



Iron Age and Roman Activity on land East of Kettering, the Balancing Pond site Post-Excavation Assessment and Updated Project Design

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Prepared by: Nick Gilmour (Project Officer),
Updated by Graeme Clarke (Post Excavation Project Officer)
Checked by: James Drummond-Murray (Senior Project Manager)
Edited by: Elizabeth Popescu (Post-Excavation & Publications Manager)
Approved for Issue by: Paul Spoerry (Regional Manager)
Signature: 

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OA South

Janus House
Osney Mead
Oxford
OX2 0ES

t. +44 (0)1865 263 800

OA East

15 Trafalgar Way
Bar Hill
Cambridge
CB23 8SG

t. +44 (0)1223 850 500

OA North

Mill 3
Moor Lane Mills
Moor Lane
Lancaster
LA1 1QD

t. +44 (0)1524 880 250

e. info@oxfordarch.co.uk
w. oxfordarchaeology.com

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Iron Age and Roman Activity on land East of Kettering, the Balancing Pond site

Post-Excavation Assessment

Written by Nick Gilmour MA ACIfA

With Contributions by Kathryn Blackbourn BA ACIfA, Martha Craven BA, Zoë Uí Choileáin MA MSc, Rachel Fosberry ACIfA, Hayley Foster BA MA PhD, Chris Howard-Davis BA MCIfA, Ted Levermore BA MA, Alice Lyons BA MA MCIfA, Sarah Percival BA MA MCIfA, Denis Sami PhD, Simon Timberlake MSc PhD

Illustrations by Markus Dylewski, Gillian Greer BSc and Dave Brown BA

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Summary

Archaeological excavations were carried out to the East of Kettering in advance of the construction of some balancing ponds and associated infrastructure. These revealed extensive Roman remains and part of an Iron Age settlement. Potentially of most significance was a large area dedicated to crop processing. This included stone and clay lined tanks, along with corn driers. Charred plant remains from this area include germinated Spelt along with large quantities of sprouts from germinated grains. These suggest that largescale brewing may have been carried out in this location. In addition, separate enclosures revealed on part of the site may be related to a high-status Romano-British building.

This excavation is part of a large project related to the East Kettering Development. Previous and potential future work on this project sets the current sites in their wider landscape setting.

1 INTRODUCTION

1.1 Background

- 1.1.1 During 2016, Oxford Archaeology East (OA East) carried out an excavation on land within the 350ha Hanwood Park development, east of Kettering (Fig. 1). This is a mixed-use development containing up to 5,500 dwellings, a secondary school, up to four primary schools, open space, employment areas, local centre facilities and associated infrastructure. The development has been the subject of archaeological evaluation and mitigation work by OA East between 2012 and 2022. A gazetteer of previous work at Hanwood Park and adjacent Cranford Business Park is presented in Appendix E, Table 21 with site locations shown on Figure 2.
- 1.1.2 The 2016 excavation covered an area where a balancing pond is due to be built, along with pipeline works. These areas were located in arable fields to the south of Poplar's Farm Road (SP 9001 7719; Fig. 1). In July 2022, the balancing pond site lay within the Central Open Space North (COS) investigation area which formed part of an additional phase of evaluation work (Sinclair 2022). A small area of associated remains was identified which was subject to additional excavation work in August 2022 (Area COS), which have been integrated with the original excavation in this updated report.
- 1.1.3 This assessment has been conducted in accordance with the principles identified in Historic England's guidance documents *Management of Research Projects in the Historic Environment*, specifically *The MoRPHE Project Manager's Guide (2015)* and *PPN3 Archaeological Excavation (2008)*.

1.2 Geology and topography

- 1.2.1 The underlying geology of the area is Jurassic limestone, with Whitby mudstones overlying this in places. Glacial till deposits have been deposited on top of this in some locations. The geology noted in the current excavation area during the evaluation was glacial clays.
- 1.2.2 The current site is situated at the bottom of a shallow valley, with the ground sloping up to the north. A stream runs immediately to the south of the excavation area.

1.3 Archaeological background

- 1.3.1 A full archaeological background has previously been presented in a desk-based assessment of the site (Chadwick and Dicks 2005, updated by Dicks 2021) and is not repeated here. However, the results of the evaluation (Gilmour 2012) of this area identified a number of Roman features and stone deposits, suggesting the potential for Roman stone buildings to be present.

1.4 Original research aims and objectives

- 1.4.1 The main aim of the project was to preserve the archaeological evidence contained within the areas by record and to attempt a reconstruction of the history and use of the site.

Regional research aims

1.4.2 The regional research aims were three-fold:

- Assess the evidence for the evolution of settlement hierarchies (Knight *et al* 2012, 64).
- Investigate intra-regional variations in the development of fields and linear boundary systems (*ibid*, 65).
- Characterise placed deposits and sites of shrines or temples (*ibid*, 67).

Site specific research aims

1.4.3 Site specific research aims focused on:

- Characterising the form and development history of the sites.
- Determining the role of each of the areas of Roman activity and their relationship to each other.
- If remains of any occupational evidence or domestic buildings survive, their form and associated artefacts will help to define their function, date and use and any subsequent modifications in form and usage.
- If evidence of crop or food processing survives (e.g. burnt grain, butchered animal bone) conclusions can be drawn on the type(s) of agricultural regimes that may have been in operation (both domestic and wild).

Research frameworks

1.4.4 This excavation takes place within, and will contribute to the goals of Regional Research Framework relevant to this area: *East Midlands Heritage; An Updated Research Agenda and Strategy for the Historic Environment of the East Midlands* (Knight *et al* 2012).

1.5 Fieldwork methodology

1.5.1 Eight areas (listed below, see Fig. 3) were stripped using 360⁰ mechanical excavators with a toothless ditching buckets, exposing a total of c.3ha. The mechanical excavation was carried out under supervision of a suitably qualified and experienced archaeologist.

Area	Size (ha)	Description	Area name from evaluation (Gilmour 2012)
B1	0.33	Link Road	-
B2	0.09	Outfall pipe corridor	-
B3	0.18	Outfall pipe corridor	-

B4	0.44	Outfall pipe corridor	Part of 8
C1	0.23	Balancing pond	Part of 7
C2	1.28	Balancing pond	Part of 8
3	0.45	Anglia water pipeline corridor	Part of 4
COS	0.1	Part of balancing pond investigation area	Central Open Space North (COS)

Table 1: Summary of excavated areas

- 1.5.2 Any archaeological features identified were mapped onto a base plan either by hand (1:50) or using a GPS, as appropriate. Established excavation and recording methodology was used as has been generally employed on rural sites in England. James Drummond-Murray (Project Manager) monitored the work of the site director (Lazlo Litchenstein). A Supervisor was used to ensure accuracy of excavation and recording.
- 1.5.3 Forty-five bulk samples were taken from the 2016 balancing pond excavation. In 2022, three additional samples were taken from Area COS. Selected samples were processed during the course of the excavation in order to provide feedback and adaptation of the sampling strategy. Additional samples were taken from Area C once the potential of the environmental remains was realised. Samples were taken from two areas; five samples were taken from the extreme western area of excavation and the remaining samples were taken from an area of intense activity in the east of the site. The nature of the deposits in this area was difficult to determine during excavation as there appeared to be a natural peat spread over much of the area in addition to several dark layers that were clearly charcoal-rich. Feedback samples from the latter indicated excellent preservation of charred plant remains with germinated spelt wheat as the predominant component. The excavation of the archaeological remains was extended with the intention of determining if this was an area in which spelt malting was taking place.

1.6 Project scope

- 1.6.1 This assessment deals with excavations related to the construction a balancing ponds, a road and pipeline easement in the same area. These areas are named 3, B1, B2, B3, B4, C1, C2 and Central Open Space (COS), as listed in Table 1 above and shown on Figure 3. This document does not include the remains of a Halifax aircraft recovered from Area C1; this will be covered by a separate report.

2 FACTUAL DATA

2.1 Stratigraphy

General

2.1.1 The following stratigraphic records were created:

Record type	Number
Context records	1088
Section drawings	290

Phase 1: Neolithic

2.1.2 The only Neolithic finds from this project were two sherds of pottery (12g) from Area 3, which may be Neolithic Peterborough Ware. These sherds came from a ditch and a pit and are likely to be residual. However, they do indicate activity of Neolithic date in this area.

Phase 2: Bronze Age

2.1.3 A single pit in Area 3 contained 38 sherds of comb-impressed Beaker (93g). This is not likely to be funerary in nature (App A.2) and therefore could suggest occupation in this area dating to c.2490-1620 BC.

2.1.4 A further 76 sherds (718g) of Middle Bronze Age pottery were recovered from another feature in Area 3, suggesting some activity within this area during the period c.1400-1000 BC.

Phase 3: Iron Age

2.1.5 Most of the Iron Age material recovered came from Area 3, which appeared to contain the remains of part of an Iron Age settlement, including the eaves-drip gully from a roundhouse.

2.1.6 This Iron Age settlement had previously been identified during evaluation (Gilmour 2012, area 4). It is possible that more of this settlement will be revealed during later work related to the East Kettering development.

Phase 4: Roman

2.1.7 The vast majority of the features and finds present on the site were Roman. The pottery shows that activity occurred between the 1st and 3rd centuries AD and further analysis may well allow Roman features to be separated into different phases of activity.

2.1.8 Most of the Roman activity was identified within Area C1. The main area of activity is bisected by a large Roman ditch (ditch 1), immediately to the north of which there was evidence of a stone structure with a cobbled surface (Industrial Area 1). A T-shaped corn drier was located within the area, along with a large stone-and clay-built tank.

2.1.9 The area south of Roman ditch 1 included a stone-lined rectangular pit that appeared to be connected to ditch 2 (which ran parallel to ditch 1 and possibly connected to

ditch 4). Also within this southern area was at least one oven, a stone-lined tank and a working surface (Industrial Area 2).

- 2.1.10 Both of these industrial areas appear to have been related to brewing. Large amounts of water are required for the initial steeping of the grain and there appears to have been a system of water management for this purpose (ditches 1 and 2). The steeped grain would have been spread over a malting floor and there are structures present which could have incorporated this. The subsequent stage of halting the germination of the grain required heat which would have been provided by hot air funnelled through the ovens including the T-shaped driers identified. It is also possible that an area of Roman activity identified to the east of Area C2 during evaluation, provided further support to the brewing. Within this area a number of large postholes, potentially from aisled buildings were recorded, some with large storage vessels set within pits in the floor (Gilmour 2012, Area 7).
- 2.1.11 In the western part of Area C1 lay a series of Roman enclosures, which continued out of the excavation area to the west to Area COS, where a well was unearthed. A surfaced road was also present in Area C1, along with a several stone spreads. It is possible that these features all relate to Roman structures located just outside of these areas. This theory would be further supported by the large quantity of high-status pottery and glass recovered from a ditch in trench 192 (situated between Areas B3 and C1) during the evaluation (Gilmour 2012, 41).
- 2.1.12 Other Roman activity was present in areas B1, B2, B3 and B4, was limited to probably field boundary ditches.

2.2 Artefacts

General

- 2.2.1 The following finds were recovered:

Material	Number	Weight (g)
Prehistoric pottery	192	1,092
Roman pottery	3188	59,000
Ceramic building material	121	20,390
Worked stone	3	2510

Copper Alloy objects

- 2.2.2 There were, in all, 21 fragments of copper alloy, probably representing a similar number of items. Although their condition varies, most have hard deposits of corrosion on their surfaces, significantly obscuring detail. Many are currently regarded as unstratified, or are from topsoil 9909, and in general terms the group falls into two, with typically Roman brooches and coins, but otherwise almost nothing earlier than the early post-medieval period.

Iron work

- 2.2.3 There was a small assemblage of 46 fragments, probably somewhat fewer objects. Overall, the largest group comprises nails (33, c 78.5 %) and most of the remaining

items are featureless and unidentifiable fragments. Overall the ironwork is in poor condition, with appreciable corrosion products on all objects, but, in most cases, the objects could be identified with moderate confidence, and thus have not yet been subject to x-ray.

Lead objects

2.2.4 There are, in all, nine fragments of lead, probably representing a similar number of items. Their condition varies, but most have degenerated, having a thin layer of white corrosion products and in some cases the metal has become somewhat brittle. There is no particular character to the group, although a spindle whorl, pot-mends, and a single weight suggest a domestic context. None of the artefacts present are particularly chronologically diagnostic, and are more likely to be dated by other finds from the contexts in which they were found.

Prehistoric Pottery

2.2.5 The assemblage comprises 192 sherds (1,092g) including 76 sherds of Bronze Age pottery, 69 Later Iron Age sherds dating from c.250BC to c.100/50BC and five Late Iron Age sherds (50BC –AD50). The Late Iron Age pottery is almost all handmade but includes some wheel thrown sherds contemporary with the earliest pottery considered in the Roman pottery report.

The Roman Pottery

2.2.6 A total of 3188 sherds, weighing 59000g (48.51 EVE), of Roman pottery were collected from 198 excavated contexts, primarily from within ditches and layers. The pottery represents a minimum of 906 fragmentary vessels, none of which were complete or buried *in situ*. Indeed, the pieces are moderately to severely abraded with an average sherd weight of c. 15g.

Ceramic building material

2.2.7 A small assemblage of ceramic building material was recovered; 121 fragments, weighing 20,390g. This assemblage mostly comprises Roman tile fragments. Large, well preserved fragments of *tegulae* form the majority of this material followed by a smaller less well preserved collection of *imbrices*. Some post-medieval material was also recovered but this was severely abraded and uninformative.

Worked Stone

2.2.8 A total of 2.51 kg (x3 pieces) of worked stone were examined from this excavation, of which 2.2 kg consisted of a single fragment of Old Red Sandstone (ORS) rotary quern, the other two pieces being small cylindrical whetstones of sandstone used for the sharpening of knives. All three pieces of worked stone are Roman in date, and seem typical of Romano-British domestic settlement contexts.

2.3 Environmental evidence

Faunal Remains

2.3.1 The assemblage was of a modest size, recovered by hand-collection and from environmental samples. The number of recordable fragments totalled 155 and the species represented included cattle (*Bos taurus*), sheep/goat (*Ovis/Capra*), horse

(*Equus caballus*), pig (*Sus sp.*), dog (*Canis familiaris*), and rabbit (*Oryctolagus cuniculus*). There was also evidence of rodent (probable rat) and amphibian (probable frog).

Marine shell

2.3.2 A total of three shells or shell fragments weighing 0.058kg were collected by hand from well **17762** during the archaeological works. The shells recovered are edible examples of oyster *Ostrea edulis*. The shells recovered represent general discarded food waste.

Environmental samples

2.3.3 A total of 48 bulk soil samples were taken. The plant remains recovered from Area C1 are exceptional in their density and content. Spelt is a wheat variety that was favoured by the Romans and it was cultivated intensely in the East of England. Germinated spelt is frequently found on sites in this area and can either be the result of accidental germination in which the cereal has been exposed to moisture or the spelt wheat may have been deliberately germinated during malting for the brewing of beer. The extreme abundance of detached spelt sprouts at this site in addition to the evidence of germinated grain is highly suggestive of the deliberate malting of spelt wheat. It is also probable that this is a prolonged and repeated activity that took place in both of the industrial areas suggested.

2.3.4 There is evidence of barley cultivation with occasional germination. The enormous quantities of germinated spelt suggest that barley was not favoured for malting and any inclusion may have been accidental contamination.

2.3.5 The waterlogged samples taken from the lower fills of ditches 1 and 4 indicate a diverse flora that includes wetland plants such as sedges and rushes that were probably growing on the damp sides of the ditch in addition to plants that may have been growing on the tops of the banks such as elderberry and brambles. There is also evidence of plants that grow in grassland/pasture such as self-heal, buttercups, grasses and poppies which may also have been growing on the ditch banks as the surrounding area appears to have been too wet for pasture.

3 STATEMENT OF POTENTIAL

3.1 Stratigraphy

3.1.1 There were a few stratified deposits recorded on this site, which is unusual for such a rural location. Where stratigraphic relationships did exist between features, these will be important in understanding the phasing and chronology of the activity on the site.

3.2 Small Finds

3.2.1 The copper alloy brooches and the coins have potential to contribute to site dating. If confirmed, the presence of a single medieval object will contribute to the dating of later activity. However, the lead artefacts have little potential to contribute to site dating and the ironwork has no potential to inform the dating and nature of activity on the site.

3.3 Prehistoric Pottery

3.3.1 The small quantity of prehistoric pottery limits the research potential of the assemblage. Thus, it is of limited potential beyond dating activity on the site. It is possible that this material will have greater potential if further work occurs in the vicinity of excavation Area 3 and any pottery recovered increases the assemblage size.

3.4 Roman Pottery

3.4.1 This site is one of several large sites recently excavated by OA East in the vicinity and even at this preliminary stage of post-excitation assessment it can be seen that (once combined) this pottery assemblage will form a significant group of material with the potential for further analysis to reveal its character and use, over a wide landscape and period of time. The need for the analysis of well stratified and recorded groups of Roman pottery has been highlighted as a research objective for the region, particularly to inform on patterns of supply (Taylor 2006, 151).

3.5 Worked Stone

3.5.1 The small assemblage of worked stone which was retrieved during excavation has limited potential to provide further information on activity or dating of the site.

3.6 Animal bone

3.6.1 The material is a good representation of a Roman domestic faunal assemblage. The data represents a modest quantity of identifiable animal bone. Collecting full biometric data would allow for comparison to be made with other sites in the area and to determine if there were any changes in size of all the main species recovered. Identifying the amphibian and rodent fragment to species with the help of a reference collection would also aid in adding further detail.

3.7 Marine shell

3.7.1 The assemblage has little potential to aid the regional or local research objectives, beyond indicating the ability of the occupants of the settlement to access food sources within their immediate area and surrounding hinterland.

3.8 Environmental Samples

- 3.8.1 The charred assemblages recovered from Area C1 are exceptional and are of extreme archaeobotanical importance. Spelt malting has been recognised at a number of other Roman sites in Britain but there is no known comparison for the density of material as found on this site. A recent excavation at Over Industrial Estate, Cambridgeshire produced extremely large assemblages of spelt malting waste (Fosberry 2017) but lacked supporting archaeology. The site at Kettering has two industrial areas that include stone structures with working areas, two areas of ovens and drainage ditches and gullies all of which appear to be associated with the malting processes.

4 UPDATED PROJECT DESIGN

4.1 Revised research aims

Regional Research Objectives

- 4.1.1 *Promote the integration of specialist studies of material relating to subsistence, diet and health* (Knight *et al* 2012, 76). While the pottery recovered from this project does not have the potential to provide added knowledge about diet, the charred plant remains are highly interesting. By combining the analysis of the charred plant remains with a full description of the various features on the site related to brewing, a better understanding of beer making during Romano-British period can be gained.
- 4.1.2 *Investigate the landscape context of rural settlements* (Knight *et al* 2012, 79). This project, especially within the wider context of the East Kettering development, has the potential to develop further our understanding of the Roman agrarian landscape. Also, with both Iron Age and Roman activity present, an analysis of the transition from the Iron Age into the Romanised landscape could be carried out.

Additional Regional Research Objectives

- 4.1.3 *Investigate evidence for Early-Mid Roman industrial/agricultural processes*: The presence of numerous tanks, wells, corn driers, enclosures and other features in Area C1, along with the well in Area COS, is of particular interest, especially when combined with the non-domestic nature of the associated Early Roman pottery assemblage. Further analysis of this complex of features along with related finds assemblages and evidence from the environmental samples has very good potential to elucidate the processes involved and compare them with any similar results from nearby sites. Associated finds include pottery (mostly large storage vessels found in nearby ditches, many with residues surviving), possible kiln/oven furniture and worked stone (querns *etc*). Initial indications suggest that the site was focused on crop-processing and brewing.

Site-specific Research Objectives

- 4.1.4 *How does the site relate to the known Roman infrastructure (waterways, roads, tracks) and major settlements/markets?*: Research into evidence held in the HER and the results of nearby excavations will help to place the site within the broader contemporary settlement hierarchy and transport network.
- 4.1.5 *What evidence is there for trade and exchange?*: Analysis of the pottery and worked stone in particular has good potential to elucidate this area of research.
- 4.1.6 *How extensive was settlement on this area during the Iron Age and Roman periods?* There is good potential to investigate settlement density and shifting patterns over these two periods. Ideally, this would need to incorporate the results from other projects, including geophysical survey, cropmarks, trenching and open area excavations undertaken across this broad swathe of land to the east and south-east of Kettering over recent years (see Fig. 2).

4.1.7 *What was the economy of the site and did this change over time?* The animal bone assemblage combined with the archaeobotanical remains have good potential to reconstruct the type(s) of agricultural regimes that may have been in operation during the Iron Age and Roman periods. Of particular importance is the prevalence of malting and brewing which the archaeobotanical remains appear to indicate.

4.2 Interfaces

4.2.1 This project has clear links with the other sites (Fig. 2) that have been and are likely to be excavated within the East Kettering development (Appendix E, Table 20). In addition, the archaeological activity identified on the Cranford Business Park site (Clarke 2021; Clarke forth.) immediately to the south of the East Kettering Development area is also similar in character (notably the more industrial/crop-processing aspects) to some of that recorded within this site. If possible, all of the East Kettering development area and the Cranford Business Park sites will be analysed together.

4.3 Methods statement

4.3.1 This section sets out the methods proposed to achieve the research aims set out above.

Stratigraphy

4.3.2 The environmental, finds and context data will be analysed within an *MS Access* database. Contexts will be assigned phase and group numbers according to the dating evidence found within them, stratigraphic and special distribution.

Artefactual Analysis

4.3.3 Where appropriate, finds will be sent to the relevant specialist for further work. Assessments of the artefacts are given in Appendix A.

Metal Small finds

4.3.4 Archival catalogue entries should be completed for all objects. A brief illustrated report should be prepared for inclusion into any proposed publication, and some contribution be made to the incorporation of comment on the finds into the main stratigraphic text. All of the iron objects should be x-rayed for final identification (c.3 plates). Seven copper alloy objects (SFs 721, 722, 723, 726, 741, 745, 747) require conservation, as do many of the lead objects.

Prehistoric Pottery

4.3.5 No further work is required for the early prehistoric pottery, other than integrating the pottery data into analysis for the publication report alongside the prehistoric pottery from other phases excavated at the site. The Late Iron Age / transitional pottery should be integrated with the Early Roman material with which it is contemporary.

Roman Pottery

4.3.6 Further analysis of the pottery fabrics and forms will be undertaken in relation to the stratified features (once phased). Comparison of the Kettering assemblage to other nearby sites and regional data sets (such as the Stanwick archive) will also be carried

out. This will facilitate progress with the East Midlands research agenda to create regional pottery corpora and publish key production centres. Comparison of the residue analysis results with the London amphora residue project will be undertaken. A full report and publication text will be prepared and sherds will be selected for illustration and a catalogue produced.

Ceramic Building Material

- 4.3.1 Further analysis of the fabric, CBM forms and types in comparison with synthetic analyses and other large Roman sites would shed light on the origin and function of this material. Most significantly the *tegula* portion of this material needs to be examined as a whole to look for crossfits and to record the proportions and style in more detail. Comparison should be made to the Harrold Kiln excavation data (Brown 1994). Petrographic analysis of the shell-tempered fabric would be most useful in provenancing this material (compare to Woods in Brown 1994).

Worked Stone

- 4.3.2 No further analysis needs to be carried out on the worked stone assemblage. However, all three worked stone objects should be illustrated, and the drawings then included within a final publication report, alongside the descriptions already produced.

Ecofactual analysis

- 4.3.3 Where appropriate, finds will be sent to the relevant specialist for further work. Detailed assessments of the ecofactual assemblages are given in Appendix B.

Animal bone

- 4.3.4 Full biometric data will be collected, to allow for comparison to be made with other sites in the area and to determine whether there were any changes in size of all the main species recovered. Identifying the amphibian and rodent fragment to species with the help of a reference collection will also be carried out, to add further detail to the understanding of the assemblage.

Marine shell

- 4.3.5 No further work is required beyond summarising for the publication report.

Environmental samples

- 4.3.6 Additional processing of the remaining soil from deposits that are identified as significant followed by full analysis should be undertaken once final phasing has been established and contextual information integrated. Ten samples are recommended for full analysis of preserved plant remains.

4.4 Publication and dissemination of results

- 4.4.1 It is proposed that, if feasible, the results of the project should be published together with those from previous any further work related to the same development. This would form an important landscape study, covering a large area of Northamptonshire. However, if the time-scale of the development becomes very extended, then a smaller scale publication may become appropriate.

4.4.2 The structure of any publication will depend on whether further excavations are incorporated within it, which is not known at this time.

4.4.3 Initially a full report will be produced and the details given in the resources and programming section below relate only to producing this full report.

4.5 Retention, dispersal and display

4.5.1 The fired clay from this excavation is recommended for deselection from the archive. Other finds and ecofacts (including bulk samples) will be further assessed in terms of retention during the analysis stage.

4.6 Ownership and archive

4.6.1 OA will retain copyright of all reports and the documentary and digital archive produced in this project. OA will maintain the archive to the standards recommended by the Chartered Institute for Archaeologists (CIfA, 2014b), the Archaeological Archives Forum (Brown, 2011), and all standards specified by Northamptonshire Archaeological Resource Centre (NARC). The finds and documentary archive will be deposited with NARC, and the digital archive will be deposited with ADS. The landowner's permission to donate the finds to this repository will be obtained.

5 RESOURCES AND PROGRAMMING

5.1 Project team structure

5.1.1 The project team is set out in the table below.

Name	Organisation	Role
Nick Gilmour	OA East	Project management
Graeme Clarke	OA East	Project Officer
Gareth Rees	OA East	Geomatics Project Officer
Gillian Greer	OA East	Graphics Project Officer
Elizabeth Popescu	OA East	Post-excavation editor
Alice Lyons	OA East	Roman pottery specialist
Chris Howard-Davis	OA North	Small find specialist
Ted Levermore	OA East	Ceramic building material specialist
Hayley Foster	OA East	Faunal remains specialist
Rachel Fosberry	OA East	Environmental remains specialist
Karen Barker	Conservator	Freelance

5.2 Task list and programme

5.2.1 A task list is presented below.

Task no.	Description	Performed by	Days
1	Project management	Nick Gilmour	5
2	Production of photogrammetry models in Agisoft	Gareth Rees	4
3	Manipulation and digitising of site images and selected sections	Gillian Greer	20
4	Stratigraphic analysis (Phasing/grouping)	Graeme Clarke	20
5	Update database with phasing and group data and produce draft phase plans	Graeme Clarke	8
6	Disseminate updated phasing information to specialists	Graeme Clarke	1
7	Phase plans and report figures, plates	Gillian Greer	20

8	Finds booking/preparation/admin	Finds assistant	2
9	Collate group text/write report including background research	Graeme Clarke	25
10	Select sections for digitising and plates for inclusion in report. Produce mock-up figures	Graeme Clarke	2
11	Metal small finds report	Chris Howard-Davis	3.5
12	Roman pottery analysis and full report	Alice Lyons	22
13	Ceramic building material report	Ted Levermore	4
14	Faunal remains report	Hayley Foster	1.5
15	Environmental Remains	Rachel Fosberry	17
16	Small find illustration	Gillian Greer	2
17	Pottery illustration	Gillian Greer	TBC
18	Internal edit of grey lit report	Elizabeth Popescu	5
19	Conservation and x-ray	Karen Barker	TBC

APPENDIX A ARTEFACT ASSESSMENTS

A.1 Small Finds by Chris Howard-Davis, updated by Denis Sami

Overall methodology

A.1.1 The same methodology was used for finds in all three of the material groups detailed below. Each fragment was examined, assigned a preliminary identification and, where possible, a date range. Outline database entries were created, using Microsoft Access 2000 format, and the data recorded (context, small finds number, material, category, type, quantity, condition, completeness, maximum dimensions, outline identification, brief description, and broad date) serve as the basis for the comments below. The state of preservation (condition) was assessed on a broad four point system (namely poor, fair, good, excellent).

Copper alloy objects

A.1.2 **Quantification:** There were, in all, 21 fragments of copper alloy, probably representing a similar number of items. Although their condition varies, most have hard deposits of corrosion on their surfaces, significantly obscuring detail. Many are currently regarded as unstratified, or are from topsoil 9909, and in general terms the group falls into two, with typically Roman brooches and coins, but otherwise almost nothing earlier than the early post-medieval period.

A.1.3 **Date range and evaluation:** the group consists mainly of items that might be regarded as personal possessions. They range in date from possibly as early as the 1st century AD, although Roman material is probably concentrated in the 3rd century. With the exception of a single small brooch or buckle which could be medieval, the remainder of the copper alloy finds need be no earlier than the 18th century.

A.1.4 There are three brooches, all of which can be assigned to the Roman period. A bow brooch (SF 721) from context 9603 is probably of 1st century date, but requires conservation to confirm this. SF 726, is a small round plate brooch of tutulus type, and can be assigned generally to the 1st to 3rd centuries AD (Bayley and Butcher 2004, 178) and SF 722, a small oval brooch with a central gemstone is of 3rd or even possibly 4th century date (*ibid*). Examples of the latter are usually gilded, but in this case the condition is too poor for this to be confirmed prior to conservation.

A.1.5 Three coins have been identified as of Roman date. Two, one from context 9394 (SF 741), and one from 9909 (SF 745) can only be provisionally identified as Roman, and will require conservation in order to refine their identifications. Indeed, it is possible that SF 745 is, in fact silver. Coin SF 747, also from 9909, is again obscured by corrosion products, but can be identified as a 3rd century radiate.

A.1.6 Other finds likely to be of Roman date include SF 756, from context 9403, which comprises one arm of a small pair of tweezers with arms flaring towards the tip, which would not be out of place in a Roman context (Eckhardt and Crummy 20087, appendix 3), and less certainly, a triangular fragment (SF 756) which seems likely to derive from a mirror.

- A.1.7 A small buckle or (less likely) brooch (SF 723) came from context 9247. Its size might indicate that it is from spur leathers, although small buckles are also known on belts or other items of clothing. The form, though not particularly diagnostic, suggests a medieval date.
- A.1.8 The remainder of the finds are of considerably later date. A large lace tag or chape, made from rolled sheet, with a carefully cut and crimped end (SF 713), comes from context 9245, and is probably early post-medieval in date. Although now surviving as a featureless tube of thin sheet, SF 735 (unstratified) could be the remnant of a second example. A button from context 9129 (SF 724) is simple in form, but is unlikely to be earlier than the late 18th century, and could be much more recent. A second, unstratified object (SF 763) may be a second button, but could equally be a dome-headed pin. A thimble of late type (SF 719) was recovered from context 9129, and is the only copper alloy item recovered that can be associated with domestic textile working of any kind, although there is also a lead spindle whorl.
- A.1.9 SF 733, again unstratified, is an almost plain rectangular sectioned band. It seems unlikely to be a finger ring, as perhaps some more decorative handling might be expected, and it could simply be a ferrule or reinforcement from a composite item. A key (SF 711) from context 9909, is likely to be late 18th century or more recent. Its form suggests that it was intended for winding a clockwork mechanism, most probably a timepiece.
- A.1.10 The remainder of the copper alloy comprises featureless fragments from 9909 (SFs 746, 749) or were found unstratified (SF 738, 739, 764)
- A.1.11 **Conservation:** the finds are well packed and stable, but many of the objects require cleaning and conservation before identification can be completed.
- A.1.12 **Potential:** the brooches and the coins have potential to contribute to site dating. If confirmed, the presence of a single medieval object will contribute to the dating of later activity.
- A.1.13 **Proposed further work:** archival catalogue entries should be completed. A brief illustrated report should be prepared for inclusion into any proposed publication, and some contribution be made to the incorporation of comment on the finds into the main stratigraphic text.

Complete archive catalogue entries copper alloy finds	1 day	CHD
Write brief report for inclusion in publication	1 day	CHD
Conservation (7 items)	SFs 721, 722, 723, 726, 741, 745, 747,	KB
Illustrate 4 items	SFs 721, 722, 723, 726,	

Ironwork

- A.1.14 **Quantification:** a small assemblage of 46 fragments was recovered, probably somewhat fewer objects. Overall, the largest group comprises nails (33, c 78.5 %) and most of the remaining items are featureless and unidentifiable fragments. A possible

small candle holder with a tapering stem and coiled terminal was recovered from pit **17731** (fill 17733). This item is likely a variation of the medieval single cupped stick documented by Egan (2010, 142). From the same pit is also a large structural fitting not identified at this stage. Overall, the ironwork is in poor condition, with appreciable corrosion products on all objects, but, in most cases, the objects could be identified with moderate confidence, and thus have not yet been subject to x-ray. Their distribution is shown below in Table 2.

Context	Nail	Hobnail	Other	Totals
9005			1	1
9007	1			1
9009	2			2
9010	1			1
9029	1			1
9200	1			1
9209	3			3
9210	1			1
9212	1		1	2
9214	2			2
9215			1	1
9216	2		1	3
9218	1			1
9233	1			1
9310	3			3
9321	1			1
9335	1			1
9352	1			1
9357			1	1
9379	2			2
9380	1			1
9394	1			1
9403	1			1
9407	1		1	2
9429	1			1
9430		3		3
9456	1			1
9524	1			1
9782	1			1
17733	2		2	4
Totals	35	3	8	46

Table 2: Distribution of the iron objects by context

A.1.15 **Date range and evaluation:** the assemblage is dominated by nails of various sizes, although few of them are complete. One large example, from context 9010 is double-clenched, and another, from 9233 is also clenched, indicating that they were driven

through relatively large baulks of wood before their points were hammered flat. All appear, from available evidence, to be hand-forged, but nails are a long-lived type and effectively impossible to date with any precision. Their distribution does not indicate any particular concentrations which might suggest their use in timber buildings. A small L-shaped wall-hook came from context 9357 and is likely to be from a timber structure.

A.1.16 The few other items include a small group of hobnails from context 9430, again hobnails have a long life and cannot be used to enhance dating. A small ring or link came from context 9215, but, again, cannot be dated with any precision.

A.1.17 **Potential:** the ironwork has no potential to inform the dating and nature of activity on the site.

A.1.18 **Proposed further work:** the assemblage should be x-rayed for final identification, and archival catalogue entries should be completed. A brief report should be prepared for inclusion into any proposed publication.

X-ray	?3 plates	Karen Barker
Complete archive catalogue entries	0.5 days	CHD
Write brief report for inclusion in publication	0.5 day	CHD

Lead objects

A.1.19 **Quantification:** There are, in all, nine fragments of lead, probably representing a similar number of items. Their condition varies, but most have degenerated, having a thin layer of white corrosion products and in some cases the metal has become somewhat brittle.

A.1.20 **Date range and evaluation:** there is no particular character to the group, although a spindle whorl, pot-mends, and a single weight suggest a domestic context. None of the artefacts present are particularly chronologically diagnostic, and are more likely to be dated by other finds from the contexts in which they were found.

A.1.21 A spindle whorl (SF 750) came from context 9394. It is a plain discoidal example, and the diameter of the central perforation falls within the range regarded as typical of Roman whorls (Walton Rogers 1997, 1731). A small weight (SF 720) was found in context 9129, and pot mends came from context 9846 (SF 725) and unstratified (SF 736); neither retain any evidence of the vessel which they repaired.

A.1.22 The remainder of the lead comprises folded fragments of thin sheet, from contexts 9319 (SF 731), 9434 (SF 734), 9871 (SF 730), and topsoil 9909 (SF 748). One final fragment (SF 768) remains unidentifiable.

A.1.23 **Conservation:** the finds are well packed and stable, but many of the objects require cleaning and conservation before identification can be completed.

A.1.24 **Potential:** the lead artefacts have little potential to contribute to site dating.

A.1.25 **Proposed further work:** archival catalogue entries should be completed. A brief illustrated comment should be prepared for inclusion into any proposed publication.

Complete archive catalogue entries lead finds	0.25 day	CHD
Write brief note for inclusion in publication	0.25 day	CHD
Illustrate 1 item	SF 750	

A.2 Prehistoric Pottery by Sarah Percival

Introduction

A.2.1 The assemblage comprises 192 sherds (1,092g) including 76 sherds of Bronze Age pottery, 69 Later Iron Age sherds dating from c250BC to c.100/50BC and five Late Iron Age sherds (50BC –AD50). The Late Iron Age pottery is almost all handmade but includes some wheel thrown sherds contemporary with the earliest pottery considered in the Roman pottery report (below).

Ceramic Period	Quantity	Weight (g)
Middle Neolithic?	2	12
Later Neolithic early Bronze Age	38	93
Bronze Age	76	718
Iron Age	69	238
Late Iron Age transitional	5	22
Not closely datable	2	9
Total	192	1092

Table 3: Prehistoric pottery by ceramic period

Methodology

A.2.2 The assemblage was analysed in accordance with the Guidelines for analysis and publication laid down by the Prehistoric Ceramic Research Group (PCRG 2010). The total assemblage was studied and a full catalogue was prepared. The sherds were examined using a binocular microscope (x10 magnification) and were divided into fabric groups defined on the basis of inclusion types. Fabric codes were prefixed by a letter code representing the main inclusion present (F representing flint, G grog and Q quartz). Vessel form was recorded; R representing rim sherds, B base sherds, D decorated sherds and U undecorated body sherds. The sherds were counted and weighed to the nearest whole gramme. Decoration and abrasion were also noted. The pottery and archive are curated by OAE.

Early Prehistoric

A.2.3 Two grog-tempered body sherds decorated with impressed whipped cord maggots may be middle Neolithic Peterborough Ware. The sherds were recovered from ditch

10011 and pit **10017** and are made of soft fabric with common medium sized sub-angular grog inclusions. The fabric and decoration are similar to Mortlake Ware found at Ecton (Bamford 1975, fig.7 and fig.8, 10-15)

A.2.4 Pit **10013** produced 38 body sherds of comb-impressed Beaker (93g) in sandy fabric with moderate grog and sparse shell inclusions. The fabric and combed-zoned decoration is comparable to pottery found in a Beaker pit at West Cotton (Harding and Healy 2008, fig.3.67, 3 and 4) and from pit clusters excavated at Crick Covert Farm (Hughes and Woodward 2015, fig.11)

A.2.5 A partial profile from a barrel-shaped Bronze Age urn came from pit **10037**. The urn is made of sandy fabric with shell, grog and quartz inclusions and has an out-turned rim forming a square-profile lip and is perhaps of Middle Bronze Age date.

Spot date	Feature	Feature type	vessel type	Quantity	Weight (g)	Rim count
Mid Neolithic	10011	Ditch	Peterborough Ware	1	5	
	10017	Pit		1	7	
Later Neolithic early Bronze Age	10013	Pit	Beaker	38	93	
Bronze Age	10037	Pit	Urn	76	718	1

Table 4: Early prehistoric pottery by feature

Later Iron Age

A.2.6 The later Iron Age assemblage comprises 69 sherds weighing 238g and including rims from three vessels. Rims include two slack-shouldered jars with upright direct flat rims (Hughes and Woodward 2015, fig.CER1, 14) and an ovoid jar with everted rounded rim (Hughes and Woodward 2015, fig.CER2, 20). The range of forms is similar to those recovered from previous excavations at Kettering (Percival 2017) and from Iron Age settlements at Crick (Hughes and Woodward 2015). The assemblage is made of sandy and shell tempered fabrics with the latter forming over 95% of the total assemblage by weight (Table 5).

Fabric type	Description	Quantity	Weight (g)	% weight	Rim count
Q1	Common quartz sand with occasional elongated voids probably plant matter	6	12	5.04%	
QSH	Common quartz sand with common fine to medium shell and plate shaped voids	48	168	70.59%	3
S1	Common fine to medium shell and plate shaped voids	15	58	24.37%	
Total		69	238	100.00%	3

Table 5: Later Iron Age pottery by fabric

A.2.7 The majority of the Later Iron Age pottery came from pits which contributed 51% of the total assemblage by weight (122g). Pottery from gullies formed a further 33% (122g) with smaller numbers of sherds deriving from ditches (16%, 38g) (Table 6).

Feature	Feature type	Quantity	Weight (g)	Rim count
10039	Pit	17	74	
10054	Gully	14	61	1
10058	Pit	10	33	1
10063	Pit	2	9	
10067	Ditch	13	32	1
10069	Ditch	4	6	
10072	Pit	3	6	
10074	Gully	4	14	
10084	Gully	2	3	
Total		69	238	3

Table 6: Later Iron Age pottery by feature

Late Iron Age/ transitional

A.2.8 A small group of five sherds (22g) are of Late Iron Age transitional date. No rim or base sherds were found and the sherds are undecorated. Four wheel-finished body sherds are made of soft fabric with numerous dark grey grog inclusions. A single sherd is made of shell-tempered fabric with sparse pale grog inclusions. The Late Iron Age assemblage forms a contiguous group with the Later Iron Age assemblage and spans mid-1st century BC to the 1st century AD. All of the late Iron Age pottery came from context 10001.

Fabric type	Quantity	Weight (g)	% weight
GTWgrey	4	13	59.09%
STWG	1	9	40.91%
Total	5	22	100.00%

Table 7: Later Iron Age pottery by fabric

Discussion

A.2.9 The possible Middle Neolithic Peterborough Ware is probably residual and represents activity at the site around 3500- 3000/2800BC (A. Tinsley pers. comm.). Similar pottery has been found locally at Ecton (Bamford 1975, fig.7 and fig.8, 10-15)

A.2.10 The Beaker pottery is likely to be non-funerary, dating to c. 2490/2340-1800-1620BC (Healy 2012) and is comparable to pottery found in a Beaker pit at West Cotton (Harding and Healy 2008, fig.3.67, 3 and 4) and from pit clusters excavated at Crick Covert Farm (Hughes and Woodward 2015, fig.11).

A.2.11 The Bronze Age urn is similar to examples found at Harston, Leicester (Vine 1982, 587).

A.2.12 The Iron Age assemblages span the period from c.250BC to cAD50/100 with occupation then continuing into the fully Romanised period (see below) and is contemporary with numerous local and regional assemblages (for example Weekley, Crick Covert Farm and Moulton).

Further Work

A.2.13 No further work is required other than integrating the pottery data into analysis for the publication report alongside the prehistoric pottery from other phases excavated at the site. The Late Iron Age / transitional pottery should be integrated with the assemblage analysed by Alice Lyons with which it is contemporary.

A.3 Roman Pottery by Alice Lyons, updated by Kathryn Blackbourn

Introduction

A.3.1 A total of 3188 sherds, weighing 59000g (48.51 EVE), of Roman pottery were collected from 198 excavated contexts, primarily from within ditches and layers (Table 8). The pottery represents a minimum of 906 fragmentary vessels, none of which were complete or buried *in situ*. Indeed, the pieces are moderately to severely abraded with an average sherd weight of c. 15g.

Feature Type	Sherd count	Weight (g)	Weight (%)
Ditch	850	13150	22.29
Layer	746	9724	16.48
Pit/pit?	174	8611	14.59
Well	232	7132	12.09
Unstratified/unassigned	463	6742	11.43
Spread	211	3389	5.74
Natural/natural?	202	2812	4.77

Feature Type	Sherd count	Weight (g)	Weight (%)
Structure	74	2239	3.79
Oven	66	1959	3.32
Gully	63	1442	2.44
Buried horizon/subsoil?	38	743	1.26
Surface	32	644	1.09
Wall or drain	20	220	0.37
Post pad	16	171	0.29
Rubble	1	22	0.04
Total	3188	59000	100

Table 8. Quantity and weight of Roman pottery by feature type

Methodology

A.3.2 The pottery was recorded following the guidelines of the Study Group for Roman Pottery (Barclay *et al* 2016). The total assemblage was studied and a catalogue was prepared. The pottery was classified using Timby's fabric series from Higham Ferrers (Timby 2004; 2009), with reference to Marney's Milton Keynes series to describe the range of grey wares present (Marney 1989), and the National Roman fabric reference collection (Tomber and Dore 1998) where appropriate. The sherds were examined using a hand lens (x10 magnification) and were divided into broad fabric groups defined on the basis of inclusion types present. Vessel forms (jar, bowl) were also recorded. The sherds were counted and weighed to the nearest whole gramme and recorded by context. Decoration, residues and abrasion were also noted.

A.3.3 OA East curates the pottery and archive.

The Pottery

A.3.4 A total of 13 broad fabric groups were recorded (Table 9).

Fabric	Fabric Abbreviation	Form	Sherd Count	Weight (g)	EVE	Weight (%)
Sandy grey ware (all centres)	SGW: sandy grey ware (Timby 2007, 93, GREY; GREY 7; GREY 5; GREY 4; GREY 9)	Beaker, bowl, cheese press, dish, flask, jar, lid, mortaria, platter, storage jar	1528	24830	42.08	29.04
Shelly ware	STW; shelly ware (Timby 2007, 90, SH1; SHELL)	Jar, bowl, storage jar, lid	724	18202	30.85	8.06
Grog-tempered white ware	NWW: sandy white ware with coarse grog inclusions (Timby 2007, p. 92, GR7)	Bowl, cheese press, jar, lid, storage jar	454	8685	14.72	6.94
Burnished ware	BURN: Burnished exterior	Jar, bowl	59	2012	3.41	0
Samian (all centres)	SAM: samian (Tyers 1996, 105-116)	Cup, bowl, platter	165	1821	3.09	2.56
Sandy oxidised ware	OXID2; OXID1 (Timby 2007, 94, WW1)	Bowl, dish, flagon, jar, lid	102	1312	2.22	0.875
Grog tempered ware	GW(GROG): reduced ware with grog inclusions (Timby 2007, 91, GR1)	Jar/bowl	31	727	1.23	0.13
Nene Valley oxidised ware	NVOW (Tyers 1996, 127-129)	Mortaria	5	429	0.73	0.05
Nene Valley colour coat	LNVCC (Tyers 1996, 173-175)	Beaker, dish, jar, jug	68	399	0.68	0.28
Fine white ware	WW (Timby 2007, 94, WW2)	Mortaria, Jar	12	216	0.37	0.03
Verulamium white ware	VER WH (Tyers 1996, 199-201)	Jar/bowl	18	186	0.32	0.44
Mancetter-Hartshill white ware	MAH WH: Mancetter-Hartshill white ware (Tyers 1996, 123-124)	Mortaria	3	108	0.18	0
Colchester colour coat	COLCC (Tyers 1996, 167-168)	Beaker	18	70	0.12	0.1
Moselkeramik Black-slipped ware	MOS BS (Tyers 1996, 138-139)	Beaker	1	3	0.01	0
Total			3188	59000	100	48.51

Table 9: The Romano-British Pottery fabrics, listed in descending order of weight (%)

Coarse wares

- A.3.5 The majority of latest Iron Age fabrics, transitional with the Roman period, are assessed in Appendix A.2, however, a small number of handmade reduced grog tempered (GR1) lid-seated jar sherds were recorded with the Roman material suggesting they may have remained in production and use alongside more typically Romanised wares. Contemporary with this grog tempered material are a small number handmade storage jar fragments (SH1; 31 sherds, 1358g), although the majority of shelly wares (SHELL) comprise wheelmade storage jars and lid-seated jars. The lid-seated jars fragments are commonly decorated with fine horizontal combed or rilled lines, indeed Thompson's C5-1 and C5-2 lid-seated jars are particularly associated with this area (Thompson 1982, 16-17). Many of the jars also retain soot residues suggesting they may have been used over a fire as cooking pots.
- A.3.6 Oxidised Roman grog tempered coarse wares (GR7) are also well represented within the assemblage; most commonly found as lid-seated, 'S'-shaped, jars with external smoke (rarely soot) marks. This type of residue suggests, unlike the Shelly wares described above, they were not directly exposed to an open flame - the different pots perhaps used for different tasks reflecting the character of their fabrics. The exact source of manufacture for these wares is unknown but they seem to be a local Northamptonshire /South Midlands based product starting around the end of the 1st century and continuing into the 2nd (Timby 2009, 155-156).
- A.3.7 The majority of the coarse wares are, however, represented by a variety of local sand tempered grey ware (GREY; GREY 7; GREY 5; GREY 4; GREY 9) globular jars and straight-sided beaded dishes of the Upper Nene Valley tradition, although multiple sources of manufacture are likely for this large group. Many of the jars have a 'S'-shaped form with grooves on the neck, similar to examples produced in the Caldecotte Kiln II produced in the early to mid-2nd century AD (Marney 1989, fig 39, no 31), where beaded straight-sided dishes were also made (*ibid*, fig 39, nos 1 and 2). Other contemporary kilns sites known in the region include Ecton, Mears Ashby, Weston Favell and Little Billing. Similar to the other utilitarian coarse wares described above, many of these vessels also retain soot residues on their external surfaces, suggesting they have been used to heat their contents near an open flame.
- A.3.8 Sandy oxidised wares (OXID1 & OXID2) sherds are less common and found in a limited range of jar/bowl, also flagon forms. A small number of jar fragments with a distinctive gritty texture (VER WH) are of Verulamium-type commonly produced between the mid-1st and mid-2nd centuries AD (Tomber and Dore 1998, 154; Tyers 1996, 199-201). These are rarely retaining soot residues and were probably used for the short term storage and dispensing of liquid such as wine.
- A.3.9 The sherds recovered from well **17762** represents a key assemblage, with an average sherd weight of 30.7g compared to the average across the entire site of just 18.5g. The assemblage contained a large proportion of sandy grey coarse ware jar variants, some of which demonstrated evidence for decoration (rouletting, rilling and stabbed decoration). The assemblage likely dates from the mid 1st to late 2nd century AD.

Fine wares

A.3.10 Gaulish samian is the most common fine tableware, the majority originating from central Gaulish factories in the 2nd century AD. A range of bowls (Dr37, 38, 44), cups (Dr33, Dr35) and platters (Dr18/31, Walters 79) were found, four of which are marked with their makers' stamp.

Fabric	Fabric Abbreviation	Sherd Count	Weight (g)
Central Gaulish samian	CG SAM	113	1362
South Gaulish samian	SG SAM	33	206
Samian (unsourced)	SAM	19	252
Total		165	1820

Table 10. The Samian assemblage, by fabric

A.3.11 The supply of domestically produced fine wares was dominated by the Nene Valley industries (LNVCC) and a range of bag-shaped and folded beakers, commonly decorated with barbotine motifs, were found dating between the mid/late 2nd - early 3rd century (Tyers 1996, 173-175). Some colour coated beaker sherds decorated with roughcast decoration (COLCC) were also found and have been assigned to the Colchester area of production (Tyers 1996, 167-168). A single imported piece of high glass rouletted beaker (MOS BS) originating from the Trier area was also found (Tyers 1996, 138-139).

A.3.12 It is worthy of note that no late Roman red wares were found in this assemblage.

Specialist wares

A.3.13 No amphora was found within this assemblage.

A.3.14 A small number of Roman mixing bowls, or mortaria, were recorded (Tyers 1996, 117-135). The mortaria comprises a reed rim grey ware example from an unknown source, several undiagnostic fragments from the Manchetter-Hartshill industry on the Warwickshire/Leicestershire border (Tyers 1996, 123-124) and two undiagnostic Nene Valley oxidised pieces (Tyers 1996, 127-129). Several exceptionally pure white ware bead and flange examples were also found, of unknown source but possibly imported.

Fabric	Fabric Abbreviation	Type	Sherd Count	Weight (g)
Sandy grey ware	GREY	Reeded rim	2	244
Manchetter-Hartshill white ware	MANCH		3	108
Nene Valley oxidised ware	NVOW		3	379
White ware	WW2	Bead and flanged	3	95
Total			10	826

Table 11. The mortaria assemblage, by fabric

Adapted wares

A.3.15 Vessels within this assemblage were rarely adapted. In the coarse ware assemblage, a Shelly ware (SHELL) globular jar has a single large post-firing hole punched through its base (9693, ditch 9695). While a small post-firing hole was recorded as being drilled through the vessel wall of a samian dish – possibly to allow for a temporary mend (9216 – layer).

Residues

A.3.16 No residues, other than soot, were preserved on the pottery.

Summary

A.3.17 This is a large stratified assemblage of mostly locally produced utilitarian jars and storage jars found in fabrics that are typical of ceramic use the East Midlands during the early to mid-Roman era (Timby 2007, 117; Marney 1989). This material is accompanied by small amounts of imported and domestically produced fine table wares. There are no late Roman fabrics or forms within the assemblage which suggests this area had fallen from intensive use by the mid-3rd century AD.

Potential for further study

A.3.18 Kettering (XNNEKE15) is one of several large sites recently excavated by OA East in the vicinity (Table 12) and even at this preliminary stage of post-excavation assessment it can be seen that (once combined) this pottery assemblage will form a significant group of material with the potential for further analysis to reveal its character and use, over a wide landscape and period of time. The need for the analysis of well stratified and recorded groups of Roman pottery has been highlighted as a research objective for the region, particularly to inform on patterns of supply (Taylor 2006, 151).

Site	Sherd Count	Weight (g)	Weight (%)
XNN CAB 16	5088	95162	64.59
XNN EKE 15	2764	41710	28.30
XNN CAB 15	484	7051	4.78
XNN AWK 15	306	3440	2.33
Total	8642	147363	100.00

Table 12. The Roman pottery from related sites

Further work

Task	Time
Further analysis of the pottery fabrics and forms in relation to the stratified features (once phased).	5 days
Compare the Kettering assemblage to other nearby sites and regional data sets (such as the Stanwick archive). This will allow progress with the East Midlands research agenda to create regional pottery corpora (Knight <i>et al</i> 2012, 72, 5.6).	5 days
Preparation of a publication text.	10 days
Select material for illustration prepare a catalogue	2 days

Total	22 days
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A.4 Fired clay by Ted Levermore

Introduction

A.4.1 The archaeological works produced a small assemblage of fired clay (132 fragments, 1090g). The majority of this assemblage comprises amorphous fragments with no discernible features and a small minority had remnant surfaces. The majority of this material was collected from oven **10018**. Although all of it is now amorphous this material likely made up the lining to this feature, it is fired to a bright oxidised orange. A single *ad hoc* clay object (36g) was recorded, it was flattened at one end and pointed at the other with a slight curve. It was probably used as a single-use prop or a spacer.

A.4.2 Most fragments were made in a silty fabric with rounded ironstone inclusions. The prop/spacer was made in a slightly micaceous silty fabric with clay pellet inclusions. The quantified data and fabric descriptions are presented on an Excel spreadsheet held with the site archive. A summary can be found in Table 13.

Context	Cut	Feature Type	Sample	Fabric type	Fragment type	Structural type	Object Class	Object Form	Count	Weight (g)
9394		Layer		F1	a				1	1
9407		Layer		F1	a				1	1
9430		Layer	857	F1	a				3	8
9445	9444	Gully	858	F1b	a				1	11
9762		Natural		F1	a				1	1
9782		Layer		F1	a				1	5
10019	10018	Oven	1003	F1	a				15	100
10019	10018	Oven	1001	F1	a				8	17
10020	10018	Oven		F1	a				37	510
10020	10018	Oven	1002	F1	a				12	120
10033	10035	Post Hole		F1	s	fs			4	32
10051	10054	Gully		F1	a				3	9
10056	10058	Pit		F2	s	hf	ad hoc	prop/spacer	1	36
10056	10058	Pit		F1	a				6	15
10071	10069	Ditch		F1	a				1	2
10073	10072	Pit		F1	a				13	106
10073	10072	Pit		F1a	a				3	18
10073	10072	Pit	1019	F1	a				21	98
Total									132	1090

Table 13: Summary Fired Clay catalogue

(a=amorphous, s=structural; fs=flattened surface, rs=rounded surface)

Statement of Potential

A.4.3 This assemblage is uninformative without any diagnostic objects. This assemblage has little to no archaeological potential.

Recommendations for Further Work.

A.4.4 The assemblage has been fully assessed and described. No further work is required.

Retention, Dispersal and Display

A.4.5 All fragments are recommended for discard.

A.5 Ceramic building material by Ted Levermore

Introduction

A.5.1 Archaeological excavation produced a small assemblage of ceramic building material (CBM); 121 fragments, 20390kg. This assemblage mostly comprises Roman tile fragments. Large, well preserved fragments of *tegulae* form the majority of this material followed by a smaller less well preserved collection of *imbrices*. Some post-medieval material was also recovered but this is severely abraded and uninformative. This report will provide a quantified summary of this assemblage.

Methodology

A.5.2 The assemblage was quantified by context, fabric and form and counted and weighed to the nearest whole gramme. Fabrics were examined using a x20 hand lens and were described by main inclusions present. Width, length and thickness were recorded where possible. Woodforde (1976) and McComish (2015) formed the basis of reference material for identification and dating.

A.5.3 The quantified data are presented on an Excel spreadsheet held with the site archive. A summary of the catalogue can appear in Table 14.

Analysis

Fabrics

A.5.4 The assemblage was assigned to six fabrics (A – F; see Table 14); A to D cover the Roman material and E and F the medieval to post-medieval. The Roman fabrics are reasonably varied, with Fabric A (shell-tempered) standing out from the other more typically Roman style CBM fabrics. Fabric A, though variable in sorting and volume of inclusions, was a silty clay matrix with fine to coarse shelly inclusions with occasional grog/clay pellets and stony chunks. This fabric is very similar to the potting clay recipe used at the Harrold Kilns, Bedfordshire (*HAR SH*; Tomber and Dore 1998, 15). The material made in this fabric may have been imported from these kilns or a production centre in that area. The other fabrics are less stark in their macroscopic traits and are probably of local origin or from a brick kiln site unknown to the author at this time.

Code	Colour	Matrix	Fine inclusions	Coarse inclusions	Moulding sand	Comments
A	Light to Mid brown-yellow sometimes mid brown to grey core	Silt Clay	common unsorted shell and calc fragments; rare grog/clay pellets	common unsorted shell and calc fragments; rare flint chunks	Fine to not visible	See Harrold Shelly Ware (Tomber and Dore, 1998); variation in quantity and sorting of the inclusions but all appear to be of the same recipe
B	Light orange/brown	Silt Clay	common rounded quartz, occ. Rounded clay and ironstone pellets	rare clay pellets and flint chunks	Fine	Variegated, some have woodfire 'glaze'
C	Mid to Dark Orange with light grey core	Fine Sandy Clay	common rounded quartz, occ. Elongate voids	rare rounded stoney inclusions, sandy clay inclusions and calc pellets and occ vughs	Fine to Coarse	
D	Buff to Cream	Fine Sandy Clay	common rounded quartz, clay/grog pellets and rounded ironstone pellets	common rounded clay/grog pellets and ironstone pellets	Fine to Coarse	Variegated clay; pock marks or sanding?
E	Light Orange with dark surfaces	Dense Silt	Uncommon angular quartz, angular ironstone and clay pellets	Occ clay pellets and ?limestone chunks	Very fine	Med-Pmed? Dark glaze - thin layer of tar?
F	Mid Red	Silt Clay	common rounded voids, occ quartz flecks	no vis	no vis	

Table14: CBM Fabric descriptions

Assemblage

A.5.5 The CBM assemblage is made up of 113 Roman tile fragments, 20249g, and a small number, 6 fragments; 134g, of later medieval to post-medieval brick and tile fragments.

Roman Tile

Form	Count	Weight (g)
Tegula	40	11911
?Flue/?Tegula	1	279
?Tegula	28	4756
?Tegula/?Lydion	1	227
?tegula/?imbrex	2	225
Imbrex	8	1113
?Imbrex	22	1164
Brick/Tile	3	105
Flat Tile	5	214
Undiag	3	275

Grand Total	113	20249
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Table 15: Roman CBM forms

Tegulae

A.5.6 *Tegula* fragments were most common in this assemblage; 40 identifiable flanged pieces, 11911g, were recorded however some 70 fragments (17173g) in total were likely to be derived from *tegulae* (see Table 16). These tile fragments survived well having an average weight of 298g. This material was generally only slightly abraded with many fresh or unabraded breaks. It is likely that there are cross-fitting fragments across the contexts judging by the freshness of these breaks, however these have not been examined. Some contexts contained refitting fragments that differed in abrasion levels, suggesting exposure of at least some of these contexts in antiquity. The *tegulae* were assigned to Fabrics A to D, with the majority made in Fabric A (61%). Flange height and width as well as tile thickness was recorded where possible. The tegula forms recorded were very typical of this period. Generally, these tiles were about 20-30mm thick with squared or slightly rounded flanges and a finger groove running parallel to the flange. They were all mould formed and had smoothed surfaces and only light sanding, especially the shell-tempered tiles. Three form groups are apparent when looking at the ratio of flange height to thickness. The most interesting was a small subset that had been made with notably tall and thin flanges at a ratio of around 3:1 (c.48mm x c.12mm).

Context	Cut	Feature	Form	Fabric	Count	Weight (g)	Th (mm)	Flange Type	Cutaway Type	Flange Thickness (mm)	Flange Height (mm)
9357	9355	Ditch	Tegula	A	1	356	22	D	A	22	54
9374	9373	Ditch	Tegula	A	1	356	22	A3/D	A	20	52
9310		Layer	Tegula	A	1	222	15		A2	12	46
9525	9513	Structure	Tegula	A	1	650	20	A3/D2	A2	30	52
9656	9548	Pit	Tegula	A	5	1786	22	A3/D	A2	20	48
9684	9682	Ditch	Tegula	A	2	1165	22	D	A2	15	50
9216		Layer	Tegula	B	4	733	22	D2/F2	A2	22-25	50
9216		Layer	Tegula	B	1	185	20	D2	A2b	25	50
9216		Layer	Tegula	D	2	494	30	D?	A2	20	>45

Table 16: Catalogue of diagnostic flanged tegula (flange and cutaway forms after Warry (2006))

A.5.7 For *tegulae* the cutaway type is most informative, allowing for classification and comparison with other dateable material (Warry 2006). For this material, all surviving cutaways could be assigned to Warry Type A which represent some of the earliest *tegula* in Roman Britain, with a date of AD 40–120. Warry also identifies the average measurements for his types but generally the proportions of our tiles are not well suited to any particular type. This highlights the difficulty in applying dates to the variability of Roman tile production. Six out of the ten *tegula* with recordable cutaways were made in Fabric A, the probable Harrold Shelly Ware fabric. This fabric is commonly associated with pottery of the late 2nd century AD onwards (Tomber and

Dore 1998 15), as well as tile exports to London from this period (Mills 2013). Indeed, shell-tempered tiles excavated at Harrold are very similar in form and fabric to those described here, and these are dated to the 2nd to mid-4th centuries AD (see Group 1 and 2; Brown 1994, 79).

- A.5.8 This portion of the assemblage is, internally, more varied than this summary suggests. More detailed recording of the *tegula*, classification of the diagnostic features and microscopic petrographic analysis of the fabrics would aid in further characterising the assemblage and provide evidence for closer dating and provenance.

Imbrices

- A.5.9 Thirty fragments, 2277g, of *imbrex* tile were among this assemblage. All of these fragments were made in the shell-tempered fabric (Fabric A). This portion of CBM was far more fragmentary and abraded than the *tegula*, and therefore harder to classify. Due to their convex form, *imbrices* are very fragile and do not survive well in the archaeological record. It is likely that some of the undiagnostic flat tiles may originally have been *imbrex* tiles. In general, the *imbrices* were 15mm thick, and likely more than 110mm tall. *Imbrex* tiles were also recovered during excavations at Harrold (Brown, 1994) and it seems likely that these came from the same kilns as the Fabric A *tegula*. The presence of both *tegula* and *imbrex* is strong evidence for a large well-made roof having stood very close to their depositional context.

Miscellaneous

- A.5.10 There were no other identifiable types of Roman CBM in this assemblage. There were, however, 15 fragments (1305g) of unidentifiable Roman material with possible forms attributed to them. It is interesting to note this assemblage appears to only include roofing material and no other type expected of large Roman structures.

Medieval to Post-Medieval

- A.5.11 Five fragments (108g) of medieval to post-medieval tile and one fragment (26g) of brick were collected from Area C. These were abraded and fragmentary and wholly uninformative. They are little more than background noise in the modern agricultural landscape.

Discussion

- A.5.12 The shell-tempered material is clear evidence for the importing of construction material to the site from Harrold some 32 kilometres to the south of the site. Considering the weight of ceramic building material, and the volume required for even the smallest structure, it seems likely that any original structure was of higher status. Very little else can be said about the material because the scope of the material is limited by the size of assemblage, the low variability in the material and the limited contextual information. Two fragments of burnt *tegula* tile were recovered from oven **9543** and several fragments appeared to be more abraded than others. This suggests a degree of reuse and exposure post-discard at this site.

Statement of Potential

A.5.13 The Roman portion of this assemblage is indicative of high levels of investment and time spent on a substantial building in the area. The full potential of this material is hindered by the lack of contextual information, much of the material was excavated from 'Layer' contexts with little to no further information provided.

Recommendations for Further Work

A.5.14 Further analysis of the fabric, CBM forms and types in comparison with synthetic analyses and other large Roman sites would shed light on the origin and function of this material. Most significantly the *tegula* portion of this material needs to be looked at as a whole to look for crossfits and to record the proportions and style in more detail. Comparison should be made to the Harrold Kiln excavation data (Brown 1994). Petrographic analysis of the shell-tempered fabric would be most useful in provenancing this material (compare to Woods in Brown 1994).

A.5.15 Photography and/or illustration of the various *tegula* forms could be considered.

Retention, Dispersal and Display

A.5.16 All the Roman material should be retained, pending a decision about further work. The later less informative material should be discarded.

A.5.17 The later material is of no archaeological value and can be discarded.

A.6 Worked Stone by Simon Timberlake

Introduction

A.6.1 A total of 2.51 kg (x3 pieces) of worked stone were examined from this excavation, of which 2.2 kg consisted of a single fragment of Old Red Sandstone (ORS) rotary quern, the other two pieces being small cylindrical whetstones of sandstone used for the sharpening of knives.

A.6.2 All three pieces of worked stone are Roman in date, and seem typical of Romano-British domestic settlement contexts.

Methodology

A.6.3 All the stone was identified visually using an illuminated x10 magnifying lens, and compared where necessary with an archaeological worked stone reference collection. This included examples of Romano-British ORS quern. Projected quern diameter was estimated using a chart. A dropper bottle containing dilute hydrochloric acid was used to confirm the presence or absence of calcite within the quern and whetstone rock types.

Catalogue of worked stone

A.6.4 *Quern*. This consisted of a single fragment which came from the upper stone of a domestic rotary quern hand mill (context 9324 SF743 weight: 2.21 kg; 285 mm x 145 mm x 40-30 mm (thick)).The fragment was an approx.10% radial section of a flat-topped (Shaffrey *Type 1b*) quern with a projected original diameter of around 330mm.

The stone was thin, with a pronounced concave and worn grinding surface, with traces of the central feed hopper rim at its thinnest end. The quern lithology was of light brown sandstone with c.5% white vein quartz clasts (<10mm) and rarer 5 mm+ red quartz (chert) clasts and no calcitic cement, and as such shows some resemble to the identified quern sources at Ross on Wye and Penallt in Herefordshire (Shaffrey 2006, 103-104).

- A.6.5 *Whetstone*. Two broken sections of cylindrical whetstones made of fine-grained micaceous sandstone(s) were identified.
- A.6.6 One of these is of a very well-worn and well-used short fragment of a pocket-sized whetstone made from a moderately hard, fine grained and slightly micaceous cherty sandstone, originating perhaps from the Kentish Hythe Beds, or possibly from the Wealden Clay sandstones (Allen 2014, 59). This example (from context 9745 SF769) was 68mm long with an oval-round x-section of between 28mm x 22mm, with one broken-off end, weighing c.97g. Typically this had been worn concave in the middle as a result of knife sharpening upon all four sides, alongside with rounded-bevelled edges (Allen *ibid.*).
- A.6.7 The second example was of a more complete, much thinner, less well-worn but much more weathered example of a cylindrical sandstone whetstone (SF772 from context 9465: weight 200g; 140mm x 18mm x 13mm). The lithology of this was more calcareous, the sandstone being softer, somewhat more laminated, but in other respects similar; consisting of a finer-grained, slightly micaceous, but only very slightly glauconitic white sandstone. This example resembled much more closely the suggested Weald Clay Lower Cretaceous (as yet unlocated) sandstone source previously identified by Allen (*ibid.* 39-44, fig. 7.17) from somewhere in the Surrey/Sussex area.

Discussion

- A.6.8 This very small assemblage of worked stone objects from East Kettering simply confirms the domestic settlement context of this Roman site.
- A.6.9 Both Curwen (1937) and Shaffrey's (2006) classification and dating of quernstone types suggests a middle to late Roman date for the flat-topped ORS querns. Shaffrey recorded 28% of the flat-topped querns from 2nd century AD, 28% from 3rd century, and 41% from 3rd-4th century AD contexts. However, the Wealden Clay sandstone whetstone from here was being produced and traded from the late 1st century right up to the 4th century AD (Allen *ibid.*, 44). Therefore the most likely date inferred by the assemblage is 2nd – 4th century AD.

Conclusions

- A.6.10 Both Old Red Sandstone quern and Wealden whetstones are commonly distributed stone products in Roman Britain, although the most frequent distribution of these items probably lies to the west of East Anglia. Small stone items (like pottery) were distributed along the road networks, and ORS quern is not uncommon within Roman settlements as far east as Cambridge. Kettering lies close to the meeting point of the

main quern distribution(s) of ORS, Millstone Grit, and the Lodsworth/ Folkestone Greensand.

A.6.11 Both quern and whetstone are items typically found within moderate status rural or semi-urbanised Romano-British settlements of the late 1st - early 4th century AD.

Further work required

A.6.12 All three items should be illustrated, and the drawings then included within a final publication report on the site(s).

A.6.13 All three items should be retained.

APPENDIX B ENVIRONMENTAL ASSESSMENTS

B.1 Faunal Remains by Hayley Foster, updated by Zoë Uí Choileáin

Introduction

B.1.1 This animal bone assessment details the analysis of the animal bone recovered from Kettering (XNNEKE15). The material dates to the British-Romano period. The assemblage was of a modest size, recovered by hand-collection and from environmental samples. The number of recordable fragments totalled 143 and the species represented included cattle (*Bos taurus*), sheep/goat (*Ovis/Capra*), horse (*Equus caballus*), pig (*Sus sp.*), dog (*Canis familiaris*), and rabbit (*Oryctolagus cuniculus*). There was also evidence of rodent (probable rat) and amphibian (probable frog).

Methodology

B.1.2 The method used to quantify this assemblage was based on that used for Knowth by McCormick and Murray (2007) which was modified from Albarella and Davis (1996). This involves analysing and recording bones from the assemblage but omitting those fragments that are considered 'low grade' and not worthy of being counted. For an element to be recorded 50% of the diagnostic zone on a bone must be present. This method narrows down the assemblage, to ensure that fragmented elements are not counted multiple times. MNI (minimum number of individuals) was calculated for all species present. MNI estimates the smallest number of animals that could be represented by the elements recovered. Any fragments that did not fit into the above criteria but were still of interest, which may include butchery marks, gnawing, or pathology, would be considered 'non-countable'. These fragments were recorded but not included in the quantification. Ribs and other vertebrae were not counted. Recordable elements were separately recorded on an Access database. Information recorded includes: context, species, element, side, condition, state of fusion, zone present, percentage present, signs of butchery, gnawing, pathology, ageing, and any other observations worthy of noting. Regarding NISP table (Table 17) loose teeth include loose maxillary teeth and teeth that could not be classified as either mandibular or maxillary. Cranium includes zygomatic arch or tooth row where three or more teeth of the dP4/P4-M3 tooth row were present. For calculation of MNI; Loose teeth or unfused epiphyses were not counted. Pig canines were divided by 2. M1/2 were divided by 4, M3 were divided by two and phalanges were divided by eight. Except for teeth and phalanges, left and right were considered for all elements. Proximal and distal ends were considered for all elements where applicable.

Identification

B.1.3 Identification of the faunal remains was carried out at Oxford Archaeology East. References to Hillson (1992), Schmid (1972), von den Driesch (1976) and Cohen & Serjeantson (1996) were used where needed for identification purposes. Attempts to distinguish between sheep and goat were carried out based on morphological characteristics and metric data following Boessneck (1969, 339-341) and Prummel and Frisch (1986, 569-570).

Ageing

B.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 and 1987) 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. The Higham wear stages are used to estimate a minimum age of an individual animal. The state of epiphyseal fusion is determined by examining the metaphysis and diaphysis of a bone. Fusion was recorded according to Silver (1970) and Schmid (1972) for cattle, sheep and pig.

Gnawing, Butchery and Burning

B.1.5 Gnawing marks made by carnivores and rodents were noted. For all identified bones and non-countable bone butchery marks were recorded. Butchery marks were described as “chop” or “cut” marks. There were no bones that showed evidence of sawing. Burning on bones was simply recorded as either burnt/blackened, calcined or singed.

Results of Analysis

B.1.6 For the purposes of this assessment the faunal material was grouped into one phase as the evidence suggests the material is all Roman in date. From the data collected (Table 17), the faunal material was dominated by cattle that made up 39.2% of the NISP, followed by sheep/goat that made up 26.6% of the material. The main domestic mammals, cattle, sheep/goat and pigs, account for most (68.6%) of the identifiable bone in the assemblage. Although this is a small assemblage fragments from most parts of the cattle and sheep/goat carcass are present.

B.1.7 The ageing data was minimal, making it difficult to produce reliable mortality profiles for the domestic species. From the data that was gathered, the mandible wear stages indicated cattle were 32-33 months of age at death and the majority of long bone epiphyses were fused except a distal metapodial that fuses at 24-36 months. Sheep/goat were all categorised as adult as per the tooth wear whereas the fusion data suggested there was a presence of a specimen less than 18-28 months of age at death. All pig long bones epiphyses were fused and the dental data indicated an animal of 25-27 months of age at death.

B.1.8 Other minor domestic species include horse and dog all of which appear to be from adult or mature animals. A few micro-vertebrate fragments were recovered, probably those of a rat from contexts 9787 and 9761 and two vertebrae and a humerus from an amphibian, most likely a frog, from context 9761.

B.1.9 In regard to visible taphonomic alterations, the bone was in good condition and there was no evidence of gnawing. Tiny fragments of burnt long bone and rib fragments were recovered from contexts 9357, 9483, 9626, and 10031. The only evidence of butchery was represented in the form of cut marks on the posterior side of a proximal sheep/goat metacarpal. There was also no evidence of any pathological change.

Element	Cattle	Sheep/Goat	Horse	Dog	Pig	Rabbit	Amphibian	Rodent	Total
Cranium				2				1	3
Loose teeth	6	7	15		1				29
Loose lower incisor			1	2				1	4
Loose canine				2					2
Loose lower PM	11		4	1					16
Loose lower M1/2	6	15	2	2					25
Loose lower M3	4	5	1	2					12
Mandible	1	3	1	1	1				7
Atlas							1		1
Axis	2	1	1				1		5
Scapula	2								2
Humerus	2						1		3
Radius	3			1	1				5
Ulna	2	1	1						4
Metacarpal	4	2	1	1					8
Pelvis	3	1							4
Femur	1	1			1				3
Tibia		1	4						5
Astragalus		2							2
Calcaneum	1								1
Metatarsal	5	1							6
Metapodial	2								2
Phalanx 1	3	1				1			5
Phalanx 2	1								1
NISP	59	41	31	14	4	1	3	2	155
%NISP	38.06	26.45	20	9.032	2.58	0.65	1.94	1.29	
MNI	4	2	2	1	1	1	1	1	13
%MNI	30.8	15.4	15.4	7.7	7.7	7.7	7.7	7.7	

Table 17: Number of identifiable specimens (NISP) by element and species for Roman phase

Discussion

B.1.10 At this site, domestic animals were the basis of the food economy with cattle and sheep/goat dominating the assemblage. In the Roman period, cattle were numerically predominant over sheep, with the relative sizes of cattle and sheep carcasses, beef would have contributed much more to the diet of the residents than lamb or mutton. At Romano-British sites, cattle were used for dairying, traction and they were commonly slaughtered for meat around four to eight years of age (Maltby, 2016). Cattle at this site were culled at over 24-36 months (as this was the youngest specimen recovered), which is slightly less than Maltby's estimation. There were no young or neonate cattle recovered, which would suggest there was no on-site breeding. This could perhaps also be due to preservation, as small and porous bones are more susceptible to breakage and degradation.

- B.1.11 During the Roman period sheep were often slaughtered for meat, at the end of their immaturity, around 18-36 months, and those sheep that were adults were exploited for wool production (Maltby 2016). Those animals that were slaughtered at the 18-36 months age range were probably being slaughtered for meat, and those that were adults were probably kept as breeding stock or for wool. There was a lack of evidence to suggest sheep/goat were bred on site as there were no remains of younger specimens. All the sheep/goat recovered from Kettering were older than 18-24 months of age up to adulthood at age of death.
- B.1.12 Pigs were slaughtered before reaching adulthood in the Roman period as they were solely used for meat and lard. Pigs would have been culled before maturity upon reaching their optimum weight for consumption. Pig only accounted for four fragments of this assemblage, therefore there was no evidence of sexing and the only piece of ageing evidence, as mentioned above, was an animal 25-27 months of age at death.
- B.1.13 Horse remains in the Roman period are usually quite well represented, as they were here, making up 17.5% of the assemblage. Dog were present in multiple contexts (9241, 9380, 9511), with mainly teeth and crania recovered. Rabbit, rodent and amphibian were all recovered in small numbers.
- B.1.14 From the data collected the assemblage suggests that cattle and pig were mainly slaughtered for meat, whereas sheep/goat were likely kept into adulthood and used for secondary products such as milk and wool. However, it must be reiterated that the size of the assemblage is very small and inferences have been made with a restricted data set.

Research Potential and Further Work

- B.1.15 The material is a good representation of a Roman domestic faunal assemblage. The data represents a modest quantity of identifiable animal bone. Collecting full biometric data would allow for comparison to be made with other sites in the area and to determine if there were any changes in size of all the main species recovered. Identifying the amphibian and rodent fragment to species with the help of a reference collection would also aid in adding further detail. A further 1.5 days would be required to produce a full report on the faunal material.

B.2 Marine shell by Carole Fletcher

Introduction and methodology

- B.2.1 A total of three shells or shell fragments weighing 0.058kg were collected by hand from a well during the archaeological works. The shells recovered are edible examples of oyster *Ostrea edulis*. The shell is relatively well preserved and does not appear to have been deliberately broken or crushed, however, one has suffered recent post-depositional damage. The shells were weighed and recorded by species, with right and left valves noted, when identification could be made. The minimum number of individuals (MNI) was not established, due to the small size of the assemblage from most features.

Factual data

B.2.2 Three oyster shells were recovered from two contexts within well **17762**. A near-complete right valve (0.014kg) has suffered recent damage, having been broken in two from posterior to anterior margin. An incomplete, large, older right valve (0.028kg) is missing the ventral margin, and traces of what may be a W-shaped shucking mark survive. The final shell is an irregular, older, medium left valve (0.016kg) with damage to the mid-points on the posterior and ventral margins, either of which may be a shucking mark.

Discussion

B.2.3 The single feature did not contain enough shells to indicate a meal of oysters alone, however, they may have been combined with other foods. Two of the oysters appear to show evidence of shucking, suggesting the mollusca were cooked before being eaten. The presence of marine mollusca indicates transportation of a marine food source to the site and demonstrates the ability of the occupants of the settlement to access foods sources beyond their immediate area and surrounding hinterland with shellfish were reaching the site from the coastal regions. The shells recovered represent general discarded food waste.

B.2.4 Although not closely datable in themselves, the mollusca may be dated by their association with pottery or other material also recovered from the features.

Statement of potential

B.2.5 The assemblage has little potential to aid the regional or local research objectives, beyond indicating the ability of the occupants of the settlement to access foods sources within their immediate area and surrounding hinterland.

Recommendation for further work

B.2.6 This statement acts as a full record for the archive and no further work is required, beyond summarising the information for publication.

Task List

Description	Performed by	Days
No further work is required, unless the site is published, then the information should be summarised for the publication	Author of publication	0.1

Retention, dispersal and display

B.2.7 The mollusca may be of some use for educational/handling collections, otherwise they can be deselected prior to archive deposition.

B.3 Environmental samples by Rachel Fosberry and Martha Craven

Introduction

- B.3.1 Forty-eight bulk samples were taken during the excavation of Areas B4 (4 samples), C1 (41 samples) and COS (3 samples). Selected samples were processed during the course of the excavation in order to provide feedback and adaptation of the sampling strategy. Additional samples were taken from Area C once the potential of the environmental remains was realised. Samples were taken from two areas; five samples were taken from the extreme western area of excavation and the remaining samples were taken from an area of intense activity in the east of the site. The nature of the deposits in this area was difficult to determine during excavation as there appeared to be a natural peat spread over much of the area in addition to several dark layers that were clearly charcoal-rich. Feedback samples from the latter indicated excellent preservation of charred plant remains with germinated spelt wheat as the predominant component. The excavation of the archaeological remains was extended with the intention of determining if this was an area in which spelt malting was taking place.
- B.3.2 The main area of activity is bisected by a large Roman ditch 1 (9752/9738) that was originally thought to be a palaeochannel due to the dark fill. Immediately north of this ditch there is evidence of a stone structure with a cobbled surface (Industrial Area 1). Samples were taken from layers of soil within and around the stones. Several samples were also taken from the area further north of the structure from several layers that covered ditch 4 (9707/9746/9731/9789/9838/9823) in addition to deposits within the ditch which was excavated in slots.
- B.3.3 The area south of the Roman ditch 1 included a stone-lined rectangular pit 9513 that appeared to be connected to ditch 2 (9719/9510) (which ran parallel to the large Roman ditch 1 and possibly connected to ditch 4). Samples were taken from what may have been connecting gullies to each of these ditches. Also within this southern area was a group of ovens and a working surface (Industrial Area 2). Numerous samples were taken to ascertain spatial distribution.
- B.3.4 The purpose of this assessment is to determine the density and diversity of plant remains, 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

- B.3.5 For this initial assessment, one bucket (approximately 10 litres) of each of the samples was processed by tank flotation using modified Siraff-type equipment for the recovery of charred 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. 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. A sub-sample of waterlogged flots was examined whilst the material was wet. The entire flot was subsequently dried and then re-assessed. The dried flots were scanned using a binocular microscope at

magnifications up to x 60 and an abbreviated list of the recorded remains are presented in Tables 18-20.

B.3.6 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 (1997) for other plants. Carbonised 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

B.3.7 For the purpose of this initial assessment, items such as seeds, cereal grains and legumes have been scanned and recorded qualitatively according to the following categories:

= 1-5, ## = 6-25, ### = 26-100, #### = 100 - 500, ##### = 500+ specimens

Items that cannot be easily quantified such as charcoal, magnetic residues and fragmented bone have been scored for abundance:

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

Results

B.3.8 Preservation of plant remains is predominantly by carbonisation with occasional samples containing plant remains that have been preserved by waterlogging.

B.3.9 The results are discussed by area below.

Area B4

B.3.10 Four samples were taken from Area B4. Single charred grains of barley (*Hordeum vulgare*) and hulled spelt/emmer wheat (*Triticum spelta/dicocum*) in ditches 9157 and 9227 cannot be considered as significant and probably derive from wind-blown refuse or may be intrusive. Snails are present in each of the samples and may have potential for analysis.

Sample No.	Context No.	Feature No.	Feature Type	Volume processed (L)	Flot Volume (ml)	Cereals	Molluscs	Charcoal
850	9143	9144	Pit	7	25	0	+++	0
851	9146	9145	Ditch	16	45	0	++++	0
852	9158	9157	Ditch	9	25	#	+++	+
853	9226	9227	Ditch	8	25	#	++	+

Table 18: Samples taken from Area B4

Area COS

B.3.11 Three samples were taken from Area COS. All three samples contain frequent, relatively well-preserved snail shells and are either devoid of or contain small quantities of charcoal.

B.3.12 Sample 4650, fill 17733 of pit **17731**, was found to contain a moderate quantity of carbonised plant remains. Cereal grains consisting of barley, spelt/emmer and grains too poorly preserved to identify were recovered alongside occasional spelt/emmer glume bases. A number of arable/ruderal weed seeds including docks (*Rumex sp.*), yellow-rattles (*Rhianthus sp.*) and scentless mayweed (*Tripleurospermum inodorum*) were also noted. Seeds of sedges (*Carex sp.*) and spike-rushes (*Eleocharis sp.*) indicate a wetland/damp ground component. A charred amorphous object was also recovered from this feature which may possibly be burnt food or dung. The plant remains within this sample are likely to be swept or wind-blown refuse from a domestic setting.

B.3.13 Sample 4652, fill 17795 of well **17762**, contains a moderate quantity of waterlogged plant material including nettles (*Urtica sp.*), willowherbs (*Epilobium sp.*), rushes (*Juncus sp.*) and sedges. These plant taxa are likely to have been growing within close vicinity of the well. Ostracods and amphibian bones were also noted within this sample which is unsurprising given that they inhabit aquatic environments.

B.3.14 Sample 4651, fill 17772 of ditch **17771**, is devoid of plant remains.

Sample Number	Context Number	Cut Number	Feature Type	Volume Processed (L)	Flot Volume (ml)	Cereals	Chaff	Weed Seeds	Waterlogged Seeds	Charred Indet.	Snail Shells	Ostracods	Charcoal	Pottery	Small mammal bones	Large mammal bones	Amphibian bones
tr4650	17733	17731	Pit	16	10	##	##	##	0	#	+++	0	++ +	#	#	0	0
4651	17772	17771	Ditch	18	5	0	0	0	0	0	+++	0	0	0	0	0	0
4652	17795	17762	Well	16	20	0	0	## w	#w	0	+++ +	++	++	## #	## #	## ##	## ##

Table 19: Samples taken from Area COS

Area C1

B.3.15 Five samples were taken from an area of activity located in the far west of Area C1. Ditches 9243, 9625 and 9682 and layers 9380 and 9415 produced only occasional charred spelt grains and chaff with charred seeds of pasture plants such as scentless mayweed (*Tripleurospermum inodorum*), ribwort plantain (*Plantago lanceolata*), sheep's sorrel (*Rumex acetosella*) and grasses (*Poaceae*).

B.3.16 The area to the east of the site contained two industrial areas and associated features that contained fills that were observed to be extremely charcoal-rich on excavation. There were possibly two phases of activity in this area.

Stone structure and surface (Industrial Area 1)

B.3.17 Several samples were taken from above and below the stones within this area and associated layers. Samples were taken from three layers and contain abundant germinated spelt grain. Sample 879, layer 9741 differs from the others in that there is no chaff present and the 300ml plot is comprised entirely of charcoal and grain. Further analysis of this sample is recommended to calculate the percentage of germination of the grain and investigation of sprout development and detachment. Sample 880, layer 9772 is also rich in germinated grain and contains abundant detached sprouts. Spelt chaff is present and seeds of rye-grass (*Lolium* sp.) were noted. Sample 882, layer 9787 contains less germinated grain (and sprouts) and more chaff and weed seeds. Rye-grass seeds are also frequent in this sample. It seems likely that these three samples are related to the same activity that is taking place in this area but the distribution of the remains may reflect different stages in the process. A T-shaped corn-drier was excavated adjacent to these deposits and it is probable that the layers represent rake-outs of the drier. The substantial quantities of burnt germinated grain clearly relate to deliberate malting (rather than accidental germination) and it is suggested that the oven was used to halt the germination of the grain prior to the subsequent stage in the malting process. The recovery of such enormous volumes of charred material suggests that the process was not carefully controlled resulting in repeated occurrences in which the grain burnt rather than parched. Perhaps this is indicative of the scale of the malting in which there was not the need to carefully conserve the malted grain.

Ditch 4

B.3.18 The layers of burnt material extend further north of the area and have been detected in samples taken from around ditch 4. Samples 857 and 860, layer 9430 were taken from an area north-west of the stone structure in Industrial Area 1. Both samples represent the same layer and the spatial variation is not clear. Sample 857 is exceptional in content. The 300ml plot is comprised predominantly of charred grain with both spelt and barley abundant. There are frequent germinated spelt grains and detached sprouts are also abundant. Charred weed seeds are also present in abundance and include knotgrasses (*Polygonum* sp.), docks, black-bindweed (*Fallopia convolvulus*) and scentless mayweed. This sample also has a high silicate content. Full analysis of this sample is recommended. Sample 883, layer 9829 was taken from the north-west of the area and is similar in regards to the proportion of barley (both chaff and grain).

B.3.19 Sample 874, layer 9710 and Sample 881, layer 9767 are from the most northern area and contain less charred plant remains, possibly indicating the extent of the spread of burnt material.

B.3.20 Samples taken from within the ditch indicate that it was water-filled. Waterlogged plant remains were recovered from Sample 872, fill 9708 of ditch slot 9707 and from sample 873, fill 9722 of ditch slot 9721. The waterlogged assemblage has a high wetland plant proportion with sedges, spike-rush (*Eleocharis* sp.) and bull-rushes (*Scirpus* sp.) present in addition to obligate aquatics such as water-crowfoot and pondweed (*Potamogeton* sp.). Seeds of stinging nettles, docks and buttercups are

included and there is also a charred cereal component with germinated spelt grains. Sample 873 contains the most diverse assemblage of plant taxa and is recommended for analysis.

Roman ditch 1

B.3.21 Six samples were taken from the large Roman ditch 1. Three samples (885, 886, 2002) taken from the lower fills (9762, 9760, 9753) indicate that the feature originally contained water and the deposits have remained waterlogged. Sample 886, (fill 9760) produced a diverse assemblage of waterlogged plant remains that have been well-preserved and contains abundant seeds of plants that would have been growing in the near vicinity. These include poppies (*Papaver rhoeas* and *P. somniferum*), self-heal (*Prunella vulgaris*), pale persicaria (*Persicaria lapathifolia*), stinging nettles (*Urtica dioica*), buttercups, sedges (*Carex sp.*) and water-crowfoot (*Ranunculus subgenus BATRACHIUM*). Occasional charred plant remains are present. This sample has excellent potential for further study to determine the local flora. It would be interesting to compare the assemblage with the charred weed seeds recovered from oven 9543. Sample 885, lower fill 9762 contains waterlogged duckweed (*Lemna sp.*) seeds, ostracods (small bivalve crustaceans) which are indicative of water but, unlike Sample 886, seeds have not been preserved. Occasional charred plant remains include both spelt and emmer glume bases and detached sprouts. Sample 2002 was taken from the basal fill (9753) of the ditch and contains preserved seeds of rushes (*Juncus sp.*), spike-rush, sedges, buttercups, fool's parsley (*Apium nodiflorum*), hemlock (*Conium maculatum*) and numerous seeds that have yet to be identified. Further study of this sample is recommended.

B.3.22 Sample 878, fill 9761, was taken from the fill above 9760 and is related to sample 886. It is different in regards to preservation and content. A 16 litre sample of soil produced a flot volume of 400ml that is almost entirely comprised of a mixture of spelt cereal chaff (including whole spikelets) and 6-row barley chaff. This exceptional sample also contains germinated spelt grains, cereal sprouts, a preserved floret of wild oats (*Avena fatua*) and a high silicate content. Analysis of this sample is recommended.

Ditch 2

B.3.23 Ditch 2 lay immediately south of ditch 4 and ran parallel, respecting the possibly earlier feature. Two samples were taken; Sample 2000 was taken from the lower fill of eastern ditch slot 9510 and contains waterlogged organic material with numerous rush seeds. Sample 871, fill 9720 of western slot 9719 produced a large assemblage of charred spelt glume bases with an extremely high proportion of cereal sprouts. The location of this ditch slot is close to oven 9543 and may contain rake-out material.

Industrial Area 2

Oven 9543

B.3.24 Six samples were taken from oven 9543. The lowest fill 9763, Sample 877, taken from the western end of the feature contains abundant detached germinated spelt sprouts in addition to abundant glume bases, most of which are identifiable as spelt wheat but

there are several specimens that have the morphological appearance of emmer wheat. Occasional germinated cereal grains are present and appear to be spelt. Occasional weed seeds are present and include corncockle (*Agrostemma githago*) and docks.

- B.3.25 Samples 862, 863, 867 and 868 were taken from fill 9541. Charred plant remains are abundant in each of the samples with evidence of spelt germination, particularly in sample 867 which was taken from the eastern end of the feature. Barley is present as both grains and chaff and there is also evidence of barley germination. Further study of these assemblages may provide further information on spatial distribution.
- B.3.26 Sample 864, fill 9566, differs from the other samples in its abundant density and diversity of charred weed seeds. Buttercups, docks, ribwort plantain, scentless mayweed, henbane (*Conium maculatum*) and cleavers are abundant. Also present are poppies (*Papaver sp.*), nipplewort (*Lapsana communis*), cornflower-type (*Centaurea sp.*), vetches (*Vicia/Lathyrus sp.*) and field penny-cress (*Thlaspi arvense*). This assemblage is indicative of the collection and burning of plants that grow on cultivated and disturbed land as well as having an element of pasture plants. Further study of this assemblage is recommended.

Pit 9513

- B.3.27 Two samples were taken from within feature 9513; Sample 865 from the primary fill 9524 contains occasional charred plant remains that have probably originated from the charred layer above, fill 9525 (Sample 861), which contains charred spelt wheat (grains, chaff and sprouts) with a diverse charred seed assemblage of plants that are associated with hay pastures such as cleavers (*Galium aparine*), clover/medicks (*Trifolium/Medicago sp.*), docks (*Rumex sp.*), scentless mayweed (*Tripleurspermum inodorum*), grasses (*Poaceae*), ribwort plantain (*Plantago lanceolata*) and buttercups (*Ranunculus acris/repens/bulbosus*). Only 25% of the flot from this sample was assessed; further study of the full flot is recommended. Samples were taken from gullies 9530 and 9611 which were located at the north-east and south-west corners of feature 9513 and may have been drainage gullies as they appeared to connect to the two main ditches in this area, possibly as part of a water-management system. The samples (887 and 888) contain only occasional charred plant remains that includes two charred seeds of fairy-flax (*Linum catharticum*) which is also a plant found growing in pasture/grassland. None of the samples contain molluscs or ostracods that could have been indicators of water. The function of this building remains unclear although it appears to have contained burnt hay.

Gullies

- B.3.28 Four gullies in the extreme south of the site were sampled. Sample 2005 was taken from fill 9464 of gully 9465 which enclosed Industrial Area 2. It contains only occasional charred plant remains that may have blown into the feature. This gully links pit 9513 to Ditch 2 and may have been used for drainage (see also Sample 887). Sample 2001 was taken from an east-west gully that ran close to 9465. Fill 9427 of ditch slot 9473 contains a single charred barley grain and sparse charcoal. Further to the east, samples were taken from fill 9455 of gully 9446 (Sample 859) and from fill 9455 of

gully 9444 (Sample 858). Both samples contain abundant charred spelt waste with a high proportion of detached sprouts. Germinated barley was also noted in both samples and there is obvious twisting of the grains indicating that it is a six-row variety. These assemblages are both worthy of further study but their proximity to the edge of the excavation may preclude full interpretation. Their abundant charred content in comparison to the scarcity of remains in gullies 9465 and 9473 may assist stratigraphic interpretation.

Peat layer

B.3.29 Two samples were taken from fill 2876 of a machine slot 9877 in the north-east of Area C1. Sample 2003 contains abundant waterlogged degraded plant remains that may represent peat. A single sedge seed was noted. Sample 2004 did not contain any preserved remains. A further sample (884) of the 'peat layer' was taken from layer 9911 below fill 9430 above ditch 4. This sample contained charred plant remains with no evidence of waterlogged plant remains preserved.

Sample No.	Context No.	Feature No.	Feature Type	Group	Total No. buckets/bags	% context sampled	Volume processed (L)	Flot Volume (ml)	Potential	Cereals	germinated grain	Chaff	cereal sprouts	Charred Seeds	Waterlogged Seeds	Snails from flot	Charcoal
854	9244	9243	Ditch	West of site	2	10	8	25	none	#	0	0	0	0	0	0	+
869	9626	9625	Ditch	West of site	2	<10	19	130	Limited	#		#			###	0	+
870	9684	9682	Ditch	West of site	2	<10	8	20	Molluscs	#	0	0	0	0	0	++	+
879	9741		Layer	Industrial Area 1	1	<5	9	300	CPR analysis	#####	####	0	##	##	0	0	+++
881	9767		Layer	Industrial Area 1	2	5	16	25	Limited	##	#	##	#	#	0	0	++
880	9772		Layer	Industrial Area 1	3	20	9	200	CPR analysis	#####	#####	####	#####	##	0	0	++
882	9787		Layer	Industrial Area 1	2	<5	9	300	moderate	###	###	####	##	##	0	0	+
865	9524	9513	Pit	9513	2	~10	8	10	Limited	##	0	#	#	0	0	0	++
861	9525	9513	Pit	9513	2	10	9	40	CPR analysis	###	##	##	#	###	0	0	+++
888	9531	9530	ditch?	9513	2			10	none	0	0	#	0	0	0	0	+
887	9612	9611	ditch	9513	2			25	none	#	0	#	#	0	0	0	+
862	9541	9543	Oven/corn dryer?	Industrial Area 2	1	<10	4	200	Charcoal	###	##	##	0	##	0	0	+++
863	9541	9543	Oven/corn dryer?	Industrial Area 2	2	<10	8	20	CPR good	#####	##	#####	##	#####	0	0	+
867	9541	9543	Oven?	Industrial Area 2	1	<10	6	60	CPR analysis	#####	#####	##	##	##	0	0	++
868	9541	9543	Oven?	Industrial Area 2	0.5	<10	4	80	CPE moderate	###	0	##	0	###	0	0	+
864	9566	9543	Oven/corn dryer?	Industrial Area 2	1	<10	6	180	CPR analysis	#####	##	#####	#	#####	0	0	+++
877	9763	9543	Oven	Industrial Area 3			8	25	CPR analysis	##	##	0	#####	##	0	0	+++
875	9754	9752	Ditch	Ditch 1	4	70	8	180	CPR good	#####	#####	0	0	#	0	0	+++

Sample No.	Context No.	Feature No.	Feature Type	Group	Total No. buckets/bags	% context sampled	Volume processed (L)	Flot Volume (ml)	Potential	Cereals	germinated grain	Chaff	cereal sprouts	Charred Seeds	Waterlogged Seeds	Snails from flot	Charcoal
876	9757	9752	Ditch	Ditch 1	4	80	8	280	CPR good, charcoal	####	###	0	#####	##	0	++	+++++
878	9761		Ditch	Ditch 1	4	20	16	400	CPR analysis	####	###	0	#####	#	0	0	++
885	9762		Ditch	Ditch 1	4	<1		25	Limited	#	0	##	#	#	##	0	+
886	9760		Ditch	Ditch 1	2	<1		140	WPR analysis	##	#	##	#	0	###	0	++
2002	9753	9752	Ditch	Ditch 1	?		9	120	WPR analysis	0	0	0	0	0	###	0	0
860	9430	9430	Layer	NW Ditch 4	4	<10	30	2200	CPR good	####	#####	#####	##	#	0	0	+
857	9430		Layer	NW Ditch 4	4	<10	32	300	CPR analysis	#####	###	0	#####	###	0	++	++
873	9722	9721	Ditch	Ditch 4	2	<1	15	300	WPR analysis	###	###	0	##	0	###	0	++
872	9708	9707	Ditch	Ditch 4	2	<1	9	40	CPR good	###	###	0	#	#	###	0	++
874	9710		Layer	Ditch 4	2	<1	12	40	CPR good	#####	#####	0	#	#	0	0	+++
883	9829		Layer	Ditch 4	2	>10	16	240	CPR good	#####	##	#####	#####	##	0	0	++
2000	9427	9473	Ditch	Ditch2	?		9	120	Limited	0	0	0	0	0	###	0	0
871	9720	9719	Ditch	Ditch 2	2	<10	8	300	CPR analysis	###	##	0	#####	#	0	0	+
2003	9876	9877	Peat layer		?		8	50	none	0	0	0	0	0	#	0	0
2004			Peat layer		?		9	1	none	0	0	0	0	0	0	0	+
884	9911		Peat layer		4	<1		40	CPR good	##	##	#####	#	#	0	0	+
855	9380		Layer	West of site	4	<5	10	15	Limited	##	0	0	0	#	0	0	++
856	9415		Layer	West of site	1	100	4	20	Limited	#	0	0	0	##	0	0	++
2001	9473	9427	Gully		?		0	1	Limited	#	0	0	0	0	###	0	0
858	9445	9444	Gully		4	90	15	75	CPR good	####	##	0	#####	##	0	0	++
859	9455	9446	Gully		4	70	29	140	CPR good	####	##	#####	#####	###	0	0	+
2005	9465	9464	Gully		?		0	1	Limited	#	#	##	0	#	0	0	0

Table 20: Samples taken from Area C1

Discussion

B.3.30 The plant remains recovered from Area C are exceptional in their density and content. Spelt is a wheat variety that was favoured by the Romans and it was cultivated intensely in the East of England. Spelt is a hulled wheat in that the grains are tightly enclosed in an outer husk that is difficult to remove. This was achieved through parching and processing and resulted in large quantities of chaff that would have been excellent tinder for any process that required fuel. Once charred, spelt chaff is well preserved in the form of extremely tough glume bases which sometimes survive as spikelet forks. Occasionally whole spikelets are burnt and there is evidence of this in many of the samples. Germinated spelt is frequently found on sites in this area and can either be the result of accidental germination in which the cereal has been exposed to moisture or the spelt wheat may have been deliberately germinated during

malting for the brewing of beer. The extreme abundance of detached spelt sprouts at this site in addition to the evidence of germinated grain is highly suggestive of the deliberate malting of spelt wheat. It is also probable that this is a prolonged and repeated activity that took place in both of the industrial areas suggested. Large amounts of water are required for the initial steeping of the grain and there appears to have been a system of water management for this purpose. The steeped grain would have been spread over a malting floor and there are structures present which could have incorporated this. The subsequent stage of halting the germination of the grain required heat which would have been provided by hot air funnelled through the ovens including the T-shaped drier.

- B.3.31 There is evidence of barley cultivation with occasional germination. The enormous quantities of germinated spelt suggest that barley was not favoured for malting and any inclusion may have been accidental contamination.
- B.3.32 The waterlogged samples taken from the lower fills of ditches 1 and 4 indicate a diverse flora that includes wetland plants such as sedges and rushes that were probably growing on the damp sides of the ditch in addition to plants that may have been growing on the tops of the banks such as elderberry and brambles. There is also evidence of plants that grow in grassland/pasture such as self-heal, buttercups, grasses and poppies which may also have been growing on the ditch banks as the surrounding area appears to have been too wet for pasture.

Statement of potential

- B.3.33 The charred assemblages recovered from Area C1 at Kettering are exceptional and are of extreme archaeobotanical importance. Spelt malting has been recognised at a number of other Roman sites in Britain but there is no known comparison for the density of material as found on this site. A recent excavation at Over Industrial Estate, Cambridgeshire produced extremely large assemblages of spelt malting waste (Fosberry 2017) but lacked supporting archaeology. The site at Kettering has two industrial areas that include stone structures with working areas, two areas of ovens and drainage ditches and gullies all of which appear to be associated with the malting processes.
- B.3.34 Collecting full biometric data would determine spatial variation over the areas of activities and would also provide a data set for future research studies that will be beyond the remit of this project.
- B.3.35 The enormous scale of the malting process is indicated by the abundance of waste material produced. This has implications for transport with road networks required to transport the malt. The malt would have been transported in vessels and may have left evidence in the form of 'beer stone' encrustation or discolouring of the internal vessel surface.
- B.3.36 Waterlogged samples have potential to provide information on the flora that was growing in the immediate vicinity of the features. It is possible that the archaeology in this area is cut into a peat layer and there was further peat formation after the site went out of use. Pollen analysis has potential for characterising the landscape and these peat layers may be suitable.

- B.3.37 Charcoal quantities are generally low and are only of significant quantities in a few samples including those from oven **9543**. The charcoal from these samples has the potential for species identification with relation to fuel use and/or the use of wood in construction of the features.
- B.3.38 Molluscs are present in some of the samples and their distribution may be significant. They have potential for further study.
- B.3.39 The preservation of the charred material is excellent and the abundance of preserved remains offers the potential for further study and statistical analysis in accordance with the research aims. Specifically, the regional research agenda Objective 5E: “Promote the integration of specialist studies of material relating to subsistence, diet and health” (Knight *et al* 2012).

Recommendations for further work

- B.3.40 Ten samples are recommended for full analysis of preserved plant remains:

9 x CPR = 9 days

3 x WPR = 3 days

Research= 2 days

Tabulation and report = 3 days

APPENDIX C RISK LOG

The table below lists potential risks for the PX analysis work.

No.	Description	Probability	Impact	Countermeasures	Estimated time / cost	Owner	Date updated
1	Specialists unable to deliver analysis report due to over running work programmes/ ill health/other problems	Medium	Variable	OA has access to a large pool of specialist knowledge (internal and external) which can be used if necessary	Variable		
2	Non-delivery of full report due to field work pressures/ management pressure on co-authors	Medium	Medium-high	Liaise with OA management team	Variable		

APPENDIX D HEALTH AND SAFETY STATEMENT

All OA post-excavation work will be carried out under relevant Health and Safety legislation, including the Health and Safety at Work Act (1974). A copy of the OA Health and Safety Policy can be supplied. The nature of the work means that the requirements of the following legislation are particularly relevant:

- Workplace (Health, Safety and Welfare) Regulations 1992 - offices and finds processing areas
- Manual Handling Operations Regulations (1992) - transport: bulk finds and samples
- Health and Safety (Display Screen Equipment) Regulations (1992) - use of computers for word-processing and database work
- COSHH (1988) - finds conservation and environmental processing/analysis

APPENDIX E GAZETTEER OF PREVIOUS WORK AT HANWOOD PARK AND CRANFORD BUSINESS PARK

OA Site Code	Report Title	Stage	Author
XNNEKE12	Land East of Kettering, Phase A, Archaeological Evaluation Report. Report No.1408	Evaluation	Gilmour, N. 2012
XNNEKE13	Iron Age Structures and Associated activity on Land East of Kettering Areas R7 and R8. Report No. 1530	Excavation – PXA	Gilmour, N. 2013
XNNEKE14	Field 15, South of Cranford Road, Land East of Kettering. Report No. 1595	Evaluation	Gilmour, N. 2014
XNNAWK14	Romano-British double burial at Kettering Sewerage Routing, Northamptonshire. Report No. 2169	Rescue Excavation	Haskins, A. 2018
XNNAWK15	Archaeological evaluation of Kettering Sewerage Routing, Northamptonshire. Report No. 1867	Evaluation	Gilmour, N. 2018
XNNCAB15	Cranford Business Park, Kettering, Archaeological Evaluation Report. Report No. 1859	Evaluation	Bush, L. 2016
XNNCAB16	Cranford Business Park, Kettering, Post-Excavation assessment and updated project design. Report No. 2062	Excavation – PXA	Gilmour, N. 2017
	Later Prehistoric and Romano-British Remains at Cranford Business Park, Kettering, Northamptonshire. Excavation Report. Report No. 2405	Excavation – Grey Lit	Clarke, G. 2021
	The Bronze Age, Iron Age and Romano-British Archaeology of Cranford Business Park, Burton Latimer, Kettering. <i>Northamptonshire Archaeology</i>	Excavation – Publication	Clarke, G. <i>forthcoming</i>
XNNEKE15	Iron Age and Roman Activity on land East of Kettering, the Balancing Pond site, Post-Excavation assessment and updated project design. Report No. 2121	Excavation – PXA	Gilmour, N. 2018. Updated 2022
XNNEKE20	Land East of Kettering, Phase 2, Archaeological Evaluation Report. Report No. 2465	Evaluation	Lewis, T. 2020
XNNEKE20a	Plots R20, R21b, and DC3, Land East of Kettering, Northamptonshire. Post-Excavation Assessment and Updated Project Design. OA East Report No. 2483	Excavation PXA	Lewis, T. 2021. Updated 2022
XNNEKE20b	Hanwood Park Plots R25 and E3. Post-Excavation Assessment and Updated Project Design. OA East Report No. 2494	Excavation – PXA	Clarke, G. 2021. Updated 2022
XNNEKE20c	East Kettering Plot R11. Report No. 2450	Excavation – PXA	Cole, E. 2020
XNNEKE22A	Plots FOS3, DC1, and Central Open Space North, Hanwood Park, Kettering	Evaluation	Sinclair, K. 2022

Table 21: Gazetteer of previous work at Hanwood Park and Cranford Business Park

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APPENDIX G OASIS REPORT FORM

Project Details

OASIS Number	Oxfordar3-3043008
Project Name	Iron Age and Roman Activity on land East of Kettering, the Balancing Pond site

Start of Fieldwork	20/7/17	End of Fieldwork	12/9/17
Previous Work	Yes	Future Work	Choose an item.

Project Reference Codes

Site Code	XNNEKE15 & XNNEKE22A	Planning App. Number	
HER Number	ENN110815	Related Numbers	ENN110710 (eval.)

Prompt	Planning condition
Development Type	Extensive Green Field Commercial Development

Techniques used (tick all that apply)

- | | | |
|--|--|---|
| <input type="checkbox"/> Aerial Photography – interpretation | <input checked="" type="checkbox"/> Open-area excavation | <input type="checkbox"/> Salvage Record |
| <input type="checkbox"/> Aerial Photography - new | <input type="checkbox"/> Part Excavation | <input type="checkbox"/> Systematic Field Walking |
| <input type="checkbox"/> Field Observation | <input type="checkbox"/> Part Survey | <input 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)	pottery	Roman (43 to 410)
Corn drying oven	Roman (43 to 410)	Pottery	Bronze Age (- 2500 to - 700)
roundhouse	Iron Age (- 800 to 43)	pottery	Iron Age (- 800 to 43)

Insert more lines as appropriate.

Project Location

County	Northamptonshire	Address (including Postcode)
District	Kettering	
Parish	Kettering	
HER office	Northamptonshire	
Size of Study Area	3ha	
National Grid Ref	SP 9001 7719	

Project Originators

Organisation	OA East
Project Brief Originator	Lesly-Ann Mather
Project Design Originator	James Drummond-Murray
Project Manager	Nick Gilmour
Project Supervisor	Nick Gilmour

Project Archives

	Location	ID
Physical Archive (Finds)	Northamptonshire Archaeological Resource Centre (NARC)	
Digital Archive	OA East office, Bar Hill	XNNEKE15 / XNNEKE22A
Paper Archive	Northamptonshire Archaeological Resource Centre (NARC)	

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 checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Human Remains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Industrial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Digital Media

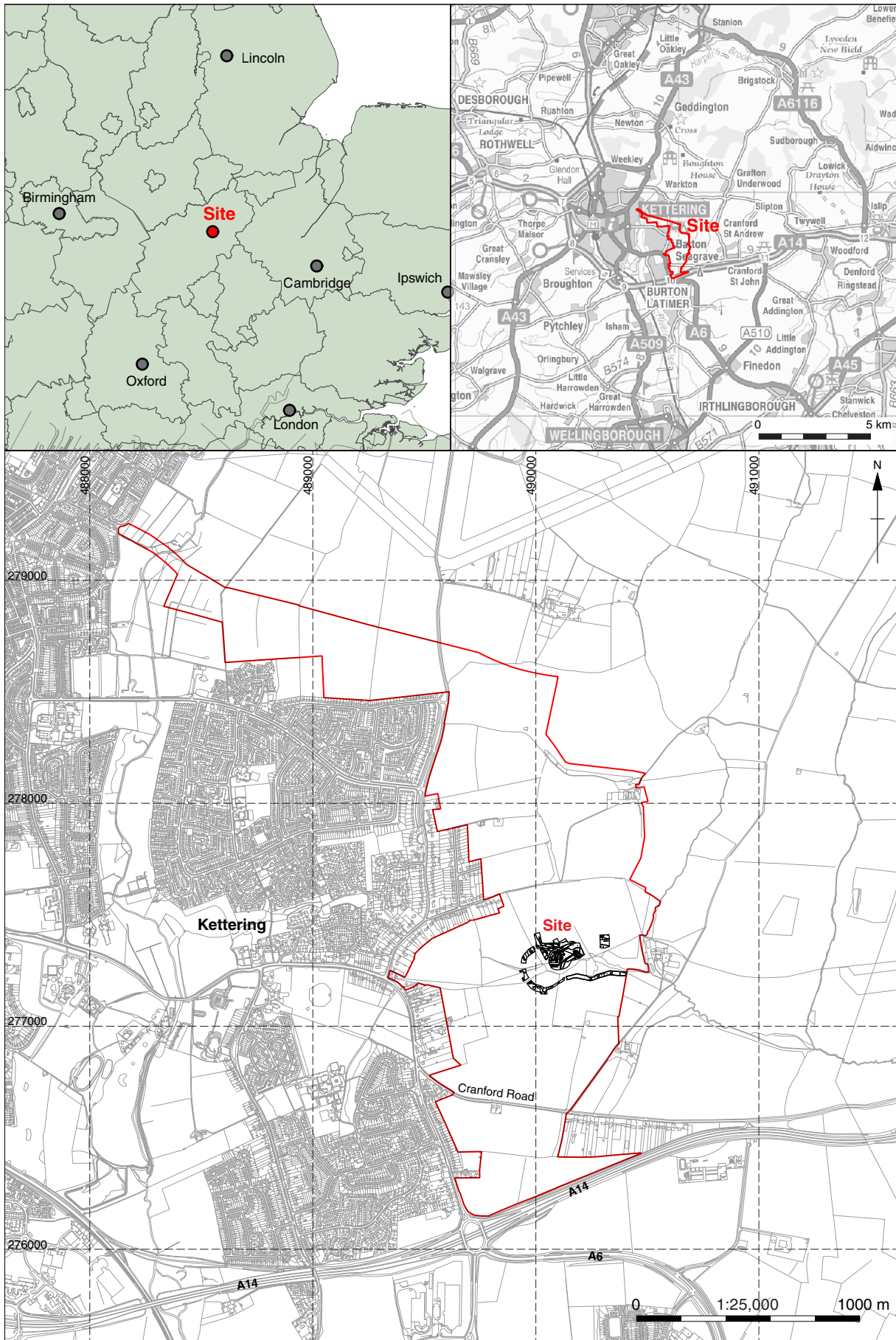
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Moving Image	<input type="checkbox"/>
Spreadsheets	<input type="checkbox"/>

Paper Media

Aerial Photos	<input type="checkbox"/>
Context Sheets	<input checked="" type="checkbox"/>
Correspondence	<input type="checkbox"/>
Diary	<input type="checkbox"/>
Drawing	<input type="checkbox"/>
Manuscript	<input type="checkbox"/>
Map	<input type="checkbox"/>

Survey	<input checked="" type="checkbox"/>	Matrices	<input type="checkbox"/>
Text	<input checked="" type="checkbox"/>	Microfiche	<input type="checkbox"/>
Virtual Reality	<input type="checkbox"/>	Miscellaneous	<input type="checkbox"/>
		Research/Notes	<input type="checkbox"/>
		Photos (negatives/prints/slides)	<input type="checkbox"/>
		Plans	<input checked="" type="checkbox"/>
		Report	<input checked="" type="checkbox"/>
		Sections	<input checked="" type="checkbox"/>
		Survey	<input type="checkbox"/>

Further Comments



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Figure 1: Site location showing archaeological excavation areas (black) in the development area (red)

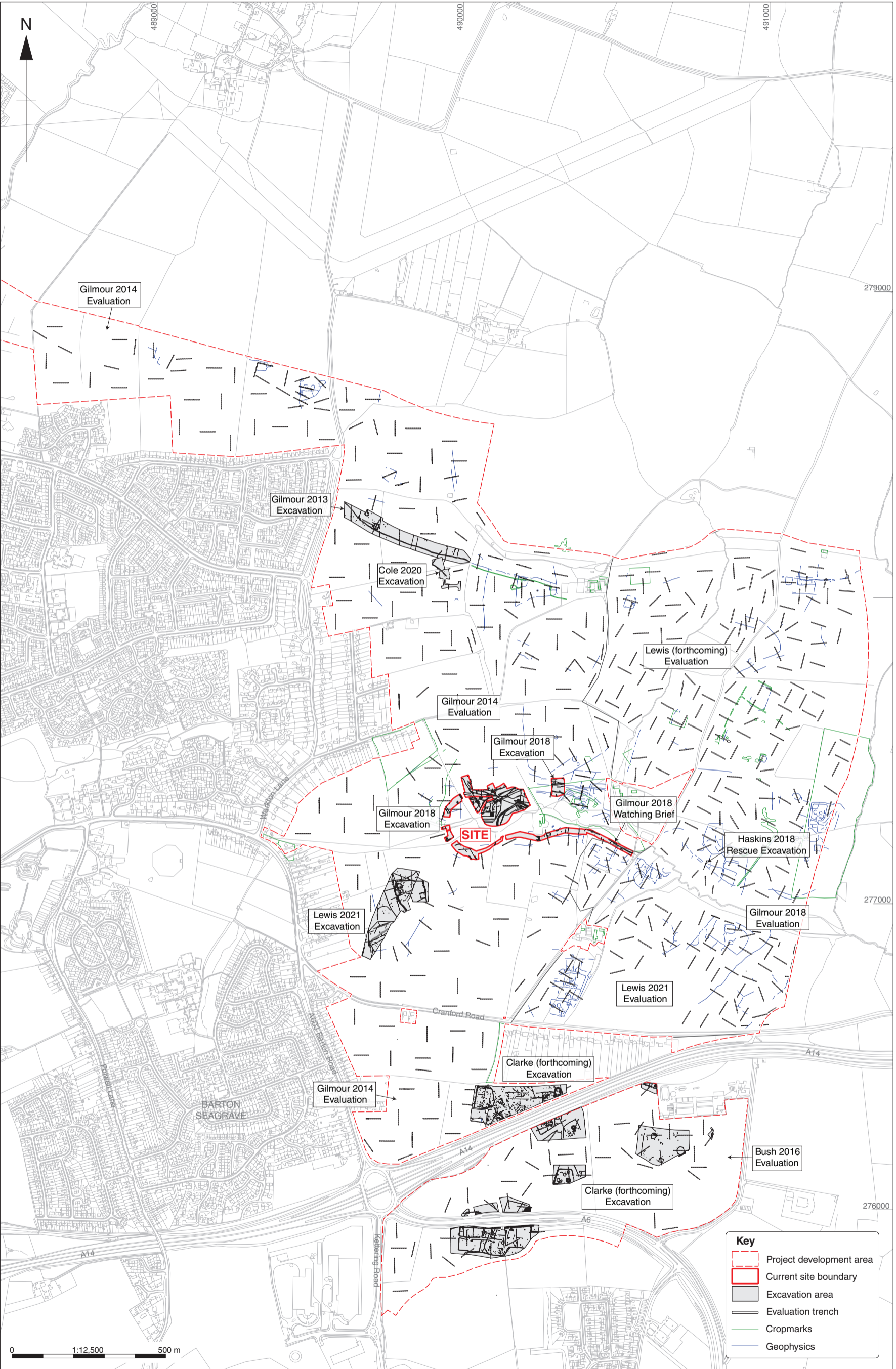


Figure 2: Site location in relation to other areas excavated by Oxford Archaeology East

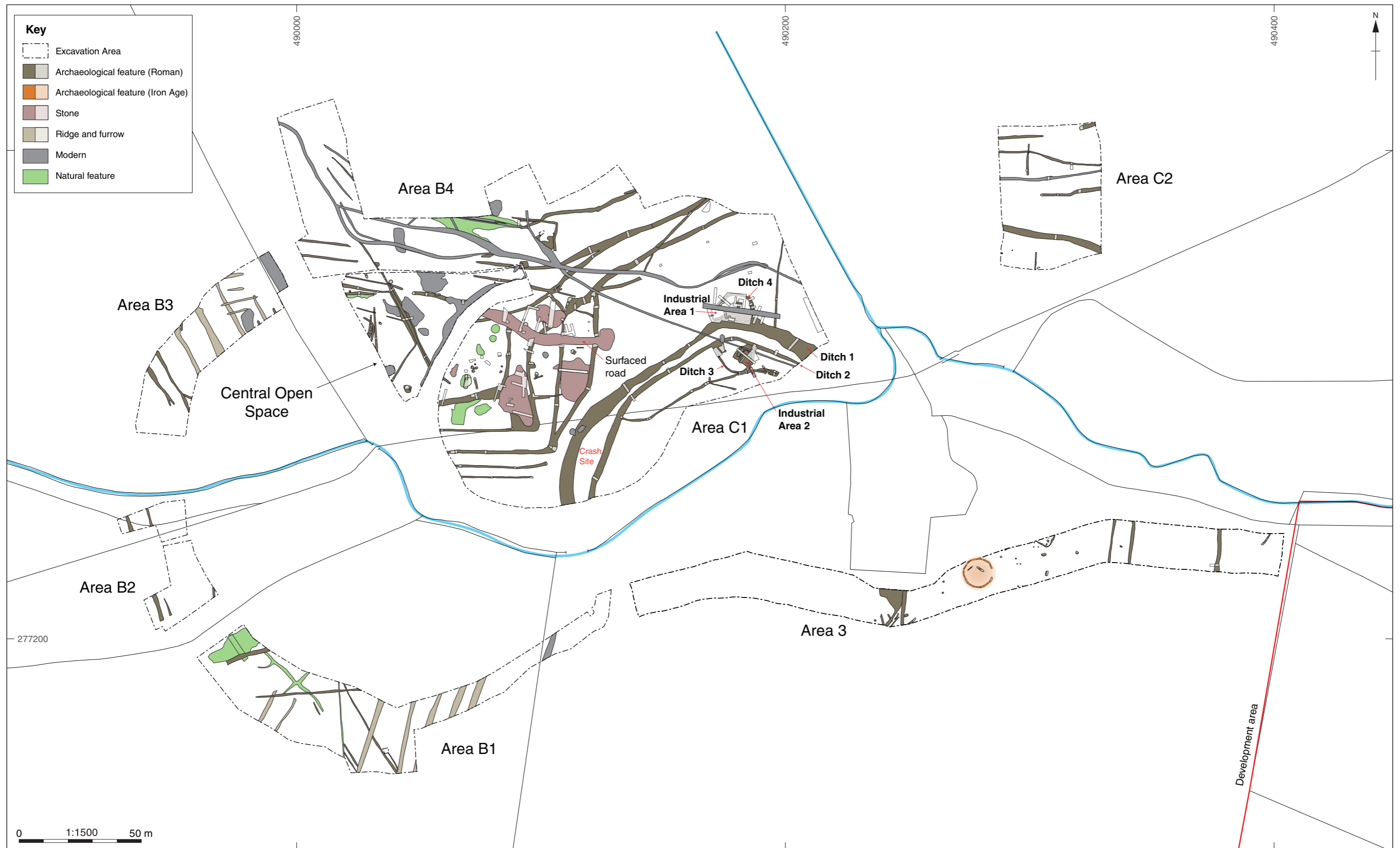


Figure 3: Site plan showing all areas

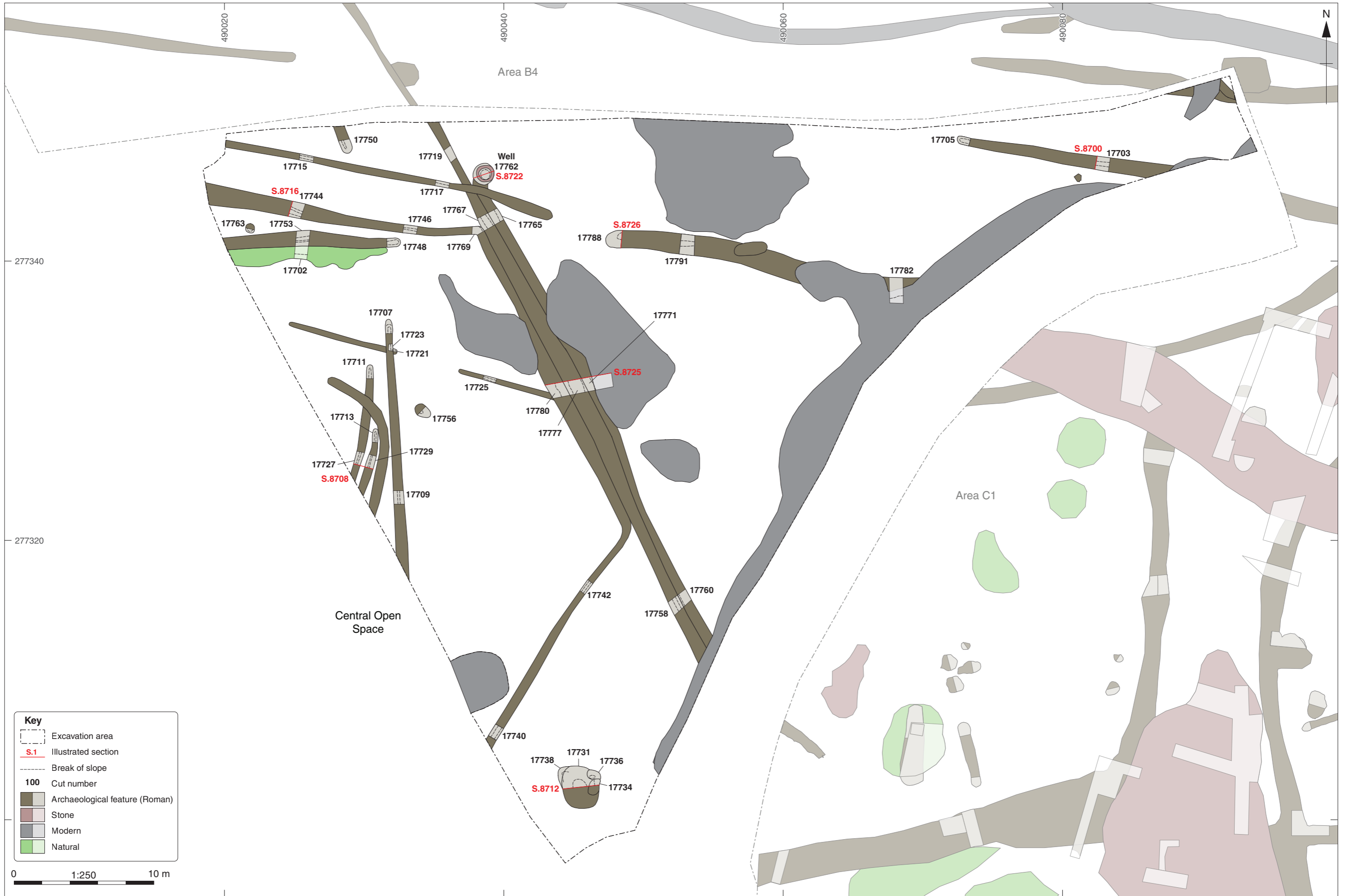


Figure 4: Central Open Space preliminary phase plan

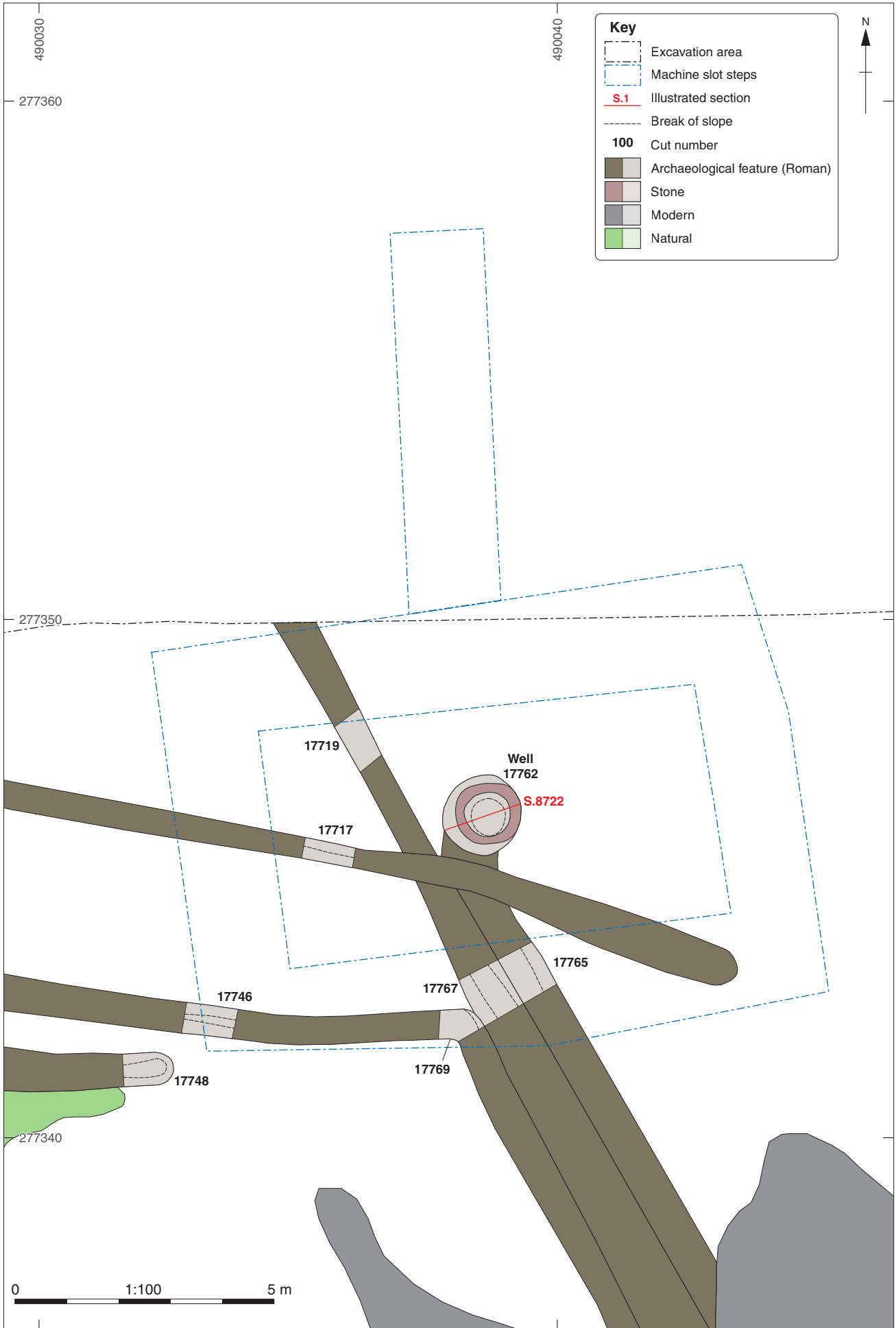


Figure 5: Detail plan of well 17762 including machine slot steps

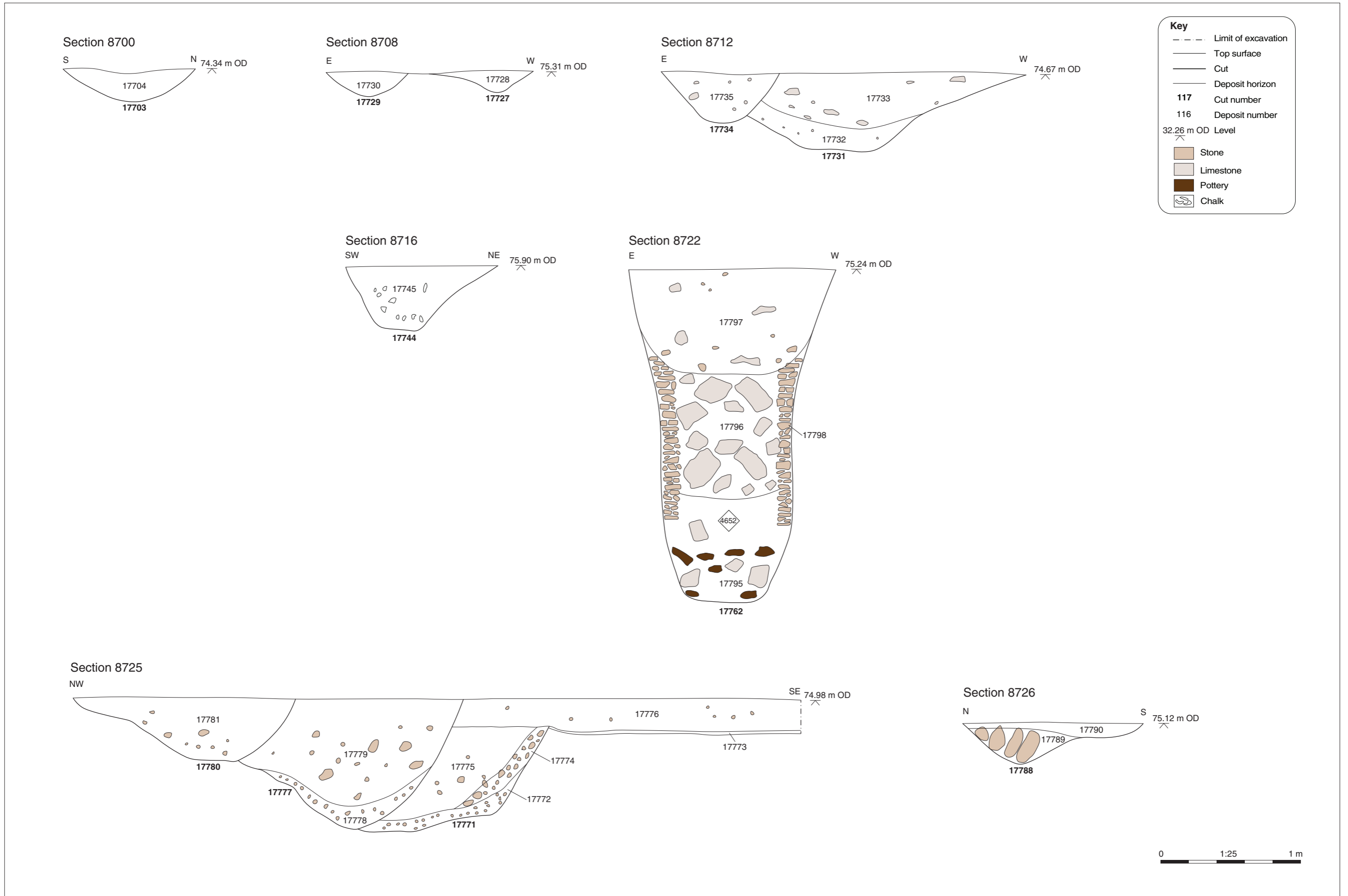


Figure 6: Central Open Space selected sections



**Head Office/Registered Office/
OA South**

Janus House
Osney Mead
Oxford OX20ES

t: +44 (0) 1865 263 800
f: +44 (0) 1865 793 496
e: info@oxfordarchaeology.com
w: <http://oxfordarchaeology.com>

OA North

Mill 3
Moor Lane
Lancaster LA1 1QD

t: +44 (0) 1524 541 000
f: +44 (0) 1524 848 606
e: [oanorth@oxfordarchaeology.com](mailto: oanorth@oxfordarchaeology.com)
w: <http://oxfordarchaeology.com>

OA East

15 Trafalgar Way
Bar Hill
Cambridgeshire
CB23 8SQ

t: +44 (0) 1223 850500
e: [oaeast@oxfordarchaeology.com](mailto: oaeast@oxfordarchaeology.com)
w: <http://oxfordarchaeology.com>



Director: Gill Hey, BA PhD FSA MCifA
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