SUFFOLK ARCHAEOLOGY

• A HISTORY OF EXPERTISE •

Suffolk County Council

Wash Pits Field, Euston Estate

Euston, Suffolk

Client:
Euston Estate

Date:
December 2015

EUN 035
Archaeological Strip, Map and Excavation Assessment Report v0.5
SCCAS Report No. 2014/063
Author: Rob Brooks

Wash Pits Field Strip, Map and Excavation Euston

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HER Information

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Planning Application No:	**SE/12/1614**
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Summary

Phases of geophysical survey and evaluation (2012) and strip, map and excavation (2014) were carried out on the site known as Wash Pits Field, which forms part of Euston Estate in Suffolk, directly east of Fakenham Magna. This report provides a quantification and assessment of the site archive and considers its potential for further analysis. The significance of the data is assessed and recommendations for dissemination of the results of the fieldwork are made. In this instance it is recommended that following some further analysis a full analytical report should be prepared. A summary of the results of this analysis should also be submitted for inclusion in a journal, to be agreed with Suffolk County Council Archaeological Service Conservation Team.

The archaeological horizons of the site remained largely well preserved, due to limited levels of modern disturbance and bioturbation, although the later medieval to post-medieval phases had in places truncated Roman field systems.

Limited levels of Bronze Age or Iron Age struck flint were recovered from four contexts, including a small penannular ditch, a Roman ditch and a spread of burnt material. There was no other evidence for prehistoric occupation. A Roman field system dated tentatively to the mid 2nd century-4th century was also recorded and this produced limited quantities of pottery. It appeared to have been modified on at least two occasions, e.g. with entranceways to fields added or removed and with slight changes to the alignment.

The main area of interest was the discovery of a 16th century brick and tile kiln of the Suffolk type and a larger and more elaborate late 17th/18th century version. These both showed evidence of various repairs and were associated with the widespread quarrying first identified in the evaluation and geophysical survey. The quarrying was shown in the strip and map to spread across the majority of the site. These works would have been associated with Euston Estate and its manorial house, which are recorded in the Domesday records. Since this time various rebuilds, extensions and modifications have been carried out on the main house, with new buildings including the stables, rectory and workers' cottages being added. Although these construction works have not yet been directly linked with the tiles and bricks produced by the two kilns, further work

may make this possible. Two wash pits (from which the field gets its name) and their associated settling ponds were also recorded. These were used for purifying and draining the clay, prior to it being moulded, dried and finally fired. Finds recovered from this main period of activity were somewhat limited, although ceramic building material (CBM), including bricks from the fabric of the structures, as well as waster products fired in the kilns were collected. There were also small quantities of animal bone, clay tobacco pipe, heated flints and Iron nails. Results from the bulk samples indicate that wood and bracken were used for fuelling the kilns, with the inclusion of crop waste.

Drawing Conventions

Plans

Limit of Excavation

Features

Break of Slope

Features - Conjectured

Natural Features

Sondages/Machine Strip

Intrusion/Truncation

Illustrated Section S.14

Cut Number 0008

Archaeological Features

Sections

Limit of Excavation

Cut

Modern Cut

Cut - Conjectured

Deposit Horizon

Deposit Horizon - Conjectured

Intrusion/Truncation

Top of Natural

Top Surface

Break in Section

Cut Number 0008

Deposit Number 0007

Ordnance Datum 18.45m OD

1. Introduction

1.1 Site location

The site (which is to be developed as a reservoir) lies to the east of Fakenham Magna and the A1088 road, on one of the many tracks running through Euston Estate, Suffolk (Fig. 1). The development area is about 1.7 miles (2.7km) south-east of Euston Hall. It is situated in an area of open grassland, flanked along its north-east to south-east edge by woodland associated with the estate, in an area that was formerly part of the post-medieval Euston Park. An evaluation by trial-trenching and geophysical survey took place in September 2012. The subsequent strip, map and the two areas of full excavation covered most of the evaluated area.

Located at TL 922 771, the reservoir including its surrounding bund, will cover 6ha in total. 4.4ha of this area will be disturbed by the construction groundworks. A desk-based assessment, a geophysical survey and an evaluation were carried out prior to the final stage of works (Craven, 2012, Schofield, 2012, and Brooks, 2012, respectively).

1.2 The scope of the project

This report was commissioned by the developers, Euston Estate and produced by the Suffolk Archaeology Community Interest Company (SACIC), formerly Suffolk County Council Archaeological Service (SCCAS) Field Team. It has been prepared in accordance with the Project Design (Appendix 1). The report is consistent with the principles of Management of Research Projects in the Historic Environment (MORPHE), notably Project Planning Note 3 Archaeological Excavations (English Heritage, 2008). The principal aims of the report are as follows:

1. To present and summarise the results of the archaeological fieldwork.
2. To quantify the site archive and review the post-excavation work that has been undertaken to date.
3. To assess the potential of the site archive to answer research aims defined in the Project Design.
4. To assess the significance of the data in relation to the Revised Regional Research Framework (Medlycott, 2011).

5. To make recommendations for further analysis (if appropriate) and the dissemination of the results of the fieldwork.

1.3 Circumstances, methodology and dates of the fieldwork

An archaeological strip, map and excavation was carried out at the site known as Wash Pits Field (Fig. 1). The work was carried out to a Project Design written by Rob Brooks and David Gill (SCCAS Field Team – Appendix 1) and approved by Dr Abby Antrobus (SCCAS Conservation Team). The work was carried out as a condition of planning permission for the construction of the reservoir. The Planning Authority was advised that any consent should be conditional upon an agreed programme of archaeological work taking place before development began, in accordance with the National Policy Planning Framework (paragraph 141). The landowners, Euston Estate, funded the work that was carried out between 6th May and 27th June, 2014. The site was an area of uncultivated grassland, with woodland on its north-east and south-east sides and farmland to the north-west and south-west.

An evaluation by trial-trenching was undertaken by SCCAS Field Team in September 2012, in accordance with a Brief and Specification issued by SCCAS Conservation Team (Antrobus, 2012). The trenches were excavated within the proposed development area (PDA). The results of the evaluation are described in SCCAS Field Team Report 2012/151 (Brooks, 2012). In summary, the works revealed that the site had been used in the mid-late 17th and early 18th centuries for the quarrying of clay and subsequent firing of bricks, with various quarry pits and two kilns being recorded. The eponymous Wash Pits were also noted and formed part of the clay purification process. Two field drainage ditch systems may have been associated with this phase of activity. The main finds from this period consisted of misfired brick and tile fragments. Several other post-medieval ditches and non-quarry pits, thought to be associated with the brick-making activity, were also recorded. Earlier features were found on the northern and southern edges of the site and consisted of Roman ditches, producing Roman pottery, as well as two undated ditches and an undated pit, which are assumed to either be later prehistoric or Roman. The features appeared to all be well preserved as the site had not been heavily ploughed, having been planted with trees in the post-medieval period. A geophysical survey was carried out by Britannia and this revealed:

> ‘nine discrete positive anomalies, six narrow weak positive linear anomalies, large areas of magnetic disturbance and multiple dipolar isolated responses … [and that the] positive discrete anomalies could be of archaeological origin and are commonly indicative of rubbish pits… [The] six narrow weak positive linear trends were … probably the laying of land drains. Areas of magnetic disturbance [were also] abundant throughout the dataset, the majority located within the centre and northern corner of the proposed reservoir … Many of these areas have an intriguing shape and form and may indeed have an archaeological origin … Along the south-western border of the plot are areas of magnetic disturbance interspersed with dipolar responses that follow a linear course. These readings could demarcate a previous trackway, or be close to a previous site sub-division or boundary. As is common place within an agricultural field, the most numerous anomalies were the dipolar isolated responses (‘iron-spike’) that are present throughout the survey area. This ferrous material is likely to have been introduced into the topsoil over the years during episodes of manuring’ (Schofield, 2012).

Due to the positive results of the evaluation and geophysical survey a Project Design was written up for a strip and map of much of the site, with excavation of the two kilns (Brooks and Gill, 2013) as a condition on planning application SE/12/1614.

Methodology

The site was stripped using a machine equipped with a toothless bucket, with the work being constantly monitored and directed by an experienced archaeologist. Topsoil and deposits of subsoil disturbed through historical quarrying were removed to expose the archaeological levels and the natural geology. The site strip covered the whole area that was to be further lowered in the course of the reservoir’s excavation (Fig. 2).

During the site stripping, features were mapped using a Leica TCR 705 Total Station, geo-referenced using an RTK GPS. The majority of the site was disturbed by pits associated with clay quarrying, heavily obscuring the earlier ditch networks recorded during the evaluation (Fig. 2). Several different types of quarry pit were recorded across the site and a selection of these types was carefully mapped in order to display their different forms and functions. In agreement with SCCAS/CT, the remainder were simply plotted in order to show the overall extent and density of the quarrying. Single examples of the different types of quarry pit were hand excavated and drawn in plan and section in the evaluation and strip and map. A series of approximately twenty ditches were recorded on the north-east, east and south-east edges of the site. These were partially hand excavated in order to characterise their forms and to obtain dating evidence. Two

spreads of fire-cracked flints and dark grey/black silty-sand were also hand excavated, along with a small ring ditch. These various features were then drawn in section (at 1:10 or 1:20) and in plan (1:20 or 1:50). Two kilns were recorded across the site and these were partially machine excavated and then fully hand excavated. The kilns were both comprehensively photographed throughout the process, with further photos being taken from overhead using a digital SLR camera mounted on an 8m tall mast and remotely controlled. 1:20 plans were made of both structures, with pre-excavation and post-excavation plans for kiln 0228 and a post-excavation plan for kiln 0229. Selected elevations of the kilns were also drawn at 1:20.

Environmental bulk samples were taken from kiln 0228 and from the two flint deposits. No material was sampled from kiln 0229 as it did not contain any preserved ash horizons and its main fill was a mixed backfill of demolition rubble and buried topsoil that became significantly contaminated during the excavation works when the site flooded. Metal detection was carried out by an experienced detectorist across much of the site, particularly focussing on the Roman ditch network.

Archaeomagnetic samples were taken from the kilns (more details of the sampling strategy are given in Section 5.4.3). Thirty samples were taken from each kiln by Museum of London Archaeology and these were sent to the University of Bradford. Here they were sampled for their natural remanent magnetisation and assessed for their suitability to be fully processed as part of the analysis stage of reporting.

A single continuous numbering system from 0201 to 0294 was used to record all contexts, with numbers 0001-0089 and 1001 used in the evaluation, the latter being for a small find (Appendix 2). Site data has been input into an MS Access database combined with the evaluation data and recorded using the County HER code EUN 035. An OASIS form has been completed for the project (reference no. suffolkc1-132074 – Appendix 3) and a digital copy of the report submitted for inclusion on the Archaeology Data Service database (http://ads.ahds.ac.uk/catalogue/library/greylit). The paper archive for both phases of fieldwork is currently located at the SACIC Needham Market office, whilst the finds are at the SCCAS store in Bury St Edmunds and the environmental samples are at the SACIC/SCCAS warehouse in Ipswich.

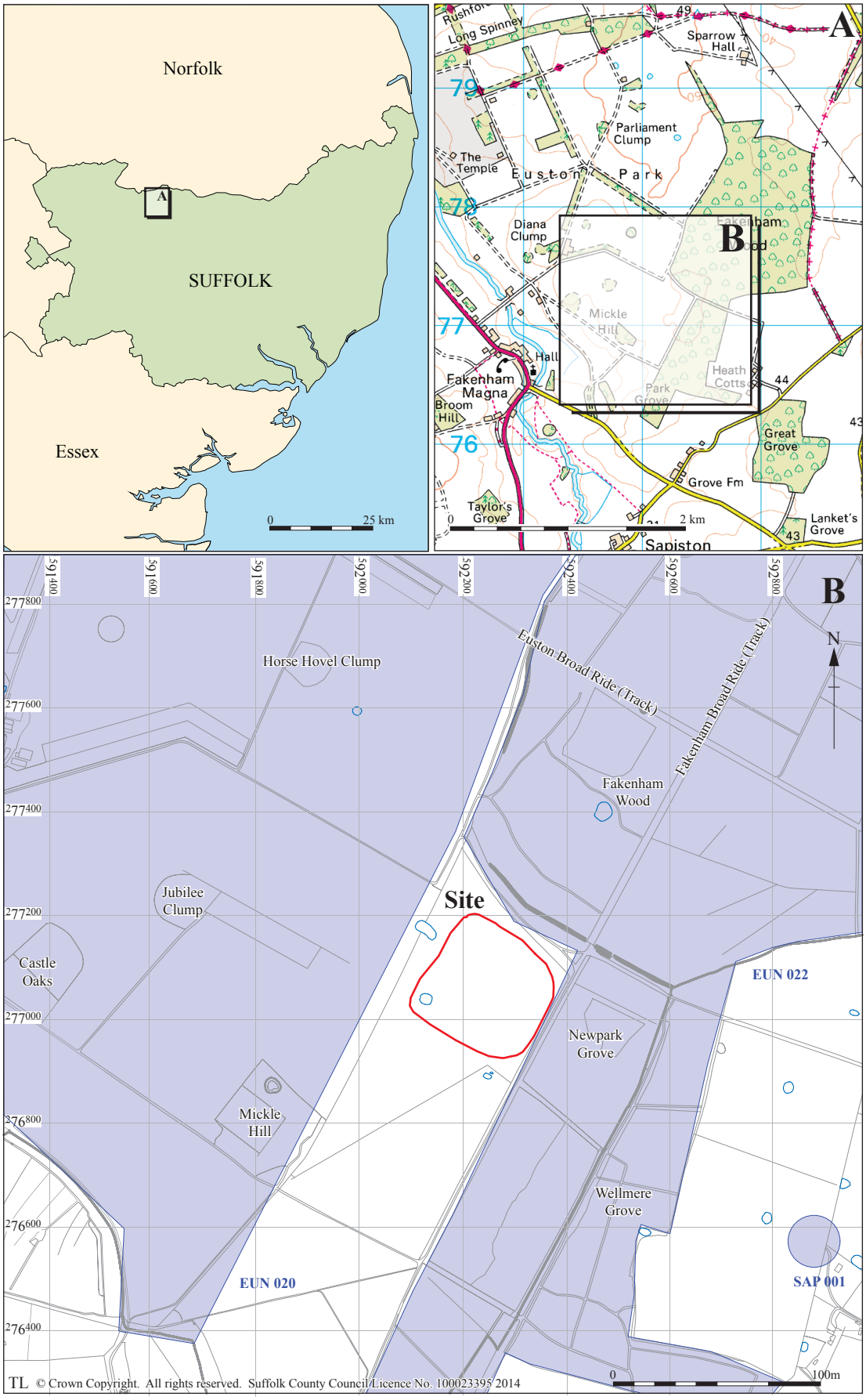

Figure 1. Location map with HER entries

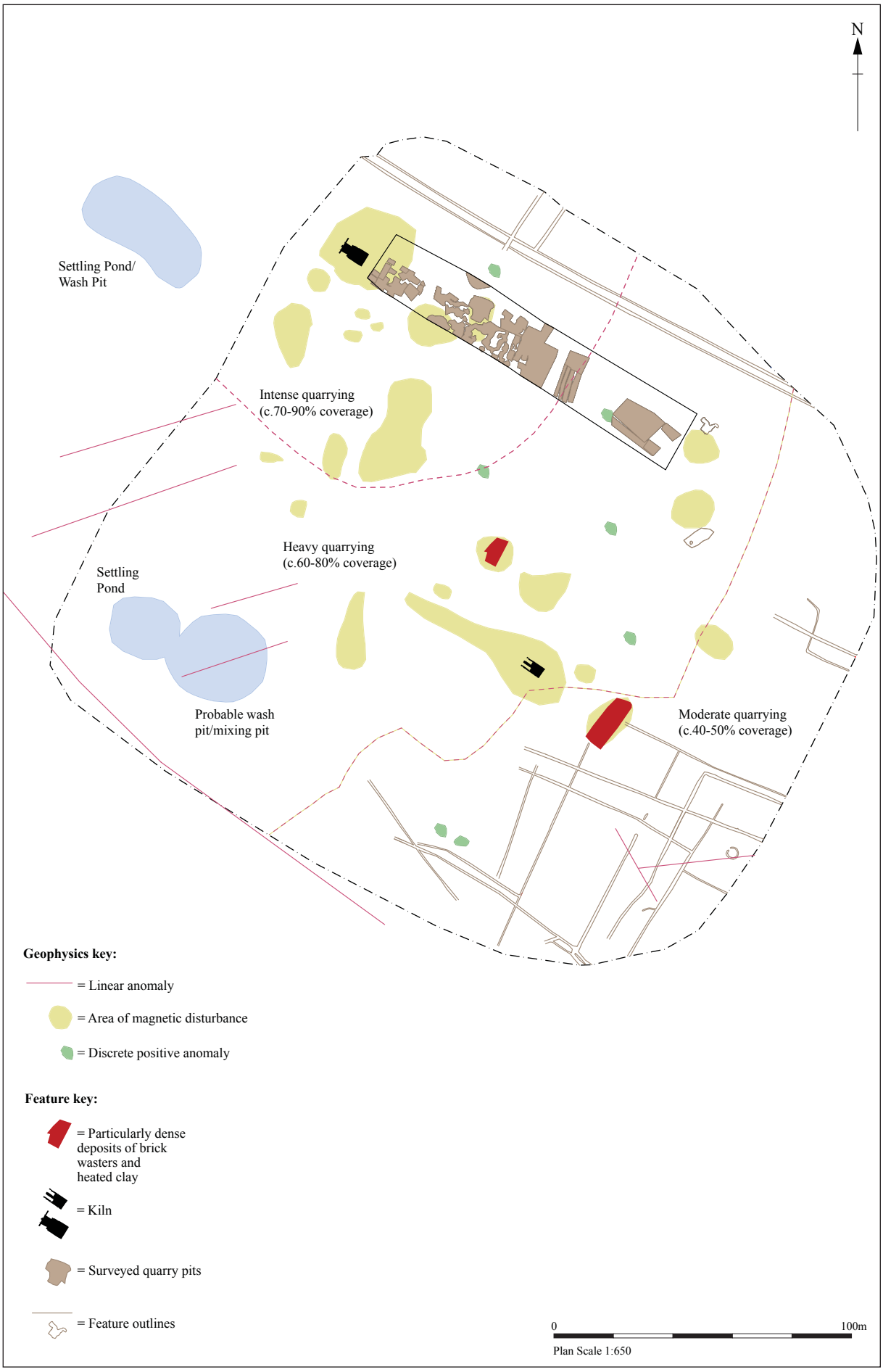

Figure 2. Site plan, showing geophysics, feature outlines, kilns and quarrying levels

2. The Excavation

2.1 Geology and topography

Geology

Although it is by no means detailed enough to record many of the localised subtleties, the British Geological Society (BGS) website records of the site list the geology as consisting of superficial deposits of Lowestoft Formation diamicton chalky till, together with outwash sands and gravels, silts and clays. This material overlies bedrock formations of undifferentiated Lewes Nodular Chalk, Seaford Chalk, Newhaven Chalk and Culver Chalk. The majority of the surrounding area is listed as having the Seaford Chalk formation bedrock geology, with overlying Lowestoft formation diamicton. Other localised deposits all have chalk bedrock formations, with superficial deposits of Lowestoft diamicton, Ingham or Croxton sand and gravel, or Head clay silt, sand and gravel (BGS, 2015). There has only been one archaeological intervention within one kilometre of the site at the Park Grove reservoir, 750m to the south. Here the natural subsoil was recorded as ‘orange/yellow clay/silt, lying directly below the plough soil. Towards the base of the slope the subsoil contained increasing quantities of gravel’ (Craven, 2009).

On site the geology was recorded as predominantly orange sandy-clay and grey-blue clay with stone and chalk inclusions. Along the north-west and south-east edges of the site the clay was in places replaced by a pale orangish-greyish-yellow clayey-silty-sand, sometimes heavily stained by natural iron residue.

Topography

The site’s topography is fairly flat with a series of spot heights at ground level recorded at between 48m and 50m above the OD, indicating a gentle slope down to the northern corner of the site. Beyond the limits of the proposed reservoir, the ground gently slopes away in all directions, but to the south-west it slopes away most steeply, dropping by 30m over a distance of 700m.

Landscape characteristics

According to the Suffolk County Council Landscape Character Assessment (SCC, 2015), the site lies in an area of undulating estate sandlands, with plateau estate farmlands immediately to the east and valley meadows and fens running through the village of Fakenham Magna. These areas have a wide variety of typical characteristics, as listed below.

Undulating estate sandlands:

- Flat or very gently rolling plateaux of free-draining sandy soils, overlying drift deposits of either glacial or fluvial origin.
- Chalky in parts of the Brecks, but uniformly acid and sandy in the south-east.
- Absence of watercourses.
- Extensive areas of heathland or acid grassland.
- Strongly geometric structure of fields enclosed in the 18th & 19th century.
- Large continuous blocks of commercial forestry.
- Characteristic ‘pine lines’ especially, but not solely, in the Brecks.
- Widespread planting of tree belts and rectilinear plantations.
- Generally a landscape without ancient woodland, but there are some isolated and very significant exceptions.
- High incidence of relatively late, estate type, brick buildings.
- North-west slate roofs with white or yellow bricks. Flint is also widely used as a walling material.
- On the coast red brick with pan-tiled roofs, often black-glazed.

Plateau estate farmlands:

- Flat landscape of light loams and sandy soils.
- Large scale rectilinear field pattern.
- Network of tree belts and coverts.
- Large areas of enclosed former heathland.
- 18th- 19th & 20th century landscape parks.
- Clustered villages with a scattering of farmsteads around them.
- Former airfields.
- Vernacular architecture is often 19th century estate type of brick and tile.

Flat, narrow, river valley bottoms:

- Deep peat or mixtures of peat and sandy deposits.
- Ancient meres within the valley bottoms & important fen sites.
- Small grassland fields, bounded by dykes running at right angles to the main river.
- Sparse scattering of small alder carr & plantation woodlands.

- Part of a wider estate type landscape.
- Largely unsettled, except for the occasional farmstead.
- Drier fields turned over to the production of arable crops.
- Cattle grazing now often peripheral to commercial agriculture.
- Loss to scrub encroachment, tree planting and horse paddocks.

2.2 Archaeological and historical background

Estate history

The site itself is known as Wash Pits field (referring to clay processing and purification) and lies in an area that was formerly part of the post-medieval Euston Park and is located immediately east of the area still recorded in the Historic Environment Record (HER) as the registered park and garden associated with Euston Hall (EUN 019, Fig. 1). It is known that a settlement existed at Euston in the Anglo-Saxon period, and a manor was recorded in the Little Domesday book of 1086. A manor house has always been present in various forms since this point, despite modifications.

The manor was held by various different parties from the 11th to the 14th century, including the Abbot of St Edmund at one point, but came into the possession of the Rokewood family in 1458 until the mid-17th century. The Rokewoods heavily rebuilt the Hall in the Elizabethan period (1558-1603). However, the present house was then substantially remodelled from the mid-1660s, having been purchased by Lord Arlington in 1664. He also built a large new stable range on the north side of the house, a rectory house (possibly the building now known as the Garden House), as well as an inn in the village. Other building works to improve the tenants' farmhouses and remodelling of the church were completed by 1676. Substantial renovations were also carried out on the house in between 1750 and 1756, including new sash windows and brick facades. Some further works were carried out to modify the house and grounds from this point onwards, but a large part of the house was destroyed in 1902 by a fire, being largely rebuilt by 1905 in a similar style and layout (HLM, 2011).

The reservoir site is flanked to the north and east by Fakenham Wood, which is registered as an ancient manorial woodland (EUN 022). Other known sites within one kilometre of the site include SAP 001 to the south-east, which is recorded as 'dark areas

and burnt flints' within the HER, and SAP 012 (730m to the south) where construction of another reservoir revealed Late Neolithic/Early Bronze Age features and finds, as well as earlier to middle Iron Age occupation.

Archaeological background

The majority of the site is surrounded by the medieval and post-medieval park and hence excluding the excavation, evaluation and geophysical survey, very little archaeological work has previously been carried out in close proximity to the site. However, a range of sites are located around Wash Pits field and those within a 1.5km radius are summarised in Table 1. A desk-based assessment of the proposed development area lists it as having moderate to high potential for uncovering prehistoric, Roman and Anglo-Saxon activity (Craven, 2012). The geophysical survey carried out prior to the evaluation revealed a series of 'discrete positive anomalies', which included both linear features and circular or oval forms (Schofield, 2012 – Fig. 2). A number of the linear anomalies were found to be field drains during sampling within the evaluation trenching. Other large spreads of 'magnetic disturbance' covered a wide area of the site. During the archaeological evaluation of the site many of the anomalies were partially excavated, but were usually found to be deposits relating to the kilns, mainly consisting of sand and clay quarry pits back filled with brick and tile wasters. There were also two kilns of the Suffolk type, of which only the subterranean structures survived, along with their rake-out pits. A series of ditches was also recorded, located at the northern and south-east edges of the site. The northern ditches were undated, but thought to pre-date the kilns, whilst the south-eastern ditches contained Roman pottery (Brooks, 2012).

HER No.	Position relative to site	Description
Prehistoric sites		
SAP 002	1.19km east	Mesolithic macehead/hammer.
FKM 026	1.27km south-west	Neolithic arrowhead scatter.
SAP 012	0.74km south	Late Neolithic/Early Bronze Age features and early-middle Iron Age postholes and pits.
FKM 025	1.31km south-west	Bronze Age sickle blade fragments and Roman finds scatter.
Roman sites		
SAP 006	1.27km east	Route of Peddars Way (possibly prehistoric).
EUN 047	1.27 km west-north-west	Eighteen Roman coins.
EUN 009	1.38km west	Bronze Roman coin.
BAR 024	1.14km east	Roman rotary quern upper stone.
FKM 011	1.29km south-west	Roman pottery.
Saxon and medieval sites		
FKM 050	1.21km south-west	Saxon brooch.
FKM 016	1.11km south-west	Church of St Peter – Saxon and later medieval.
FKM 022	1.24km south-west	Saxon and medieval pottery scatter.
EUN 021	0.97km west	Little Fakenham deserted medieval village.
EUN 006	1.08km west	Little Fakenham church – medieval.
FKM 030	1.29km south-west	Fakenham medieval settlement core.
Post-medieval sites		
BAR 050 and 063	1.04km east	Barningham park and house – post-medieval.
EUN 020	Immediately north-west	Registered Park and Garden associated with Euston Hall – post-medieval.
FKM 024	1.21km south-west	Post-medieval avenue of trees for Fakenham Hall.
Ancient woodlands and undated sites		
SAP 011	1.06km south-east	Great Grove ancient woodland.
EUN 022	Immediately east	Ancient woodland.
SAP 006	0.96km east	Three(+) rings of large flint foundations – undated.
FKM 005	1.31km south-west	Scheduled circular earthwork – undated.
FKM 019	0.94km south-west	Circular crop mark – undated.

Table 1. Archaeological listings located within 1.5km of the site (from Craven, 2012)

Map evidence

On Hodskinson's map of 1783 the reservoir site is shown as a lightly wooded area, adjoining the more densely planted Fakenham Wood immediately to the north. However, on the Lenny estate maps of 1828 and 1836 the site is known as Wash Pits field, and one of the two extant ponds on the site is labelled as a 'Wash Pit' (HLM, 2011). The 1828 map also marks the area of woodland immediately to the east as 'Brick Kiln Cover (?)' and indicates the position of a brick kiln, which still reputedly exists. The site itself is labelled as Mickle Hill on the 1828 map. On the 1840 Tithe Map of the site it is wooded, though not very heavily and the two ponds are present (Pl. 1). None of the early edition Ordnance Survey maps record the site as Wash Pits field, although the two ponds are clearly present and the larger of the ponds is split into two (Fig. 3). It is unlikely that the ponds were in fact the eponymous Wash Pits, but probably the associated clay settling ponds (Peter Minter of the Bulmer Brick Company, pers. comm., 23/06/2014).

It is notable on current maps that a series of similar features to the Euston settling ponds extend to the south and south-east of the site towards Sapiston and Bowbeck, as well as to the north-east towards Coney Weston. This possibly indicates an extensive area of clay extraction and brick-making, a theory that is partially backed up by the kiln at Knettishall Heath to the north-east. Some of the potential off-site settling ponds are marked on Figure 1.

The brick-making process

In order to make bricks and tiles, quarried clay (historically sourced locally to reduce expensive transportation costs) would need to be processed in order to remove any impurities and to make a material that was stable enough to be fired without breaking up. Clay was traditionally dug up in the winter (Blowers, 1987) and sometimes left to break up by freezing and thawing. It was then manually wetted and mixed in wash pits to help remove impurities (prior to the invention of horse-powered pugmills that would carry out the same task). The resultant slurry of clay was screened off into settling ponds and then once again excavated after it had dried somewhat. After this the clay was shaped in wooden moulds, dried for approximately two to three weeks under cover (longer if the conditions were not favourable – Herne, 2015) and then fired in purpose-built kilns, or temporary clamp kilns. However the latter method was unpredictable and would often produce a lot of wastage.

Suffolk kilns were a specific design of up-draught kiln used widely within much of East Anglia throughout the late medieval period and well into the post-medieval period. They could not be fired continuously as some of the later types of kiln could be, but instead had to be raked out and left to cool to retrieve the fired products between each use. Their main advantage however was their efficiency, which was greater than that of some other contemporary kilns. In most instances only the below ground sections of the structure survive. These consist of what is essentially a rectangular brick box with the entrance at one end. The box was divided into two by a central low spine wall running the length of the kiln that created two distinct chambers on either side. These chambers were covered by a series of kiln bars (made up of double arches) that ran widthways across the kiln. At the entrance to the fire box chambers the walls of the main structure usually extended further out in order to somewhat shelter the kiln, with more elaborate

arrangements such as protruding tunnels in the case of kiln 0229. The above ground structure matched the rectangular subterranean shape of the fireboxes with a series of walls functioning to shelter the green (unfired) bricks or tiles, while also supporting a roof. However, in the case of a kiln found at Ellough, there was not necessarily a permanent walled structure, but possibly walls of mud, turf and brick waster fragments, which could be repaired as necessary (Boulter, 1997)

The kilns would have functioned by fires being set in the fire box chambers. The newly air-dried green bricks and tiles would already have been placed on top of the arches (the tops of which would have been built flat for this purpose). The open end of the kiln would subsequently have been blocked – with wooden or metal gates – to keep the kiln as insulated as possible. Firing would then have taken place over several days, requiring constant supervision by experienced brick-makers. With modern kilns it is recommended that the temperature is gradually increased to somewhere between 900° and 1200° in order to reduce the risk of misfires and it is likely that a similar result would be required within older kilns too (Herne, 2015).

Few Suffolk kilns or wash pits and settling ponds are recorded in the Suffolk HER or appear to have been archaeologically recorded or documented to modern standards. One recent example is from the Land East of The Granary site, Clare (dated as 1500-1550 century – Brooks, 2015). Other examples, some recorded to a lesser degree include a kiln with a 16th century origin at Ellough (ELO 004 – Boulter, 1997), a 15th-17th century kiln at Gedding (Anderson and Tester, 2003), two later Suffolk kilns at Little Cornard (Hammond, 1989), a 16th-early 17th century example at Wormingford Hall, Essex (White and Marriot, 2012), a late 17th-early 18th century kiln at Danbury, Essex (Drury, 1975) and a 19th century kiln at Aldeburgh that appears to be a hybrid of a Suffolk and a Scotch kiln (Smith and Henry, 2013). A record in the HER lists another possible site at Botesdale, where 15th-16th tile and brick kilns are listed in Jacobites Wood (BOT 008). Close to the site, further areas likely to have been part of the brick making industry were also highlighted in a documentary report focussing on the Sapiston reservoir evaluation (Breen, in Rolfe, 2006). This picked up on areas nearer to Sapiston, called ‘Brickhills’ and ‘Kiln Yards’. Other examples of brick kilns and wash pits in East Anglia are recorded at Little Cornard in Suffolk (Blowers, 1987), whilst map evidence from Overstrand in Norfolk also lists them (NRO/UEA, 2012) and a late 19th-

early 20th century kiln site with a wash pit has been partially dug and recorded in a community excavation at Knettishall Heath, 5.2km to the north-east.

A brief history of brick-making

The 16th century is seen by some as the start of the first great age of English brickwork, by which time bricks and tiles were becoming a valuable, well-made commodity used in structural as well as decorative applications. The best quality products were being manufactured in the east of England, particularly in the counties of Suffolk, Norfolk and Essex. However even here the use of bricks in buildings below the status of a country house was relatively limited at this early stage. In order to make the bricks for such structures, the production was usually carried out on site or near to it to reduce transportation costs and to allow for the supervision of the firing by the builder or architect. The fuel to fire the kilns is usually assumed to be wood, although coal was also increasingly employed as time went by, because it gave a more consistent temperature and gradually became cheaper. In the case of the earliest Euston kiln, bracken appears to have been used as well.

Much of the production work was carried out by unskilled labourers, who were given part-time work, whilst the equipment (such as moulds) was supplied by the builders. However there are also records of artisan brick-makers travelling around some parts of the country in the 16th and 17th centuries (Airs, 1998).

Most pre-19th century kilns were intermittently fired, although they were usually permanent structures, if not necessarily suited to prolonged usage (Peter Minter, pers. comm., 10/08/2013). The most widespread early types were either temporary clamp kilns, or the Scotch and Suffolk varieties. However, these were later mainly eclipsed by down-draught kilns, particularly the industrial scale varieties employed in cities. Most small rural kiln sites went out of operation by the 20th century, with some of the survivors finally put out of use by the introduction of blackout regulations.

Suffolk kilns were different from the Scotch kiln in their construction, sometimes being smaller and as the name suggests they were also more widespread in eastern England (Palmer, Nevell and Sissons, 2012), but were found elsewhere. Scotch kilns were only partially inset into the ground and had flues lining the sides. Suffolk kilns however had their lower walls and firebox chambers fully built into the ground, with twin partially

subterranean stoke holes at one end. The heat (and smoke) would rise between sets of arches upon which the green bricks and tiles would be stacked, surrounded by above ground walls.

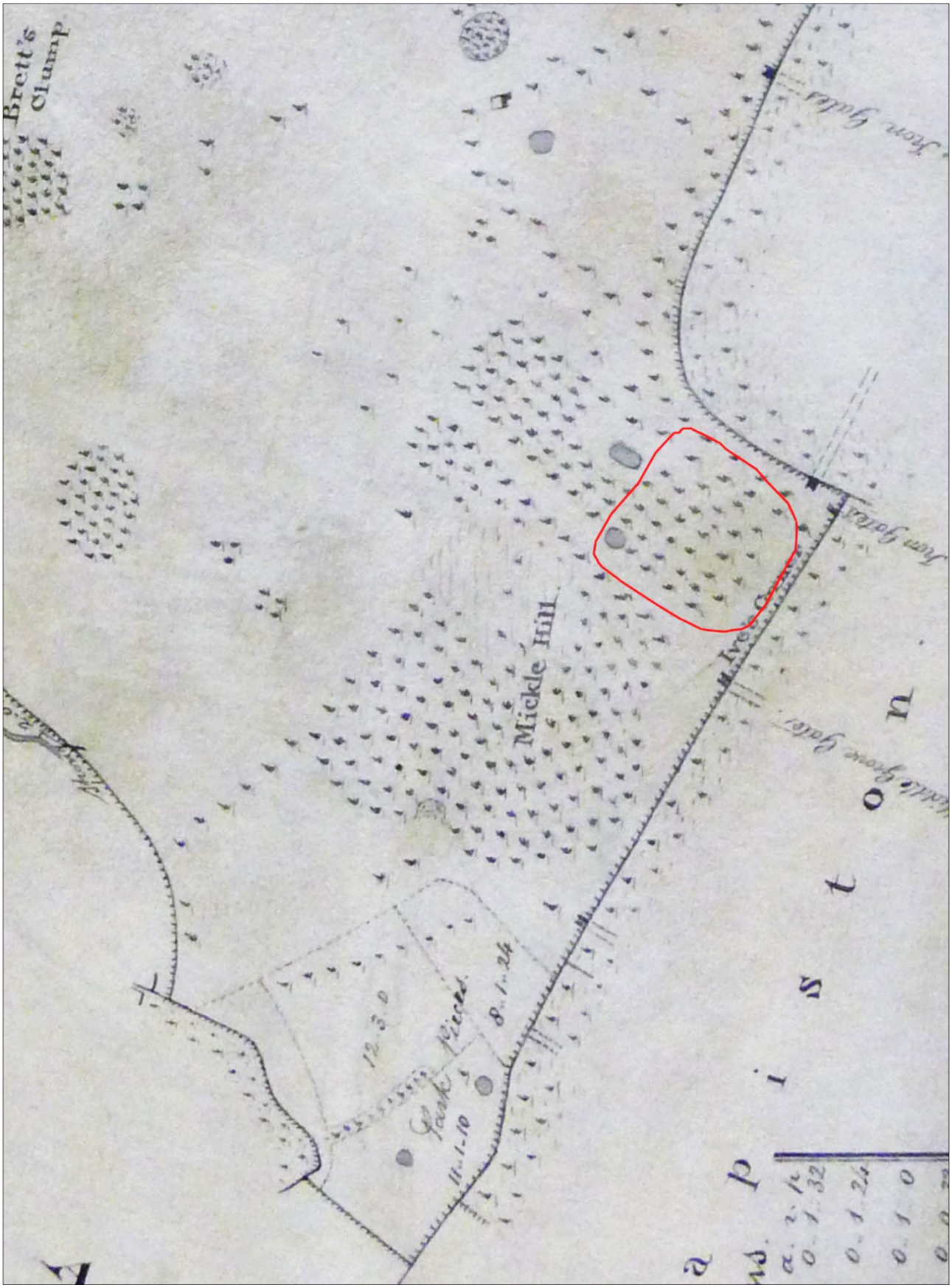

Plate 1. 1840 Tithe map of the site (site marked in red – Suffolk Record Office reference T/86/2)

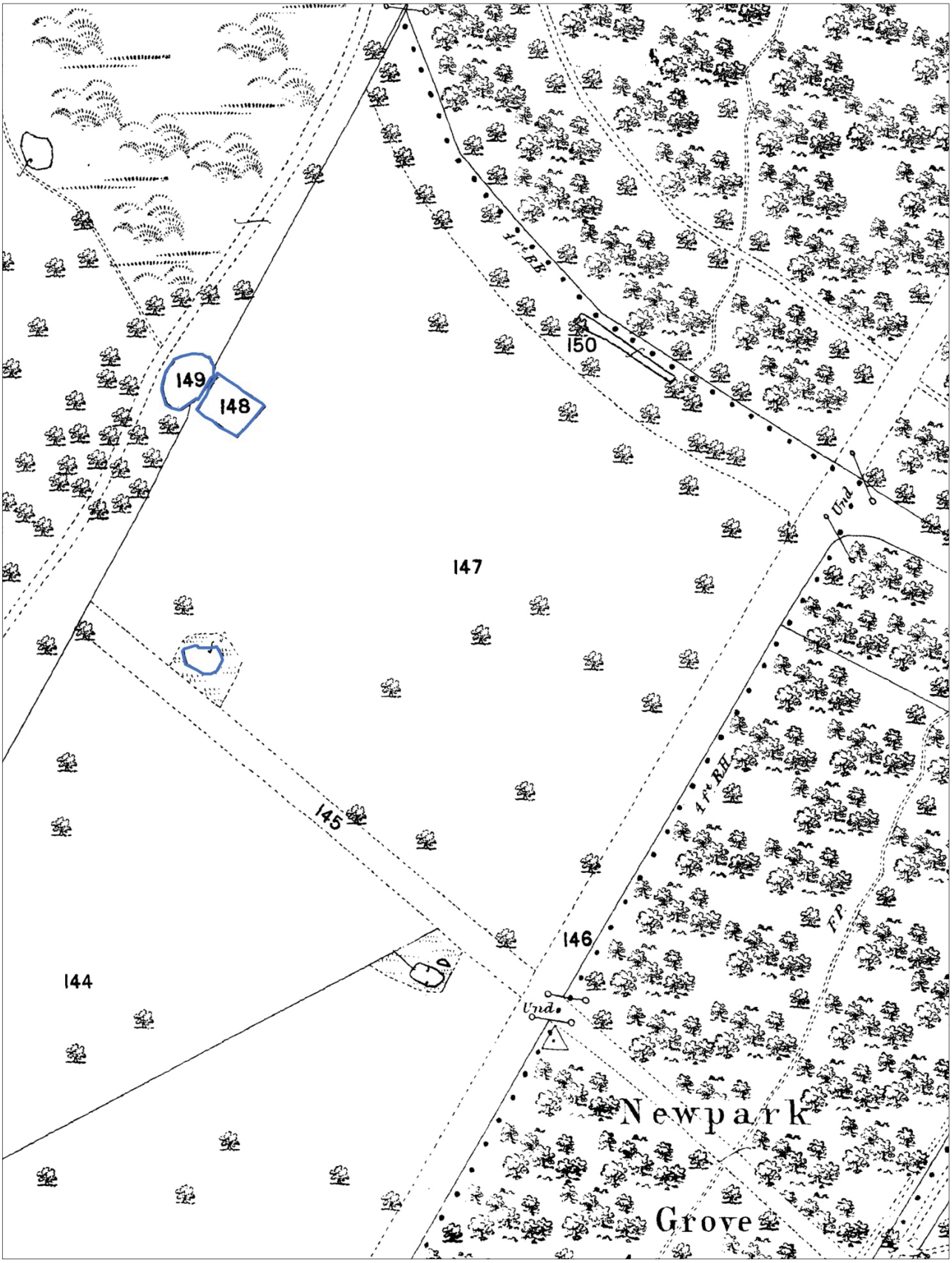

Figure 3. 1883 Ordnance Survey map of the site (with settling ponds and wash pits blue)

3. Original research aims

The original research aims (ORA) for this phase of the project were defined as a result of the evaluation works and are as follows:

ORA 1: The immediate aim of the project is to preserve by record all archaeological deposits upon the site, prior to its development.

ORA 2: The project will also produce a permanent record of the archaeological deposits suitable for further research, the archive of which will be deposited with the Suffolk HER.

ORA 3: The work will include provision of proposals regarding the need for further analysis, dissemination and archive deposition.

ORA 4: What further evidence is there for the presence of post-medieval activity? Is this solely represented by the kilns and related activity? Will there be other archaeological activity from this period such as settlement deposits or field systems?

ORA 5: Although both kilns appear to be of the Suffolk type, are the kilns identical and/or contemporary?

ORA 6: The evaluation and works on the SAP 012 reservoir to the south uncovered varying levels of evidence for later prehistoric and Roman activity. Are there any further indications of these periods on site?

ORA 7: A seemingly wide variety of quarry pit types were recorded during the evaluation. What different types of quarrying activities do these represent and are they all contemporary? Further small isolated post-medieval pits associated with the brick kiln phase were recorded in the area of Trenches 16 and 21. What do these represent?

ORA 8: The site has good potential to investigate research aims relating to late medieval and post-medieval industry as highlighted in Medlycott (2011). Given the results of the strip, map and excavation, as well as the evaluation, which of these topics can be more fully explored?

4. Site sequence: results of the fieldworks

4.1 Introduction

Stripping of the site entailed the removal of *c*.0.3m-0.5m of topsoil and small amounts of subsoil that was often heavily disturbed by on site quarrying and overlaid the natural geology of sandy-clay, pure clay and clayey-silty-sand. Based on the initial plan and the results of the evaluation, it was clear that the site was largely dominated by two phases of 16th century and late 17th/early 18th century quarrying and brick-making activity with a Roman ditch network and a small number of possibly earlier features surviving in places. Two large kilns of the Suffolk type survived on the site near the northern and southern corners of the site. Near the southerly kiln the Roman ditch network survived most extensively and there was also a small penannular ditch. Given its form it may be a small ploughed out burial mound with associated ditch. However its position within the Roman ditch network could indicate a small enclosure such as a sheepfold within the field system.

This summary of the results of the fieldwork is based on an assessment of the site data with feature descriptions by phase. For further information refer to the context descriptions given in Appendix 2.

4.2 Phase 1 – prehistoric or Roman

Ring ditch 0217

A penannular ditch was excavated near the southern corner of the site within the area of the Roman ditch network (Figs. 4 and 7). The form of the feature was poorly defined in plan (Pl. 2). It only survived to a shallow depth of 0.06m-0.12m and was 0.4m-0.48m wide, with an internal diameter of 3.16m-3.36m. In profile the cut had generally shallow, but occasionally steeply sloping concave sides and a flat or slightly concave base. The fill was consistently recorded as mid-dark greyish-brown compact silty-clay, with occasional natural flints. It produced no pottery, but there were eight pieces of worked flint (102g) made up of one scraper and seven flakes, thought to be Bronze or Iron Age. The ditch was cut by a field drain, which corresponded with one of the geophysics readings in the area.

If the feature is interpreted as a small barrow with only the ring ditch surviving, then there was no evidence for any truncated mound material in the surrounding soil profiles. However the area was quite heavily root disturbed, which might explain this absence. The ditch is thought unlikely to be a roundhouse due to its small size, but this possibility is not ruled out. Another interpretation is that it may be some sort of specialised animal enclosure within the Roman field system, such as a sheepfold.

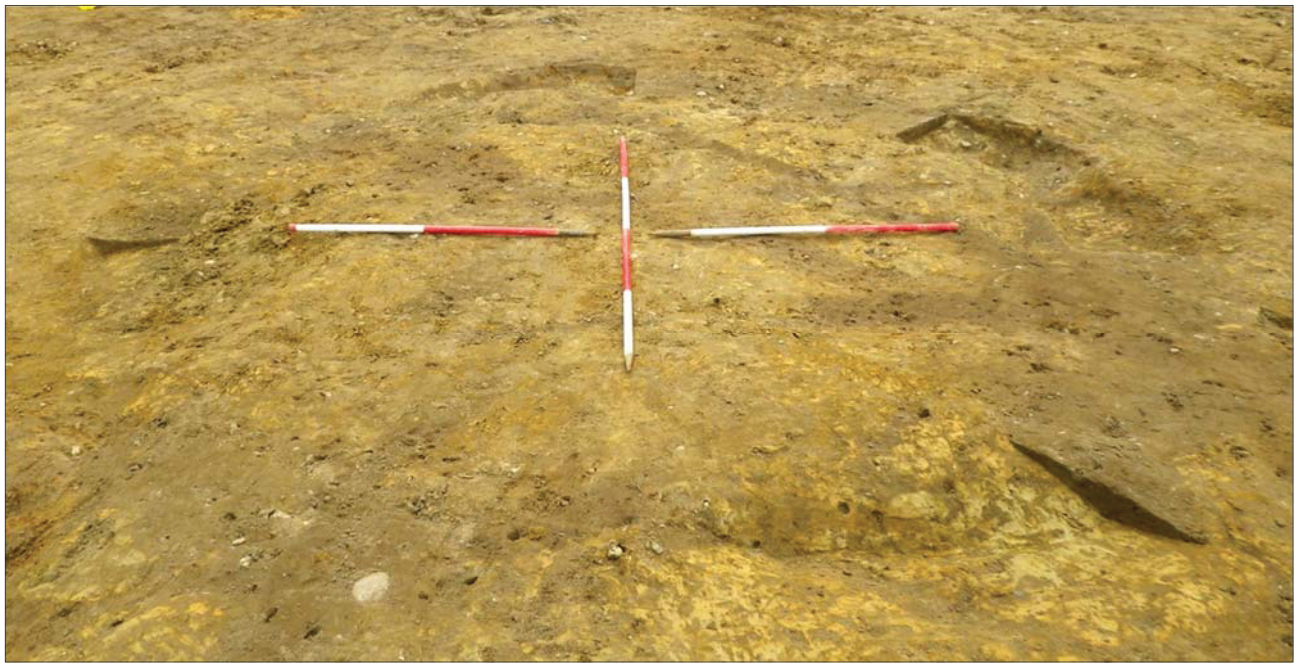

Plate 2. Penannular ring ditch 0217, with four sections excavated (facing south-east, 2m and 1m scales)

Heated flint deposits

Spread 0269 and pit 0271/0277

One roughly oval spread of mid-dark greyish-black loose clayey-sandy-silt, aligned west-south-west to east-north-east and measuring 9.94m x 4.31m x 0.14m deep was recorded as 0269/0270 (Figs. 5 and 7). The profile had very gently sloping sides that broke imperceptibly to the slightly irregular base and the deposit appeared to be shallow throughout. It contained frequent small to medium sized pieces of flint, most of which were heat cracked, as well as five worked flint flakes (28g) of Bronze Age to Iron Age date, and Sample 11 produced charcoal and very limited quantities of bone. Recorded in the base of spread 0269 was a small pit cut recorded as 0271/0277, which was oval in plan and aligned south-west to north-east. It had *c.*65° slightly concave sides, with

curving breaks of slope to the somewhat irregular base and the cut measured 1.06m x 0.75m x 0.24m deep. The fill was made up of material identical to spread 0269/0270 and therefore no relationship could be recorded, but it is thought that they were probably contemporary. No finds were recovered from this feature.

Pit 0292 and spread 0294

A spread of dark brownish-grey silty-sand with patches of heated flints was recorded *c.*30m north of spread 0269 as 0294 (Fig. 6). Its shape in plan was very irregular, suggesting that it had probably been disturbed by tree roots and/or animal burrows and it was up to 0.18m deep. At its north-east end was an oval pit, recorded as cut 0292, which was roughly oval in plan with concave sides and a flat base. The dimensions were somewhat unclear, but it measured *c.*0.78m long x 0.1m deep and was filled with very dark brownish-greyish-black firm silty-sand that was similar to the surrounding spread. Neither fill 0293 or spread 0294 produced any finds, but they are interpreted as contemporary to spread 0269 and pit 0271/0277 due to their similar fills. Sample 12 from fill 0293 was almost entirely made up of charcoal, with some burnt soil concretions.

4.3 Phase 2 – Roman

Ditch network

Evidence of Roman occupation on the site is made up entirely of ditches forming what is probably a single field system network that was heavily truncated by later quarrying, particularly within the central area of the site (Figs. 6 and 7). The ditches were best preserved in the southern corner of the excavation and further along the south-east edge. They were also recorded along the north-east limit of excavation. It was not possible to closely date the features beyond the mid 2nd-4th century period due to the small pottery assemblage. The ditches did not correspond with the geophysics results (Fig. 2).

The pattern of the ditches and their slightly varying alignments suggest that there were probably at least two sub-phases of modification to the network's layout. However, it was impossible to fully map the extent of these features in the centre and western extents of the site due to the levels of quarrying truncation across much of the area

(Figs. 2 and 7). Most of the ditches were aligned west-north-west to east-south-east and north-east to south-west. However a limited number of the ditches were aligned on a slightly different orientation, or curved, slightly differing from the other cuts. Others appeared to be re-cuts or additions/adjustments to the original layout.

Full details of the feature profiles are recorded in Appendix 2, but in summary they were generally shallow, had moderate (*c.*45°) to steep concave sides with flat to somewhat concave bases. The majority of the ditches were between 0.25m-0.98m wide, although cut 0062 was 1.24m wide and cut 0019 was 1.7m wide. Most of the ditches varied from 0.06m to 0.4m deep, with cut 0009 recorded as 0.82m deep. Excavation of several of these features during the evaluation produced low levels of later prehistoric flint, as well as twenty Roman pottery sherds (some with a mid 2nd-4th century date) from cuts 0056 (ten sherds, 83g) and 0062 (ten sherds, 42g). Further excavation of the ditch network during the strip and map phase of works produced fifteen sherds of Roman pottery from fill 0287 of ditch 0286 that could not be closely dated (150g). The fills are mainly recorded as firm-compacted mid to dark grey or greyish-brown clayey-silt or silty-sand, while a smaller number are recorded as orangish-grey or yellowish grey material, often with low levels of small stones.

The ditches were interpreted on site as a series of small arable fields and paddocks as well as the remnants of droveways. There appear to be a number of breaks in some of the features, thought to mark entrance ways/gates. Certain ditches were presumably added to the system or filled in to modify the pattern as was required, although the levels of disturbance across the site and the similarity in the fills and ages of the cuts made it impossible to ascertain exactly how the pattern had evolved.

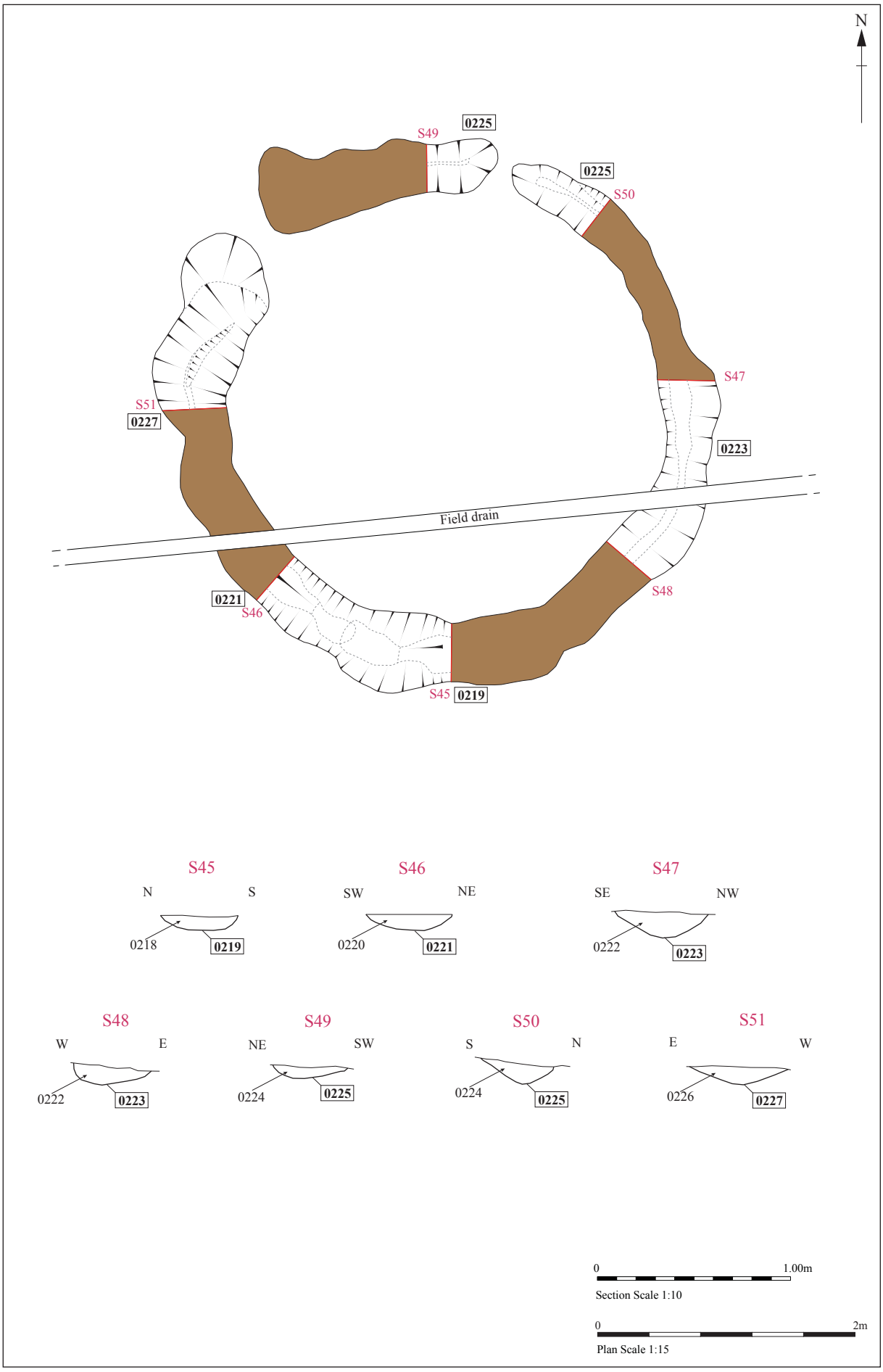

Figure 4. Plan of ring ditch with sections

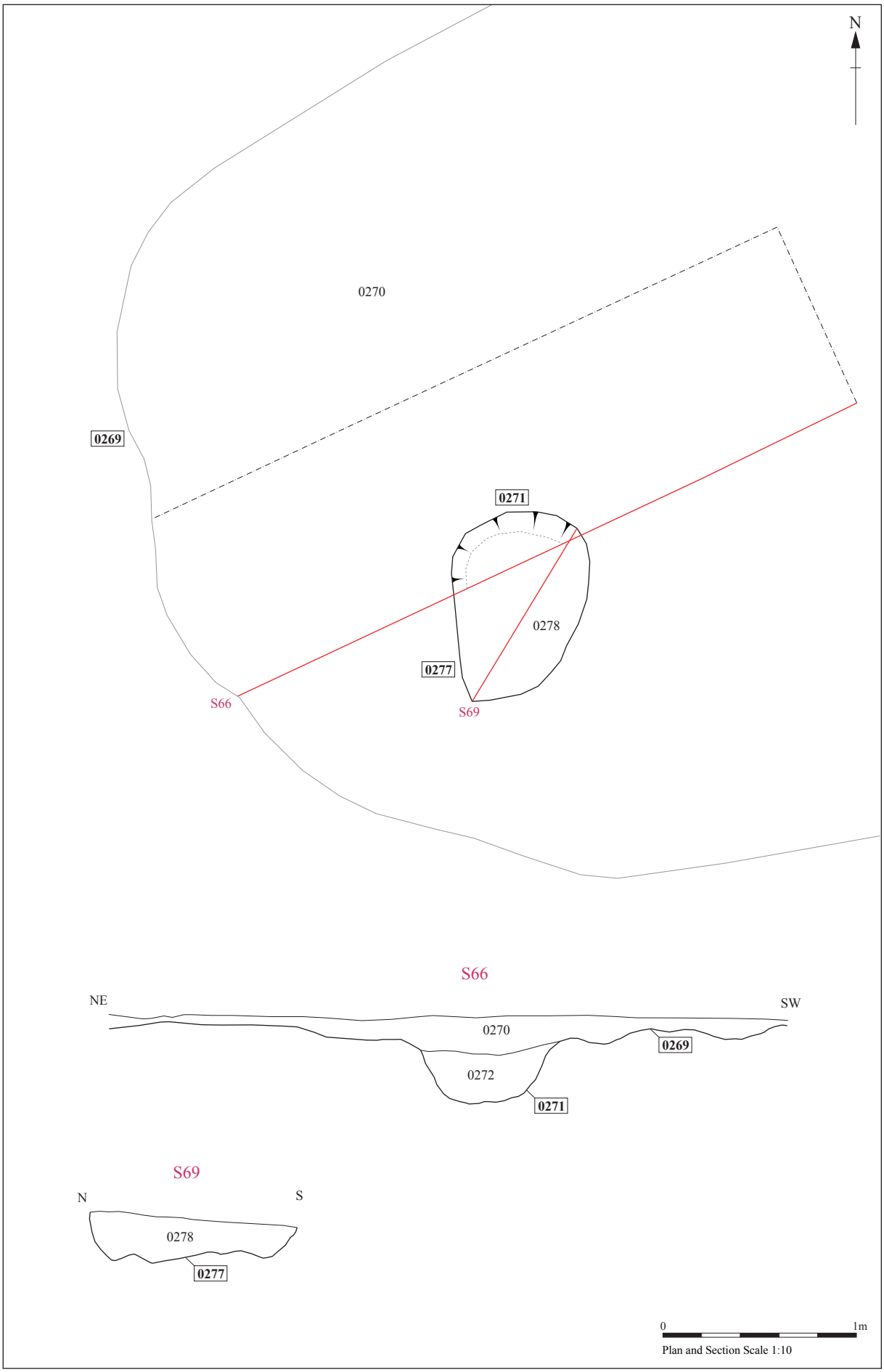

Figure 5. Western edge of spread 0269 and pit 0271/7

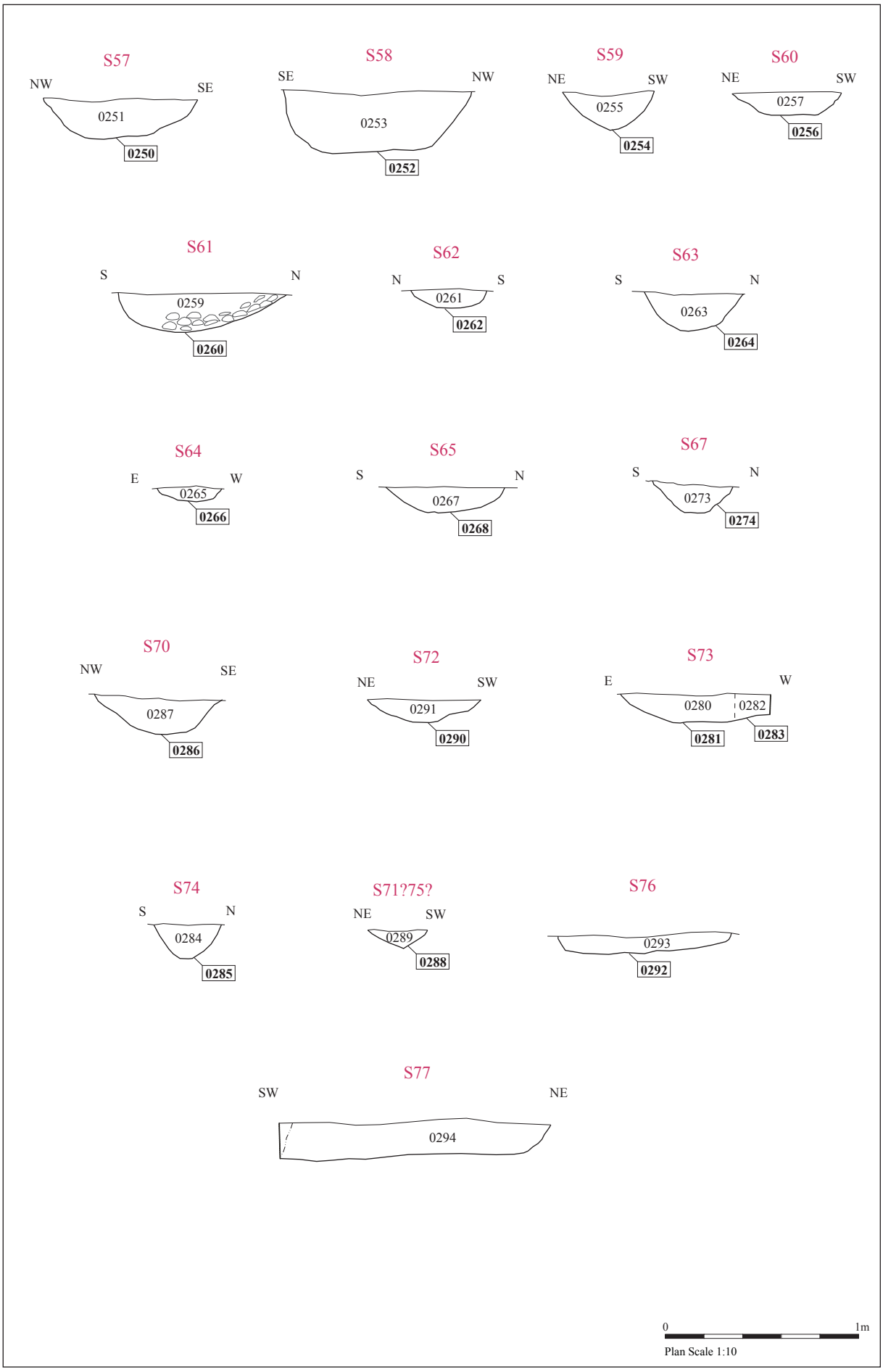

Figure 6. Roman ditch sections and spread 0294

Figure 7. Site plan, showing features and different types of quarry pits

4.4 Phase 3 – 16th-17th century

Kiln 0228 (0081)

Introduction

The southerly of the two kilns was recorded under group numbers 0228 and 0081 in the evaluation (see also 0231-0244 and 0279 – Appendix 2) and has been dated as 16th-17th century from analysis of brick samples from the structure (Figs. 8-10 and Pls. 3-6). The main structure was recorded as 0231 and was rectangular in plan, aligned north-west to south-east (similar to kiln 0229) and measured 7.35m x 3.9m. The alignment of the kiln was identical to that of the later kiln, suggesting that this was a deliberate choice. This may have been to avoid the prevailing wind or to facilitate the best possible access to a nearby track for removal of the finished bricks and tiles.

All that survived of the kiln was the subterranean structure (to approximately 0.7m below the exposed ground level) that served as the firebox chambers to heat the bricks and tiles, which would have been stacked on archway kiln bars, just above ground level. The above ground walls (and any roof structure) had been razed sometime after the structure fell into disuse and these would have served to insulate and shelter the kiln and the bricks and tiles. These walls were probably 2m-2.5m tall. The kiln was built into the ground to provide better insulation, but it also had the disadvantage of encouraging flooding (Pl. 3).

External wall structure

The remains included three external walls, consisting of the two longer north-west to south-east aligned sides of the kiln and the north-east to south-west aligned end wall, surrounding the internal elements (Figs. 8 and 9, Pls. 4 and 5). The north-west end of the below ground structure was left open to allow access for fuelling and cleaning the kiln, as well as for permitting air to enter. In this structure the outer walls were one brick length thick (*c.*0.23m-0.24m) and extended for approximately 1.5m to the north-west of the internal structure, in order to control the draw (inflow of air) to the fire. It was evident that these walls had either been repaired or added later (Peter Minter, pers. comm., 23/06/2014).

Plate 3. Kiln 0228, partially flooded (facing south-east)

Plate 4. Above - Kiln 0228, after surface cleaning to reveal archways (facing north, 2m and 1m scales)

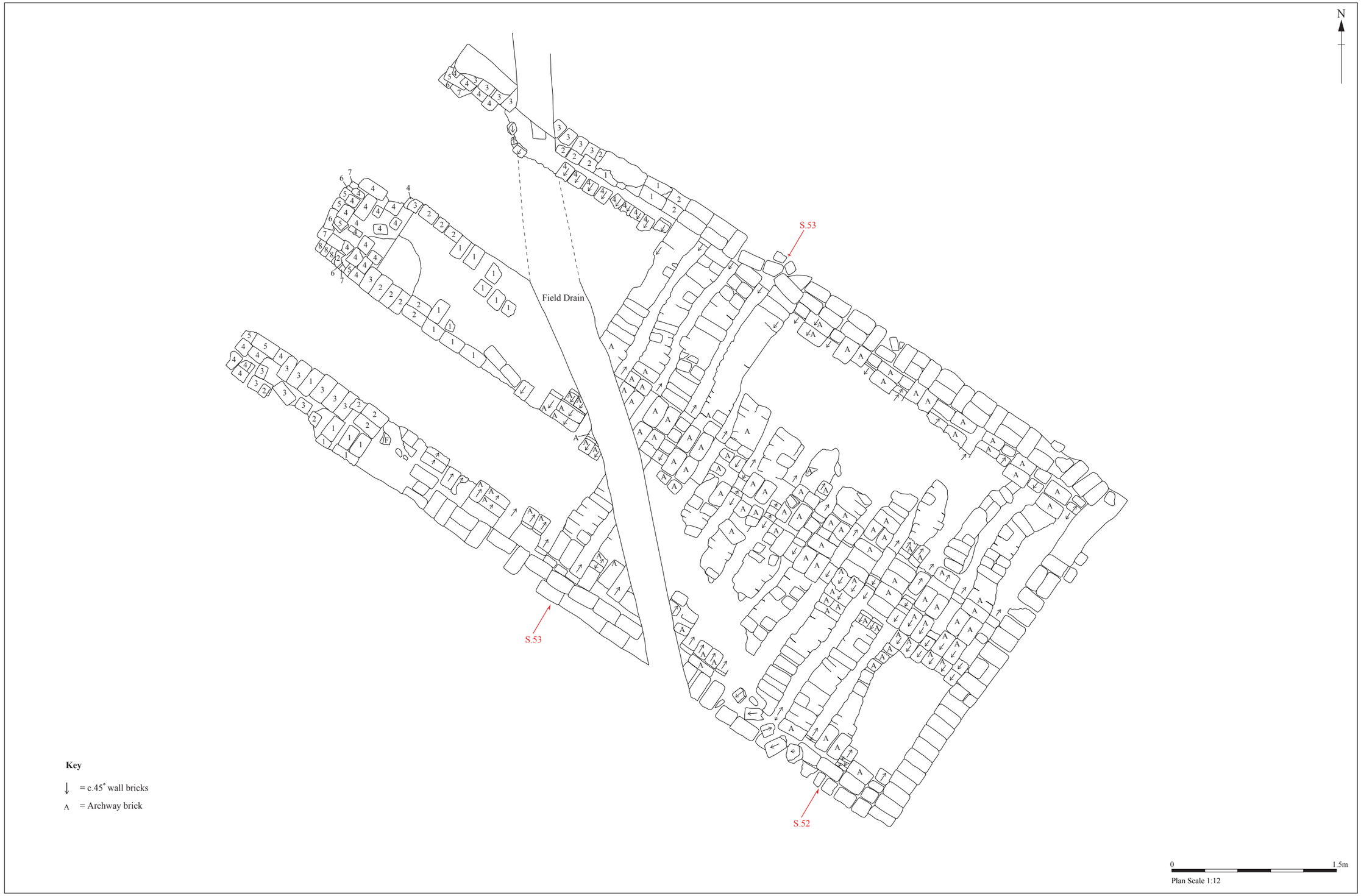

Figure 8. Kiln 0228 pre-excavation plan

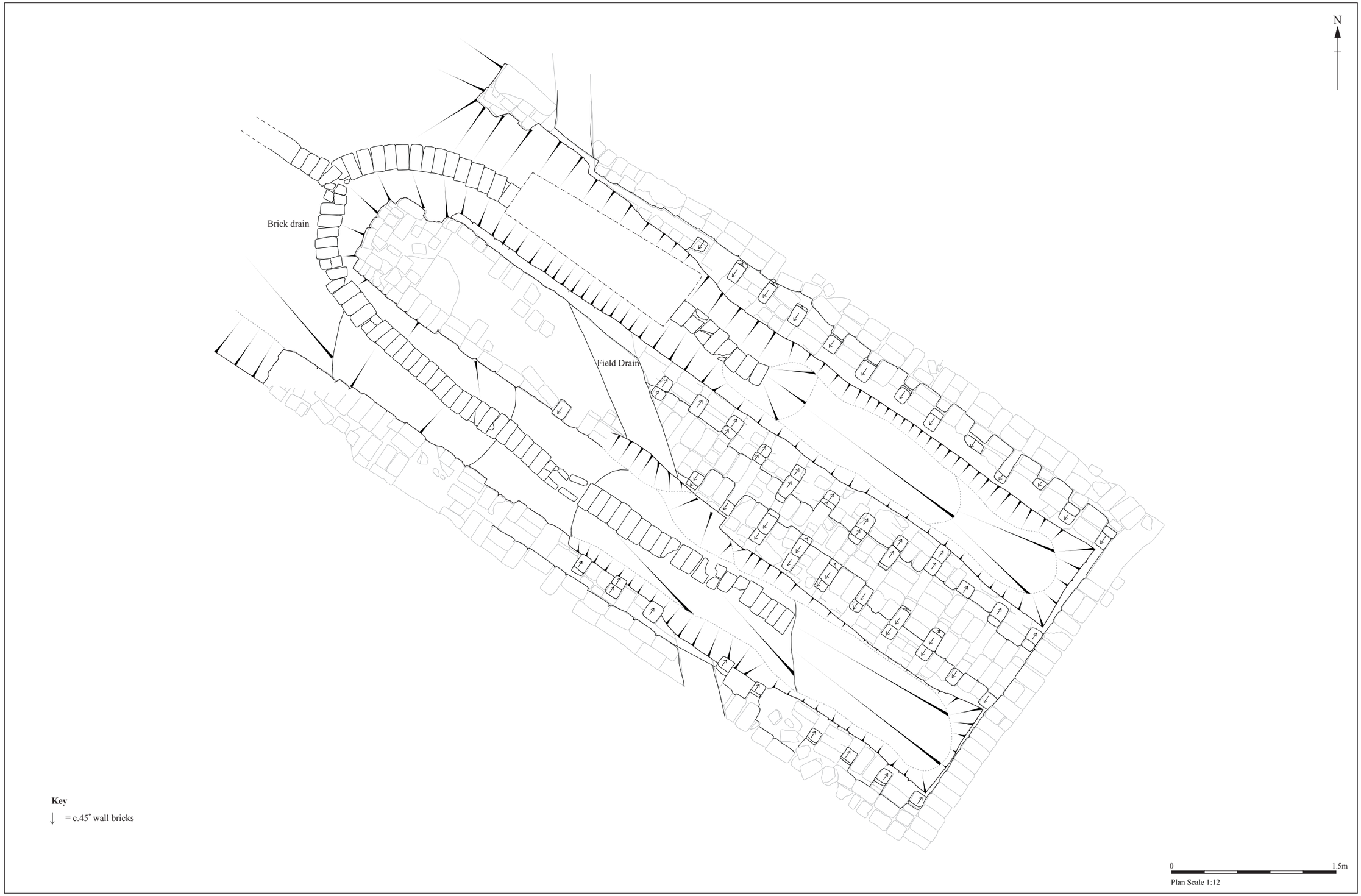

Figure 9. Kiln 0228 post-excavation plan

Plate 5. Kiln 0228, after removal of archways, drain exposed (facing south-east, 2m and 1m scales)

Spine wall, arches and firebox chambers

Two internal firebox chambers (*c.*0.85m wide) ran the length of the kiln and were divided by a central spine wall that was 4.4m long. The spine wall in this kiln survived to the same height as the external walls, and the upper three or four courses were built to form a *c.*45° point, with the sloping edges that this created designed to allow for ash or other debris to fall to the base of the kiln. Correspondingly on the inside edges of the external walls, *c.*45° angled bricks were built in for the same purpose. Most of the spine wall was only a single brick thick, being built directly onto the clay geology that had been purposefully excavated to form the rough shape of the kiln. At approximately 0.1m-0.12m intervals, arches ran from both sides of the spine wall widthways to the outer walls, forming twelve to thirteen double arches (one brick length/0.24m thick) along the structure. The gaps between the arches allowed for heat to rise from the fireboxes below, whilst the arches themselves served as kiln bars. They would have been built with a flat upper surface above ground onto which the green (unfired) bricks and tiles were stacked, although the upper surface of the arches did not survive. In this kiln several of the arches survived partially intact (Figs. 8 and 10, Pls. 4 and 6 and Secs. 52 and 53).

Drain

A double drain (the sides made up of two lines of bricks laid on their sides and covered by horizontal bricks) was set into the base of the chambers, extending further along the south-west firebox than the north-east. It merged into a single line at the north-west end of the kiln (Fig. 9 and Pl. 7) and had been truncated beyond this point.

Brickwork and other details

The bonding for much of the kiln's brickwork was regular and the bricks tended to be quite irregular. The depth of five courses was *c.*0.36m and these were generally bonded using clay, although the firing of the kiln was so intensive that it was not always clear whether mortar had been used instead, particularly in structurally complex components such as the archways. It is noted in the 16th century kiln excavated at Ellough that mortar was used to bond the kiln bar arches, but in no other part of the kiln (Boulter, 1997) and lime mortar is recorded on brick samples from kiln 0229. The bricks making up the structure were red (and not frogged), measuring on average 226mm-236mm

long x 114mm-119mm wide x 53mm-56mm thick. It was also noted that much of the internal structure (e.g. the spine wall and archway bases) was only one brick thick and had subsequently started to slump away from the natural clay onto which it was directly built. The floor of the kiln was made up of natural clay, which had been so intensively heated and mixed with ash that it had become a very dark red or black in places. This surface was concave in both fire box chambers; a result of having been raked out after firing of the kiln.

Back fill

The kiln was back filled with a series of mixed demolition, topsoil and ash fills, with high quantities of brick and tile rubble in places and ashy deposits at the base (0232-0244). The rake out pit/spread of redeposited ash and brick wasters for the kiln formed a roughly circular shape around it, but on its north-west edge it extended outwards *c.*45m. This was picked up initially on the geophysics survey and a slot was machine-excavated through it to confirm the dimensions. Environmental samples from fills 0244 (Sample 10) and 0239 (Samples 13 and 14), produced chaff, barley/rye, and rye rachis, as well as high densities of bracken (thought to be the main fuel source for the kiln), charcoal/ charred wood and other unidentified plant remains. Heather was also recorded in Sample 10. Sixteen fragmentary and whole bricks dated by their dimensions as 16th/17th century, along with seven plain roof tiles were recovered from contexts 0231, 0239, 0243 and 0244 (Appendix 4). Significantly, no pantiles were found in the kiln, suggesting a pre-17th century date. A fragment of tobacco pipe stem and heated flints were also recovered from the kiln (fills 0243 and 0244).

Settling pond and wash pit

Approximately 84m west of kiln 0228 was a large silted deposit, *c.*34m long (east to west) and *c.*29.5m wide. It was made up of brownish-grey silt and was immediately south-east of/adjoining one of the ponds marked on the historical maps. There was also a somewhat poorly defined channel running from the silted deposit into the pond, the base of which was covered with flints. The silt spread was shallower than the pond and as such the two features were interpreted as a wash pit (the silt spread) and a settling pond to overwinter the clay (Peter Minter, pers. comm., 23/06/2014). The pond itself measured 23.7m (east to west) x 21m. It is assumed that this wash pit and settling pond are associated with kiln 0228 on the basis of their proximity to it.

Plate 6. Kiln 0228, excavated fireboxes and archways (facing north-west, 1m scales)

Plate 7. Kiln 0228, brick drain and burnt clay base (facing south-east, 0.3m scale)

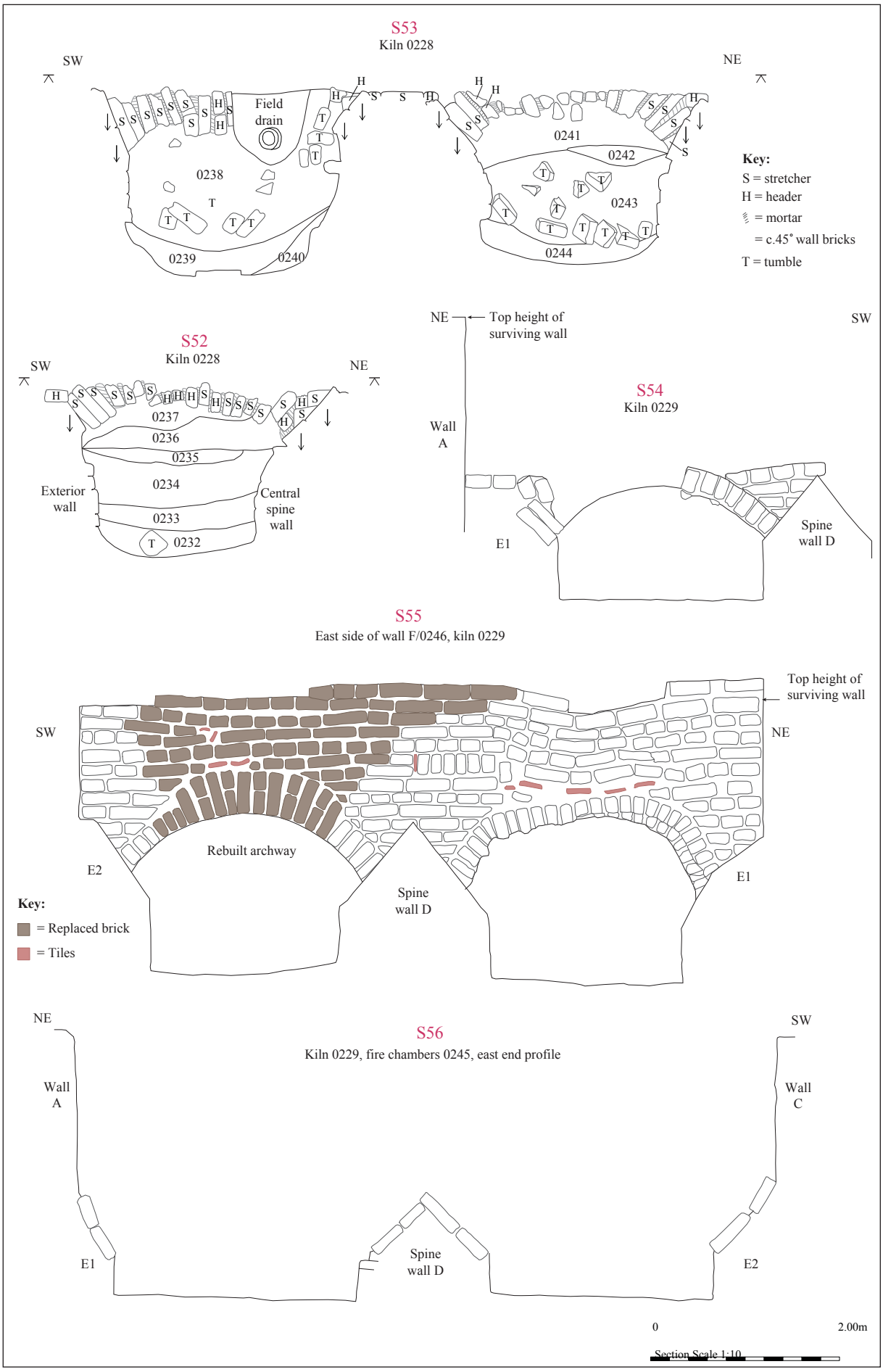

Figure 10. Kiln sections

4.5 Phase 4 – late 18th century

Kiln 0229 (0036)

Introduction

The larger and northerly of the two kilns was recorded under group numbers 0229 and 0036 in the evaluation (see also 0230, 0245-0249 and 0258 – Appendix 2) and has been dated as 18th/19th century from analysis of brick samples from the structure (Pls. 8-15 and Sections 54-56). The kiln is in part discussed in reference to letters A-J as shown on Figures 10 and 11, of which elements F-J were additions/modifications in comparison to kiln 0228. The main structure was recorded as 0229 and was rectangular in plan, aligned north-west to south-east (similar to kiln 0228) and measured 9.56m x 4.95m. The alignment of the kiln was identical to that of the earlier kiln, suggesting that this was a deliberate choice and as with that this may have been to avoid the prevailing wind or to facilitate the removal of the finished bricks and tiles to the nearest track. The internal width of the main structure varied from 3.53m-3.64m and the internal length was 5.04m-5.16m. There was no visible construction cut for the structure because it had been built immediately abutting the natural geology.

All that survived of the kiln was the subterranean structure to approximately 1.5m below the exposed ground level at the south-east end to 1.74m at the north-west end, indicating the slope built into the structure to facilitate raking out of ash and to discourage flooding. The walls served as the firebox chambers to heat the bricks and tiles, which would have been stacked on archway kiln bars, just above ground level. The above ground walls (and any roof structure) had been razed sometime after the structure fell into disuse and these would have served to insulate and shelter the kiln and the bricks and tiles. These walls were probably 2m-2.5m tall. As with kiln 0228 it was built into the ground to provide better insulation, but it also left it prone to flooding.

Not only was kiln 0229 larger than its earlier counterpart but it was also built in a more elaborate and robust way, with improvements to the design (e.g. wall H, tunnels G and the brick floor) as well as a general increase in the thickness of the walls. A number of repairs (some quite extensive) were also carried out on the archways and internal walls of this kiln and the brick floor at the end of the south-west stoke hole had been worn away by repeated firings and raking. This suggests a longer lifespan than for kiln 0228,

and/or that kiln 0229 was used more intensively. The large kiln would have been capable of producing significantly more bricks and tiles from each firing and may have remained in use for a longer period, reflecting the increased use of bricks and tiles at this time.

External wall structure (A-C)

The remains included three external walls (A-C – Pls. 8-10), consisting of the two longer north-west to south-east aligned sides of the kiln (5.54m-5.7m long) and the north-east to south-west aligned end wall (4.85m long), surrounding the internal elements (D and E). This part of the kiln is thought to have been built first (before elements F-J), as that allowed the necessary access for construction. Unlike in kiln 0228 the north-west end of the below ground structure was sheltered by tunnels, although it was still accessible through tunnels in order to allow access for fuelling and cleaning the kiln, as well as for permitting air to enter. In this structure the outer walls were between two and a half and three brick lengths thick (*c.*0.6m-0.72m), making them substantially thicker than on the earlier kiln. This was presumably to form a suitable foundation for the demolished above ground walls of the kiln but mainly to insulate the structure, creating a high thermal mass around it and helping to regulate the temperature during firing.

At some point it appears that wall B was partially repaired with a single skin of bricks, which had subsequently started to peel away from the original portion of the wall, having not been tied in. The repair ran from at least ground level down to the top of the arches, at which point it was presumably impossible to access lower down on the structure. The bricks below this point were heavily vitrified. Parts of the spine wall (D) may also have been repaired judging by the varying levels of vitrification on some of the bricks, but any such repairs were not consistent and again may have related to access to the structure.

Plate 8. Kiln 0229, fully excavated, composite image (facing north-east, 1m and 2m scales)

Plate 9. Kiln 0229, fully excavated (facing east, 1m and 2m scales)

Plate 10. Kiln 0229, fully excavated (facing south-east, 1m and 2m scales)

Spine wall (D), arches (E1 and E2) and firebox chambers

Two internal firebox chambers (*c.*1.2m-1.3m wide) ran the length of the kiln and were divided by a central spine wall (D) that was 5m long within walls A-C, extending for another 3m externally beyond wall F (D2). The spine wall was between 0.58m and 0.8m thick x 0.68m to 0.86m tall, and the upper four or five courses were built to form a *c.*45° point, with the sloping edges that this created designed to allow for ash or other debris to fall to the base of the kiln. Correspondingly on the inside edges of the external walls, *c.*45° angled bricks were built in for the same purpose.

At approximately 0.1m-0.12m intervals, arches ran from both sides of the spine wall widthways to the base of the outer walls (E1 and E2), where they were tied into the main structure and formed fourteen double arches (one brick length/0.24m thick) along the structure. The gaps between the arches allowed for heat to rise from the fireboxes below, whilst the arches themselves served as kiln bars. They would have been built with a flat upper surface above ground onto which the green (unfired) bricks and tiles were stacked, although the upper surface of the arches did not survive. In this kiln only one of the arches survived and even then only partially (Section 54 on Fig. 10, and Pl. 11), although originally they would have been >1.16m tall, as is shown by the sooting on the interior walls (Pl. 12). A lot of weight was borne by the arches and this partly explains why they had all collapsed, although this was also a result of having been subjected to high temperatures and possibly from deliberate demolition.

Plate 11. Above – Kiln 0229, partially surviving archway (section 54, facing south, 0.3m scale)

Plate 12. Kiln 0229, internal structure (showing sooting of internal walls between arches)

Stoke tunnels (G), associated walls (F and H) and spine wall (D2)

The entrances/stoke holes to the kiln were at the north-west end and were made up of two tunnels (G) tied into walls F (Pl. 13) and H (Pl. 14), of which wall F was itself tied into walls A and C. The tunnels were *c.*1.4m wide and extended 2.6m beyond the kiln. They functioned to control the draw (inflow of air) to the fireboxes, but also left access for fuelling and cleaning the kiln. As such they were essentially elaborate modifications of the walls that extended beyond the length of the main firebox structure in kiln 0228, although the tunnels would have provided much greater shelter than in the earlier kiln. Both of the entrance tunnels/stoke holes had partially collapsed, with the extreme heat appearing to have intensively vitrified the silicate content of the bricks. This had allowed some of the bricks in the northern arch to warp under the effect of gravity. The majority of the south-west tunnel where it is tied into wall F appears to have been repaired, presumably as a result of similar warping and subsequent collapse (Sec. 55). Where the tunnels extended to the north-west they only survived at a thickness of up to *c.*0.12m, but they were more substantial originally, having broken up during firings of the kiln. The central spine wall continued through from the fire box chambers as D2 between the two tunnels (although here it was *c.*1m tall), which were tied into it. It was built around a loose brick rubble and clay core, which had been partially fired by the heat of the kiln.

Wall F's thickness varied from *c.*0.56m-0.64m and had irregular bonding, and although it wasn't obviously apparent that any repairs had been carried out on it, these irregularities may have related to repairs to this part of the construction.

At their far north-western extent, the tunnels were tied into ancillary wall H (that functioned to stop them from splaying outwards) and was bonded with white mortar. This wall was a single brick length thick x 6.06m long, but was partially robbed out at its south-west end. It would have originally run across the top of, and tied into the tunnels and spine wall D2, but was damaged here also. The wall was up to sixteen courses deep, with fewer courses as it became shallower at the north-east and south-west ends.

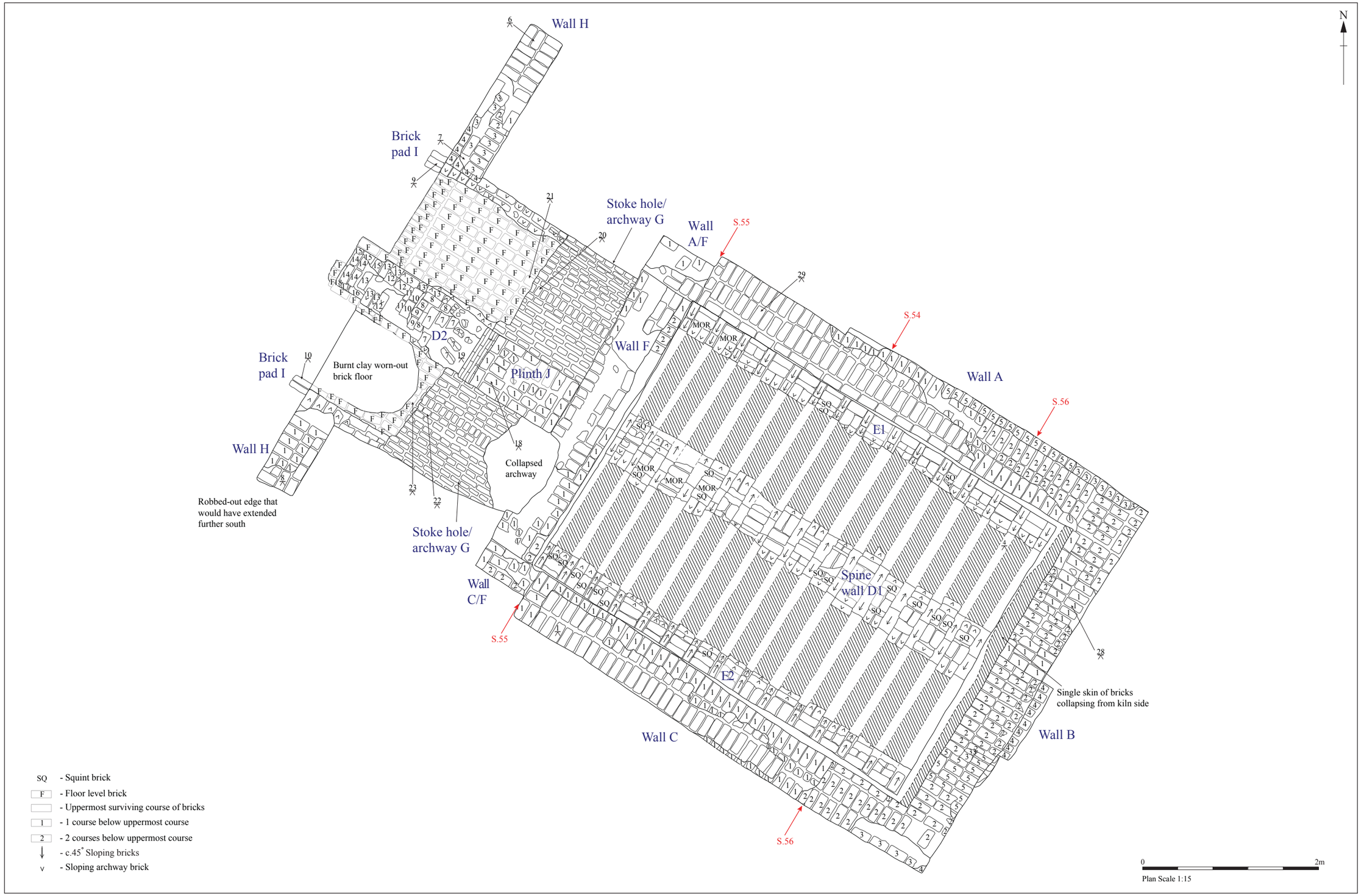

Figure 11. Kiln 0229 plan

Plate 13. Kiln 0229, wall F (section 55, facing north-west, 1m and 2m scales)

Plate 14. Kiln 0229, walls H and looking through stoke holes/archways G (facing south-east, 1m and 2m scales)

Plate 15. Kiln 0229, plinth J (facing south-east, 0.3m scale)

Door plinths (I) and large plinth (J)

Two brick plinths (I) were located at the north-west ends of the tunnels. These only survived as two bricks (southern plinth) or three bricks (northern plinth) and were set at the same level as the adjacent floor bricks. All of these bricks were laid on their sides and they were interpreted on site as post pads for a set of fire doors to control airflow into the active kiln.

A large rectangular brick plinth of uncertain purpose was positioned on top of the external section of the spine wall between the two stoke tunnels (J), although it was not clearly tied into any parts of the rest of the structure. This measured 1.25m x 0.66m x six courses of brick tall (*c.*0.46m). The north-west end of the structure was slightly stepped (Pl. 15). On site the plinth was interpreted as being a final addition to the structure to create downward pressure onto the tunnels in order to stop them from moving outwards, although this was unclear as the tunnels would presumably have been covered with soil anyway (therefore applying pressure) to aid insulation.

Brickwork and other details

The brickwork was in places laid in English bond (alternating courses of headers and stretchers), although this often varied due to the thickness of the walls, which made it difficult to keep a regular bond. The often substantial nature of the walls and their position abutting the natural geology also meant that they were largely very stable, negating the need for regular bonding throughout (obviously aesthetic appeal was not a consideration for such a structure).

Generally the kiln was built with regular unfrogged bricks (section 5.3.3), although the archways were partly constructed using squint bricks, i.e. bricks moulded with a 45° angle along one long edge to help with the formation of the archway angle. As noted in the ceramic building material (CBM) report, in places the structure was bonded with white lime mortar (clearly visible in wall H), but as with kiln 0228 it is unclear whether natural clay had also been used. On site it was thought that clay would have been the most likely and convenient option, although it was also noted that it would have been near impossible to make complex load bearing structures like the archways without mortar.

Brick floor

The floor of this kiln was built from bricks, presumably in order to make it easier to rake out ash and to reduce the opportunity for water to pool if the structure flooded. Generally the bricks were aligned lengthwise with the kiln and laid flat, except under the stoke hole tunnels where they were more irregular, and at the far north-western threshold where they were laid on their sides. At the north-west end of the south-western firebox the floor had been worn away, appearing to have become intensively vitrified prior to crumbling.

Back fill

Within the body of the structure was deposit 0230. This consisted of brick and tile rubble and brick dust (*c.*50%), amidst a loose dark grey clayey-silty buried topsoil matrix. At the base of the fill was a deposit of fine brick dust/silt, which had presumably percolated from crumbling material above. There were very occasional charcoal fragments, but there was no evidence of a concentrated ash deposit and the fill had been contaminated

when the site flooded during excavation. Eleven whole and fragmentary bricks, thought to be of 18th/19th century date (by dimension), four pantiles and five plain roof tiles were recovered as samples of CBM from the structure and fill, along with a piece of clay tobacco pipe, four iron nails, as well as cattle, deer and unidentified mammal bones.

Settling pond and wash pit

Approximately 45m west of kiln 0229 was a large pond measuring 45.6m long (south-east to north-west) x up to 21m wide. It was beyond the limit of excavation and so was not fully investigated, but may have been another settling pond as seen to the west of kiln 0228. It was also depicted as two distinctly separate features on the 1883 OS map, perhaps indicating that one was a wash pit and the other a settling pond. The feature is associated with kiln 0229 on the basis of its proximity to the structure.

4.6 Associated industrial features

Quarry pits

Contributions from Peter Minter

Approximately six different types of quarry pit were recorded during the strip and map phase of works. A series of these were surveyed and are shown on Figure 7 and in Table 2 below. Further excavated and recorded quarry pits from the evaluation are recorded in Appendix 5. Of particular interest are the 'stanks', quarry pits that were either regular or irregular channels. These represented approximately the amount dug out each season, typically by a single worker. The cuts were dug as separate channels in order to discourage flooding of the stank currently being dug with any water that had gathered in the previous year's pit.

Pit type	Description
Linear stank channel	One of a series of regular stank pits, each line being dug over one season, typically by one labourer.
Irregular stank channel	Irregular stank pit, dug over one season, typically by one labourer but appearing to chase a specific seam of clay.
Regular stank pit clusters	As above, but slightly more regular and probably in an area of denser clay.
Shallow hollow/seasonal stank with brick wasters	Noticeably shallow and wide areas of quarrying that were then used as useful areas for back filling with waster material. These deposits often showed up prominently on the geophysics results.
Large later(?) pit	Large pit, interpreted as a later pit to supply the higher demands for material of the later kiln.
Large later(?) pit with brick wasters	As above, but with a high number of brick wasters within the back fill. These deposits showed up prominently on the geophysics results.
Dense brick deposits	Very dense deposits of brick and tile wasters from the kilns, within shallow hollows. It is unclear if these represent quarry pits or some other function.

Table 2. Quarry pit types and other deposits (as shown on Fig. 7)

Whilst it is not possible to clearly identify which quarry pits are associated with which kiln, it is notable that in the area surrounding kiln 0229 there is a greater density of quarrying (*c.*70%-90%) than that around kiln 0228 (*c.*60%-80%, dropping to *c.*40%-50% just to the south-east– Figs. 2 and 7). As such and given that it is likely that kiln 0229 produced many more bricks and tiles, a higher proportion of the quarry pits must be associated with this kiln. It is also assumed that the earliest pits are the smaller, more irregular pits, dug by a lower workforce and reflecting a more limited level of production from the 16th century kiln. However this is by no means certain and extensive levels of quarrying have been recorded associated with the 16th century kiln at Clare (CLA 079 – Brooks, 2015).

A number of quarry pits were individually hand excavated as cuts 0203, 0209/0211, 0214 and 0216, located approximately 5m south of kiln 0229 (Appendix 2). These consisted of a series of irregular sub-rectangular features in plan, with 0209/0211 representing a linear stank. The features had moderately steep (45°) to near vertical (85°) irregular sides, that curved sharply to the often uneven or concave bases. Pit 0209/0211 measured >1.7m x 0.8m-0.9m x 0.2m-0.35m deep, while the other cuts varied from 2.8m-3.3m long x 1.6m-1.9m wide x 0.3m-0.9m deep. Each cut was recorded as containing one or two fills, usually consisting of mixtures of yellowish-brown, brownish-yellow and grey-brown clayey-sand deposits with inclusions of small flints, differing levels of brick waster fragments, charcoal flecks and small pieces of blue-grey clay. No finds were recovered from these fills. During the evaluation a number of small possible pits and linear features were excavated in Trenches 16 and 21. The function of these could not be established, but they were contemporary with the kilns as they contained heavily over-fired kiln CBM waste (Appendix 5 and Brooks, 2012).

Plate 16. Pit 0203 (facing west, 1m scale)

Plate 17. Pit 0209/0211 (facing south-east, 1m scale)

Plate 18. Pit 0216 (facing south-east, 1m scale)

5. Quantification and assessment

5.1 Post-excavation review

The following post-excavation tasks have been completed for the stratigraphic, finds and environmental archives:

Task 1. Completion and checking of the primary (paper and digital archive)

Task 2. Creation of a Microsoft Access database of the stratigraphic archive

Task 3. Creation of a Microsoft Access database of the finds archive

Task 4. Creation of a Microsoft Access database of the environmental archive

Task 5. Catalogue and archiving of images

Task 6. Contexts allocated to groups where relevant

Task 7. Provisional group descriptions and basic discussions in text

Task 8. Selection of samples sent for assessment

Task 9. TST data converted into MapInfo tables and AutoCAD dxf formats

Task 10. Scanning for security/digital archive copy of plans and sections

Task 11. Scanning of plans and integration with GPS/mapping data

Task 12. Processing, dating and assessment of finds

Task 13. Assessment of environmental samples

5.2 Quantification of the stratigraphic archive

The stratigraphic archive for the excavation phase of fieldwork has been quantified in Table 3.

Type	Quantity	Format
Context register sheets	2	A4 paper
Context sheets	35	A4 paper (+11 page print out of entire context database in order to account for missing records)
Drawing register (sections and plans)	2	A4 paper (1 section register and 1 plan register
Level recording sheets	2	A4 paper (1 register and 1 plan of kiln 0229 level positions)
Digital photograph register	2	A4 paper
Environmental sample sheets	1	A4 paper
Plan/section drawing sheets	15	A3 gridded drawing film
Digital photographic images	179	JPEG images
Assessment report (SCCAS report no. 2014/063)	1	A4, comb bound, white card covers (SCCAS/SACIC standard grey literature)

Table 3. Quantification of the context and stratigraphic archive

5.3 Quantification and assessment of the finds archive

Compiled by Richenda Goffin

5.3.1 Introduction

The quantities of finds recovered from the strip, map and excavation stage are shown below and are catalogued by context in Appendix 5. The table includes a large quantity of heat-altered flint samples recorded by weight which came from several of the kiln fills and elsewhere. There were no small finds.

Finds Type	No	Wt (g
Pottery	15	151
CBM	53	39500
Clay tobacco pipe	2	8
Nails	4	62
Worked flint	14	168
Heat-altered flint	-	11878
Animal bone	23	200

Table 4. Finds quantities

5.3.2 Roman pottery

Cathy Tester

Introduction

Fifteen sherds of Roman pottery weighing 150g and representing a maximum of three vessels were recovered from a single context, the fill of ditch 0286 (0287) in the south-east corner of the site. It was quantified by count and weight and details of fabric, form and form element were recorded. Fabric codes were assigned from the Suffolk Roman Fabric series which is available in archive. Each 'sherd family' was recorded separately as shown in Table 5.

Context	Fabric	Form	No	Wt/g	Notes	Spot date
0287	GMB	Jar	11	125	Bodysherds from lower half of a single jar. 2 sherds have pinkish- red surf, 1 red, 1 50/50 = firing error. Plain surf abraded	Rom
	GMB	Jar	2	17	Bodysherds	Rom
	GMG		2	8	Abraded bodysherds	Rom
Total			**15**	**150**		

Table 5. Roman pottery catalogue

The assemblage

The pottery consists entirely of micaceous coarsewares in the black-surfaced (GMB) and grey surfaced (GMG) fabric variants. All of the sherds are in the standard GM fabric with a fine uniform texture and few inclusions except for very abundant mica throughout. Micaceous wares are a feature of North Suffolk sites, usually accounting for a very large proportion of the coarseware pottery supply, particularly on rural sites. A common source in the north of the county is suggested and the closest known kilns are in the Wattisfield area. The pottery here is made up of non-diagnostic bodysherds from jars which can only be broadly dated as Roman. However, similar pottery in micaceous fabrics (20 sherds, weighing 125g) from two of the evaluation trenches included a more datable mid-2nd to 4th century jar form (Fawcett, 2012). A much larger Roman pottery assemblage (470 sherds weighing 6,776g) was recovered from a site less than 3km to the North at Rushford Road Belt (EUN026) where coin and pottery evidence indicated a Roman settlement dating from the late 1st century to the end of the period (Tester, 1998).

5.3.3 Ceramic building material

Sue Anderson

Introduction

Fragmentary and complete bricks and tiles were recovered from five contexts relating to the two brick kilns. Examples of types were recovered as a hand-collected sample from the structure and fills of both kilns, and smaller fragments were recovered from the processing of soil samples from the ash and charcoal fills of kiln 0228. Table 6 shows the quantification by context. A full quantification by context, fabric and form is included in Appendix 6.

Kiln	Feature	Context	Sample	Description	No frags	Wt/g
0228	0231	0231		Structure	5	12356
	0231	0239	<13>	ash/charcoal fill	53	2110
	0231	0239	<14>	ash/charcoal fill	7	348
	0231	0243		sandy clay fill	17	2186
	0231	0244	<10>	ash/charcoal fill	74	3560
0229	0245	0229		structure	4	10930
	0245	0230		rubble fill	28	13980
Total					**188**	**45470**

Table 6. CBM quantities by context

Methodology

The assemblage was quantified (count and weight) by fabric and form. Fabrics were identified on the basis of macroscopic appearance and main inclusions. The width, length and thickness of bricks and floor tiles were measured, but roof tile thicknesses were only measured when another dimension was available. Forms were identified from work in Norwich (Drury, 1993), based on measurements; other form terminology follows Brunskill's glossary (1990).

The assemblage

Table 7 shows the quantification by type and form.

Form	Code	No	Wt (g)
Late brick	LB	127	37597
Plain roof tile: post-medieval	RTP	40	3873
Pantile	PAN	11	3876
Fired clay	FC	10	124

Table 7. CBM by type and form

Most of the assemblage was in a similar range of fabrics, medium sandy with sparse small flint and quartz pebble inclusions, sparse to moderate grog and occasional locally occurring natural inclusions such as ferrous particles and chalk. The fabric was not micaceous. The main variants from this were in the pantiles, which were generally made in more ferrous or calcareous clays and were perhaps imported to the site.

Late bricks form the largest part of this assemblage, but they are only a small proportion of the brick which was present on the site. Complete bricks were recovered from the structures of both kilns and provide a range of measurements. Four from 0229 were between 223–233mm long, 106–114mm wide and 58–60mm thick. The five samples from 0228 were 226–236mm long, 114–119mm wide and 53–56mm thick. Although of broadly similar length, the two brick groups hardly overlap in width and thickness. Based on size alone, it seems likely that kiln 0228 is the earlier of the two, the measurements falling within the typical range for 16th/17th-century bricks. The narrower, thicker bricks in the structure of 0229 are more typical of 18th/19th-century types.

Material recovered from the fill of 0229 included pieces of chamfered brick with lime mortar adhering, and pieces of plain roof tile and pantile. Several fragments were over-fired and/or vitrified and had probably been used in the kiln structure, but others may represent waste products of the kilns.

The fills of kiln 0228 also contained small pieces of brick, most of which were reduced and/or vitrified. Several pieces of roof tile were also recovered and there were fragments of fired clay which may have been used as a filler to seal any gaps in the kiln. Significantly, no pantile fragments were recovered from this kiln, suggesting a pre-17th-century date for the backfilling.

Provenance

The site is well stratified and most of the assemblage is derived from sealed contexts. No phasing was available at the time of assessment. All fragments of CBM were recovered from kiln fills or structural contexts.

5.3.4 Clay tobacco pipe

Two fragments of clay pipe stems weighing 8g were recovered from the excavation. One of these which was found in kiln fill 0230 is slightly burnt; a second stem piece came from kiln fill 0243.

5.3.5 Struck flint

Cathy Tester

Introduction and methodology

Fifteen pieces of struck flint were collected from four contexts during the excavation. All of the flint is unpatinated and mid grey to black in colour. Some pieces are mottled, and cortex, which is present on every piece, is a dirty grey or off white, sometimes quite thick. The flint was recorded by type and other descriptive comments were made as required. The flint types and descriptions are shown in Table 8.

Context	Type	Categ.	No.	Notes
0219	Scraper	Scr	1	Irregular flake with steep retouch on 2 adjacent edges
	Flake	Retf	1	NSP, retouch on 1 edge NSP c. 50% cortex
	Flake	Flak	1	Snapped flake, thin cortex on dorsal face
	Flake	Flak	2	Irregular flakes, quite sharp
0222	Flake	Notf	1	Notched flake. Large irregular, HF, 2 notches, c. 20% cortex
	Flake	Flak	3	3 small flakes, quite sharp. Thick off-white cortex
0267	Core	Core	1	Core fragment w 5 flakes removed (3 HF) thick white cortex
0270	Flake	B/flak	1	Blade-like flake, HF
	Flake	Flak	1	Small squat flake
	Flake	Retf	1	Irregular flake ,HF with possible retouch on 1 edge
	Flake	Flak	1	Irregular flake, cortex on 3 edges. Quite sharp.
	Flake	Retf	1	Irregular flake, HF, NSP retouch on 1 edge

Table 8. Flint descriptions

Key: HF = hinge-fractured, NSP = Natural striking platform

The assemblage

The assemblage includes a core fragment with at least five flakes removed, three of them hinge-fractured (0267) as well as eight unmodified flakes. The flakes are small, squat and irregular, and some of them are quite sharp suggesting that knapping could have taken place close by (0219, 0222 and 0270). Another flake is 'blade-like' (0270) unmodified with a hinge fracture. Five modified flakes include three with retouch on one edge (0219 and 0270) and a large flake with two retouched notches (0222). An irregular flake has steep retouch on two edges suggesting its use as a scraper (0219).

Discussion

The flint assemblage could be Bronze Age or Iron Age and displays characteristics of later prehistoric assemblages including its irregularity, the lack of patination and the use of surface and weathered raw material as indicated by the presence of cortex on every piece. Natural (cortical) striking platforms as well as squat, hinge-fractured and snapped flakes are also characteristic of later assemblages. The flints were recovered from two fills of ring ditch 0217 (0219 and 0222) which produced no other datable finds, the fill of linear ditch 0268 (0267) and in burnt spread 0269 (0270), also with no associated datable finds.

5.3.6 Burnt flint

Two fragments of burnt and fire-cracked flint were retained from spread 0270. Fragments of struck flint were also recovered from this feature. Samples of heat-

affected flint were taken from contexts 0239 and 0244 (which were fills of kiln 0228), as well as 0270 (spread deposit) and 0293 (pit fill).

5.3.7 Iron nails

Four iron nails were collected from a single deposit, kiln fill 0230. Three are complete with heads, and one of these has a flat head and a pointed terminal which is bent round back against itself. The fourth nail has lost the head and is shorter and smaller than the others. All the shanks are square or rectangular in section.

5.4 Quantification and assessment of the environmental evidence and archaeomagnetic samples

5.4.1 Animal bone

Julie Curl

Methodology

The assessment was carried out following a modified version of guidelines by English Heritage (Davis, 1992). All of the bone was scanned to determine range of species and elements present. Where species identification was not possible, an attempt was made to determine if the remains were those of large mammals, small to medium mammals, small mammals, birds, fish and herpetofauna. A note was also made of butchering and any indications of skinning, horn or antler working and other modifications. When possible a record was made of ages and any other relevant information, such as pathologies. Counts and weights were noted for each context with additional counts for each species identified, counts were also taken of bone classed as ‘countable’ (Davis, 1992) and measureable bone (following Von Den Driesch, 1976). As this is such a small assemblage, information was recorded directly into a table for this report, which makes up Appendix 7.

The faunal assemblage

A total of 214g of faunal remains, consisting of nineteen pieces, was recovered from excavations at this site. Remains were produced from the late medieval and post-

medieval kiln fills. The bone was found in deposits with large amounts of CBM and small amounts of clay pipe.

The bone is in good condition, although there is some erosion of the bone surface, perhaps from acidic soil conditions. Some porosity of the bone is probably as a result of many of the bones being juvenile and not fully formed. The erosion of the surfaces has possibly destroyed some evidence, such as butchering marks.

The bulk of the remains in this assemblage belonged to deer. In fill 0230 there were four pieces of Fallow Deer bone, consisting of a metatarsal, radius and other fragments; these remains were also found with a piece of chopped cattle humerus and unidentifiable fragments. Nine bones of a young deer (probably Fallow) were also collected under context 0245 (kiln 0229) and the size of the juvenile bones suggest an age at death of this fawn of approximately 1-2 months or less. There are possible cut marks on both the adult and juvenile deer, although these marks are not completely clear due to the damage to the bone surfaces.

Conclusions

This is a small and unusual assemblage. Most assemblages are dominated by the butchering waste of domestic food mammals, such as cattle, and while cattle waste is present, the dominant species is Fallow Deer.

Fallow Deer were brought into Britain by the Norman period for hunting and meat and kept in large deer parks for centuries and many escaped. By the post-medieval period this species would have been relatively common in places. The deer remains are possibly from food waste and may represent legitimately hunted stock or the remains of animals obtained by poaching, or as is perhaps most likely the death of individuals as a result of predation or illness.

5.4.2 Charred plant macrofossils and other remains

Val Fryer

Introduction and method statement

Samples for the retrieval of the plant macrofossil assemblages were taken from ashy fills within kiln 0231, from burnt spread 0269 and from a possible pit (cut 0269), and all five were submitted for assessment.

The samples were bulk floated by Anna West of SCCAS/SACIC and the flots were collected in a 300 micron mesh sieve. The dried flots were scanned under a binocular microscope at magnifications up to x 16 and the plant macrofossils and other remains noted are listed in Appendix 8. Nomenclature within the table follows Stace (2010). All plant remains were charred. Modern roots and seeds were also recorded.

Results

Charred plant macrofossils are present throughout, but the assemblages are somewhat limited in composition. The three ash deposits associated with the kiln (Samples 10, 13 and 14) all contain moderate to high densities of chaff, with barley/rye (*Hordeum/Secale cereale* type) and rye rachis nodes being predominant. All three assemblages also contain very high densities of bracken (*Pteridium aquilinum*) pinnule and stem fragments as well as indeterminate pieces of root/stem, inflorescence fragments and charcoal/charred wood. Other plant remains noted within these assemblages include an indeterminate cereal grain, individual seeds of fat hen (*Chenopodiaceae*) type, medick/clover/trefoil (*Medicago/Trifolium/*Lotus sp.) and mint (*Mentha* sp.) type and a badly crushed small legume (*Fabaceae*). Possible heather (*Ericaceae*) stem and leaves are noted within the assemblage from Sample 10. Samples 11 (burnt spread 0269) and 12 (pit 0292) are almost entirely composed of charcoal/charred wood fragments, some of which are quite large (i.e. >10mm). The material within Sample 11 is noticeably rounded and abraded, possibly indicating that it was exposed to the elements for some considerable period, whilst the remains in Sample 12 are mostly coated with fine orange mineral concretions.

Other remains are generally scarce. However, siliceous globules and concretions, all of which are probably derived from the high temperature combustion of straw/grass, are abundant within the samples from the kiln.

5.4.3 Preliminary archaeomagnetic measurements

Samuel E. Harris and Catherine M. Batt

Introduction and methodology

Sixty orientated samples from two brick kilns (thirty samples each) at Wash Pits Field site at Euston in Suffolk were taken by Museum of London Archaeology and sent to the University of Bradford to undergo a program of archaeomagnetic investigation. This preliminary report outlines the pilot studies undertaken.

Twenty representative samples from each brick kiln were selected for initial analysis. In the sample consolidation phase, three samples from context 0231 were lost through detachment of the orientation mark. The natural remanent magnetisation (NRM) of the remaining thirty-seven samples was measured on the Molspin fluxgate spinner magnetometer.

Results

The stereographic plots show the distribution of the directions of magnetisation (Figs. 12 and 13). Declination is plotted as an angle from north and inclination as a distance from the perimeter to the centre. The scatter on the data is small (AM234 and AM235: 95% confidence error values of 3.0° and 2.9° respectively) which is well within the range generally considered to be appropriate for dating.

Additionally, two samples from each brick kiln underwent a full demagnetisation to assess the stability of the remanence. These both showed that the NRM is very stable and that better precision may be achieved after removal of a small viscous component obtained since the last firing of the brick kiln. This pilot study concludes that these features retain a stable record of the past geomagnetic field, are suitable for archaeomagnetic dating and are likely to produce a meaningful date if fully analysed.

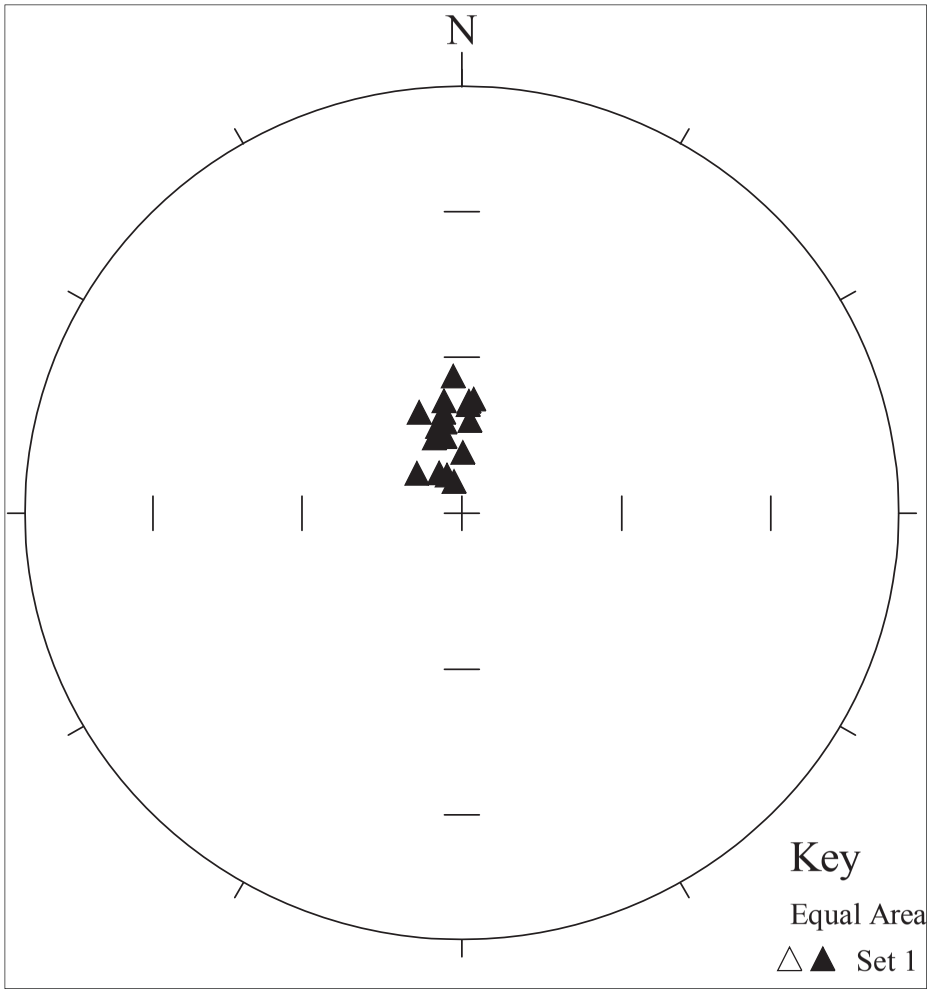

Figure 12. A stereographic projection of the NRM values for the 17 samples from AM234 (context 0231)

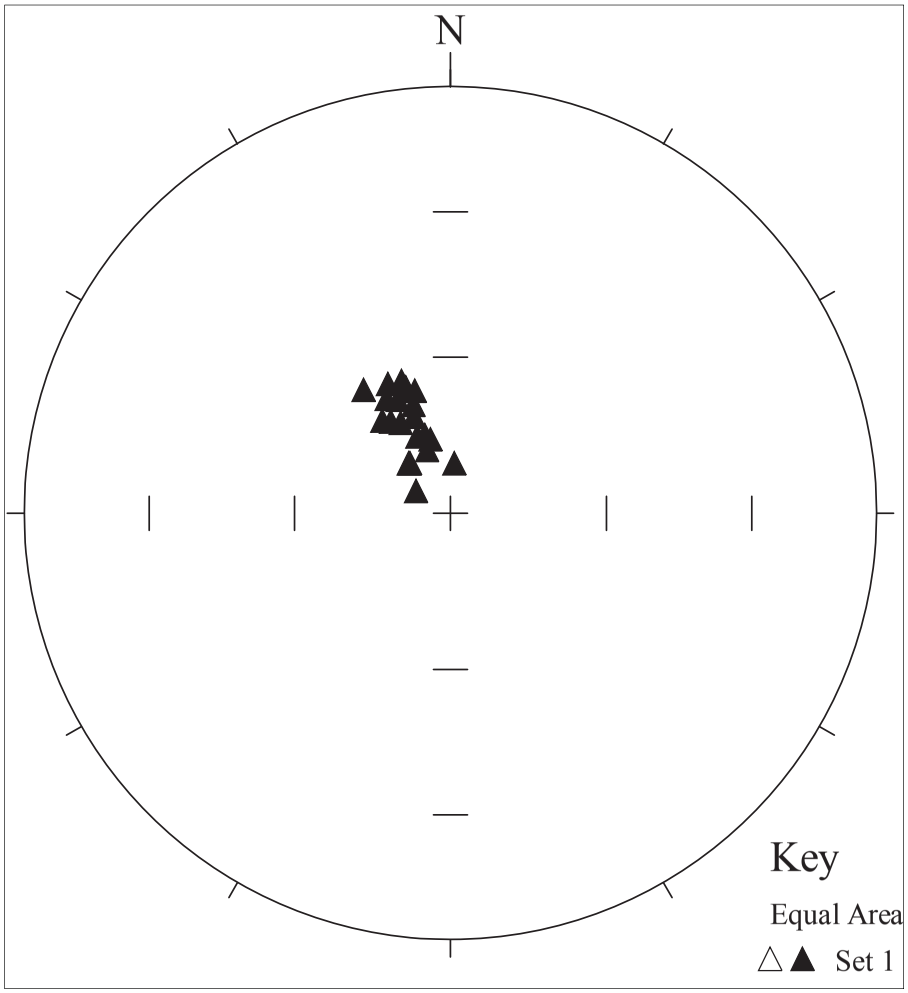

Figure 13. A stereographic projection of the NRM values for the 20 samples from AM235 (context 0229)

6. Significance of the data and potential for analysis

6.1 Realisation of the Original Research Aims

The original research aims (ORA) for the excavation phase of the project were defined as a result of the evaluation works and are as follows:

ORA 1: The immediate aim of the project is to preserve by record all archaeological deposits upon the site, prior to its development.
Realisation: The two kilns were fully excavated and recorded as per the Project Design. Any associated quarry and industrial features associated with the kiln were also mapped and sample excavated in order to characterise and where possible to date them. The pre-medieval ditch systems were also mapped as fully as possible given the levels of disturbance across the site relating to quarrying and they were characterised through sample excavation.

ORA 2: The project will produce a permanent record of the archaeological deposits suitable for further research, the archive of which will be deposited with the Suffolk HER.
Realisation: Site records and finds data have been digitised, whilst the original records and finds have been prepared for archiving within the Suffolk HER.

ORA 3: The work will include provision of proposals regarding the need for further analysis, dissemination and archive deposition.
Realisation: Further research aims, as well as more general recommendations on the requirements for further analysis of site records, finds and samples are included in this report. Dissemination will be via publication within a suitable journal. This has not been decided upon at this point, but given the nature of the archaeology it would seem that a journal focussed on industrial archaeology would be fitting. It may also be possible to combine this with the 16th century kiln uncovered in 2013 at Clare in Suffolk (Brooks, 2015).

ORA 4: What further evidence is there for the presence of post-medieval activity? Is this solely represented by kilns, quarrying and waste bricks or are there other associated structures? Will there be other archaeological activity from this period such as settlement deposits or field systems?

Realisation: Excluding the remains associated with quarrying and the kilns, there was no other evidence on site for post-medieval activity in the close vicinity, excluding low levels of animal bone and clay tobacco pipe probably deposited by the kiln operators and/or as a result of other human or natural processes. This suggests that the area was targeted for its suitable geology, rather than because it was a convenient position for the local population. Although this seems somewhat obvious, the transportation of finished bricks and tiles added considerably to the overall cost of production and as such kilns were typically positioned as close to roads, or the site where they were to be used as possible.

ORA 5: Although both kilns are of the Suffolk type, are the kilns identical and/or contemporary?
Realisation: Differences in the sizes of the structures and in the initial dating of the bricks from them suggested that they were not identical. This has been confirmed through full excavation, indicating that the earliest kiln is likely to be 16th century and the latter 18th century. Their structures are largely similar, although the later example is both larger and more advanced. Full archaeomagnetic analysis will hopefully provide clearer dating for the last firing of each kiln.

ORA 6: The evaluation and works on the SAP 012 reservoir to the south uncovered varying levels of evidence for later prehistoric and Roman activity. Are there any further indications of these periods on site?
Realisation: No clear evidence for prehistoric archaeology has been uncovered on the site, except for the presence of a small ring ditch (which could equally be a later feature) and fifteen struck flints, of probable Bronze Age or Iron Age date. Roman activity on the site consists entirely of a series of ditch field systems. Despite showing signs of having been used and modified over a somewhat extended period of time, limited levels of finds were recovered from their excavation, suggesting that any settlement associated with the ditches was located at some distance from the site itself.

ORA 7: A seemingly wide variety of quarry pit types were recorded during the evaluation. What different types of quarrying activities do these represent and are they all contemporary? Further small isolated post-medieval pits associated with the brick kiln phase were recorded in the area of Trenches 16 and 21. What do these represent?

Realisation: Although it has not been possible to definitively differentiate between which quarry pits are associated with which kiln, the assumption is that the greater proportion is associated with the larger, later kiln that would have been able to produce more bricks and tiles, and when demand was greater for the products due to more widespread usage. The levels of quarrying around the large kiln are also more intensive. It has been possible to a certain degree to characterise the nature of the pits, in terms of how they were dug seasonally and or/focussing on certain geological seams.

ORA 8: The site has good potential to investigate research aims relating to late medieval and post-medieval industry as highlighted in Medlycott (2011). Given the results of the strip, map and excavation, as well as the evaluation, which of these topics can be more fully explored?

Realisation: The site has revealed a well preserved example of a brick and tile industry that appears to have flourished both in the 16th century and the late 17th/18th century, a topic which on its own is highlighted by Medlycott. The archive has the potential to investigate not only the technology of the industry, but also the impact on local architectural and landscape characterisation and also to develop on themes such as the economy, as well as to explore issues such as utilisation of local labourers or possibly itinerant artisans.

6.2 General discussion of the site and its potential

The various elements of the Euston archive will now be discussed to assess the results of the work carried out in the process of creating this report and to explore their potential for further analysis and integration into a final report. A further statement (6.2.4) attempts to address the potential of the archive considered as a whole.

6.2.1 Potential of the stratigraphic archive

The stratigraphic archive has largely been analysed as fully as is possible, with all of the recorded features having been assigned to phases. The exceptions to this are the kilns, which may be dated more closely, subsequent to the integration of the archaeomagnetic dates. This will lead to a fuller understanding of the site sequence and its significance at a local, regional and national scale. The assessment report has served to provide an illustration of the main topics that may require further work.

The topic that will benefit from further analysis and reporting will be that of the later medieval and post-medieval brick and tile kiln industry recorded on the site. On a local level this will help to contextualise the estate, as well as potentially allowing for comparison with other estates at the time. However, the archive will be more informative in exploring the brick and tile industry. Despite their widespread use within much of East Anglia and beyond, few Suffolk-type kilns have been excavated and recorded to modern standards (for examples see page 15). Full analysis of the Euston kilns will allow for a better understanding of the beginnings of the itinerant brick and tile making trade, both locally and on a regional scale. This will also allow for comparison with other Suffolk kilns.

6.2.2 Potential of the finds data

Introduction

The artefactual material recovered from the excavation phase was sparse and consisted mainly of finds associated with the kiln itself, and Roman pottery that was present in the fill of a ditch.

Pottery

A small quantity of Roman coarseware pottery collected from a ditch in the southern part of the site combines with a similar amount recovered from the same area during the evaluation to suggest more evidence of Roman settlement in this vicinity from the 2nd to 4th centuries.

The pottery has been fully recorded within this and the evaluation report (Brooks, 2012) and will require no further work except that a summary should be included in the archive report.

CBM

Further work will be required to complete the CBM analysis once final stratigraphic and archaeomagnetic dating information is available. The main potential of this material is to provide information on the range of fabrics and forms being produced by these kilns, and to aid in site taphonomy and dating.

This report provides an outline of the CBM types present in the assemblage, but the material has not yet been placed in context, either within the site itself or within the broader historic environment of the region and in comparison with other brick kiln sites in the region (e.g. Anderson and Tester 2003; Anderson 2012; Drury 1975). More detailed description of the material recovered from the kiln, and a discussion of the types of CBM being produced, will be required for the archive or publication report.

Comparison of the assemblage with other large groups of CBM from the region will be possible.

Three-dimensional spatial distribution of CBM fabrics and forms in features and structures will be important in studying the construction and use of the kiln. A report suitable for archive and/or publication will be prepared.

Clay tobacco pipe

Two undiagnostic pipe stem fragments were recovered from the excavation, both from kiln deposits. No further work is required on them.

Struck flint

A small amount of struck flint cores and flakes identified as later prehistoric (Bronze Age or Iron Age) was recovered from three features, a ring-ditch a linear ditch and a 'spread', all of which had no other associated datable finds. The sharpness of many of the flakes suggests that knapping may have been carried out close by.

All of the struck flint has been described and quantified and will require no further work. A summary should be included in the archive report.

Burnt flint

Samples of heat-affected flint were retained for weighing from several of the fills of the kiln. Apart from discussing this material in view of firing the kiln no further work is necessary and the flint can be discarded.

Iron nails

The four nails in kiln deposit 0230 have been catalogued and no further work is required.

6.2.3 Potential of the environmental and archaeomagnetic data

Animal bone

Although the deer remains are potentially interesting, there is no further information that can be obtained from further study of this assemblage and no further work is recommended.

Charred plant macrofossils and other remains

In summary, although these assemblages are somewhat limited in composition, they do provide valuable data about the fuels used within at least the earlier brick kiln at Euston. Bracken ('furze') would appear to have been the fuel of choice, almost certainly because it was both locally abundant and it maintained an even, high temperature throughout combustion. The latter would have been essential for a successful firing, and furze kilns are certainly known from elsewhere in Britain from the medieval period

onwards (Drury, 1981 and Smith, unpublished archive report). In addition to the furze, it would appear that cereal chaff, straw and dried herbage (along with its resident molluscs) may have been used as tinder or kindling, with charcoal or wood probably being used for the latter stages of firing.

Although these assemblages are of considerable interest, it is suggested that quantification would probably add little to the data already contained within this assessment. Therefore, no further work is recommended at this stage, although a summary of the assessment should be included within any publication of data from the site.

Archaeomagnetic samples

The stereographic plots show the distribution of the directions of magnetisation (Figs. 12 and 13). The scatter on the data is small and well within the range generally considered to be appropriate for dating. Additionally, the samples from each brick kiln that were assessed for the stability of the remanence showed that the NRM is very stable and that better precision may be achieved after removal of a small viscous component obtained since last firing of the brick kiln. This pilot study concludes that these features retain a stable record of the past geomagnetic field, are suitable for archaeomagnetic dating and are likely to produce a meaningful date if fully analysed.

It is recommended that full analysis of the samples from each kiln is undertaken for integration into the analysis report in order to achieve closer dating of the last firing of each structure.

6.2.4 General discussion

Introduction

The presence of two well preserved 16th and 18th century+ kilns is unusual, almost certainly demonstrating an area that on two occasions was specifically targeted for its natural clay geology; a choice echoed for a third time by the current developers when siting the reservoir. Associated quarrying was also recorded across the site, along with wash pits and settling ponds for purifying the clay (although no features such as drying sheds were identified). The site has the potential to address research objectives relating

to the development and impact of the later medieval and post-medieval brick and tile industry on a local, regional and possibly national level. A low level of earlier archaeology was recorded across the site.

Prehistoric and Roman

Limited pre-medieval archaeological deposits have been recorded across the site, probably indicative of a low level of early occupation in the area, but also as a result of truncation by later quarrying. The earlier remains consist of a series of prehistoric worked flints of probable Bronze Age or Iron Age date, as well as a series of Roman paddocks and fields, dated by pottery. There is also the small ring ditch that is thought to be prehistoric but may be Roman. The prehistoric finds clearly demonstrate low levels of occupation, whilst the presence of a possible small ring ditch/roundhouse could be relatively significant evidence for activity on the site/in the general area. However, the ditch produced little in the way of finds and in itself only survived partially, making interpretation difficult. The Roman features and finds tend to indicate that the field systems were modified at various times and while not closely datable as a whole, some of the pottery from the evaluation stage is of mid 2nd-4th century date.

The presence of the later prehistoric and Roman occupation on the site is of interest, particularly as it indicates the existence of such settlement in an area where there has been little in the way of other archaeological work to date. In particular, the Roman field system clearly demonstrates that there is a settlement in the vicinity, although the low density of finds would tend to imply that this is perhaps at some distance from the excavation. A number of Roman sites are located in the general area (Table 1), with Peddars Way of particular interest, *c.*1.2km to the east. The prehistoric and Roman stratigraphic and artefactual remains have no clear potential for further analysis, having been fully addressed within this report. However, their presence is important in informing any further work taking place in the vicinity.

Later medieval and post-medieval

The 16th century and 17th/18th century Suffolk-type kilns and the brick and tile industry that they represented clearly dominated the development area and form a significant topic for further research. In places the clay quarrying covered as much as an estimated 90% of the surface area and spread beyond the limits of the excavation, demonstrating

the intensity with which the site was worked throughout the lifespans of both kilns. The associated features illustrate that in all likelihood all of the industrial processes were carried out on site, from the quarrying of the clay, to its purification, moulding of the unfired bricks and tiles, their drying and subsequent firing. However it is possible that further material such as sand may have been brought in from off site to help temper the clay mix.

The earlier and smaller kiln was more typical of Suffolk kilns, when compared to the examples at Clare (Brooks, 2015) and Ellough (Boulter, 1997). It was well preserved, despite showing signs of repair and also truncation by a later feature. In equally good condition, despite evidence of even greater repairs to its larger and more robust design, the 17th/18th century kiln displayed a series of modifications to the design used for the earlier structure. These represent clear developments in the technology, presumably not only to allow for more bricks and tiles to be fired, but also to maintain a more consistent and higher quality product through ensuring greater control over the process. Wider comparison with other kiln sites would be of interest in allowing a fuller appraisal of the Euston examples and of the technology as a whole.

The kilns also serve to represent levels of employment and the economic success of the estate and it may be possible to tie these works in closely with known building works recorded in documentary sources and obviously in the fabric of the buildings themselves. To add to this, the kilns are evidence of skilled artisans being present on site, almost certainly instructing general labourers, although it is not clear yet how regularly or for how long either would have been employed by the estate. Existing documentary studies of the area include the Desk-Based Assessment for the Sapiston reservoir, which looked at HER records, aerial photographs, listed buildings and various documentary sources, though this was focused on a site approximately 1km south of Wash Pits field (Rolfe, 2006). This picked up on two fields called ‘Brickhills’ and ‘Kiln Yards’. A further reappraisal of the documentary records held by the council and the Euston archive specifically in reference to this site would be worthwhile and might allow for a greater clarification of when the kilns were set up and why, as well as who operated them.

The longevity of the industry on this site was sufficient for it to earn itself the moniker of Wash Pits field, reflecting its function, whilst the presence of another reputed kiln in

nearby woodland, alongside several other potential wash pits/settling pools to the east of the site (section 2.2) is also interesting. These factors go to suggest that this was an extensive local industry, not solely confined to Euston Estate. However, the estate was likely to have been one of the local instigators of such pioneering industry in the first place, creating an early demand for such products for use in high status buildings.

It is clear that the kilns would have been a focus for some of the most intensive industry on the estate and while it is not clear exactly how widespread it would have been, there must have been some relatively extensive management of the local landscape in terms not only of the quarrying as recorded on the site, but also for the gathering of fuel, in the form of bracken and wood.

7. Analysis and reporting: aims and objectives

7.1 Revised research aims

Given the results of the strip, map and excavation, the main focus of research for the next stage of works will be on the late medieval to post-medieval brick and tile industry. The technology of production, supply and 'the changing role of brick, from a high status building material to a vernacular construction method … merits further study' as highlighted by Medlycott (2011). A number of revised research aims have been drawn up to cover this, which will address issues highlighted directly to the site and to Euston Estate, while a series of secondary research aims are designed to put the findings within the wider context.

Although Roman and prehistoric archaeology was also uncovered on the site, it is felt that this material has been adequately assessed within this report and will therefore require no further work.

7.1.1 Primary revised research aims

RRA 1: How do the kilns compare to one another and other known examples? What does this suggest about these examples in terms of their function and longevity?

RRA2: What can be said about the nature of the later medieval and post-medieval brick and tile industry from the findings of the site and documentary research? Who were the workforce? When were they likely to have carried out the work? What else can be said to characterise this type of work?

RRA 3: A study of local buildings (namely on the estate and in the surrounding villages) alongside documentary research may reveal where the bricks and tiles from the kilns were being used. How does this reflect change in the use of bricks over time and in relation to the types of buildings they were used in? What ramifications did this have on local architecture and does it reflect local, regional and national trends?

RRA 4: It is assumed that the larger later kiln indicates an upturn in the production of bricks and tiles in the 17th/18th century on the estate. With this in mind, what does this indicate about the estate?

RRA 5: The work can highlight issues regarding historic landscape characterisation in the later medieval and post-medieval period. How did the works themselves, namely the practice of widespread quarrying and clay processing affect the local aesthetic? Could the work be viewed from the main house? How was the gathering of fuel, namely bracken furze and wood managed, and has this had any lasting effects on the area? How did the widespread introduction of brick and tile architecture to local buildings affect the area?

RRA 6: How do the archaeomagnetic dates from the kiln samples compare to the dates assigned to the bricks in this assessment report? Does this have any ramifications for the dating of local buildings? Might it have an effect on recognised brick dating techniques for the local area or more widely?

RRA 7: How does the brick and tile industry fit within the estate economy? Were the products purely used for estate related buildings or also sold locally? Can they be identified in local buildings?

RRA 8: Despite a number of variables, would it be possible to estimate the levels of clay that could have been extracted from the site and also productions levels of brick and tile production for the kilns? From this could it be estimated how many buildings incorporated the materials?

7.1.2 Secondary/wider revised research aims

RRA 9: Rural industry in the post-medieval period is a topic highlighted for further research, specifically in reference to brick-making (Medlycott, 2011). As such the two kilns, within the setting of Euston estate will be well placed to highlight issues of industrial development and diversity. However, it will also be of interest to compare them to the late medieval brick and tile kilns excavated at Clare (Brooks, 2015), and Ellough (Boulter, 1997) and any other similar and well excavated examples. Will such comparisons help to highlight issues regarding trade, distribution, architecture/ usage of the products, or dating?

RRA 10: How visible is the growth of the brick and tile industry in the later medieval/ post-medieval period? The prevalence of houses incorporating such materials at this time is obvious in many areas, but is the process clearly represented and/or recognised in the archaeological record? Similarly, what sort of evidence is there within the documentary record?

RRA 11: In reference to the Euston, Clare, Ellough and other suitable kilns, is it possible to start to track the evolution of the Suffolk kiln? With enough examples, is it conceivable that a typology could be constructed, or is this unlikely given the somewhat *ad hoc* manner in which many may have been built?

7.2 Analytical report synopsis

It is proposed that following the post-excavation analysis of the stratigraphic, finds and environmental archives the results of the fieldwork should be described in greater detail in an analytical report, to be made available as a 'grey literature' report via the OASIS on-line archaeological database.

The report would include a phase- and period-based account of the site sequence, integrated with revised finds evidence and the fully analysed archaeomagnetic samples, concentrating on the evidence for the late medieval to post-medieval occupation of the site, with a summary of the later prehistoric and Roman archaeology. The Revised Research Aims stated (7.1) would be used to place the evidence in its broader context.

The text would be accompanied by relevant maps, representative photographs and section drawings.

Because of the significance of the results of the analysis, SCCAS Conservation Team will require a further stage of reporting. Typically this would take the form of a summary in the county journal (Proceedings of the Suffolk Institute of Archaeology and History). However, due to the specialised nature of the archaeology recorded on this site and its potential for comparison with other kilns, it is likely that a journal specialising in industrial and/or late medieval/post-medieval archaeology would be more fitting. This is to be agreed with SCCAS Conservation Team.

8. Analysis and reporting: task sequence

The following tasks are proposed in order to complete the stratigraphic, finds and environmental analysis, leading to the production of a full analytical report. Table 9 details the confirmed staff for the next stage of analysis, while Table 10 summarises the task list.

8.1 Stratigraphic method statement

Task 1: Rewrite descriptions of the feature groups and phases if the archaeomagnetic analysis, in conjunction with the evaluation and excavation artefact assemblage indicates a significant change in the site sequence.

Task 2: Carry out research into the late medieval and post-medieval brick and tile industry, focussing on the areas highlighted in Section 7.1.

8.2 Finds, environmental and archaeomagnetic method statement

Task 3: Categories requiring no further work – the pottery, clay tobacco pipe, struck and burnt flint, iron nails, animal bone and environmental sample remains will not benefit from further work, although the results presented herein will be included in any further report.

Task 4: CBM report – Further work will be required to integrate the CBM fully, once the stratigraphic and archaeomagnetic dating information is available. The material will need to be placed in context within the site itself and within the broader historic environment of the region and in comparison with other brick kiln sites in the region (e.g. Anderson and Tester 2003; Anderson 2012; Drury 1975). More detailed descriptions of the material recovered from the kiln, and a discussion of the types of CBM being produced, will be required for the archive or publication report. Comparison of the assemblage with other large groups of CBM from the region will be possible. Three-dimensional spatial distribution of CBM fabrics and forms in features and structures will be important in studying the construction and use of the kiln. A report suitable for archive and/or publication will be prepared.

Task 5: Archaeomagnetic analysis – to more closely date the two kilns, full analysis of the samples from each kiln will be undertaken and presented in a full report.

Task 6: Finds, environmental and archaeomagnetic report – completion of the full report, including any revisions as a result of further works.

8.3 Graphics method statement

Task 7: Graphics revisions/inclusions – it is not thought that any further figures will be required for the analysis report. Plans of the individual Roman ditch sections have not been shown herein, but they would add little to any further interpretation.

Task 8: Site photographs – a number of digital photographs of the site have been included in this report, particularly of the complex kiln structures. Further photographs will be entered into the SCCAS archive, but will not be required for the analysis report. Photographs of local buildings (in the region of 20-30) illustrating the usage of bricks and tiles from the kilns will be incorporated into the final report.

8.4 Documentary and local environment research method statement

Task 9: Research into specific issues as detailed previously relating to the kilns, their origins/dating, the use of the bricks and tiles and the organisation of the brick-making workforce.

Task 10: Survey of estate and local buildings to trace usage of bricks within the surrounding architecture.

Task 11: Integration of the results into the overall report.

8.5 Analytical report text method statement

Task 12: Production of draft report, followed by the final report/archive and journal article.

Task 13: Internal copy editing of report.

Task 14: Specialist edits and corrections.

8.6 Project management method statement

Task 15: General project management by Jo Caruth.

Task 16: Send report to external readers (to be agreed with SCCAS Conservation Team) for editing.

Task 17: Subsequent corrections by Rob Brooks

Task 18: Proof reading and indexing by Richenda Goffin

Task 19: Publication within a suitable journal to be discussed and agreed with SCCAS Conservation Team. This may involve integration of the results with results of the brick kiln excavation at Clare (Brooks, 2015) as well as more generally with the other kilns mentioned in this report. A journal such as the Post-Medieval Archaeology or Industrial Archaeology Review may be suitable.

Task 20: Archiving within the SCCAS stores to the standards specified by the Conservation Team (SCCAS, 2014).

8.7 Programming

The analysis stage of the work will start within 2015 and a draft report will be produced within six months, with the final report and journal article to be completed within one year. The schedule has not been fully specified as it is dependent on securing further funding for the analysis works and the completion of the specialist tasks as summarised in Table 10. It will also be necessary to confirm and secure a space within a suitable journal, which may also dictate the timing of the article for publication.

Name	Organisation	Initials	Role
Jo Caruth	SACIC	JC	Project Manager
Rob Brooks	SACIC	RB	Author/stratigraphic analysis
Richenda Goffin	SACIC	RG	Finds Manager
Ruth Beveridge	SACIC	RBe	Finds Supervisor
Beata Wieczorek-Oleksy	SACIC	BWO	Graphics Assistant

Sue Anderson	Freelance	SA	Finds/CBM specialist
Catherine Batt	University of Bradford	CB	Archaeomagnetic specialist
Anthony M. Breen	Freelance	AB	Documentary/historical research
Further staff are to be confirmed, as shown in Table 10.			

Table 9. Details of staff confirmed for further analysis work

No.	Description of task	Staff
Stratigraphic method statement		
1	Revise feature descriptions and phasing as necessary	RB
2	Carry out research into the later medieval and post-medieval brick and tile industry	RB
Finds, environmental and archaeomagnetic method statement		
3	Categories requiring no extra work – summaries of the assessment will be included in the analysis report	RG/RBe
4	CBM – a full analysis report of the CBM will be created, placing the material within its local and regional context as well as in relation to the site.	SA
5	Archaeomagnetic analysis – full processing and reporting on the samples will be carried out.	CB
6	Overall discussion and completion of finds, environmental and archaeomagnetic report	RG
Graphics method statement		
7	Graphics revisions/inclusions – addition of further figures or edits to report figures as necessary.	BWO
8	Photographs – further photographs to be included and edited as necessary.	RB
Documentary and local environment research method statement		
9	Documentary research – research into the site, the origins of the brick kilns, etc.	AB
10	Building survey – survey of building in local area.	*TBC*
11	Integration of results into overall report.	RB
Publication text		
12	Production of draft analytical report	RB
13	Internal copy editing of report	RG
14	Specialist edits and corrections	*TBC*
Project management		
15	General project management	JC
16	External reader for editing report	*TBC*
17	Subsequent corrections	RB
18	Proof reading and indexing	RG
19	Publication within a suitable journal	*TBC*
20	Archiving	RB

Table 10. Summary of further tasks and staff

9. Acknowledgements

The fieldwork and post-excavation assessment was commissioned and funded by Euston Estate. Dr Abby Antrobus (SCCAS Conservation Team) approved the Project Design and monitored the fieldwork. David Gill (SCCAS Senior Project Officer) and Jo Caruth (SACIC) managed the project and also provided advice during the production of the report.

Special thanks go to Peter Minter of the Bulmer Brick and Tile Company Ltd. for giving his invaluable background information and advice when visiting the site.

The fieldwork was carried out by John Sims, Andy Beverton, Rob Brooks and Tim Carter (SCCAS Field Team/SACIC), Tim Schofield (Britannia Archaeology Ltd) and John Percival (freelance) and directed by Rob Brooks, with assistance from Andy Beverton and John Sims.

Post-excavation management was provided by Richenda Goffin. Finds processing was undertaken by Jonathan van Jennians. The specialist finds report was compiled by Richenda Goffin, with contributions by Cathy Tester (pottery and struck flint), Sue Anderson (CBM), Julie Curl (faunal remains) and Val Fryer (plant macrofossils and other remains). The environmental samples were processed by Anna West. The archaeomagnetic samples were taken by Catherine Drew and Mark Birch of Museum of London Archaeology and assessed by Samuel E. Harris and Catherine M. Batt of the University of Bradford.

The report illustrations were created by Beata Wieczorek-Oleksy and Crane Begg and the report was edited by Richenda Goffin.

10. Archive deposition

The paper, digital, finds and environmental archive is to be deposited after completion of the analysis works with SCCAS, Bury St Edmunds.

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Appendix 1. Abridged project design

Wash Pits Field, Euston Estate, Euston

Project Design and Risk Assessment for an Archaeological Strip and Map/Excavation and Documentary Research

Client: Euston Estate

Suffolk County Council Archaeological Service Field Team
Authors: Rob Brooks and David Gill
May, 2013

Contents

Project details

Planning Application No:	**SE/12/1614**
Curatorial Officer:	**Dr Abby Antrobus**
Grid Reference:	**TL 922 771**
Area:	**4.4ha (possibly more?)**
HER Event No/Site Code:	**EUN 035**
Oasis Reference:	**TBC**
Project Start date:	**TBC**
Project Duration:	**10-12 days (estimated) for the strip and map** **10 days (estimated) for the kiln recording**
Client/Funding Body:	**Euston Estate**
SCCAS/FT Project Manager:	**John Craven**
SCCAS/FT Project Officer:	**Rob Brooks**
SCCAS/FT Job Code:	**EUST/WPF/**

Glossary of abbreviations

EAA	East Anglian Archaeology
HER	Historic Environment Record
IFA	Institute for Archaeologists
NPPF	National Planning Policy Framework
SCCAS/FT	Suffolk Archaeological Service Field Team
SCCAS/CT	Suffolk Archaeological Service Curatorial Team
LPA	Local Planning Authority
ICON	The Institute of Conservation

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SCCAS/FT Finds Dept	Richenda Goffin	01284 741233
SCCAS/FT Graphics Dept	Crane Begg	01284 741251
SCCAS/FT H&S	Stuart Boulter	01473 583290
SCCAS/FT EMS	Jezz Meredith	01473 583288
SCCAS/FT Outreach Officer	Duncan Allan	01473 583288

Emergency services		
Local Police	6 High Street, Brandon, IP27 0AQ	101
Local GP	School Lane Thetford Norfolk IP24 2AG	01842 753115
Location of nearest A&E	Hardwick Lane, Hardwick Lane, Bury St. Edmunds, Suffolk, IP33 2QZ	01284 713000
Environment Agency	Customer Services Line (8am to 6pm) 24 hour Emergency Hotline	03708 506 506 0800 807060
Essex and Suffolk Water	24 hour Emergency Hotline	0845 782 0999
National Gas Emergency Service	Gas emergency hotline	0800 111 999
UK Power Networks	East England electricity emergency hotline	0800 783 8838
Anglian Water	24 hour Emergency Hotline	08457 145 145

Client contacts		
Client	Euston Estate	
Estate manager	Andrew Blenkiron	01842 766366 07770 976181
Site landowner/developer	Euston Estate	

Archaeological contacts		
Curator	Dr Abby Antrobus	01284 741231
EH Regional Science Advisor	Dr Helen Chappell	01223 582707

Sub-contractors		
Plant hire	Client	
Misc. Equipment hire	TBC	
Toilet/facilities hire	TBC	

Other		
SCC Press Office	Andrew St Ledger (Chief Press Officer)	01473 264398
SCC Fleet Maintenance		01359 270777
SCC Environment Strategy Manager	Emma Flint	01473 264810
SCC Health and Safety Advisor (ESE)	Mark Ranson	01473 261494
SCC Corporate H&S Manager	Dave Atkinson	01473 260513

1. Introduction

- An archaeological strip and map programme (with contingency for areas of excavation) and a survey of the kiln structures, are required to record archaeological deposits at the site of Wash Pits field, on Euston Estate, Euston, in Suffolk (Figs. 1 and 2). These works form a requirement of a condition on planning application SE/12/1614 in accordance with section 12 of the NPPF and in conjunction with the archaeological results uncovered by trial trenching in September 2012 (Brooks, 2012). An original documentary report was carried out with the earlier phase of works (as part of a desk-based assessment - Craven, 2012) and this will need to be extended in order to include the material currently held within the Euston Estate office archives.
- The proposed development, a farm reservoir, will result in the total destruction of the archaeological deposits and therefore a programme of archaeological recording is required to preserve by record all deposits on the site.
- The work required is detailed fully herein, and has been approved by the archaeological adviser to the local planning authority, Dr Abby Antrobus of SCCAS/CT. This document provides the basis for measurable standards and will be adhered to in full, unless otherwise agreed with SCCAS/CT.

Figures 1 and 2. Location maps of the site (red) REMOVED FROM THIS APPENDIX

2. The site

- The proposed development is for the conversion of the Wash Pits field into a reservoir covering an area of 6ha (although only 4.4ha of the area will be affected by groundworks).
- The site is currently grassland, having been partially wooded in the post-medieval period. The grassland continues to the south, whilst to the west is arable agricultural land. To the north and east of the site is woodland. The field does not appear to have been ploughed, presumably because its shallow topsoil and dense clay geology made it unsuitable for crops.

3. Project and archaeological background

- The planning condition for archaeological was originally placed as the site lies in an area that was formerly part of the post-medieval Euston Park and is located immediately east of the area still recorded in the Historic Environment Record (HER) as the registered park and garden associated with Euston Hall (HER code EUN 019).
- Two Suffolk-type kilns were found within the evaluation (undertaken by SCCAS/FT in 2012) and are rectangular, with parallel flues underground and often an open or vaulted roof (Brooks, 2012). These were smaller than the widespread Scotch kiln and were often used in East Anglia, where building stone was scarce (Palmer, Nevell and Sissons, 2012). However few of these structures appear to exist today or to have been archaeologically excavated or documented.
- The archaeological evaluation also identified numerous clay quarry pits and other contemporary pits and ditches. Notably no drying sheds were discovered, which would typically be expected with such an extensive clay manufacturing process. In the areas at the northern and southern ends of the site, where the clay geology gave way to sand, Roman and possibly prehistoric features were also discovered.
- The site is known as Wash Pits field, and one of the extant ponds on the site is recorded as ‘Wash Pit’ on the Lenny estate maps of 1828 and 1836 (HLM, 2011). The 1828 map also marks the area of woodland immediately to the east as ‘Brick Kiln Cover(?)’ and indicates the position of a brick kiln, which still reputedly exists. None of the early edition Ordnance Survey maps record the site as Wash Pits field, although the two ponds are clearly marked. Wash pits were a part of the brick-making industry.
- A geophysical survey was also carried out prior to the evaluation. This revealed a series of ‘discrete positive anomalies’, which included both linear features and circular or oval forms. Other large spreads of ‘magnetic disturbance’ covered a wide area of the site. These were thought to be areas of

modern activity, but were still often uncovered within the trenching and were found to be deposits relating to the brick making activities uncovered across the site.

- It is known that a settlement existed at Euston in the Anglo-Saxon period, and a manor was recorded in the Little Domesday book of 1086. A manor house has always been present in various forms since this time, and the present house was substantially remodelled in the 1660s. Substantial renovations were also carried out on the house in the mid 18th century. Some further works were carried out to modify the house and grounds from this point onwards (HLM, 2011).
- The site is flanked to the north and east by Fakenham Wood, which is registered as an area of ancient manorial woodland (EUN 022). Other known sites within one kilometre of the site include SAP 001 to the south-east, which is recorded as 'dark areas and burnt flints' within the HER, and SAP 012 730m to the south, where Late Neolithic/Early Bronze Age features and finds, as well as earlier to middle Iron Age occupation were recorded.
- Very little archaeological work has been carried out in close proximity to the site, although a desk-based assessment of the proposed development area lists it as having moderate to high potential for uncovering prehistoric, Roman and Anglo-Saxon activity (Craven, 2012).

4. Project Objectives

4.1 Overall objectives

- The immediate aim of the project is to 'preserve by record' all archaeological deposits upon the site, prior to its development.
- The project will also produce a permanent record of the archaeological deposits, the archive of which will be deposited with the Suffolk HER.
- The work will include provision of proposals and a timetable regarding the need for further analysis, dissemination and archive deposition.

4.2 Research aims

- The project will assess the potential of the site to address research aims defined in the Regional Research Framework for the Eastern Counties (Medlycott, 2011). The academic aims of the work centre on the study of the brick-making industry in the 17th and 18th centuries.
    - In terms of the post-medieval archaeology, the technology of production, supply and 'the changing role of brick, from a high status building material to a vernacular construction method … merits further study' (ibid.) and brick-making, as an emerging rural industry has been highlighted as being a target for study.
    - The work may also highlight issues regarding historic landscape characterisation in the post-medieval period, particularly regarding the changes, both visual and economic, associated with industries such as brick-making and the changing nature of country houses and their land.
    - The Roman and potential prehistoric features on the site may relate to the research topics such as the Iron Age-Roman transition, prehistoric settlement and landscapes and the Iron Age agrarian economy, as well as Roman rural settlements and landscapes.

5. Archaeological method statement

The project will involve the excavation and recording of all archaeological deposits present on the site through a strip and map strategy, with contingency for areas of excavation if intensive archaeological deposits are found, as well as a detailed survey of the kilns as detailed below. In addition to the kilns there is the potential for evidence of associated structures, such as drying sheds and pugmills also the examination of the wash pits will determine if these were man made (and the result of clay extraction and screening) or were just opportunistically employed natural features.

5.1 Management

- The project will be managed by SCCAS/FT Project Officer John Craven in accordance with the principles of *Management of Research in the Historic Environment* (MoRPHE, English Heritage 2006).
- SCCAS/CT will be given five days notice of the commencement of the fieldwork and arrangements made for SCCAS/CT visits to enable the works to be monitored effectively.

5.2 Project preparation

- An event number has been obtained from the Suffolk HER (EUN 035) and will be included on all project documentation.
- An OASIS online record will be initiated and key fields in details, location and creator forms completed prior to fieldwork.
- A pre-site inspection and Risk Assessment for the project has been completed (see Appendix 2).

5.3 Documentary research

- The existing documentary research carried out for the evaluation will need to be extended in order to address the material currently held at the Euston Estate offices/archives. These may provide further dating evidence for the kilns' use, as well as the extent of the use and distribution of the bricks produced. At present these sources have only been researched through secondary sources, whereas material such as the earliest 18th century estate maps may be of particular importance in understanding this site and to put it in its local context.

5.4 Fieldwork

Strip and map

- This phase of work is estimated to take 10-12 days with a project officer, 5 other staff and a metal detectorist.
- Fieldwork standards will be guided by 'Standards for Field Archaeology in the East of England', EAA Occasional Papers 14, and the IFA paper 'Standard and Guidance for archaeological field evaluation', revised 2008.
- The archaeological fieldwork will be carried out by members of SCCAS/FT led by Assistant Project Officer Rob Brooks. The fieldwork team will be drawn from a pool of suitable staff at SCCAS/FT and will include an experienced metal detectorist/excavator.
- The site will be stripped by the main contractor Miles Waterscapes excavated using a machine equipped with a back-acting arm and toothless ditching bucket under the supervision of an experienced archaeologist. This will involve the removal of topsoil and any underlying layers until the archaeological levels are reached. It is assumed that the stripping will be confined to the 4.5Ha of the reservoir itself and that the area beneath the bunds will not be stripped.
- The natural subsoil and/or archaeological surfaces will be cleaned by hand as necessary to identify archaeological deposits and artefacts and allow decisions to be made on the method of further investigation by the Project Officer.
- During the stripping all features will be planned using either a Total Station Theodolite or a GPS (with smaller features also marked out on site) in order to create an overall plan of the site. A limited example of the non-kiln related features will also be excavated at this point in order to obtain spot dates for this activity. ***With this information available, an on-site meeting will be carried out with SCCAS/CT in order to determine the excavation strategy for the rest of the site.*** This will involve the writing of a detailed excavation methodology, regarding extent and percentage of the features excavated. However, as a general principle:
    - The site will be fully stripped, during which the excavation of the archaeological deposits will be by hand, including stratified layers, unless it can be demonstrated to the satisfaction of SCCAS/FT that no information will be lost by using a machine. All features will be excavated by hand unless otherwise agreed with SCCAS/CT, excluding the kilns and certain other features, which will require some degree of machine excavation (described

below). Typically 50% of discrete features such as pits will be sampled by hand excavation, whilst linear features will be sampled to obtain their date and function. If any intensive or unexpected deposits are revealed during the strip and map it may be necessary to revise this strategy on the advice of SCCAS/CT to include a more comprehensive excavation strategy for these areas.
    - In the case of certain features and structures associated with the brick-making industry such as drying sheds, they may be adequately recorded by plans, photographs and limited excavation. In other instances, and with the agreement with SCCAS/CT it may be possible to machine sample features such as quarry pits.
    - The 'wash pit' will be drained either by pump or the excavation of a sump and a machine excavated slot will be dug into the 'wash pit' within the south-west corner of the site to record its profile in order to establish that the feature is man made. Environmental specialists and soil micromorphologists will be consulted over sampling strategy.
    - Any fabricated surfaces (floors, yards, etc) will be fully exposed and cleaned.
    - Metal detector searches of the site will take place during the fieldwork by an experienced SCCAS/FT metal-detectorist.
- Initially it is proposed that two experienced archaeologists will watch the stripping (carried out by two machines), whilst another two members of staff (Project Officer and surveyor) plan the features uncovered during the stripping. A further two experienced archaeologists will also be required to excavate some features for spot dating at this stage (as set out above). Following the stripping and the arrangement of an excavation strategy (as set out above) staff will be deployed to excavate features and record structure, with additional excavators as required. A machine and operator will also be required at this stage for the excavation of certain features, including the kilns, wash pit and quarry pits.
- It is proposed that the full site be stripped under archaeological supervision including areas of blank trenching identified in the evaluation, namely the centre and western edge of the site. This is because these areas have relatively high potential for being the locations of drying sheds or pugmills in so far as the western area is close to the wash pit and the other area is located centrally to the kilns.

Kiln surveys

- This phase of work is estimated to take 10 days for a project officer and 5 other staff, as well as a mechanical excavator.
- There is a presumption that the two known kilns will be identical structures and this will determine the excavation strategy.
- Brick specialists will be consulted over the sampling strategy and brick sizes will be recorded and samples will be taken from all kilns.
- Initially both of the known kilns (as well as any others uncovered during the site stripping) will be partially exposed by machine. Following this the structures will be hand cleaned in order to reveal their structures and dimensions. At this point it should become clear whether the kilns are of a similar and contemporary construction style and therefore (with the agreement of SCCAS/CT) whether they both require full or partial surveys.
- If it is established that the kilns are of the same construction style, then it may be viable to only fully excavate one of the kilns, where possible using a combination of machine and hand excavation to reveal the overall structures, both internally and externally. It is unlikely that it will be necessary to entirely excavate both kilns because of their probable similarities, and in the case of kiln 0081 its internal fire chamber arches are thought to be intact, which would limit access to the structure. Hand cleaning of the structures will take place in order to draw plans and elevations where necessary and they will be comprehensively photographed. Attention will be taken to record any areas of repairs/phases of building that may determine longevity.
- The kiln rake-out pits/stoke hole entrances will also be uncovered in order to record how the kiln functioned, and if possible a machine section will be dug into this material in order to record it.
- Samples of residual ash will be taken for the kilns, although these may not be suitable for radiocarbon dating due to the age of the structures.
- Paul Linford of English Heritage has been consulted as to the suitability of the kilns for archaeomagnetic dating and has suggested that two days be allowed for the necessary sampling to take place, as well as supplying a list of suitable specialists to carry out the work.

Environmental sampling

- Palaeoenvironmental sampling will follow appropriate guidance (English Heritage 2011). All samples will be retained until an appropriate specialist has assessed their potential for palaeoenvironmental remains. Decisions will be made on the need for further analysis following these assessments, including on the potential for radiocarbon dating.
- Standard bulk soil sampling (of at least 40 litres each, or 100% of the context) will be taken from selected archaeological contexts, using a combination of judgement and systematic sampling, particularly from those which are both datable and interpretable. A limited number of samples will be taken from the post-medieval deposits, unless they are shown to relate to activity other than the brick-making industry.

Site recording

- An overall site plan showing feature positions, sections and levels will be made using an RTK GPS or Total Station Theodolite. Individual detailed site or feature plans etc will be recorded by hand at 1:10, 1:20 or 1:50 as appropriate to complexity. All excavated sections and elevations will be recorded at a scale of 1:10 or 1:20. All such drawings will be in pencil on A3 pro forma gridded permatrace sheets. All levels will refer to Ordnance Datum. Section and plan drawing registers will be maintained.
- The site, and all archaeological features and deposits will be recorded using standard pro forma SCCAS/FT registers and recording sheets and numbering systems. Record keeping will be consistent with the requirements of the Suffolk HER and will be compatible with its archive.
- A photographic record, consisting of high resolution digital images, will be made throughout the excavation. A number board displaying site code and, if appropriate, context number and a metric scale will be clearly visible in all photographs. A photographic register will be maintained. Aerial photography by pole mounted camera (operated by Higher View) may be required at the end of the excavation if any suitable features or structures are identified.
- All pre-modern finds will be kept and no discard policy will be considered until all the finds have been processed and assessed. Finds on site will be treated following appropriate guidelines (Watkinson & Neal, 2001) and a conservator will be available for on-site consultation as required.
- All finds will be brought back to the SCCAS/FT finds department at the end of each day for processing, quantifying, packing and, where necessary, preliminary conservation. Finds will be processed and receive an initial assessment during the fieldwork phase and this information will be fed back to site to inform the on-site excavation methodology.
- If human remains are encountered guidelines from the Ministry of Justice will be followed. Human remains will be treated at all stages with care and respect, and will be dealt with in accordance with the law and the provisions of Section 25 of the Burial Act 1857. The excavation will first attempt to establish the location, extent, depth and date of burials whilst leaving remains *in situ*. If human remains are to be lifted, for instance if the proposed development will unavoidably cause disturbance or damage, then a Ministry of Justice license for their removal will be obtained in advance. In such cases appropriate guidance (McKinley & Roberts 1993, Brickley & McKinley 2004) will be followed and, on completion of full recording and analysis, the remains, where appropriate, will be reburied or kept as part of the project archive.
- In the event of unexpected or significant deposits being encountered on site, the client and SCCAS/CT will be informed. Such circumstances may necessitate changes to the Brief and hence excavation methodology, in which case a new archaeological quotation will have to be agreed with the client, to allow for the recording of said unexpected deposits. If the excavation is aborted, i.e. because unexpected deposits have made the development unviable or led to other mitigation measures such as project redesign, then all exposed archaeological features will be recorded as usual prior to completion of fieldwork and a PXA report produced.
- Fieldwork will not end without the prior approval of SCCAS/CT. On completion the site will be handed over to Euston Estate, to begin development.

5.5 Post-excavation

Introduction

A post-excavation timetable will be presented to SCCAS/CT within 4 weeks of the end of the fieldwork. Following this a written proposal will be prepared as to whether an assessment or a final report is required.

Post-excavation method statement

- The post-excavation finds work will be managed by the SCCAS/FT Finds Team Manager, Richenda Goffin, with the overall post-excavation managed by John Craven. Specialist finds staff, whether internal SCCAS/FT personnel or external specialists, are experienced in local and regional types and periods for their field.
- All finds will be processed and marked (HER site code and context number) following ICON guidelines and the requirements of the Suffolk HER. For the duration of the project all finds will be stored according to their material requirements in the SCCAS Archaeological Stores at Bury St. Edmunds or Ipswich. Metal finds will be stored in accordance with ICON) guidelines, *initially recorded and assessed for significance* before dispatch to a conservation laboratory within 4 weeks of the end of the excavation. All pre-modern silver, copper alloy and ferrous metal artefacts and coins will be x-rayed if necessary for identification. Sensitive finds will be conserved if necessary and deposited in bags/boxes suitable for long term storage to ICON standards. All coins will be identified to a standard acceptable to normal numismatic research.
- All on-site derived site data will be entered onto a digital (Microsoft Access) SCCAS/FT database compatible with the Suffolk HER.
- Bulk finds will be fully quantified and the subsequent data will be added to the digital site database. Finds quantification will fully cover weights and numbers of finds by context and will include a clear statement for specialists on the degree of apparent residuality observed.
- Analytical reports for all categories of collected bulk finds will be prepared in-house or commissioned as necessary and will meet appropriate regional or national standards. Specialist reports will include sufficient detail and tabulation by context of data to allow for full analysis.
- A selection of bulk soil samples from archaeological features will be processed by wet sieving and flotation in-house in order to recover any environmental material which will be analysed by external specialists.
- All hand drawn site plans and sections will be scanned.
- All raw data from GPS or TST surveys will be uploaded to the project folder, suitably labelled and kept as part of the project archive.
- Selected plan drawings will then be digitised as appropriate for combination with the results of digital site survey to produce a full site plan, compatible with MapInfo GIS software.
- All hand-drawn sections will be digitised using autocad software.
- Digital photographs will be allocated and renumbered with a code from the Suffolk HER photographic index.

5.6 Report

- An assessment or final report will be produced, consistent with the principles of *Management of Research in the Historic Environment* (MoRPHE, English Heritage 2006) unless otherwise agreed with SCCAS/CT.
- The report will contain a description of the project background, location plans, excavation methodology, a period by period description of results, finds report and a full inventory of finds and contexts. The report will also include scale plans, sections drawings, illustrations and photographic plates as required.
- The report will present a clear and concise analysis of the archaeological value and significance of the results, and identify the site's research potential in the context of the Regional Research Framework for the East of England (Medlycott, 2011).
- The report will contain sufficient information to stand as an archive report.
- The report will include a summary in the established format for inclusion in the annual *'Archaeology in Suffolk'* section of the Proceedings of the Suffolk Institute of Archaeology and History.
- A copy of this Written Scheme of investigation will be included as an appendix in the report.
- The report will include a copy of the completed project OASIS form as an appendix.
- An unbound draft copy of the report will be submitted to SCCAS/CT for approval within 6 months of completion of fieldwork.

5.7 Publication

- The significance of the site and the requirement for publication will be discussed as part of the assessment but it is thought that the brick making aspect of the site will merit publication as an article with Post Med Arch Society or Industrial Archaeology Society newsletter or a similar journal.

5.8 Project archive

- On approval of the report a printed and bound copy will be lodged with the Suffolk HER. A digital .pdf file will also be supplied, together with a digital and fully georeferenced vector plan showing the application area and trench locations, compatible with MapInfo software.
- The online OASIS form for the project will be completed and a .pdf version of the report uploaded to the OASIS website for online publication by the Archaeological Data Service. A paper copy of the form will be included in the report.
- A second bound copy of the report will be included with the project archive (see below).
- Two printed and bound copies of the report will be supplied to the client, together with our final invoice for outstanding fees. A digital .pdf copy will be supplied on request.
- The project archive, consisting of the complete artefactual assemblage, and all paper and digital records, will be deposited in the SCCAS Archaeological Store at Bury St Edmunds within 6 months of completion of fieldwork. The project archive will be consistent with *Management of Research in the Historic Environment* (MoRPHE, English Heritage 2006) and ICON guidelines. The project archive will also meet the requirements of SCCAS (SCCAS/CT 2010).
- All physical site records and paperwork will be labelled and filed appropriately. Digital files will be stored in the relevant SCCAS archive parish folder on the SCC network site.
- The project costing includes a sum to meet SCCAS archive charges. A form transferring ownership of the archive to SCCAS will be completed and included in the project archive.
- If the client, on completion of the project, does not agree to deposit the archive with, and transfer to, SCCAS, they will be expected to either nominate another suitable depository approved by SCCAS/CT or provide as necessary for additional recording of the finds archive (such as photography and illustration) and analysis. A duplicate copy of the written archive in such circumstances would be deposited with the Suffolk HER.
- Exceptions from the deposition of the archive described above include:
  - Objects that qualify as Treasure, as detailed by the Treasure Act 1996. The client will be informed as soon as possible of any such objects are discovered/identified and the find will be reported to SCCAS/CT and the Suffolk Finds Liaison Officer and hence the Coroner within 14 days of discovery or identification. Treasure objects will immediately be moved to secure storage at SCCAS and appropriate security measures will be taken on site if required. Any material which is eventually declared as Treasure by a Coroners Inquest will, if not acquired by a museum, be returned to the client and/or landowner. Employees of SCCAS, or volunteers etc present on site, will not eligible for any share of a treasure reward.
  - Other items of monetary value in which the landowner or client has expressed an interest. In these circumstances individual arrangements as to the curation and ownership of specific items will be negotiated.
  - Human skeletal remains. The client/landowner by law will have no claim to ownership of human remains and any such will be stored by SCCAS, in accordance with a Ministry of Justice licence, until a decision is reached upon their long term future, i.e. reburial or permanent storage.

6. Project Staffing

6.1 Management

SCCAS/FT Manager	Rhodri Gardner
SCCAS/FT Project Manager	John Craven
SCCAS/FT Finds Dept	Richenda Goffin
SCCAS/FT Graphics Dept	Crane Begg

6.2 Fieldwork

The fieldwork team will be derived from the following pool of SCCAS/FT staff.

Name	Job Title	First Aid	Other skills/qualifications
Robert Brooks	Assistant Project Officer	Yes	CSCS card, surveyor
Andrew Beverton	Assistant Project Officer	Yes	CSCS card, surveyor
John Sims	Supervisor	Yes	CSCS card
Tim Carter	Excavator		

6.3 Post-excavation and report production

The production of the site report and submission of the project archive will be carried out by Rob Brooks.

The post-excavation finds analysis will be managed by Richenda Goffin. The following SCCAS/FT specialist staff will contribute to the report:

Graphics	Crane Begg
Graphics	Eleanor Hillen, Gemma Adams
Illustration	Donna Wreathall
Post Roman pottery and CBM	Richenda Goffin
Roman Pottery	Cathy Tester, Stephen Benfield, Andy Fawcett
Environmental sample processing	Anna West
Finds Processing	Jonathan Van Jennians

SCCAS also uses a range of external consultants for post-excavation analysis who will be sub-contracted as required. The most commonly used of these are listed below.

Sue Anderson	Human skeletal remains	CFA
Sarah Bates	Lithics	Freelance
Dr Steve Boreham	Palaeoenvironmental analysis	University of Cambridge
Julie Curl	Animal bone	Freelance
Val Fryer	Plant macrofossils	Freelance
Sarah Jones	Archaeomagnetic sample collection	Museum of London Archaeology
Prof Mark Noel	Archaeomagnetic sample processing	Geoquest Associates
SUERC	Radiocarbon dating	Scottish Universities Environmental Research Centre

7. Health and safety

7.1 Introduction

- The project will be carried out following Suffolk County Council Health and Safety Policies at all times.
- All staff will be aware that they have a responsibility to:
  - Take care of their own health and safety and that of others who maybe affected by what they do, or fail to do, at work.
  - Follow safe systems of work and other precautions identified in the risk assessment.
  - Report any changes to personal circumstances that may affect their ability to work safely.
  - Report potential hazards, incidents and near misses to the Project Officer/supervisor.
- A pre-site inspection has been made of the site and applicable SCCAS/FT Risk Assessments for the project are included in Appendix 2.
- All SCCAS/FT staff are experienced in working on a variety of archaeological sites and permanent staff all hold a CSCS (Construction Skills Certification Scheme) card. All staff have been shown the

SCCAS Health and Safety Manual, copies of which are held at the SCCAS/FT offices in Ipswich and Bury St Edmunds. All staff will read the site WSI and Risk Assessments (see below), will receive a site safety induction from the Project Officer prior to starting work, and sign the site induction register (Appendix 3). All staff will be issued with appropriate PPE.

- From time to time it may be necessary for site visits by other SCCAS/FT staff, external specialists, SCCAS/CT staff or other members of the public. All such staff and visitors will be issued with the appropriate PPE and will undergo the required inductions.
- Site staff, official visitors and volunteers are all covered by Suffolk County Council insurance policies. SCC also has professional negligence insurance. Copies of these policies are available on request.

7.2 Specific site issues

7.2.1 Welfare facilities

- Welfare facilities will be hired for staff use. Fresh, clean water for drinking and hand washing is carried in SCCAS vehicles. A vehicle will be on site at all times.

7.2.2 First Aid

- A member of staff with the First Aiders at Work qualification will be on site at all times. A First Aid kit and a fully charged mobile will also be in vehicle/on site at all times.

7.2.3 Site access and security

- The site is private property of Euston Estate and located over 1km from any public highways or settlements.

7.2.4 Deep excavation and work within unstable structures

- Due to Health and Safety considerations, excavations will be limited to a maximum depth of 1.2m below existing ground level unless sides are stepped or shored. No excavation will take place within unstable or built over areas of the kilns (such as the archways) unless they are supported and only then if there is a requirement to excavate them that cannot be achieved through another avenue of investigation (e.g. partial demolition of otherwise recorded kilns to expose areas that cannot be uncovered otherwise). External contractors will be consulted about the necessity for supporting the structures and will be employed to install any such measures.

7.2.5 Contaminated ground

- Details of any ground contamination have not been provided by the client but it is thought unlikely that contamination is present. If any such is identified then groundworks will cease until adequate safety and environmental precautions are in place.
- Advice will be sought from HSE and relevant authorities if required concerning any of these issues.

7.2.6 Hazardous Substances

- No hazardous substances are specifically required in order to undertake the archaeological works.

7.2.7 Underground services

- No services are known to cross the site.

7.2.8 Overhead Power lines

- No power lines cross the site.

7.2.9 Personal Protective Equipment (PPE)

- The following PPE is issued to all site staff as a matter of course. Additional PPE will be provided if deemed necessary.
  - P Hard Hat (to EN397).
  - High Visibility Clothing (EN471 Class 2 or greater).
  - Safety Footwear (EN345/EN ISO 20346 or greater – to include additional penetration-resistant midsole).
  - Gloves (to EN388).
  - Eye Protection (safety glasses to at least EN 166 1F).

7.2.10 Environmental impact/constraints

- Suffolk County Council maintains an internal Environmental Management System run in accordance with the ISO14001 standard by a dedicated EMS officer. The council has a publicly available Environment Policy, which commits us to meeting all relevant regulatory, legislative and other requirements, preventing pollution, and to continually improving our environmental performance.

- All existing and new SCCAS subcontractors are issued annually with the SCC Environmental Guidance Note for Contractors.

- On site the SCCAS Project Officer will monitor environmental issues and will alert staff to possible environmental concerns. In the event of spillage or contamination, e.g. from plant or fuel stores, EMS reporting and procedures will be carried out in consultation with Jezz Meredith (SCCAS/FT EMS Officer).
- The plant machinery will be well serviced and be as quiet a model as is practicable. It will come equipped with appropriate spill kit and drip trays. It will only refuel in a single designated area, as defined by the SCCAS. All refuelling will be carried out using electrically operated pumps and will only be done when drip trays are deployed.
- All rubbish will be bagged and removed either to areas designated by the client or returned to SCCAS for disposal.
- Water will not be pumped into any water course, storm drain etc without prior consent from the Environment Agency. Procedures for dealing with contamination from fuel spills or sediments will be closely followed.

8. Bibliography

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Appendix 2. Context list

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0001		Evaluatio	Finds Other	Unstratified finds from trench 2.									Yes	No			
0002		Evaluatio	Subsoil Layer	Mottled dark brownish grey silty sand and mid yellowish brown silty sand. Friable in nature. Cut by ditch [0003]. 0.16m deep to the west and 0.2m deep to the east.			0.2					0003, 0007	No	No			
				Mixed natural and topsoil.													
0003	0003	Evaluatio	Ditch Cut	Linear in plan, north-west to south east orientated. U-shaped profile, 45 degree sloping slightly concave sides with a slight break of slope to concaved base. Filled by (0004). Cuts "dirty natural" sub-soil (0002). Some root and animal disturbance.		0.6	0.4				0002	0004	No	No			
				Probably associated with ditch of similar character and same alignment to the wet.													
0004	0003	Evaluatio	Ditch Fill	Mid-dark brownish grey friable silty sand mottled with light grey and yellow sands. Occasional to moderate small-medium round pebbles fairly well sorted. 2 x very small CBM/fired clay fragments recovered. Some root/animal disturbance.	1.3 slot	0.6	0.4				0003		Yes	No			
				Single ditch fill.													
0005	0006	Evaluatio	Pit Fill	Mid brownish grey friable silty sand. Occasional small sub-angular flints. Horizon clear. Only fill.			0.16				0006		No	No			
				Fill of pit													
0006	0006	Evaluatio	Pit Cut	Circular in plan. Broad and shallow profile, break of slope generally 60 degrees with steep concave sides, occasionally shallow convex slope (probably due to disturbance, roots). The base is flat.	0.68	0.66	0.16					0005	No	No			
				Cut of pit.													
0007	0007	Evaluatio	Ditch Cut	Linear in plan, aligned north-west to south-east. U shaped profile, slightly convex and concave sloping 40 degree sides, slight-moderate break of slope to concave base. Filled by 0008. Cuts subsoil layer 0002. Some animal disturbance. Photo only of ditch in trench baulk.	1.3 slot	0.6	0.39				0002	0008	No	No			
				Similar character and same alignment as ditch [0003] to the east, probably contemporary. Both seem top run adjacent to and approximately 30m south of current track. May have formed in earlier phase.													
0008	0007	Evaluatio	Ditch Fill	Mid-dark brownish grey friable silty sand mottled with lighter grey silty sand and yellow sand. Moderate small-medium round pebbles, well sorted but some tending towards base. Abraded pot fragment found on surface and may be intrusive. Some animal disturbance.	1.3 slot	0.6	0.39				0007		Yes	No			
				Single ditch fill.													
0009	0009	Evaluatio	Ditch Cut	Linear in plan north-west to south-east. U-shaped profile, 80 degree sides with a sharp break of slope to base. Slightly concaved flattish base. Filled by 0010, 0011 and 0012. Unstratified finds i.e. faced brick from all fills (0029).		0.7	0.82					0010	No	No			
				Ditch? Cuts subsoil.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0010	0009	Evaluatio	Ditch Fill	Mixed mid greyish brown fairly firm clayey sandy silt. Occasional CBM fragments and lenses of yellow sand. Moderate small-medium round and sub angular pebbles. Occasional-moderate charcoal. Finds under 0029 faced brick fragments kept only.			0.25				0009	0011	No	No			
				Basal fill.													
0011	0009	Evaluatio	Ditch Fill	Mixed fill of firm yellow sandy clay with lenses (some large) of mid greyish brown clayey sandy silt. Silty lenses contain occasional CBM fragments, moderate charcoal and occasional-moderate small-medium round and sub-angular pebbles. Finds in 0029, faced brick fragments kept only.			0.4				0010	0012	No	No			
				Middle fill.													
0012	0009	Evaluatio	Ditch Fill	Mid greyish brown firm but friable clayey sandy silt. Occasional-moderate CBM fragments, occasional-moderate charcoal, Moderate mixed small-medium round and sub-angular pebbles. Finds in 0029, face fragments kept only.			0.38				0011		No	No			
				Upper fill.													
0013	0013	Evaluatio	Ditch/gully Cut	Linear in plan, aligned north-west to south-east. U shaped profile, steep 80 degree sloping sides, sharp break of slope to base, flattish/slightly concave base. Mostly truncated by machine. Filled by 0014. Adjacent to ditch 0009 and same alignment.	1	0.42	0.3					0014	No	No			
				Ditch/gully. Fill 0014 possibly sealed by subsoil, but more likely to be a root disturbed topsoil lens above fill 0014.													
0014	0013	Evaluatio	Ditch/gully Fill	Pale light brown (slightly greyish) loose/friable slightly silty sand. Bands/tips of mid brown very silty sand sloping down from south-west to north-east. Occasional small round pebbles. No finds, mostly machine excavated.	>1	0.42	0.3				0013		No	No			
				Single ditch/gully fill. Sealed by subsoil.													
0015	0016	Evaluatio	Ditch Fill	Mid yellowish grey brown firm silty sand. Occasional small angular and rounded flints. Horizon clear. Single fill.			0.14				0016		No	No			
				Fill of ditch.													
0016	0016	Evaluatio	Ditch Cut	Linear in plan, aligned NW-SE. No full profile, but appears to be "U" shaped with steep near straight sides and a concave base. Possibly cuts [0018] but very unclear. Filled by 0015.	>3	0.25	0.14					0015	No	No			
				Cut of ditch/gully.													
0017	0018	Evaluatio	Ditch Fill	Mid yellowish grey brown firm silty sand. Occasional small sub-angular flints. Horizon clear. Single fill.			0.28				0018		No	No			
				Fill of ditch.													
0018	0018	Evaluatio	Ditch Cut	Linear in plan, aligned NE-SW. Profile "U" shaped, very steep near straight sides and a concave base. Filled by (0017). Possibly cut by [0016] - very unclear!!!! Sealed by topsoil.	>1.9	0.35	0.28					0017	No	No			
				Cut of ditch. Steep angle of cut could suggest this was a structural feature, but this seems unlikely given the prevalence of other such features across the site, which appear to be some sort of early field drains.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0019	0019	Evaluatio	Ditch Cut	Linear in plan, aligned NE-SW. Broad U like profile, slightly irregular sloping sides, with a moderate break of slope to irregular undulating base. Filled by 0020. Excavated and recorded at machine level, seen in baulk to continue to topsoil level.		1.7	0.22					0020	No	No			
				Possible ditch? Wet channel?													
0020	0019	Evaluatio	Ditch Fill	Friable mid grey silty-sand mottled with orangey mineral staining - Fe panning? Some firm orangey-yellowish sandy-clay lensing. Occasional-moderate small-medium round and sub-angular pebbles, fairly well sorted. Occasional CBM fragments.	0.7 slot	1.7	0.22				0019		Yes	No			
				Single fill of linear feature.													
0021	0021	Evaluatio	Ditch? Cut	Linear in plan, aligned NNE-SSW. Shallow concaved profile. Whole cross section not excavated), 40 degree sloping sides (slightly concaved), slight break of slope to flattish base. Filled by 0022. Hard to define to NNE but brick seen in section. Excavated and recorded at machine surface level.	0.5 exc	0.8	0.15					0022	No	No			
				Linear feature unknown function, possibly a ditch. Cut by probable pit [0023]													
0022	0021	Evaluatio	Ditch? Fill	Firm mix of light grey clayey silty sand and yellow clay. Occasional-moderate small-medium sub-angular and angular pebbles. Very occasional red brick and tile fragments (all kept). Truncated by probable pit 0023 to SW.	0.5 exc	0.8	0.15				0021	0023	Yes	No			
				Single fill of linear feature.													
0023	0023	Evaluatio	Pit Cut	Slightly oval in plan, aligned NW-SE, partially obscured under western baulk. Concaved bowl like profile, slight break of slope at top, concaved sides and base, no break of slope at the bottom. Cuts linear 0021. Filled by 0024. Excavated and recorded at machine surface level.	1.1	0.9	0.2				0022	0024	No	No			
				Probable pit, unknown function.													
0024	0023	Evaluatio	Pit Fill	Mid-light grey friable slightly clayey silty sand mottled with mid brown silt and yellow clay patches. Moderate small-medium round pebbles. Occasional red brick fragments (all kept).	1.1	0.9	0.2				0023		Yes	No			
				Single probable pit fill.													
0025	0025	Evaluatio	Pit Cut	Un-excavated pit cut. Unknown shape and form, continues under western baulk. Possibly ovoid NW-SE. Filled by 0026. Same as 0032.							0033	0026	No	No			
				Pit cut? Same fill, with brick fragments, as others. Cuts subsoil?													
0026	0025	Evaluatio	Pit Fill	Mid-dark greyish brown fairly firm clayey sandy silt with dark brown lenses of charcoal and silt. Moderate small-medium angular and sub-angular pebbles. Occasional-moderate red brick fragments (none kept).							0025		No	No			
				Unexcavated pit fill.													
0027	0028	Evaluatio	Pit/posthole Fill	Dark greyish brown friable silty sand. Frequent small charcoal lumps and flecks. Occasional small angular and rounded flints. Horizon clear. Single fill.			0.16				0028	0034	No	No			
				Fill of pit/posthole.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0028	0028	Evaluatio	Pit/posthole Cut	Oval in plan, aligned NW-SE. "U" shaped profile with very steep slightly concave sides, curving to a concave base. Sealed by 0034???	0.45	0.35	0.16					0027	No	No			
				Cut of pit/posthole.													
0029	0009	Evaluatio	Pit Finds	Mixed finds from fills 0010, 0011, 0012 in pit 0009. Faced red brick fragments only, approximately 20% of fragments from all fills of pit. All fragments of black (unsuccessfully fired?) brick collected.									Yes	No			
0030	0031	Evaluatio	Ditch Fill	Pale greyish brown friable silty sand. Occasional/rare very small flints. 3 pieces of burnt flint. Horizon clear. Single fill.			0.12				0031	0034	No	No			
				Fill of ditch.													
0031	0031	Evaluatio	Ditch Cut	Linear in plan, aligned approximately E-W. Broad and shallow profile, break of slope approximately 45°, concave sides and a broad slightly concave base. Very ephemeral but I think real, contained burnt flint. Filled by 0030.	>2.5	0.42	0.12					0030	No	No			
				Cut of ditch													
0032	0032	Evaluatio	Pit Cut	Un-excavated pit (?) cut. Unknown shape and form, continues under western baulk. Filled by 0033. Same as pit 0025.								0033	No	No			
				Same as 0025.													
0033	0032	Evaluatio	Pit Fill	Mixed firm yellow clay and mid grey brown clayey sandy silt with some lenses of charcoal. Moderate small-medium rounded and sub-angular pebbles. Occasional-moderate red brick fragments. No finds kept.							0032	0025	No	No			
0034	0034	Evaluatio	Subsoil Layer	Mid/pale yellowish brown friable silty sand. Horizon clarity is clear with underlying natural geology.			0.18				0027, 0030	0054	No	No			
				Buried plough soil/subsoil.													
0035		Evaluatio	Kiln Other	Rectangular red brick structure 1.08m x 0.71m, north-west to south-east aligned. Bricks are 22.5cm x 5cm and unfrogged. Mid brownish yellow clayey sand mortar with few inclusions. Height unknown, coursing unknown. Built against 0036 on its north western edge. Same as 0249 - see 0249 for full description.							0036		No	No	0229		
				Small brick structure built against the main kiln.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0036		Evaluatio	Kiln Structure	Rectangular structure, red bricks, bricks are 22cm x 10.5cm x 5.5cm and unfrogged. North-west to south-east aligned. Excavated to 1m deep in one sondage at north-west end, but not bottomed due to presence of surviving structures. Wall at northwest end has 2 arches in it, extending to the north-west under the current ground level (both showing signs of burning inside). North-east arch has continued to be used in a state of disrepair, south-west arch has been repaired. Exposed northern wall shows scars where other arches have run across and these line up with the central arch columns that still survive running down the centre of the structure. Walls facing into the centre of the structure show that burning has been present within the structure. Looking through the northern arch, brick vaulting can be seen under the unexcavated part of the trench to the north-west. Bricks are coursed with a row of stretchers over a row of headers, 4 courses measures 27.5cm. Mortar is mid pinkish brown clayey sand. Walls are 0.6m max thickness down to 0.3m in the south-west corner. Structure appears to be trench built but exterior edge of wall is unexcavated. Structure is filled with mid brown silty sand with lenses of crushed red brick and mid yellow soft clay, frequent broken and whole bricks and broken tiles, some of which show are heat altered on a single face suggesting they were part of the structure.	>7.5	4.7		SF1001				0035	Yes	No	0229		
				Brick kiln.													
0037		Evaluatio	Layer	Mid greyish brown firm silty sand. Moderate CBM flecks and coal/ charcoal. Horizon diffuse.			0.16				0038		No	No			
				Layer above pits [0039 and [0041] possibly pit fill but cut could not be established so numbered separately.													
0038	0039	Evaluatio	Pit Fill	Very dark greyish brown firm silty sand. Moderate CBM flecks. Occasional small to medium sub-angular flints. Horizon clear. Single fill.			0.18				0039	0037	No	No			
				Fill of pit, waste from kiln firing?													
0039	0039	Evaluatio	Pit Cut	Shape in plan unclear, roughly semi-circular, but runs under baulk to N. Profile is shallow and slightly irregular, generally shallow concave sides and shallow concave base. Cuts pit [0041]. Filled with (0038).	1.1	>0.6	0.18				0040	0038	No	No			
				Cut of pit, rubbish from kiln?													
0040	0041	Evaluatio	Pit Fill	Dark greyish brown firm silty sand. Moderate CBM flecks. Only fill. Horizon clear. Pieces of brick recovered			0.2				0041	0039	Yes	No			
				Fill of pit, waste from kiln?													
0041	0041	Evaluatio	Pit Cut	Shape in plan unclear, appears roughly semi-circular, although exits the trench to the north. Profile shallow and broad, 45 degree approximately concave sides and concave base. Cut by pit [0039]. Filled by 0040.	>0.8	>0.6	0.2					0040	No	No			
				Cut of pit - kiln waste.													
0042	0045	Evaluatio	Pit Fill	Mid yellowish greyish brown compact silty sand. Moderate small angular and rounded flints. Top fill. Horizon clear.			0.32				0043		No	No			
				Fill of pit.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0043	0045	Evaluatio	Pit Fill	Mid greyish brown compact silty sand. Moderate CBM flecks. Frequent coal flecks. Horizon clear.			0.4				0044	0042	No	No			
				Fill of pit.													
0044	0045	Evaluatio	Pit Fill	Very dark greyish brown compact silty sand. Frequent CBM. Frequent coal flecks and small lumps. Horizon clear. Basal fill.			0.28				0045	0043	Yes	No			
				Waste from kiln? Pit fill.													
0045	0045	Evaluatio	Pit Cut	Possible linear with rounded terminus in plan, not enough visible in trench to say, exits to the south. Profile is broad and shallow, 45-60 degree concave sides leading to a flat irregular base. Filled with 0042, 0043 and 0044. Cuts subsoil 0034.	>3	>1.6	0.4					0044	No	No			
				Cut of pit.													
0046	0046	Evaluatio	Pit Cut	Large feature at west end of trench, shape in plan unknown, curving edge exposed 8.5m to east. Shallow profile, gentle convex to concaved edge with slight break of slope to flattish base. Top break of slope not excavated as truncated by field drain. Excavated using a 0.6m wide machine bucket. Filled by 0047, 0048 and 0049. Seems to cut subsoil 0050 but horizon is merged.	>8.4	>1.8	0.8				0049, 0048, 0050	0047	No	No			
				Shallow "cut" pit? Fills are possibly dumped hard standing to consolidate wet ground/hollows may not be a cut at all.													
0047	0046	Evaluatio	Large bricky fe Fill	Mid brownish grey fairly firm grey sandy clayey silt/silty clay (50:50). Occasional-moderate charcoal flecks and small CBM fragments/ flecks <20 x 20mm. Occasional-moderate small-medium round pebbles. All inclusions fairly well sorted. Clear upper and lower horizons. Machine excavated.			0.24				0046	0048	No	No			
				Fill of hollow/pit.													
0048	0046	Evaluatio	Large bricky fe Fill	Mid greyish brown fairly firm sandy clayey silt. Moderate small-medium brick fragments <50x40mm. Moderate charcoal flecking. Moderate small-medium round an sub-angular pebbles. All fairly well sorted. Machine excavated.			0.36				0047	0046, 0049	No	No			
				Upper fill of large feature.													
0049	0049	Evaluatio	bricky feature Fill	Mixed layer of fairly firm mid brown (slightly greyish hue) sandy clayey silt with medium-small CBM fragments and small-medium rounded and sub-angular pebbles all well sorted. Occasional small chalk nodules and flecks. Machine excavated, truncated by field drain.			0.2				0048	0046	No	No			
				Upper fill of feature 0046.													
0050	0050	Evaluatio	Deposit Layer	friable light brown silty sand mottled with mid brown silty sand. Occasional-moderate small-medium rounded and sub-angular well sorted pebbles. "Cut" by large feature [0046]. Truncated by field drain. Interface between upper fill 0049 and 0050 merge.			0.2					0046	No	No			
				Plough soil.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0051	0052	Evaluatio	Ditch Fill	Mid greyish brown firm silty sand. Occasional small-medium angular and sub-angular flints. Horizon clear. Struck flint recovered.			0.24				0052		Yes	No			
				Fill of ditch.													
0052	0052	Evaluatio	ditch Cut	Linear in plan, aligned ESE-WNW. Profile is quite broad and shallow, break of slope approximately 45° leading to slightly concave or convex sides and a concave base. Relationship with subsoil 0034 unclear.	>1.9	0.65	0.25					0051	No	No			
				Cut of ditch.													
0053	0054	Evaluatio	Ditch Fill	mid greyish brown firm silty sand. Occasional-moderate small angular and sub-angular flints. Horizon clear. No finds.			0.3				0054		No	No			
				Fill of ditch.													
0054	0054	Evaluatio	Ditch Cut	Linear in plan, aligned NE to SW. True profile seen in section 24, break of slope approximately 45°, slightly concave sides leading to a concave base. Probably cuts ditch 0056. Cuts subsoil 0034.	>3.25	0.75	0.3				0034, 0055	0053	No	No			
				Cut of ditch.													
0055	0056	Evaluatio	Ditch Fill	Mid-dark greyish orange brown firm silty sand. Moderate small angular and sub-angular flints. Horizon clear. Some Roman (?) grey ware recovered.			0.1				0056	0054	Yes	No			
				Fill of ditch.													
0056	0056	Evaluatio	Ditch Cut	Linear in plan, aligned NW-SE. Profile is broad and shallow, break of slope approximately 35°-40°, slightly concave sides leading to a broad slightly concave base. Probably cut by ditch 0054.	>1.2	0.54	0.1					0055	No	No			
				Cut of possible Roman ditch.													
0057	0057	Evaluatio	Ditch Cut	NE-SW aligned ditch, linear in plan. Straight fairly steep sides, sharp break of slope to flat base.	>0.35	0.32	0.17					0058	No	No			
				Cut of post medieval ditch.													
0058	0057	Evaluatio	Ditch Fill	Mid reddish-brown firm silty clay. Moderate flecks of CBM. Rare small flints. Horizon clear.			0.17				0057		No	No			
				Fill of ditch.													
0059	0059	Evaluatio	Ditch Cut	Linear in plan, NE-SW aligned. Steep straight sides, sharp break of slope to flat base.		0.4	0.34					0060	No	No			
				Cut of ditch.													
0060	0059	Evaluatio	Ditch Fill	Mid brown silty clay. Moderate red CBM flecks and fragments. Occasional small angular and sub-angular pebbles.			0.34				0059		No	No			
				Fill of ditch.													
0061	0062	Evaluatio	Ditch Fill	Pale-mid greyish yellow brown firm silty sand. Occasional small angular and rounded flints. Horizon clear. Possible Roman pot recovered.			0.28				0062		Yes	No			
				Fill of ditch.													
0062	0062	Evaluatio	Ditch Cut	Linear in plan, aligned N-S. Profile broad and shallow, break of slope approximately 50°, slightly concave sides and a broad slightly concave base.	>1.8	1.24	0.28					0061	No	No			
				Cut of ditch.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0063	0063	Evaluatio	Quarry pit Cut	Semi circular in plan, runs under baulk to north. Profile unclear, appears to be squared, with steep straight sides and a near flat base. Sealed by topsoil.	1.4	>0.95	0.32					0064	No	No			
				Cut of post medieval pit. Associated with kiln?													
0064	0063	Evaluatio	Pit Fill	Mid grey sift silty clay, very occasional small sub-angular pebbles. No finds.			0.32				0063		No	No			
				Fill of post medieval pit.													
0065	0065	Evaluatio	Pit Cut	Semi circular in plan, runs under baulk to south. Profile unclear, appears to have steep sides with a sharp-gradual break to base, with a slightly concave base. Sealed by topsoil.	1.3	>0.6	0.27					0066	No	No			
				Cut of pit.													
0066	0065	Evaluatio	Pit Fill	Mid grey soft silty clay. Very occasional small sub-angular and rounded pebbles. No finds.			0.27				0065		No	No			
				Fill of pit.													
0069	0069	Evaluatio	Ditch Cut	Linear in plan, aligned NE-SW. Profile has a break of slope of approximately 45°, slightly concave sides, leading to a concave base.	>1.9	0.76	0.22					0070	No	No			
				Cut of ditch.													
0070	0069	Evaluatio	Ditch Fill	Mottled mid grey silty sand with orange patches and Fe staining. Common small stones. Friable-firm. Clear horizon.			0.22				0069		Yes	No			
				Fill of ditch.													
0071	0072	Evaluatio	Ditch Fill	Mid greyish brown firm silty sand. Occasional small sub-angular flints. Horizon clear. Single fill.			0.26				0072		No	No			
				Fill of ditch.													
0072	0072	Evaluatio	Ditch Cut	Linear in plan, aligned NW-SE. Profile has approximately 60° concave sides leading to a concave base. Appears to cut sub-soil.	>2.1	0.82	0.26					0071	No	No			
				Cut of ditch.													
0073	0074	Evaluatio	quarry pit? Fill	Mid-pale greyish brown firm silty sand. Occasional small-medium sub-angular flints. No finds. Horizon clear.	>2	1.6	0.32				0074		No	No			
				fill of quarry pit													
0074	0074	Evaluatio	Pit Cut	Appears linear in plan from what is visible in trench, aligned NW-SE. Profile is slightly irregular, steep slightly concave sides leading to an irregular base. Sealed by topsoil.	>2	1.6	0.32					0073	No	No			
				Cut of post medieval pit.													
0075		Evaluatio	Finds Other	Unstratified bricks recovered from Trench 3.									Yes	No			
				Presumably associated with the quarrying features and brick deposits within the base of the trench.													
0076	0076	Evaluatio	Pit Cut	Large feature. Shape only partially uncovered within trenching. Curving south-eastern edge.	>17	>1.8	>0.35					0077	No	No			
				Cut of large rake-out pit from kiln 0081 in Trench 35. Only partially investigated within this trench due to the limited opportunity to excavate it properly.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0077	0076	Evaluatio	Pit Fill	Dark brownish-grey silty-sand, ash, brick fragments and redeposited clay. Machine excavated.							0076	0078	No	No			
				Rake out pit fill.													
0078	0076	Evaluatio	Pit Fill	Dark grey/black ashy silty-sand sand mix. Machine excavated.							0077	0079	No	No			
				Rake out pit fill.													
0079	0076	Evaluatio	Pit Fill	Mid brownish-grey clayey-sand, with abundant CBM fragments and burnt clay content. Machine excavated.							0078, 0080		No	No			
				Rake out pit fill.													
0080	0076	Evaluatio	Pit Fill	Dark grey sandy-clay with occasional brick fragments. Machine excavated.								0079	No	No			
				Rake out pit fill.													
0081		Evaluatio	Kiln Structure	Kiln in Trench 35, with rake out pit in Trench 29. Only partially uncovered during machining.									No	No	0228		
0082	0082	Evaluatio	Pit Cut										No	No			
				Quarry pit cut													
0083	0083	Evaluatio	Pit Cut										No	No			
				Quarry pit cut													
0084	0084	Evaluatio	Pit Cut										No	No			
				Quarry pit cut													
0085	0085	Evaluatio	Pit Cut										No	No			
				Quarry pit cut													
0086	0086	Evaluatio	Pit Cut										No	No			
				Quarry pit cut													
0087	0087	Evaluatio	Pit Cut										No	No			
				Quarry pit cut													
0088	0088	Evaluatio	Pit Cut										No	No			
				Quarry pit cut													
0089	0089	Evaluatio	Pit Cut										No	No			
				Quarry pit cut													
0201	0203	Excavati	Pit Fill	Light yellowish-brown moderately compacted clayey-sand (20%:80%), with frequent small, medium and large fragments of soft red bricks, and occasional small to medium flints. Clear horizon. Top fill. Originally numbered as 0001.	3.1	1.9					0202		No	No			
				Upper fill of clay/sand extraction pit/wash 0203. This is basically a rapid backfill dumped into pit when it went out of use. Many brick fragments in fill - very soft and often over fired. See sheet 0203 for further detail.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0202	0203	Excavati	Pit Fill	Dark brownish-yellow moderately compacted clayey-sand (20%:80%), with moderate small flecks of brick, and occasional small flints and small lumps of blue-grey dense pure clay. Clear horizon clarity. Basal/primary fill. This 'fill' is perhaps more likely a result of the use of the pit. Strong evidence of mottling within this deposit and within the natural clayey sands below. Therefore the pit was water filled for some time. Is this pit a wash pit for weathering clay [seems unlikely given low capacity and presence of dense sticky pure blue grey clay that must come from the solid underlying geology. Therefore material from nearby deeper pits was brought closer to kiln, perhaps mixed with clayey sand excavated from this pit and left to weather? [This does not conform with the known wash pits on the site or with other more structured wash pits such as at Knettishall forest, but possible].			0.2				0203	0201	No	No			
0203	0203	Excavati	Pit Cut	Rectangular cut in plan, NW-SE aligned. Irregular V-shaped profile, with an irregular stepped base. Both is cut by and cuts other features as shown on GPS/TST survey. One of the largish relatively regularly sized pits that extend across the NE part of the area close to the kiln in the northern corner of the site. The nature of the primary fill suggests that this pit had standing water in it for a considerable period. As discussed on sheet 0202 was the solid geology clue/grey clay excavated in the deep pit to the SE and S, brought close to the kiln, mixed with clayey-sand and left to weather?	3.1	1.9	0.9					0202	No	No			
0204	0206	Excavati	Drain Fill	Fill of land drain cut.									No	No			
0205	0206	Excavati	Drain Fill	Fill of land drain cut.									No	No			
0206	0206	Excavati	Drain Cut	Cut of land drain.									No	No			
0207	0209	Excavati	Pit Fill	Mid grey/brown clayey-sand (30:70 ratio). Moderately compacted, with moderate small flints, occasional small lumps of blue/grey clay and occasional small flecks of charcoal. Clear horizon clarity. Top fill. Upper back fill of linear form extraction/wash pit 0209 [what is the evidence that this is a wash pit??]. As with pit 0203 this back fill was put in when the feature went out of use.			0.25				0208		No	No			
0208	0209	Excavati	Pit Fill	Light yellowish-brown clayey-sand (30:70 ratio), of moderate compaction, with moderate small to medium flints, and occasional small lumps of blue/grey clay. Clear horizon clarity. Basal fill. Disturbed natural/redeposited natural lower fill of linear form pit 0209. Noticeably more stony and mixed when compared to the similar natural at the base of the cut. Again has small lumps of blue/grey clay in it.			0.1				0209	0207	No	No			

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0209	0209	Excavati	Pit Cut	Rectangular cut in plan, aligned NW-SE, with asymmetrical profile and an irregular/flattish base. Cuts pit 0211.	>1.7	0.9	0.35		0211		0210	0208	No	No			
				Linear form extraction/wash pit [what is the evidence that it was a wash pit?? Too small and shallow]. Exactly the same sequence of fills as pit 0203. This pit is the end of a long line of pits. I think this pit cuts 0211 - the next pit in the sequence to the SE, but the relationship is not at all clear. Could also reinterpret the whole area as one big cut [or general event].												
0210	0211	Excavati	Pit Fill	Mid greyish-yellowish-brown clayey-sand, moderately compact, with occasional small flints and flecks of charcoal. Clear horizon clarity. Single feature fill.			0.2				0211	0209	No	No			
				Fill of linear form extraction pit 0211.													
0211	0211	Excavati	Pit Cut	Rectangular cut, aligned NW-SE, with asymmetrical profile and an irregular/flat base. Cut by 0209.		0.8	0.2			0209		0210	No	No			
				This pit and 0209 are both dug from the SW side as have asymmetrical profiles. If not standard wash/quarry pit [no evidence for the former], then might be some form of prospecting pit.													
0212	0214	Excavati	Pit Fill	Grey/yellow-brown clayey-sand (40:60), with moderate smaller flints, occasional large (whole) bricks, occasional small flecks of brick, and occasional charcoal flecks. Top fill.			0.3				0213		No	No			
				Main fill of extraction/wash pit 0214. Upper back fill of this pit contained whole bricks laid with appearance of possible structure were in fact just in fill. Very mixed fill - grey clayey sand, yellow/brown redeposited sand and lumps of blue/grey clay, which does occur on surface of natural in this area.													
0213	0214	Excavati	Pit Fill	Mid grey-brown clayey sand (40:60), with frequent small flints, Fe and Manganese mottling and nodules. Occasional small brick fragments. Clear horizon clarity. Basal fill.			0.05				0214	0212	No	No			
				Lower disturbed natural/disturbed base of cut within extraction pit 0214. Heavily mottled, result of water action in base?													
0214	0214	Excavati	Pit Cut	Rectangular cut, aligned N-S, [with approximately 45° irregular sides] with a concave to flat/irregular base. Cut by an ?20th century land drain not seen during excavation.	2.8	1.9	0.3					0213	No	No			
				Maybe these pits are simple extraction pits and the larger pits in the vicinity are the wash pits [there are already well formed wash pits on the site and all the nearby pits are irregular and atypical for other wash pits seen by the Project Officer]. Large raised area of clue/grey clay left in southern end of this pit, perhaps left as too pure [or chalky?] and not the sandy deposit required to mix into a rudimentary brick earth.													
0215	0216	Excavati	Pit Fill	Mid brownish-grey clayey-sand (40:60), with moderate small flints and occasional flecks of charcoal. Clear horizon clarity. Single fill.			0.3				0216		No	No			
				Single fill of plain and regular extraction pit 0216.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0216	0216	Excavati	Pit Cut	Rectangular cut, aligned NW-SE, with a regular profile and sloping/regular base. No relationships - appears to be an isolated feature.	3.3	1.6	0.3					0215	No	No			
				Very regular simple extraction pit. One fill, probably quite rapidly backfilled into feature. Based on the excavated sample, c.20% of total number of pits may also be similar to this one.													
0217		Excavati	Ditch Group	Group number for small ring ditch. Cuts include 0219, 0221, 0223, 0225 and 0227.									No	No	0217		
0218	0219	Excavati	Ditch Fill	Mid-dark greyish brown compact silty clay. Occasional small angular and rounded flint nodules. Single fill. Horizon clear.			0.07					0219	No	No	0217		
				Fill of Ring ditch.													
0219	0219	Excavati	Ditch Cut	Curvilinear in plan, roughly aligned east to west with a slight curve towards the north. The profile is shallow with a sharp break of slope, concave sides and a near flat base. Filled by 0218.		0.4m	0.07				0218		Yes	No	0217		
				Cut of ring ditch, possibly small barrow or drip gully for roundhouse.													
0220	0221	Excavati	Ditch Fill	Mid-dark greyish brown compact silty clay. Occasional small angular and rounded flint nodules. Single fill. Horizon clear.			0.08				0221		No	No	0217		
				Fill of ring ditch.													
0221	0221	Excavati	Ditch Cut	Slightly curvilinear in plan, aligned roughly east to west with a slight curve to the north. The profile is shallow with a sharp break of slope, concave sides and a slightly concave base. Partially over cut. Filled by 0220.			0.08					0220	No	No	0217		
				Cut of Ring ditch, possible small barrow or drip gully for round house???													
0222	0223	Excavati	Ditch Fill	Mid-dark greyish brown compact silty clay. Occasional small angular and rounded flint nodules. Single fill. Horizon clear.			0.12				0223		Yes	No	0217		
				Fill of ring ditch.													
0223	0223	Excavati	Ditch Cut	Curvilinear in plan aligned roughly north to south with a slight curve towards the west. The profile is slightly irregular with a sharp break of slope, concave sides and a concave base. Filled by 0222.		0.48	0.12					0222	No	No	0217		
				Cut of ring ditch. Possible small barrow or round house drip gully.													
0224	0225	Excavati	Ditch Fill	Mid-dark greyish brown compact silty clay. Occasional small angular and rounded flint nodules. Single fill. Horizon clear.			0.06				0225		No	No	0217		
				Fill of ring ditch.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0225	0225	Excavati	Ditch Cut	Curvilinear in plan, roughly aligned east to west with a slight curve to the south. There is a break in the middle of this segment but this is thought to be due to truncation rather than a cut terminus. The profile is shallow with a sharp break of slope, concave sides and a concave base. Filled by 0224.		0.48	0.08					0224	No	No	0217		
				Cut of ring ditch. Possible small barrow or drip gully for a round house.													
0226	0227	Excavati	Ditch Fill	Mid-dark greyish brown compact silty clay. Occasional small angular and rounded flint nodules. Single fill. Horizon clear.			0.09				0227		No	No	0217		
				Fill of ring ditch.													
0227	0227	Excavati	Ditch Cut	Curvilinear in plan, roughly aligned north to south with a slight curve to the east. The northern extent of this segment has not been preserved leading to a gap in the ring. The profile for this is shallow with a sharp break of slope, slightly concave sides and a narrow concave base. Filled by 0226.			0.08					0226	No	No	0217		
				Cut of ring ditch. Possible small barrow or drip gully for a round house???													
0228		Excavati	Kiln Group	Group number issued for kiln near southern corner of site. One section accidentally photographed as 0200. Same as 0081 from the evaluation.									No	No	0228		
				Brick and tile Suffolk kiln similar to the one at the northern end of the site.													
0229		Excavati	Kiln Group	Group number for kiln structure. See 0230, 0245, 0246, 0247, 0248, 0249, 0258. Positioned near NW corner of site.									No	No	0229		
				18th (??) century brick kiln.													
0230	0245	Excavati	Kiln Fill	Fill of brick and tile, brick dust and occasional finds amidst a loose soil matrix. Soil is dark grey clayey silty buried topsoil. At the base is a deposit of fine brick dust silt, presumably percolated from crumbling material above. Occasional charcoal. No evidence of any ashy deposit below. On top of floor running through 0245 and 0246.				SF1002					Yes	No	0229		
				Mixture of bricks and tiles from the internal archways of the kiln structure, with redeposited topsoil.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0231	0231	Excavati	Kiln	Rectangular in plan, aligned WNW-ESE. 7.35m x 3.9m. Made up of 2 chambers with an average approximate width of 0.85m and run the length of the structure, they are sealed at the ESE end and open towards the WNW. There is a outer wall on 3 sides of the kiln. The outer wall along the length of the kiln is separate to the internal structure and is approximately 0.24m wide (the length of one brick or the width of 2). There is no regular bonding to these bricks. The bricks are red and not frogged and measure 233mm x 122mm and 60mm deep. The internal structure is made of a single skin of bricks over the natural clay, to a depth of approximately 0.7m the bricks are the same, the depth of 5 courses is c.0.36m, the bricks are not bonded in a particular style. There is an internal spine which runs up the middle of the kiln for 4.4m which acts as the central support for the arches. The arches were approximately 0.24m wide and spaced at intervals of approximately 0.12m. Between the archways the bricks of the spine were formed to a point so as to act as vents. There were also sloping brick vents on the outer walls. There were 12 arches in total. Where the arches stop the chamber carries on in what appears to be the flue or entrance. This part of the kiln appears to have been rebuilt or possibly been a later addition - rebuild seems most likely. The base of the kiln is curved towards the middle of each chamber and generally slopes towards the entrance/flue area and is made of baked clay. The kiln contained demolition/collapse fills and ashy deposits on the base.	7.35m	3.9m						0232	Yes	No	0228		
				Kiln. Contains rubble from demolition or collapse and ashy deposits from the final firing?? Some arches still partially intact.													
0232	0231	Excavati	Kiln Fill	Dark blackish brownish-grey slightly sandy silt of soft compaction and a coherent nature. The fill contains small patches of lighter brownish-grey ash that occurred frequently throughout. The fill has a clear horizon (lower) with the kiln cut.		0.82	0.14				0231	0233	No	No	0228		
				Slightly mixed basal fill at the south east corner of 0231. Likely partially derived from the last burnt material.													
0233	0231	Excavati	Kiln Fill	A mid greyish brown sandy silt fill of soft compact and containing moderate quantities of CBM fragments and charcoal flecking. The fill had a fairly clear horizon (lower) with 0232.		0.82	0.14				0232	0234	No	No	0228		
				Fill of kiln.													
0234	0231	Excavati	Kiln Fill	An orangey brown silty sand of a soft and friable nature. The fill contains moderate quantities of CBM (both large and small fragments). Lower horizon is fairly clear.		0.89	0.24				0233	0235	No	No	0228		
				Largest fill at south east corner of kiln.													
0235	0231	Excavati	Kiln Fill	A small deposit of greyish brown slightly silty sand containing a good quantity of ash mixed throughout. Clear horizons.		0.76	0.08				0234	0236	No	No	0228		
				Small deposit of "mixed" ashy material.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0236	0231	Excavati	Kiln Fill	A deposit of orangey brown silty sand of a soft and friable nature. The fill contains frequent quantities of CBM (large and small fragments). Clear horizons.		1.08	0.17				0235	0237	No	No	0228		
				Fill of [0231].													
0237	0231	Excavati	Kiln Fill	Top fill of kiln at south east corner. Greyish brown sandy silt containing occasional CBM fragments (small). The fill was slightly soft and friable.		0.61	0.14				0236		No	No	0228		
				Top fill, its more silty nature and appearance suggest it accumulated within a void under the arches.													
0238	0231	Excavati	kiln Fill	Mid brownish red silty sand. Firm and friable. Horizon clear. Main fill directly under arches. Frequent small-large brick inclusions.			0.62				0239, 0239		No	No	0228		
				Main rubble fill of kiln from collapse or demolition.													
0239	0231	Excavati	Kiln Fill	White and black ash and charcoal fill of kiln. Friable. Horizon clear onto base and drain. Sample taken for species analysis.			0.15				0240	0238	Yes	Yes	0228		
				Ash/charcoal fill from final firing of the kiln?													
0240	0231	Excavati	Kiln Fill	Mid pinkish-red silty sand. Friable. Horizon clear onto base of kiln. Heat altered sand. No inclusions.			0.16					0239	No	No	0228		
				Heat altered sand at base of kiln.													
0241	0231	Excavati	Kiln Fill	Mid brownish red silty sand. Compact. Frequent small-medium CBM fragments. Occasional small angular and rounded small flints. Horizon clear. Directly under arches.			0.24				0242		No	No	0228		
				Rubble fill of kiln.													
0242	0231	Excavati	Kiln Fill	Mid reddish brown silty sand. Compact. Occasional small-medium CBM fragments. Horizon clear.			0.1m				0243	0241	No	No	0228		
				Fill of kiln.													
0243	0231	Excavati	Kiln Fill	Mid red sandy clay with abundant medium to large CBM inclusions (bricks from collapse or demolition of the kiln). Loose compaction. Horizon clear.			0.5m				0244	0242	Yes	No	0228		
				Rubble from collapse or demolition of the kiln.													
0244	0231	Excavati	Kiln Fill	White and black ash and charcoal deposit. Friable. Horizon sharp onto the kiln floor. No inclusions. Sample taken.			0.14					0243	Yes	Yes	0228		
				Ash and charcoal from the firing of the kiln.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0245		Excavati	Kiln chambers Structure	Main structure and archway chambers of kiln 0229. Consists of three walls (c.0.55-0.7m thick), the regular archways that are built into the base of the walls, the brick floor and the spine wall. The collapsed archways and the spine wall would have formed two chambers in which the fires were lit, with each chamber made up of 14 archways. There was no visible construction cut for 0245, suggesting it was built straight against the natural geology, providing better insulation. The archways and the plinths they formed for the unfired bricks are partially tied into the main walls of the structure, but only to a certain height - the archways themselves gave most of the structural strength. 0245 seems to have been built before 0246 and 0258, to make building archways easier. The existing outer walls of the kiln splay out further than the lower walls (now razed) upstanding walls of the kiln. It is unclear whether mortar, natural clay (maybe moistened to form a slip) or a mixture was used for this part of the structure. However it have been difficult to make archways without proper mortar presumably loosely tied in, in places to brick structures 0258. the main brick walls are 2.5-3 brick lengths thick. 5 samples of structural bricks and 3 squint bricks have been kept as 0230. The eastern wall of the chambers appears to have been partially repaired with a single skin of bricks, down to the top of the arches. This was not tied in with the main structure and is subsequently peeling away. Parts of the central spine wall may also have been repaired	5.84m	4.94							No	No	0229		
0246		Excavati	Wall and tunnel	Western wall of the kiln 0229 firing chambers, but not tied into the 0245 and 0258 structures well. Also consists of the two stoke holes/entrance tunnels to the 0245 firing chambers. The northerly of the two tunnels has partially collapsed, with intensive heat presumably further drying the bricks in places and the heating of the silicate content allowing warping. The southern tunnel though appears to have been repaired. Both tunnels only survive as single brick skins, on the exterior of the firing chambers but appear to have been twice as thick originally. They have subsequently crumbled. This structure seems to have been built after 0245 with 0258 being added to loosely tie the 0245 and 0246 together. A central spine wall runs between the two stoke hole tunnels and would have been the structural base for them. It also meets 0247. The spine wall has partially collapsed and appears to have a loose rubble and fired clay centre.									No	No	0229		

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0247		Excavati	Kiln tunnels Wall	Roughly north to south aligned walls at western end of kiln 0229. May have originally been a single wall, but now only exists as two lengths that appear to have met with the spinal wall that is part of 0246. Partially built to stop the stoke tunnels splaying outwards, but the tunnels also are partially built into 0247. 0247 has been bonded with white mortar. The northern portion of 0247 survives more fully, but both the northern and southern lengths have been partially robbed out. The walls are 2 brick lengths thick and are built straight into the natural geology with no clear construction cuts. The northern 0.85m of the wall is only two courses deep.									No	No	0229		
0248		Excavati	Brick plinths	two brick plinths at the west end of kiln 0229/tunnels 0246. These are made of bricks laid E-W and on their thinnest edge and are c.0.08m higher than the floor running through 0245 and 0246. The northern plinth is made up of three bricks and the southern of 2, but both are clearly incomplete as have mortar on their southern and northern edges respectively. possibly an incomplete/damaged threshold for the kiln, or possibly supports for the doors to close up the front of the kiln during firing.									No	No	0229		
0249		Excavati	kiln Structure	A rectangular brick structure, 6 courses high, that sits on top of the spine wall/between the stone tunnels that are part of 0246. It is not tied into 0246 in any discernible way, appearing to sit on the brick rubble that makes up this part of 0246. It is slightly offset to the south of the structure. The height of 6 courses is 0.41m. The structure steps out slightly for every course on its western end. unclear purpose - possibly a weight to keep the arches tightly locked or a structural support for something.	1.21m	0.7m							No	No	0229		
0250	0250	Excavati	Ditch Cut	Linear in plan, aligned north-east to south-west. 1.42m slot. Broad and relatively shallow profile with a sharp break of slope concave sides and a broad slightly concave base. Filled by 0251. Cut of ditch.	>1.42	0.8m	0.2m					0251	No	No			
0251	0250	Excavati	Ditch Fill	Mid to dark orangey brown very clayey silt. Compact. Occasional small flints. No finds. Fill of ditch.			0.2m				0250		No	No			
0252	0252	Excavati	Ditch Cut	Linear in plan, aligned NE-SW. The profile has a sharp break of slope, steep concave sides and an irregular lightly concave base. Filled by 0253. Cut of ditch.	>0.97	0.98	0.32					0253	No	No			
0253	0252	Excavati	Ditch Fill	Mid to dark orangey brown very clayey silt. Compact. Occasional small to medium sub rounded flints. No finds. Fill of ditch.			0.32				0252		No	No			

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0254	0254	Excavati	Ditch Cut	Linear in plan, aligned north-west to south-east. The profile is near "U" shaped, with a sharp break of slope concave sides and a concave base. Contained single fill 0255.	>1.1m	0.46	0.18					0255	No	No			
				Cut of ditch.													
0255	0254	Excavati	Ditch Fill	Dark greyish brown slightly clayey silt. Compact. Occasional small rounded pebbles. No finds.			0.18				0254		No	No			
				Fill of ditch.													
0256	0256	Excavati	Ditch Cut	Linear in plan, aligned north-west to south-east. The profile is shallow with a sharp break of slope, concave sides and a near flat base. Filled by 0257.		0.54	0.12					0257	No	No			
				Cut of ditch.													
0257	0256	Excavati	Ditch Fill	Mid orangey brown very clayey silt. Compact. No inclusions. No finds.			0.12				0256		No	No			
				Fill of ditch.													
0258		Excavati	Kiln walls	Two small areas of brick structure at the NW and SW corners of 0245 that loosely tie in with 0245 and 0246. they appear to have been built soon after 0246 was completed and from the west/front of the kiln. There is no clear break between 0258 and 0246, but internally 0246 and 0258 do not tie in together clearly, though this may simply be the misleading appearance of the highly vitrified/damaged internal bricks.									No	No	0229		
0259	0260	Excavati	Ditch Fill	Mid greyish brown compact silty sand. Frequent small-medium angular and rounded flints, the majority of which was found on the north edge and the base, possible tumble. Horizon clear. No finds.			0.22				0260		No	No			
				Fill of ditch.													
0260	0260	Excavati	Ditch Cut	Linear in plan, aligned NW-SE. Profile is slightly irregular with a sharp break of slope, concave sides and a concave base. Filled by 0259.	>1.2m	0.88	0.22					0259	No	No			
				Cut of ditch.													
0261	0262	Excavati	Ditch Fill	Mid greyish brown compact silty clay. Occasional small angular and rounded flints. Horizon clear. No finds.			0.1m				0262		No	No			
				Fill of ditch.													
0262	0262	Excavati	Ditch Cut	Linear in plan, aligned NW-SE. Shallow profile with a sharp break of slope, concave sides and a slightly concave base. Filled by 0261.	>1.3m	0.4m	0.1m					0261	No	No			
				Cut of ditch.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0263	0264	Excavati	Ditch Fill	Mottled grey clayey sand and silty sand and orange sandy clay. Occasional small stones. Rare chalk and charcoal flecks. Firm with a clear horizon.	>1.1m	0.7m	0.19				0264		No	No			
				Fill of ditch.													
0264	0264	Excavati	Ditch Cut	Linear in plan (slightly irregular), aligned NW-SE. Profile has a sharp break of slope, concave sides and a concave base. Filled by 0263.	>1.1m	0.7m	0.19					0263	No	No			
				Cut of ditch.													
0265	0266	Excavati	Ditch Fill	Mid grey firm-compact sandy silt with occasional small stones and small orange clay lumps. Clear horizon.	>1.05	0.4m	0.08				0266		No	No			
				Fill of ditch.													
0266	0266	Excavati	Ditch Cut	Linear in plan, aligned NE-SW. Shallow profile with a sharp break of slope concave sides and a slightly concave base. Filled by 0265.	>1.05	0.4m	0.08					0265	No	No			
				Cut of ditch.													
0267	0268	Excavati	Ditch Fill	Compact mid grey sandy silt with frequent orange sandy clay inclusions. Common small stones and occasional charcoal. Clear horizon.			0.13				0268		Yes	No			
				Fill of ditch.													
0268	0268	Excavati	Ditch Cut	Linear in plan, aligned NW-SE. The profile is relatively broad and shallow, with a sharp break of slope, concave sides and a slightly concave base. Filled with 0267.	>1.1m	0.65	0.13					0267	No	No			
				Cut of ditch.													
0269	0269	Excavati	Spread Other	Spread of burnt material. Irregular base but largely flat. Very shallow, similar depth right across. Another similar spread to the north of it.			0.14				0272	0270	No	No			
				Dump of burnt material.													
0270	0269	Excavati	Spread Fill	Mid to dark greyish black very gravelly organic clayey silt. Loose. Frequent small to medium pieces of angular flint, large amounts of which are fire cracked. Also several pieces of struck flint.			0.14				0269		Yes	Yes			
				Fill of spread.													
0271	0271	Excavati	Pit Cut	Oval in plan, roughly aligned north to south. The profile has a sharp break of slope, concave sides and an irregular base. Filled by 0272 and sealed by layer 0269. Very similar fills to 0269 possibly the same feature??	1.06m	0.75	0.24					0272	No	No			
				Cut of pit or possibly the same as larger feature 0269??													
0272	0271	Excavati	Pit Fill	Very dark greyish black organic silt. Compact. Occasional small angular flints, no finds.			0.14				0271	0269	Yes	No			
				Fill of possible pit.													
0273	0274	Excavati	Ditch Fill	Heavily mixed/root disturbed grey silty sand. Compact. Common small to medium stones and orange clay lumps. Clear to diffuse horizon.			0.15				0274		No	No			
				Fill of ditch.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0274	0274	Excavati	Ditch Cut	Linear in plan, aligned NW-SE. Profile has a sharp break of slope, approximately 45-60° slightly concave sides and a slightly concave base. Filled by 0273.	>1.2m	0.42	0.15					0273	No	No			
				Cut of ditch.													
0275	0276	Excavati	Drain Fill	Mid/dark greyish orange brown silty clay. Compact. Rare small angular and rounded flint inclusions. Horizon clear.							0276		No	No			
				Fill of probable land drain.													
0276	0276	Excavati	Land drain Cut	Linear in plan, aligned north-east to south-west. The profile is "v" shaped with steep sides and a narrow concave base. Filled by 0275.								0275	No	No			
				Cut of probable land drain.													
0277	0277	Excavati	Pit Cut	Same as 0271.									No	No			
0278	0277	Excavati	Pit Fill	Same as 0272.									No	No			
				Fill of pit.													
0279	0231	Excavati	Drain Masonry	Linear in plan found at the western end of each chamber within kiln 0231 in the centre of the floor. It consists of one row of bricks laying width ways next to each other. These are supported at each end with a brick on its side. The two drains run out of the front of the kiln and join together in front of the centre of the kiln Impossible to tell whether part of the original construction or later addition when water became a problem. The southern drain extends into the kiln for approximately 5.3m and the northern one for 4.4m. The bricks are the same size as the ones from kiln 0231.									No	No	0228		
0280	0281	Excavati	Ditch Fill	Mid greyish brown compact silty sand. Occasional small angular and rounded flints. Horizon clear. No visible difference or relationship between ditch fills.			0.14				0281		No	No			
				Fill of ditch.													
0281	0281	Excavati	Ditch Cut	Linear in plan aligned north-east to south-west. Profile is broad and shallow with a sharp break of slope, concave sides and a broad slightly concave base.	>1.1m	0.64	0.14					0280	No	No			
				Cut of ditch.													
0282	0283	Excavati	Ditch Fill	Mid greyish brown compact silty sand. Occasional small angular and rounded flints. Horizon clear. No visible difference with 0280.			0.14				0283		No	No			
				Fill of ditch.													
0283	0283	Excavati	Ditch Cut	Linear in plan, aligned approximately east-west. Sharp break of slope, concave sides. Filed by 0282. No relationship visible with 0281.		>0.2	0.14					0282	No	No			
				Cut of ditch.													

Context No	Feature No	Grid Sq.	Feature Type	Description	Length	Width	Depth	Small Finds	Cuts	Cut by	Over	Under	Finds	Sample	Group No	Phase	Spotdate
0284	0285	Excavati	Ditch Fill	Mid greyish brown compact silty sand. Rare small angular and rounded flints. Horizon clear. Single fill. No finds.	>0.7m	0.36	0.18				0285		No	No			
				Fill of ditch.													
0285	0285	Excavati	Ditch Cut	Linear in plan, aligned approximately east to west. "U" shaped profile with a sharp break of slope concave sides and a concave base. Filled by 0284. Same as 0283.	>0.7m	0.36	0.18					0284	No	No			
				cut of ditch.													
0286	0286	Excavati	Ditch Cut	Linear in plan, aligned NE-SW. Profile has a sharp break of slope, slightly convex sides and a regular concave base. Animal disturbance. Filled by 0287.		0.66	0.19					0287	No	No			
				Cut of ditch.													
0287	0286	Excavati	Ditch Fill	Mid to dark orangey brown very clayey silt. Occasional charcoal flecks. Compact. Good horizon clarity, large amounts of Roman pottery recovered.			0.19				0286		Yes	No			
				Fill of ditch.													
0288	0288	Excavati	Ditch Cut	Linear in plan, aligned NW-SE. The profile is shallow with a gradual break of slope concave sides and a v shaped base. Filled by 0289.		0.32	0.08					0289	No	No			
				Possible land drain????????													
0289	0288	Excavati	Ditch Fill	Mid greyish brown slightly clayey silt. Loose/friable. Good horizon clarity. No finds. No inclusions.			0.08				0288		No	No			
				Fill of ditch.													
0290	0290	Excavati	Ditch Cut	Very shallow linear ditch running SE-NW. 1.2m slot. Gradual break of slope at top and base. Irregular base. Filled by 0291.	>1.2m	0.58	0.12					0291	No	No			
				Cut of ditch.													
0291	0290	Excavati	Ditch Fill	Light to mid orangey grey clayey silt, compact. Good horizon clarity, occasional small to medium round pebbled and sub rounded flint. No finds.			0.12				0290		No	No			
				Fill of ditch.													
0292	0292	Excavati	Pit Cut	Oval in plan. Shallow profile with a sharp break of slope. Concave sides and a near flat base. Filled by 0293. Found at the NE end of spread 0294.	0.78m		0.1m					0293	No	No			
				Cut of pit.													
0293	0292	Excavati	Pit Fill	Very dark brownish greyish black silty sand. Firm. Horizon clear.			0.1m				0292		Yes	Yes			
				Fill of pit.													
0294	0294	Excavati	Spread Layer	Dark brownish grey silty sand with burnt flint patches. Horizon clear.			0.18						No	No			
				Spread cut by quarry pits.													

Appendix 3. OASIS form

OASIS DATA COLLECTION FORM: England

OASIS ID: suffolkc1-132074

Project details

Project name	EUN 035 Wash Pits Field Strip and Map/Assessment, Euston Estate
Short description of the project	Phases of geophysical survey and evaluation, strip and map and excavation were carried out on the site known as Wash Pits Field, which forms part of Euston Estate in Suffolk. Limited levels of Bronze Age or Iron Age struck flint were recovered from four contexts. There was no other evidence for prehistoric occupation. A Roman field system, dated tentatively to the mid 2nd century-4th century was also recorded, which produced limited levels of pottery and appeared to have been modified on at least two occasions. The main area of interest was the discovery of a 16th century brick and tile kiln of the Suffolk type and a larger and more elaborate late 17th/18th century version. These both showed evidence of various repairs and were associated with the widespread quarrying first identified in the evaluation and geophysical survey, and that was shown in the strip and map to spread across the majority of the site. Wash pits and settling ponds used for purifying and draining the clay were also recorded. Finds recovered from this main period of activity were somewhat limited, although ceramic building material (CBM), including bricks from the fabric of the structures, as well as waster products fired in the kilns were collected. There were also small quantities of animal bone, clay tobacco pipe, heated flints and Iron nails. Results from the bulk samples indicate that wood and bracken were used for fuelling the kilns, with the inclusion of crop waste.
Project dates	Start: 06-05-2014 End: 09-06-2014
Previous/future work	Yes / No
Any associated project reference codes	EUN 035 - HER event no.
Any associated project reference codes	EUN 035 - Sitecode
Any associated project reference codes	2014/063 - Contracting Unit No.
Any associated project reference codes	suffolkc1-133462 - OASIS form ID
Type of project	Recording project
Current Land use	Grassland Heathland 2 - Undisturbed Grassland

Monument type	DITCH Uncertain
Monument type	DITCHES Roman
Monument type	EXTRACTIVE PITS Post Medieval
Monument type	SUFFOLK KILNS Post Medieval
Monument type	LAYERS/DEPOSITS Uncertain
Monument type	PIT Uncertain
Significant Finds	CERAMICS Roman
Significant Finds	BRICK Post Medieval
Significant Finds	ROOF TILE Post Medieval
Significant Finds	PANTILE Post Medieval
Significant Finds	LITHIC IMPLEMENTS Late Prehistoric
Significant Finds	CLAY TOBACCO PIPE Post Medieval
Significant Finds	ANIMAL REMAINS Post Medieval
Investigation type	""Part Excavation"","Part Survey""
Prompt	National Planning Policy Framework - NPPF

Project location

Country	England
Site location	SUFFOLK ST EDMUNDSBURY EUSTON EUN 035 Wash Pits Field Strip and Map/Assessment, Euston Estate
Postcode	IP24
Study area	4.40 Hectares
Site coordinates	TL 922 771 52.3577465243 0.822806650773 52 21 27 N 000 49 22 E Point

Project creators

Name of Organisation	Suffolk Archaeology CIC
Project brief originator	Local Authority Archaeologist and/or Planning Authority/advisory body
Project design originator	Dr Abby Antrobus
Project director/manager	David Gill
Project director/manager	Jo Caruth
Project supervisor	Rob Brooks
Type of sponsor/funding body	Land owner
Name of sponsor/funding body	Euston Estate

Project archives

Physical Archive recipient	Suffolk County Council Archaeological Service

Physical Archive ID	EUN 035
Physical Contents	"Animal Bones","Ceramics","Environmental","Worked stone/lithics","other"
Digital Archive recipient	Suffolk County Council Archaeological Service
Digital Archive ID	EUN 035
Digital Contents	"Animal Bones","Ceramics","Environmental","Stratigraphic","Survey","Worked stone/lithics","other"
Digital Media available	"Database","Geophysics","Images raster / digital photography","Survey","Text"
Paper Archive recipient	Suffolk County Council Archaeological Service
Paper Archive ID	EUN 035
Paper Contents	"Animal Bones","Ceramics","Environmental","Stratigraphic","Survey","Worked stone/lithics","other"
Paper Media available	"Context sheet","Plan","Report","Section","Survey "

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Wash Pits Field, Euston, EUN 035, Archaeological Strip, Map and Excavation Assessment Report, v0.1
Author(s)/Editor(s)	Brooks, R.
Other bibliographic details	SCCAS Report No. 2014/063
Date	2015
Issuer or publisher	SACIC/SCCAS
Place of issue or publication	Needham Market
Description	A4, comb bound, white card covers, in colour.

Entered by	Rob Brooks (rob.brooks@suffolkarchaeology.co.uk)
Entered on	7 April 2015

OASIS:

Appendix 4. Evaluation quarry features

Trenches containing clay quarrying and brick making features recorded during the evaluation (Fig. 12)

Trench 3 **Quarry pits/brick deposits** Almost the entire length of the trench was taken up with approximately nine large cuts. These were not hand-excavated, although a 7.5m machine sondage was dug through the pits at the southern end to reveal the profile. The pits appeared to be sub-square, although some were more irregular, whilst the largest pits tended to be rounded. They ranged in size from 0.5m x >0.45m to 4.5m x >1.8m. Whilst the cuts were variable in plan, their profiles in section were very similar, with steep, slightly concave sides, curving to fairly flat bases. The pits were cut through either subsoil or the geological layers and were overlaid by topsoil. The fills consisted of grey and brown silty-sands, sometimes with clay content and most of the cuts contained only one fill. Some of the fills also contained burnt clay fragments and over fired brick fragments. A sample of unstratified bricks produced from the machining of the pit was dated as 17th to 18th century, which correlates with other brick fragments on site, as well as the brick sample from kiln 0036.
Trench 4 **Quarry pit 0046** A large pit cut measuring >8.4m x >1.8m x 0.8m deep was excavated in the west end of Trench 4. Its shape in plan was not clear, but it had gently sloping sides, a flat base and was filled with 0047, 0048 and 0049; mixes of brown and grey-brown clayey-sandy-silts, which produced no finds. This was interpreted as a quarry pit due to its proximity to those in Trenches 3 and 6, and because it was similarly shallow. It also produced a distinct positive anomaly result during the magnetometer survey, suggesting the presence of redeposited brick within the rest of the feature.
Trench 6 **Quarry pits/brick deposits** This trench revealed another series of quarry pits with a sub-square shape in plan, as well as several slightly more irregular pits, including some with a somewhat elongated shape. Similar linear cuts were seen amongst other areas of quarrying and were excavated in Trenches 7, 30 and 36. The deposits ranged in size from 0.75m x >0.8m to 9m x >1.8m. A sondage was excavated through the largest deposit, revealing it to be a series of irregular cuts that were at most 0.5m deep and seem to have been dug to the top of the sand geology, having excavated the clay layer. The fills were a mixture of greyish-brown sandy-silts with occasional clay content. Some of them also contained brick fragments.
Trench 7 **Quarry pits** Trench 7 revealed a series of sub-square and very irregular linear quarry pit cuts. These varied in size from 0.65m x >1.45m to c.9.75m x >1.8m. The largest of these deposits was machine excavated to 1.15m below ground level, where its uneven base was revealed. Another linear deposit was excavated as a possible ditch, but its extremely irregular and shallow base was interpreted as being that of another quarry feature. Similarly cuts were found in trenches 30 and 36. Mid to dark brownish-grey sandy-silt fills were recorded infilling these cuts, and none of them contained brick fragments.
Trench 8 **Quarry pits/brick deposit** Two slightly irregular sub-square quarry pits containing brick rubble were recorded at the northern end of Trench 8, measuring >3.27m x >1.8m and >2.95m >1.2m. These were centred on a discrete positive anomaly from the magnetometer survey and the brownish-grey silty-sand fills contained brick patches. At the southern end of the trench a less irregular sub-square pit was recorded with a similar fill, but no brick content. This measured >4.5m x >1.8m.
Trench 9 **Quarry pit/brick deposit** A sub-square corner to a cut was present in the west end of this trench, measuring >0.7m x >1.2m. This contained brownish-grey silty-sands and brick and burnt clay fragments, which were also present within the trench section, underlying the topsoil. A strong area of magnetic disturbance was recorded in this area of the site.
Trench 10 **Quarry pit/brick deposit** A single sub-square pit, measuring 2.65m x >1.6m was present in the western end of this trench. It contained brownish-grey silty-sand and brick and burnt clay fragments, which were also present in the trench profile. This feature centred on a discrete positive anomaly from the geophysical survey.
Trench 11 **Quarry pit/brick deposit** A discrete positive anomaly result from the geophysical survey marked a single pit, measuring >1.4m x >0.85m was present in the western end of this trench. It contained brownish-grey silty-sand and brick and burnt clay fragments, which were also present in the trench profile. It was cut by a field drain and a ditch/field drain.
Trench 12 **Quarry pit/brick deposit** A single sub-circular pit, measuring >1.05m x >0.55m was present in the eastern edge of this trench. It contained

brownish-grey silty-sand and brick and burnt clay fragments, which were also present in the trench profile.

Trench 14

Quarry pit/brick deposit

One sub-square pit in the western edge of the trench, measuring >2.65m x >0.7m and containing brownish-grey silty-sand and brick fragments.

Trench 15

Quarry pit/brick deposit

At the eastern end of this trench, to the south-east of kiln 0036, was a quarry pit containing brick deposits and mid brownish-grey silty-sand. It measured >2.75m x >2.55m and had a curved edge.

Kiln 0036, structure 0035 and rake-out deposits

Kiln 0036 and associated brick structure 0035 were recorded within the extended area of this trench. A more detailed description is given in the main report. To the north-west of the kiln, burnt deposits of rake-out material from brick-firing were recorded.

Trench 16

Quarry pits/brick deposits

At the northern end of this trench a large quarry pit containing brownish-grey sandy-silt, brick fragments and burnt clay was recorded. It measured 3.3m x >1.8m. A small area of a quarry pit with redeposited brick was also recorded emerging from the western edge of the trench as cut 0025. It appeared to have a slightly irregular sub-square shape and measured >1.55m x >0.4m and had brownish-grey silty-sand. A shallow linear cut, with an irregular base, was recorded as 0019 and ran on a north-east to south-west alignment.

Post-medieval linear features

Three linear features and a further small possible pit were recorded in this trench and are described in greater detail in the main report.

Trench 21

Quarry pits/brick deposits

Three sub-square and linear quarry pits containing brick rubble were recorded in plan within this trench and all three contained brownish-grey sandy-silt. The largest of these cuts measured 3.95m x >1.8m, whilst the remaining two were >0.9m x 0.75m and >1.8m x >1.65m.

Pits 0039, 0041 and 0045

Three pits containing material thought to be kiln waste and probably contemporary with the kilns. These are discussed in greater detail in the main report.

Trench 22

Quarry pits/brick deposits

Six irregular and sub-square pits were present in this trench, measuring 1.7m x >1.5m up to >3.4m x >1.8m. Each contained brownish-grey silty-sandy fills with varying levels of burnt clay and over-fired brick fragments. The presence of a large area of magnetic disturbance around this trench may indicate the presence of another kiln.

Trench 24

Quarry pit/brick deposit

One sub-circular pit containing brownish-grey silty-sand and brick fragments with burnt clay. The cut measured 2.4m x >1.25m. This end of the trench was identified as an area of magnetic disturbance in the magnetometer survey, and as such further brick deposits may be present nearby.

Trench 27

Quarry pit/brick deposit

A single sub-square pit was partially recorded within the southern edge of this trench, measuring 0.6m x >0.25m and containing brownish-grey sandy-silt with brick fragments. It appeared to be partially disturbed by tree rooting and was located in an area of magnetic disturbance.

Trench 29

Rake-out pit 0076

A large rake-out pit, 0076, associated with kiln 0081 in Trench 35, was recorded in Trench 29, containing several fills. Several machine sondages were excavated through the, which is discussed in greater detail in the main report.

Trench 30

Quarry pits

At least nine separate quarry pit cuts were present along the edge of this trench. Whilst some of these were sub-square, or linear, some were also extremely irregular. One of the linear cuts was excavated as a potential ditch and was recorded as 0074. This was shallow and had a very irregular base, indicating a similarity to those excavated in Trenches 7 and 36. None of these deposits produced brick fragments or burnt clay, but were consistently filled with greyish-brown silty-sand.

Trench 31

Quarry pit/brick deposit or possible rake-out pit

At the eastern end of Trench 31 a large cut measuring >5.2m x >1.8m was recorded. It western edge was irregular and it consisted of pale grey silty-sand, overlaid by a mixed deposit of greyish-yellow chalky-clay and grey chalky-sand, which had been heavily discoloured by burnt clay and over fired brick fragments. Whilst this may be another quarry pit, the density of the brick fragments and burnt clay in the uppermost fill is comparable to the material in the rake-out pits associated with the kilns. A similar feature was recorded at the west end of Trench 36.

Trench 34

Quarry pits/brick deposits

Two sub-square pits were recorded in this trench. Both contained mid brownish-grey silty-sand and one contained burnt clay and brick fragments. These measured >3m x >1.3m and >1.9m x >0.75m and emerged from the northern edge of the trench.

Trench 35
Kiln 0081
Kiln 0081 was present in the northern end of the trench. It was only partially uncovered during this stage of works. A more detailed description is given in the main report.

Trench 36
Quarry pit/brick deposit or possible rake-out pit
At the western end of this trench was a large cut very similar to that in Trench 31. It consisted of brownish-grey sandy-clayey material, with occasional brick fragments, overlaid by a clayey-sand that was heavily discoloured by burnt clay and over fired brick fragments.

Quarry pits/brick deposits
Three other quarry pits were recorded within the trench. All were sub-square, or irregularly shaped with straight edges and measured from 1.1m x >0.65m and up to >2.75m x >1.1m. All three contained brownish-grey silty-sandy fills and the largest pit contained brick fragments.

Trench 41
Quarry pits
Two sub-square/irregular features were present in this trench. These measured 3.4m x >1.8m and >2m x >0.7m and were filled with brownish-grey sandy-silt.

Trench 42
Quarry pits
In the north-east end of this trench two sub-square pit cuts were present, cutting earlier ditches. Both contained variable pale-mid greyish-brown slightly disturbed silty-sand and neither appeared to contain kiln waste. The largest cut measured >2.7m x >1.35m, with the other recorded at >1.6m x >1.5m.

Trench 43
Quarry pits/brick deposits
In the centre of this trench a large round pit filled with greyish-brown silty-sand and dense deposits of brick fragments and burnt clay. The visible extent of the pit measured 5m x >1.8m and corresponds closely with a discrete positive anomaly from the geophysical survey. Four smaller sub-rectangular pits were also present in this trench and they measured 1.5m-2.6m long x 0.7m->2m wide. They were filled with identical material to that in the larger pit, although no kiln waste was present.

Trench 44
Quarry pits
Four small sub-square quarry pits, containing brownish-grey silty-sand were present within Trench 44. These measured from 1.6m x 0.8m to >2.7m x >1m. None of these cuts produced kiln waste.

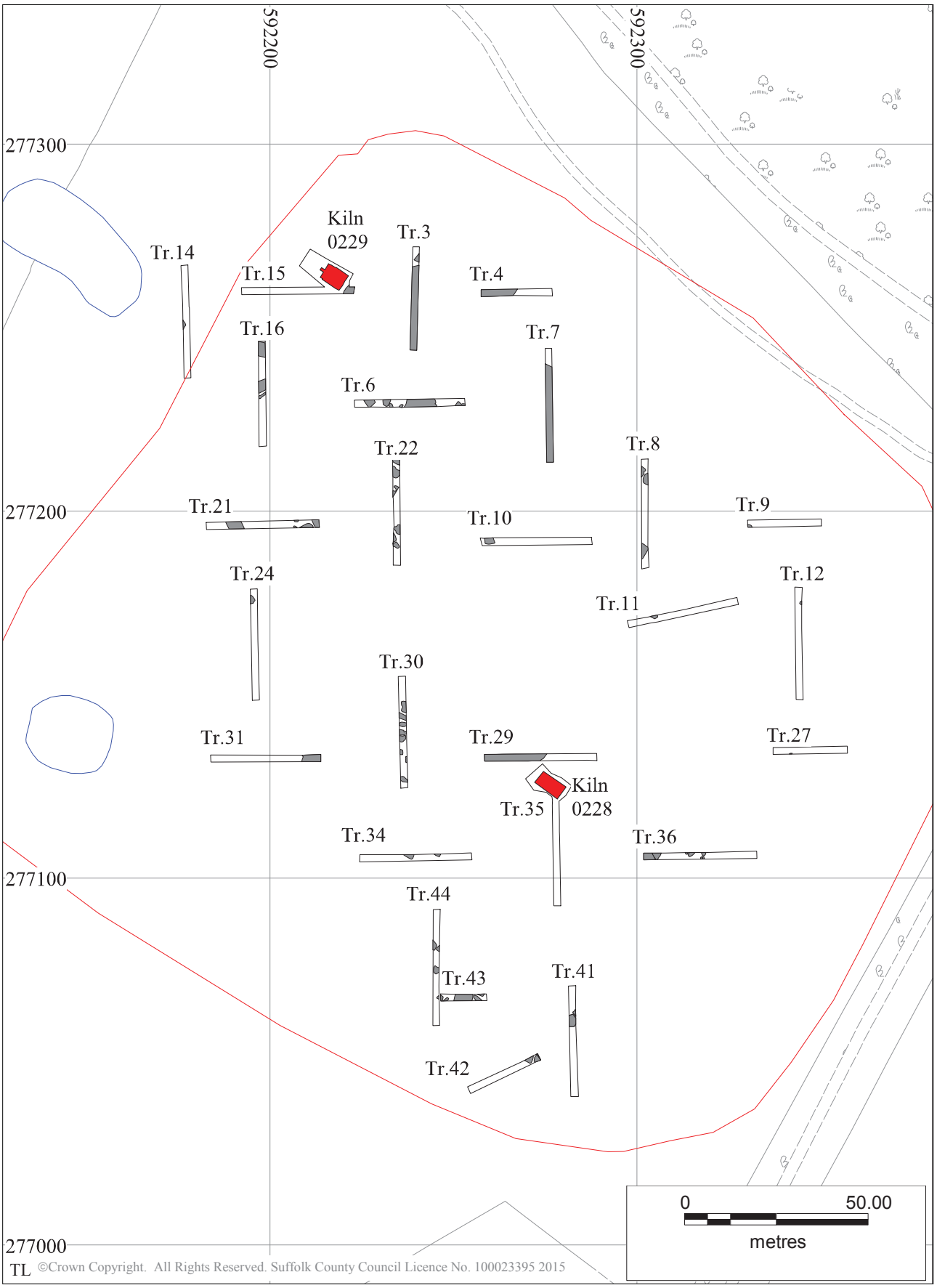

Figure 12. Quarry features recorded during the evaluation

Appendix 5. Bulk finds catalogue

Context	Pot No.	Pot Wt (g)	CBM No.	CBM Wt (g)	Iron Nails No.	Iron Nails Wt (g)	W flint No.	W flint Wt (g)	B flint No.	B flint Wt (g)	A bone No.	A bone Wt (g)	Ceramic Period	Overall Date	Notes
0001							1	11							
0004			1	1				0						P-Med	
0008	1	1					1	2					Pre	LBA-EIA	
0020			8	170										P-Med	
0022			3	1011										17th-18th C	
0024			2	1122										17th-18th C	
0029			34	2279										17th-18th C	1 clay pipe at 7g
0036			1	2520										17th-18th C	
0040			3	256										P-Med	
0044			3	627										17th-18th C	
0051							1	4							
0055	10	83											Rom	Roman	
0061	10	42					1	1					Rom	Roman	
0070							1	9							
0075			2	2202										17th-18th C	
0219							5	64							
0222							3	38							6 stone at 2g
0230			31	24919	4	62					13	176		PMed	1 clay pipe at 5g
0231			5	12392											
0243			17	2189							10	24		PMed	1 clay pipe at 3g
0267							1	38							
0270							5	28	2	145					
0287	14	150											Rom	Roman	

Appendix 6. CBM catalogue

Context	Sample	Fabric	Form	No	Wt/g	Abr	Length	Width	Height	Peg	Mortar	Glaze	Comments
0229		msf	LB	1	2623		227	107	59				cracked, 1 stretcher reduced & part vit
0229		msf	LB	1	2569	+	223	106	60				1 stretcher reduced & part vit
0229		msf	LB	1	2885		233	114	58				1 corner has rubbed concavity
0229		msf	LB	1	2853		230	111	61				reduced & part vit one header
0230		msfg	LB	1	55								thick green vitrification surfaces
0230		msf	PAN	2	499							DB	
0230		msf	RTP	1	738			164	13		thin traces		orange
0230		msf	RTP	1	128					1 x R			reduced edge
0230		msf	RTP	1	223					1 x S(2)			holes not full thickness, reduced edge
0230		msc	PAN	1	331								straight edge, thinner than other PAN frags
0230		msffe	PAN	1	353								curving edge, overfired, brittle, reduced along edges, another tile (or clay frag) stuck to surface
0230		msffe	PAN	7	2693								curving edge, overfired, brittle, reduced along edges
0230		msf	RTP	2	267			163	12	1 x S(2)			overfired, brittle, reduced edge
0230		msfg	LB	1	1122			109	62				thick green vitrification surfaces and break
0230		msfg	LB	1	2381	+	235	110	62		thick cream cs on top and stretcher		chamfered after firing, rough
0230		msfg	LB	1	1209			113	61		thick cream cs on top		chamfered from middle to stretcher edge, sooted break
0230		msfg	LB	1	1552			112	60		cream cs, incl on one broken end		chamfered from middle to stretcher edge
0230		msf	LB	1	50								corner frag
0230		msf	LB	1	2239	+	220	106	55				
0230		msf	RTP	5	140	+				1 x S			overfired, brittle
0231		msfg	LB	1	2571	+	236	119	54				cracked
0231		msfg	LB	1	2571	+	228	119	56				slight vit (but no reduction)
0231		msfg	LB	1	2283	+	226	115	54				cracked
0231		msfg	LB	1	2344	+	232	114	53				cracked

Context	Sample	Fabric	Form	No	Wt/g	Abr	Length	Width	Height	Peg	Mortar	Glaze	Comments
0231		msfg	LB	1	2587		228	117	54				
0239	<13>	msf	RTP	2	16								mostly oxidised
0239	<14>	msf	RTP	1	9	+							
0239	<14>	fsc	FC	1	3								
0239	<14>	msf	LB	1	25								reduced
0239	<14>	msf	LB	3	32	+							
0239	<14>	msf	LB	1	279	+			55				reduced surface
0239	<13>	msf	RTP	5	86								reduced
0239	<13>	msf	LB	13	186								mostly oxidised
0239	<13>	msf	LB	30	254	+							reduced frags
0239	<13>	msf	LB	1	565			107	52				reduced surfaces, laminated, partially vit
0239	<13>	msf	LB	1	927	+		111	55				almost fully reduced
0239	<13>	msf	LB	1	76								reduced/vit, chamfered?
0243		msf	RTP	1	87					1 x S(2)			orange-brown
0243		msf	RTP	1	603			163	13	1 x S(2)			orange-brown
0243		msf	RTP	15	1496					1 x R, 4 x S			
0244	<10>	msf	FC	9	121	+							some poss brick, all pale brown, 5 look like pieces of caulking?
0244	<10>	msf	LB	1	705			109	50-60				reduced, slightly blown
0244	<10>	msf	LB	24	1316	+							oxidised frags
0244	<10>	msf	LB	35	1338	+							reduced, some vit
0244	<10>	msf	RTP	5	80	+							1 reduced

Appendix 7. Animal bone catalogue

Context	No.	Wt (g)	Species	NISP	Adult	Juvenile	Neonatal	Element range	Measurable	Count	Chopped	Countable	Comments
0230	10	180	Cattle	1		1		Upper limb			1		Some erosion of bone surface
			Deer	4		4		Upper and lower limb				1?	Some erosion of bone surface. Metatarsal, radius and fragments of. Fallow?
			Mammal	5				Fragments					Some erosion of bone surface
0245	9	34	Deer	9		9	?	Upper and lower limb		2		?2	Young deer , size suggests very young Fallow, possible neonatal

Key:
NISP = Number of Individual Species elements Present

Appendix 8. Plant macrofossils and other remains

Sample No.	**10**	**11**	**12**	**13**	**14**
Context No.	**0244**	**0270**	**0293**	**0239**	**0239**
Cut No.	**0231**	**0269**	**0292**	**0231**	**0231**
Feature type	**Ash from kiln**	**Burnt spread**	**?Pit**	**Ash from kiln**	**Ash from kiln**
Cereals					
Hordeum sp. (rachis nodes)	x				x
Hordeum/Secale cereale type (rachis nodes)	xx			x	xxxx
Secale cereale L. (rachis nodes)	xx			x	xx
Cereal indet. (grain)					x
Dry land herbs					
Chenopodiaceae indet.	x				
Fabaceae indet.				xcf	
Medicago/Trifolium/Lotus sp.	x				
Mentha sp.					xcf
Other plant macrofossils					
Charcoal <2mm	xxxx	xxx	xxxx	xxxx	xx
Charcoal >2mm	xxxx	xxxx	xxxx	xxx	xx
Charcoal >5mm	xxx	xxxx	xx	xx	
Charcoal >10mm	xx	xx	xx	x	
Charred root/stem	xx			xx	xxxx
Ericaceae indet. (stem)	xcf				
(leaves)	xcf				
Pteridium aquilinum (L.) Kuhn (pinnule frags.)	xxxx			xxxx	xxxx
(stem)	xcf			x	xx
Indet. culm nodes	x				xx
Indet. inflorescence frags.	xx				xxx
Indet. seed			x	x	
Other remains					
Bone		x			
Burnt soil concretions			xxx		
Charred arthropod remains	x				
Siliceous globules	xx			xxx	xx
White ?siliceous concretions	xxxx			xxxx	
Mollusc shells					
Vertigo pygmaea	xb				
Lymnaea sp.	xb				
Sample volume (litres)	**40**	**40**	**30**	**10**	**10**
Volume of flot (litres)	**0.6**	**0.2**	**0.7**	**0.4**	**1**
% flot sorted	**25%**	**50%**	**12.50%**	**25%**	**<12.5%**

Key to Table

- x = 1 – 10 specimens xx = 11 – 50 specimens xxx = 51 – 100 specimens xxxx = 100+ specimens
- cf = compare b = burnt

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