.1.1 The overall aim of the investigation was to preserve by record the archaeological evidence contained within the footprint of the pipeline route, prior to damage by development, and investigate the origins, date, development, phasing, spatial organisation, character, function, status, and significance of the remains revealed, and place these in their local, regional and national archaeological context.

2.1.2 Based on the results of the evaluation and the recommendations of the brief, more specific aims and research questions were formulated:

- Assess the extent of prehistoric activity in the area;
- Attempt to understand the extent and nature of Romano-British activity in this area.

2.2 Additional Research Objectives

2.2.1 Post-excavation analysis showed that the original aims and objectives of the excavation stated above could be met through the analysis of the excavated materials.

2.2.2 The post-excavation process also identified new objectives developed in the context of national (English Heritage 1997), regional and local research assessments and agendas (Medleycott 2011; Brudenell 2018). These are outlined below:

- i. Assess the nature and extent of Late Bronze Age settlement and activity in the area adjacent to the pipeline route;
- ii. Identify the nature of pit deposition during the Late Bronze Age at the Herringswell site;
- iii. Compare the small finds with known examples from the East Anglian region;
- iv. Enhance understanding of agricultural regimes during the Late Bronze Age in Suffolk and East Anglia;
- v. To compare the results of the excavation with similar known sites of Late Bronze Age date in East Anglia, particularly Suffolk.

2.2.3 Some of work associated with fulfilling these additional research objectives is ongoing. In particular, radiocarbon dates are being obtained from three pits in Area 1 that are associated with assemblages of Late Bronze Age pottery and the results of these and a fuller, illustrated, description of the significant finds will be published in the *Proceedings of the Suffolk Institute of Archaeology and History* (see Publication and Archiving, Section 3.10).

2.3 Fieldwork Methodology

2.3.1 The methodology used followed that outlined in the Brief and detailed in the WSI (Gilmour 2018; Appendix F).

2.3.2 Machine excavation was carried out, under constant supervision of a suitably qualified and experienced archaeologist, by a mechanical excavator equipped with a 1.8m wide flat-bladed ditching bucket.

- 2.3.3 All spoil was retained within the area of the easement.
- 2.3.4 Spoil, exposed surfaces and features were scanned with a metal detector. All metal-detected and hand-collected finds were retained for inspection, other than those which were obviously modern.
- 2.3.5 All archaeological features and deposits were hand excavated and then recorded using OA East's pro-forma sheets. Trench locations, plans and sections were recorded at appropriate scales and colour photographs were taken of all relevant features and deposits.
- 2.3.6 Surveying was carried out using a survey-grade differential GPS (Leica CS10/GS08 or Leica 1200) fitted with "smartnet" technology with an accuracy of 5mm horizontal and 10mm vertical.
- 2.3.7 Environmental sampling was carried out according to English Heritage guidelines (2011). Ten bulk samples were taken from eight features during the evaluation phase to inform the sampling strategy for the excavation phase. A further 39 bulk samples were taken from 33 cut features during the excavation.

3 RESULTS

3.1 Introduction and presentation of results

3.1.1 The evaluation and excavation revealed a range of features that dated from the Late Bronze Age to the medieval period. Several natural features and unphased features were also encountered. The broad periods to which features have been assigned within this report are as follows:

- Unphased
- Period 1: Prehistoric
- Period 2: Roman
- Period 3: post-Roman

3.1.2 The results of the excavation are presented below and include a stratigraphic description of the archaeological remains, organised by area (Areas 1-4) and period. The results section begins with a description of the remains from evaluation trenches which were not subsequently incorporated into one of the four excavation (Section 3.3), followed by descriptions of each of the excavation Areas (Sections 3.4-3.7), which include the results from the evaluation trenches within these areas. The correspondence between the evaluation trenches and excavation areas is summarised in Table 1.

3.1.3 Throughout the results section, cut numbers are written in **bold** type. Where more than one slot was excavated into a feature, all related cut numbers are given in the first instance, and thereafter the features are referred to by the lowest cut number only. Details of all contexts are included in Appendix A. Specialist artefact and environmental reports are presented in Appendices B and C respectively. Fig. 1 shows the location of the evaluation trenches and excavation areas along the pipeline route, and Fig. 2 gives selected HER entries, Fig. 3 shows the pipeline route and Figs 4-10 provide detailed plans and selected sections of the various excavation areas.

3.2 General soils and ground conditions

3.2.1 The natural geology of chalk, sand and gravel was overlain by a silty sand subsoil (2) up to 0.35m in depth, which in turn was overlain by plough soil (1) up to 0.25m thick. This sequence was relatively consistent across the pipeline route.

3.2.2 Ground conditions throughout the excavation were generally good, although the weather was wet and less conducive to archaeological investigation during the excavation of the features in Area 3. Archaeological features, where present, were not always easy to identify against the underlying natural geology, especially in Area 2, and several features were tested to confirm their status as natural.

3.3 Evaluation Phase

3.3.1 Seventeen 30m long trenches were planned in the original brief. Of these, six were not excavated owing to agricultural demands upon the fields in which they were situated. Three were excavated but did not lead to mitigation, whilst eight were re-opened during the excavation phase. The details are given in Table 1.

Phase and Area	Evaluation trenches
Excavation phase - Area 1	10, 11
Excavation phase - Area 2	12
Excavation phase - Area 3	1, 2
Excavation phase - Area 4	3, 4, 5
Evaluation phase - excavated	13, 14, 15
Evaluation phase - not excavated	6, 7, 8, 9, 16, 17

Table 1: evaluation trenches grouped by area and phase

Trenches 13, 14 & 15 (Fig.4)

- 3.3.2 These trenches were located toward the eastern end of the pipeline, just beyond Area 2. Trench 13 contained a pit (**1301**) and Trench 14 contained two ditches (**1401=1407=1409=1411** and **1403=1405**), whilst Trench 15 was devoid of archaeology and is not described further here.
- 3.3.3 Pit **1301** (Fig. 4, Section 1301; Plate 1) located toward the northern half of Trench 13, was circular in plan with steep sides and a concave base. It measured 0.81m in diameter and 0.68m deep. The fill (1302), a mid grey silty sand, produced no finds.
- 3.3.4 Pit **1301** was sealed by two distinct spreads of material. Layer 1303, a dark grey silty sand with charcoal flecks was 0.09m thick. It was overlain by layer 1304, a mid greyish brown silty sand, which was up to 0.24m thick and only present across the eastern most 12m of the trench.
- 3.3.5 Trench 14 revealed two ditches (**1401=1407=1409=1411** and **1403=1405**, Plate 2) that ran parallel with the trench from north-east to south-west. Ditch **1401** ran almost the full length of the trench and cut ditch **1403** along its southern most edge. Ditch **1403** was exposed for approximately 6.0m and was located in the central area of Trench 14.
- 3.3.6 Ditch **1401** was up to 0.78m wide and 0.17m deep, with gently sloping sides and a flat base. Its mid greyish brown silty sand fill (1402, 1408, 1410, 1412) was devoid of finds. Ditch 1403 was 0.52m wide and 0.16m deep, with steep sides and a concave base. No finds were recovered from the mid greyish brown silty sand fill (1404, 1406).

3.4 Area 1 (Fig.5)

- 3.4.1 Area 1 was located in the central section of the pipeline route, covering an area of 150m in length and up to 8m wide, between Trenches 10 and 11. This section of the report incorporates the results obtained from these two trenches. Thirteen discrete archaeological features were identified and excavated in Area 1 (Fig. 5). These included five postholes (**1500, 1502, 1551, 1553** and **1555**) and eight pits (**1003, 1005, 1517, 1521, 1528, 1530, 1549** and **1557**). An additional seventeen natural features were tested, five of which were recorded (**1007=1508, 1001=1504=1506, 1510, 1514** and **1519**). Two of these natural features produced finds (**1007=1508** and **1514**).
- 3.4.2 As all of the pits, and one of the postholes, produced pottery of Late Bronze Age date and no finds of other periods were recovered, all of the features from this area have been assigned a Late Bronze Age date (falling within Period 1).

Period 1: pits and postholes

3.4.3 Five postholes were revealed during the excavation phase of Area 1. They ranged in size from 0.20m in diameter to 0.32m and were between 0.10m and 0.14m deep. All were steep sided with concave bases. Their maximum dimensions and fill numbers are given in Table 2.

Cut	Feature type	Length (m)	Width/diameter (m)	Depth (m)	Fills	Thickness (m)
1500	posthole	-	0.20	0.14	1501	0.14
1502	posthole	-	0.32	0.14	1503	0.14
1551	posthole	-	0.28	0.10	1552	0.10
1553	posthole	-	0.32	0.13	1554	0.13
1555	posthole	-	0.32	0.10	1556	0.10
1003	pit	-	0.37	0.16	1004	0.16
1005	pit	-	0.55	0.34	1006	0.34
1521	pit	-	1.15	0.66	1522 1523 1524 1525	0.44 0.25 0.49 0.12
1528	pit	1.28	1.10	0.40	1529	0.40
1530	pit	1.46	1.20	0.62	1526 1527 1531 1532	0.28 0.35 0.28 0.31
1549	pit	-	1.34	0.54	1550	0.54
1557	pit	1.90	1.0	0.43	1558	0.43

Table 2: Area 1, discrete features

3.4.4 Postholes **1500** and **1502** were located at the extreme western end of the excavation area, were sub-circular in plan and contained a single fill of light reddish brown silty sand (1501 and 1503 respectively). Postholes **1551**, **1553** and **1555** lay 100m further east, just north of pit **1549**, and were circular in plan. They were filled by a light to mid grey sand (1552, 1554 and 1556 respectively). The latter seemed to form a coherent group and were almost identical in every aspect. Posthole **1553**, the only posthole to produce any finds, contained a single sherd (0.005kg) of Late Bronze Age pottery within its fill (1554).

3.4.5 The eight pits were dispersed across the area and occurred singly, with an approximate distance of 10m to 30m between each pit. The only exception to this were intercutting pits **1521** and **1530**.

3.4.6 All the pits were sub-circular in plan and measured between 0.37m and 1.90m on their long axis and were between 0.16m and 0.66m deep. Their dimensions are given in Table 2.

3.4.7 Pit **1003** (Fig.4, Section 1002) and pit **1005** were located toward the western end of the area within evaluation Trench 10. Both had steep sides and concave bases and contained mid brownish grey silty sand fills (1004 and 1006 respectively). Pit **1003**

- produced seven sherds of Late Bronze Age pottery (0.069kg) and a flint blade, whilst three sherds of Late Bronze Age pottery (0.022kg) were also recovered from pit **1005**.
- 3.4.8 Pit **1517** lay just north of natural feature **1514** and had steep sides and a flat base. Five sherds of Late Bronze Age pottery (0.049kg) were recovered from its light reddish brown sand fill (1518).
- 3.4.9 To the south-east of pit **1517**, two intercutting pits, **1521** and **1530** (Fig. 5, Section 1508, Plate 3), lay adjacent to the southern baulk. Pit **1530** cut pit **1521** through all its fills on its north-eastern side.
- 3.4.10 The earlier pit (**1521**) was steep sided with a flattish base. It contained four distinct fills (1522, 1523, 1524 and 1525). The basal fill (1522) consisted of a mottled light greyish brown and dark grey sandy silt with frequent charcoal inclusions. This fill produced four pieces of unworked burnt flint (0.200kg), some mouse bones, eight sherds of Late Bronze Age pottery (0.068kg), daub (0.110kg) and fired clay (0.020kg). Charred cereal grains of emmer wheat and barley were recovered from the bulk environmental sample of this fill (Appendix C.2).
- 3.4.11 Fill 1522 was overlain by a substantial deposit of mottled yellowish and reddish brown fired clay (1523; Plate 3). Fourteen large fragments (1940kg) of this clay were retrieved for post excavation analysis, which revealed the presence of several pieces with flattened surfaces and withy impressions, indicating it had derived from a structure of some kind (see App. B.9). Some scorched chalk and occasional charcoal were also associated with the deposit.
- 3.4.12 Overlying the fired clay deposit was a dark grey sandy silt (1524) which had occasional charcoal inclusions. This also contained fired clay/daub fragments (0.020kg), a worked flint flake, a substantial assemblage of 35 pieces of unworked burnt flint (2237kg), a pig tooth, cattle bone (0.158kg), and 84 sherds of Late Bronze Age pottery (1243kg). A fragment of a ceramic metalworking mould (0.005kg) was also recovered from this fill. From the shape of the mould it was likely that it was used to produce a narrow chisel or axe similar to the southern ribbed Ewart Park type (Timberlake, Appendix B.2). Cereal grains of emmer wheat and barley were also recovered from the bulk environmental sample of this deposit (Appendix C.2).
- 3.4.13 The uppermost fill of the pit (1525), a mottled mid grey to reddish brown sandy silt with occasional charcoal inclusions, produced a single sherd of Late Bronze Age pottery (0.003kg).
- 3.4.14 Pit **1530** was steep sided with an irregular base. It truncated all the fills of pit **1521** and contained four fills (1526, 1527, 1531 and 1532). The lower fill (1526), a mid greyish brown silty sand with occasional charcoal, was devoid of finds and filled only the north-east corner of the pit. This basal fill was overlain by a dark grey sandy silt with frequent charcoal (1527), which contained fragments of daub (0.092kg), nine unworked burnt flints (0.573kg) and 35 sherds of Late Bronze Age pottery (0.520kg).
- 3.4.15 The south western-most upper fill (1531) of pit **1530**, a mottled mid grey and reddish brown, sandy silt, with occasional charcoal inclusions, produced 14 sherds of Late Bronze Age pottery (0.233kg) and several amphibian bones. The bulk environmental sample from this fill also produced emmer and barley grains. Present only in the north-

eastern side of the pit, the upper fill (1532) consisted of a mid greyish brown silty sand, from which no artefacts were retrieved.

- 3.4.16 Pit **1557** which lay 15m east of pit 1530, was steep sided with a concave base. Its fill (1558), a mid greyish brown silty sand, did not produce any finds.
- 3.4.17 Pit **1549** (Fig.5, Section 1510; Plate 4) lay 27m east of pit **1530** and was partially obscured by the southern baulk edge. It was steep sided with a concave base and contained a single fill of dark grey silty sand, mottled with mid reddish brown patches of sand, frequent chalk pieces and rare charcoal inclusions (1550). The fill produced 24 sherds of Late Bronze Age pottery (0.256kg), a butchered sheep bone, 22 worked flints and 11 pieces of unworked burnt flint (1094kg). An incomplete carved chalk weight (SF1) was also recovered from the pit (Plate 5). This was identified as either a loomweight or net sinker, carved from an ammonite fossil (Timberlake, Appendix B.2). A similar grain assemblage (emmer and barley) to that of pits **1521** and **1530** was recovered from the bulk environmental sample.
- 3.4.18 Pit **1528** (Fig.5, Section 1509) located 30m from pit **1549** toward the far eastern edge of the area, had near vertical sides and a concave base. Its fill (1529), a dark grey silty sand, mottled with reddish brown sand patches, contained rare charcoal inclusions. It produced 16 pieces of daub (0.275kg), 38 worked flints including an end scraper, 43 pieces of unworked burnt flint (0.904kg), 23 sherds of Late Bronze Age pottery (0.154kg) and bones from cattle, sheep and a vole. A single charred grain was recovered from the bulk environmental sample.

Natural features

- 3.4.19 Seventeen natural features were exposed and test excavated in Area 1 (Fig. 5). These included periglacial features and tree throws, and all contained reddish silty sand fills of various hues. Five were formally recorded (**1007=1508**, **1001=1504=1506**, **1510**, **1514** and **1519**), whilst two (**1007** and **1514**) produced finds and are described below.
- 3.4.20 Feature **1007**, located partially within evaluation Trench 10, appeared to be either a tree throw or a periglacial feature. It measured approximately 0.65m in diameter and 0.60m deep. A single worked flint was found within its fill (1008=1509), which consisted of a light reddish brown sand.
- 3.4.21 Natural feature **1514**, another possible tree throw, was centrally placed within Area 1. It measured approximately 1.7m in diameter and was 0.34m deep. It contained two fills, a light (1515) and a dark (1516) reddish silty sand. Three sherds of Late Bronze Age pottery (0.036kg), eight struck flints and six pieces of unworked burnt flint (0.143kg) were found in the lower fill (1515). The upper fill (1516) produced five sherds of Late Bronze Age pottery (0.013kg), four worked flints and 22 pieces of unworked burnt flint (0.468kg). A single charred grain was also obtained from a bulk environmental sample of fill 1516.

3.5 Area 2 (Fig.6)

- 3.5.1 Area 2 was located 125m to the east of Area 1 and covered an area 50m long and up to 8m wide, around the location of Trench 12. The area was dominated by natural, periglacial, features but a small group of eight pits (**1201**, **1533**, **1535**, **1537**, **1539**,

1543, 1545 and **1547**) was observed near the western end of the area. Seven of the pits in Area 2 were devoid of finds but occurred in a small group near to a pit (**1201**) that produced Late Bronze Age pottery. The pits were therefore tentatively assigned to Period 1. Three discrete natural features, probably tree throws, were also located within the vicinity of these pits and a further three natural features in the eastern part of the area were excavated.

Period 1: pits

- 3.5.2 All eight of the pits were excavated. Six of these occurred in a relatively tight cluster at the extreme western end of the area, whilst pits **1201** and **1547** were outliers, which lay approximately 5m from the eastern-most of the pits in the main group.
- 3.5.3 All the pits were circular or sub-circular in plan. They ranged in size from 0.22m to 0.71m in diameter, and all were relatively shallow with depths ranging from 0.05m to 0.22m. The dimensions and fill numbers of each pit are given in Table 3.

Pit cut	Length (m)	Width/diameter (m)	Depth (m)	Fills	Thickness (m)
1201	-	0.53	0.17	1202	0.17
1533	-	0.51	0.08	1534	0.08
1535	-	0.71	0.15	1536	0.15
1537	-	0.52	0.13	1538	0.13
1539	-	0.40	0.09	1540	0.09
1543	-	0.24	0.07	1544	0.07
1545	-	0.22	0.05	1546	0.05
1547	-	0.42	0.22	1548	0.22

Table 3: Area 2, discrete features

- 3.5.4 Pits **1533, 1535, 1537, 1539, 1543** and **1545**, which comprised the main group, were all sub-circular with gently sloping sides and concave bases. Each contained a single fill (1534, 1536, 1538, 1540, 1544 and 1546) of light reddish brown silty sand with rare charcoal inclusions. The only artefact recovered from the pits in this grouping was a flint flake from pit **1533**.
- 3.5.5 Pit **1547**, which lay just south-east of pit **1201**, was anomalous in that it was sub-circular with near vertical sides and a flat base. Its fill (1548), which consisted of a dark grey sand, produced no finds and only sparse charred plant remains were recovered from the bulk environmental sample.
- 3.5.6 Pit **1201** (Fig.6, Section 1201, Plate 6) was circular in plan; it had moderately sloping sides with a concave base. Its fill (1202), mid grey silty sand with occasional charcoal flecks, was noticeably firm compared to the softer fills of the other pits in this area. It also produced three small sherds of Late Bronze Age pottery (0.004kg) and 5 unworked burnt flints (0.095kg).

Natural features

- 3.5.7 A flint flake and an end scraper of uncertain date were recovered from the subsoil (2) at the western end of the area.

3.5.8 Six natural features were observed and tested in Area 1. These included periglacial features toward the eastern part of the area and probable tree throws in the western part of the area near the pits described above. All were filled with reddish brown silty sand. The largest natural feature (**1541**), which measured 0.50m in diameter and 0.25m deep, was excavated but produced no finds from its fill (1542) of light reddish brown silty sand.

3.6 Area 3 (Fig. 7)

3.6.1 Area 3 was located in the extreme western part of the pipeline route, between Trenches 1 and 2 and adjacent to the historic core of the village of Herringswell. An area 165m long and up to 8m wide was stripped around and between Trenches 1 and 2. A total of 58 archaeological features were revealed and these included ditches, gullies, furrows and pits. At the eastern end of Area 3, a series of plough scars were also evident. These crossed the area from north to south and became less frequent in the central part of the excavation area at around 80m from the eastern end. They were not evident at all toward the western end. Three features shown on the plan were test excavated but not recorded as they were clearly natural. A single sherd (0.011kg) of Early Roman pottery was recovered from the subsoil (2).

3.6.2 The profiles and dimensions and fill numbers of the archaeological features within Area 3 are given in Tables 4 to 9.

3.6.3 The ditches in the eastern half and the far western end of Area 3 were mainly cut into the natural. However, in the central area on the western side, the ditches were cut into a series of deposits that formed a 32m wide series of spreads/layers. The ditches and pits cut into these layers have been grouped as Ditch and Pit Group 1 (Fig. 7) and are described below.

3.6.4 The features in Area 3 are assigned mainly to Periods 2 and 3 based on their associated pottery finds, and on stratigraphic and spatial relationships. Most of the ditches, especially those located within Ditch and Pit Group 1, appear to be of Roman date on the basis of the consistent presence of relatively small quantities of Early Roman pottery, whilst some of the features within the eastern part of the area, and the furrows, are of probable post-Roman, medieval, date.

Period 1

3.6.5 No features were seen in Area 3 that could be assigned to Period 1, however, two sherds (0.008kg) of Late Bronze Age pottery (Appendix B.5) and four struck flints (Appendix B.4) were recovered from spread 1835, attesting to a presence at the western end of the pipeline route.

Period 2: ditches and gullies

3.6.6 A total of 26 ditches and gullies that were assigned to Period 2 were excavated in Area 3. These are discussed here, for clarity, in terms of two broad groups; those that were cut into spreads of deposits in the western half of the area (Ditch and Pit Group 1) and those that were not. The latter group is further sub-divided according to orientation.

Ditch and Pit Group 1

- 3.6.7 Ditch and Pit Group 1 comprised a sequence of intercutting ditches that were cut into the natural geology, and sometimes also through a series of layers or spreads that were deposited over an undulation in the natural (1802, 1803, 1816=1828, 1817=1829 and 1819=1830, 1792=1797, 1793=1796 and 1835). A one-metre-wide slot, excavated across the entire 32m width of the spreads, exposed a total of fourteen ditches and two pits. These are described below in the order in which they are located, from east to west and stratigraphically.
- 3.6.8 The dating evidence from Ditch and Pit Group 1, although sparse and consisting of just 27 sherds of pottery, in poor and heavily abraded condition, suggests that this sequence of features occupied a timeframe which covered the early to mid-Roman period from the 1st to 3rd centuries AD. The only evidence recovered from the excavations which pointed toward a later Roman date were two coins (one of third century and one of fourth century date) found in the upper fill (1822) of ditch **1780** (see App. B.1).
- 3.6.9 The ditches in this group (**1774, 1775, 1778, 1779, 1780, 1781, 1782, 1784, 1790, 1794, 1798, 1833, 1839, 1851**) were all linear in plan and broadly aligned north to south, except for ditch **1833** which ran on an east to west alignment and was mostly obscured by the northern baulk edge. The ditch measurements, profiles and fill numbers are given in Table 5.
- 3.6.10 The two pits (**1777** and **1843**) were both visible in the northern baulk section edge. Their form suggests these were pits as opposed to ditch terminals. The pit measurements, profiles and fill numbers are given in Table 5.
- 3.6.11 At the eastern end of the group, a large V-shaped ditch (**1774**) was cut into the natural through two distinct spreads of material 1802 and 1803 (Fig. 8, Section 1556, Plate 7). The ditch contained two fills. The lower fill (1800), a mixed light to dark grey silty sand, was devoid of finds, whilst two small sherds (0.003kg) of Early Roman pottery were recovered from the uppermost fill (1801), which consisted of a mid grey silty sand.
- 3.6.12 Ditch **1775** was also cut through spreads 1802 and 1803 on its eastern side, whilst to the west it truncated pit **1777** (Fig. 8, Section 1556). This ditch contained three fills. The lower fill (1804), a dark grey silty sand with charcoal inclusions, and the second fill (1805), a mottled light yellowish brown and mid grey silty sand, produced no finds. A single sherd (0.005kg) of Early Roman pottery and some cattle bone (0.072kg) were recovered from the upper fill (1806), which consisted of a dark grey silty sand with charcoal inclusions.
- 3.6.13 Spread 1802 was 0.12m thick and consisted of a light reddish brown to mid grey silty sand, with frequent occurrences of small pieces of degraded fired clay. Some slag (0.051kg) was recovered from the deposit. This was overlain by spread 1803, a dark grey silty sand measuring 0.18m thick.

- 3.6.14 Pit **1777** was truncated on its eastern side by ditch **1775** (Fig.8, Section 1556) and in turn had severely truncated an earlier ditch (**1839**). Both pit **1777** and ditch **1839** were cut by ditch **1778** along their western edge (Fig. 8, Section 1559).
- 3.6.15 Pit **1777** contained four fills, the lower (1807) consisted of a dark brownish grey clayey, silty sand with occasional charcoal, whilst the second fill (1808) consisted of a light brown clayey, silty sand. These were overlain by a dark grey silty sand with charcoal inclusions (1809), the final fill (1842) consisted of a mid grey silty sand with charcoal inclusions. Ditch **1839** contained two fills; the lower (1840), a very dark grey silty sand and the upper (1841), a dark grey silty sand; both had occasional charcoal inclusions. Neither feature produced any artefacts.
- 3.6.16 Ditch **1778** cut ditch **1779**, along its eastern side (Fig.8, Section 1557, Plate 8). No finds were recovered from ditch **1778**, either from its lower fill (1810), a mixed light and dark grey silty sand, or from the upper fill (1811) which consisted of a dark grey silty sand.
- 3.6.17 Ditch **1779** also contained two fills, the lower fill (1812), a very dark brownish grey silty sand with occasional charcoal inclusions, produced a single sherd (0.004kg) of Early Roman pottery and some cattle and amphibian bone (0.037kg), whilst the upper fill (1813), a mixed light and dark grey silty sand, was devoid of finds.
- 3.6.18 To the west of ditch **1779**, ditch **1781** (Fig.8 Section 1557) contained five fills and was also devoid of finds. The lower fill (1823) comprised a mixed light and dark grey silty sand with charcoal inclusions. This was overlain by a fill (1824) of very dark grey clayey silty sand, which in turn was overlain by fill 1825, a mixed light and dark grey silty sand with charcoal inclusions. The penultimate fill (1826), a dark grey silty sand, was overlain by a similar fill (1827) that also contained charcoal inclusions.
- 3.6.19 Ditch **1781** also cut another much smaller ditch (**1782**) to the west (Fig.8, Section 1557). The relationship between ditches **1779** and **1781** was not wholly clear, as they were truncated by ditch **1851**, of which only the very base fill (1814), a dark grey silty sand which produced sheep bone (0.077kg), had survived. This V-shaped ditch, as well as ditches **1778**, **1779** and **1781**, was truncated by furrow-like ditch **1780** (Fig.8, Section 1557).
- 3.6.20 Ditch **1780** had three fills (1820, 1821 and 1822). The lowest fill (1820), a dark reddish grey silty sand was overlain by a light reddish brown clayey silt fill (1821). The uppermost fill (1822), which consisted of a mixed and mottled, mid grey silty sand with light red clayey sand, produced two metal-detected, copper alloy coins dating to the late Roman period (Appendix B.1). If these were not intrusive, then undated ditches **1778**, **1779**, **1781** and **1782** were earlier and can be assigned a provisional Roman date based in part on their stratigraphic relationships and, in part, on their form.
- 3.6.21 This phasing of the undated ditches can also be supported by their stratigraphic relationship with ditch **1782**, which was earlier than ditch **1781**. It cut through three distinct spreads (1816=1828, 1817=1829 and 1819=1830) and truncated the eastern edge of pit **1843**. Ditch **1782** produced no finds from either its lower fill (1831), a mottled grey sandy silt, or from its upper fill (1832), a mid grey sandy silt with charcoal

inclusions. Both the upper-most spread 1819 and the upper fill (1846) of pit **1843** contained Early Roman pottery (see below).

- 3.6.22 Pit **1843** (Plate 9) contained three fills (1844, 1845 and 1846). The lower fill (1844) consisted of very dark brownish grey clayey silt lenses within a light reddish brown sand. This fill was heavily disturbed by rooting and devoid of finds. It was overlain by fill 1845, which consisted of a mixed and mottled light to mid yellow and grey sand. The uppermost fill (1846), a dark grey clayey silt, with burnt flint inclusions, contained three sherds (0.036kg) of Early Roman pottery, animal bone (0.016kg) and frequent larger pieces of burnt flint, 17 pieces (0.448kg) of which were retained. This deposit, which filled the pit from the south and west only, was believed by the excavator to be the same as spread 1817 (both were clay rich with frequent burnt flint inclusions). The pit was sealed by four thin layers of alternating light yellow sand (1847 and 1848) and light greyish brown silty sand (1849 and 1850), but it was not possible to discern if these were fills of another ditch, or spreads of material, originating from north of the excavation area.
- 3.6.23 The three spreads 1816, 1817 and 1819 were 0.12m, 0.06m, and 0.08m thick respectively. The lowest of these (1816), a mottled light brown to dark grey sand, produced animal bone (0.130kg) and a burnt flint (0.053kg). The middle spread 1817 (possibly the same as fill 1846), a dark grey clayey silt, was distinctly darker with frequent flint inclusions. This may represent a buried soil horizon, although the bulk environmental samples taken were devoid of any supporting evidence. The uppermost spread 1819, a mid brownish grey silty sand, produced two sherds (0.063kg) of Early Roman pottery, animal bone (0.009kg) and an unworked burnt flint.
- 3.6.24 Toward the western end of Ditch and Pit Group 1, approximately 7 to 8m from ditch **1782**, were four more ditches (**1784, 1790, 1794, 1798**). Two of these (**1794, 1798**) cut the partially excavated ditch **1833**. Ditch **1798** was in turn truncated by ditch **1790**. These ditches were also cut through spreads (1792=1797, 1793=1796 and 1835) which overlay the natural.
- 3.6.25 Ditches **1794, 1790** and **1798** all contained a single fill of mid reddish brown silty sand (1795, 1791 and 1799 respectively), whilst ditch **1784**, the western most of the group, contained three fills, the lower fill (1785) and upper fill (1787) both consisted of a light greyish brown silty sand, separated by a thinner fill (1786) of mid yellowish sand. Only the fill (1799) of ditch **1798** did not produce finds.
- 3.6.26 Seven sherds (0.044kg) of Early Roman pottery, sheep and pig bone and a worked flint were recovered from the fill (1791) of ditch **1790**, whilst a single sherd (0.060kg) of Early Roman pottery, cattle and sheep bone (0.034kg), three worked flints and an unworked burnt flint (0.011kg) were recovered from the fill (1795) of ditch **1794**.
- 3.6.27 The western-most ditch **1784** produced two sherds (0.020kg) of Early Roman pottery, a flint flake and two pieces of unworked burnt flint (0.008kg) from the lower fill (1785). Ten sherds (0.076kg) of Early Roman pottery, cattle and sheep bone (0.011kg), four flint flakes, and four pieces of unworked burnt flint (0.077kg) were recovered from the top fill (1787).

3.6.28 The east-west running ditch **1833** contained two fills, a dark grey clayey silt lower fill 1834 and a dark grey sandy silt upper fill 1836, neither of which produced finds.

3.6.29 The lowest of the spreads (1792), a mottled yellowish grey silty sand, 0.14m thick, contained a small sherd (0.005kg) of Early Roman pottery. The overlying spread (1793), a mid brownish grey silty sand, was 0.20m thick and almost certainly was equivalent to layer 1819 described above. It produced no finds. Spread 1835, a light brownish grey silty sand, 0.22m thick produced two sherds (0.008kg) of Late Bronze Age pottery three sherds (0.102kg) of Early Roman pottery, four worked flints and nine unworked burnt flints (0.411kg).

Cut	Feature type	Width (m)	Depth (m)	Sides	Base	Fills	Thickness (m)
1774	ditch	2.57	0.74	steep	concave	1800 1801	0.32 0.45
1775	ditch	3.06	0.72	steep	irregular	1804 1805 1806	0.46 0.15 0.28
1778	ditch	1.80	0.52	steep	flat	1810 1811	0.13 0.50
1779	ditch	1.60	0.60	steep	flat	1812 1813	0.26 0.36
1780	ditch	2.58	0.42	gentle	concave	1820 1821 1822	0.20 0.12 0.26
1781	ditch	2.30	0.74	steep	concave	1823 1824 1825 1826 1827	0.10 0.16 0.48 0.26 0.16
1782	ditch	0.96	0.62	steep	concave	1831 1832	0.18 0.42
1784	ditch	2.90	0.42	steep	concave	1785 1786 1787	0.22 0.08 0.20
1790	ditch	1.10	0.34	steep	v-shaped	1791	0.34
1794	ditch	0.90	0.34	steep	concave	1795	0.34
1798	ditch	0.58	0.24	steep	concave	1799	0.24
1833	ditch	-	-	-	-	1834 1836	- -
1839	ditch	1.22	0.57	-	-	1840 1841	0.39 0.16
1851	ditch	-	0.24	steep	v-shaped	1814	0.24
1777	pit	2.10	1.07	steep	concave	1807 1808 1809 1842	0.34 0.07 0.38 0.34
1843	pit	1.90	0.50	steep	concave	1844 1845 1846	0.40 0.30 0.22

Table 4 Area 3: Ditch and Pit Group 1

Other ditches and gullies

- 3.6.30 A further 12 ditches and gullies that were assigned to Period 2, and not included in Ditch and Pit Group 1, were excavated within Area 3. These are discussed here in groups according to their alignment.
- 3.6.31 Three ditches (**1697**, **1723**, **1751=1761**) and three gullies (**101**, **1699** and **1756**) in Area 3 were aligned north-west to south-east. Their fill numbers, profiles and maximum dimensions are shown in Table 6.
- 3.6.32 Three of these features were located west of Ditch and Pit Group 1. The single fill (102) of the western-most of the gullies (**101**), consisted of a mid yellowish grey silty sand. It produced a single worked flint and two small sherds (0.001kg) of Early Roman pottery.
- 3.6.33 Approximately 20m east of gully **101**, five sherds (0.056kg) of Early Roman pottery and an unworked burnt flint (0.071kg) were recovered from the mottled mid grey to reddish brown silty sand fill (1698) of ditch **1697**. The fill (1700) of immediately adjacent gully (**1699**) was of the same composition and produced an unworked burnt flint (0.006kg) and a flint flake.
- 3.6.34 Ditch **1751**, located just east of Ditch and Pit Group 1, produced a large sherd (0.047kg) of Early Roman pottery from its mid grey sandy silt fill (1752).
- 3.6.35 Ditch **1723**, the western-most of the dated features within Area 3, produced a single sherd (0.010kg) of Early Roman pottery and two pieces of animal bone (0.011kg) from its fill (1724) of mid grey sandy silt.

Cut	Width (m)	Depth (m)	Sides	Base	Fills	Thickness (m)
101	0.51	0.16	gentle	flat	102	0.16
1697	1.26	0.24	steep	flat	1698	1.26
1699	0.48	0.26	steep	flat	1700	0.26
1723	0.62	0.29	steep	concave	1724	0.29
1751	0.44	0.25	gentle	v-shaped	1752 1762	0.25
1756	0.68	0.15	gentle	concave	1757	0.15

Table 5: Area 3, ditches and gullies aligned north-west to south-east

- 3.6.36 Four ditches (**1703**, **1705**, **1708** and **1745**) and three gullies (**1735**, **1758** and **1769**) had different alignments to those described above. Their measurements, profiles and fill details are given in Table 7.
- 3.6.37 Ditch **1703**, which lay approximately 60m from the eastern end of the area, was recut by ditch **1705** along its southern edge which in turn was recut along its southern edge by ditch **1708**. This series of recuts probably served to widen the ditch which ran north-east to south-west. These ditches were truncated by two Period 3 ditches; **1721** at the north-eastern end and **1701** near the baulk edge at the south-western end.
- 3.6.38 The light to mid grey silty sand fill (1704), of ditch **1703**, was mottled with patches of yellow sand and produced no finds.

- 3.6.39 The lower fill (1706) of ditch **1705** consisted of a mid yellow sand, from which, no finds were recovered, however, two small sherds (0.006kg) of Early Roman pottery were found in the upper fill (1707) of mid grey sandy silt. Ditch **1708** produced no finds from its lower fill (1709) of mid yellow and grey mottled sand but a single sherd (0.023kg) of Early Roman pottery was recovered from the upper fill (1710) of mid grey silty sand.
- 3.6.40 Gully **1735** ran in an easterly direction from under the northern baulk edge. It was not clear as to where this gully terminated as only the very base of it was visible in plan. The single fill (1736), a mottled grey silty sand, produced no finds.
- 3.6.41 A second gully **1769**, which was the only obviously curvilinear feature in the excavation area ran in a northerly direction from under the baulk edge for approximately 3.0m before turning to the north-east and terminating. The single fill (1770), a mid grey sandy silt, was also devoid of finds.
- 3.6.42 It is possible that gullies **1735** and **1769** described here could be associated with gullies **1756** and **1758** as they occurred in the same part of Area 3 and this was also where most of the discrete features occurred. Unfortunately, this was also an area with a large amount of disturbance, so associations must remain speculative. Both gully **1756** and **1758** were filled by a dark grey silty sand with occasional charcoal inclusions (1757 and 1759 respectively). Neither gully produced any finds but they both cut the Early Roman pit **1753**.
- 3.6.43 Ditch **1745** was aligned north-east to south-west. Seven sherds (0.192kg) of Early Roman pottery and an iron nail were found in the fill (1746), which consisted of a mid grey silty sand.

Cut	Width (m)	Depth (m)	Sides	Base	Fills	Thickness (m)
1703	0.30	0.08	steep	concave	1704	0.08
1705	0.40	0.30	steep	concave	1706 1707	0.03 0.30
1708	0.60	0.24	steep	concave	1709 1710	0.10 0.10
1735	0.30	0.08	steep	concave	1736	0.08
1745	0.90	0.22	steep	concave	1746	0.22
1758	0.80	0.16	gentle	concave	1759	0.16
1769	0.70	0.19	gentle	concave	1770	0.19

Table 6: Area 3, ditches and gullies on other alignments

Period 2: Discrete features

- 3.6.44 Eight pits, (**1737, 1739, 1741, 1743, 1747, 1753, 1763, and 1771**) and a posthole (**1731**) were found in the central part of Area 3 between 60m and 80m from the eastern end. All were sub-circular in plan, and they ranged in size from 0.24m to 2.08m in diameter with depths that ranged from 0.08m to 0.38m. The dimensions, profiles and fill numbers of each feature are given in Table 8.
- 3.6.45 Only a single sherd of possible Late Iron Age pottery and two sherds of Early Roman pottery were recovered from two pits (**1743 and 1753**). These were assigned to Period

- 2, along with the other pits in this small group based on their close proximity to Period 2 ditches located within this part of the excavation area.
- 3.6.46 Pit **1737** produced no finds from its fill (1738) of dark grey sandy silt. The fill (1740) of pit **1739** was of a similar composition but was mottled with patches of yellow silty sand and devoid of finds. Similarly, no artefacts were recovered from the fill (1742) of pit **1741**, which consisted of a dark grey silty sand.
- 3.6.47 The fill (1744) of pit **1743** consisted of dark grey sandy silt mottled with yellow silty sand with rare charcoal inclusions. It was the only pit in Area 3, apart from the more substantial pit **1753** (see below), to produce a sherd (0.002kg) of Early Roman pottery.
- 3.6.48 The remainder of the pits (**1747**, **1753**, **1763**, and **1771**) had multiple fills. Apart from pit **1771** which was located just west of ditch **1701**, these pits were also cut into, or truncated by, other features. Pit **1771** contained two fills. The lower fill (1772) consisted of a mottled light grey and yellowish brown sand, whilst the upper fill (1773) consisted of a mottled mid grey and yellow silty sand. Neither fill contained artefacts.
- 3.6.49 Pits **1747**, which cut ditch **1751** and **1763** which was in turn cut by pit **1767** were both devoid of finds. The lower fill (1764) of pit **1763**, a mid grey silty sand, was overlain by a fill (1765) of mottled grey and yellow sand, which in turn was overlain by a light grey silty sand fill (1766). The fills of pit **1747** comprised a lower fill (1748) of mid yellowish brown silty sand, overlain by fill 1749, a thin layer of friable dark reddish-brown sand, which was possibly heat affected. The upper fill (1750) consisted of a mid greyish brown silty sand.
- 3.6.50 Pit **1753** was partially obscured by the southern baulk edge and was cut along its western edge by gully **1756** and along its eastern edge by gully **1758**. The lower fill (1754) and the upper-most fill (1760) of pit **1753**, both consisted of a mid grey silty sand and these were separated by fill 1755, a mottled light grey and yellow silty sand. All three fills had occasional charcoal inclusions. The upper fill (1760) also produced two sherds (0.030kg) of possible late Iron Age pottery, a single sherd (0.025kg) of Early Roman pottery, pig bone (0.157kg), and ten oyster shells.
- 3.6.51 Pits **1737** and **1741** were both small, and might be the base of post holes, this could not be proven and only one feature, **1731**, could be identified as a true post hole. It was located on the northern edge of the excavation area just south of gully **1735**. It was sub-circular with a U-shaped profile and contained three fills. Fill 1734, a light grey silty sand appeared to be a post pipe and fills 1732 and 1733, which consisted of a mixed grey and yellow silty sand, were back fill deposits. There were no finds from the feature, which was fully excavated.

Pit and posthole cuts	Length (m)	Width/diameter (m)	Depth (m)	Sides	Base	Fills	Thickness (m)
1731	0.78	0.78	0.30	steep	concave	1732 1733 1734	0.30 0.30 0.30
1737	0.43	0.32	0.03	gradual	flat	1738	0.03
1739	-	1.28	0.24	steep	concave	1740	0.24
1741	-	0.24	0.08	steep	concave	1742	0.08
1743	-	0.84	0.14	steep	concave	1744	0.14
1747	-	0.60	0.20	steep	concave	1748 1749 1750	0.20 0.03 0.14
1753	-	2.08	0.38	moderate	flat	1754 1755 1756	0.20 0.19 0.15
1763	-	0.80	0.35	steep	irregular	1763 1765 1766	0.20 0.18 0.10
1771	-	0.63	0.17	steep	concave	1772 1773	0.16 0.12

Table 7: Area 3, Period 2 discrete features

Period 3: Ditches

- 3.6.52 Four ditches (**1701**, **1711**, **1719** and **1721**) were assigned to Period 3 as they clearly cut Roman ditches and contained medieval pottery. All were aligned from north-east to south-west. Their measurements, profiles and fill numbers are given in Table 9.
- 3.6.53 One sherd (0.022kg) of late medieval or early post-medieval pottery, amphibian bones, an iron nail, and a single oyster shell were recovered from the single fill (1702) of ditch **1701**, which consisted of mottled mid grey and reddish brown silty sand.
- 3.6.54 Ditch **1711** (Fig.8, Section 1544) contained seven fills, all of which contained occasional charcoal (except for fill 1717). The basal fill (1712) consisted of a mixed light yellowish brown and grey silty sand, which was overlain by successive fills of dark grey sandy silt (1713), a mid grey silty sand (1714), a mottled light reddish brown to light grey silty sand (1715), a mid grey silty sand (1716), a light yellowish brown silty sand (1717) and a dark reddish grey sandy silt (1718). Only the uppermost fill (1718) contained finds, which included six sherds (0.034kg) of medieval pottery, a fragment (0.100kg) of possible Roman tile and horse bones (0.046kg). This fill and fill (1716) also contained frequent, randomly distributed, medium to large angular and sub-angular flint nodules. These did not appear to have been worked in any way and were possibly dumped there as part of a field clearance episode or for drainage. These large nodules were not present in any other part of Area 3.
- 3.6.55 Ditches **1719** and **1721** were relatively insubstantial compared to ditches **1711** and **1701**. Ditch **1719** was cut along its eastern side by ditch **1711** and was located immediately adjacent to ditch **1721**. Neither ditch **1721** nor **1719** produced finds from

their fills (1722 and 1720 respectively), which both consisted of dark grey silty sand with occasional charcoal inclusions.

Period 3: Discrete features

3.6.56 Pit **1767** contained a single fill (1768) of reddish brown silty sand but was marked out by the homogenous nature of the fill compared to the other pit fills in Area 3. Although it contained no dating evidence, it was cut into the top of ditch **1751**, which in turn had truncated pit **1763**, the top of which was also cut by pit **1767** (see below) making it potentially post-Roman in date.

Ditch cut	Feature type	Width/diameter (m)	Depth (m)	Sides	Base	Fills	Thickness (m)
1701	ditch	1.78	0.34	steep	irregular	1702	0.34
1711	ditch	3.22	0.59	gentle	concave	1712 1713 1714 1715 1716 1717 1718	0.16 0.07 0.18 0.17 0.21 0.05 0.10
1719	ditch	0.90	0.27	gentle	concave	1720	0.27
1721	ditch	0.36	0.09	gentle	concave	1722	0.09
1767	pit	1.10	0.10	gradual	concave	1768	

Table 8: Area 3, Phase 3 features

Unphased: furrows

3.6.57 A total of six furrows were distributed across the excavation area. Five of these were located toward the western end on a broadly north to south and north-north-west to south-south-east alignments. The most centrally located furrow within Area 3 was aligned north-east to south-west.

3.6.58 At least one furrow in the western end of the trench truncated Early Roman gully **1699**. Potentially, all the furrows post-date the Roman period, although no artefacts to date the furrows were recovered during the excavation. The furrows were on a broadly similar alignment to the Roman features which were broadly dated as 1st to 3rd century AD, but the furrows are themselves more likely to be of medieval date.

3.6.59 Of the six furrows, one (**105**) was excavated. It lay at the extreme western edge of the site, measured 1.80m wide and 0.16m deep and was steep sided with a flat base. It was filled by a mid-yellowish grey sand (106) and produced no finds. This furrow partially truncated ditch **107** along its western edge.

Unphased: ditches and gullies

3.6.60 A total of six ditches and one gully in Area 3 were not assigned to a specific period owing to both the lack of artefactual evidence, or any secure stratigraphic/spatial relationship with features of a known date. The dimensions, profiles and fill numbers are given in Table 4.

3.6.61 Three of these undated features (gully **103** and ditches **107** and **109**) within evaluation Trench 1, in the western part of the area, were not re-exposed during the excavation

phase and were therefore not assessed further. Gully **103** was filled by a light brownish grey silty sand (104), whilst ditches **107** and **109** were both filled by a mid grey sand (108 and 110 respectively). None of these features produced artefacts.

3.6.62 Four ditches (**201**, **203**, **205** and **208**) were located at the eastern end of the Area within evaluation Trench 2. These were excavated during the evaluation phase, but no dating evidence was recovered. No further interventions were possible owing to unfavorable, flooded conditions during the excavation phase. Ditches **201**, **203** and **208** all contained a single fill of mid to dark grey silty sand (202, 204 and 209 respectively). Ditch **205** produced a flint blade from its lower fill (206), which consisted of a dark grey silty sand with occasional charcoal, whilst the upper fill (207), a mid reddish brown silty sand, was devoid of finds.

Unphased: pits

3.6.63 A small group of intercutting and undated discrete features (**1725**, **1727** and **1729**) were located between ditch **1711** and **1723** in an area just west of evaluation Trench 2. This small area, which measured approximately 3m by 5m, had been heavily disturbed prior to excavation. The measurements, profiles and fill numbers are given in Table 4.

3.6.64 The form of feature **1729** was amorphous but might be best described as a large pit or natural hollow of irregular form with gently sloping sides and an irregular base. The fill (1730), a very dark brown silty sand, produced no finds.

3.6.65 Pit **1725** was aligned east to west, was sub-rectangular in plan and had steep sides with a concave base. It was not possible to see the full extent of this pit, as only approximately 2.0m of the feature was visible in plan owing to considerable disturbance in this part of the area. Animal bone (0.300kg) was found in the dark greyish brown silty sand fill (1726) and cereal grains (spelt and emmer) and chaff were retrieved from the bulk environmental sample.

3.6.66 A smaller sub-rectangular pit (**1727**) was cut into the top of pit **1725**. The fill (1728) consisted of a dark greyish brown silty sand with heavily degraded charcoal.

Cut	Feature type	Width/diameter (m)	Depth (m)	Sides	Base	Fills	Thickness (m)
103	ditch	0.67	0.13	gentle	flat	104	0.13
107	ditch	0.50	0.36	unknown	concave	108	0.36
109	ditch	0.67	0.38	steep	concave	110	0.38
201	ditch	1.72	0.45	steep	concave		0.45
203	ditch	2.10	0.22	gentle	concave	204	0.22
205	ditch	1.11	0.33	steep	concave	206 207	0.25 0.09
208	ditch	1.30	0.25	gentle	concave	209	0.25
1725	pit	0.66	0.20			1726	0.20
1727	pit	0.32	0.07			1728	0.07
1729	pit	1.40	0.16			1730	0.16

Table 9: Area 3, unphased features

3.7 Area 4 (Fig. 9)

- 3.7.1 Area 4 was located 100m to the east of Area 3 and covered an area measuring 310m long by up to 8m wide, between evaluation Trenches 3 and 5. The results for Area 4 incorporate those obtained from Trenches 3, 4 and 5. A total of 40 archaeological features in Area 4 were assigned to Periods 1 and 2 based on artefactual evidence and stratigraphic and spatial relationships.
- 3.7.2 Area 4 revealed a dense concentration of ditches, that were only hinted at during the evaluation phase. The main concentration occurred in the eastern half of the excavation area, just west of evaluation Trench 5 (Fig. 9, Inset 2).
- 3.7.3 These ditches are presumed to be field boundaries or enclosure ditches. A series of Early Roman ditches were aligned broadly north to south and these appear to overlie an earlier series of prehistoric ditches, which are aligned broadly east to west.

Period 1 ditches

- 3.7.4 A number of ditches (**1573=1575**, **1577**, **1579=1581**, **1583=1596=1603**, **1601**, **1692**, **1650**, **1641**, **1639=1657** and **1670**) in Area 4 ran broadly west-north-west to east-south-east in marked contrast to the known Period 2 ditches of Early Roman date, which ran on a north-north-west to south-south-east alignment. Additionally, some of these were truncated by the Period 2 ditches, supporting their inclusion within period 1. Unfortunately, no firm dating evidence was obtained from any of these ditches, and here they have been attributed a broad prehistoric (Period 1) date. The maximum measurements, profiles and fill numbers of these ditches are given in Table 11.
- 3.7.5 The fill of ditch **1573**, the eastern most of these ditches, consisted of a light greyish to reddish brown silty sand (1574=1576) and produced a single flint flake. Parallel with this ditch and slightly to the south, the heavily truncated base of a probable ditch (**1577**), was filled by a light reddish brown silty sand (1578) from which no finds were recovered.
- 3.7.6 Approximately 10m to the west, the fill (1580=1582) of ditch **1579**, which consisted of a mid greyish brown silty sand, was devoid of finds.
- 3.7.7 Ditch **1583** lay south of, and roughly parallel with, ditch **1579**. No artefacts were recovered from its fill (1584, 1597 and 1604), which consisted of a mid greyish brown silty sand.
- 3.7.8 To the south, ditch **1601** was truncated by an Early Roman ditch (**1595**). It contained a single fill (1602), which consisted of a mid greyish brown silty sand from which no finds were recovered.
- 3.7.9 To the west, lay two further parallel ditches **1692** and **1650** (the latter was also cut by an Early Roman ditch (**1649**), (see Fig. 10, Section 1532). The northern most ditch (**1692**) was truncated by gully **1653** at the south-eastern end and by a possible pit **1686=1695** (assigned to Period 3) at the north-western end. It contained two fills, the lower fill (1693) consisted of a dark grey silty sand, whilst the upper fill (1694) consisted of a light grey silty sand. No artefacts were recovered from either fill. The

southern-most ditch (**1650**), also produced no finds from its mottled light greyish to mid reddish brown, silty sand fill (1669).

3.7.10 Two further, virtually parallel ditches (**1639** and **1641**) were located 5m further west. The northern most one (**1641**) was partially cut along its southern edge by ditch **1639**, which in turn was cut by Early Roman ditches at both the western and eastern ends (**1624** and **1677** respectively).

3.7.11 Both ditches (**1641** and **1639**) contained dark grey silty sand fills (1642 and 1640=1658 respectively) but neither produced finds.

3.7.12 Ditch **1670**, toward the western end of this group of ditches, was severely truncated by Period 2 ditches **1648** and **1649**. Its dark grey sandy silt fill (1671) produced a worked flint and a single sherd (0.007kg) of Early Roman pottery, but this was considered to be intrusive.

Period 1: discrete features

3.7.13 Two features (**1672** and **1585**) were assigned to this period based on their stratigraphic relationships and location. Their measurements, profiles and fill numbers are given in Table 11.

3.7.14 Pit **1672** was truncated by Period 2 ditch **1649** and by Period 1 ditch **1670**. Its single fill (1673=1667) consisted of an indurated light grey sand, which produced one piece of burnt unworked flint (0.015kg).

3.7.15 A posthole **1585**, located south of the terminal end of ditch **1579**, was assigned to Period 1 based on its location. It contained a single fill (1586) of mid greyish brown silty sand, which was devoid of finds.

Cut	Feature type	Width/diameter(m)	Depth (m)	Sides	Base	Fills	Thickness (m)
1573	ditch	1.0	0.08	gentle	concave	1574 1576	0.08 0.08
1577	ditch	0.80	0.06	gentle	concave	1578	0.06
1579	ditch	0.60	0.22	gentle	concave	1580 1582	0.12 0.22
1583	ditch	0.98	0.22	gentle	concave	1584 1597 1604	0.22 0.09 0.11
1601	ditch	0.85	0.23	steep	concave	1602	0.23
1692	ditch	1.33	0.46	steep	concave	1693 1694	0.46 0.14
1650	ditch	0.68	0.14	gentle	concave	1669	0.14
1641	ditch	0.60	0.12	gentle	concave	1642	0.12
1639	ditch	1.09	0.28	steep	concave	1640 1658	0.28 0.15
1670	ditch	0.66	0.32	steep	concave	1671	0.32
1672	pit	0.78	0.33			1673	0.33
1585	pit	0.27	0.03			1586	0.03

Table 10 Period 1 features

Period 2: ditches and gullies

- 3.7.16 A total of 12 ditches (**401=1646, 501, 503, 1595, 1609, 1620, 1624, 1630, 1633, 1648=1659=1677, 1649=1661=1682, 1651 and 1655**) and a gully (**1653**) were assigned as Early Roman Period 2 ditches based on pottery finds and their stratigraphic relationships and location. The measurements, profiles and fill numbers are given in Table 12.
- 3.7.17 The western most of the Period 2 ditches (**1630, 1633 and 1624**) in the central part of Area 4 (Fig. 9, Inset 2, Plate 10) were aligned from north-north-west to south-south-east. These three intercutting ditches all had relatively steep sides and broadly concave bases (Fig.10, Section 1522). The western most ditch (**1633**) was cut by ditch **1630** along its eastern edge. Ditch **1630** was in turn truncated along its eastern edge by ditch **1624**. Ditch **1624** also truncated natural feature **1636** to the east.
- 3.7.18 No finds were recovered from the lower fill (1634) of ditch **1633**, and only a single cattle tooth was found in the upper fill (1635), which both consisted of a dark grey silty sand.
- 3.7.19 Ditch **1630** also contained two fills of dark grey silty sand. The lower fill (1631) was devoid of finds, however, the upper fill (1632) produced 2 sherds (0.017kg) of Early Roman pottery and horse bone (0.198kg).
- 3.7.20 Ditch **1624** contained five fills of mid grey to dark grey sandy silts (1625, 1626, 1627, 1628 and 1629). Artefacts were only recovered from the penultimate fill (1628), a very dark grey sandy silt, which produced eight sherds (0.067kg) of Early Roman pottery and cattle bones (0.351kg).
- 3.7.21 A further two ditches (**1648 and 1649**), were assigned to Period 2, were revealed 10m to the east.
- 3.7.22 Ditch **1648** and ditch **1649** cut three earlier features (ditches **1670 and 1650** and pit **1672**), all of which were assigned to Period 1.
- 3.7.23 Ditch **1648**, the western-most of the two ditches, contained up to four fills (1662, 1663, 1664 and 1665) within the three excavated sections. The lower fills (successively 1662, 1663 and 1664) consisted of mid to dark grey sandy silts and produced no finds. Artefactual evidence was recovered from the latest fill (1665=1660=1679), which consisted of a mid reddish brown silty sand. These comprised a single sherd (0.004kg) of Early Roman pottery, a sheep bone (0.014kg), and seven pieces of unworked burnt flint (0.044kg).
- 3.7.24 Ditch **1649** contained three fills. The lower fill (1666=1689=1683), which consisted of a dark grey sandy silt with rare charcoal inclusions, produced thirteen sherds (0.091kg) of Early Roman pottery, horse and sheep bone (0.054kg), nine flint flakes and 15 pieces of unworked burnt flint (0.142kg). The upper-most fill, a light to mid reddish brown silty sand (1668=1691=1685) also contained a single sherd (0.018kg) of Early Roman pottery, whilst the middle fill (1675=1690=1684), a mid grey silty sand, was devoid of finds.
- 3.7.25 Two ditches (**501 and 503**) within evaluation Trench 5, at the eastern end of the area, were assigned to Period 2. Seven small sherds (0.008kg) of Early Roman pottery were

recovered from the mid brown silty sand fill (502) of ditch **501**. Ditch **503** contained a similar fill (504), from which, a single sherd (0.009kg) of Early Roman pottery was recovered.

- 3.7.26 A further two ditches (**1609** and **1620**) were assigned to Period 2 based on the premise that they were also aligned broadly north-west to south-east and a gully (**1653**) also truncated a Period 1 ditch.
- 3.7.27 Ditch **1609** contained two fills. No finds were recovered from the lower fill (1610), which consisted of a light yellowish grey sand. The upper-most fill (1611), a dark greyish brown sandy silt produced six worked flints, including a scraper of uncertain date, and five pieces of unworked burnt flint (0.015kg).
- 3.7.28 Ditch **1620** was filled by a mid brownish grey silty sand (1621), from which no finds were recovered. Similarly, no artefacts were found within the dark grey sandy silt fill (1654) of gully **1653**, which lay on a similar alignment to ditch **1609**. Ditch **1655**, to the north- west of gully **1653**, was truncated by a Period 3 feature (**1686**) and produced no finds from its fill (1656), which consisted of a dark grey silty sand.
- 3.7.29 To the east of ditches **1609** and **1620** lay a wide ditch (2.47m) **1595**, which contained three successive fills of mid grey, light grey and mid grey sandy silts (1598, 1599 and 1600 respectively), none of which produced any artefacts.
- 3.7.30 To the west, around 25m from Ditch **1630** lay ditch **401**. It was aligned north-east to south-west and lay on the western edge of pit **403** but its exact relationship to this pit was unclear. Gully **1651** was aligned north-east to south west and formed a T-shaped boundary with ditch **401** (Fig.9, Inset 1). The gully (**1651**) was filled by a dark brown sandy silt (1652), whilst the fill (402) of ditch **401** consisted of a dark yellowish grey sand. Neither feature produced finds.

Ditch cut	Width (m)	Depth (m)	Sides	Base	Fills	Thickness (m)
401	0.57	0.22	steep	v-shaped	402	0.09
					1647	0.22
501	0.56	0.09	gentle	concave	502	0.09
503	1.28	0.18	gentle	flat	504	0.18
1595	2.47	0.54	steep	concave	1598	0.15
					1599	0.10
					1600	0.52
1609	0.70	0.30	steep	concave	1610	0.12
					1611	0.22
1620	1.12	0.16	gentle	irregular	1621	0.16
1624	2.15	0.68	steep	concave	1625	0.40
					1626	0.38
					1627	0.13
					1628	0.14
					1629	0.13
1630	1.68	0.54	steep	concave	1631	0.38
					1632	0.22
1633	1.40	0.40	steep	concave	1634	0.23
					1635	0.18
1648	1.90	0.54	steep	concave	1662	0.20
					1663	0.10
					1664	0.30

Ditch cut	Width (m)	Depth (m)	Sides	Base	Fills	Thickness (m)
					1665 1660 1679	Unknown 0.10
1649	2.50	0.76	steep	concave	1666 1675 1668 1683	0.60 0.30 0.14
1651	0.58	0.10	gentle	concave	1652	0.10
1653	0.20	0.05	gentle	gentle	1654	0.05
1655	0.52	0.12	steep	concave	1656	0.12

Table 11: Period 2, ditches

Period 2: discrete features

- 3.7.31 A total of four pits (**403=405=1643**, **1587**, **1591** and **1593**) and a posthole (**1607**) were assigned to Period 2. Their measurements, profiles and fill numbers are given in Table 13.
- 3.7.32 Pit **403** (Fig. 10, Section 402, Plate 11) contained two fills, the lower fill (404=406=1644), a dark grey clayey silty sand, was devoid of finds, However, it produced two sherds (0.064kg) of Early Roman pottery, horse and cattle bone (0.016kg), from its uppermost fill (1645) which consisted of a dark brown sandy silt. The relationship between this pit and the ditches (**401** and **1651**) it was related to was unclear.
- 3.7.33 A short row of three pits (**1587**, **1591** and **1593**), located to the east of period 1 ditches **1579** and **1583**, were aligned north to south along their long axes (which measured 2.90m, 1.70m and 0.80m respectively). All had gently sloping sides and irregular bases and were possibly the base of quarry pits. Pit **1587**, the southern most of the pits was partially obscured by the baulk edge. The pit contained three fills (1589, 1588 and 1590). The lower fill (1589), consisted of a light greyish brown silty sand, produced a Late Bronze Age sherd of pottery (0.002kg), two cattle teeth, a flint flake and 20 pieces (0.165kg) of unworked burnt flint. Overlying this initial deposit, fill 1588, a light reddish brown silty sand, produced five sherds (0.029kg) of Early Roman pottery. Pit **1591**, which lay to the north of pit **1587**, produced four small sherds (0.002kg) of Early Roman pottery from its light reddish brown silty sand fill (1592). No finds were recovered from the compositionally similar fill (1594) contained within the smaller pit **1593**, immediately north of pit **1591**.
- 3.7.34 Posthole **1607** was closely associated with ditch **1609**, as it appeared to be cut by that ditch, but the relationship was not clear enough to assign it to Period 1. The light greyish brown fill (1608) was devoid of finds.

Pit and posthole cut	Width/diameter (m)	Depth (m)	Sides	Base	Fills	Thickness (m)
403	2.90	0.50	gentle	concave	404 406 1644	0.50 0.36 0.25
1587	1.30	0.30	gentle	irregular	1589 1588	0.18 0.30

					1590	0.20
1591	1.00	0.16	gentle	irregular	1592	0.16
1593	0.72	0.09	gentle	irregular	1594	0.09
1607	0.30	0.08	gentle	concave	1608	0.08

Table 12: Period 2, discrete features

Period 3: features

- 3.7.35 Two archaeological features (ditch **505** and pit **1686=1695**) clearly postdated the Period 2 ditches that they truncated but no dating evidence was recovered from either feature. They have been tentatively attributed a post-Roman (Period 3) date.
- 3.7.36 Ditch **505** was located towards the eastern end of the area, within evaluation Trench 5, and truncated the terminal end of Period 2 ditch **503**. It measured 0.73m wide and 0.36m deep with steep sides and a flat base. The single fill (506), a mid brown silty sand, produced no finds.
- 3.7.37 Pit **1686** was sub-circular in plan and was cut into the top of Period 2 ditches **1655** and **1649**. It measured 1.80m by 1.20m and was 0.13m deep with gently sloping sides and a flat base. The single fill (1687=1696) consisted of a light grey silty sand, from which no finds were recovered.

Natural features

- 3.7.38 Five sherds (0.048kg) of Early Roman pottery and a flint flake were retrieved from the subsoil (2)
- 3.7.39 A spread of material (303) at the western end of the area overlay the mid yellowish grey sandy clay fill (302) of a natural hollow (**301**). The spread, of dark grey silty clay was 0.29m thick. No artefacts were recovered from either this deposit nor from fill 302.
- 3.7.40 Five natural features were excavated in this area. Features **1612**, **1614** and **1616** were broadly sub circular or amorphous in plan but had irregular profiles and were probably tree throws. All the fills (1613, 1615 and 1617 respectively) consisted of a brownish grey silty sand. Only feature **1616** produced a piece of burnt flint (0.006kg).
- 3.7.41 Another, much larger and irregular feature **1636**, also a probable tree throw, was cut by ditch **1624** along its western edge. It measured approximately 2.50m in diameter and 0.48m deep. The lower fill (1637), a light grey silty sand was devoid of finds but a single sherd (0.006kg) of Early Roman pottery was recovered from the upper-most fill (1638), a dark grey silty sand.
- 3.7.42 A tree throw (**1567**) located within evaluation Trench 5 was cut by pit **1565** and ditch **1569** (see below). It measured 1.0m in diameter and was 0.12m deep. The fill (1568), mid greyish brown silty sand, was devoid of finds.

Unphased features: ditches and pits

- 3.7.43 The extreme western end (near evaluation Trench 3) and the extreme eastern end (near evaluation Trench 4) of Area 4 revealed archaeological features that produced no dating evidence. As a result, these features are included here as unphased,

although some relationships were deduced from their stratigraphic relationships. The measurements, profiles and fill numbers of these features are given in Table 10.

- 3.7.44 Two gullies lay east of the natural spread 303. A dark brown silty sand (1606) filled the western most gully (**1605**), the north-west to south-east orientation of which was most closely aligned with the Period 2 ditches (see below). Ditch **1622** was aligned from north-east to south-west and produced no finds from its fill (1623), which consisted of dark grey clayey sand.
- 3.7.45 A small group of ditches and pits occupied the western end of the area, near the excavation boundary. Ditch **509=1561** and ditch **1569** shared roughly the same alignment as the Period 2 ditches but were at least 15m from the nearest phased ditch (**503**). Both were filled with a mid greyish brown silty sand (510=1562 and 1570 respectively) and a single worked flint was recovered from ditch **1569**.
- 3.7.46 A probable ditch (**1618**) was revealed within the central part of the area but it was obscured by both the baulk edge and natural feature **1616**. Its profile was visible in the baulk edge section for about 2.30m and the feature was 0.22m deep. The visible profile appeared to be sub-rectangular and the fill (1619) was of a mid reddish brown silty sand, but otherwise no further conclusions could be drawn.
- 3.7.47 The four pits (**507**, **1559**, **1563** and **1565**) were filled by mid greyish brown silty sand (508, 1560, 1564 and 1566 respectively) and all were devoid of finds.

Ditch cut	Feature type	Width/diameter (m)	Depth (m)	Sides	Base	Fills	Thickness (m)
509	ditch	0.96	0.18	gentle	irregular	510 1562	0.18 0.18
1569	ditch	1.03	0.27	steep	concave	1570	0.27
1605	ditch	0.52	0.09	gentle	irregular	1606	0.09
1622	ditch	0.92	0.27	steep	concave	1623	0.27
507	pit	0.32	0.11	gentle	flat	508	0.11
1559	pit	0.72	0.21	gentle	concave	1560	0.21
1563	pit	0.54	0.11	gentle	concave	1564	0.11
1565	pit	1.00	0.49	gentle	concave	1566	0.49
1571	pit	1.50	0.30	steep	concave	1572	0.30

Table 13: Area 4, unphased features

- 3.7.48 Pit **1571** lay 20m east of these features and to the south of ditch **503** (Fig. 10, Section 1515). It was partially obscured by the baulk edge. Three worked flints and a single unworked burnt flint (0.088kg) were recovered from the fill (1572) which consisted of a mid greyish brown silty sand.

3.8 Finds summary

Metalwork

- 3.8.1 Six metal artefacts (Appendix B.1) were recovered from Area 3. These comprised two Roman coins, of 3rd and 4th century date, recovered from the top of ditch **1780** and two nails, one from ditch **1701** and the other from furrow **1745**. A medieval lead seal

matrix and a copper alloy furniture mount (possibly of medieval date) were found in the top soil (1).

Other small finds

- 3.8.2 Small finds included a fragment of ceramic metalworking mould (Appendix B.2) and a decorated chalk weight (Appendix B.3), both from Late Bronze Age contexts.

Flint

- 3.8.3 A total of 120 worked flints and 7330kg of unworked burnt flint (Appendix B.4) were recovered from 25 archaeological features as well as natural features and deposits. The flint is likely to be contemporaneous with other artefacts recovered from pits **1528** and **1549** in Area 1, whilst the remainder is most likely a residual element incorporated into later features.

Prehistoric pottery

- 3.8.4 A total of 216 sherds (2681kg) of Late Bronze Age pottery (Appendix B.5), dating from approximately 1000 to 800BC, were recovered from 14 contexts, with all but three sherds coming from Area 1. The majority came from pits **1521**, **1528**, **1530** and **1549** and is likely to be contemporary with these features. The pottery is generally in moderate condition with some larger, fresher sherds present. Both fineware and coarseware fabrics are represented and some sherds are burnished.

Roman pottery

- 3.8.5 A total of 107 sherds (1177kg) of utilitarian, Early Roman pottery (Appendix B.6) was recovered from 11 contexts in Areas 3 and 4. The pottery was generally highly abraded with a low mean sherd weight of 11g.

Post-Roman pottery

- 3.8.6 A small assemblage (10 sherds) of medieval and early post-medieval pottery (Appendix B.7) was recovered from Area 3. This indicates low levels of rubbish deposition or manuring in the post-Roman period.

Ceramic building material

- 3.8.7 Ceramic building material (CBM) (Appendix B.8) weighing a total of 0.124kg was recovered from three features, ditch **1711** in Area 3 and ditches **1633** and **1620** in Area 4. None of the fragments were diagnostic and all were heavily abraded and fragmentary.

Fired clay

- 3.8.8 A total of 73 fragments (2.621kg) of fired clay (Appendix B.9) was recovered from pits **1521**, **1528** and **1530** in Area 1 and ditches **1648** and **1649** in Area 4. The material from Area 1 included structural fragments and suggests the presence of a kiln, oven or hearth.

3.9 Environmental summary

Faunal remains

- 3.9.1 Faunal remains (Appendix C.1) of the main species of domesticated stock (cattle, sheep, horse and pig) were recovered during the evaluation and excavation phases. Horse was not present in Period 1 (prehistoric contexts). Cattle was the dominant species during Period 2 (Roman), whilst only a horse bone was retrieved from the Period 3 (post-Roman) contexts. Meat joints and butchered bones were represented in both period 1 and 2 contexts, however the limited amounts of identifiable specimens of large mammals from all phases precludes anything more than minimal interpretation of the data.
- 3.9.2 Small animal bones including vole and mouse from Period 1 and amphibian bone from all phases suggests suitable environmental conditions for them to thrive.

Environmental remains

- 3.9.3 An assemblage of charred, fully processed emmer wheat and hulled barley grains (Appendix C.2), possibly indicative of a maslin crop, was recovered from some of the Late Bronze Age pits in Area 1. This is particularly significant as similar assemblages have recently been recovered from comparable Late Bronze Age pits in Norfolk (e.g., Moan 2018, Clarke 2019).

Shell

- 3.9.4 A total of 0.090kg of edible oyster shell (Appendix C.3) was recovered during the evaluation and excavation stages. Most were deposited in pit **1753** (a total of ten shells), whilst the remainder were single finds. Three shells exhibit signs of shucking, and represent food waste.

3.10 Publication and Archiving

- 3.10.1 The Late Bronze Age pits and their associated finds assemblages in Area 1 are of local and regional significance. An article detailing these pit deposits, with accompanying illustrations of the weight, mould and a selection of the associated pottery, and including the results of radiocarbon dating of three short-life samples from the pits (in progress), will be submitted to *the Proceedings of the Suffolk Institute of Archaeology and History*.
- 3.10.2 The site archive (under site codes HGW 025 and TDD 036) comprises a maximum of five bulk finds / document boxes and three small find boxes. The archive will be deposited with SCCAS in due course.

4 DISCUSSION

4.1 Reliability of field investigation

4.1.1 The results and data obtained from the excavations can be deemed reliable as features were clearly visible against the natural geology, and site conditions were generally very good. However, the relatively narrow width of the excavation areas (between 6m and 8m, which included space set aside for spoil heaps) meant that it was difficult to observe relationships between features in plan. This limited the amount of interpretation it was possible to place upon the results, especially in Area 3.

4.2 Research aims

4.2.1 The project's research objectives, as outlined in Section 2 of this report, are explicitly addressed in the following discussion, organised by period.

4.3 Prehistoric (Period 1)

Assess the extent of prehistoric activity in the area

4.3.1 The main evidence for prehistoric activity was that obtained from the Late Bronze Age pits in Area 1 (see below). This aside, residual and stray flint finds also attest to an earlier prehistoric presence; a total of 120 worked flints (Appendix B.4) that potentially date from the Mesolithic to the Bronze Age were recovered from Areas 1, 2, 3 and 4. Aside from the material from the Late Bronze Age features, all of this flintwork appears to be residual/unstratified and whilst it attests to a prehistoric presence along the pipeline route, this activity remains difficult to characterise in any detail.

4.3.2 Equally difficult to interpret is the series of putatively prehistoric ditches in Area 4, which, whilst stratigraphically pre-dating the Early Roman features in this area, produced no finds. Given the limited exposure of these features it is difficult to speculate on their function, but they may have related to field systems or boundaries of later prehistoric date.

Assess the nature and extent of Late Bronze Age settlement and activity in the area adjacent to the pipeline route

4.3.3 Despite a rich record of Late Bronze Age metalwork from the region (Pendleton 1992), evidence for Late Bronze Age settlement has traditionally been very rare. However, recent large scale developer funded projects have led to the discovery of an increasing number of sites (see Brudenell 2018) and the evidence from along the pipeline route adds further to the corpus of known sites of this date in Suffolk.

4.3.4 The site sits in a favourable location within a wider prehistoric landscape. Numerous spring heads, emerging within less than a 500m to the north of the pipeline route, would have acted as a source of water needed to support settlement and for associated activities, including agriculture and metalworking. It is not surprising then, that clear evidence for Bronze Age activity in the form of find spots, excavation evidence and monuments exists in the surrounding landscape.

4.3.5 Early Bronze Age activity in the area, preceding the Late Bronze Age occupation revealed by the excavations, is attested by findspots including two fragments of a

copper alloy tanged dagger (HGW 010), which were recovered some 200m south of the western end of the pipeline. Meanwhile, the two possible ploughed out round barrows (TDD 004), on the pipeline route attest to funerary activity in the area during this period. The close proximity of these monuments to both the springs and the Area 1 Late Bronze Age remains is of potential significance but without further archaeological intervention, little can be postulated about the relationships between these features.

- 4.3.6 The Late Bronze Age settlement at this site was characterised by a series of scattered pits and postholes located in Areas 1 and 2. Two stray sherds of Late Bronze Age pottery were found in Area 3, up to a kilometre to the west of the features in Area 1 and 2, and the recovery of residual struck and burnt flint, suggested to be later prehistoric date, in Herringswell village itself, still further to the west (HGW018; see Fig. 2), hint that dispersed traces of later prehistoric activity may be fairly extensive in the area.
- 4.3.7 Potential evidence for the surviving traces of structures, in the form of postholes (five in total), was revealed in Area 1, and structural material (daub with impressions of wattle) was also found in three of the pits (**1521**, **1530** and **1528**).
- 4.3.8 This 'open settlement' type is wholly characteristic of Late Bronze Age sites in the region, which generally are comprised of pits and postholes and sometimes wells/watering holes and post built (four post/roundhouse) structures (see below).

Identify the nature of pit deposition during the Late Bronze Age at the Herringswell site

- 4.3.9 Four pits (intercutting pits **1521** and **1530** and pits **1528** and **1549**) were of particular interest, in terms of their contents. All contained fills of a similar composition that were rich with artefacts and environmental remains. The artefact assemblages were comprised of Late Bronze Age pottery, which included sherds of fineware as well as more utilitarian vessels (Appendix B.5), and fragments of fired clay (Appendix B.8). Clean charred grain was also recovered from pits **1521**, **1530** and **1549** (see below) and a piece of metalworking mould and a carved chalk weight were recovered from pits **1521** and **1549** respectively.
- 4.3.10 Brudenell (2012, 346) considers that the deposition of pots into pit contexts was not always governed by a "strict set of rules" and that pits were used as repositories for deposition that covered a wide ranging set of circumstances, from unconsidered filling up of refuse pits, at one end of a spectrum, to highly structured deposits at the other.
- 4.3.11 The relatively finds and charcoal-rich dumped deposits which characterised the Late Bronze Age pits clearly represent the deliberate deposition of occupation material, perhaps deriving from surface middens or similar deposits. Whether this represents more than simple rubbish disposal is unclear, and whilst there was no clear evidence for any formally placed or 'structured' deposits, deliberate deposition of this kind could be interpreted in the context of some kind of ritualised behaviour.

Compare the small finds with known examples from the East Anglian region

- 4.3.12 A fragment of ceramic mould (Appendix B.2) dating to the Late Bronze Age was recovered from pit **1521**. The mould was of a similar fabric to the pottery recovered from that pit and the other Area 1 features. Similar moulds are very rare finds in Suffolk and in East Anglia in general. Timberlake (App. B.2) considers that the mould fragment is most likely to relate to the production of a socketed axe, although given its incomplete state this remains equivocal. Aside from the mould itself, the structural fired clay (with flattened surfaces and withy impressions) found in pit **1521** could conceivably derive from some type of furnace associated with metal production.
- 4.3.13 A recent, comprehensive, study by Adams and colleagues (Adams *et al* 2017) found no clear evidence for Late Bronze Age metalworking in Suffolk or Norfolk, whereas elsewhere in the region, in Cambridgeshire and especially Essex, there are more substantial assemblages of artefacts associated with metalworking, such as crucibles and moulds. Some researchers have associated evidence for metalworking with high status sites, as exemplified by the Late Bronze Age Ringworks of southern Essex and the Thames Estuary. Needham (2013) and Evans (Evans *et al* 2016), for example, have posited a strong link between such high status sites (Springfield Lyons and Mucking respectively) and access to and control of metalworking (see also Yates 2007). In northern parts of Eastern England, however, especially in Cambridgeshire, evidence for small-scale metalworking has been recorded from what appear to be typical settlement sites (see Adams *et al* 2017), with remains similar to those found at the Herringswell/Tuddenham site. This pattern may hint at important inter-regional differences in the organisation of metalworking, settlement hierarchy and social organisation – patterns which may become clearer as more sites are investigated across the region.
- 4.3.14 The decorated chalk weight (loom weight or net sinker) recovered from Pit **1549** attests to other types of activity taking place along the pipeline route. It is of unusual form; carved from an ammonite fossil, acentrically bored and decorated with parallel and criss-crossed lines.
- 4.3.15 Similar weights have been found at Late Bronze Age sites, for example, at All Canning's Cross, Wiltshire; Purely, Croydon; and more locally at Must Farm, Cambridgeshire (see Timberlake, App. B3.)

Enhance understanding of agricultural regimes during the Late Bronze Age in Suffolk and East Anglia

- 4.3.16 Pits **1521**, **1530** and **1549** also produced significant assemblages of charred grain. In all three cases the grain consisted of emmer wheat (*Triticum dicoccum*) and six-row hulled barley (*Hordeum vulgare* ssp. *vulgare*). The grain was clean with no chaff present and very few weed seeds. Fosberry (Appendix C.2) suggests the wheat and barley may have been grown together as a maslin crop.
- 4.3.17 Similar assemblages of fully-processed emmer and barley were recovered from Late Bronze Age pits during recent excavations at Wymondham, Norfolk, dated to 923-823 BC (Clarke 2019) and Bell Farm, Horsford, Norfolk dated to 938-823 BC (Moan 2018).

Grain from the Herringswell pits has been submitted for radiocarbon dating, which will add to the known chronological framework for these distinctive cleaned maslin crops in the region.

- 4.3.18 Only a small amount of animal bone was recovered. This assemblage was overwhelmingly dominated by domestic stock, which included cattle, sheep (with cut marks) and pig with no evidence for the exploitation of wild species. These probably represent the remains of meals consumed rather than animal husbandry taking place directly in the vicinity of Area 1.

To compare the results of the excavation with similar known sites of Late Bronze Age date in East Anglia, particularly Suffolk

- 4.3.19 As noted above, Late Bronze Age activity in Suffolk, and the wider region, is typically represented by the remains of unenclosed settlements consisting of pits, watering holes/well and post built structures. Sites of featuring some or all of this restricted range of features have been recently excavated at Flixton Park Quarry; Hartismere High School, Eye; Bloodmoor Hill, Carlton Colville; and Day's Road, Capel St Mary (see Brudenell 2018).
- 4.3.20 Beyond Suffolk, parallels can also be found with Late Bronze Age sites on the gravels and fen edge of Cambridgeshire, to the west of the pipeline route. Sites at Dimmock's Cote Quarry, Wicken (Gilmour 2014), Fordham by-pass (and Turners Yard Fordham Gilmour *pers.comm*) and Newmarket Road, Burwell (Fletcher 2014) have all yielded pits that contained Late Bronze Age pottery, animal bone and small finds.

4.4 Roman (Period 2)

Attempt to understand the extent and nature of Romano-British activity in this area.

- 4.4.1 The evidence for Roman activity revealed by the excavations was represented almost exclusively by a large number of ditches exposed in Areas 3 and 4. It should be emphasised that, given the limited exposure afforded by the pipeline easement and the lack of cropmarks corresponding to these features outside of the easement (or geophysical survey), the function and character of these features remain very difficult to determine. Furthermore, whilst a high proportion of these features contained Roman pottery, it is notable that the pottery was recovered in relatively low densities and in an abraded and very fragmentary state, suggesting that it had had a complex post-depositional history – presumably being incidentally incorporated into the ditches from surface scatters or dumps. This said, the pottery from these features was notable in terms of its tight chronological range – all Early Roman and potentially all belonging to the pre-Flavian period (predating AD 79; see Lyons, App. B.6). The only evidence for later Roman activity took the form of two coins, one of third and one of fourth century date from the upper fill of ditch **1780**, the stratigraphically latest feature belonging to Ditch and Pit Group 1, Area 3.
- 4.4.2 Several discrete archaeological features (pits and a posthole) were also assigned to Period 2 based on their location and stratigraphic relationships. The dating evidence was sparse and the attribution of these features is tentative and they certainly do not appear to relate to settlement activity of any kind. Faunal remains from Period 2

features indicate that all the main domesticates were present, with cattle bone dominating, but little can be said concerning animal husbandry.

- 4.4.3 It seems likely that at least some of the Period 2 ditches relate to field systems, and much of the pottery assemblage may derive from manuring of agricultural fields. Speculatively, the dense swathe of linear features in the centre of Area 3 (designated here as Ditch and Pit Group 1), with fourteen ditches crossing an area little more than 15m wide, could represent the remains of a ditched trackway, subject to episodic re-cutting and maintenance, in which case the recovery of the later Roman coins from the upper part of this sequence of features may suggest that any such route way remained in use for several centuries.
- 4.4.4 Scatters of Roman artefacts recorded in the environs of the pipeline route may represent areas of settlement associated with such field systems and trackways; in particular, a scatter of Roman pottery is recorded less than 500m to the north-east of Area 3 (HGW 007, see Fig. 2). It is also possible that some of the undated cropmarks of field systems and trackways to the north of the pipeline route (HGW 021 and 022) relate to a wider organised agricultural landscape during this broad period.

4.5 Post-Roman (Period 3)

- 4.5.1 At least three linear features and three discrete features in Area 3 date to this phase of activity. Little can be said about the post-Roman ditches, other than they seem to represent the establishment and re-cutting of field boundaries.
- 4.5.2 The furrows present in Area 3 relate to this period and are probably medieval in origin. This seems likely given that the site is near the historic core of Herringswell and just south of Hall Farm.

4.6 Conclusion

- 4.6.1 The results of the archaeological investigations along the pipeline route are of considerable significance. The density of archaeological features was relatively high and this attests to the pipeline running through a long-occupied landscape, where at least three broad periods of occupation were identified.
- 4.6.2 The Late Bronze Age remains are particularly important. Metalworking was evidenced by the socketed axe mould found in pit **1521** and the presence of clean charred grain offers a rare chance to obtain radiocarbon dates from secure contexts associated with Late Bronze Age pottery in this part of Suffolk.
- 4.6.3 Interpreting the Roman activity along the pipeline is challenging, but the concentration of features suggests that the area was part of a well-organised agrarian landscape, with potentially extensive systems of fields and trackways.
- 4.6.4 It is probable that the various phases of activity in the Herringswell area were linked to the springs in the area. These natural resources formed the focus for the development of the medieval villages of Herringswell and Snailswell and it should be expected that this was also an attractive place for prehistoric and Romano-British settlement.

APPENDIX A CONTEXT INVENTORY

Trench	Context	Cut	Category	Feature Type	Function	Breadth	Depth
	1		layer	natural	top soil		0.25
	2		layer	natural	subsoil		0.35
	3		layer	natural	natural geology		
1	101		cut	gully	use	0.44	0.16
1	102	101	fill	gully	disuse		0.16
1	103	103	cut	gully	use	0.57	0.13
1	104	103	fill	gully	disuse		0.13
1	105	105	cut	furrow	use	1.8	0.16
1	106	105	fill	furrow	disuse		0.16
1	107	107	cut	ditch	use		0.36
1	108	107	fill	ditch	disuse		0.36
1	109	109	cut	ditch	use	0.57	0.38
1	110	109	fill	ditch	disuse		0.38
2	201	201	cut	ditch	use	1.72	0.45
2	202	201	fill	ditch	disuse		0.45
2	203	203	cut	ditch	use	2.1	0.22
2	204	203	fill	ditch	disuse		0.22
2	205	205	cut	ditch	use	1.11	0.33
2	206	205	fill	ditch	disuse		0.25
2	207	205	fill	ditch	disuse		0.09
2	208	208	cut	ditch	use	1.3	0.25
2	209	208	fill	ditch	disuse		0.25
2	210	210	cut	ditch	modern service	0.5	0.25
2	211	210	fill	ditch	modern service		0.35
3	301	301	cut	natural			0.29
3	302	301	layer	natural deposit	natural deposit		0.1
3	303	301	layer	natural deposit	natural deposit		0.29
4	401	401	cut	ditch	use	0.42	0.09
4	402	401	fill	ditch	disuse		0.09
4	403	403	cut	pit	use	1.64	0.5
4	404	403	fill	pit	disuse		0.5
4	405	405	cut	pit	use	1.18	0.36
4	406	405	fill	pit	disuse		0.36
5	501	501	cut	ditch	use	0.56	0.09
5	502	501	fill	ditch	disuse		0.09
5	503	503	cut	ditch	terminus	1.28	0.18
5	504	503	fill	ditch	disuse		0.18
5	505	505	cut	ditch	terminus	0.73	0.36
5	506	505	fill	ditch	disuse		0.36
5	507	507	cut	ditch/gully	use	0.32	0.11
5	508	507	fill	pit	disuse		0.11
5	509	509	cut	pit	use	0.96	0.18
5	510	509	fill	ditch	disuse		0.18

Trench	Context	Cut	Category	Feature Type	Function	Breadth	Depth
10	1001	1001	cut	natural		1.88	0.5
10	1002	1001	fill	natural			0.5
10	1003	1003	cut	pit	use	0.37	0.16
10	1004	1003	fill	pit	disuse		0.16
10	1005	1005	cut	pit	use	0.55	0.34
10	1006	1005	fill	pit	disuse		0.34
10	1007	1007	cut	natural	use	0.65	0.11
10	1008	1007	fill	natural	disuse		0.11
12	1201	1201	cut	pit	use	0.53	0.17
12	1202	1201	fill	pit	disuse		0.17
13	1301	1301	cut	pit	use	0.81	0.68
13	1302	1301	fill	pit	disuse		0.68
13	1303		layer				0.09
13	1304		layer				0.24
14	1401	1401	cut	ditch	use	0.67	0.12
14	1402	1401	fill	ditch	disuse		0.12
14	1403	1403	cut	ditch	terminus	0.52	0.14
14	1404	1403	fill	ditch	disuse		0.14
14	1405	1405	cut	ditch	use	0.39	0.16
14	1406	1405	fill	ditch	disuse		0.16
14	1407	1407	cut	ditch	use	0.58	0.17
14	1408	1407	fill	ditch	disuse		0.17
14	1409	1409	cut	ditch	use	0.47	0.13
14	1410	1409	fill	ditch	disuse		0.13
14	1411	1411	cut	ditch	terminus	0.78	0.34
14	1412	1411	fill	ditch	disuse		0.34
A1	1500	1500	cut	post hole	structural	0.2	0.14
A1	1501	1500	fill	post hole	disuse		0.14
A1	1502	1502	cut	post hole	structural	0.32	0.14
A1	1503	1503	fill	post hole	disuse		0.14
A1	1504	1504	cut	natural	glacial scar	1.84	0.64
A1	1505	1504	fill	natural	glacial scar		0.64
A1	1506	1506	cut	natural	boundary	1.96	0.43
A1	1507	1507	fill	natural	disuse		0.43
A1	1508	1508	cut	natural	tree throw/natural	0.6	0.6
A1	1509	1508	fill	natural	tree throw/natural		0.6
A1	1510	1510	cut	natural	boundary	1.1	0.4
A1	1511	1510	fill	natural	disuse		0.3
A1	1512	1510	fill	natural	disuse/slump		0.11
A1	1513	1511	fill	natural	disuse		0.13
A1	1514	1514	cut	natural	tree throw	1.7	0.34
A1	1515	1514	fill	natural			
A1	1516	1514	fill	natural			0.34
A1	1517	1517	cut	pit	use	0.6	0.16
A1	1518	1517	fill	pit	disuse		0.16
A1	1519	1519	cut	natural	tree throw	2.7	0.47
A1	1520	1519	fill	natural	tree throw		0.47

Trench	Context	Cut	Category	Feature Type	Function	Breadth	Depth
A1	1521	1521	cut	pit	use/secondary deposition	1.15	0.66
A1	1522	1521	fill	pit	backfill		0.44
A1	1523	1521	fill	pit	secondary deposition		25
A1	1524	1521	fill	pit	disuse/backfill		0.49
A1	1525	1521	fill	pit	disuse/silting		0.12
A1	1526	1530	fill	pit	disuse/slump		0.28
A1	1527	1530	fill	pit	disuse/backfill		0.35
A1	1528	1528	cut	pit	storage	1.1	0.4
A1	1529	1528	fill	pit	disuse		0.4
A1	1530	1530	cut	pit	storage	1.2	0.62
A1	1531	1530	fill	pit	disuse		0.28
A1	1532	1530	fill	pit	disuse		0.31
A2	1533	1533	cut	pit	use	0.51	0.08
A2	1534	1533	fill	pit	disuse		0.08
A2	1535	1535	cut	pit	use	0.71	0.15
A2	1536	1535	fill	pit	use		0.15
A2	1537	1537	cut	pit	use	0.52	0.13
A2	1538	1537	fill	pit	disuse		0.13
A2	1539	1539	cut	pit	use	0.4	0.09
A2	1540	1539	fill	pit	disuse		0.09
A2	1541	1541	cut	natural	animal burrow	0.5	0.25
A2	1542	1541	fill	natural			0.25
A2	1543	1543	cut	pit	use	0.24	0.07
A2	1544	1543	fill	pit	disuse		0.07
A2	1545	1545	cut	pit	use	0.22	0.05
A2	1546	1545	fill	pit	disuse		0.05
A2	1547	1547	cut	pit	use	0.42	0.22
A2	1548	1547	fill	pit	disuse		0.22
A1	1549	1549	cut	pit	use	1.34	0.54
A1	1550	1549	fill	pit	disuse		0.54
A1	1551	1551	cut	post hole	structural	0.28	0.1
A1	1552	1551	fill	post hole	disuse		0.1
A1	1553	1553	cut	post hole	structural	0.32	0.13
A1	1554	1553	fill	post hole	disuse		0.13
A1	1555	1555	cut	post hole	structural	0.32	0.1
A1	1556	1555	fill	post hole	disuse		0.1
A1	1557	1557	cut	pit	use	1	0.43
A1	1558	1557	fill	pit	disuse		0.43
A4	1559	1559	cut	pit	use	0.72	0.21
A4	1560	1559	fill	pit			0.21
A4	1561	1561	cut	natural	periglacial disturbance	1.14	0.18
A4	1562	1561	fill	natural			0.18
A4	1563	1563	cut	pit	unknown	0.54	0.11
A4	1564	1563	fill	pit	disuse		0.11
A4	1565	1565	cut	pit	unknown	1	0.49
A4	1566	1565	fill	pit	disuse		0.49
A4	1567	1567	cut	natural	tree throw	1	0.12

Trench	Context	Cut	Category	Feature Type	Function	Breadth	Depth
A4	1568	1567	fill	natural	tree throw		0.12
A4	1569	1569	cut	ditch	use	1.03	0.27
A4	1570	1569	fill	ditch	disuse		0.27
A4	1571	1571	Cut	pit	use	1.5	0.3
A4	1572	1571	fill	pit	disuse		0.3
A4	1573	1573	cut	ditch	boundary	0.85	0.08
A4	1574	1573	fill	ditch	disuse		0.08
A4	1575	1575	cut	ditch	boundary	1	0.08
A4	1576	1575	fill	ditch	disuse		0.08
A4	1577	1577	cut	ditch	boundary	0.8	0.06
A4	1578	1577	fill	ditch	disuse	0.8	0.06
A4	1579	1579	cut	ditch	boundary	0.6	0.121
A4	1580	1579	fill	ditch	disuse		0.12
A4	1581	1581	cut	ditch	boundary	0.86	0.22
A4	1582	1581	fill	ditch	disuse		0.22
A4	1583	1583	cut	ditch	boundary	0.98	0.22
A4	1584	1583	fill	ditch	disuse	0.98	0.22
A4	1585	1585	cut	post hole	use	0.27	0.03
A4	1586	1585	fill	post hole	disuse		0.03
A4	1587	1587	cut	pit	possible quarry pit	1.3	0.3
A4	1588	1587	fill	pit	disuse		0.3
A4	1589	1587	fill	pit	disuse		0.18
A4	1590	1587	fill	pit	disuse		0.2
A4	1591	1591	cut	pit	use	1	0.16
A4	1592	1591	fill	pit	disuse		0.16
A4	1593	1593	cut	pit	use	0.72	0.09
A4	1594	1593	fill	pit	disuse		0.09
A4	1595	1595	cut	ditch	boundary	2.47	0.54
A4	1596	1596	cut	ditch	boundary	0.7	0.09
A4	1597	1596	fill	ditch	disuse	0.7	0.09
A4	1598	1595	fill	ditch	disuse		0.15
A4	1599	1595	fill	ditch	disuse/slump		0.1
A4	1600	1595	fill	ditch	disuse		0.52
A4	1601	1601	cut	ditch	boundary	0.85	0.23
A4	1602	1601	fill	ditch	disuse		0.23
A4	1603	1603	cut	ditch	boundary	0.54	0.11
A4	1604	1603	fill	ditch	disuse		0.11
A4	1605	1605	cut	gully	use	0.52	0.09
A4	1606	1605	fill	gully	disuse		0.09
A4	1607	1607	cut	post hole	structural	0.3	0.08
A4	1608	1607	fill	post hole	disuse		0.08
A4	1609	1609	cut	ditch	boundary	0.7	0.3
A4	1610	1609	fill	ditch	disuse		0.12
A4	1611	1609	fill	ditch	disuse		0.22
A4	1612	1612	cut	natural		1.1	0.1
A4	1613	1612	fill	natural		1.1	0.1
A4	1614	1614	cut	natural		0.86	0.1
A4	1615	1614	fill	natural			0.1

Trench	Context	Cut	Category	Feature Type	Function	Breadth	Depth
A4	1616	1616	cut	natural		1.04	0.14
A4	1617	1616	fill	natural			0.14
A4	1618	1618	cut	unknown			
A4	1619	1618	fill	unknown		2.3	0.42
A4	1620	1620	cut	ditch	terminus	1.12	0.16
A4	1621	1620	fill	ditch	disuse		0.16
A4	1622	1622	cut	ditch	boundary	0.92	0.27
A4	1623	1622	fill	ditch	disuse		0.27
A4	1624	1624	cut	ditch	boundary	2.15	0.68
A4	1625	1624	fill	ditch	disuse		0.4
A4	1626	1624	fill	ditch	disuse		0.38
A4	1627	1624	fill	ditch	disuse		
A4	1628	1624	fill	ditch	disuse		0.14
A4	1629	1624	fill	ditch	disuse		0.13
A4	1630	1630	cut	ditch	boundary	1.68	0.54
A4	1631	1630	fill	ditch	disuse		0.38
A4	1632	1630	fill	ditch	disuse		0.22
A4	1633	1633	cut	ditch	boundary	1.4	0.4
A4	1634	1633	fill	ditch	disuse		0.23
A4	1635	1633	fill	ditch	disuse		0.18
A4	1636	1636	cut	natural	tree throw	2.5	0.48
A4	1637	1636	fill	natural			0.3
A4	1638	1636	fill	natural			0.23
A4	1639	1639	cut	ditch	boundary	1.09	0.28
A4	1640	1639	fill	ditch	disuse		0.28
A4	1641	1641	cut	ditch	boundary	0.6	0.12
A4	1642	1641	fill	ditch	disuse		0.12
A4	1643	1643	cut	pit	extraction	2.9	0.55
A4	1644	1643	fill	pit	disuse		0.25
A4	1645	1643	fill	pit	disuse		0.3
A4	1646	1646	cut	ditch	boundary	0.57	0.22
A4	1647	1646	fill	ditch	disuse		0.22
A4	1648	1648	cut	ditch	boundary	1.9	0.54
A4	1649	1649	cut	ditch	boundary	2.5	0.76
A4	1650	1650	cut	ditch	boundary	0.68	0.14
A4	1651	1651	cut	ditch	boundary	0.58	0.1
A4	1652	1651	fill	ditch	disuse		0.1
A4	1653	1653	cut	gully	use, terminus	0.2	0.05
A4	1654	1653	fill	gully	disuse		0.05
A4	1655	1655	cut	ditch	boundary	0.52	0.12
A4	1656	1655	fill	ditch	disuse		0.12
A4	1657	1657	cut	ditch	boundary, terminus	1	0.15
A4	1658	1657	fill	ditch	disuse		0.15
A4	1659	1659	cut	ditch	boundary	1.3	
A4	1660	1659	fill	ditch	disuse		
A4	1661	1661	cut	ditch	boundary		
A4	1662	1648	fill	ditch	disuse		0.2
A4	1663	1648	fill	ditch	disuse		0.1

Trench	Context	Cut	Category	Feature Type	Function	Breadth	Depth
A4	1664	1648	fill	ditch	disuse		0.3
A4	1665	1648	fill	ditch	disuse		0.1
A4	1666	1649	fill	ditch	disuse		0.3
A4	1667	1672	fill	pit	use		0.18
A4	1668	1649	fill	ditch	tertiary		0.14
A4	1669	1650	fill	ditch	disuse		0.15
A4	1670	1670	cut	ditch	use	0.66	0.32
A4	1671	1670	fill	ditch	disuse		0.32
A4	1672	1672	cut	pit	use	0.78	0.33
A4	1673	1672	fill	pit	disuse		0.33
A4	1675	1649	fill	ditch	disuse		0.3
A4	1676	1670	fill	ditch	disuse		0.1
A4	1677	1677	cut	ditch	boundary		
A4	1678	1677	fill	ditch	disuse		0.39
A4	1679	1677	fill	ditch	disuse		0.1
A4	1680	1680	cut	ditch	boundary		
A4	1681	1680	fill	ditch	disuse		
A4	1682	1682	cut	ditch	boundary	1.6	0.56
A4	1683	1682	fill	ditch	disuse		0.35
A4	1684	1682	fill	ditch	disuse		0.16
A4	1685	1682	fill	ditch	disuse		0.12
A4	1686	1686	cut	pit	use	1.2	0.13
A4	1687	1686	fill	pit	disuse		0.13
A4	1689	1661	fill	ditch	disuse		0.18
A4	1690	1661	fill	ditch	disuse		0.14
A4	1691	1661	fill	ditch	disuse		0.2
A4	1692	1692	cut	ditch	boundary, terminus	1.33	0.46
A4	1693	1692	fill	ditch	disuse		0.46
A4	1694	1692	fill	ditch	disuse		0.14
A4	1695	1695	cut	pit	use	1.2	1.24
A4	1696	1695	fill	pit	disuse		0.24
A3	1697	1697	cut	ditch	use	1.26	0.24
A3	1698	1697	fill	ditch			0.24
A3	1699	1699	cut	ditch	use	0.48	0.26
A3	1700	1699	fill	ditch			0.26
A3	1701	1701	cut	ditch	possible furrow	1.78	0.34
A3	1702	1701	fill	ditch	disuse		0.34
A3	1703	1703	cut	ditch	boundary	0.3	0.08
A3	1704	1703	fill	ditch	disuse		0.08
A3	1705	1705	cut	ditch	boundary	0.4	0.3
A3	1706	1705	fill	ditch	slump		0.03
A3	1707	1705	fill	ditch	disuse		0.3
A3	1708	1708	cut	ditch	boundary	0.6	0.24
A3	1709	1708	fill	ditch	disuse		0.1
A3	1710	1708	fill	ditch	disuse		0.1
A3	1711	1711	cut	ditch	boundary	3.22	0.59
A3	1712	1711	fill	ditch	disuse		0.16
A3	1713	1711	fill	ditch	disuse		0.07

Trench	Context	Cut	Category	Feature Type	Function	Breadth	Depth
A3	1714	1711	fill	ditch	disuse		0.18
A3	1715	1711	fill	ditch	disuse		0.17
A3	1716	1711	fill	ditch	disuse		0.21
A3	1717	1711	fill	ditch	disuse		0.05
A3	1718	1711	fill	ditch	disuse		0.1
A3	1719	1719	cut	ditch	boundary	0.9	0.27
A3	1720	1719	fill	ditch	disuse		0.27
A3	1721	1721	cut	ditch	drainage	0.36	0.09
A3	1722	1721	fill	ditch	disuse		0.09
A3	1723	1723	cut	ditch	boundary	0.62	0.29
A3	1724	1723	fill	ditch	disuse		0.29
A3	1725	1725	cut	pit	boundary	0.66	0.2
A3	1726	1725	fill	pit	disuse		0.2
A3	1727	1727	cut	pit	unknown	0.32	0.07
A3	1728	1727	fill	pit	disuse		0.07
A3	1729	1729	cut	pit		1.4	0.16
A3	1730	1729	layer	pit			0.16
A3	1731	1731	cut	post hole	structural	0.78	0.3
A3	1732	1731	fill	post hole	backfill		0.3
A3	1733	1731	fill	post hole	backfill		0.3
A3	1734	1731	fill	post hole	post pipe		0.3
A3	1735	1735	cut	gully	use	0.3	0.08
A3	1736	1735	fill	gully	disuse		0.08
A3	1737	1737	cut	pit	use	0.32	0.03
A3	1738	1737	fill	pit	disuse		0.03
A3	1739	1739	cut	pit	use	1.28	0.24
A3	1740	1739	fill	pit	disuse		0.24
A3	1741	1741	cut	pit	use	0.24	0.08
A3	1742	1741	fill	pit	disuse		0.08
A3	1743	1743	cut	pit	unknown	0.84	0.14
A3	1744	1743	fill	pit	disuse		0.14
A3	1745	1745	cut	ditch	unknown	0.9	0.22
A3	1746	1745	fill	ditch	disuse		0.22
A3	1747	1747	cut	pit	use	0.6	0.2
A3	1748	1747	fill	pit	disuse		0.2
A3	1749	1747	fill	pit	disuse		0.03
A3	1750	1747	fill	pit	disuse		0.14
A3	1751	1751	cut	ditch	boundary	0.44	0.2
A3	1752	1751	fill	ditch	disuse		0.2
A3	1753	1753	cut	pit	use	2.08	0.38
A3	1754	1753	fill	pit	disuse		0.2
A3	1755	1753	fill	pit	disuse		0.19
A3	1756	1756	cut	gully	use	0.68	0.15
A3	1757	1756	fill	gully	disuse	0.68	0.15
A3	1758	1758	cut	gully	use	0.8	0.16
A3	1759	1758	fill	gully	disuse		0.16
A3	1760	1753	fill	pit	disuse /deliberate backfill?		0.16

Trench	Context	Cut	Category	Feature Type	Function	Breadth	Depth
A3	1761	1761	cut	ditch	boundary	0.4	0.25
A3	1762	1761	fill	ditch	disuse		0.25
A3	1763	1763	cut	pit	boundary	0.8	0.35
A3	1764	1763	fill	pit	disuse		0.2
A3	1765	1763	fill	pit	disuse		0.18
A3	1766	1763	fill	pit	disuse		0.1
A3	1767	1767	cut	pit	use	0.68	0.1
A3	1768	1767	fill	pit	disuse		0.1
A3	1769	1769	cut	gully	use	0.7	0.19
A3	1770	1769	fill	gully	disuse		0.19
A3	1771	1771	cut	pit	use	0.63	0.17
A3	1772	1771	fill	pit	disuse/ initial silting		0.16
A3	1773	1771	fill	pit	disuse		0.12
A3	1774	1774	cut	ditch	boundary	2.57	0.74
A3	1775	1775	cut	ditch	boundary	3.06	0.72
A3	1777	1777	cut	pit	use	2.1	1.07
A3	1778	1778	cut	ditch	boundary	1.8	0.52
A3	1779	1779	cut	ditch	boundary	1.6	0.86
A3	1780	1780	cut	ditch	boundary	2.58	0.42
A3	1781	1781	cut	ditch	boundary	2.3	0.74
A3	1782	1782	cut	ditch	boundary	0.8	0.62
A3	1784	1784	cut	ditch	boundary	2.9	0.42
A3	1785	1784	fill	ditch	disuse		0.22
A3	1786	1784	fill	ditch	disuse		0.08
A3	1787	1784	fill	ditch	disuse		0.2
A3	1790	1790	cut	ditch	boundary	1.1	0.34
A3	1791	1790	fill	ditch	disuse		0.34
A3	1792		layer				0.06
A3	1793		layer	soil horizon			0.1
A3	1794	1794	cut	ditch	boundary	0.9	0.34
A3	1795	1794	fill	ditch	disuse		0.34
A3	1796		layer	soil horizon			0.2
A3	1797		layer				0.14
A3	1798	1798	cut	ditch	boundary	0.58	0.24
A3	1799	1798	fill	ditch	disuse		0.24
A3	1800	1774	fill	ditch	disuse		0.32
A3	1801	1774	fill	ditch	disuse		0.45
A3	1802		layer			3	0.12
A3	1803		layer				0.18
A3	1804	1775	fill	ditch	disuse/backfill		0.46
A3	1805	1775	fill	ditch	disuse/slump		0.15
A3	1806	1775	fill	ditch	disuse		0.28
A3	1807	1777	fill	pit	disuse		0.34
A3	1808	1777	fill	pit	disuse		0.07
A3	1809	1777	fill	pit	disuse		0.38
A3	1810	1778	fill	ditch	disuse		0.13
A3	1811	1778	fill	ditch	disuse		0.5
A3	1812	1779	fill	ditch	disuse		0.26

Trench	Context	Cut	Category	Feature Type	Function	Breadth	Depth
A3	1813	1779	fill	ditch			0.36
A3	1814	1851	fill	ditch	disuse		0.24
A3	1816		layer				0.12
A3	1817		layer	soil horizon			0.06
A3	1818		layer				0.08
A3	1819		layer				0.08
A3	1820	1780	fill	ditch	disuse		0.2
A3	1821	1780	fill	ditch	disuse/backfill		0.12
A3	1822	1780	fill	ditch	disuse		0.26
A3	1823	1781	fill	ditch	disuse		0.1
A3	1824	1781	fill	ditch	disuse		0.16
A3	1825	1781	fill	ditch	disuse/slump?		0.48
A3	1826	1781	fill	ditch	disuse		0.26
A3	1827	1781	fill	ditch	disuse		0.16
A3	1828		layer				0.12
A3	1829		layer				0.12
A3	1830		layer				0.18
A3	1831	1782	fill	ditch	disuse		0.18
A3	1832	1782	fill	ditch	disuse		0.42
A3	1833	1833	cut	ditch	boundary		
A3	1834	1833	fill	ditch	disuse		
A3	1835		layer				0.22
A3	1836	1833	fill	ditch	disuse		
A3	1838	1837	layer				0.19
A3	1839	1839	cut	ditch		1.22	0.57
A3	1840	1839	fill	ditch	boundary		0.39
A3	1841	1839	fill	ditch	disuse		0.16
A3	1842	1777	fill	pit	disuse		0.34
A3	1843	1843	cut	pit	use	1.9	0.5
A3	1844	1843	fill	pit	disuse		0.4
A3	1845	1843	fill	pit	disuse		0.3
A3	1846	1843	fill	pit	disuse		0.22
A3	1847		layer				0.02
A3	1848		layer				0.2
A3	1849		layer				0.02
A3	1850		layer				0.08
A3	1851	1851	cut	ditch	boundary		0.24

APPENDIX B FINDS REPORTS

B.1 Metalwork

By Denis Sami

Introduction

B.1.1 A small assemblage of metalwork consisting of six artefacts dating to the Roman, medieval and modern periods was recovered during excavation in Area 3 (Table 14). Finds are in general poor preservation, incomplete and present heavy oxidation.

Material	Quantity
CuA (copper-alloy)	3
Fe (iron)	2
PB (lead)	1
Total	6

Table 14. Quantity of finds by material.

Methodology

- B.1.2 Finds were assessed according to the Oxford Archaeology East finds standard. The catalogue is organised by small find number (SF) and measurement such as length (L) width (W), thickness (Th) and weight (Wg) are reported when relevant. Features, identification and description of finds are also included in the catalogue
- B.1.3 Further information is included in the archived excel data set.
- B.1.4 The catalogue of Roman iron artefacts at the British Museum by Manning (1989) was used as main reference in analysing the iron metalwork. The eighth volume of the *Roman Imperial Coinage* (RIC VIII, 1981) was used in the identification of the two Roman coins.
- B.1.5 The medieval lead seal SF3 was compared with similar artefacts recorded in the Portable Antiquities Scheme (PAS) database.

Factual data

- B.1.6 The metalwork was randomly distributed with no consistency or particular concentrations. SF 3 and 6 were unstratified objects from top-soil, while Roman coins SF 4 and 5 were the only finds recovered from ditch **1822**, suggesting a Roman date for the ditch.
- B.1.7 SF3 is an unusual object, possibly part of a composite cast artefact most likely a medieval seal matrix. As is indicated by the character of its sides, it is clear that this object was not cut from an original seal. Parallels can be found with similar seals documented in the PAS (NMS-C04457 and NMS-4CDC94).
- B.1.8 Overall, the chronology of the assemblage is inconsistent and includes finds dating to the Roman and medieval periods as well as modern artefacts. Given their little variation in forging technique, shape and size, hand forged iron nails are notoriously

difficult finds to date. The chronology of nails is therefore based on the associated ceramics.

Statement of potential

B.1.9 Given its chronological, typological and stratigraphic inconsistency the metalwork assemblage has a very low potential and can offer limited information to the general discussion about the archaeology of the site.

Recommendation for further work

B.1.10 No further work or conservation is needed for this assemblage. Finds were fully recorded and ironwork artefacts should be considerate for discard.

Catalogue

SF	Context	Area	Feature	Material	Artefact	Description	Length (mm)	Width (mm)	Thickness (mm)	Diam. (mm)	Weight (gr)	Spot date
3	9999 9	3	topsoil	Pb	artefact	Approximately one sixth of a seal matrix. The part was cast and not cut. Device uncertain [...]OB. (PAS: NMS-C04457; 2.1.3 NMS-4CDC94)	12.2	13.7	3.8	0	2.83	MED
4	1822	3	ditch	CuA	coin	A poorly preserved barbarous radiate. Ob: bust, radiate right; REV: illegible	0	0	0.7	11.2	0.65	ROM AD 275- 285
5	1822	3	ditch	CuA	coin	Ob: Bust diadem right, [...] TIUS PFAUG. Rev: Phoenix on Globe, FEL TEMP REPARATIO, -//TRP dot. (RIC VIII 233)	0	0	0	11.2	1.95	ROM AD 348- 351
6	9999 9		topsoil	CuA	mount	A possible casket of furniture mount made of a thin strip of metal with a central hole for rivet	0	20	0.3	0		MED/M OD
7	1702	3	ditch	Fe	nail	A fragment of a nail shaft with square cross-section.	25.3		4.5	0	0	MOD
8	1746	3	ditch	Fe	nail	A long nail with tapering shaft with square cross-section and possibly circular head (Manning type 1)	100. 5	0	11.3	0		RM/MO D

Table 15. Catalogue of metal finds

B.2 Metalworking mould

By Simon Timberlake

Introduction

B.2.1 A single fragment of a probable Late Bronze Age-type metalworking mould was found within the fired clay/ pottery assemblage during the examination of this material at the post-excavation stage (N. Gilmour pers.comm). Subsequent to this the fired clay

assemblage from this site was quickly scanned for any other mould pieces, or the more organic void-rich clay-jacketed mould bandage layer, an example of which was seen coating the Late Bronze Age (Ewart Park) sword mould previously excavated by OAE from Witchford, Cambridgeshire in 2017.

Methodology

- B.2.2 The mould surface and clay fabric of the mould was identified visually using an illuminated x10 magnifying lens, then compared with photographs of other mould material, including that from Witchford, Ely. A dropper bottle containing dilute hydrochloric acid was used to confirm the presence or absence of calcite upon the exterior of the mould. The piece was then sent to Dr Norman Moles, at the University of Brighton for non-destructive spot analysis testing using a portable XRF Analyser. Semi-quantitative analyses of the mould were undertaken which included measurements for the metals copper and lead.
- B.2.3 The PXRf used was an Olympus Innov-X Delta Professional, operated in Geochem mode, with 60 second count times on beam 1 for trace elements and 30 seconds on beam 2 for lighter/major elements. The PXRf provided useful data for 20 elements. Output was initially calibrated to factory settings; the output values have since been adjusted to standards appropriate to the compositions i.e. silica-rich sediments. This adjustment affects the elements Al, Si, P, Ca, Fe, Ni and Cu.

Description of the mould fragment

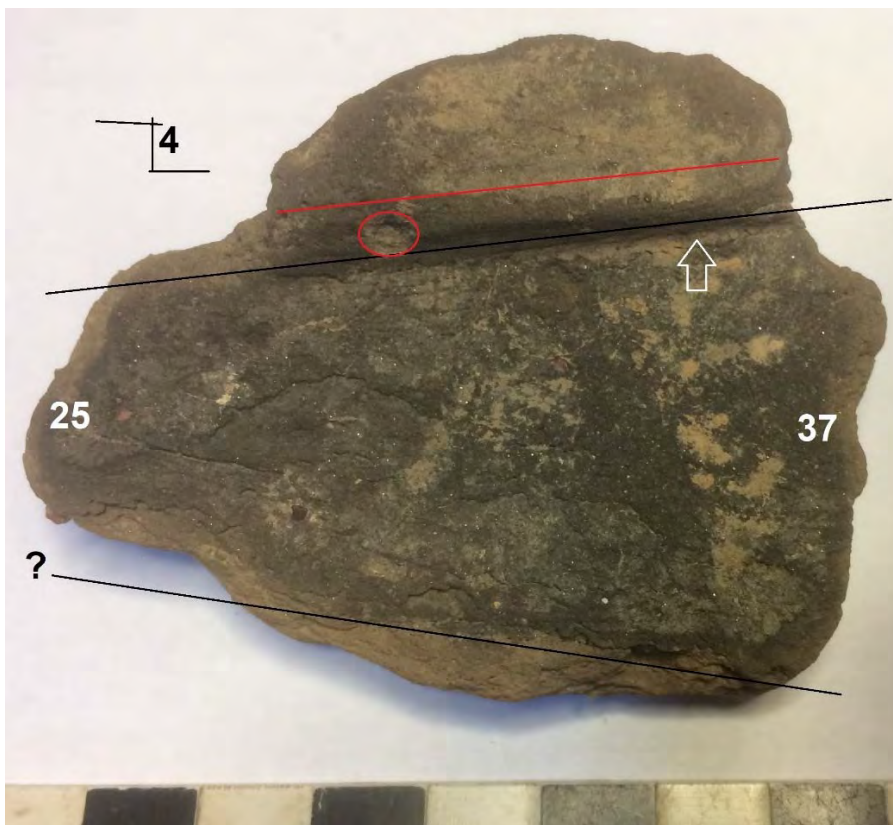
- B.2.4 The mould fragment weighed 52g; with the dimensions of the slightly concavo-convex piece being 75mm (long) x 56mm (wide) x 15mm thick (in the middle) + 5mm along the right-hand (unbroken) edge.

Detailed description of mould from context [1524]

- B.2.5 **Interior:** The right-hand upper stepped edge of this shallow bivalve clay mould has survived over a distance of about 45mm, and is at its maximum is about 16mm wide, with a very faint groove upon its surface approx. 1.5mm wide and 0.25-0.5mm deep, one which runs parallel with the stepped mould edge, and just 2-3mm away from it. A possible mould location pin hollow of around 1.5-2mm diameter can be seen right upon the edge of the stepped mould face towards the narrower end of the piece (NB this is only a very tentative interpretation of this, given that most such location pin holes (which can sometimes be identified within Ewart Park socketed axe moulds (see Rohl & Needham 1998, 136; Figure 38 (313) are normally placed well away from the intended casting edge; yet these sometimes occur as the result of an inaccuracy). Meanwhile the left-hand edge of the mould appears to have broken away almost exactly at the base of the opposite (missing) 'step', though it is now difficult to tell whether the actual line of this break effectively indicates the true width of the mould piece.
- B.2.6 Overall it would seem that the mould negative (i.e. the casting impression) decreases in width from 37mm to 30mm (to a possible 25mm) from the broad to the narrower end of the piece. Likewise, the mould depth increases from 3mm to 4mm over a distance of 45mm towards the more pointed end, as suggested by the surviving

vertical stepped edge; a fact which suggests that the metal thickness of the cast blade or shaft increases in this direction as it narrows.

- B.2.7 The flat internal mould surface is not quite flat, but instead is very slightly concave laterally, and also longitudinally, at least towards the broader, shallower end. The strong (dark grey-black) reducing colours and flakiness of this surface reveals that the mould has clearly been used, and that this was then broken-off the metal; the uneven surface of the mould fragment reflecting some very minor loss of this to the adherence of the rough casting when this was removed. Interestingly the original upper surface of the mould can still be seen right in the junction of the step with the lower surface of the mould (see Appendix B2. Fig. 1).
- B.2.8 **Exterior:** The thickness of the clay mould suggests a slightly convex rounded reinforcement to the middle (15mm thick) compared to the edges (5mm), the latter with their 16mm+ flange/ possible location pin arrangement designed to centre the mould and also prevent loss of metal to the sides. The clay mould was clearly sealed by another 5mm thickness of clay beyond the edge of this casting flange join, as suggested by the slightly reddish brown (oxidised) clay fabric covering this. The exterior of the mould has thus been carefully shaped, smoothed and dried to ensure density and strength, but at the same time allowing for gas porosity and heat penetration
- B.2.9 **Fabric:** A light brown coloured micaceous loessic silt with very minor amounts of a streaky red clay grog (1-2mm diameter), occasional organic inclusions (indicated by burnt-out voids <1mm), plus 2-3% of rounded red (oxidised and burnt) flint grit (1-2mm). Otherwise this is moderately homogenous as a fabric, fairly dense, yet lamellar and slightly flaky in texture. The mould surface(s) themselves have been smoothed, possibly with an addition of a finer-grained clay-silt paste, and are fully reduced, as is typical of the reducing effect of hot metal upon the previously-fired clay fabric. This can be seen in a number of places, notably towards the 'blade' casting edge.



B2. Figure 1: Internal surface of fragment showing possible mould edges , flange groove and questionable location pin (hole) , plus surviving edge of mould surface. Dimensions (in mm).



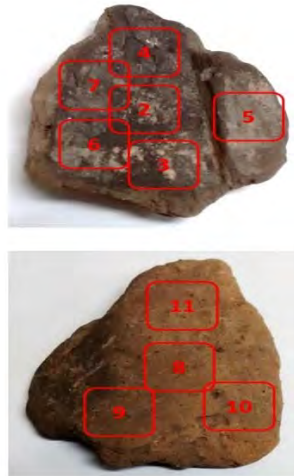
B2. Figure 2: Details of mould surface towards narrow tip. Traces of the original mould surface can also be seen

pXRF metal analysis of the mould surface

B.2.10 Geochemical analysis undertaken at the University of Brighton showed a significant but slightly variable elevation in copper upon the interior surface of the mould

compared to the exterior. Unfortunately, tin was below the detection limit within all the analyses, given that at a 60 second count time the LOD is still relatively high (60 ppm). Lead was only marginally elevated within the mould interior compared to the exterior, yet the relative concentration pattern for this element matches that for copper. The change in the light element concentrations suggested perhaps a clay slip application to the interior surface.

Ceramic mould, XSF HER 18 - HGW025/TDD036 #1524
Locations of pXRF analyses 19th March 2019



B2. Figure 3: pXRF sampling points upon interior and exterior surfaces of mould, as recorded by N. Moles

		%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Side	Reading	Al	Si	P	K	Ca	Ti	Fe	V	Cr	Mn	Ni	Cu	Zn	As	Rb	Sr	Y	Zr	Nb	Pb	Th
Interior	#2	6.01	23.59	0.44	1.71	4.14	0.42	2.26	311	76	541	27	119	91	7	81	76	18	362	22	30	
Interior	#3	5.46	22.70	0.70	1.55	6.59	0.39	1.99	232		484	27	96	80	4	76	75	16	349	21	26	
Interior	#4	5.99	25.04	0.52	1.78	3.49	0.44	1.96	324	96	269	27	96	89		77	75	17	351	20	25	11
Interior	#5	6.52	23.84	0.85	1.75	4.74	0.40	1.96	250	80	419	30	56	85	5	76	71	16	350	19	18	
Interior	#6	6.07	25.26	0.36	1.78	2.44	0.43	2.02	253	88	324	27	76	87	4	78	78	17	366	20	23	
Interior	#7	5.55	24.16	0.37	1.69	4.65	0.41	2.34	219	71	293	32	74	85	7	74	73	20	336	18	21	17
Interior	average	5.93	24.10	0.54	1.71	4.34	0.41	2.09	265	82	388	28	86	86	5	77	75	17	352	20	24	
Exterior	#8	5.37	21.23	0.52	1.39	10.98	0.39	1.90	247	57	560	27	31	78	6	77	70	17	368	19	19	10
Exterior	#9	5.77	22.73	0.63	1.46	10.81	0.39	1.89	261	62	574	28	37	85		81	74	17	369	19	22	
Exterior	#10	5.77	21.24	0.81	1.35	13.05	0.39	1.92	228	76	704	24	31	80	5	77	73	15	368	17	17	
Exterior	#11	4.54	16.57	0.62	1.06	19.78	0.35	1.76	167	79	779	28	26	82	4	76	74	19	339	23	22	
Exterior	average	5.36	20.44	0.64	1.31	13.65	0.38	1.87	226	69	654	27	31	81	5	78	73	17	361	20	20	
Interior relatively:		similar	higher	similar	higher	lower	similar	higher	similar	similar	lower	similar	higher	similar	similar	similar	similar	similar	similar	similar	similar	
		Al	Si	P	K	Ca	Ti	Fe	V	Cr	Mn	Ni	Cu	Zn	As	Rb	Sr	Y	Zr	Nb	Pb	
		high outlier																				
		low outlier																				

Table 16. Sample measurements for spot analysis point 2-7 (interior) and 8-11 (exterior) at 60 second count times on beam 1 for trace elements and 30 seconds on beam 2 for lighter/major elements. The coloured cells indicate outlier high or low values. An indication at the bottom of the table is also provided as to the general values per element upon the interior relative to the exterior of the mould. Noted the high copper values down the 'centre line' of the interior mould surface. All of the copper levels are well above the detection limit (LOD), which approximates to x3 the standard deviation for the lowest concentration (12 ppm). All analyses by N. Moles.

Discussion

- B.2.11 It is difficult to see from this single surviving piece what particular object is being casted here, and also what particular part of the casting mould we are looking at. In all probability though we are not looking at a sword.
- B.2.12 The hilts (cast handles) of Ewart Park swords have prominent flanged edges, whilst the sword blades typically have continuously curved edges, and as such the (clay) moulds for these do not have such an abrupt or thickset edge. In this case the latter appears to widen, and become thinner, a fact which suggest the casting of a thin end to a narrow and straight-sided socketed axe or chisel. Both the angle and the linearity of this mould and its wide flanged rim (which would probably have produced a metal casting seam and a prominent ridge of flashing along the edge) is slightly reminiscent of the southern ribbed type Ewart Park axes, though with this example the apparent lack of blade depth appears to be the main problem (i.e. the current blade appears far too thin). However, the confusion here may be down to the incomplete and relatively undiagnostic nature of this part of the mould piece. If this fragment was not from an axe mould, it is difficult to see what it relates too.
- B.2.13 Possible analogies to look at here include some of the very narrow socketed axes/chisels (see Rohl & Needham *ibid.*, 136 Fig.38 (320)) or ribbed narrow axes found within some of the Late Bronze Age axe hoards from NE Norfolk (see Beeston Regis: Lawson 1980).
- B.2.14 The surface chemistry of the mould surfaces is typical of clay minerals, although the light element variation between the inside and the exterior does suggest the addition of another slightly different clay layer; perhaps a painted-on slip added to the soft clay interior when first pressing the mould. The addition of such a layer might help take on the detail of the mould, reduce porosity of the mould surface, and facilitate partition of the form. This is a fairly standard practice adopted in mould-making within experimental (prehistoric) metallurgy, for which there is some archaeological evidence.
- B.2.15 The problem with these particular pXRF analyses are not the differences in copper values between interior and exterior mould surfaces, all of which appear convincing, but rather the low order of magnitude of the (copper, tin and lead) concentrations present. Instead of 106ppm Cu (0.01%) we might perhaps have been expecting 200-500ppm Cu, given the contact of the clay with molten metal. In truth though we have very little data on other analyses of similarly-dated moulds. The Witchford sword mould (see Blackburn 2018) was examined qualitatively for heavy metals, and simply showed relative enhancements of copper and lead (as wavelength peaks) rather than as elemental concentrations in parts per million. Yet in the current example the higher copper values (95-119ppm) within the middle of the mould surface (locations 2-4) compared to 56ppm Cu upon the flange edge (location 5) does support the pattern of this having been a used metal mould.

B.3 Stone

By Simon Timberlake

Introduction

B.3.1 A small assemblage consisting of just 1056g (x9 pieces) of stone was examined from this excavation, of which 79g (x1 piece) consisted of worked stone (a small loom weight) and the remaining 977g of burnt, unburnt and natural iron-rich concretion.

Methodology

B.3.2 All of the stone was identified visually using an illuminated x10 magnifying lens, and compared where necessary with an archaeological worked stone reference collection. A dropper bottle containing dilute hydrochloric acid was used to confirm the presence or absence of calcite in the rock.

Catalogue and description of worked stone

B.3.3 The single worked stone item consisted of half of a carved chalk weight.

Loomweight/ perforated chalk weight SF <1> context [1550]

B.3.4 Approximately 45% of a broken acentrically-bored carved chalk weight which is roughly disc-shaped, slightly corrugated in appearance, and more lopsided (weighted) upon one side than the other. The pattern of parallel longitudinal and sometimes criss-cross scratches upon the top and bottom surfaces is almost certainly due to intentional abrasion i.e. the smoothing of these surfaces by rubbing these against an abrasive surface, such as a piece of un-weathered sandstone.

B.3.5 The surviving weight (half) weighs 70g and is approximately 87mm x 50mm x 20-23mm (thick). The acentric hour-glass perforation bored for the hanging of this weight is approx.30mm in diameter upon the exterior and 21mm at its narrowest point. The wear marks upon the edges of the perforation suggests that it was probably hung vertically from its narrowest point.

B.3.6 One possible explanation for the unusual shape of the weight is that the object was opportunistically fashioned from a fossil cast of a chalk ammonite. This would explain the irregular shape of this weight, the increased width upon one side, and the trapezoidal x-sectional profile which strongly resembles the final whorl of a number of different chalk ammonites; the most likely contenders being *Subprionocyclus* sp. or *Scaphites* sp., both of these from the Upper Chalk. In fact, the broad tubercular corrugations of one or other of these ammonites (or of a similar but different ammonite – *Mantelliceras mantelli* from the Lower Chalk as a glacial erratic is a possibility) can just about be made out, as can the narrower and regular lateral ridges around the venter. The placing of the acentrically-located hour-glass boring of the loomweight disc may also have been influenced by the structure and symmetry of these ammonite fossils – this particular location representing the umbilical area of the ammonite which would have been naturally depressed (and thus thinner) and also probably easier to carve.



B2. Figures 1-3: Herringswell loomweight (left) oriented for comparison with fossil chalk ammonites *Subprionocyclus* sp. and *Scaphites* sp. from the Upper Chalk (Campanian)



B2. Figures 4-5: An overlay of the projected diameter of the loomweight showing the still-detectable outline of the projected shell corrugations and also ventral ridges (right) on parts of the partly-carved object.

Discussion

- B.3.7 The likeliest interpretation of this object is that it was collected then further shaped (carved and rubbed) then bored for use as a vertically-hung small loomweight (weighing around 150g when whole) alongside a range of other similar chalk or clay weights. However, the acentric boring and potentially lopsided nature of this weight puts into question as to how effective such a weight would be in balancing the stretch of the warp. The alternative explanation for this is that this was a weight, but one used as a net sinker (in which equal weighting and shape was less important) rather than as a loomweight. There are many examples of such sinkers, most of these possessing small acentric perforations, and most of them bored through stone (particularly chalk, limestone, shale or sandstone). Many of these have been recorded as casual finds through the Portable Antiquities scheme, and many can be seen upon the finds.org.uk/database/. However, there are no examples here of re-utilised chalk fossils, nor of such well carved round disc-like shapes, and in almost all cases the perforations are smaller and less well made and less smooth.
- B.3.8 Neolithic/ Early Bronze Age disc-like perforated chalk loomweights have previously been recorded from Maiden Castle (Sharples 1991, 214 Fig.171.1-4), from Late Bronze Age horizons at All Cannings Cross, Wiltshire (Cunnington 1923), and from numerous recent excavations undertaken during the course of commercial archaeological excavations and evaluations (Wessex Archaeology). Whilst centric or acentrically perforated circular disc-like loomweights (usually in fired clay) are found at Late Bronze

Age sites, the much better-made and more closely matching weights are those which are pyramidal or cylindrical/ ellipsoidal in form with single horizontal perforation acentrally located towards the top hanging ends. The classic forms of these are those recovered from the Late Bronze Age Runnymede site (Needham & Longley 1980), whilst similar top perforated sub-pyramidal weights were recently examined by the author from the Must Farm pile dwelling settlement, Whittlesey, North Cambridgeshire.

- B.3.9 The probability is, therefore, that here we are looking at a more ad hoc. fabrication of small loomweights, some of which (such in this case) seem likely to have been fashioned from a core made from the cast of a chalk ammonite; one which may have been opportunistically used as the shape of a chalk erratic seemed suitable for what was required. If not a loomweight, then this is almost certainly a net sinker.

Catalogue of burnt and natural stone

Burnt stone

- B.3.10 This consists of a single piece of heat-cracked fissile micaceous sandstone (70x50x20mm; weight 138g). Despite the flat top to this, there is no evidence that it has been worked. Almost certainly this is part of a larger (unexcavated) assemblage of burnt stone associated with this settlement; one which was contemporaneously collected from the glacial gravels and used for the purposes of cooking (i.e. as a pot boiler).

Natural stone

- B.3.11 Amongst the natural (non-anthropogenic) stone collected is a periglacially altered (sand-polished) lump of ferruginous sandstone or carstone (100x75x50mm; weight 776g (SF <2> context [1560])), and x8 small and soft lumps of ochreous goethitic ironstone (weight 54g). The latter is purely natural in origin, and almost certainly part of a thick iron pan concretion.

Discussion

- B.3.12 The burnt stone, which is unabraded and shows little sign of re-deposition, is a good indicator of prehistoric domestic activity, and a good indicator therefore of local or in situ. prehistoric settlement. However, it is difficult to draw any clear conclusions as to the prevalence of cooking pits/ middening based just on this one piece of burnt stone. Loomweights, though, are a good indication also of settlement dwelling sites of the Late Bronze Age – Iron Age.

B.4 Flint

By Lawrence Billington

Introduction

- B.4.1 A total of 120 worked flints and over 7kg of unworked burnt flints were recovered during the trenching and area excavations. A basic quantification of the assemblage

by broad context type is provided as Table 17 and a full catalogue of the material by context is included as Table 18. The majority of both the worked and unworked burnt flint was recovered from several pits, with smaller amounts deriving from fills of ditches/gullies and from various natural deposits and features.

	Pits	Ditch/gully	Other	Totals
Chip	0	1	1	2
Irregular waste	1	1	2	4
Primary flake	3	0	1	4
Secondary flake	38	12	14	64
Tertiary flake	13	7	3	23
Secondary blade-like flake	4	3	0	7
Tertiary blade-like flake	1	0	0	1
Secondary blade	1	2	0	3
Tertiary blade	1	3	1	5
Scraper	1	1	1	3
Core	4	0	0	4
Total worked	67	30	23	120
unworked burnt flint no.	130	34	59	223
unworked burnt flint weight g.	5414.6	299.9	1615.3	7329.8

Table 17. Basic quantification of the flint assemblage by feature/context type

Condition and raw materials

- B.4.2 The condition of the worked flint is varied but many pieces show at least some sign of post-depositional damage/edge rounding and some piece exhibit severe edge damage. The major exception to this is some of the material from the larger assemblages of worked flint from pits **1528** and **1549** which is in very fresh condition (see below).
- B.4.3 A small proportion of the assemblage is recorticated (patinated), varying from a light blue sheen to heavy white colour. The heavier recortication appears to have at least some chronological significance and many of the pieces displaying technological/morphological traits suggestive of a Mesolithic/earlier Neolithic date are recorticated.
- B.4.4 The raw materials are entirely typical of prehistoric flint assemblages from the Breckland and seem to derive largely from thermally shattered nodules and cobbles, which abound in periglacial reworked surface deposits across the area (see Healy 1998).

Pits

- B.4.5 A total of 67 worked flints were recovered from eight individual features; six of these features also produced unworked burnt flint whilst three further pits produced only unworked burnt flint. Most of these features produced relatively small quantities of worked and/or burnt flint, but larger assemblages of worked flint (accompanied by substantial quantities of burnt flint) were recovered from two pits in Area 1, **1528** and **1549**.
- B.4.6 Pit **1528** produced 38 worked flints and 904g (43 fragments) of unworked burnt flint. The flintwork from this feature can be separated into two distinct groups. The first

group, forming the majority of the flints (31 pieces), is made up exclusively of fresh unretouched flake-based material, deriving from a casual and expedient approach to core reduction. Most of these pieces are partly cortical flakes, often squat and thick, with acute flaking angles which have been removed via direct hard hammer percussion. Several of these flakes have probable use-wear along their edges suggestive of use as simple cutting tools. This material is characteristic of later prehistoric, i.e. post-Early Bronze Age flintworking and seems likely to be broadly contemporary with the feature from which it derives. The second group of flint from this pit comprise seven recorticated pieces which are clearly the product of more systematic and carefully executed technologies. They include a few blade-based pieces and a ventrally retouched end scraper made on a large rejuvenation flake. Much of this material is probably of Neolithic date and, as such, is likely to be residual.

- B.4.7 A smaller assemblage of 22 worked flint were recovered from pit **1549**; as with pit 1528 this included two heavily recorticated pieces – here both blade-based pieces likely to be of Mesolithic and/or earlier Neolithic date – alongside fresh crudely worked flake-based material of probable later prehistoric date. This assemblage includes four minimally worked cores, thermally fractured cobbles from which short sequences of irregular flakes have been removed.
- B.4.8 The remainder of the pits which produced worked flint contained between one and three pieces; all of this material may well be residual. Little of this flintwork displays the expedient approach to core reduction seen in the pit **1528** and **1549** assemblages and is likely to be of earlier date – with three blade-based/blade-like removals probably reflecting Mesolithic/Neolithic activity whilst other flakes may be later Neolithic/Early Bronze Age. One of the features also produced a substantial unworked burnt flint assemblage (pit **1521**; almost 2.5kg of unworked burnt flint).

Ditches and gullies

- B.4.9 Thirty worked flints and a relatively small quantity (300g) of unworked burnt flint were recovered from fourteen individual ditch/gully fills, largely from Areas 3 and 4. The flint was thinly distributed occurring in low densities and where slightly larger assemblages (up to a maximum of nine pieces) were recovered from the same deposit they were disparate in terms of condition and technology. All of this material is likely to be residual. This flintwork is dominated by unretouched removals with a relatively large number of blade-based and blade-like pieces, and is clearly chronologically mixed, probably spanning the Mesolithic until at least the Early Bronze Age and including a few pieces more suggestive of later prehistoric date. The only retouched piece is a small scraper from ditch **1609**.

Other contexts

- B.4.10 A total of 23 worked flints and 1615g of unworked burnt flint were derived from other contexts – largely from natural features/layers encountered during the excavation, and including a few pieces from the subsoil and from furrows. The worked flint is very similar in character to the material from the ditches and is dominated by unretouched removals exhibiting a variety of technological traits. The only retouched piece is an end scraper made on the proximal end of a secondary flake from the subsoil in Area 2.

Discussion

B.4.11 The most significant aspect of the flint is material from pits **1528** and **1549**, both of which are dominated by material typical of later prehistoric (post Early Bronze Age) flintworking, which seem likely to be broadly contemporary with the features from which they derive, and which attest to the working and use of flint at the site, presumably in the context of domestic activity of some kind during the Late Bronze Age.

B.4.12 Aside from these two assemblages, worked flint was routinely recovered as a residual element from the fills of later cut features and from natural features/deposits exposed across the site. This material is typical of the extensive surface lithic scatters known from the Breckland which, whilst multi-period, are invariably dominated by Neolithic and Early Bronze Age material (Healy 1991, 1998; Bishop 2012, ch 6). The presence of extensive lithic scatters at this location, adjacent to the eponymous Herringswell springs, is not surprising in the regional context, nor is it unusual, unfortunately, for these surface scatters to have no correlate in terms of cut features or more robust traces of activity (*ibid.*).

Trench/Area	Context	Cut	Context type	Chip	Irregular waste	Primary flake	Secondary flake	Tertiary flake	Secondary blade-like flake	Tertiary blade-like	Secondary blade	Tertiary blade	Scraper	Core	Total worked	unworked burnt flint no.	unworked burnt flint weight (g)
1	102	101	gully									1			1		
2	206	205	ditch									1			1		
3	303	301	natural deposit					1							1		
5	504	503	ditch				1								1		
10	1004	1003	pit							1					1	1	42.8
12	1202	1201	pit													5	95
A1	1509	1508	unknown									1			1		
A1	1515	1514	natural		1		7								8	6	143
A1	1516	1514	natural				2	2							4	22	468
A1	1522	1521	pit													4	200
A1	1524	1521	pit					1							1	35	223.7
A1	1529	1528	pit		1	3	20	11	2				1		38	43	904
A1	1527	1530	pit													9	573
A1	1550	1549	pit				16				1	1		4	22	11	109.4
A2	1534	1533	pit						1						1		
A2	Subsoil		subsoil				1						1		2		
A3	1816		layer													1	53.2

Trench/Area	Context	Cut	Context type	Chip	Irregular waste	Primary flake	Secondary flake	Tertiary flake	Secondary blade-like flake	Tertiary blade-like	Secondary blade	Tertiary blade	Scraper	Core	Total worked	unworked burnt flint no.	unworked burnt flint weight (g)
A3	1819		layer				1								1	1	8.3
A3	1835		layer		1		3								4	9	411
A3	1846		pit													17	448
A3	1698	1697	furrow													1	71
A3	1700	1699	furrow	1											1	1	6.3
A3	1785	1784	ditch					1							1	2	7.8
A3	1787	1784	ditch				3	1							4	4	77.2
A3	1791	1790	ditch						1						1		
A3	1795	1794	ditch		1		2								3	1	10.6
A4	1570	1569	ditch									1			1		
A4	1572	1571	pit				2	1							3	1	88
A4	1576	1575	ditch	1											1		
A4	1589	1587	pit						1						1	20	165
A4	1611	1609	ditch				1	3	1				1		6	5	18.2
A4	1617	1616	natural													1	6.4
A4	1628	1624	ditch														
A4	1665	1648	ditch													7	44
A4	1666	1649	ditch				5	2			2				9	15	142
A4	1671	1670	ditch						1						1		
A4	1667	1672	pit														
A4	1673	1672	pit													1	15.2
A4	Subsoil		subsoil			1									1		

Table 18 Quantification of the flint assemblage

B.5 Prehistoric Pottery

By Nick Gilmour

Introduction

B.5.1 The evaluation and excavations yielded 216 sherds of prehistoric pottery (2681g) with a high mean sherd weight (MSW) of 12.5g. The pottery was recovered from 14 contexts relating to pits, a posthole, a layer and a tree throw (Table 19). The majority of the pottery was recovered from excavation area A1. A single sherd (8g) of Late Bronze Age pottery was also recovered from subsoil, which is not considered further in this report.

B.5.2 The pottery dates from the Late Bronze Age. It includes a number of feature sherds characteristic of the Late Bronze Age, together with fabrics typically associated with this ceramic tradition in the region.

B.5.3 The pottery is in moderate condition, with some larger fresher sherds bringing up the mean sherd weight. Several sherds have been burnt post-breakage of the pots from which they came.

Trench	Feature Type	Cut	Context	No sherds	Weight (g)
10	Pit	1003	1004	7	69
10	Pit	1005	1006	3	22
A1	Pit	1517	1518	5	49
A1	Pit	1521	1522	8	68
A1			1524	84	1243
A1			1525	1	3
A1	Pit	1528	1529	23	154
A1	Pit	1530	1527	35	520
A1	Pit		1531	14	233
A1	Pit	1549	1550	24	256
A1	Posthole	1553	1554	1	5
A1	Tree throw	1514	1515	3	36
A1			1516	5	13
A3	Layer	-	1835	2	8
A4	Pit	1587	1589	1	2
Total				216	2681

Table 19. Quantification of prehistoric pottery

Methodology

B.5.4 All the pottery has been fully recorded following the recommendations laid out by the Prehistoric Ceramic Research Group (2011). After a full inspection of the assemblage, fabric groups were devised on the basis of dominant inclusion types, their density and modal size. Sherds from all contexts were counted, weighed (to the nearest whole gram) and assigned to a fabric group. Sherd type was recorded, along with evidence for surface treatment, decoration, and the presence of soot and/or residue. Rim and base forms were described using a codified system recorded in the catalogue, and were assigned vessel numbers. Where possible, rim and base diameters were measured, and surviving percentages noted. In cases where a sherd or groups of refitting sherds retained portions of the rim, shoulder and/or other diagnostic features, the vessel was categorised by ceramic tradition (Grooved Ware, Collared Urn etc.)

B.5.5 All pottery was subject to sherd size analysis. Sherds less than 4cm in diameter were classified as 'small' (136 sherds); sherds measuring 4-8cm were classified as 'medium' (66 sherds), and sherds over 8cm in diameter will be classified as 'large' (12 sherds). The quantified data is presented on an Excel data sheet held with the site archive.

Prehistoric pottery fabrics

B.5.6 A total of six different fabrics is present in this pottery assemblage. All contain crushed burnt flint, although in different frequencies and sizes. These fabrics are all listed below:

F1: Occasional medium flint, rare coarse flint (>5mm), in a sandy clay matrix.

F2: Moderate fine to medium flint, sandy clay matrix.

F3: Rare coarse flint (≈5mm), micaceous sandy clay matrix.

F4: Moderate fine to medium flint, rare coarse flint, sandy clay matrix.

F5: Frequent fine flint, sandy clay matrix.

F6: Rare fine flint, micaceous sandy clay matrix.

B.5.7 Finewares within the assemblage have been designated by fabric, with three of these fabrics have been classed as fineware fabrics: F3, F5 and F6. The flint inclusions in fabrics F5 and F6 are fine and well sorted. Although the flint inclusions in fabric F3 are coarse, they are well sorted and do not protrude from the surfaces, which are all well finished. Burnished sherds only occur in these three fineware fabrics, although not every sherd in fabrics F3, F5 and F6 is burnished.

Fabric type	Sum of No sherds	Weight (g)	% fabric by weight
F1	61	1164	43.55
F2	113	1205	44.78
F3	10	96	3.59
F4	7	60	2.24
F5	6	36	1.35
F6	19	120	4.49
Total	214	2681	100.00

Table 20. Quantification of prehistoric pottery by fabric.

Late Bronze Age pottery

B.5.8 All the pottery discussed in this report is of Late Bronze Age origin; a total of 216 sherds (2681g). This pottery is described below, by area and feature.

Trench 10

B.5.9 Only two features within evaluation trench 10 contained prehistoric pottery. However, trench 10 was situated within the later excavation area A1. Almost all the prehistoric pottery recovered during this project came from area A1.

Pits 1003 and 1005

B.5.10 A total of seven sherds (69g) of pottery was recovered from pit 1003. This pottery is in fabrics F1 and F2. A single large sherd (34g) is from a vessel with a form diagnostic of the Late Bronze Age – a slack-shouldered vessel with an everted, rounded rim. The remaining sherds were dated by their fabric.

B.5.11 Context 1006, from within pit 1005 produced two sherds (22g) of pottery in fabric F1. One of these sherds (10g) was a base sherd. This sherd was from a vessel with a simple flat base, with a diameter of 12cm.

Area A1

B.5.12 The majority of the prehistoric pottery recovered during this project was found within area A1. This comprised 203 sherds (2,713g), recovered from eight pits, a posthole and a tree throw.

Tree Throw 1514

B.5.13 In total eight sherds (49g) of pottery were recovered from deposit 1516, within tree throw **1514**. By weight, most of this pottery (30g) was in fineware fabric F6, with fabrics F1 and F2 also present. One sherd (15g) is highly diagnostic of the Late Bronze Age and comes from the rim of a bowl. This bowl had a rim diameter of 11cm and burnished externally.

Pit 1517

B.5.14 Just five sherds (49g) of pottery were recovered from pit **1517**. One of these (27g) was from the slightly stepped base of a vessel. All were in fabric F2, which is typical of the Late Bronze Age in this region.

B.5.15 Pit **1521** produced four sherds (22g) of pottery. These were all plain body sherds, which were dated by their fabric (F2) to the Late Bronze Age.

Pit 1521

B.5.16 The largest assemblage of prehistoric pottery from a single feature on this site was recovered from pit **1521**. In total 93 sherds (1314g) of pottery were found from three deposits within this pit. This is almost half of the entire prehistoric pottery assemblage from the site (by weight). Table 21 below summaries this material.

Context	Fabric	Sherd type	Location of burnish	No of sherds	Weight (g)
1522	F2	Body	None	7	61
1522	F2	Rim	None	1	7
1524	F1	Base	None	1	37
1524	F1	Body	None	26	525
1524	F1	Rim	None	3	130
1524	F2	Base	None	1	10
1524	F2	Body	None	35	377
1524	F2	Rim	None	2	28
1524	F3	Body	Exterior	2	22
1524	F3	Body	None	4	35
1524	F3	Rim	Exterior	1	13
1524	F4	Base	None	1	22
1524	F4	Body	None	6	38
1524	F5	Body	None	2	6
1552	F6	Body	Exterior	1	3
Total				93	1314

Table 21: Summary of pottery from pit 1521

B.5.17 Some of the pottery summarised in Table 21 above is particularly diagnostic. In particular, a single sherd (86g) in fabric F1. This is from a shouldered vessel, with an everted and rounded rim. This form of vessel is very typical of the Late Bronze Age in

this region. Some sherds in fineware fabrics F3, F5 and F6 are also present in this assemblage, around half of which have been burnished.

Pit 1528

B.5.18 An assemblage of 23 sherds (154g) was recovered from context 1529, within pit **1528**. This pottery was in fabrics F1, F2 and F6. A single sherd (4g) is from the rim of a vessel, it is of fabric F1. While this sherd is too small to measure the original rim diameter, its form is typical of the Late Bronze Age, as it is flat and lipped externally. Three sherds (13g) in fineware fabric F6 are externally burnished.

Pit 1530

B.5.19 A large group of prehistoric pottery was recovered from pit **1530**. In total 49 sherds (753g) of pottery was recovered from this pit. Table 22 below summarises this material.

Context	Fabric	Sherd type	Location of burnish	No sherds	Weight (g)
1527	F1	Base	None	1	37
	F1	Body	None	10	150
	F1	Rim	None	1	22
	F2	Body	None	16	266
	F2	Rim	None	1	6
	F3	Base	exterior	1	4
	F5	Body	None	2	12
	F5	Rim	exterior	1	5
	F6	Body	interior and exterior	2	18
1531	F1	Body	None	1	15
	F1	Rim	None	3	90
	F2	Body	None	8	109
	F2	Rim	None	1	6
	F5	Rim	None	1	13
Total				49	753

Table 22: Summary of pottery from pit 1530

B.5.20 This pottery derives from a minimum of six different vessels, as this is the number of different rim forms present. The assemblage includes sherds in both fineware and courseware fabrics, while some of the fineware sherds have burnished surfaces. This assemblage is overall characteristic of Late Bronze Age ceramics in this region.

Pit 1549

B.5.21 An assemblage of 24 sherds (256g) of Late Bronze Age pottery was recovered from pit **1549**. This pottery is in fabrics F1, F2, F3 and F6. Two rim sherds are present, both in fabric F3 and both from externally burnished bowls. One of these rims is flat and lipped internally, while the other is flat and lipped externally. Two other notable sherds are in fabric F6 and are from burnished vessels similar to the two rim sherds in fabric F3.

Pits 1553 and 1587

B.5.22 Just a single body sherd (5g) in fabric F2 was recovered from pit **1553**. This has been dated by the fabric from which it is made.

B.5.23 Pit **1587** also produced a single body sherd (2g). This sherd is in fabric F6 and is burnished on the exterior surface.

Area A3

B.5.24 Two sherds (8g) were recovered from layer 1835 within excavation area A3. Both of these body sherds are in fabric F2. They are both abraded and have been dated by their fabric.

Discussion

B.5.25 All of the prehistoric pottery assemblage dates to the Late Bronze Age (c.1000-800 BC). The fabrics present in the assemblage are typical of ceramics of this date from East Anglia and the forms of the vessels are also typical of this period.

B.5.26 Where possible to identify the form of vessels, they are shouldered jars and bowls, some with most being slack-shouldered. The assemblage is too small to produce a meaningful comparison of the number of jars and bowls present. However, the lack of sherds from cups is a feature of Late Bronze Age assemblages, which can differentiate them from Earlier Iron Age pottery groups.

B.5.27 There is a complete absence of decoration on any of the vessels. This is again typical of earlier Post-Deverel-Rimbury ceramics, of the Late Bronze Age.

B.5.28 Just under 10% of the assemblage (by weight) is in fineware fabrics. This is perhaps a little high for a typical Late Bronze Age assemblage. However, 5.1% (by weight) of the entire pottery assemblage is burnished and this falls well within the normal range.

Deposition

B.5.29 The presence of weathered sherds and some sherds which have been burnt after the vessel from which they came was broken, suggests that this pottery was not immediately deposited into the features within which it was found. However, the condition of individual sherds is varied and there are several large fresh sherds present. In addition, two features contain significant quantities of pottery. This suggests that most of the pottery is within features contemporary with the production and use of this material. Therefore, it seems likely that the pottery was not all immediately deposited within the features where it was recovered, but that this process did occur relatively quickly.

B.6 Roman Pottery

By Alice Lyons

Introduction

B.6.1 A total of 107 sherds, weighing 1177g (1.31 EVE), of Early Roman pottery was recovered during an archaeological evaluation at Herringswell in west Suffolk. A minimum of 62 vessels were found, although none were deliberately placed, and all are fragmentary. The pottery has survived in a severely abraded condition with an average sherd weight of only 11g. The poor condition of the pottery and its small sherd

size suggests the material has been significantly disturbed post-deposition (possibly by ploughing) and is largely residual in character.

B.6.2 Pottery was recovered in four (Trenches 1, 3, 4 & 5) of the seventeen trenches that were excavated. Most of the pottery was found within ditches, but smaller amounts were also found in pits and other features (Table 23).

Trench	Feature	Sherd Count	Weight (g)	EVE	Weight (%)
1	gully	2	1	0.00	0.08
3		53	805	0.78	68.39
	ditch	34	369	0.42	
	furrow	7	192	0.13	
	pit	5	63	0.23	
	subsoil	1	11	0.00	
	layer	6	170	0.00	
4		44	354	0.53	30.08
	ditch	27	205	0.35	
	natural	1	6	0.00	
	pit	11	95	0.18	
	subsoil	5	48	0.00	
5	ditch	8	17	0.00	1.45
Total		107	1177	1.31	100.00

Table 23: The Roman pottery quantified by Trench and feature type (**BOLD** = trench totals)

Methodology

B.6.3 The pottery was evaluated following the national guidelines (Barclay *et al* 2016). The total assemblage was studied, and a catalogue was prepared (Appendix 1). The sherds were examined using a hand lens (x10 magnification) and were divided into fabric groups defined based on inclusion types present. Vessel forms (jar, bowl) were also recorded. The sherds were counted and weighed to the nearest whole gram and recorded by context. Decoration, residues and abrasion were also noted. The assemblage was assessed for illustration, however, due to its small sherd size and general poor condition none was selected.

The Fabrics and Forms

B.6.4 Five broad fabric groups were identified (Table 24).

Fabric (Abbreviation)	Vessel Form	Sherd Count	Weight (g)	EVE	Weight (%)
Sandy grey ware (SGW)	Beaker, cup, dish, flagon, jar, bowl, storage jar	94	1089	1.23	92.52
Oxidised ware (SOW; OW; SREDW)	Dish, flagon, jar/bowl, storage jar	7	75	0.08	6.38
Grey ware with grog temper (GW(GROG))	Jar/bowl	1	10	0.00	0.85
Shelly ware (STW)	Jar	3	2	0.00	0.17

Colchester colour coat (COL CC)	Beaker	2	1	0.00	0.08
Total		107	1177	1.31	100.00

Table 24: The Roman pottery, listed in descending order of weight (%)

Coarse wares

B.6.5 The majority of the pottery found comprises local, but unsourced, wheel made Sandy grey ware vessels one of which was tempered with grog (previously fired pottery). The earliest diagnostic material comprises a small SGW cup (Thompson 1982, E1-3) and SGW jar with distinctive ripples in its shoulder (*ibid*, B2-1). Other common forms include SGW cordoned and globular jars, also straight-sided shallow dishes and platters. Very small amounts of SOW and STW coarse wares were also found in a limited range of forms including flagon, jar/bowl and storage jar fragments.

Fine ware

B.6.6 Fine wares were very sparsely represented within the group as only two scraps of a Colchester colour coated beaker were found (Tomber and Dore 1998, 132). Notably no samian (Tyers 1996 105-116) was recovered.

Specialist wares

B.6.7 No amphora (Tyers 1996, 85-105), mortaria (*ibid* 117-135) or other specialist vessel was found within the group.

Discussion

B.6.8 The pottery assemblage forms a small cohesive group of Early Roman utilitarian pottery. The majority of which is made in local fabrics but included forms influenced by Gaulish (Belgic) vessel design, which perhaps hint at connections with the wider Roman Empire. No imported pottery was, however, identified. The absence of samian confirms a pre-Flavian (AD79) date for the group, as these distinctive red glossy tableware imports did not tend to reach rural sites before this time.

B.6.9 Evidence for Roman activity in the immediate area is limited, but the SHER does hold reports for a high-status mirror burial (MSF17737), also a scatter of Roman pottery (MSF6485). It may be worth considering that Herringswell is not far from Snailswell (c. 8km to the west) which is also the location of a well-known high-status Roman burial (Lethbridge 1953). Indeed, the two sites appear to have been linked by the route of the ancient Icknield Way (Plouviez 1999, p. 43). In the mid-1st century AD, when this pottery assemblage was deposited, it was a time before Roman infrastructures were in place and small communities like Snailswell and Herringswell were almost certainly linked by this ancient route.

Catalogue

KEY: B = base, C=century, D = decorated body sherd, Dsc = description, E=early, ERB = Early Roman, L=late, M=mid, R = rim, U=undecorated body sherd

*For full fabric names see Pot_Table_2.

Trench	Context	Cut	Feature Type	Fabric Family	Dsc	Form	Quantity	Weight	Spot date
A1	102	101	gully	SGW	U	JAR/BOWL	2	1	MC1-C2
A3	1698	1697	ditch	SGW	U	JAR	3	34	MC1-MC2
A3	1698	1697	ditch	SOW	UB	DISH	1	19	MC1-E/MC2
A3	1698	1697	ditch	OW	U	FLAG	1	3	MC1-C3
A3	1707	1705	ditch	SGW	D	JAR	1	3	LC1-C2
A3	1707	1705	ditch	SGW	D	JAR	1	3	LC1-MC2
A3	1710	1708	ditch	SGW	R	DISH	1	23	C2-C4
A3	1724	1723	ditch	SGW	U	JAR	1	10	LC1-C2
A3	1744	1743	pit	SGW	U	JAR	1	2	LC1-C2
A3	1746	1745	furrow	SGW	D	JAR	2	91	LC1-C2
A3	1746	1745	furrow	SGW	U	JAR	1	35	LC1-C2
A3	1746	1745	furrow	SGW	U	JAR	2	27	LC1-C2
A3	1746	1745	furrow	SGW	R	DISH	2	39	C2-C4
A3	1752	1751	ditch	SGW	R	DISH	1	47	MC2+
A3	1760	1753	pit	SGW	B	DISH/PLATTER	1	25	MC1-C2
A3	1785	1784	ditch	SOW	R	JAR	1	17	C2-C3
A3	1785	1784	ditch	SGW	U	JAR	1	3	MC1-C2
A3	1787	1784	ditch	SGW	U	JAR	4	46	LC1-C2
A3	1787	1784	ditch	SGW	RB	DISH	2	28	C2
A3	1787	1784	ditch	COLCC	U	BEAK	2	1	C2-C3
A3	1787	1784	ditch	STW	U	JAR/BEAK	2	1	C1-C2
A3	1791	1790	ditch	SGW	U	JAR	2	35	LC1-C2
A3	1791	1790	ditch	SGW	U	JAR	1	9	LC1-C2
A3	1791	1790	ditch	SGW	UB	JAR	3	14	MC1-E/MC2
A3	1791	1790	ditch	SGW	U	JAR/BOWL	1	1	C1
A3	1795	1794	ditch	SGW	R	SJAR	1	60	MC1-E/MC2
A3	1797		layer	SGW	U	JAR	1	5	LC1-C4
A3	1801	1774	ditch	STW	U	JAR	1	1	MC1-C2
A3	1801	1774	ditch	SGW	U	JAR	1	2	MC1-C2
A3	1806	1775	ditch	SGW	U	JAR	1	5	MC1-C2
A3	1812	1779	ditch	SGW	U	JAR/BOWL	1	4	M/LC1
A3	1819		layer	SGW	U	JAR	1	49	MC1-C2
A3	1819		layer	SGW	UB	JAR/BOWL	1	14	MC1-C2
A3	1835		layer	SGW	U	JAR	3	102	MC1-MC2
A3	1846	1843	pit	SGW	R	JAR	1	28	MC1-E/MC2
A3	1846	1843	pit	SGW	R	JAR	1	6	MC1-C2
A3	1846	1843	pit	SGW	U	JAR	1	2	MC1-C2

Trench	Context	Cut	Feature Type	Fabric Family	Dsc	Form	Quantity	Weight	Spot date
A3			subsoil	SGW	D	JAR	1	11	MC1-C2
A4	404	403	pit	SGW	RUD	JAR	2	64	MC1-C2
A4	1576	1575	ditch	SOW	U	FLAG/BEAK	1	1	MC1-C3
A4	1588	1587	pit	SGW	UD	JAR	4	26	M/LC1
A4	1588	1587	pit	SGW	R	CUP	1	3	E/MC1
A4	1592	1591	pit	SGW	U	JAR/BEAK	3	1	MC1-E/MC2
A4	1592	1591	pit	SGW	U	JAR/BOWL	1	1	MC1-E/MC2
A4	1628	1624	ditch	SGW	RUD	JAR	6	49	MC1-C2
A4	1628	1624	ditch	SOW	U	JAR/BOWL	1	11	MC1-C2
A4	1628	1624	ditch	SGW	R	DISH	1	7	LC1-MC2
A4	1632	1630	ditch	SGW	U	JAR	2	17	LC1-C2
A4	1638	1636	natural	SGW	H	FLAG	1	6	MC1-C3
A4	1665	1648	ditch	SGW	U	JAR	1	4	MC1-E/MC2
A4	1666	1649	ditch	SGW	U	JAR/BEAK	1	4	LC1-C2
A4	1666	1649	ditch	SGW	RUD	JAR	8	48	MC1-MC2
A4	1666	1649	ditch	SGW	RUD	JAR	3	18	MC1-E/MC2
A4	1668	1649	ditch	SGW	U	JAR	1	18	MC1-C2
A4	1671	1670	ditch	SGW	R	JAR/BOWL	1	7	MC1-C2
A4	1683	1682	ditch	SOW	D	SJAR	1	21	C1
A4			subsoil	SGW	UB	JAR	2	21	MC1-C2
A4			subsoil	GW(GROG)	U	JAR/BOWL	1	10	C1
A4			subsoil	SGW	U	JAR/BOWL	1	14	MC1
A4			subsoil	SREDW	U	JAR/BOWL	1	3	MC1-C2
A5	502	501	ditch	SGW	U	BEAK	7	8	LC1-MC2
A5	504	503	ditch	SGW	U	JAR	1	9	LC1-C2

B.7 Post-Roman Pottery

By Carole Fletcher

Introduction

B.7.1 The archaeological works produced 10 sherds of medieval and post-medieval pottery, from subsoil in Area 3, and ditches **1701** and **1718**.

Methodology

B.7.2 The Prehistoric Ceramics Research Group (PCRG), Study Group for Roman Pottery (SGRP), The Medieval Pottery Research Group (MPRG), 2016 *A Standard for Pottery*

Studies in Archaeology and the MPRG *A guide to the classification of medieval ceramic forms* (MPRG 1998) act as standards. Recording was carried out using OA East's in-house system, based on that previously used at the Museum of London. Fabric classification has been carried out for all sherds, using where possible, for all fabric types, Suffolk fabric codes (unpublished), although fabric identification is tentative. Due to the small size of the assemblage, simplified recording has been undertaken, with fabric, basic description, weight and count recorded in the text.

Sampling Bias

- B.7.3 The excavation was carried out by hand, and selection made through standard sampling strategies, on a feature by feature basis. There are not expected to be any inherent biases.

Assemblage

- B.7.4 Subsoil in Area 3 produced an abraded rim sherd (19g), everted near square, from a Medieval coarseware jar (late 12th-14th century), a small, moderately abraded body sherd (2g) of Late Medieval and Transitional Ware (15th to 16th century), a moderately abraded body sherd (7g) from a Glazed red earthenware vessel (16th-18th century).
- B.7.5 Ditch **1701** produced a sherd (22g) from an unglazed handle of late medieval or early post-medieval date, with a well-defined central groove.
- B.7.6 Ditch **1718** produced the largest group of sherds (six sherds, 34g) from three vessels an abraded rim sherd (10g) from a Hedingham Ware jug (mid 12th-mid 13th century), four sherds (18g) from an East Anglian Redware jug with a line of slip decoration (13th-14th century) and an abraded body sherd of Medieval coarseware (late 12th-14th century).

Discussion

- B.7.7 The fragmentary nature of the assemblage means it is of little significance, beyond indicating low levels of rubbish deposition or manuring in the post-Roman period. This statement acts as a full record.

B.8 Ceramic Building Material

By Ted Levermore

Introduction

- B.8.1 Archaeological work recovered 3 fragments, 124g, of ceramic building material (CBM) from Areas 3 and 4. This assemblage comprised a possible Roman tile and undiagnostic fragments attributed broadly to the medieval to post-medieval periods. The assemblage was abraded and uninformative. This report is a quantified assessment of the material.

Methodology

B.8.2 The assemblage was quantified by context, fabric and form and counted and weighed to the nearest whole gram. Width, length and thickness were recorded where possible. Woodforde (1976) and McComish (2015) formed the basis of reference material for identification and dating. The quantified data and fabric descriptions are presented on an Excel spreadsheet held with the site archive.

Results of Analysis

Fabrics

B.8.3 Three fabrics were recorded from this small assemblage. The fabrics recorded were all typical CBM recipes, with preferences towards large and unsorted inclusions in the earlier forms and refined fabrics for the later post-medieval and early modern material. Full fabric descriptions can be found with the site archive.

Assemblage

Roman

B.8.4 Ditch **1711**, Area 3, produced a slightly abraded fragment of probable Roman tile (18mm thick; 100g). It was made in a dull orange-brown silty fabric containing occasional fine quartz flecks and rare coarse flint and calcareous inclusions. The majority of the form was lost but the faces were smoothed and exacted. Fabric rather than form was used to date this piece.

Medieval to Post-Medieval

B.8.5 Two severely abraded fragments of CBM were collected in Area 4 from Ditches **1620** and **1633** (16g and 8g, respectively). They were undiagnostic beyond their fabric and provided no viable archaeological information. It is likely they occupy this later date range.

Discussion

B.8.6 The material recovered was abraded and fragmentary and therefore offer little information to draw any conclusions from. The later material is likely to have been brought to the site – or moved around the site – by agricultural processes. It represents little more than background noise in the archaeological landscape and no conclusions here should be overstated.

B.9 Fired/Baked Clay

By Ted Levermore

Introduction

B.9.1 Archaeological work recovered 73 fragments, 2621g, of fired clay. This assemblage comprised fragments of lining and daub, perhaps from an oven or hearth structure, in Area 1 and amorphous fragments from Area 4. No diagnostic objects were present. Generally, this material was abraded and uninformative. This report is a quantified assessment of the material.

Methodology

B.9.2 The assemblage was quantified by context, fabric and form and counted and weighed to the nearest whole gram. Width, length and thickness were recorded where possible. The quantified data and fabric descriptions are presented on an Excel spreadsheet held with the site archive.

Results of Analysis

Fabrics

B.9.3 Four fabrics were recorded from this small assemblage; one a subset. All fabrics could be considered as deriving from local silt-marl clays with varying amounts of grit and calcareous material. Full fabric descriptions can be found with the site archive.

Assemblage

Area 1

B.9.4 Pits **1521**, **1528**, and **1530** produced material that may relate to an oven or a hearth. Pit **1521** generated an assemblage of chunky amorphous fragments of a silty-marl clay (14 fragments, 1940g were sampled) which was likely part of the lining for the pit or a nearby oven-type feature. The pit also produced several fragments with a combination of flattened surfaces and wattle/rod impressions (30 fragments, 309g). The impressions suggest a lattice work of various rod sizes were used (5, 10, 15, 20 and 35mm diameters were recorded) to construct whatever structure this material derives from. The clay used was similar, if harder fired, to the lining material. Fragments with similar impressions and surfaces were found in Pit **1528** (16, 275g) and **1530** (11, 92g).

Area 4

B.9.5 Severely abraded amorphous fragments of fired clay made in a fine sandy clay were collected from Ditches **1648** (1 fragment, 2g) and **1649** (1 fragment, 3g). They provide little to no useful information.

Discussion

B.9.6 The material recovered is heavily abraded and fragmentary. There is very little that can be drawn from the assemblage in sum. The structural fragments suggest, tentatively, the presence of a kiln, oven or hearth within Area 1.

APPENDIX C ENVIRONMENTAL REPORTS

C.1 Animal bone

By Hayley Foster

Introduction and methodology

- C.1.1 This animal bone report details the analysis of the faunal remains recovered from Herringswell, Suffolk. Material from securely dated contexts could be divided into three periods, Prehistoric (Period 1), Roman (Period 2), and Post-Roman (Period 3). Faunal material that was unphased was not included in the NISP data, however it should be noted that it consisted of 38 identifiable fragments. The assemblage was of a small size and material was recovered via hand-collection and from environmental samples. The number of recordable fragments that could be assigned to a phase totalled 58. The species represented include cattle (*Bos taurus*), sheep/goat (*Ovis/Capra*), pig (*Sus scrofa*), horse (*Equus* sp.), dog (*Canis familiaris*), field vole (*Microtus agrestis*), mouse (*Mus musculus*), amphibian: frog (*Rana temporaria*) and toad (*Bufo bufo*). The weight of all faunal material recovered totalled 5.59kg. Remains derived predominantly from pits and ditches.
- C.1.2 The method used to quantify this assemblage is based on that used for Knowth by McCormick and Murray (2007) which was modified from Albarella and Davis (1996).
- C.1.3 Identification of the faunal remains was carried out at Oxford Archaeology East. References to Hillson (1992), Schmid (1972) and von den Driesch (1976) were used where needed for identification purposes.
- C.1.4 Two methods of ageing were implemented when analysing the mammalian bone remains. These methods include observing dental eruption and wear, and epiphyseal fusion. When analysing tooth wear of sheep/goat, tooth wear stages by Payne (1973) were implemented. Tooth wear stages by Grant (1982) were implemented when assessing wear for cattle and pig. Higham (1967) mandibular wear stages (MWS) were assigned to loose mandibular M3s and mandibles with the innermost tooth still present. Fusion was recorded according to Silver (1970) and Schmid (1972).

Results of Analysis

- C.1.5 The faunal remains from Herringswell were mainly derived from Periods 1 and 2. The material was principally in a good state of preservation with high levels of fragmentation present. The main domesticates dominated the assemblage, however a notable large percentage of amphibian remains were recovered from environmental samples, along with mice and voles.

Species	NISP	NISP%
Cattle	21	36.2
Sheep/Goat	11	19.0
Horse	8	13.8
Pig	3	5.2

Species	NISP	NISP%
Amphibian	11	19.0
Vole	2	3.4
Mouse	2	3.4
Total	58	100.0

Table 25: NISP (Number of Identifiable Specimens) from phased contexts from Herringswell.

Period 1 (Prehistoric)

- C.1.6 Faunal material from the prehistoric phase consisted of only 20 identifiable fragments in total. Amphibian remains made up 40% of the NISP, followed by sheep/goat and cattle. This earliest phase was composed of more material from environmental samples opposed to hand collected.
- C.1.7 There was very little ageing data from Period 1. A cattle distal metacarpal contained an unfused distal epiphysis indicating an animal ageing to less than 2-2.5 years of age at death.
- C.1.8 The visible evidence for taphonomic changes is low in the prehistoric phase with only one case of butchery noted on a sheep humerus from pit **1549**, in which 3 cut marks are visible on the distal posterior borders indicating evidence of removal/filleting of meat from the joint. Several fragments from this phase also exhibited signs of surface weathering.

Species	NISP	NISP%	MNI	MNI%
Cattle	3	15.0	1	14.3
Sheep/Goat	4	20.0	1	14.3
Pig	1	5.0	1	14.3
Amphibian	8	40.0	2	28.6
Vole	2	10.0	1	14.3
Mouse	2	10.0	1	14.3
Total	20	100.0	7	100.0

Table 26: NISP (Number of Identifiable Specimens) and MNI (Minimum Number of Individuals) data from Period 1.

Period 2 (Roman)

- C.1.9 Period 2 contained the highest frequency of faunal material with cattle comprising 50% of the NISP, followed by the other main domesticates.
- C.1.10 Epiphyseal fusion ageing for cattle revealed, the presence of unfused epiphyses of animals ageing to less than 2-2.5 years and less than 3.5-4 years of age at death. Horse epiphyseal fusion revealed a presence of an animal 3-3.5 years of age at death. The two pig mandibles retrieved from ditch **1790** and pit **1753**. aged to 19-21 months and 23-25 months. Most long bones however contained fused epiphysis indicating the presence of animals that were mature or adults. There were no unfused bones for sheep/goat, suggesting an absence of young animals.

C.1.11 Butchery evidence on a cattle radius from ditch **1779** was observed in the form of a chop and 3 cut marks to the proximal anterior lateral shaft indicating a probable attempt at disarticulation and skinning.

Species	NISP	NISP%	MNI	MNI%
Cattle	18	50.0	3	42.9
Sheep/Goat	7	19.4	1	14.3
Horse	7	19.4	1	14.3
Pig	2	5.6	1	14.3
Amphibian	2	5.6	1	14.3
Total	36	100.0	7	100.0

Table 27: NISP (Number of Identifiable Specimens) and MNI (Minimum Number of Individuals) data from Period 2. Period 3 (Post-Roman)

C.1.12 The Post-Roman period consisted of only 2 identifiable fragments. A horse ulna from ditch **1711** retrieved via hand-collection and an amphibian pelvis from ditch **1701**.

Species	NISP	NISP%	MNI	MNI%
Horse	1	50.0	1	50.0
Amphibian	1	50.0	1	50.0
Total	2	100	2	100

Table 28: NISP (Number of Identifiable Specimens) and MNI (Minimum Number of Individuals) data from Period 3.

Discussion

C.1.13 Cattle dominated the assemblage, with their largest presence in the Roman period. At Romano-British sites cattle were used for dairying, traction and they were commonly slaughtered for meat around 4 to 8 years of age (Maltby, 2016). The small amount of ageing data suggests that some cattle were slaughtered before reaching 4 years of age however animals over 4 years were also present. This would suggest that cattle were slaughtered primarily for meat.

C.1.14 Sheep/goat consisted of 19% of the NISP for the assemblage. The only ageing data that is relevant was a fused distal tibia indicating an animal older than 15 months of age at death. The lack of evidence does not allow for any conclusions to be made regarding sheep/goat husbandry at Herringswell.

C.1.15 Amphibians were well represented in the assemblage also consisting of 19% of the NISP. Amphibian remains were retrieved solely from the environmental samples. All of those remains classified as amphibian were identified as frog except a toad humerus from pit **1530**. The presence of amphibian remains in pits and ditches indicates suitable environmental conditions for frogs to thrive.

C.1.16 Horse remains were not heavily represented, the limited ageing data suggests that there was a presence of at least one horse over 3.5 years of age and one under 3.5 years according to the epiphyseal fusion evidence of the distal radii. There is no solid

evidence that horse breeding was taking place on site as no young horse remains were retrieved. Horses would have been primarily used for riding and for traction purposes.

C.1.17 Pig remains only consisted of 3 identifiable fragments. Two of the fragments were mandibles which aged to 19-21 months and 23-25 months at death. Pigs would have been slaughtered when reaching an optimum weight for consumption as they would have been exploited for meat and lard.

C.1.18 Mice and voles were only represented by 2 fragments each and were recovered from environmental samples from Period 1.

C.1.19 There seems to be no prominent bias in terms of skeletal element distribution. The absence of young and juvenile animals could perhaps be due to preservation, as denser bones, such as mandibles and teeth, are more durable and less susceptible to taphonomic destruction.

C.1.20 Most elements of the main food species have been recovered, with both meat joints and waste bone present, this suggests animals were butchered onsite. The small amount of butchery evidence retrieved also corroborates this interpretation. This assemblage has the expected array of species present and suggests exploitation of domestic animals most likely for meat.

C.1.21 The faunal assemblage from Herringswell appears to mostly conform to taxa type from contemporary sites in Suffolk. The faunal assemblage from Herringswell is small in size therefore only provides minimal data for interpretations into husbandry practices and diet.

Catalogue

Period	Context	Species	Element	MWS	Age
2	1791	Pig	Mandible	19	19-21 mnts
2	1760	Pig	Mandible	21	23-25 mnts

Table 29: Higham Mandible wear ageing data for pig.

Context	Cut	Period	Species	Element	Retrieval	Fusion proximal	Fusion distal
1550	1549	1	Vole	Femur	Hand	F	UM
1550	1549	1	Sheep/Goat	Horn Core	Hand	0	0
1550	1549	1	Sheep/Goat	Humerus	Hand	X	F
1529	1528	1	Cattle	Metacarpal 1	Hand	F	UM
1524	1521	1	Pig	Loose mandibular Tooth	Hand	0	0
1529	1528	1	Sheep/Goat	Loose maxillary tooth	Hand	0	0
1529	1528	1	Sheep/Goat	Loose maxillary tooth	Hand	0	0
1529	1528	1	Cattle	Femur	Hand	X	F
1522	1521	1	Mouse	Loose mandibular Tooth	Enviro	0	0
1529	1528	1	Vole	Tibia	Enviro	F	F
1531	1530	1	Amphibian	Humerus	Enviro	X	F
1531	1530	1	Amphibian	Humerus	Enviro	F	X

Context	Cut	Period	Species	Element	Retrieval	Fusion proximal	Fusion distal
1531	1530	1	Amphibian	Tibia	Enviro	X	F
1531	1530	1	Amphibian	Urostyle	Enviro	0	X
1531	1530	1	Amphibian	Radius	Enviro	X	F
1531	1530	1	Amphibian	Metacarpal 1	Enviro	X	F
1531	1530	1	Amphibian	Vertebra	Hand	0	0
1531	1530	1	Amphibian	Vertebra	Enviro	0	0
1524	1521	1	Cattle	Metacarpal 1	Hand	F	X
1522	1521	1	Mouse	Radius	Enviro	F	F
1814	1851	2	Sheep/Goat	Pelvis	Hand	F	X
1804	1775	2	Cattle	Humerus	Hand	X	F
1814	1851	2	Cattle	Humerus	Hand	X	0
1787	1784	2	Cattle	Phalanx 2	Hand	F	F
1804	1775	2	Cattle	Humerus	Hand	X	F
1812	1779	2	Cattle	Radius	Hand	F	X
1665	1648	2	Sheep/Goat	Tibia	Hand	X	F
1666	1649	2	Horse	Metatarsal 2	Hand	F	F
1628	1624	2	Cattle	Loose maxillary tooth	Hand	0	0
1666	1649	2	Sheep/Goat	Metatarsal 1	Hand	F	X
1666	1649	2	Horse	Humerus	Hand	UX	X
1666	1649	2	Horse	Radius	Hand	F	F
1666	1649	2	Horse	Radius	Hand	F	UM
1635	1633	2	Cattle	Loose maxillary tooth	Hand	0	0
404	403	2	Cattle	Pelvis	Hand	0	X
1812	1779	2	Amphibian	Humerus	Enviro	X	F
1787	1784	2	Sheep/Goat	Loose mandibular Tooth	Hand	0	0
1787	1784	2	Sheep/Goat	Loose maxillary tooth	Enviro	0	0
1812	1779	2	Cattle	Loose mandibular Tooth	Enviro	0	0
1791	1790	2	Sheep/Goat	Loose Tooth	Enviro	0	0
1795	1794	2	Sheep/Goat	Loose mandibular Tooth	Enviro	0	0
404	403	2	Horse	PH1	Hand	F	F
404	403	2	Cattle	Metacarpal 1	Hand	F	X
1589	1587	2	Cattle	Loose mandibular Tooth	Hand	0	0
404	403	2	Horse	Pelvis	Hand	X	F
1791	1790	2	Pig	Mandible	Hand	X	0
404	403	2	Cattle	Tibia	Hand	UE	X
404	403	2	Cattle	Metacarpal 1	Hand	F	X
404	403	2	Cattle	Scapula	Hand	X	F
1812	1779	2	Amphibian	Urostyle	Enviro	0	0
1632	1630	2	Horse	Femur	Hand	0	0
1760	1753	2	Pig	Mandible	Hand	0	0
1589	1587	2	Cattle	Loose maxillary tooth	Hand	0	0
1628	1624	2	Cattle	Femur	Hand	UE	F
1795	1794	2	Cattle	Phalanx 2	Hand	F	F
404	403	2	Cattle	Femur	Hand	X	F
1718	1711	3	Horse	Ulna	Hand	F	X
1702	1701	3	Amphibian	Pelvis	Enviro	X	0

Table 30: List of Recordable faunal fragments.

C.2 Environmental samples

By Rachel Fosberry

Introduction

C.2.1 Thirty-nine bulk samples were taken from features within the four excavated areas of the site. The features sampled were mainly prehistoric pits and ditches with the aim to determine whether plant remains are present, their mode of preservation and whether they are of interpretable value with regard to domestic, agricultural and industrial activities, diet, economy and rubbish disposal.

Methodology

C.2.2 The samples were processed by tank flotation using modified Siraf-type equipment for the recovery of preserved plant remains, dating evidence and any other artefactual evidence that might be present. The floating component (flot) of the samples was collected in a 0.3mm nylon mesh and the residue was washed through 10mm, 5mm, 2mm and a 0.5mm sieve.

C.2.3 A magnet was dragged through each residue fraction for the recovery of magnetic residues prior to sorting for artefacts. Any artefacts present were noted and reintegrated with the hand-excavated finds.

C.2.4 The dried flots were subsequently sorted using a binocular microscope at magnifications up to x 60 and an abbreviated list of the recorded remains are presented in Table 1. Identification of plant remains is with reference to the Digital Seed Atlas of the Netherlands (Cappers et al. 2006) and the authors' own reference collection. Nomenclature is according to Zohary and Hopf (2000) for cereals and Stace (2010) for other plants. Carbonized seeds and grains, by the process of burning and burial, become blackened and often distort and fragment leading to difficulty in identification. Plant remains have been identified to species where possible. The identification of cereals has been based on the characteristic morphology of the grains and chaff as described by Jacomet (2006).

Quantification

C.2.5 Items such as seeds and cereal grains have been scanned and recorded qualitatively according to the following categories:

= 1-5, ## = 6-25, ### = 26-100, #### = 100+ specimens

C.2.6 Items that cannot be easily quantified such as charcoal and molluscs have been scored for abundance

+ = rare, ++ = moderate, +++ = abundant

U=untransformed, w=waterlogged

Results

C.2.7 Plant remains are preserved by carbonization and are mainly restricted to cereal grains with very little evidence of chaff and no preservation of legumes. Charcoal volumes are generally sparse or low.

C.2.8 The results are presented by area:

Area 1

C.2.9 Pits **1521** (Samples 22 and 26), **1530** (Sample 21) and **1549** (Sample 25) produced almost identical assemblages of charred cereal grains, namely emmer wheat (*Triticum dicoccum*) and six-row, hulled barley (*Hordeum vulgare ssp. vulgare*) (Table 32). The assemblages are remarkable in that they are entirely comprised of grain with no chaff evident. Weed seeds are extremely rare with only occasional seeds of brome (*Bromus* sp.) black-bindweed (*Fallopia convolvulus*) and corn gromwell (*Lithospermum arvense*) representing crop weeds. Analysis of these assemblages indicate that the proportion of twisted and straight grains of barley are 2:1 which is consistent with the six-row variety of this species in which three spikelets form on each rachis segment (when viewed from above, two sets of three spikelets are seen as '6-row'). The two grains within the two lateral spikelets are usually twisted whereas the middle grain is straight resulting in a ratio of two twisted grains to one straight grain. The emmer wheat has been identified by its characteristic morphology but this can only be tentative as the most accurate identification of this species is through chaff which is absent. Spelt wheat can sometimes resemble emmer wheat (particularly in the 'droplet' form) and this species cannot be discounted.

C.2.10 Pit **1528** and tree throw **1514** both contain single specimens of charred grain only.

Area 2

C.2.11 Pit **1547** contains sparse charred plant remains only.

Area 3

C.2.12 Samples were taken from twenty features within Area 3. Charred cereal grains are present in ditches **1705** (Sample 40), **1725** (Sample 41) and **1774** (Sample 42) and in pit **1743** (Sample 58) and include hulled wheat and barley but densities are generally low. Sample 41, fill 1726 of ditch **1725** is the only sample from this site to produce cereal chaff and both spelt and emmer glume bases and spikelet forks were noted. Untransformed elderberry (*Sambucus nigra*) seeds are present in many of the samples and are frequent in ditch **1774**. These seeds have a tough outer coat (testa) that enables them to survive in deep, damp soils and are often found in the basal fills of prehistoric ditches.

C.2.13 There is evidence of waterlogged deposits in ditch **1775** in which seeds of wetland plant species such as sedges (*Carex* spp.), rushes (*Juncus* spp.) and duckweed (*Lemna* sp.) are present in lower fill 1805 (Sample 45) and duckweed seeds are also found in ditch **1779** (Sample 48) along with waterlogged seeds of goosefoots (*Chenopodium* sp.), fumitory (*Fumaria* sp.), nettles (*Urtica dioica*) and sedges.

Area 4

C.2.14 The twelve samples taken from features in Area 4 did not contain significant preserved plant remains.

Cut No.	Context No.	Sample No.	Area.	Period	Feature type	Volume processed (L)	Flot Volume (ml)	Cereals	Chaff	Weed Seeds	Snails from flot	Charcoal Volume (ml)	Charcoal <2mm	Charcoal >2mm	Pottery
1514	1516	20	1	0	Tree throw	14	5	#	0	0	+++	<1	+	0	#
1530	1531	21	1	1	Pit	17	25	####	0	#	+++	4	+++	+	#
1521	1524	22	1	1	Pit	17	25	####	0	0	++	2	+++	0	#
1528	1529	23	1	1	Pit	17	11	#	0	#U	+++	<1	+	0	0
1521	1522	26	1	1	Pit	18	10	####	0	#	++	2	+++	++	##
1549	1550	25	1	1	Pit	16	5	###	0	0	+++	2	+++	+++	#
1547	1548	24	2	0	Pit	8	4	#f	0	0	++	<1	+	+	0
1701	1702	39	3	3	Furrow?	16	50	#f	0	##U	0	1	++++	0	0
1705	1707	40	3	2	Ditch	17	5	##	0	0	++	2	+++	+	#
1725	1726	41	3	0	Ditch	18	15	##	###	##U	++	5	+++	+	0
1774	1801	42	3	2	Ditch	17	10	##	0	###U	+	2	+++	+	#
	1802	43	3	0	Burnt spread	18	10	0	0	0	+	<1	+	0	0
	1803	44	3	0	Burnt spread	19	25	0	0	#U	+	1	++	0	0
1775	1804	45	3	2	Ditch	16	10	#	0	###w	+	<1	++	0	0
1775	1806	46	3	2	Ditch	17	10	0	#	#U	+	1	++	0	0
1777	1807	47	3	2	Ditch	9		0	0	0	0	0	0	0	0
1779	1812	48	3	2	Ditch	17	10	0	0	##w	0	1	+++	0	#
1851	1814	49	3	2	Ditch	8		0	0	0	0	0	0	0	0
1780	1821	50	3	2	Ditch	9	25	0	0	0	++	0	0	0	0
1783	1829	51	3	0	Pit/ditch	9	30	0	0	#U	+	0	0	0	0
-	1817	52	3	0	Test pit	16	10	0	0	0	+	0	0	0	0
-	1797	53	3	0	Spread	16	25	#	0	0	+	<1	+	0	#
1794	1795	54	3	2	Ditch	16	15	0	0	0	0	1	0	0	0

Cut No.	Context No.	Sample No.	Area.	Period	Feature type	Volume processed (L)	Flot Volume (ml)	Cereals	Chaff	Weed Seeds	Snails from flot	Charcoal Volume (ml)	Charcoal <2mm	Charcoal >2mm	Pottery
1790	1791	55	3	2	Ditch	14	10	#	0	#U	0	1	++	++	#
1784	1787	56	3	2	Ditch	16	15	0	0	#U	++++	4	++	++	0
1843	1844	57	3	2	Pit	8		0	0	0	0	0	0	0	0
1743	1744	58	3	0	Pit	8	10	##	0	##U	++	2	++	++	0
1571	1572	27	4	0	Tree throw/pit	17	10	#f	0	#U	+++	1	+	0	0
1575	1576	28	4	0	Ditch	16	10	#f	0	0	+++	0	0	0	#
1577	1578	29	4	0	Ditch	8	5	0	0	0	+++	0	0	0	0
1579	1580	30	4	0	Ditch	10	10	0	0	0	+++	<1	+	0	0
1583	1584	31	4	0	Ditch	10	5	0	0	#U	+++	<1	+	0	0
1587	1588	32	4	2	Pit	16	5	0	0	0	+++	<1	+	0	#
1591	1592	33	4	2	Pit	16	5	0	0	0	+++	<1	+	0	#
1624	1628	34	4	2	Ditch	18	5	0	0	#u	0	0	0	0	#
1636	1638	35	4	0	Tree throw	17	15	0	0	#U	+	<1	+++	+	0
1616	1617	36	4	0	Pit	8	3	0	0	0	++	0	0	0	0
1609	1611	37	4	0	Ditch	16	5	0	0	0	+++	<1	+	0	0
1672	1667	38	4	0	Poss. Pit	8	5	0	0	0	+++	<1	+++	0	0

Table 31: Environmental bulk samples

Cut No.		1530	1521	1549	1521
Context No.		1531	1524	1550	1522
Sample No.		21	22	25	26
Volume processed (L)		17	17	16	18
Flot Volume (ml)		25	25	5	10
Charcoal Volume (ml)		4	2	2	2
Charcoal <2mm		+++	+++	+++	+++
Charcoal > 2mm		+		+++	++
CHARRED CEREAL GRAIN					
twisted, hulled <i>Hordeum vulgare</i> ssp. <i>vulgare</i> caryopsis	hulled 6-rowed Barley grain	22	15	2	27
straight, hulled <i>Hordeum vulgare</i> L. caryopsis	hulled domesticated Barley grain	14	6	1	14
hulled <i>Hordeum vulgare</i> L. caryopsis	hulled domesticated Barley grain	32	75	3	116

Fragmented <i>Hordeum vulgare</i> L. caryopsis	broken Barley grains	+++	+	+++	+++
<i>Hordeum vulgare</i> L./ <i>Triticum</i> sp. caryopsis	Barley or Wheat grain	72	7	15	11
<i>Triticum</i> cf. <i>dicoccum</i> Schübl caryopsis	Emmer Wheat grain	55	63	0	61
<i>Triticum dicoccum</i> Schübl./ <i>spelta</i> L. caryopsis	Emmer/Spelt Wheat grain	17	20	3	19
cereal indet. caryopsis	indeterminate cereal grain				
CHARRED WEED SEEDS					
<i>Bromus</i> sp. caryopsis	Bromes				2
<i>Fallopia convolvulus</i> (L.) Á. Löve achene	Black-bindweed	1			3
<i>Lithospermum arvense</i> L. nutlet	Field Gromwell		1		11

Table 32: Analysis of selected prehistoric pits in Area 1

Discussion

C.2.15 The environmental samples from this site are from features that are largely undated.

The assemblages from the prehistoric pits in Area 1 are of interest as they represent the disposal of burnt grain, but it is the cleanliness of the grain that is significant in these contexts. Emmer and spelt are both hulled wheat species in which the grain is enclosed in a tough outer husk forming a spikelet. The spikelet needs to be parched and pounded to release the grain and this process usually results in the inclusion of chaff in charred assemblages. Similarly, hulled barley would also need to be dehusked if intended for human consumption. The absence of chaff in these assemblages indicates that the cereals have been fully processed, resulting in prime clean grain which has then been burnt and subsequently disposed of within the pits. The mixture of wheat and barley may suggest that the two cereals had been grown as a maslin crop, a practice in which two cereals are grown together in case one crop fails (van der Veen 1995, 335). Similar assemblages of fully-processed emmer and barley have been recovered from Late Bronze Age pits from recent excavations at Wymondham, Norfolk dated 923-823BC (Clarke 2019) and Bell Farm, Horsford, Norfolk dated 938-823BC (Moan 2018).

C.2.16 The waterlogged assemblage from ditches **1775** and **1779** indicate a local flora of wetland plants that is not particularly informative.

C.3 Mollusca

By Carole Fletcher

Introduction

C.3.1 A total of 0.090kg of marine shells were collected by hand during the archaeological works. The shells recovered are all edible examples of oyster *Ostrea edulis*, from estuarine and shallow coastal waters. The shell is relatively well preserved and has not been deliberately broken or crushed.

Methodology

C.3.2 The marine shells were weighed and recorded by species, with complete or near-complete right and left valves noted, where identification could be made, using Winder (2011) as a guide and recorded in the text.

Assemblage and Discussion

C.3.3 A single shell was recovered from evaluation feature **301**, the remaining shells were recovered from the excavation, with single shells in ditches **1648** and **1701**. The bulk of the shells were recovered from pit **1753**, where the shell most likely became incorporated into the context as general rubbish deposition. In total, four shells, the single right valve from ditch **1648** and three left valves from pit **1753**, show evidence of shucking (in the form of small 'V' or 'U'-shaped cut on the outer edge).

C.3.4 No context produced enough mollusca shells to indicate a single meal of, for example, oysters alone, however, they may have been combined with other foods. The assemblage is too small a sample to draw any but the broadest conclusions, in that shellfish were reaching the site from the coastal regions, indicating trade with the wider area.

C.3.5 The shells represent general discarded food waste and, although not closely datable in themselves, the shells may be dated by their association with pottery or other material also recovered from the feature.

Catalogue

Context	Cut	Species	Common Name	Habitat	Total No. of Shells	Description	Shucked Shells	R valves	L valves	Weight (kg)
303	301	<i>Ostrea edulis</i>	Oyster	Estuarine and shallow coastal water	1	Partial left valve in poor condition			1	0.018
1665	1648	<i>Ostrea edulis</i>	Oyster	Estuarine and shallow coastal water	1	Near-complete right valve with damage to all edges and shucking mark on ventral edge	1	1		0.013
1702	1701	<i>Ostrea edulis</i>	Oyster	Estuarine and shallow coastal water	1	Incomplete left valve, damaged on all edges			1	0.007
1760	1753	<i>Ostrea edulis</i>	Oyster	Estuarine and shallow coastal water	10	Near-complete left valve, incomplete left valve and partial left valve. Six small right valves, of which two are complete, with shucking marks, one incomplete with a W-shaped shucking mark, three near-complete valves with damage to the ventral edge and a partial valve	3	7	3	0.052
Totals:					13		4	8	5	0.090

Table 33. Catalogue of mollusca assemblage

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APPENDIX E OASIS REPORT FORM

Project Details

OASIS Number	Oxfordar3-316034		
Project Name	Herringswell SEW 10830		
Start of Fieldwork	12/09/2018	End of Fieldwork	30/11/2018
Previous Work	No	Future Work	Unknown

Project Reference Codes

Site Code	HGW 025 & TDD 036	Planning App. Number	N/A
HER Number		Related Numbers	XSFHER18
Prompt	Water Act 1989 and subsequent code of practice		
Development Type	Pipelines/Cables		

Techniques used (tick all that apply)

- | | | |
|--|---|--|
| <input type="checkbox"/> Aerial Photography – interpretation | <input type="checkbox"/> Open-area excavation | <input type="checkbox"/> Salvage Record |
| <input type="checkbox"/> Aerial Photography - new | <input checked="" type="checkbox"/> Part Excavation | <input type="checkbox"/> Systematic Field Walking |
| <input type="checkbox"/> Field Observation | <input checked="" type="checkbox"/> Part Survey | <input checked="" type="checkbox"/> Systematic Metal Detector Survey |
| <input type="checkbox"/> Full Excavation | <input type="checkbox"/> Recorded Observation | <input type="checkbox"/> Test-pit Survey |
| <input type="checkbox"/> Full Survey | <input type="checkbox"/> Remote Operated Vehicle Survey | <input type="checkbox"/> Watching Brief |
| <input type="checkbox"/> Geophysical Survey | <input type="checkbox"/> Salvage Excavation | |

Monument	Period	Object	Period
Ditch	Roman (43 to 410)	Coin	Roman (43 to 410)
Pit	Roman (43 to 410)	Loomweight	Bronze Age (- 2500 to - 700)
Pit	Late Bronze Age (- 1000 to - 700)	Metalwork mould	Late Bronze Age (- 1000 to - 700)
Ditch	Medieval	Pottery	Roman
		Pottery	Late Bronze Age

Insert more lines as appropriate.

Project Location

County	Suffolk	Address (including Postcode) Land east of Hall Farm, The Street, Herringswell, Bury St Edmunds, IP28 6SX
District	Forest Heath	
Parish	Herringswell and Tuddenham	
HER office	Suffolk County Council	
Size of Study Area	16,000m ²	
National Grid Ref	TL731702	

Project Originators

Organisation	Oxford Archaeology East (OAE)
Project Brief Originator	Rachel Abrahams (SCCAS)
Project Design Originator	Nick Gilmour (OAE)
Project Manager	Nick Gilmour
Project Supervisor	Neal Mason (OAE)

Project Archives

	Location	ID
Physical Archive (Finds)	SCCAS	HGW 025 & TDD 036
Digital Archive	SCCAS	HGW 025 & TDD 036
Paper Archive	SCCAS	HGW 025 & TDD 036

Physical Contents	Present?	Digital files associated with Finds	Paperwork associated with Finds
Animal Bones	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ceramics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Environmental	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Glass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Human Remains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Industrial	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Leather	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metal	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Stratigraphic		<input type="checkbox"/>	<input type="checkbox"/>
Survey		<input type="checkbox"/>	<input type="checkbox"/>
Textiles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Worked Bone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Worked Stone/Lithic	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Digital Media

Database	<input checked="" type="checkbox"/>
GIS	<input checked="" type="checkbox"/>
Geophysics	<input type="checkbox"/>
Images (Digital photos)	<input checked="" type="checkbox"/>
Illustrations (Figures/Plates)	<input checked="" type="checkbox"/>
Moving Image	<input type="checkbox"/>
Spreadsheets	<input type="checkbox"/>
Survey	<input checked="" type="checkbox"/>
Text	<input checked="" type="checkbox"/>
Virtual Reality	<input type="checkbox"/>

Paper Media

Aerial Photos	<input type="checkbox"/>
Context Sheets	<input checked="" type="checkbox"/>
Correspondence	<input type="checkbox"/>
Diary	<input type="checkbox"/>
Drawing	<input checked="" type="checkbox"/>
Manuscript	<input type="checkbox"/>
Map	<input type="checkbox"/>
Matrices	<input type="checkbox"/>
Microfiche	<input type="checkbox"/>
Miscellaneous	<input type="checkbox"/>
Research/Notes	<input type="checkbox"/>
Photos (negatives/prints/slides)	<input type="checkbox"/>
Plans	<input type="checkbox"/>
Report	<input checked="" type="checkbox"/>
Sections	<input checked="" type="checkbox"/>
Survey	<input type="checkbox"/>

Further Comments

APPENDIX F

WRITTEN SCHEME OF INVESTIGATION



Herringswell SEW 10830

Written Scheme of Investigation

Client: Anglian Water

Prepared by Nick Gilmour
Date prepared June 6, 2018
Version 2

Planning application no. n/a
Site code XSFHER18
Project number 22046
Project type trench evaluation
NGR TL 723 701 to TI 743 707
Event number HGW 025 and TDD 036
Museum accession no. TBC



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1 GENERAL BACKGROUND

- 1.1.1 This WSI conforms to the principles identified in Historic England's guidance documents Management of Research Projects in the Historic Environment (MoRPHE), specifically the MoRPHE Project Manager's Guide (2015) and Project Planning Note 3: Archaeological Excavation.
- 1.1.2 All work will be conducted in accordance with the Chartered Institute for Archaeologists Code of Conduct and Standard and Guidance for Archaeological Evaluation.
- 1.1.3 This WSI also incorporates the requirements of the EAA Standards for Field Archaeology in the East of England (Gurney 2003).

1.2 Circumstances of the project

- 1.2.1 Anglian Water plan to install a new pipeline from Herringswell to a treatment works. This pipeline would be just over 2100m long and the working easement would be 8m.
- 1.2.2 Part of the pipeline is close to the historic settlement of Herringswell and the route passes through the location of two possible ring ditches (identified from cropmarks).
- 1.2.3 The construction of the pipeline could damage any heritage assets present on the site and the archaeological evaluation will seek to locate any such assets to allow assessment of the impact the pipeline may have.
- 1.2.4 This Written Scheme of Investigation (WSI) has been prepared on behalf of the Client in response to an Archaeological Brief for Investigation issued by Suffolk County Council Archaeological Service (SCCAS).

1.3 The proposed archaeological strategy

- 1.3.1 It is proposed to excavate 17 trenches, each 30m long and 1.8m wide, which will comprise a 5% sample of the total easement of the pipeline. A plan of their location is attached to this document. This trench plan may need to be updated following due to the presence of ground nesting birds and/or following advice from Natural England.
- 1.3.2 All work carried out as part of this evaluation will conform to Suffolk County Council *Requirements for a Trenched Archaeological Evaluation* (March 2017).
- 1.3.3 There may be further phases of archaeological work following this trenched evaluation, dependent on the results of the trial trenching.

1.4 Changes to this method statement

- 1.4.1 If changes need to be made to the methods outlined below – either before or during works on site – the SCCAS will be informed and asked to consider changes before they are made. Changes will be agreed in before work on site commences, or else at the earliest available opportunity.

2 THE GEOLOGY, TOPOGRAPHY AND OTHER FEATURES OF THE SITE

- 2.1.1 The bedrock geology consists of chalk (Holywell Nodular Chalk Formation And New Pit Chalk Formation), with superficial deposits of sand and gravel (river terrace gravels) in places (British Geological Survey 2014, (British Geological Survey online map viewer <http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html>). (06/06/2018)
- 2.1.2 The pipeline crosses relatively flat land, between 15m and 17m ADO. Almost all of the route is current arable land and some of it passes across the Breckland Farmland SSSI.

3 ARCHAEOLOGICAL BACKGROUND

- 3.1.1 A brief summary of archaeological features and finds in the vicinity is given below. Where relevant the Suffolk Historic Environment Record number is given in brackets. An HER search of the area has been commissioned and will be used within the report produced after fieldwork has taken place.

3.2 Prehistoric

- 3.2.1 Little Neolithic activity is known from the area through which the pipeline will pass. However, a polished flint adze or chisel was found on the surface of a ploughed field, c.300m to the south of the pipeline corridor at the eastern end of the scheme (TDD 007)
- 3.2.2 Approximately half way along the length of the pipeline route two possible ploughed out barrows are recorded (TDD 004). These two possible ploughed out round barrows were seen in spring 1981 as two chalky circles with surrounding dark rings; one about 30 yards diameter, the other smaller.
- 3.2.3 Two fragments of an Early Bronze Age bronze dagger were recovered from a field c.200m south of the western end of the pipe route (HER 010).

3.3 Roman

- 3.3.1 A scatter of Roman metal objects has been recovered by metal detecting from Field Farm, c.230m south of the pipeline route (TDD 013). Further Roman activity in the general area is attested to by a scatter of pottery found in a field c.300m to the west of the western end of the pipeline (HER 007).

3.4 Saxon, Medieval and Post-medieval

- 3.4.1 Close to the Eastern end of the pipeline route an Anglo-Saxon cemetery was found during gravel quarrying (TDD 001). This site, known as 'the basin', is located c.100m to the south of the route.
- 3.4.2 A silver sceat was found within a field that the pipeline route passes through close to the eastern end of the scheme (TDD 014). While a scatter of medieval artefacts, including silver pennies, has also been found c.150m south of the route at this eastern end (TDD 012).
- 3.4.3 The western end of the route is adjacent to the historic core of Herringswell, as plotted from defined from historic maps, the locations of listed buildings and artefact scatters (HER 024). This village is of Late Saxon origin. The eastern end of the pipeline route is close to the historic core of Tuddenham (TDD 025).
- 3.4.4 A medieval square moat is located c.260m to the north of the pipeline route, close to its' western end and Hall farm (HER 011).

3.5 Modern

- 3.5.1 The eastern end of the pipeline route is extremely close to the site of the World War II Tuddenham airfield (TDD 019). This was constructed in 1942 and went out of use as an airfield in 1946. It operated as a nuclear missile site between 1959 and 1963.

4 AIMS AND OBJECTIVES

4.1 Aims of the evaluation

- 4.1.1 This evaluation will seek to establish the character, date, state of preservation of archaeological remains within the proposed development area. The scheme of works detailed below aims to:
- establish the presence or absence of archaeological remains on the site, characterise where they are found (location, depth and extent), and establish the quality of preservation of any archaeology and environmental remains
 - provide sufficient coverage to establish the character, condition, date and purpose of any archaeological deposits
 - provide sufficient coverage to evaluate the likely impact of past land uses, and the possible presence of masking deposits
 - provide – in the event that archaeological remains are found – sufficient information to construct an archaeological mitigation strategy, dealing with preservation, the recording of archaeological deposits, working practices, timetables, and orders of cost.

4.2 Research frameworks

- 4.2.1 This excavation takes place within, and will contribute to the goals of Regional Research Frameworks relevant to this area:
- Research and Archaeology Revisited: A Revised Framework for the East of England (Medlycott 2011, East Anglian Archaeology Occasional Papers 24)
 - Research and Archaeology: A Framework for the Eastern counties: 1. Resource Assessment (Glazebrook 1997, East Anglian Archaeology Occasional Papers 3);
 - Research and Archaeology: A Framework for the Eastern counties: 2. Research Agenda and Strategy (Brown & Glazebrook 2000, East Anglian Archaeology Occasional Papers 8)

5 METHODS

5.1 Background research

- 5.1.1 A suitable level of documentary research will be undertaken before work on site commences. This research will draw on information in the Suffolk Historic Environment Record, and will include historical sources, maps, previous archaeological finds, and past archaeological investigations in the vicinity. The results will not be presented separately, but will be incorporated into the final evaluation report.

5.2 Event number and site code

- 5.2.1 Two event numbers have been obtained from the Suffolk HER (HGW 025 and TDD 036), and a unique site code assigned to the project (XSFHER18). An OASIS reference number has also been established for the project (Oxford-ar3-316034).

5.3 Trial Trenching

Excavation standards

- 5.3.1 The proposed archaeological evaluation and analysis will be conducted in accordance with current best archaeological practice and the appropriate national and regional standards and guidelines.
- 5.3.2 All work will be conducted in accordance with the Chartered Institute for Archaeologists' *Code of Conduct and Standard and Guidance for Archaeological Field Evaluations*.
- 5.3.3 All fieldwork will be undertaken in accordance with the requirements of the OA Field Manual (ed. D Wilkinson 1992), and the revised OA fieldwork manual (publication forthcoming). Further guidance is provided to all excavators in the form of the *OA Fieldwork Crib Sheets – a companion guide to the Fieldwork Manual*. These have been issued ahead of formal publication of the revised Fieldwork Manual.

Pre-commencement

- 5.3.4 Before work on site commences, service plans will be checked to ensure that access and groundworks can be conducted safely.
- 5.3.5 In order to minimise damage to the site and disruption to site users, Oxford Archaeology will agree the following with the client/landowner before work on site commences:
- the location of entrance ways
 - sites for welfare units
 - soil storage areas
 - refuelling points for plant (if necessary), and the extent of any bunding required around fuel dumps
 - access routes for plant and vehicles across the site

- 5.3.6 Access routes to, from and between trenches will be agreed on site at the start of works. Where possible, access routes will use tramlines in the crop, in order to reduce crop damage.

Excavation methods

- 5.3.7 A total of 17 trenches measuring 30m by 1.8m will be excavated. This is equivalent to 5% of the development area. An indicative plan of the proposed trench layout is attached to this WSI. This trench plan will be updated with the location of two possible ring ditches (known from cropmarks) and trenches will target these locations if possible. During machine stripping, the location of trenches may be altered if there are site obstructions, services, or modern disturbance. If so, the location of affected trenches will be re-surveyed.
- 5.3.8 Service plans will be checked before work commences on site and this may result in an alteration of the trench plan. Before trenching, the footprint of each trench will be scanned by a qualified and experienced operator using a CAT and Genny with a valid calibration certificate.
- 5.3.9 All machine excavation will take place under the supervision of a suitably qualified and experienced archaeologist.
- 5.3.10 Trial trenches will be excavated by a mechanical excavator to the depth of geological horizons, or to the upper interface of archaeological features or deposits, whichever is encountered first. A toothless ditching bucket with a minimum bucket width of 1.8m will be used to excavate the trenches. Overburden will be excavated in spits not greater than 0.1m thick.
- 5.3.11 Spoil will be stored alongside trenches, unless otherwise specified by the client. Topsoil, subsoil, and archaeological deposits will be kept separate during excavation, to allow for sequential backfilling of excavations. Trenches will not be backfilled without the approval the SCCAS.
- 5.3.12 Where the archaeological levels are particularly deep, safe excavation procedures will be followed to ensure that trenches are safe to enter. This may include shoring or stepping the sides of trenches, as appropriate to the soil and site conditions. If trenches become flooded, pumps may be used to remove excess water, and they will be assessed for stability and safety before staff enter them.
- 5.3.13 The depth and nature of any colluvial or other masking deposits will be established across the site. Buried soils will be tested pitted.
- 5.3.14 The top of the first archaeological deposit will be cleared by machine, then cleaned off by hand. Exposed surfaces will be cleaned by trowel and hoe as necessary, in order to clarify located features and deposits.
- 5.3.15 All features will be investigated and recorded to provide an accurate evaluation of archaeological potential, whilst at the same time minimising disturbance to archaeological structures, features, and deposits. All relationships between features or deposits will be investigated and recorded. Any natural subsoil surface revealed will be hand cleaned and examined for archaeological deposits and artefacts. Excavation will characterise the full archaeological sequence down to undisturbed natural

deposits. Apparently natural features (such as tree throws) will be sampled sufficiently to establish their character.

- 5.3.16 All excavation of archaeological deposits will be done by hand, unless agreed with the SCCAS that there will be no loss of evidence using a machine. The method of excavation will be decided by the senior project archaeologist.
- 5.3.17 There will be sufficient excavation to give clear evidence for the period, depth, and nature of any archaeological deposit. Investigation slots through all linear features will be a least 1m in width. Discrete features will be half-sectioned or excavated in quadrants where they are large or deep.
- 5.3.18 Deep features will be evaluated with hand auger or boreholes, to assess their depth and structure.

5.4 Recording of archaeological deposits and features

- 5.4.1 Records will comprise survey, drawn, written, and photographic data.

Survey

- 5.4.2 Surveying will be done using a survey-grade differential GPS (Leica CS10/GS08 or Leica 1200) fitted with "smartnet" technology with an accuracy of 5mm horizontal and 10mm vertical.
- 5.4.3 The site grid will be accurately tied into the Ordnance Survey National Grid and located on the 1:2500 or 1:1250 map of the area. Elevations will be levelled to the Ordnance Datum.

Written records

- 5.4.4 A register of all trenches, features, photographs, survey levels, small finds, and human remains will be kept.
- 5.4.5 All features, layers and deposits will be issued with unique context numbers. Each feature will be individually documented on context sheets, and hand-drawn in section and plan. Written descriptions will be recorded on pro-forma sheets comprising factual data and interpretative elements.
- 5.4.6 Where stratified deposits are encountered, a Harris Matrix will be compiled during the course of the excavation.

Plans and sections

- 5.4.7 Site plans will normally be drawn at 1:50, but on deeply-stratified sites a scale of 1:20 will be used. Detailed plans of individual features or groups will be at an appropriate scale (1:10 or 1:20).
- 5.4.8 Long sections showing layers will be drawn at 1:50. Sections of features or short lengths of trenches will be drawn at 1:20. All section levels will be tied in to Ordnance Datum.
- 5.4.9 All site drawings will include the following information: site name, site code, scale, plan or section number, relevant context or feature numbers, orientation, date and the name or initials of the archaeologist who prepared the drawing.

Photogrammetric recording

- 5.4.10 Plans and sections may be supplemented with photogrammetric recording of the excavation areas. Photogrammetric models will be based on high-resolution digital photographs with a minimum file size of 5 MB. Photogrammetric processing will be conducted using the Agisoft Photosoft (Professional Edition) software, and will incorporate reference points taken by GPS-based survey equipment.

Photographs

- 5.4.11 The photographic record will comprise high resolution digital photographs.
- 5.4.12 Photographs will include both general site shots and photographs of specific features. Every feature will be photographed at least once. Photographs will include a scale, north arrow, site code, and feature number (where relevant), unless they are to be used in publications. The photograph register will record these details, and photograph numbers will be listed on corresponding context sheets.

5.5 Exceptional remains, including human remains

Significant archaeological features

- 5.5.1 If exceptional or unexpected features are uncovered, the SCCAS will be informed, and their advice sought on further excavation or preservation.
- 5.5.2 Significant archaeological features (e.g. solid or bonded structural remains, building slots or post-holes) will be preserved intact, even if fills are sampled. The following features will normally be cleaned, recorded and preserved for future excavation, unless directed to by the SCCAS:
- layers relating to domestic or industrial activity (e.g. floor, middens)
 - discrete features relating to domestic or industrial activity (e.g. kilns, ovens, hearths)
 - artefact scatters (e.g. flint, metal-working debris).
- 5.5.3 If preservation *in situ* is required by the SCCAS, all exposed surfaces will be cleaned and prepared for reburial beneath construction materials. If appropriate, the areas will be protected with geotextile or other buffering materials.

Human remains

- 5.5.4 If human remains are encountered, the Client, County Coroner, and the SCCAS will be informed immediately.
- 5.5.5 Unless directed otherwise by the SCCAS, human remains will be left in situ (covered and protected), until a full program of excavation is agreed by the SCCAS and Client. No further excavation will then take place in the vicinity of the remains until removal becomes necessary. If the remains are under imminent threat, or if the SCCAS requires information on date and preservation, we will excavate and remove them.
- 5.5.6 Human remains will be excavated in accordance with all appropriate legislation and Environmental Health regulations. Excavation will only take

place after Oxford Archaeology has obtained a Ministry of Justice exhumation license.

5.6 Metal detecting and the Treasure Act

- 5.6.1 Metal detector searches will take place at all stages of the excavation by an experienced metal detector user (Tom Lucking). Excavated areas will be detected immediately before and after mechanical stripping. Both excavated areas and spoil heaps will be checked. To prevent losses from night-hawking, features will be metal detected immediately after stripping.
- 5.6.2 Metal detectors will not be set to discriminate against iron.
- 5.6.3 Artefacts will be removed and given a small find number. Labels will be placed on the location of each 'small find' and surveyed in with a GPS.
- 5.6.4 If finds are made that might constitute 'Treasure' under the definition of the Treasure Act (1996), they will, if possible, be excavated and removed to a safe place. Should it not be possible to remove the finds on the day they are found, suitable security will be arranged. Finds that are 'Treasure' will be reported to the landowner and County Coroner within 14 days, in accordance with the Act. The County Finds Liaison Officer from the Portable Antiquities Scheme will also be informed.

5.7 Post-excavation processing

- 5.7.1 Processing will take place in tandem with excavation, and advice will be sought from relevant specialists on key artefact types. The Project Manager and fieldwork project officer will be given feedback to enable them to develop excavation strategies during fieldwork.
- 5.7.2 Any finds requiring specialist treatment and conservation will be sent for appropriate treatment.
- 5.7.3 Finds will be marked with context numbers, site code or accession number, as detailed in the requirements of the Suffolk County Store.

5.8 Finds recovery and processing

Standards for finds handling

- 5.8.1 Finds will be exposed, lifted, cleaned, conserved, marked, bagged, and boxed in line with the standards in:
 - United Kingdom Institute for Conservators (2012) *Conservation Guidelines No. 2*
 - Watkinson & Neal (1988) *First Aid for Finds*
 - Chartered Institute for Archaeologists (2014) *Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials*
 - English Heritage (1995) *A Strategy for the Care and Investigation of Finds*.

- 5.8.2 Where finds require conservation, this will be done in accordance with the guidelines of the Institute for Conservation (ICON),

Procedures for finds handling

- 5.8.3 At the start of work, a finds supervisor will be appointed to oversee the collection, processing, cataloguing, and specialist advice on all artefacts collected.
- 5.8.4 Artefacts will be collected by hand, sieving, and metal detector. Excavation areas and spoil will be scanned visually and with a metal detector to aid recovery of artefacts. All finds will be bagged and labelled according to the individual deposit from which they were recovered, ready for later cleaning and analysis. 'Special/small finds' may be located more accurately by GPS if appropriate.
- 5.8.5 Processing will take place in tandem with excavation, and advice will be sought from relevant specialists on key artefact types. (See the Appendix for a list of specialists.)
- 5.8.6 All artefacts recovered from excavated features will be retained for post-excavation processing and assessment, except:
- those which are obviously modern in date
 - where very large volumes are recovered (typically ceramic building material)
 - where directed to discard on site by the SCCAS.
- 5.8.7 Where artefacts are not removed from site, a strategy will be employed to ensure a sufficient sample is retained, in order to characterise the date and function of the features they were excavated from. A record will be kept of the quantity and nature of artefacts which are not removed from site.

5.9 Sampling for environmental remains and small artefact retrieval

Standards for sampling and processing

- 5.9.1 Features will be sampled and processed in accordance with the guidelines set out in:
- English Heritage (2011, 2nd edition) *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation*.
 - Association for Environmental Archaeology (1995) *Environmental archaeology and archaeological evaluations. Recommendations concerning the environmental archaeology component of archaeological evaluations in England*. Working Papers of the Association for Environmental Archaeology 2. York: Association for Environmental Archaeology.
 - Dobney, K., Hall, A., Kenward, H. & Milles, A. (1992) A working classification of sample types for environmental archaeology. *Circaea* 9.1: 24-26
 - Murphy, P.L. & Wiltshire, P.E.J. (1994) *A guide to sampling archaeological deposits for environmental analysis*.

Procedures for sampling and processing

- 5.9.2 Bulk samples (up to 40 litres or 100% of context) will be taken from a range of site features and deposits to target the recovery of plant remains (charcoal and macrobotanicals) fish, bird, small mammal and amphibian bone and small artefacts. Environmental samples will be taken from well-stratified, datable deposits. Samples will be labelled with the site code, context number, and sample number.
- 5.9.3 If appropriate, monolith samples of waterlogged deposits and buried soils will be taken for pollen analysis, soil micro-morphological, or sedimentological analysis. Where consistent with the aims of the evaluation, samples will be taken from deposits, artefacts, and ecofacts for scientific (absolute) dating.
- 5.9.4 Where features containing very small artefacts – such as micro-debitage and hammerscale – are identified, bulk samples will be taken (up to 40 litres or 100% of context).
- 5.9.5 Typically, 10 litres of each bulk sample will be processed using tank flotation, with the remaining sub-sample processed where appropriate or necessary. Normally, early prehistoric samples will be fully processed. Waterlogged samples will be wet sieved and stored in cool or wet conditions as appropriate.
- 5.9.6 Where practical, waterlogged wood specimens will be recorded in detail on site, in situ. When removed, they will be cleaned and photographed, and stored in wet cool conditions for assessment by a suitably qualified specialist (see the Appendix).
- 5.9.7 The project team will consult Historic England's Scientific Advisor on environmental sampling and dating where necessary.

6 REPORTING

6.1 Evaluation Report

- 6.1.1 Post-excavation analysis and reporting will follow guidance in Historic England's (2015) *Management of Research Projects in the Historic Environment* (MoRPHE).

6.2 Contents of the evaluation report

- 6.2.1 The report will include:
- a title page detailing site address, site code and accession number, NGR, author/originating body, client's name and address
 - full list of contents
 - a non-technical summary of the findings
 - the aims of the evaluation
 - a description of the geology and topography of the area
 - a description of the methodologies used
 - a description of the findings
 - tables summarising features and artefacts
 - site and trench location plans, and plans of each area excavated showing the archaeological features found
 - sections of excavated features
 - interpretation of the archaeological features found
 - specialist reports on artefacts and environmental finds
 - relevant colour photographs of features and the site
 - a predictive model of surviving archaeological remains, where affected by development proposals, and assessment of their importance at local, regional and national level.
 - a discussion of the relationship between findings on the site and other archaeological information held in the Suffolk Historic Environment Record
 - a bibliography of all reference material
 - the OASIS reference and summary form.

6.3 Draft and final reports

- 6.3.1 A draft copy of the report will be supplied to the SCCAS for comment.
- 6.3.2 Following approval of the report, one printed copy and one digital copy (PDF) will be presented to the Suffolk Historic Environment Record.
- If the SCCAS requires no further excavation on the site, a summary report will be prepared for the *Proceedings of the Suffolk Institute of Archaeology & History*

6.4 OASIS

- 6.4.1 A digital copy of the approved report will be uploaded to the OASIS database.

6.4.2 A copy of the OASIS Data Collection Form will be included in the report.

7 ARCHIVING

Archive standards

- 7.1.1 The site archive will conform to the requirements Appendix 1 of the Historic England's (2015) *Management of Research Projects in the Historic Environment* (MoRPHE), and the requirements of the Suffolk County Council Stores (Archaeological Archives in Suffolk Guidelines for Preparation and Deposition (2017)).
- 7.1.2 The preparation of the archive will follow the guidelines contained in *Guidelines for the Preparation of Excavation Archives for Long Term Storage* (United Kingdom Institute for Conservation, 1990), *Standards in the Museum care of Archaeological Collections* (Museums and Galleries Commission 1992), and *Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation* (Brown 2007).

Archive contents

- 7.1.3 The archive will be quantified, ordered, and indexed. It will include:
- artefacts
 - ecofacts
 - project documentation – including plans, section drawings, context sheets, registers, and specialist reports
 - photographs (digital photographs will be stored on CD-ROM, and colour printouts made of key features)
 - an archive-standard CD-ROM with electronic documentation (such as GIS and CAD files)
 - a printed copy of the Written Brief
 - a printed copy of the WSI
 - a printed copy of the final report
 - a printed copy of the OASIS form.
- 7.1.4 It is Oxford Archaeology Ltd's policy, in line with accepted practice, to keep site archives (paper and artefactual) together wherever possible.

Transfer of ownership

- 7.1.5 The archaeological material and paper archive produced from this investigation will be held in storage by OA East who will seek to transfer the complete project archive to the Suffolk County Council Stores, in order to facilitate future study and ensure long-term public access to the archive. Where the landowner wishes to retain items recovered during excavation, all selected artefacts will be fully drawn and photographed, identified, analysed, documented and conserved in order to create a comprehensive catalogue of items to be kept by the landowner before the remainder of the archive can be deposited in the Suffolk County Council Stores. A written transfer of ownership document will be forwarded to the SCCAS before the archive is deposited. In the unlikely event that artefacts of significant monetary value are discovered, and if they are not subject to Treasure Act legislation, separate ownership arrangements may be negotiated following the creation of a comprehensive illustrated catalogue, as described above.

8 TIMETABLE

- 8.1.1 Trial trenching is expected to take 10 working days to complete, based on a five-day week, working Monday to Friday. This does not allow for delays caused by bad weather, but it does include time for site set-up and final backfilling of trenches.
- 8.1.2 Post-excavation processing and assessment tasks will commence shortly after excavation commences, to inform the excavation strategy, and minimise time required to prepare the final report after excavation is completed.
- 8.1.3 Post-excavation tasks and report writing will take a maximum of four weeks following the end of fieldwork, unless there are exceptional discoveries requiring lengthier analysis.

9 STAFFING AND SUPPORT

9.1 Fieldwork

- 9.1.1 The fieldwork team will be made up of the following staff:
- 1 x Project Manager (supervisory only, not based on site)
 - 1 x Project Officer/Supervisor (full-time)
 - 2 x Site Assistants
 - 1 x Archaeological Surveyor (as required)
 - 1 x Finds Assistant (part-time, as required)
 - 1 x Environmental Assistant (part-time, as required)
- 9.1.2 The Project Manager will be Nick Gilmour, and the Project Officer responsible for work on site will be one of OAE's experienced Project Officers.
- 9.1.3 All Site Assistants will be drawn from a pool of qualified and experienced staff. Oxford Archaeology East will not employ volunteer, amateur, or student staff, whether paid or unpaid, except as an addition to the team stated above.

9.2 Post-excavation processing

- 9.2.1 We anticipate that the site may produce later prehistoric to medieval remains. Environmental remains will also be sampled.
- 9.2.2 Pottery will be assessed by Matt Brudenell (prehistoric), Alice Lyons (Roman) and Dr Paul Spoerry (Saxon and medieval).
- 9.2.3 Environmental analysis will be carried out by OA East staff, in consultation with the OA Environmental Department in Oxford. The results will be reported to Historic England's Regional Scientific Advisor. Environmental analysis will be undertaken by Rachel Fosberry (charred plant macrofossils, plant macrofossils), Liz Stafford (land molluscs), and Denise Druce and Mairead Rutherford (pollen analysis).
- 9.2.4 Faunal remains will be examined by Hayley Foster.
- 9.2.5 Conservation will be undertaken by Ipswich and Colchester Museums / Karen Barker (Antiquities Conservator), and will be undertaken in accordance with guidelines issued by the Institute for Conservation (ICON).
- 9.2.6 In the event that OA's in-house specialists are unable to undertake the work within the time constraints of the project, or if other remains are found, specialists from the list in the Appendix will be approached to carry out analysis.

10 OTHER MATTERS

10.1 Monitoring

- 10.1.1 The SCCAS will be informed appropriately of dates and arrangements to allow for adequate monitoring of the works.
- 10.1.2 During the excavation, representatives of the client, Oxford Archaeology East and the SCCAS will meet on site to monitor the excavations, discuss progress and findings to date, and excavation strategies to be followed.

10.2 Insurance

- 10.2.1 OA East is covered by Public and Employer's Liability Insurance. The underwriting company is Lloyds Underwriters, policy number CC004337. Details of the policy can be supplied on request to the Oxford Archaeology East office.

10.3 Chartered Institute for Archaeologists

- 10.3.1 Oxford Archaeology is a Registered Organisation with the Chartered Institute for Archaeologists (CIfA), and is bound by CIfA By-Laws, Standards, and Policy.

10.4 Services, Public Rights of Way, Tree Preservation Orders etc.

- 10.4.1 The client will inform the project manager of any live or disused cables, gas pipes, water pipes or other services that may be affected by the proposed excavations before the commencement of fieldwork. Hidden cables/services should be clearly identified and marked where necessary. If there are overhead cables on the site or in the approachways, a survey must be completed by the relevant authority before plant is taken onto site.
- 10.4.2 The client will likewise inform the project manager of any public rights of way or permissive paths on or near the land which might affect or be affected by the work.
- 10.4.3 The client will inform the Project Manager if the site is a Scheduled Ancient Monument, Site of Special Scientific Interest (SSSI), or any other type of designated site. The client will also inform the project manager of any trees subject to Tree Preservation Orders, protected hedgerows, protected wildlife, nesting birds, or areas of ecological significance within the site or on its boundaries.

10.5 Site Security

- 10.5.1 Unless previously agreed with the Project Manager in writing, this specification and any associated statement of costs is based on the assumption that the site will be sufficiently secure for archaeological work to commence. All security requirements, including fencing, padlocks for gates etc. are the responsibility of the client.

10.6 Access

- 10.6.1 The client will secure access to the site for archaeological personnel and plant, and obtain the necessary permissions from owners and tenants to place a mobile office and portable toilet on or near to the site. Any costs incurred to secure access, or incurred as a result of withholding of access will not be Oxford Archaeology's responsibility. The costs of any delays as a result of withheld access will be passed on to the client in addition to the project costs already specified.

10.7 Site Preparation

- 10.7.1 The client is responsible for clearing the site and preparing it so as to allow archaeological work to take place without further preparatory works, and any cost statement accompanying or associated with this specification is offered on this basis. Unless previously agreed in writing, the costs of any preparatory work required, including tree felling and removal, scrub or undergrowth clearance, removal of concrete or hard standing, demolition of buildings or sheds, or removal of excessive overburden, refuse or dumped material, will be charged to the client, in addition to any costs for archaeological evaluation already agreed.

10.8 Site offices and welfare

- 10.8.1 All site facilities – including welfare facilities, tool stores, mess huts, and site offices – will be positioned to minimise disruption to other site users, and to minimise impact on the environment (including buried archaeology).

10.9 Backfilling/Reinstatement

- 10.9.1 Backfilling – but not specialist reinstatement – of trenches is included in the cost unless otherwise agreed with the client. Backfilling will only take place with the approval of the SCCAS.

10.10 Health and Safety, Risk Assessments

- 10.10.1 A risk assessment and method statement (RAMS) covering all activities to be carried out during the lifetime of the project will be prepared before work commences.
- 10.10.2 The risk assessment will conform to the requirements of health and safety legislation and regulations, and will draw on OA East's activity-specific risk assessment literature.
- 10.10.3 All aspects of the project, both in the field and in the office will be conducted according to OA East's Health and Safety Policy, Oxford Archaeology Ltd's Health and Safety Policy, and Health and Safety in Field Archaeology (J.L. Allen and A. St John-Holt, 1997). A copy of OA East's Health and Safety Policy can be supplied on request.

11 APPENDIX: CONSULTANT SPECIALISTS

NAME	SPECIALISM	ORGANISATION
Allen, Leigh	Worked bone, CBM, medieval metalwork	Oxford Archaeology
Allen, Martin	Medieval coins	Fitzwilliam Museum
Anderson, Sue	HSR, pottery and CBM	Suffolk County Council
Bayliss, Alex	C14	English Heritage
Biddulph, Edward	Roman pottery	Oxford Archaeology
Billington, Laurence	Lithics	Oxford Archaeology
Bishop, Barry	Lithics	Freelance
Blinkhorn, Paul	Iron Age, Anglo-Saxon and medieval pottery	Freelance
Boardman, Sheila	Plant macrofossils, charcoal	Oxford Archaeology
Bonsall, Sandra	Plant macrofossils; pollen preparations	Oxford Archaeology
Booth, Paul	Roman pottery and coins	Oxford Archaeology
Boreham, Steve	Pollen and soils/ geology	Cambridge University
Brown, Lisa	Prehistoric pottery	Oxford Archaeology
Cane, Jon	illustration & reconstruction artist	Freelance
Champness, Carl	Snails, geoarchaeology	Oxford Archaeology
Cotter, John	Medieval/post-Medieval finds, pottery, CBM	Oxford Archaeology
Crummy, Nina	Small Find Assemblages	Freelance
Cowgill, Jane	Slag/metalworking residues	Freelance
Dickson, Anthony	Worked Flint	Oxford Archaeology
Dodwell, Natasha	Osteologist	Oxford Archaeologist
Donnelly, Mike	Flint	Oxford Archaeology
Doonan, Roger	Slags, metallurgy	
Druce, Denise	Pollen, charred plants, charcoal/wood identification, sediment coring and interpretation	Oxford Archaeology
Drury, Paul	CBM (specialised)	Freelance
Evans, Jerry	Roman pottery	Freelance
Fletcher, Carole	Medieval pot, glass, small finds	Oxford Archaeology
Fosberry, Rachel	Charred plant remains	Oxford Archaeology
Foster, Haley	Zooarchaeologist	Oxford Archaeology
Fryer, Val	Molluscs/environmental	Freelance
Gale, Rowena	Charcoal ID	Freelance
Geake, Helen	Small finds	Freelance
Gleed-Owen, Chris	Herpetologist	
Goffin, Richenda	Post-Roman pottery, building materials, painted wall plaster	Suffolk CC
Hamilton-Dyer, Sheila	Fish and small animal bones	
Howard-Davis, Chris	Small finds, Mesolithic flint, RB coarse pottery, leather, wooden objects and wood technology;	Oxford Archaeology

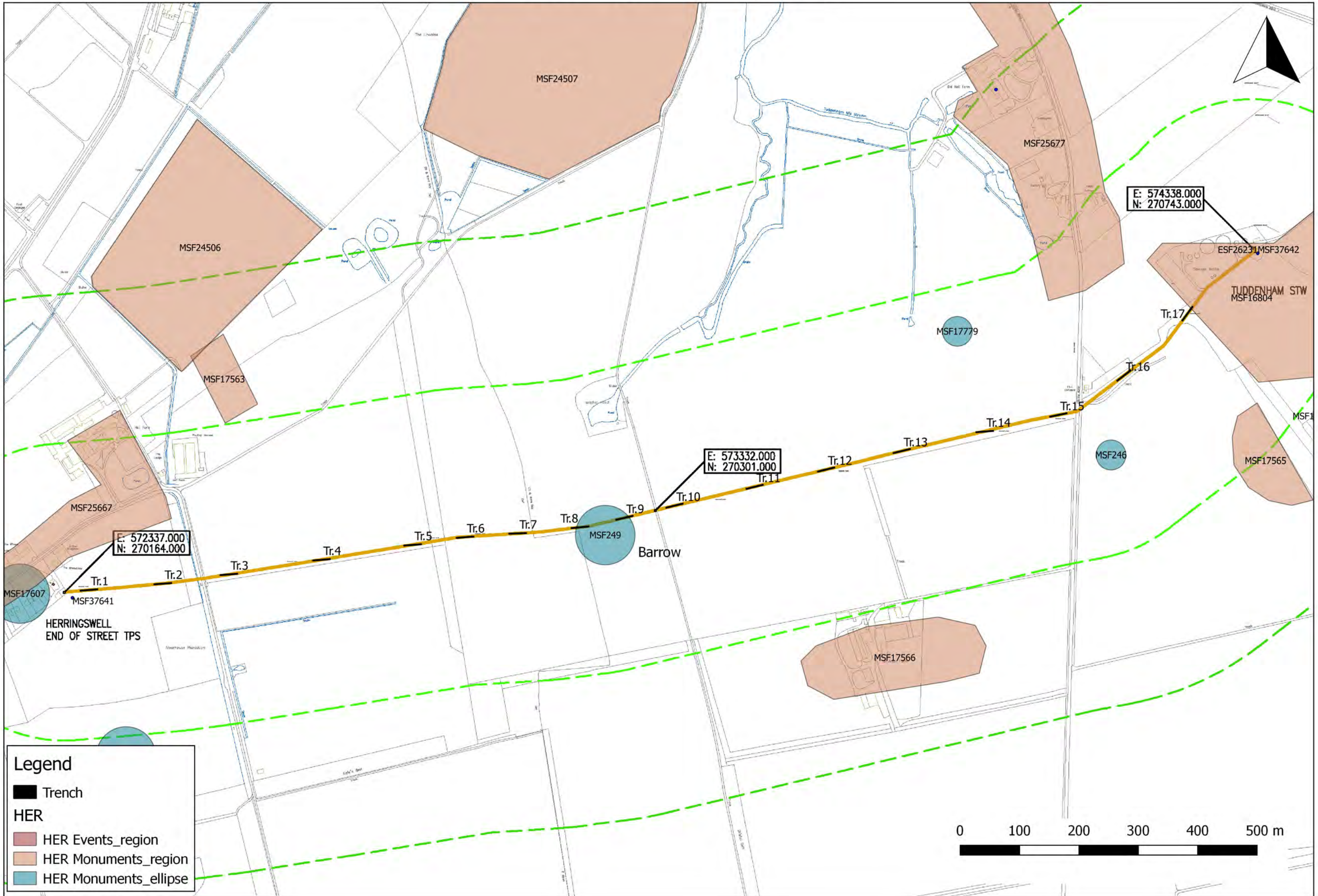
NAME	SPECIALISM	ORGANISATION
Hunter, Kath	Archaeobotany (charred, waterlogged and mineralised plant remains)	Oxford Archaeology
Jones, Jenny	Conservation	ASUD, Durham University
King, David	Window glass & lead	
Locker, Alison	Fishbone	
Loe, Louise	Osteologist	Oxford Archaeology
Lyons, Alice	Late Iron Age/Roman pottery	Oxford Archaeology
Macaulay, Stephen	Roman pottery	Oxford Archaeology
Masters, Pete	geophysics	Cranfield University
Middleton, Paul	Phosphates/garden history	Peterborough Regional College
Mould, Quita	Ironwork, leather	
Nicholson, Rebecca	Fish and small mammal and bird bones, shell	Oxford Archaeology
Palmer, Rog	Aerial photographs	Air Photo Services
Percival, Sarah	Prehistoric pottery, quern stones	Freelance
Poole, Cynthia	Multi-period finds, CBM, fired clay	Oxford Archaeology
Popescu, Adrian	Roman coins	Fitzwilliam Museum
Rackham, James	Faunal and plant remains, can arrange pollen analysis	
Riddler, Ian	Anglo-Saxon bone objects & related artefact types	Freelance
Robinson, Mark	Insects	
Rowland, Steve	Faunal and human bone	Oxford Archaeology
Rutherford, Mairead	Pollen, non-pollen palynomorphs, dinoflagellate cysts, diatoms	Oxford Archaeology
Samuels, Mark	Architectural stonework	Freelance
Scaife, Rob	Pollen	
Scott, Ian	Roman, Medieval, post-medieval finds, metalwork, glass	Oxford Archaeology
Sealey, Paul	Iron Age pottery	Freelance
Shafrey, Ruth	Worked stone, cbm	Oxford Archaeology
Smith, Ian	Animal Bone	Oxford Archaeology
Spoerry, Paul	Medieval pottery	Oxford Archaeology
Stafford, Liz	Snails	Oxford Archaeology
Strid, Lena	Animal bone	Oxford Archaeology
Tyers, Ian	Dendrochronology	
Ui Choileain, Zoe	Human bone	Oxford Archaeology
Vickers, Kim	Insects	Sheffield University
Wadeson, Stephen	Samian, Roman glass	Oxford Archaeology
Walker, Helen	Medieval Pottery in the Essex area	

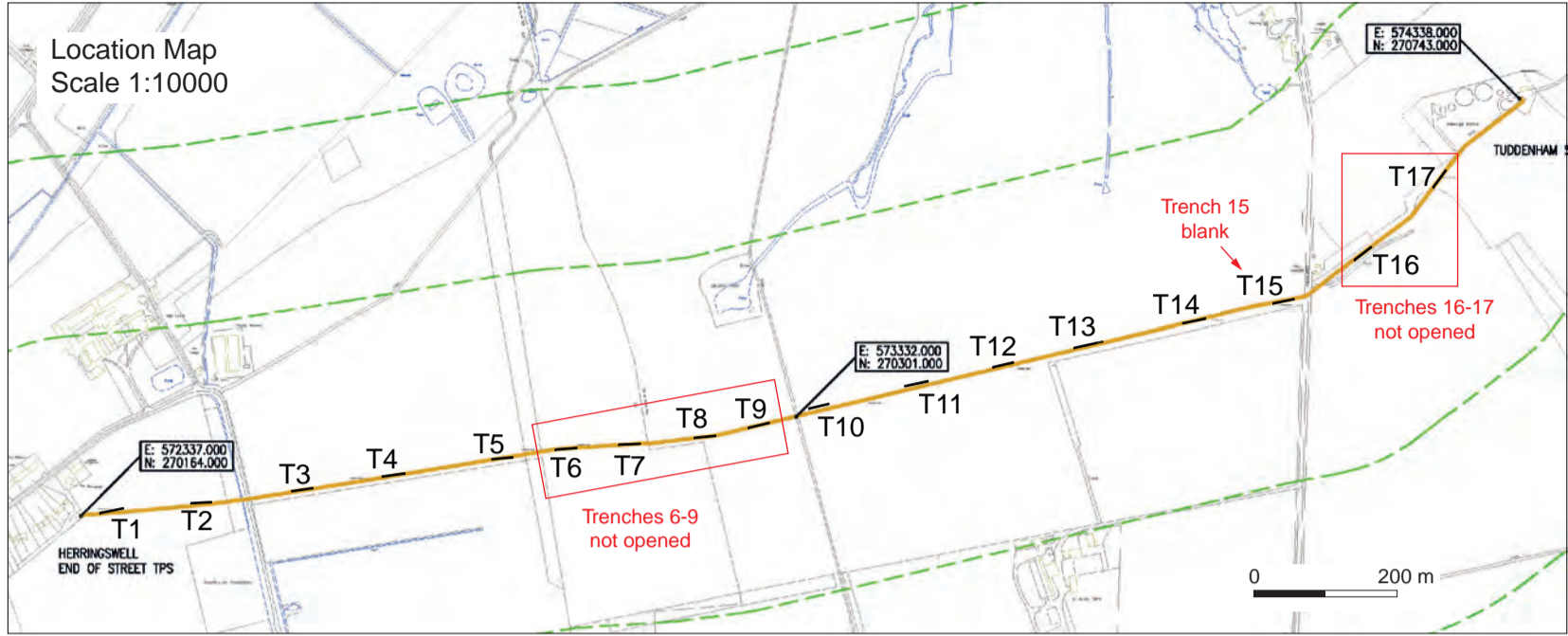
NAME	SPECIALISM	ORGANISATION
Way, Twigs	Medieval landscape and garden history	Freelance
Webb, Helen	Osteologist	Oxford Archaeology
Willis, Steve	Iron Age pottery	
Young, Jane	Medieval Pottery in the Lincolnshire area	
Zant, John	Coins	Oxford Archaeology

Radiocarbon dating is normally undertaken for Oxford Archaeology East by SUERC and by the Oxford University Accelerator Laboratory.

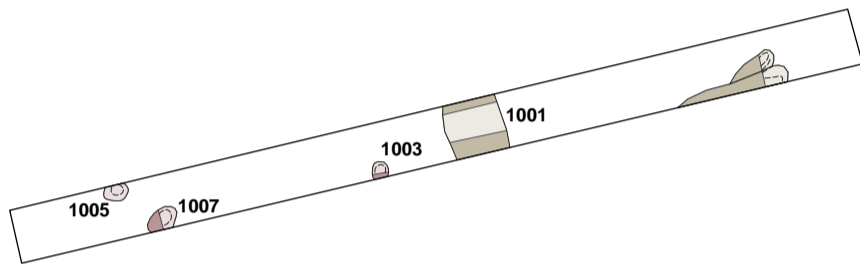
Geophysical prospection is normally undertaken by Magnitude Surveys Ltd.

Herringswell AW Pipeline: Trench Plan (Revised 3)

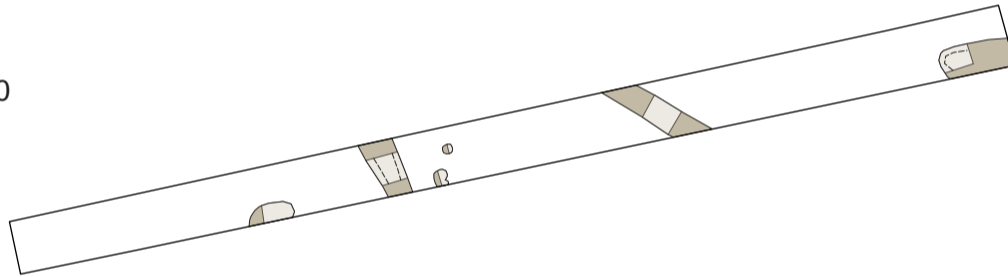




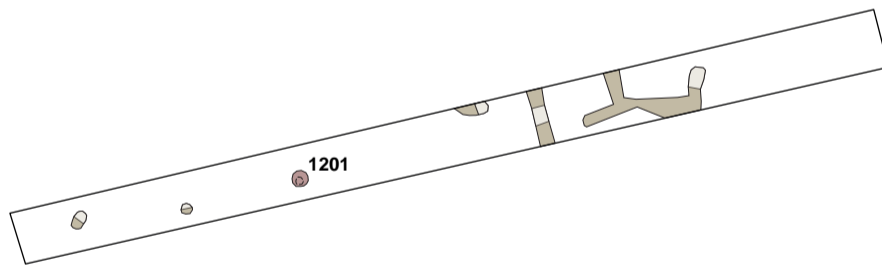
Trench 10
Scale 1:500



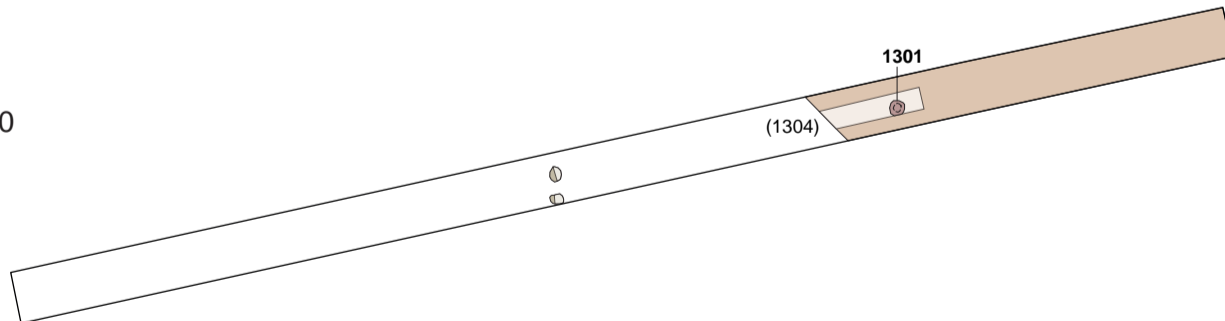
Trench 11
Scale 1:500



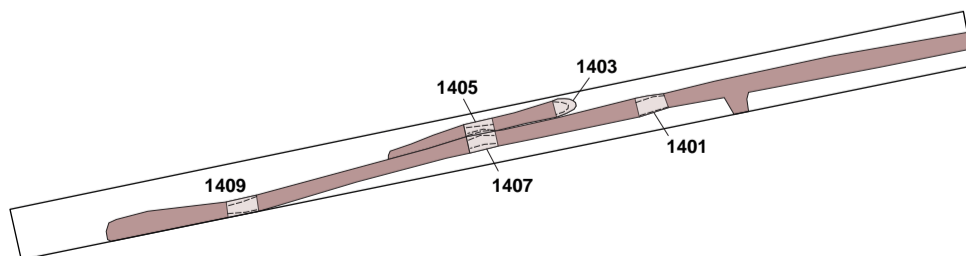
Trench 12
Scale 1:500



Trench 13
Scale 1:500



Trench 14
Scale 1:500



Key	
	Evaluation trench
	Archaeological feature
	Archaeological deposit
	Natural feature
	Break of slope
111	Cut number
(111)	Deposit number



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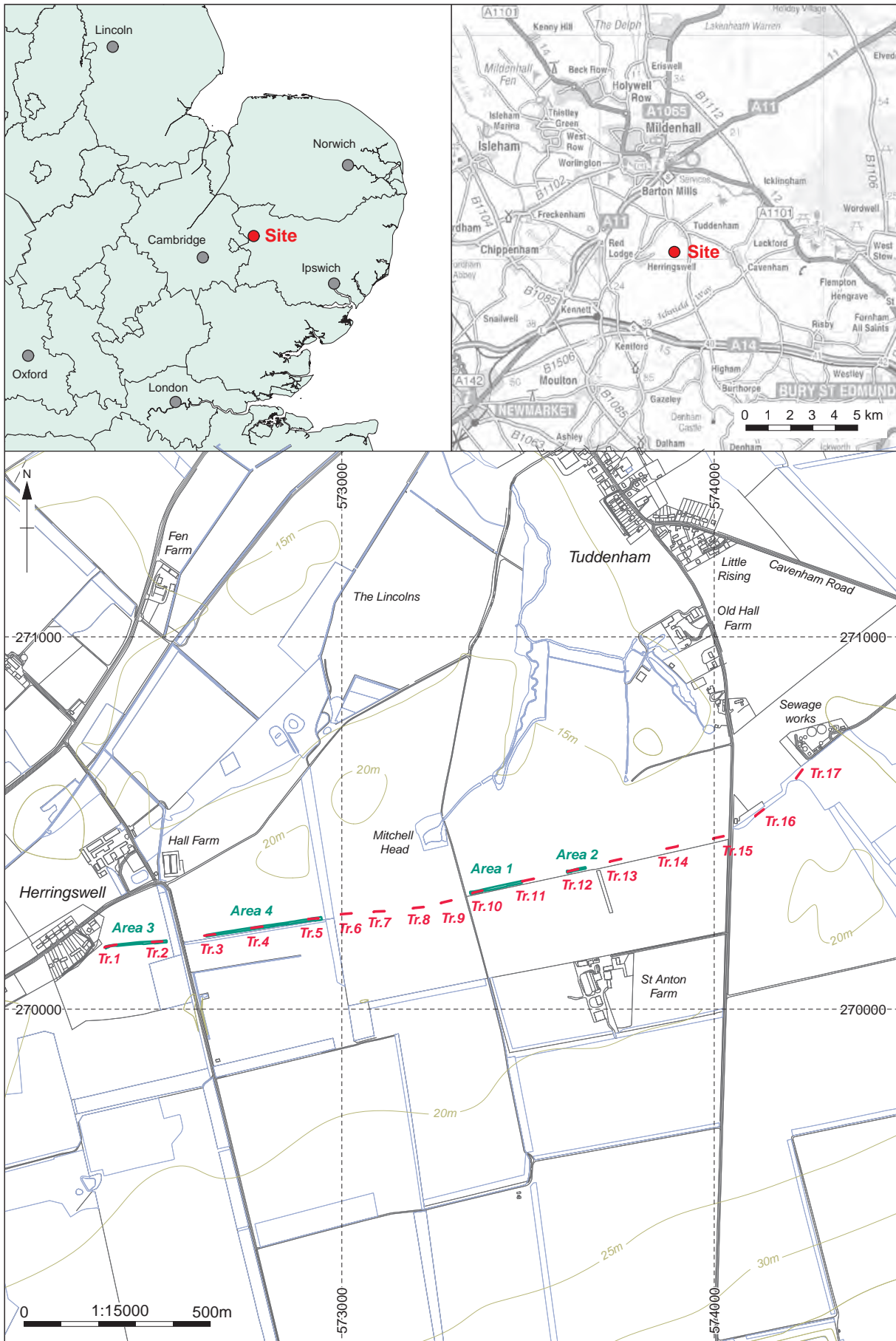
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Figure 1: Site location showing excavation areas (green) and evaluation trenches (red)

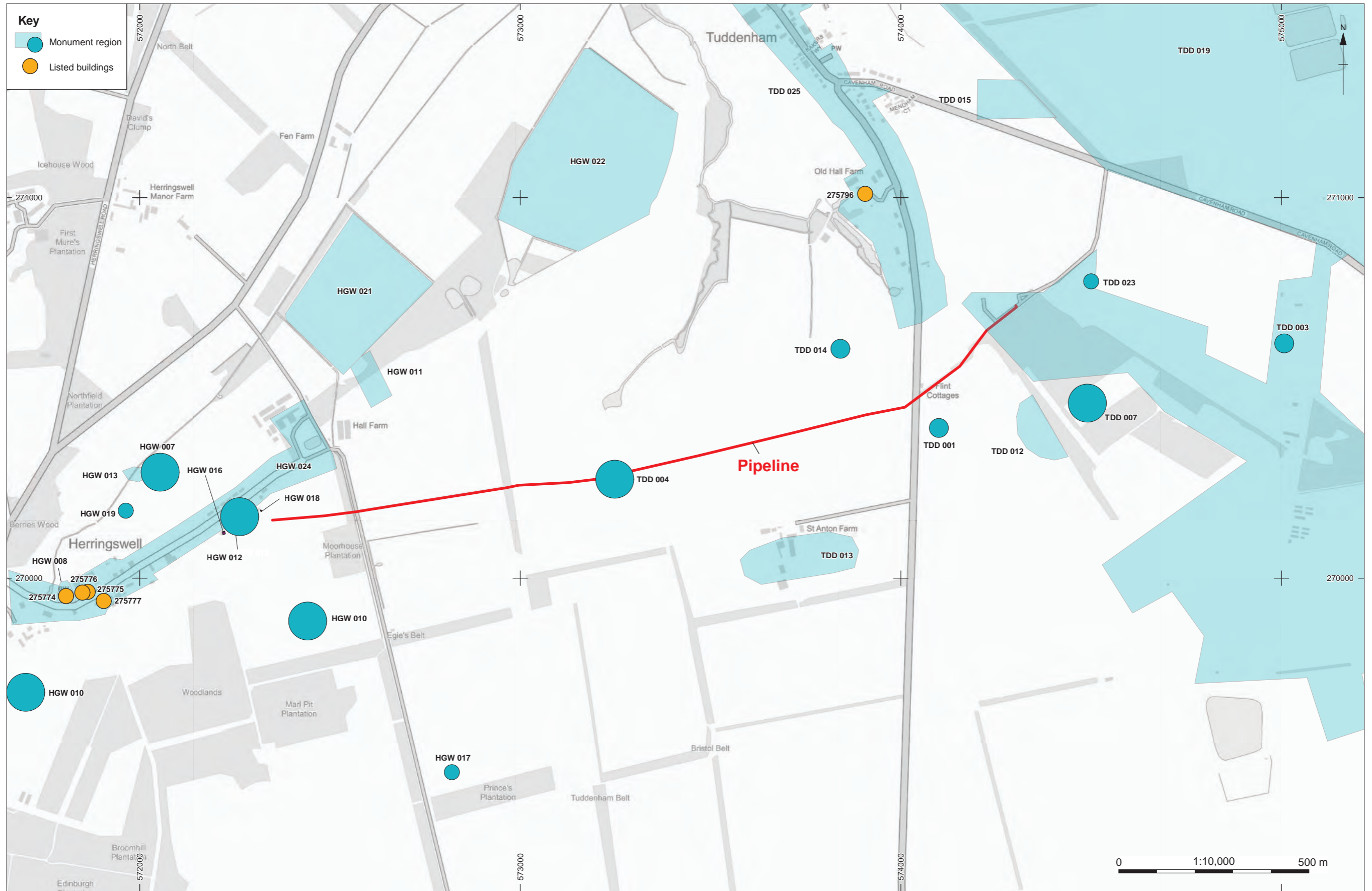


Figure 2: Selected HER entries

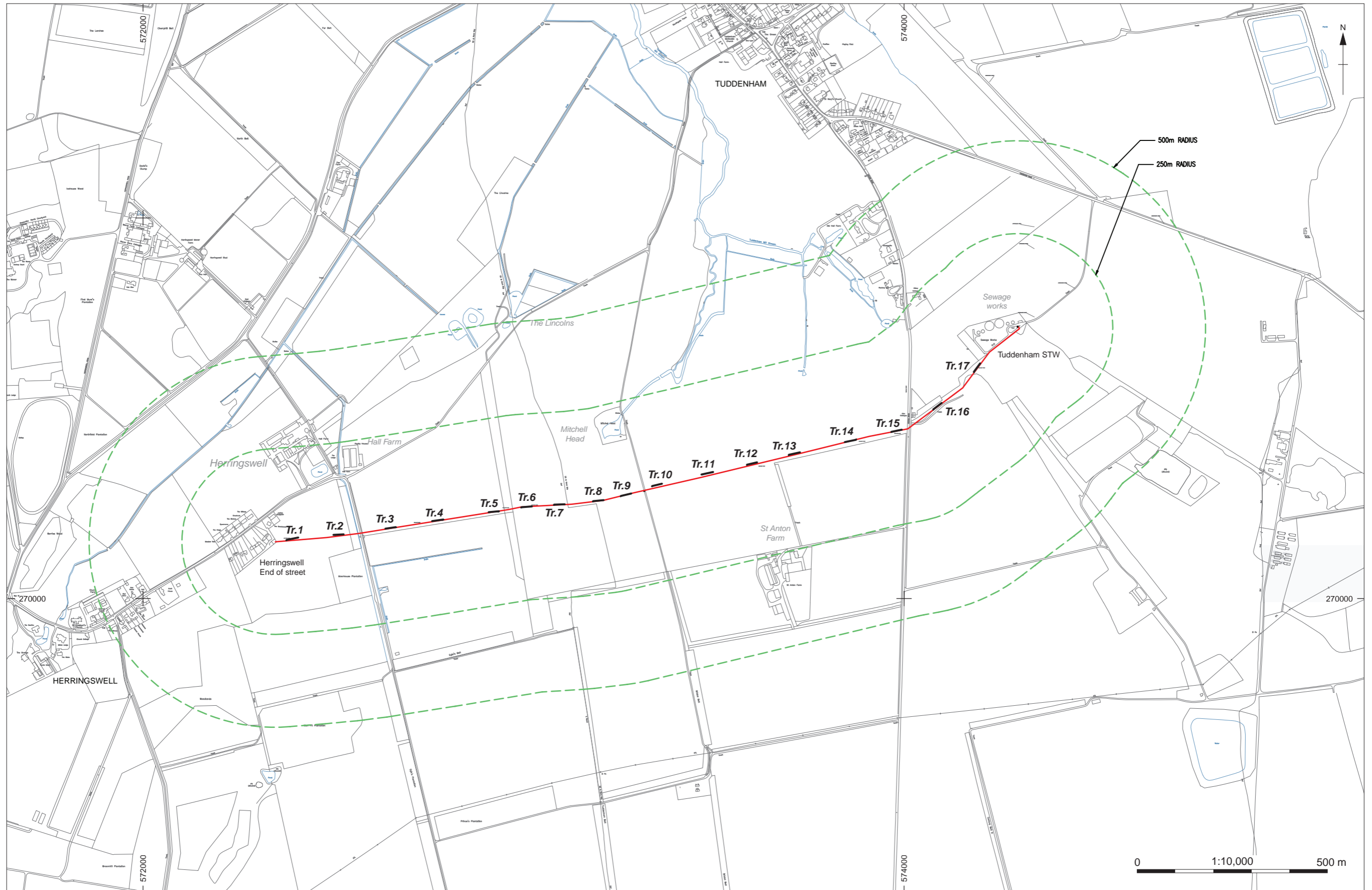


Figure 3: The pipeline route (red) with evaluation trenches (black) (data provided by client)

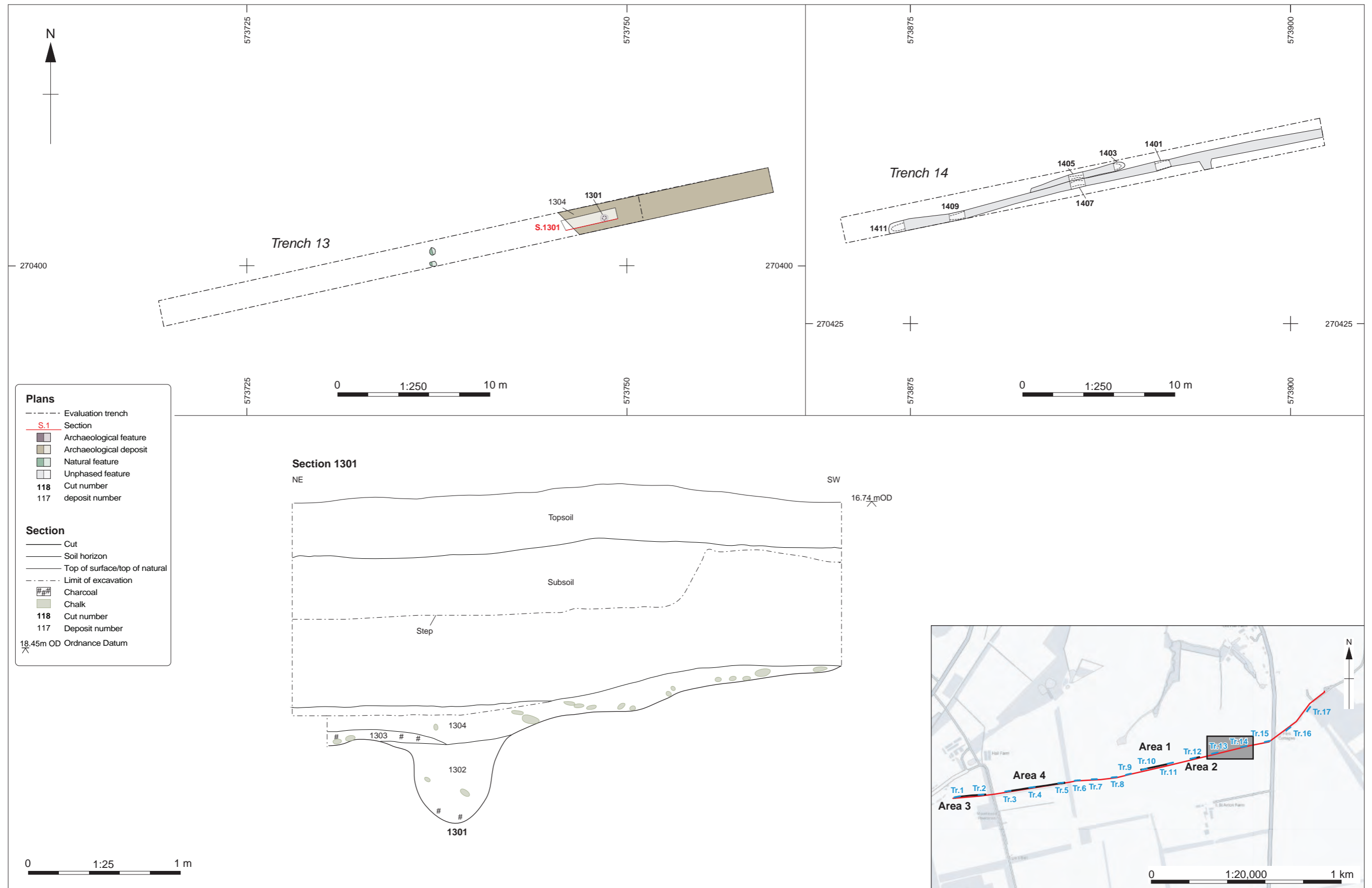


Figure 4: Evaluation trenches 13 and 14 with selected section

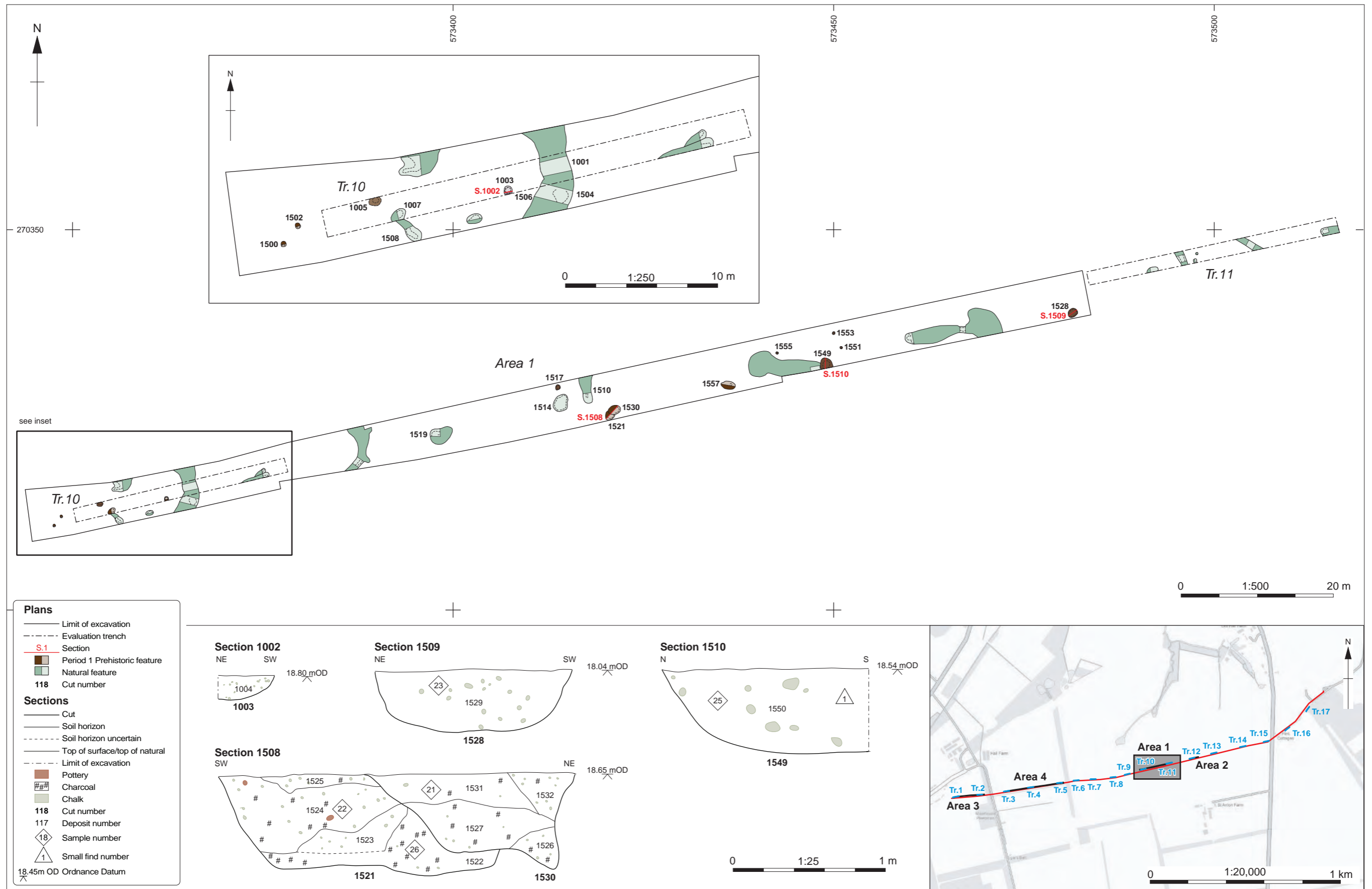


Figure 5: Excavation Area 1 with selected sections

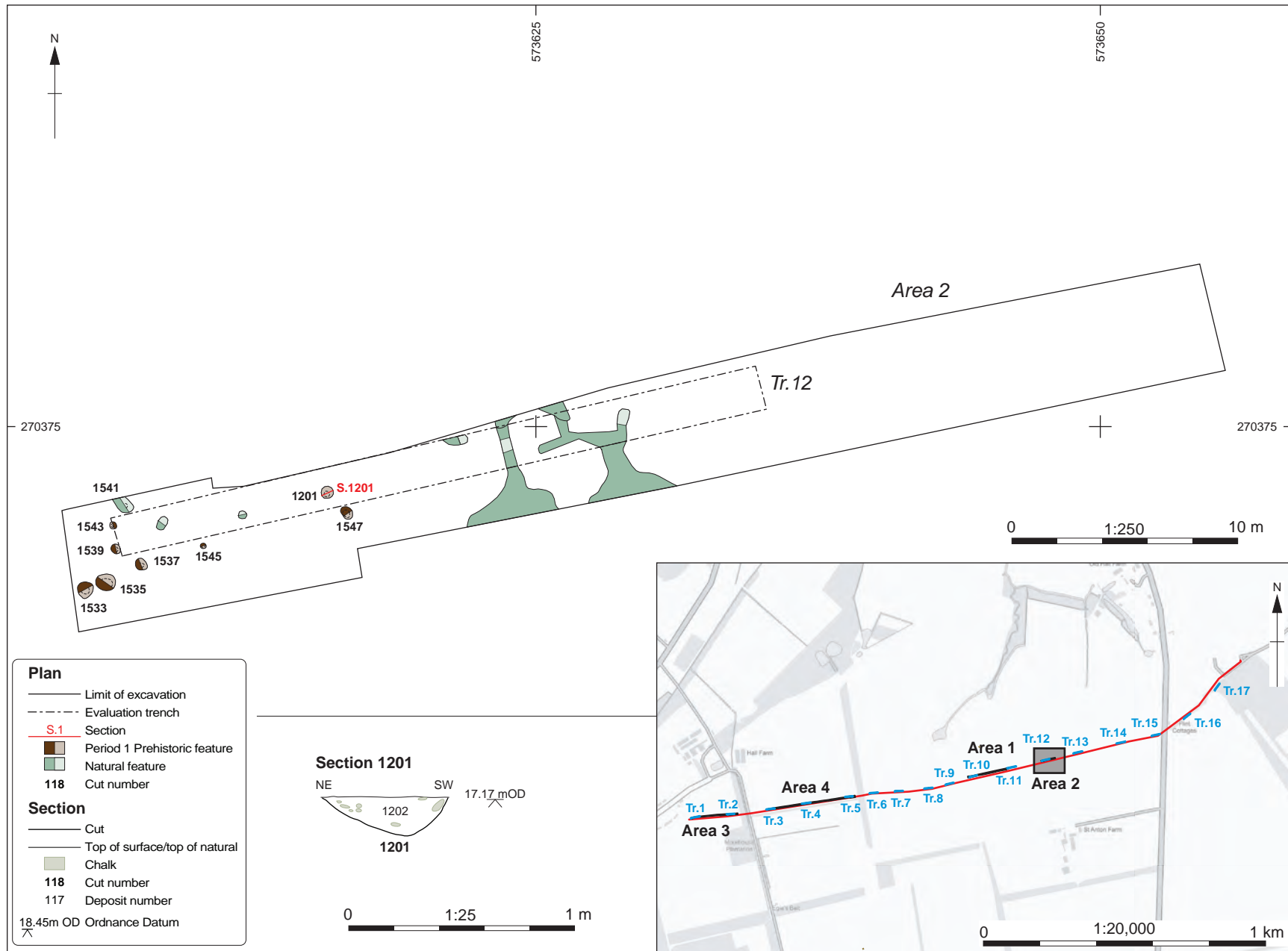


Figure 6: Excavation Area 2 with selected section

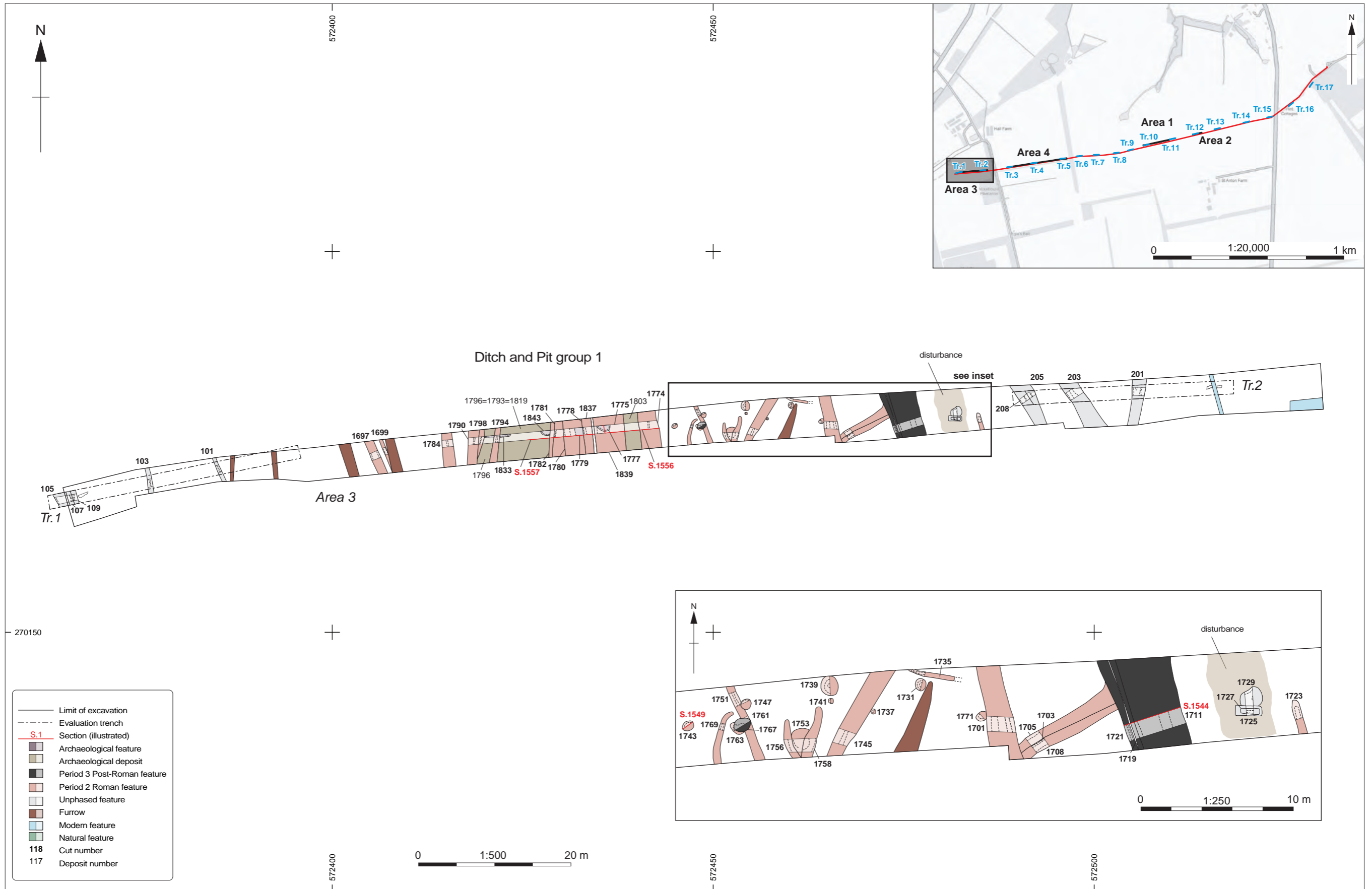


Figure 7: Excavation Area 3

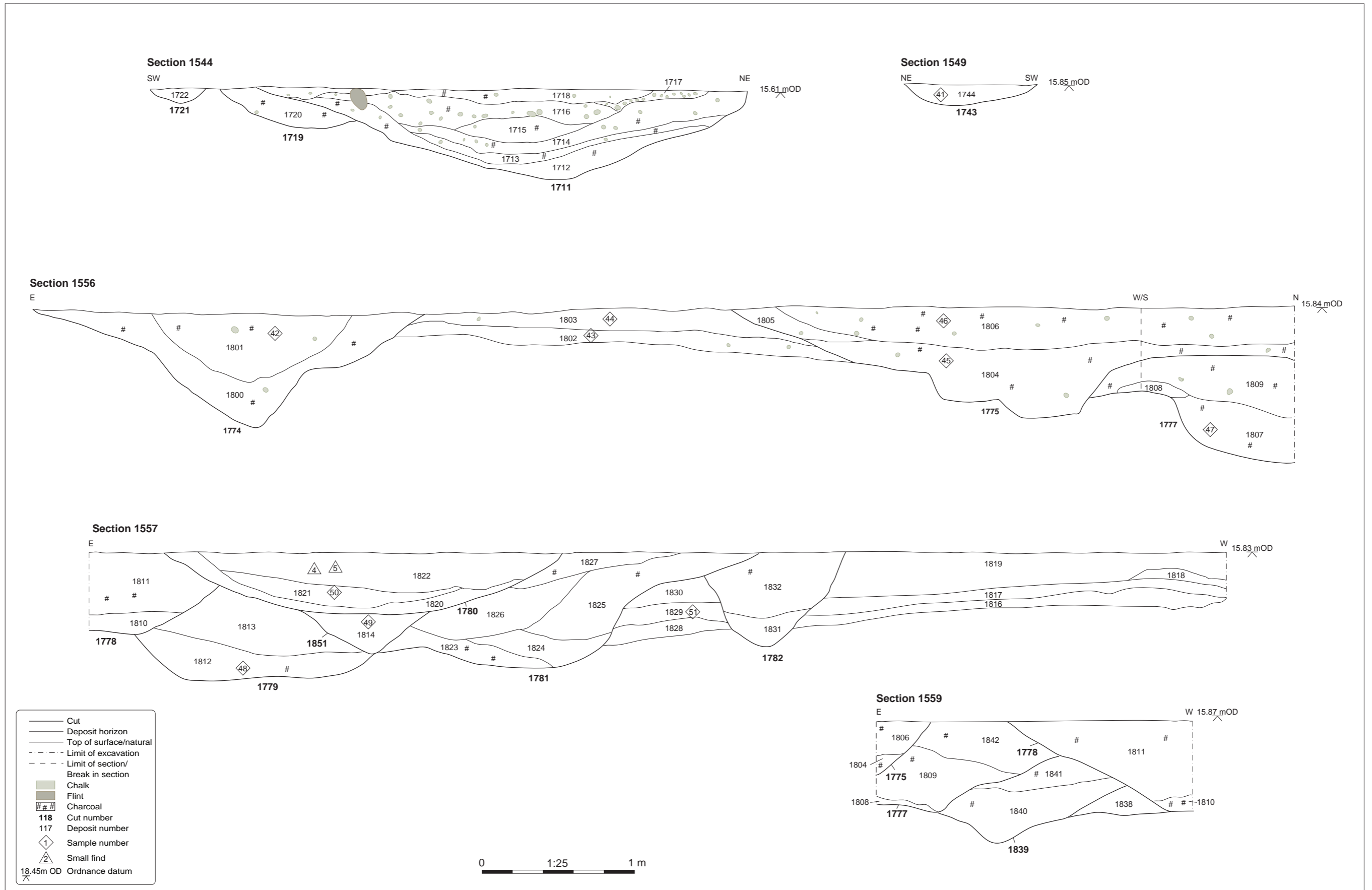


Figure 8: Excavation Area 3 selected sections

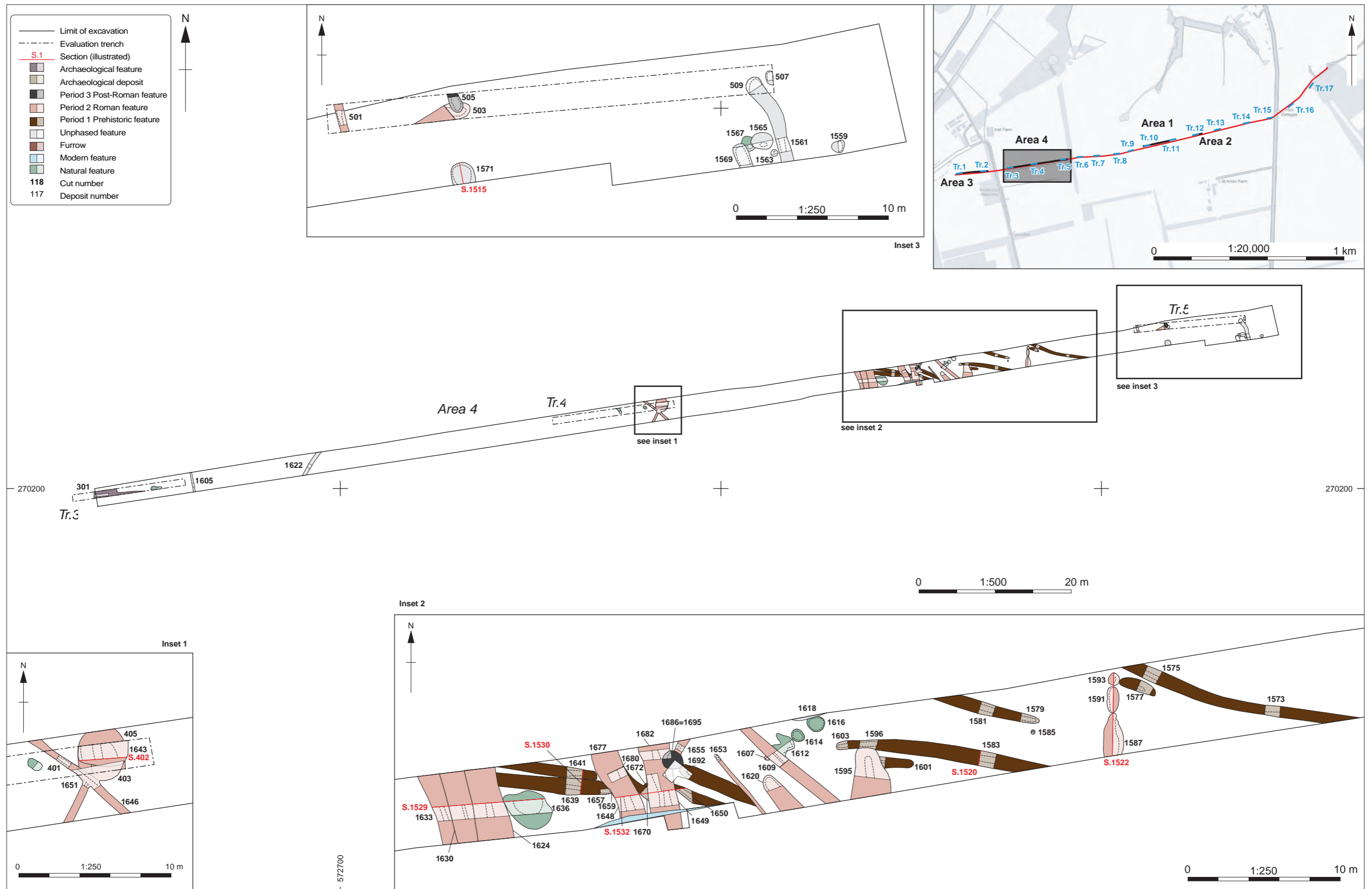
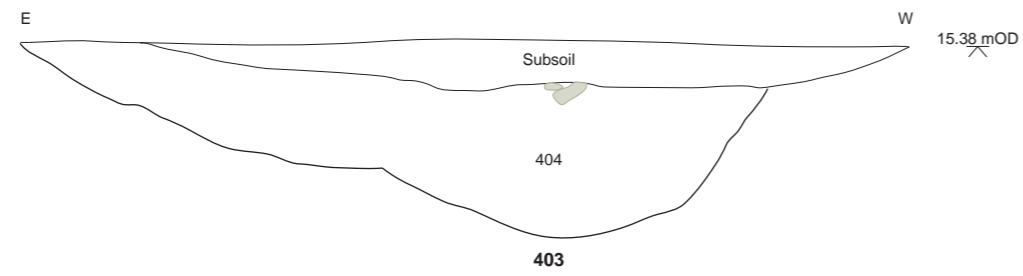
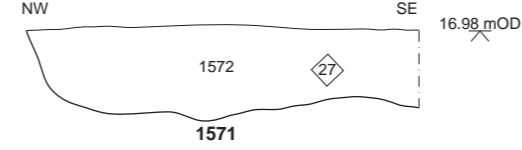


Figure 9: Excavation Area 4

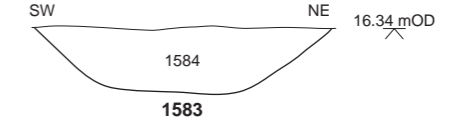
Section 402



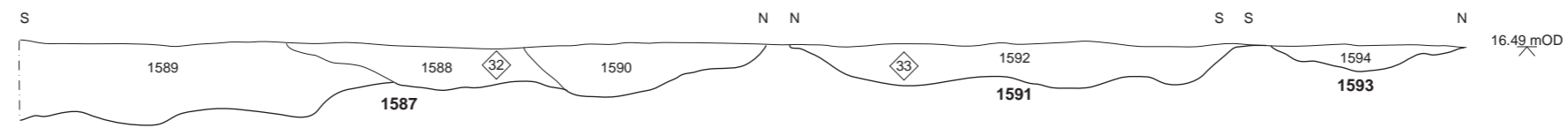
Section 1515



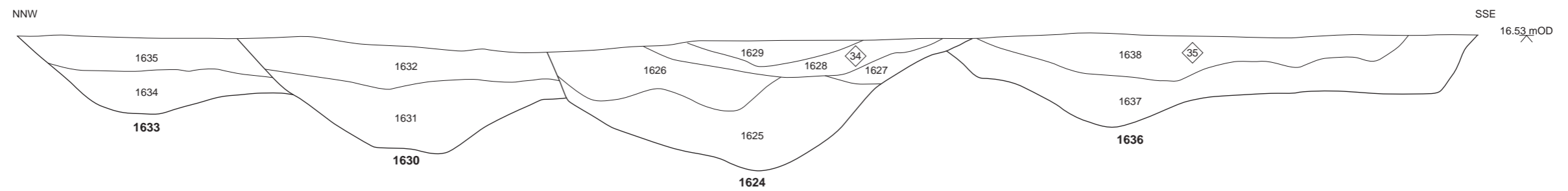
Section 1520



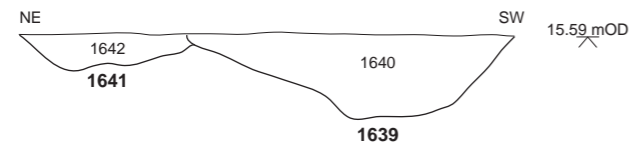
Section 1522



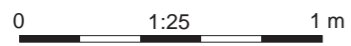
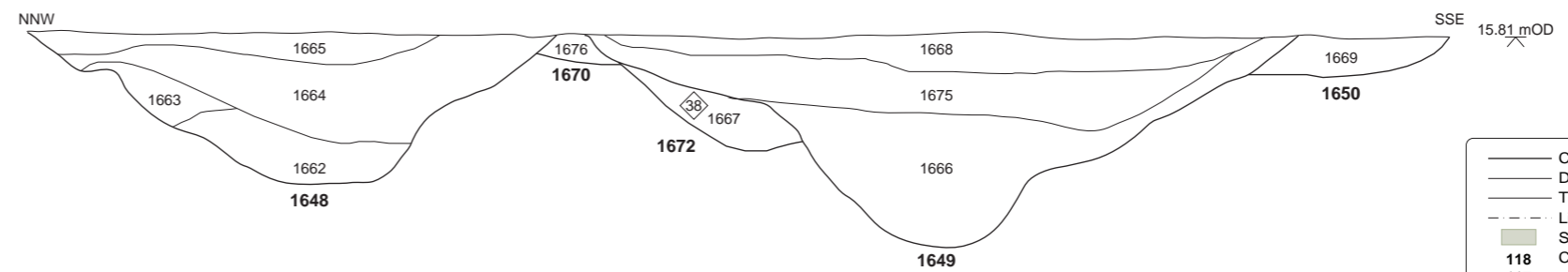
Section 1529



Section 1530



Section 1532



	Cut
	Deposit horizon
	Top of surface/natural
	Limit of excavation
	Stone
118	Cut number
117	Deposit number
	Sample number
	18.45m OD Ordnance datum

Figure 10: Excavation Area 4 selected sections



Plate 1: Trench 13, Pit **1301**, looking south



Plate 2: Trench 14, ditches **1401** and **1403**, looking west



Plate 3: Area 1, Pit **1521** containing fired clay deposit, and Pit **1530**, looking north-west



Plate 4: Area 1, Pit **1549** which contained carved chalk weight (SF 1), looking south



Plate 5: Carved chalk weight (SF1)



Plate 6: Trench 12, Pit **1201**, looking south



Plate 7: Area 3, dense intercutting feature spreads, with Ditch 1774 in the foreground, looking east-north-east



Plate 8: Area 3, ditches 1778, 1779 and 1781, looking north-west



Plate 9: Area 3, Pit **1843**, looking north



Plate 10: Area 4, intercutting ditches **1633**, **1630** and **1624** with Tree bole **1636**, looking north-east



Plate 11: Area 4, Pit **403** with Ditch **1646**, looking north



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