Post-excavation Assessment

Multi-period remains from Zone E, Beaulieu Chelmsford, Essex

Post-excavation Assessment and Updated Project Design

oxfordarchaeology east

May 2017

Client: Countryside Zest (Beaulieu Park) LLP

OA East Report No: 2014

OASIS No: oxfordar3-277666

NGR: TL 7307 1008

Multi-period remains from Zone E, Beaulieu, Chelmsford, Essex

Post-excavation Assessment and Updated Project Design

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Report Date: May 2017

Report Number:	2014
Site Name:	Zone E Excavation
HER Event No:	SPBP16
Date of Works:	September 2016
Client Name:	Countryside Zest (Beaulieu Park) LLP
Client Ref:	15344
Planning Ref:	09/01314/EIA
Grid Ref:	TL 7307 1008
Site Code:	SPBP16
Finance Code:	XEXBEP14
Receiving Body:	Chelmsford Museum
Accession No:	

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Date:	04/05/17

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Position:	Regional Manager
Date:	12/05/17
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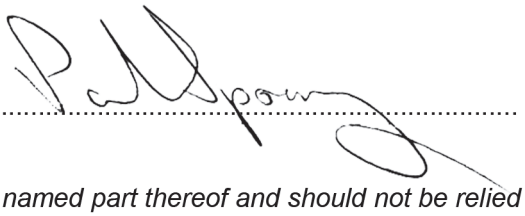

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Table of Contents

List of Figures

List of Plates

List of Tables

Summary

Oxford Archaeology East carried out an open area excavation within a proposed open space next to Zone E of the new neighbourhood, at Beaulieu, Chelmsford. The works were carried out between the 22/8/16 and 15/10/16.

The earliest phase of activity recorded dates to the Late Iron Age and comprises an enclosure ditch, roundhouse ring-gully and posthole, thought to be the eastern extent of an enclosed settlement previously recorded to the west (Site 8).

The second phase of activity is represented by a lime kiln that dates to the transitional medieval (Tudor) period. This kiln is likely to have been used to make the lime mortar during the construction of Beaulieu Palace, located 0.25km to the east.

Extending across the entire site was a series of pits laid out in rows aligned roughly east to west. The pits, of which a large proportion (c. 38%) were subsequently replaced by brick pads, all date to the post-medieval period (17th/18th century). The pads were constructed using broken Tudor bricks similar to those in the lime kiln and found near the brick clamps identified on Site 3, along with roof tile and occasional architectural fragments; indicative of demolition material Their function remains unclear but possible interpretations might be that they formed part of a formal garden or the foundations of a viewing platform.

1 Introduction

1.1 Project Background

1.1.1 Between the 22nd August 2016 and 15th October 2016 Oxford Archaeology East (OA East) carried out an archaeological excavation at Beaulieu, Chelmsford: Zone E (TL 7307 1008) (see Figure 1) in advance of a proposed open space within a new neighbourhood to the north-east Chelmsford, known as Beaulieu.

1.1.2 Outline planning permission for the Beaulieu development has been granted by Chelmsford City Council (ref: 09/01314/EIA). The new neighbourhood will comprise up to 3,600 new homes and up to 62,300m² of mixed use development including new schools, leisure and community facilities, employment areas, new highways and associated ancillary development, including full details in respect of roundabout access from Essex Regiment Way and a priority junction from White Hart Lane.

1.1.3 These archaeological excavations were undertaken to mitigate the construction impacts of an area of landscaping totalling 0.779 hectares.

1.1.4 This work was carried out in accordance with the Beaulieu Archaeological Investigation Strategy (URS 2013a), and an Archaeological Method Statement prepared by OA East (Mortimer 2016).

1.1.5 This excavation is part of an ongoing archaeological project, across a phased development. The time-scale for this development is dependant on many factors and so cannot be accurately determined at the present time. The work presented in this Post-Excavation Assessment will eventually be incorporated into wider Analysis and Publication Reports.

1.1.6 This assessment has been conducted in accordance with the principles identified in English Heritage's guidance documents *Management of Research Projects in the Historic Environment,* specifically *The MoRPHE Project Manager's Guide* (2006) and *PPN3 Archaeological Excavation* (2008).

1.1.7 The site archive is currently held by OA East and will be deposited with the appropriate county stores in due course.

1.2 Geology and Topography

1.2.1 Beaulieu (the Site) is located approximately 4km to the north-east of Chelmsford, Essex. The Site encompasses an area of high ground (*c*. 50m OD) surrounded on three sides by river valleys. To the west and south is the River Chelmer, and to the east is Boreham Brook. North of the Site the ground rises towards the village of Terling. From the southern part of the Site there are views south towards the Chelmer Valley and Danbury Hill.

1.2.2 Zone E is situated in the centre of the Beaulieu development (centred on TL 7307 1008; Fig. 1) and the current land use is arable farmland.

1.2.3 The superficial geology consists of boulder clay of the Lowestoft Till formation underlain by London Clays. To the south of the area lies a mixture of head deposits and sand and gravels (British Geological Survey).

1.3 Archaeological and Historical Background

Neolithic

1.3.1 Essex has some of the earliest surviving evidence of settlement, mainly concentrated to the north-east along the River Crouch at Lawford and Lemarsh (Hedges, 1984). Evidence for possible domestic settlement within the vicinity of Beaulieu was recorded at Court Road, 1km to the north-west, in the form of several pits with Neolithic pottery within their fills (SMR 6142).

Bronze Age

1.3.2 Settlement continued to be concentrated along the river valleys of the Chelmer and Crouch, however during the Bronze Age the landscape was enclosed by field systems for the first time, such as those found at Great Wakering (Kemble, 2001). These enclosed field systems would have continued in use through into the early Iron Age. It has been suggested that these Bronze Age field systems form the basis for the modern landscape in the Chelmer Valley (Drury & Rodwell 1980).

1.3.3 Several crop-marks have been recorded by aerial photography to the south of Belstead Hall and interpreted as part of a Bronze Age settlement (SMR 16888), with further domestic dwellings excavated at Springfield Lyons, 2.5km to the south-west. Further occupation sites are attested to by the recovery of artefacts, such as at New Hall School, to the east and Pratt's Farm, to the north.

Iron Age

1.3.4 The settlement pattern during the Iron Age would have been of nucleated settlements within a larger farming landscape. Evidence of this, within the vicinity of the development area, was seen to the south of Belstead Hall (SMR 17438). This comprised a large enclosure with associated pits and smaller ditches (Drury, 1978).

1.3.5 The Later Iron Age witnessed an expansion of settlement onto the heavier clay soils and the continued occupation of the estuaries. These estuarine sites are seen to become more complex in nature over time, with higher population density and sustained occupation, such as has been found at Little Waltham (Drury 1980).

1.3.6 By the end of the Iron Age sites such as Gosbecks oppida show that portions of the population were highly structured and of high status. These sites would have relied on farming communities scattered around the environs to supply agricultural commodities. (Crummy 1997).

Roman

1.3.7 During the Roman period a *mansio* (an imperial post station or inn) was established 5km west of Beaulieu at Moulsham Street in Chelmsford. Around this a small market town (*Caesaromagus*) developed with the surrounding area forming an agricultural hinterland to supply produce to the town.

1.3.8 This agricultural landscape would have comprised large farms and villa complexes, such as those at Great Holts Farm and Bulls Farm Lodge. Smaller domestic sites would also have formed part of the landscape. Evidence for these has been recorded during evaluation work at Greater Beaulieu. Evidence for pottery making, associated with domestic use was also recorded.

Anglo-Saxon

1.3.9 In the immediate post-Roman period, the Roman town at Chelmsford was abandoned and much of the surrounding landscape reverted to rough pasture or woodland (Hunter

2003). No known remains of Anglo-Saxon date are recorded within the application site although this is more likely to reflect the relatively poor archaeological visibility of Anglo-Saxon settlement sites rather than a lack of activity during the period.

1.3.10 Two records relating to the Anglo-Saxon period are held by the EHER; both of which are documentary records for Late Saxon manors, with Belestedam (Belstead Hall) recorded in the Domesday survey of AD 1086 and one in the vicinity of New Hall School documented in AD 1062 (Reaney 1935).

Medieval

1.3.11 The medieval town of Chelmsford was founded at the end of the 12th century, by the Bishop of London, to the north of the earlier Roman settlement at Moulsham. Throughout the medieval period the site was located within the rural hinterland of Chelmsford in a landscape populated by scattered farmsteads and manors.

1.3.12 To the east lay the manor of New Hall on the site of the current New Hall School. It is first mentioned by name (as 'Nova Aula') in documents dating to AD1301 when the site formed part of the lands owned by the Canons of Waltham Abbey and was used as the summer residence of the Abbott. It was later transferred to the Regular Canons under Henry II (Burgess & Rance 1988).

1.3.13 The first deer park surrounding New Hall was created during the medieval period with the manor at its centre (Tuckwell 2006). Under Henry VII, New Hall was granted to Thomas Boteler, Earl of Ormond, who received a licence to crenellate (fortify) it in AD1481 (E41/420) and who, in all likelihood, rebuilt or remodelled the original medieval hall in the latest architectural style. The new structure came to the attention of Henry VIII who visited New Hall in 1510 and 1515, shortly before Ormond's death. Subsequently, the property passed to Thomas' daughter and thus into the Boleyn family through her husband Sir Thomas Boleyn, from whom Henry VIII acquired the hall in 1516, changing its name to the 'Palace of Beaulieu'. Shortly after 1518 he rebuilt the Ormond's medieval hall on a quadrangular plan with gatehouse in the south range, great hall in the east and chapel in the west ranges. Mary Tudor took residency at New Hall intermittently between 1532 and her ascendancy to the crown in 1553.

1.3.14 Evidence for a further moated manor is recorded at Belstead Hall. This manor was occupied throughout the medieval period. By 1325 it was called Belestede, in 1354 it was recorded as Belestede Hall and by 1504 it was known as Belested Hall. The name is thought to derive from 'the site of the bell house' (Reaney 1935).

1.3.15 Analysis of aerial photographs and geophysical survey identified a number of features which, when investigated by trial trench evaluation, were found to comprise a possible enclosure ditch or moat. A cobbled surface (possibly representing a house platform or yard surface), pit and several further ditches were recorded within the enclosure. Pottery recovered from the features suggests an occupation date of the 12-13th century (ECC FAU 2009). These remains have been interpreted as paddocks and an agricultural processing area associated with the manorial site at Belstead Hall *c.*160m to the north-east of Site 7 within Zone A of the Beaulieu development.

Post-medieval

1.3.16 The development of New Hall and its deer park dominated the landscape of the application site and the surrounding area until the park contracted in size and the fields were enclosed for agriculture in the early 18th century. As the deer park was reduced in size the former medieval manors or lodges developed into farms, creating an essentially agricultural landscape.

1.3.17 Since the medieval period, New Hall had been set within the largest deer park in Essex; once totalling some 1,500 acres. The EHER records that the enclosed area actually comprised four separate parks surrounding New Hall and its gardens. Within the Great or Old Park located to the north of New Hall. The remaining parks were known as the Red Deer Park located to east of New Hall, the Dukes Park (located further east beyond the study area; EHER 47226) and the New or Little Park situated to the south and west of New Hall. The application site is located within this latter area.

Previous Archaeological Investigations

Geophysical Surveys

1.3.18 Geophysical magnetic susceptibility and detailed magnetometer surveys were carried out to evaluate the potential for important archaeological remains that may be buried within the Site. The magnetic susceptibility survey provided a rapid assessment of likely areas for previous settlement and industrial activity. The survey identified six areas of high potential, ten areas of medium potential and seven areas of low potential (Scott Wilson 2008). The magnetic susceptibility survey was followed by a detailed magnetometer survey of c.50% of the Beaulieu scheme. This survey provided a greater level of detail and identified individual features such as pits and ditches, field boundaries, buildings and structures, kilns or hearths and buried iron objects. The detailed magnetometer survey identified ten areas of high archaeological potential; six of medium potential and 19 of low potential (Scott Wilson 2008).

Trial Trench Evaluation, 2008

1.3.19 A limited programme of targeted trial trench evaluation was undertaken between June and August 2008 to support the Environmental Impact Assessment for the Beaulieu development. The purpose of the trial trenching was to confirm the presence/absence and significance of archaeological remains at eight sites identified by an assessment of the combined results of the desk-based studies and non-intrusive surveys (Scott Wilson 2007).

1.3.20 The trial trenching confirmed the presence of archaeological remains dating from the late prehistoric to post-medieval periods. This included a Late Iron Age and Early Romano-British settlement (Site 8); an Iron Age ditch (Site 5); medieval rural settlement possibly indicative of a precursor to Belstead Hall (Site 7); a possible medieval/transitional medieval warrener's lodge associated with the former deer park (Site 10); transitional medieval moated enclosure (Site 11); Tudor fishpond and associated earthwork dam (Site 2); a brick making site comprising two scove or clamp kilns of possible Tudor date (Site 3) and evidence for associated quarrying activity (Site 4).

Beaulieu Minerals Trial Trench Evaluation, 2011

1.3.21 A trial trench evaluation was undertaken in September/October 2011 to inform and support the planning application for the Beaulieu Minerals Extraction scheme. The evaluation identified a concentration of archaeological remains to the north-west of New Hall School. These remains appear to represent a rural settlement and possible metalworking activity dating from the Late Bronze Age through to the end of the Roman period. Metal detecting of the plough soil revealed several Early Roman coins and fragments of Early Roman brooches within the main area of activity.

Beaulieu Phase 1 Evaluation and Excavations, 2013

1.3.22 Archaeological trial trench evaluation of the proposed Essex Regiment Way roundabout, White Hart Lane junction and connecting access road identified four locations of significant archaeological remains (Stocks-Morgan 2013).

1.3.23 Site 5, located within the footprint of the proposed Essex Regiments Way roundabout, identified part of a Middle Iron Age settlement comprising a single roundhouse, surviving only as the remains of an eaves-drip gully. Several small pits and postholes were identified outside the roundhouse and were likely to be associated with domestic activity contemporary with the building. This settlement was surrounded by a large oval enclosure.

1.3.24 In Area A1 a single east to west aligned field boundary ditch of possibly Late Iron Age date attests to a wider agricultural landscape of field systems. A second, probably medieval, ditch was encountered on a north-west to south-east alignment (Stocks-Morgan 2013a).

1.3.25 In Zone D of the development Site 11 and Area D1 identified evidence of two High medieval house platforms and their surrounding enclosures. These are thought to be a medieval settlement associated with Belstead Manor estate (Stocks-Morgan 2013b).

Beaulieu Zone A Housing Evaluation and Excavations, 2014

1.3.26 Trial trench evaluation and subsequent open area excavation within the Zone A housing area to the south of Belstead Hall Farm revealed remains dating from the Middle Bronze Age to the post-medieval period (Stocks-Morgan 2014a),

1.3.27 A Middle Bronze Age boundary ditch, aligned north-east to south-west, evidence for Early Iron Age open settlement comprising ten pits containing a large assemblage of pottery and fired clay, and a medieval, possible retting pit and enclosures were also recorded at Site 7. Sparse domestic activity is suggested by Late Iron Age pits that were revealed in Areas A3 and A4 along the side of a brook to the south of Zone A. In contrast Area A2 revealed the presence of a Late Iron Age/Roman enclosure ditch and later medieval ditch.

Zone B and E Trench Evaluation, 2014

1.3.28 Four areas of significant archaeological remains were identified in Zone E. No significant archaeological remains were recorded in Zone B (Stocks-Morgan 2014b).

1.3.29 Two small open area excavations were undertaken in the western part of Zone E, which encountered Late Bronze Age / Early Iron Age open settlement, comprising five four-post structures and several pits. A further area to the north of the site encountered a small undated gully.

1.3.30 A large open area excavation (Site 8) was undertaken towards the south-eastern corner of the site, which identified occupation spanning a period from the Late Iron Age into the Early Roman periods. These settlement remains consisted of an enclosure surrounding a roundhouse and associated occupation features. In the Early Roman period this enclosure was reconfigured and the roundhouse was replaced. This phase of settlement also produced an associated midden deposit and an ancillary roundhouse (Stocks-Morgan 2016a)

Beaulieu Phase 2a Infrastructure mitigation evaluation and excavations, 2015

1.3.31 A small open area excavation was carried out ahead of the construction of drainage ponds and swales that form part of the Phase 2a infrastructure works. The archaeology encountered comprised a prehistoric trackway and a Late Iron Age nucleated settlement (Stocks-Morgan 2016b).

CZ1 / Site 10

1.3.32 A 14th / 15th century pit was encountered with two associated ditches during excavation of Zone G / Site 10. This pit is thought to be a retting pit, based upon its shape and the recovery of pollen/seeds from the waterlogged deposits. A later medieval ditched enclosure was also recorded. Inside the enclosure were the remains of a 16th century house, represented by the remains of two brick-built fireplaces, and a possible brick-built staircase. Two further brick-built ancillary structures were evident, one being a cellar and the second a probable latrine block (Stocks-Morgan 2016c).

Beaulieu Gas Diversion

1.3.33 A total of six trenches were excavated across two separate fields, within the proposed development area.

1.3.34 No significant archaeological finds, features or deposits were present in the evaluation trenches (Stocks-Morgan 2016d).

Beaulieu Primary and Secondary Schools Site

1.3.35 A total of sixty-one trenches were excavated within the proposed development area, across three separate fields.

1.3.36 Two phases of medieval field boundaries were present within the southern field, one of which was on a north-west to south-east alignment and the second phase aligned on a north to south axis. One further undated ditch was encountered in the northern part of the development area (Stocks-Morgan 2016e).

Beaulieu Land parcels CZ 1 and CZ 2 and Zones M and N

1.3.37 This evaluation comprised thirty-three trenches across three separate fields, within the proposed development area.

1.3.38 A possible prehistoric posthole was recorded to the north of the site and a transitional medieval ditch and two quarry pits were encountered towards the eastern side of the development area. A further undated ditch was also present (Stocks-Morgan 2016f).

Beaulieu LS1, CZ5 and the Primary School site (Zone P)

1.3.39 A total of forty-five trenches were excavated across two separate fields, within the proposed development area.

1.3.40 Evidence of Early Iron Age open settlement was encountered, comprising a fire pit and two small pits. A Middle Iron Age ditch, thought to be part of either a field system or trackway, was revealed in the eastern field.

1.3.41 Transitional medieval remains comprising several brick-filled linear features associated with the deer park were recorded in the eastern field. These may be evidence for a deer course. A post-medieval ring ditch was evident in the north-western part of the site along with a field boundary (Stocks-Morgan 2016g).

Beaulieu CZ 6 and CZ 7

1.3.42 Forty-one trenches were excavated across two separate fields, within the proposed development area.

1.3.43 This evaluation recorded the remains of early prehistoric dispersed settlement in the form of a fire pit and a rectangular pit which contained frequent charcoal. In the northern part of the development area a putative late medieval settlement comprised four possible wall foundations, perhaps belonging to a building, and two ditches thought to be part of an enclosure.

1.3.44 Several brick-filled linear features in both fields may be evidence for a deer course associated with the deer park (Stocks-Morgan, 2016h).

Beaulieu land parcel CZ 7

A total of eighteen trenches were excavated in this area. The remains of two linear, brick-filled features may be evidence for a deer course. A further three post-medieval field boundaries were found, along with two undated ditches and an undated posthole (Stocks-Morgan 2016i).

Beaulieu Minerals Extraction Site (Site 1)

1.3.45 Evidence for prehistoric activity included three Early Bronze Age pits that may have been the remnants of cremations, although this was not conclusive; they could equally represent domestic activity. An Early Iron Age post-built structure interpreted as a possible grain store was recorded in Area 1B. During the Middle Iron Age an unenclosed settlement was established that consisted of a roundhouse, a post-built structure and two ovens, a possible stock enclosure and numerous pits and postholes. Subsequently a Late Iron Age roundhouse within a sub-rectangular enclosure were set out in this area. The Early Roman period was represented by rectangular structures with associated cobbled surfaces and a small oven in Area 1C and a trackway to the north-east, in Area 1B.

1.3.46 Two areas of 12th to 14th century occupation were identified in Areas 1A and 1C. In Area 1C this comprised a rectangular enclosure encompassing a rectangular building. In the north-east of Area 1A, a small building was recorded in association with intercutting cess pits and a hollow filled by midden material.

1.3.47 By the transitional medieval period several brick-filled gullies had been laid out. In the main these comprised gullies backfilled with broken brick fragments that followed the alignments of pre-existing medieval boundary ditches. These probably formed the foundations for creating visible barriers within the deer park landscape. A smaller number of more regularly constructed, brick-filled features possibly represented the foundations for small buildings.

1.3.48 Three post-medieval ring ditches spaced across the excavation were most likely tree stands within a formal or managed garden (Stocks-Morgan 2017).

1.4 Acknowledgements

1.4.1 The author would like thank Iain Williamson of AECOM and Countryside Zest (Beaulieu Park) LLP who respectively commissioned and funded the archaeological work. The project was managed by Richard Mortimer and the illustrator was Charlotte Walton. Thanks are also extended to Simon Birnie and Steve Graham who supervised the site and Jessica Dyson, Ed Cole, Paddy Lambert, Adele Lord and Joanna Nataszyc who helped with the fieldwork. The project was monitored by Alison Bennett of Essex County Council. The machining was undertaken by Dave Calder of Danbury Plant Hire.

2 Project Scope

2.1.1 This assessment deals only with the excavation carried out on areas designated as Zone E, within a larger phased development. The earlier evaluation data will be incorporated into the results where relevant. Further assessments will be produced following any future work required on other parts of the development.

3 Original Research Aims and Objectives

3.1 Aims

3.1.1 The main aim of the excavation was to preserve by record the archaeological remains present within the development area and to reconstruct the history and use of the site.

3.1.2 The current project will be incorporated within the wider archaeological investigations at Beaulieu. The research objectives that are applicable to this specific site are detailed below.

3.2 Regional Research Objectives

3.2.1 There are a number of regional research objectives that have been identified by Historic England, formerly English Heritage (English Heritage 1997) which provide a framework for investigation and can be applied to the Medieval evidence recovered at Beaulieu.

Iron Age (700BC to 43 AD)

- To identify suitable means of dating Iron Age sites chronologically through absolute dating, regional pottery sequences and datable pottery assemblages
- A focus on developing a greater understanding of the development of the agrarian economy; this should include development of knowledge of the increase in agricultural production through the study of the landscape such as trackways, enclosures, drove routes and fields
- A need for site specific excavation to focus on settlement remains
- A further priority is the transition between the Bronze Age and the Iron Age in the region
- There should be further focus on Iron Age settlement chronology and dynamics, social organisation and settlement form and function in the Early and Middle Iron Age
- The processes of social and economic change during the Late Iron Age including the adoption of the Aylesford/ Swarling culture and the development of tribal polities
- The Iron Age / Roman transition
- Further research is required to understand the distribution, density and dynamics of Iron Age settlements.

The Roman Period (AD 43-450)

- To characterise the consumption and production of food, with particular reference to crop processing activities and storage and the impact of the Iron Age / Roman transition
- To identify agricultural production and ironworking, as a means to understand agricultural innovation and regimes used in the later Roman period

- To study the origins of relict field systems, understand how wooded the landscape was and what changes occurred at the end of the Roman period
- To characterise rural settlement sites, the form of farms and buildings and how far the size and shape of fields can evidence agricultural regimes
- To understand the continuity of Iron Age settlement into Roman and new settlement structure and land use following 2nd century Romanisation.

The Medieval Period (AD 1066-1540)

- The study of medieval rural settlement diversity across East Anglia
- The characterisation of settlement forms, function, chronology, structure and the investigation rural settlement type and morphology
- The understanding of agrarian regimes on the geology of the rural sites, through the use of environmental sampling
- The characterisation and chronology of medieval field systems and understanding how the size and shape of fields can be related to agricultural regimes
- The study of the evolution of the medieval house and farmstead and agrarian economy
- To understand the form that farms take and the type of building present and whether functions can be attributed to them.

The Post-Medieval Period AD (1540 – 1900)

- To map historic parks and gardens and identify / define unregistered parks and gardens. To assess the differential survival of earlier phases of historic parks
- The characterisation of settlement forms, function, chronology
- To assess / understand the development of parks and gardens in respect to the social and economic circumstances, especially in relation to the distribution of wealth and social stratification
- To understand the development of farmsteads and modern farming practices. To determine the social status specifically through architectural design
- To understand the effect of the dissolution and the social change brought about by the decline in manors, estates and gardens

3.3 Site Specific Research Objectives

3.3.1 The site specific aims for Zone E are:

- To confirm the extent and nature of the early post-medieval brick pads found in Site 8 to the west
- To preserve by record the nature, extent, form, function and longevity of Iron Age and Early Roman settlement activity seen previously in Site 8.

4 Summary of Results

4.1 Provisional Site Phasing

4.1.1 For consistency with all previous and forthcoming reports, features where dating is available will be attributed to the following periods (see Table 1). Features have been placed in phases based on stratigraphic and spatial relationships, alongside the use of artefact dating.

Neolithic (3500 – 2000 BC)	Early Neolithic (3500 – 2900 BC)	
	Middle Neolithic (2900-2500 BC)	
	Later Neolithic (2500 - 2000 BC)	
Bronze Age (2000 – 700 BC)	Early Bronze Age (2000 – 1500 BC)	EBA
	Middle Bronze Age (1500 – 1000 BC)	MBA
	Later Bronze Age (1000 – 700 BC)	LBA
Iron Age (700 BC – AD 43)	Early Iron Age (700 – 200 BC)	EIA
	Middle Iron Age (200 – 50 BC)	MIA
	Later Iron Age (100 – 50BC)	LrIA
	Late Iron Age (50 BC – AD 43)	LIA
Roman (AD 43 – 410)	Early Roman (AD 43 – 200)	ER
	Roman (AD 200 – 400)	
Saxon (AD 410 – 1066)	Early Anglo-Saxon (AD 410 – 650)	
	Middle Anglo-Saxon (AD 650 – 850)	
	Late Anglo-Saxon (AD 850 – 1066)	
Medieval (AD 1066 – 1650)	Early Medieval (AD 1066 – 1200)	
	High Medieval (AD 1200 – 1450)	
	Transitional (AD 1450 – 1650)	
Post-Medieval (AD 1650 – 1800)		
Modern (AD 1800 – present)		

Table 1: Chronology used in this report

4.1.2 The site was overlain by a layer of dark grey brown silty clay topsoil (7030) that was on average 0.30m thick. This sealed a very thin layer of subsoil (7031) that was a maximum of 0.10m thick.

4.1.3 The underlying natural deposits into which the archaeological features were cut comprised a mid blueish grey brown clay.

4.1.4 The archaeology encountered (Figs 2 and 3) comprised two main phases, the earliest of which dates to the Late Iron Age / Early Roman period and consists of a ditch and roundhouse gully associated with the settlement encountered immediately to the west in Site 8 (Stocks-Morgan 2016). A break in occupation was then evident that lasted until the transitional medieval period, when a lime kiln associated with the construction of Beaulieu palace was constructed.

4.1.5 Extending across the excavation area was a series of post-medieval pits laid out in rows, of which several were replaced by brick pads. These pits / brick pads formed part of the same broader feature recorded to the west in Site 8 (see Fig. 3 for plan of archaeological features across both areas) (Stocks-Morgan 2016a).

4.2 Late Iron Age / Early Roman

4.2.1 A slightly curvilinear ditch (**6389**) was present in the western part of the excavation area which was aligned north-east to south-west. This ditch had stepped sides and a concave base and measured 2.20m wide and 0.55m deep. The fill comprised a mid greyish brown silty clay (6390) (see Fig. 4, S. 2202). It was cut by one of the series of post-medieval pits (**6391**) extending across the site (see below). The excavated slot in the northern part of the ditch (**6532**) was more truncated, most probably from modern ploughing, though this did contain eleven sherds of pottery of probable Late Iron Age date (App. B2).

4.2.2 To the east of this ditch lay a roundhouse gully (**6534**) which had an overall diameter of 12.6m. A possible entranceway was present in the south-eastern part of the gully (**6528**). This gully had gradual sides and a fairly flat base which measured 0.30m wide and 0.24m deep. It was filled by a light greyish brown silty clay (6529).

4.2.3 A posthole (**6417**) was encountered within the northern part of the roundhouse. It was sub-circular in plan, measuring 0.44m in diameter and 0.14m deep with steep sides and a flat base. The fill comprised a dark blackish brown silty clay (6418) which contained frequent daub pieces.

4.2.4 Although both the roundhouse and posthole are undated, their form is typical of Late Iron Age / Early Roman settlement remains, suggesting that they represent a continuation of the enclosed settlement of this date recorded in Site 8 immediately to the west.

4.3 Transitional medieval

4.3.1 At the southern end of Field 25 a lime kiln was encountered within Trench 584 of the Zone E evaluation, *c*.55m to the south-east of the main excavation area. This trench was extended to reveal the entirety of the feature to allow it to be recorded as part of the Zone E excavation. The kiln structure was exposed but preserved *in situ*: no excavation of the structure itself was carried out and details of its construction are limited to observations of external surfaces.

4.3.2 This lime kiln was a brick built 'flare' kiln which had two flue entrances aligned to the north and south (Plates 1 and 2). The initial construction cut (**7033**) for the kiln was dug into natural with the central part being sub-circular in plan, measuring 2.2m in diameter.

It had vertical sides and a flat base which was 1.78m deep. To the north the cut extended out by 3.70m and had a rounded terminus with a fairly steep side. To the south the cut again extended out in the same manner, however, the southern end of the flue could not be established due to the presence of modern field boundary.

4.3.3 The lime kiln itself (**7026**) was constructed using mid orangey red sandy bricks. The base of the kiln measured 0.74m in height and was constructed from bricks (with an average size of 220mmx100mmx55mm) laid flat in an irregular course/pattern.

4.3.4 The sides of the kiln were built at a slope of *c*. 30 degrees in an irregular course using similar mid orangey red sandy bricks with an average size of 160mmx100mmx50mm. The internal diameter at the base of the kiln was 0.70m and the internal diameter at the top of the surviving structure was 1.30m. A rounded arch was constructed into both flue entrances along with a central arch, which had bricks laid flat over the top of the arch. All three arches measured 0.45m wide and 0.55m high (see Plates 1 and 2).

4.3.5 Inside the kiln, three deposits associated with its use and last firing were encountered. The first of these was a 0.26m thick black charcoal-rich deposit (7069), which was. Overlain by a 0.24m thick, light brown silty clay (7066) with frequent chalk / lime pieces (<3cm). A further layer of charcoal-rich material (7065) extended over the top of this and was 0.04m thick. A sample was taken from this fill was sent for radiocarbon dating: the calibrated date range this produced is unfortunately much earlier than the date of the kiln: 47 cal BC – 73 cal AD (SUERC-69648; 1987± 30 BP @ 95% confidence). Bricks recovered from the kiln are of typical Tudor form, dating to the late 15th – 16th-century (see Section 7 for further discussion).

4.3.6 Overlying fill 7065 and the flue entrances was series of deposits (7034, 7037, 7058, 7059, 7060, 7061, 7062, 7067, 7068; Fig. 4 S. 2511) which were laid down after the kiln had gone out of use; these were a mix of backfill and rubble from the dismantled upper part of the kiln.

4.4 Post-medieval

4.4.1 A series of pits was encountered extending across the site, laid out in rows on a roughly east to west alignment. A continuation of these pit alignments was previously revealed in the excavation of Site 8, located immediately to the west (Fig. 3; Stocks-Morgan 2016).

4.4.2 The area covered by the pits within the Zone E excavation measured 87m north to south and 83m east to west. The northern and southern extents of these pits were visible within the area and the western edge was exposed within the Site 8 excavation area. Therefore, it is only the eastern extent that remains undefined as it lies beyond the area of excavation.

4.4.3 All sub-circular in plan, the pits ranged in diameter between 0.49m and 2.02m, with a mean average of 1.05m. They all had very similar profiles with steep sides and a slightly concave bases. Of the excavated examples, depths ranged between 0.15m and 0.30m. The pits were all filled with a very similar subsoil-derived material, comprising a mid brownish grey silty clay (see Plate 3 and Fig. 4, S 2204 for examples). Pit **6378** contained a sherd of post-medieval red earthenware pottery and some CBM and a further pit (**6370**) contained a sherd of black glazed ware (see App. B.2).

4.4.4 At some point when these pits were still partly open, a number of them were capped with broken bricks to create brick pads. Out of the 132 pits encountered within the Zone E excavation, 50 of them had been replaced by brick pads.

4.4.5 These brick pads were all sub-circular in plan and measured between 0.62m and 2.1m in diameter. The excavated examples had gradual sides and fairly flat bases with a maximum depth of 0.29m. They were filled with brick rubble, in addition to occasional pieces of worked stone, interspersed within a matrix of mid greyish brown silty clay. Some of the brick rubble included a mid creamy white limestone mortar attached to the bricks and interspersed within the soil fill, which relates to the previous use of the bricks elsewhere, rather than being integral to the construction of brick pads themselves. The only finds which were recovered (apart from brick, tile and architectural stone) comprise two sherds of post-medieval red earthenware from pits **6492** and **6514**.

4.4.6 All the pits were spaced 5m apart, with the exception of one row located towards the southern part of the group, which lay at a distance of 7.40m from the row immediately to the north.

4.4.7 Exceptions to the general layout of the pits include two pits which were not in alignment with the other pits (**6502**, **6523**; both in the north-west corner) and also three areas where pits were absent.

4.5 Undated

4.5.1 In the eastern part of the site, a north-north-west to south-south-east aligned ditch (**6537**) was encountered which was 1.40m wide. It had steep sides and a flat base and was 0.64m deep. The fill comprised a dark greyish brown silty clay (6538). This ditch was seen to cut the Iron Age ditch (**6389**) in plan, however, it is currently unclear if it dates to the Roman or medieval phase.

4.5.2 Towards the centre of the excavation area, to the south-west of roundhouse gully **6528**, three sub-circular postholes were encountered. In plan they appear to form three points of an equilateral triangle, although their profiles were slightly different so it is uncertain if they were related. The northern posthole (**6498**) had steep sides and a concave base with an angle of inclination towards the north. This posthole measured 0.45m in diameter and 0.35m deep. It was filled by a light blueish grey silty clay (6499). The western posthole (**6506**) had steep sides and a concave base and measured 0.30m in diameter and 0.2m deep. The fill comprised a light brownish grey silty clay (6507). To the east lay posthole (**6540**) which had steep sides and a concave base, which was 0.55m in diameter and 0.35m deep. It was filled by a light grey silty clay (6539).

4.5.3 Located to the south of the roundhouse was another sub-circular posthole (**6663**) which was 0.6m in diameter. It had steep sides and a slightly concave base and was 0.35m deep. The initial fill comprised a dark brown silty clay with moderate gravel, which was 0.15 m thick. This was overlain by a mid reddish brown silty clay with frequent fired clay and gravel (6664).

4.5.4 Towards the eastern end of the excavation area a sub-circular posthole (**6361**) was encountered between pits **6309** and **6439** which did not lie within the general pit alignment. This posthole measured 0.62m in diameter and 0.14m deep. It had gradual sides and a concave base and was filled by a light greyish orange silty clay (6362).

5 Factual Data and Assessment of Archaeological Potential

5.1 Stratigraphic and Structural Data

The Excavation Record

5.1.1 All hand written records have been collated and checked for internal consistency, and the site records have been transcribed onto an MS Access Database. Contexts will be

ascribed to a phase dependant on the evidence found within them. The site plans and all relevant sections have been digitised in AutoCAD, finds will be drawn by hand. The quantification of excavation records are shown in Table 2.

Type	Excavation
Context registers	9
Context numbers/sheets	306
Plan registers	1
Section registers	1
Sample registers	4
Photo registers	5
Plans (1:20; 1:50)	13
Sections (1:10; 1:20)	20
Digital photographs	200

Table 2: Quantification of excavation records

Finds and Environmental Quantification

5.1.2 A small assemblage was recovered during the excavation with CBM forming the greatest component.

5.1.3 The bulk finds have been washed, bagged, marked (in accordance with Essex County Council guidelines) and quantified by material type onto an MS Office Access database to allow integration with the stratigraphic record. These overall totals are summarised in Table 3, which also includes some data obtained from the evaluation reports; more detailed quantification is presented in the finds appendices.

	Excavation Quantities	
Finds Category	**Weight (kg)**	**Number**
Pottery	0.469	16
CBM	22.919	30
Animal bone	0.349	10
Glass	0.017	4
Tobacco pipe	0.011	3
Stone (worked)		4

Table 3: Quantification of finds

Range and Variety

5.1.4 Features consisted of brick pads, pits, ditches, postholes and a kiln. The features were of Late Iron Age to post-medieval date with the greatest proportion belonging to post-medieval period. Table 4 below summarises the total number of each type of feature.

				Provisional Date										
type	**total**	**EBA**	**MBA**	**LBA**	**EIA**	**EBA-EIA**	**MIA**	**LIA**	**ER**	**HM**	**TM**	**PM**	**Mod**	**undated**
Brick pads	50											50		
Pits	84							1				82		1
Ditches	3							2						1
Postholes	4													4
roundhouse	1							1						
kiln	1										1			
total	**143**							**4**			**1**	**132**		**6**

Table 4: Range and variety of features

Condition

5.1.5 Survival of the deposits was variable and there was some slight truncation due to ploughing. The overburden thickness was greatest in the eastern part of the site.

5.2 Documentary Research

5.2.1 Research focusing on documentary and cartographic evidence will be undertaken where appropriate to place the site into its wider context and specifically to research the kiln.

5.3 Artefact Summaries

Glass

Summary

5.3.1 Four small shards of vessel and window glass were recovered from two contexts. The date range for this assemblage is 17th to 18th century.

Statement of Potential and Recommendations for Further Work

5.3.2 This is a small assemblage with little significance. The catalogue acts as a full record and the glass may be deselected prior to archive deposition. No further work is required.

Pottery

Summary

5.3.3 A total of 16 sherds weighing 0.469kg was recovered from six contexts. Twelve sherds date to the Late Iron Age / Early Roman period and four sherds are post-medieval in date.

Statement of Potential and Recommendations for Further Work

5.3.4 This is a rather small assemblage and therefore not of great significance. The assemblage is only of interest in that it provides additional data to that already accrued from other excavations at Beaulieu Park and helps shed light on the settlement and

development of this area, and adds to current knowledge of rural settlement in central Essex and of the hinterlands of the nearby medieval town of Chelmsford, although it has to been said that as Chelmsford was not founded until 1199, it perhaps post-dates the early medieval pottery from this site.

5.3.5 Further work would include attribution of the early glazed ware. One sherd (a shell-and-sand-tempered ware cooking-pot profile in Iron Age/Early Roman ditch **6532**) is complete enough and/or interesting enough to merit illustration.

Clay Tobacco Pipe

Summary

5.3.6 During the excavation three fragments of white ball clay tobacco pipe, weighing 0.011kg, were recovered from post-medieval brick pads **6253** and **6514**.

Statement of Potential and Recommendations for Further Work

5.3.7 The catalogue acts as a full record and the clay tobacco pipe may be deselected prior to archival deposition. No further work is required.

Ceramic Building Material

Summary

5.3.8 A total assemblage of 30 fragments (weighing 22919g) has been assessed, with the largest group by weight (21122g) of 20 pieces comes from the lime kiln. The bricks are consistently of the same typical Tudor form of late 15th – 16th century date and the roof tile, whilst showing greater variation in fabric and finish, is broadly contemporary.

Statement of Potential and Recommendations for Further Work

5.3.9 The ceramic building material is an important assemblage that forms part a wider group that can be related to the historical context of building work and the creation of Beaulieu palace by Henry VIII. The bricks and brick structures are significant elements in understanding the scale of production, working methods and building work undertaken on the project.

5.3.10 It is recommended that the whole assemblage is fully recorded in accordance with ACBMG recommendations, the data analysed in relation to the structures and stratified site record to establish the character of the buildings and changes and alterations to its structure and a report produced. A small selection of the better preserved objects should be illustrated. Prior to recording any discard policy should be fully discussed and established with the archiving body and implemented during recording.

Worked Stone

Summary

5.3.11 Four blocks of limestone were recovered from fill 6412 (in post-medieval brick pad **6411**) and analysed from photographs. All four pieces were broken parts of moulded building stone.

Statement of Potential and Recommendations for Further Work

5.3.12 The stone has reasonable potential to add to the understanding of the site. Since the blocks are likely to have been used in the palace construction, they will inform about one or more of the stone types used in the building. One of the blocks also has detailed moulding and may be datable.

5.3.13 The stone will need to be fully recorded and their function confirmed; the profile of the window mullion in particular should be carefully examined as the profile is likely to be datable. The stones will also need to be petrographically studied and sampled so that samples can be compared with reference material at Oxford and Southampton. Results can then be correlated with any documentary evidence concerning the materials used in the construction of the palace.

Task	Duration
Visit Cambridge to record/sample stone Compare stone to reference material in Oxford/Southampton Univ. (Stone in Archaeology reference collection) Write report including reference to documentary material for the palace (if available)	4 days
TOTAL	4 days

5.4 Environmental Summaries

Faunal Remains

Summary

5.4.1 A total weight of 345g of animal bone was recovered from the excavation, all from a single context.

Statement of Potential and Recommendations for Further Work

5.4.2 This assemblage is too small and fragmented to yield any further information. No further work is required.

Environmental Remains

Summary

5.4.3 Eighteen samples were taken during the excavation from both the lime kiln and the pits / brick pads. Five were selected for initial analysis. Preservation of plant remains is by carbonisation and is limited to wood charcoal only. Significant quantities of charcoal (up to 6L) were recovered from kiln **7026**. The two pits (**6319** and **6377**) from the post-medieval pit alignment both also contain significant amounts of charcoal.

5.4.4 Charcoal is evidence of the burning of wood and further analysis could identify the species used as as fuel for the lime kiln. The charcoal recovered from the pits is possibly the remnants of posts that have had the ends charred prior to insertion or the charcoal fills may have accumulated after the posts have been removed, possibly with waste produced by the lime kiln. Analysis of the charcoal from these pits is also recommended.

Statement of Potential and Recommendations for Further Work

5.4.5 Charcoal remains from the processed kiln samples and any further processed samples should be sent to the relevant specialist in order to assess the viability of species identification.

5.4.6 Twelve samples (22 buckets) remain unprocessed at this stage. The cost of processing these samples is 3 days. Alternatively 0.5 days would be required for sample discard.

5.4.7 Further carbon 14 dates could be obtained to clarify the date of the Lime Kiln, with charcoal recovered from different contexts (7066, 7069) being used to avoid any possible contamination issues.

6 Report Writing, Archiving and Publication

6.1 Storage and Curation

6.1.1 Excavated material and records will be deposited with, and curated by, Essex County Council in appropriate county stores under the Site Code and county HER code SPBP16. A digital archive will be deposited with OA Library/ADS. ECC requires transfer of ownership prior to deposition. During analysis and report preparation, OA East will hold all material and reserves the right to send material for specialist analysis.

6.1.2 The archive will be prepared in accordance with current OA East guidelines, which are based on current national guidelines

6.2 Publication

6.2.1 The results from all phases of the project will form a site of regional significance, therefore publication in the East Anglian Archaeology monograph series appears appropriate. However, given the location of the site, the Oxford Archaeology monograph series is a viable alternative. Once the publication outlet is confirmed (following discussions with relevant parties), a preliminary synopsis will be prepared.

7 Discussion

Introduction

7.1.1 The discussion concentrates on features that are dated and can be grouped. It is presented as an overall chronological format to help set the findings into context within their wider landscape setting (see Fig. 2 for plan of archaeological features and Fig. 3 for location of the excavation in relation to Site 8).

Late Iron Age / Early Roman

7.1.2 The earliest features identified date to the Late Iron Age and comprise a north-east to south-west aligned ditch (**6389**) in the western part of the site with a roundhouse (**6534**) and associated posthole (**6417**) to the east. These features are likely to be the continuation of the Late Iron Age settlement revealed to the west in Site 8 (Stocks-Morgan, 2016a).

7.1.3 The density of settlement features recorded in Zone E is far less than that in Site 8, suggesting that these features lie on the periphery of the main settlement site.

Transitional medieval

7.1.4 A brick lime kiln (**7026**) identified in the south-eastern part of Area E is a significant discovery. This kiln had a circular chamber with two flues extending out at opposing ends (north and south). Surviving in the base of the chamber were three layers associated with its use, which were overlain by various dumps of soil and rubble related to the backfilling of the kiln once it had gone out of use. The construction and design of the kiln, combined with the charcoal and chalk rich material found in the use layers suggest that this kiln was used for making lime mortar.

7.1.5 The charcoal-rich use fill (7065) recorded at the base of the kiln was selected for radiocarbon dating with the aim of providing an accurate date for the kiln. This was partly due to its location near to both a Roman settlement (Site 8, Stocks-Morgan 2016) and the Tudor palace and that fact that the construction methods of lime kilns are relatively similar in the Roman period and the medieval period. The resulting radiocarbon determination had a date range spanning the Late Iron Age to Early Roman period (47 cal BC to 73 cal AD). It is possible, though little evidence for this was noticed on site, that the sample was contaminated by earlier material (given its proximity to a large Roman rural settlement).

7.1.6 The kiln was constructed using bricks which, based on their fabric and typology, are of Tudor date: late 15th-16th-century (see App. B5). Examples of lime kilns being constructed near to large building projects in the Tudor period have been recorded, for example at Hampton Court Palace (Ford *et al*. 2013). It is likely that it was more cost efficient to bring in limestone from elsewhere and use a temporary lime kiln built specially for the purpose to make the mortar on site. The nearest outcrops of limestone to Beaulieu can be found along the Thames estuary, both in Kent and Essex or in north-west Essex near to Saffron Walden, both of which are roughly 32 km away. It is likely that the Thames estuary would have been the most likely source as it has more accessible transport links if using barges via the Thames, the Essex coast and the River Chelmer.

7.1.7 It is likely that, as at Hampton Court Palace, the palace at Beaulieu would have needed a large amount of mortar to bond the bricks and face walls, therefore having a kiln on site would have been the most economical option. Brick would also have been manufactured on site, witnessed by the five brick kilns uncovered to the east of the

palace at Site 3 (Stocks-Morgan forthcoming). One anomaly is that lime kilns are known to cause noxious smoke while in use and, as the current example lay to the west of the palace building, the prevailing wind is likely to have taken these fumes over the palace and working area.

Post-medieval

7.1.8 The majority of the archaeological remains recorded at Zone E date to the post-medieval period and consist of a series of pits / brick pads. These pits were all sub-circular and measured a maximum of 2.1m in diameter. This pit alignment was also exposed to the west in Site 8 and combining the two excavations they encompass an area *c*. 89m (north to south) by *c*. 138m (east to west) (see Fig. 3 for plan of both sites).

7.1.9 Laid out in rows and forming a grid pattern, the pits / brick pads were generally spaced 5m apart, although two rows located towards the southern part of the area were spaced 7m apart on the north to south alignment. Further differences in the pattern include several spaces where no pits were encountered. There is no indication as to why there are discrepancies in the pit arrangements, as truncation is unlikely to be a factor given the survival of all the other pits.

7.1.10 At a later date, but when the pits still were visible/partly open, 38% of them were replaced by brick pads comprising brick and stone rubble laid into recut pits. There is very little indication at present as to why some pits were replaced and some not, with no spatial pattern discernible.

7.1.11 The pits / brick pads are currently dated to the 17th / 18th century. This is based on two sherds of pottery from the first phase of pits, which are from a secure context. Dating from the brick pads is slightly less secure as although more artefacts were found (two sherds of pottery, one shard of glass and three fragments of clay pipe) they occur high in the soil matrix and could easily be intrusive. The bricks themselves cannot be used to date the features as, although Tudor in date, they were clearly re-used. The similarity of the bricks to those found on Site 3 in the vicinity of the brick clamps suggests all the bricks were fired (and probably manufactured) on that site.

7.1.12 There is very little evidence for what sort of structure these pits / brick pads formed, possible functions include a formal garden, comprising plinths for statues, a stand for watching tournaments, or foundations for marques. Based on the archaeological record alone it is very difficult to ascertain the function. Further study of the historical documents and research into any parallels from other sites will be required to further clarify the function of these features.

Undated

7.1.13 A ditch (**6537**) was present on a north-east to south-west alignment, although it is undated the alignment is similar to a Roman ditch (**1099**) seen in Site 8. It is possible that this ditch was part of the same field system / paddocks and dates to the 2nd century AD.

Appendix A. Context Summary with Provisional Phasing

Context	Cut	Area	Category	Feature Type	Width (m)	Depth (m)	phase
6253		Zone E	cut	brick pad	2.1		Post-medieval
6254	6253	Zone E	fill	brick pad	2.1		Post-medieval
6255		Zone E	cut	brick pad	1.05	0.25	Post-medieval
6256		Zone E	cut	pit	0.95		Post-medieval
6257		Zone E	cut	pit	1.35	0.3	Post-medieval
6258	6257	Zone E	fill	pit	1.35	0.23	Post-medieval
6259		Zone E	cut	pit	0.86	0.2	Post-medieval
6260	6259	Zone E	fill	pit	0.86	0.1	Post-medieval
6261	6259	Zone E	fill	pit	0.86	0.2	Post-medieval
6262	6255	Zone E	fill	brick pad	1.05	0.25	Post-medieval
6263	6257	Zone E	fill	pit	1.35	0.27	Post-medieval
6265		Zone E	cut	brick pad	2.03		Post-medieval
6266	6265	Zone E	fill	brick pad	2.03		Post-medieval
6267		Zone E	cut	brick pad	1.47		Post-medieval
6268	6267	Zone E	fill	brick pad	1.47		Post-medieval
6269		Zone E	cut	brick pad	1.33		Post-medieval
6270	6269	Zone E	fill	brick pad	1.33		Post-medieval
6271		Zone E	cut	brick pad	1.2		Post-medieval
6272	6271	Zone E	fill	brick pad	1.2		Post-medieval
6273		Zone E	cut	pit	1.49		Post-medieval
6274	6273	Zone E	fill	pit	1.49		Post-medieval
6275		Zone E	cut	brick pad	1.25		Post-medieval
6276	6275	Zone E	fill	brick pad	1.25		Post-medieval
6277		Zone E	cut	brick pad	1.14		Post-medieval
6278	6277	Zone E	fill	brick pad	1.14		Post-medieval
6279		Zone E	cut	pit	0.68		Post-medieval
6280	6279	Zone E	fill	pit	0.68		Post-medieval
6281		Zone E	cut	pit	1.1		Post-medieval
6282	6281	Zone E	fill	pit	1.1		Post-medieval
6283		Zone E	cut	pit	0.73		Post-medieval
6284	6283	Zone E	fill	pit	0.73		Post-medieval

Context	Cut	Area	Category	Feature Type	Width (m)	Depth (m)	phase
6285		Zone E	cut	brick pad	1.12		Post-medieval
6286	6285	Zone E	fill	brick pad	1.12		Post-medieval
6287		Zone E	cut	brick pad	1.44		Post-medieval
6288	6287	Zone E	fill	brick pad	1.44		Post-medieval
6289		Zone E	cut	brick pad	1.22		Post-medieval
6290	6289	Zone E	fill	brick pad	1.22		Post-medieval
6291		Zone E	cut	brick pad	0.89		Post-medieval
6292	6291	Zone E	fill	brick pad	0.89		Post-medieval
6293		Zone E	cut	brick pad	1.38		Post-medieval
6294	6293	Zone E	fill	brick pad	1.38		Post-medieval
6295		Zone E	cut	pit	1.38		Post-medieval
6296	6295	Zone E	fill	pit	1.38		Post-medieval
6297		Zone E	cut	pit	1.05		Post-medieval
6298	6297	Zone E	fill	pit	1.05		Post-medieval
6299		Zone E	cut	brick pad	0.71		Post-medieval
6300	6299	Zone E	fill	brick pad	0.71		Post-medieval
6301		Zone E	cut	brick pad	1.37		Post-medieval
6302	6301	Zone E	fill	brick pad	1.37		Post-medieval
6303		Zone E	cut	brick pad	0.95		Post-medieval
6304	6303	Zone E	fill	brick pad	0.95		Post-medieval
6305		Zone E	cut	brick pad	1.11		Post-medieval
6306	6305	Zone E	fill	brick pad	1.11		Post-medieval
6307		Zone E	cut	brick pad	0.75		Post-medieval
6308	6307	Zone E	fill	brick pad	0.75		Post-medieval
6309		Zone E	cut	brick pad	1.26		Post-medieval
6310	6309	Zone E	fill	brick pad	1.26		Post-medieval
6311		Zone E	cut	brick pad	1.18		Post-medieval
6312	6311	Zone E	fill	brick pad	1.18		Post-medieval
6313		Zone E	cut	brick pad	1.02		Post-medieval
6314	6313	Zone E	fill	brick pad	1.02		Post-medieval
6315		Zone E	cut	brick pad	1.07		Post-medieval
6316	6315	Zone E	fill	brick pad	1.07		Post-medieval

Context	Cut	Area	Category	Feature Type	Width (m)	Depth (m)	phase
6317		Zone E	cut	brick pad	1.19		Post-medieval
6318	6317	Zone E	fill	brick pad	1.19		Post-medieval
6319		Zone E	cut	pit	1.3	0.29	Post-medieval
6320	6319	Zone E	fill	pit	1.3	0.29	Post-medieval
6321		Zone E	cut	brick pad	0.84		Post-medieval
6322	6321	Zone E	fill	brick pad	0.84		Post-medieval
6323		Zone E	cut	pit	1.01		Post-medieval
6324	6323	Zone E	fill	pit	1.01		Post-medieval
6325		Zone E	cut	pit	1.09		Post-medieval
6326	6325	Zone E	fill	pit	1.09		Post-medieval
6327		Zone E	cut	pit	1.05		Post-medieval
6328	6327	Zone E	fill	pit	1.05		Post-medieval
6329		Zone E	cut	pit	0.81		Post-medieval
6330	6329	Zone E	fill	pit	0.81		Post-medieval
6331		Zone E	cut	pit	0.98		Post-medieval
6332	6331	Zone E	fill	pit	0.98		Post-medieval
6333		Zone E	cut	pit	1.13		Post-medieval
6334	6333	Zone E	fill	pit	1.13		Post-medieval
6335		Zone E	cut	pit	1.01		Post-medieval
6336	6335	Zone E	fill	pit	1.01		Post-medieval
6337		Zone E	cut	pit	1.1		Post-medieval
6338	6337	Zone E	fill	pit	1.1		Post-medieval
6339		Zone E	cut	pit	0.84		Post-medieval
6340	6339	Zone E	fill	pit	0.84		Post-medieval
6341		Zone E	cut	pit	1.2		Post-medieval
6342	6341	Zone E	fill	pit	1.2		Post-medieval
6343		Zone E	cut	pit	1.2		Post-medieval
6344	6343	Zone E	fill	pit	1.2		Post-medieval
6345		Zone E	cut	pit	1.03		Post-medieval
6346	6345	Zone E	fill	pit	1.03		Post-medieval
6347		Zone E	cut	pit	1.04		Post-medieval
6348	6347	Zone E	fill	pit	1.04		Post-medieval

Context	Cut	Area	Category	Feature Type	Width (m)	Depth (m)	phase
6349		Zone E	cut	pit	1.19		Post-medieval
6350	6349	Zone E	fill	pit	1.19		Post-medieval
6351		Zone E	cut	pit	0.49		Post-medieval
6352	6351	Zone E	fill	pit	0.49		Post-medieval
6353		Zone E	cut	pit	1.01		Post-medieval
6354	6353	Zone E	fill	pit	1.01		Post-medieval
6355		Zone E	cut	pit	1.23		Post-medieval
6356	6355	Zone E	fill	pit	1.23		Post-medieval
6357		Zone E	cut	pit	1.18		Post-medieval
6358	6357	Zone E	fill	pit	1.18		Post-medieval
6359		Zone E	cut	pit	1.34		Post-medieval
6360	6359	Zone E	fill	pit	1.34		Post-medieval
6361		Zone E	cut	pit	0.62	0.14	undated
6362	6361	Zone E	fill	pit	0.62	0.14	undated
6363		Zone E	cut	pit	0.96		Post-medieval
6364	6363	Zone E	fill	pit	0.96		Post-medieval
6365		Zone E	cut	pit	0.65		Post-medieval
6366	6365	Zone E	fill	pit	0.65		Post-medieval
6367		Zone E	cut	pit	1.07		Post-medieval
6368	6367	Zone E	fill	pit	1.07		Post-medieval
6369		Zone E	cut	pit	1.15	0.24	Post-medieval
6370	6369	Zone E	fill	pit	1.15	0.24	Post-medieval
6371		Zone E	cut	pit	1.14		Post-medieval
6372	6371	Zone E	fill	pit	1.14		Post-medieval
6373		Zone E	cut	pit	1.1		Post-medieval
6374	6374	Zone E	fill	pit	1.1		Post-medieval
6375		Zone E	cut	pit	0.97		Post-medieval
6376	6376	Zone E	fill	pit	0.97		Post-medieval
6377		Zone E	cut	pit	1	0.3	Post-medieval
6378	6377	Zone E	fill	pit	1	0.3	Post-medieval
6379		Zone E	cut	brick pad	0.89		Post-medieval
6380	6379	Zone E	fill	brick pad	0.89		Post-medieval

Context	Cut	Area	Category	Feature Type	Width (m)	Depth (m)	phase
6381		Zone E	cut	brick pad	0.92		Post-medieval
6382	6381	Zone E	fill	brick pad	0.92		Post-medieval
6383		Zone E	cut	brick pad	1.14		Post-medieval
6384	6383	Zone E	fill	brick pad	1.14		Post-medieval
6385		Zone E	cut	brick pad	1.4		Post-medieval
6386	6385	Zone E	fill	brick pad	1.4		Post-medieval
6387		Zone E	cut	brick pad	0.98		Post-medieval
6388	6387	Zone E	fill	brick pad	0.98		Post-medieval
6389		Zone E	cut	ditch	2.2	0.55	LIA / ER
6390	6389	Zone E	fill	ditch	2.2	0.55	LIA / ER
6391		Zone E	cut	pit	1.2	0.19	Post-medieval
6392	6391	Zone E	fill	pit	1.2	0.19	Post-medieval
6393		Zone E	cut	pit	0.76		Post-medieval
6394	6393	Zone E	fill	pit	0.76		Post-medieval
6395		Zone E	cut	pit	1.33		Post-medieval
6396	6395	Zone E	fill	pit	1.33		Post-medieval
6397		Zone E	cut	brick pad	1.06		Post-medieval
6398	6397	Zone E	fill	brick pad	1.06		Post-medieval
6399		Zone E	cut	pit	0.93		Post-medieval
6400	6399	Zone E	fill	pit	0.93		Post-medieval
6401		Zone E	cut	pit	0.64		natural feature
6402	6401	Zone E	fill	pit	0.64		natural feature
6403		Zone E	cut	pit	0.54		natural feature
6404	6403	Zone E	fill	pit	0.54		natural feature
6405		Zone E	cut	pit	0.85		Post-medieval
6406	6405	Zone E	fill	pit	0.85		Post-medieval
6407		Zone E	cut	pit	1.05		Post-medieval
6408	6407	Zone E	fill	pit	1.05		Post-medieval
6409		Zone E	cut	pit	1.15		Post-medieval
6410	6409	Zone E	fill	pit	1.15		Post-medieval
6411		Zone E	cut	brick pad	1.01		Post-medieval
6412	6411	Zone E	fill	brick pad	1.01		Post-medieval

Context	Cut	Area	Category	Feature Type	Width (m)	Depth (m)	phase
6413		Zone E	cut	pit	0.97		Post-medieval
6414	6413	Zone E	fill	pit	0.97		Post-medieval
6415		Zone E	cut	pit	0.78		Post-medieval
6416	6415	Zone E	fill	pit	0.78		Post-medieval
6417		Zone E	cut	pit	0.44	0.14	LIA / ER
6418	6417	Zone E	fill	pit	0.44	0.14	LIA / ER
6419		Zone E	cut	pit	1.57		Post-medieval
6420	6419	Zone E	fill	pit	1.57		Post-medieval
6421		Zone E	cut	pit	0.91		Post-medieval
6422	6421	Zone E	fill	pit	0.91		Post-medieval
6423		Zone E	cut	brick pad	1.25		Post-medieval
6424	6423	Zone E	fill	brick pad	1.25		Post-medieval
6425		Zone E	cut	brick pad	1.94		Post-medieval
6426	6425	Zone E	fill	brick pad	1.94		Post-medieval
6427		Zone E	cut	brick pad	1.28		Post-medieval
6428	6427	Zone E	fill	brick pad	1.28		Post-medieval
6429		Zone E	cut	brick pad	1.67		Post-medieval
6430	6429	Zone E	fill	brick pad	1.67		Post-medieval
6431		Zone E	cut	brick pad	1.75		Post-medieval
6432	6431	Zone E	fill	brick pad	1.75		Post-medieval
6433		Zone E	cut	pit	1.07		Post-medieval
6434	6433	Zone E	fill	pit	1.07		Post-medieval
6435		Zone E	cut	pit	1.08		Post-medieval
6436	6435	Zone E	fill	pit	1.08		Post-medieval
6437		Zone E	cut	pit	0.92		Post-medieval
6438	6437	Zone E	fill	pit	0.92		Post-medieval
6439		Zone E	cut	pit	1.1		Post-medieval
6440	6439	Zone E	fill	pit	1.1		Post-medieval
6441		Zone E	cut	pit	0.9		Post-medieval
6442		Zone E	cut	pit	0.9		Post-medieval
6443		Zone E	cut	pit	1.01		Post-medieval
6444	6443	Zone E	fill	pit	1.01		Post-medieval

Context	Cut	Area	Category	Feature Type	Width (m)	Depth (m)	phase
6445		Zone E	cut	pit	1.23		Post-medieval
6446	6445	Zone E	fill	pit	1.23		Post-medieval
6447		Zone E	cut	pit	0.87		Post-medieval
6448	6447	Zone E	fill	pit	0.87		Post-medieval
6449		Zone E	cut	pit	0.97		Post-medieval
6450	6449	Zone E	fill	pit	0.97		Post-medieval
6451		Zone E	cut	pit	1.37		Post-medieval
6452	6451	Zone E	fill	pit	1.37		Post-medieval
6453		Zone E	cut	pit	1.05		Post-medieval
6454	6453	Zone E	fill	pit	1.05		Post-medieval
6455		Zone E	cut	pit	1.08		Post-medieval
6456	6455	Zone E	fill	pit	1.08		Post-medieval
6457	6257	Zone E	fill	pit	1.35	0.18	Post-medieval
6458		Zone E	cut	brick pad	0.62	0.17	Post-medieval
6459	6458	Zone E	fill	brick pad	0.62	0.17	Post-medieval
6460		Zone E	cut	brick pad	1.2	0.29	Post-medieval
6461	6460	Zone E	fill	brick pad	1.2	0.29	Post-medieval
6462		Zone E	cut	brick pad	1.54		Post-medieval
6463	6462	Zone E	fill	brick pad	1.54		Post-medieval
6464		Zone E	cut	pit	2.02		Post-medieval
6465	6464	Zone E	fill	pit	2.02		Post-medieval
6466		Zone E	cut	pit	1.08		Post-medieval
6467	6466	Zone E	fill	pit	1.08		Post-medieval
6468		Zone E	cut	pit	1.05		Post-medieval
6469	6468	Zone E	fill	pit	1.05		Post-medieval
6470		Zone E	cut	brick pad	1.29		Post-medieval
6471	6470	Zone E	fill	brick pad	1.29		Post-medieval
6472		Zone E	cut	pit	0.97		Post-medieval
6473	6472	Zone E	fill	pit	0.97		Post-medieval
6474		Zone E	cut	pit	1.04		Post-medieval
6475	6474	Zone E	fill	pit	1.04		Post-medieval
6476		Zone E	cut	brick pad	1.5		Post-medieval

Context	Cut	Area	Category	Feature Type	Width (m)	Depth (m)	phase
6477	6476	Zone E	fill	brick pad	1.5		Post-medieval
6478		Zone E	cut	pit	1.01		Post-medieval
6479	6478	Zone E	fill	pit	1.01		Post-medieval
6480		Zone E	cut	pit	1.05		Post-medieval
6481	6480	Zone E	fill	pit	1.05		Post-medieval
6482		Zone E	cut	brick pad	1.01		Post-medieval
6483	6482	Zone E	fill	brick pad	1.01		Post-medieval
6484		Zone E	cut	pit	0.9	0.32	Post-medieval
6485	6484	Zone E	fill	pit	0.9	0.32	Post-medieval
6486		Zone E	cut	pit	1.33		Post-medieval
6487	6486	Zone E	fill	pit	1.33		Post-medieval
6488		Zone E	cut	brick pad	1.62		Post-medieval
6489	6488	Zone E	fill	brick pad	1.62		Post-medieval
6490		Zone E	cut	pit	0.91		Post-medieval
6491	6490	Zone E	fill	pit	0.91		Post-medieval
6492		Zone E	cut	brick pad	0.64		Post-medieval
6493	6492	Zone E	fill	brick pad	0.64		Post-medieval
6494		Zone E	cut	pit	0.79		Post-medieval
6495	6494	Zone E	fill	pit	0.79		Post-medieval
6496		Zone E	cut	pit	1.15		Post-medieval
6497	6496	Zone E	fill	pit	1.15		Post-medieval
6498		Zone E	cut	posthole	0.46	0.35	undated
6499	6498	Zone E	fill	post hole	0.46	0.35	undated
6500		Zone E	cut	pit	0.7	0.3	Post-medieval
6501	6500	Zone E	fill	pit	0.7	0.3	Post-medieval
6502		Zone E	cut	pit	1.22		Post-medieval
6503	6502	Zone E	fill	pit	1.22		Post-medieval
6504		Zone E	cut	pit	1.23		Post-medieval
6505	6504	Zone E	fill	pit	1.23		Post-medieval
6506		Zone E	cut	posthole	0.3	0.24	undated
6507	6506	Zone E	fill	posthole	0.3	0.24	undated
6508		Zone E	cut	brick pad	1.11		Post-medieval

Context	Cut	Area	Category	Feature Type	Width (m)	Depth (m)	phase
6509	6508	Zone E	fill	brick pad	1.11		Post-medieval
6510		Zone E	cut	brick pad	1.2		Post-medieval
6511	6510	Zone E	fill	brick pad	1.2		Post-medieval
6512		Zone E	cut	brick pad	1.11		Post-medieval
6513	6512	Zone E	fill	brick pad	1.11		Post-medieval
6514		Zone E	cut	brick pad	0.79		Post-medieval
6515	6514	Zone E	fill	brick pad	0.79		Post-medieval
6516		Zone E	cut	pit	1.04		Post-medieval
6517	6516	Zone E	fill	pit	1.04		Post-medieval
6518		Zone E	cut	pit	0.96		Post-medieval
6519	6518	Zone E	fill	pit	0.96		Post-medieval
6520		Zone E	cut	pit	0.79		Post-medieval
6521	6520	Zone E	fill	pit	0.79		Post-medieval
6522		Zone E	cut	pit	0.69		Post-medieval
6523	6522	Zone E	fill	pit	0.69		Post-medieval
6524		Zone E	cut	brick pad	0.99		Post-medieval
6525	6524	Zone E	fill	brick pad	0.99		Post-medieval
6526		Zone E	cut	brick pad	0.67		Post-medieval
6527	6526	Zone E	fill	brick pad	0.67		Post-medieval
6528		Zone E	cut	gully	0.34	0.15	LIA / ER
6529	6528	Zone E	fill	gully	0.34	0.15	LIA / ER
6530		Zone E	cut	pit	0.79		Post-medieval
6531	6530	Zone E	fill	pit	0.7		Post-medieval
6532		Zone E	cut	ditch	1.2	0.34	LIA / ER
6533	6532	Zone E	fill	ditch	1.2	0.34	LIA / ER
6534		Zone E	master	roundhouse			LIA / ER
6535		Zone E	cut	pit	1.15		Post-medieval
6536	6535	Zone E	fill	pit	1.15		Post-medieval
6537		Zone E	cut	ditch	1.4	0.64	undated
6538	6537	Zone E	fill	ditch	1.4	0.64	undated
6539	6540	Zone E	fill	post hole	0.6	0.35	undated
6540		Zone E	cut	post hole	0.6	0.35	undated

Context	Cut	Area	Category	Feature Type	Width (m)	Depth (m)	phase
6663		Zone E	cut	post hole	0.6	0.35	undated
6664	6663	Zone E	fill	post hole	0.6	0.25	undated
6665	6663	Zone E	fill	post hole	0.5	0.17	undated
7026	7033	Zone E	masonry	kiln	1.9	1.78	transitional medieval
7030		Zone E	layer	topsoil		0.3	
7031		Zone E	layer	subsoil		0.1	
7033		Zone E	cut	kiln	7	1.78	transitional medieval
7034	7026	Zone E	fill	kiln	1.9	0.3	transitional medieval
7037	7033	Zone E	fill	kiln	1.9	0.4	transitional medieval
7058	7026	Zone E	fill	kiln	1.24	0.46	transitional medieval
7059	7033	Zone E	fill	kiln	1.9	0.7	transitional medieval
7060	7033	Zone E	fill	kiln	1.9	0.26	transitional medieval
7061	7033	Zone E	fill	kiln	1.8	0.38	transitional medieval
7062	7033	Zone E	fill	kiln	1.4	0.51	transitional medieval
7065	7026	Zone E	fill	kiln	1.5	0.14	transitional medieval
7066	7026	Zone E	fill	kiln	0.5	0.24	transitional medieval
7067	7033	Zone E	fill	kiln	1.24	0.12	transitional medieval
7068	7033	Zone E	fill	kiln	1.24	0.38	transitional medieval
7069	7026	Zone E	fill	kiln	0.25	0.26	transitional medieval

Appendix B. Finds Reports

B.1 Glass

By Carole Fletcher

Introduction

B.1.1 Archaeological works produced small shards of vessel and window glass, recovered from two transitional medieval to post-medieval contexts. The shards are all in relatively poor condition: the vessel glass from pit **6319** is highly iridised, with surface flaking, and the glass from pit **7026** is heavily pitted. Although not closely datable, the condition indicates that the glass is not modern and the vessel shard from kiln **7026** might be 17th century or later and that from pit **6319**, 18th century or later. The glass is likely to be the result of casual loss and has become incorporated into features as a result of agricultural processes.

Context	Cut	Count	Weight (kg)	Form	Description	Date
6320	**6319**	1	0.005	Vessel glass	Triangular curved shard of mid olive-green glass, originally from a bottle, with iridised surfaces and edges. 3-4mm thick.	Not closely datable but likely to be 18th century or later
7034	**7026**	1	0.008	Vessel glass	Sub-rectangular curved shard of mid olive-green glass originally from a bottle, with iridised surfaces and edges. The surfaces are also pitted and there has been some surface loss. Thickness varies from 5mm to 4mm.	Not closely datable but likely to be 17th century or later
		1	0.001	Window glass	Irregular shard of flat clear glass with a greenish cast. The surfaces are iridised, slightly rough and pitted. 2.6mm thick.	Not closely datable

Table 5: Glass

B.2 Pottery

By Helen Walker

Introduction and methodology

B.2.1 A total of 16 sherds weighing 0.469kg was recovered from six contexts. Twelve sherds date to the Late Iron Age / Early Roman period and four sherds are post-medieval in date.

B.2.2 The Medieval Pottery Research Group (MPRG) A *guide to the classification of medieval ceramic forms* (MPRG 1998) and *Minimum Standards for the Processing, Recording, Analysis and Publication of Post-Roman Ceramics* (MPRG 2001) act as a standard. The pottery recording follows Cunningham's typology of post-Roman pottery in Essex (Cunningham 1985, 1-16; expanded by Cotter 2000 and Drury *et al.* 1993). Some of Cunningham's rim form codes are quoted in this report. All percentages quoted are by weight.

B.2.3 The assemblage is recorded in the summary catalogue. The pottery and archive are curated by Oxford Archaeology East until formal deposition.

Sampling Bias

B.2.4 The open area excavation was carried out by hand and selection made through standard sampling strategies on a feature by feature basis. There are not expected to be any inherent biases.

The Assemblage

B.2.5 Table 6 shows the total sherd count and weight of all fabrics, shown in approximate chronological order.

Fabric Name	No. Sherds	Weight (g)	% by weight
Late Iron Age vegetable-tempered ware	4	96	20
Shell-and-sand-tempered ware	7	248	53
Post-medieval red earthenware	4	92	20
Black-glazed ware	1	33	7

Table 6 Pottery fabrics

Late Iron Age / Early Roman

B.2.6 A large fragment from the rim and shoulder of a jar was excavated from Late Iron Age ditch **6532**. It shows a simple everted rim and grey-brown burnished surfaces both inside and out, which have laminated away in places. The fabric is tempered with sparse sands and abundant small carbonised inclusions and has tentatively been identified as a Late Iron Age vessel.

B.2.7 Further pottery was recovered from this context and comes from a single vessel, almost the whole side of a shell-and-sand-tempered ware cooking-pot which has a shouldered profile and a rim which is mid-way between the flat-topped, thickened, everted rim type and the flat-topped rim type above an upright neck. As well as shell and sand, there is a small amount of grog in the fabric. The vessel shows areas of spalling around the shoulder, wear marks around the basal angle, and patches of fire-blackening on the internal surfaces.

Post-medieval

B.2.8 The post-medieval assemblage recovered comprises five sherds, weighing 125g and includes the ‘pad base’ from a black-glazed ware jug or large drinking vessel from pit **6370** most likely dating to the 17th century. The remaining pottery from Zone E comprises post-medieval red earthenware and although rather fragmentary, a number of rim sherds are present in this ware, the most diagnostic comprising a lid-seated rim from pit **6514** showing a pouring lip and glossy internal glaze probably from a single-handled jar or pipkin datable to the later 16th to 17th centuries. Kiln **7026** produced a

wide flanged rim from either a dish or a bowl showing a sparse internal glaze which could be as early as 16th century. The remaining sherds of post-medieval red earthenware are either unglazed or sparsely glazed rather than showing the glossy glaze of 17th century and later pieces, and probably belong to the 16th century although a later date cannot be ruled out. The post-medieval pottery therefore spans the 16th to 17th centuries.

Context	Fabric	Form	Sherd Count	Sherd Weight	Context Date range
6370	Black glazed ware	pad base from jug or large drinking vessel	1	33	17th to earlier 18th C
6378	Post-medieval red earthenware		1	8	16th C or later
6493	Post-medieval red earthenware		1	9	16th C or later
6515	Post-medieval red earthenware	Jar with lid-seated rim	1	38	later 16th to 17th C
6533	Shell-and-sand-tempered ware	Jar	6	242	Late Iron Age / Early Roman
	Shell-and-sand-tempered ware		1	6	
	Late Iron Age vegetable tempered	Jar	4	96	
7034	Post-medieval red earthenware		1	37	16th C

Table 7: Pottery catalogue

B.3 Clay Tobacco Pipe

By Carole Fletcher

Introduction and methodology

B.3.1 During the excavation three fragments of white ball clay tobacco pipe, weighing 0.011kg, were recovered from brick pads **6253** and **6514**. Terminology used in this report is taken from Oswald's simplified general typology (Oswald 1975, 37–41) and Crummy and Hind (Crummy 1988, 47-66). A quantification table for the clay pipes can be found at the end of this report, based on the recording methods recommended by the Society for Clay Pipe Research (http://scpr.co/PDFs/Resources/White%20BAR%20Appendix%204.pdf). Stem bore diameter recording has not been undertaken on this assemblage due to its limited size. The assemblage is catalogued in Table 8.

Discussion

B.3.2 The fragments of clay tobacco pipe recovered represent what are most likely casually discarded pipe stems, perhaps lost by builders or agricultural workers, that have subsequently been reworked. The pipe fragments do little other than to indicate the consumption of tobacco on or in the vicinity of the site, by one or more individuals, most likely in the 18th century. The plain and fragmentary nature of the assemblage means it is of little significance.

Context	Cut	Form	Weight (kg)	No of pipe stem fragments	Description	Date
6254	**6253**	Fragment of	0.002	1	Length of stem 30mm, slightly	Not closely

Context	Cut	Form	Weight (kg)	No of pipe stem fragments	Description	Date
		pipe stem			tapering, approx. 8.2-7.8mm diameter, trimmed mould seam.	datable
6515	**6514**	Fragment of pipe stem	0.009	2	Length of stem 68mm, broken into two pieces at point where it thickens to form the heel. Diameter 11.2mm tapering to 9.8mm. The stem is grey suggesting the pipe has been burnt, likely as part of cleaning the now non-existent bowl and bore.	Not closely datable
Total			**0.011**	**3**		

Table 8: Clay Tobacco Pipe

B.4 Worked Stone

By Ruth Shaffrey

Description of architectural stone

B.4.1 Four blocks of limestone were recovered from fill 6412 in post-medieval brick pad **6411**, and assessed from photographs. The first is a block with a recessed U-shaped channel cut into one side, with some tooling marks surviving and one moulded edge. The stone most likely functioned as a drain. The second piece has decorative mouldings along one narrow edge and was probably a window mullion. The third appears to be a concretion of a stone block, brick and mortar. The fourth is a large ashlar block with significant tooling marks on at least one face.

B.5 Ceramic Building Material

By Cynthia Poole

Introduction

B.5.1 Ceramic building material amounting to 30 fragments weighing 22,919g has been assessed, including contexts relating to excavation. The largest group by weight (21,122g) of 20 pieces comes from the lime kiln and consists almost entirely of bricks, many complete or near complete. The remainder consists of a mix of broken fragments of roof tile and brick, including one half brick, most of which comes from the brick pads. The bricks are consistently of the same typical Tudor form of late 15th – 16th-century date and the roof tiles, whilst showing greater variation in fabric and finish, are broadly contemporary. The assemblage is summarised by context in Table 9.

Methodology

B.5.2 The assemblage has been fully recorded on an Excel spreadsheet in accordance with guidelines set out by the Archaeological Ceramic Building Materials Group (ACBMG 2007). The record includes quantification, fabric type, form, surface finish, markings and evidence of use/reuse (mortar, burning etc). Fabrics were characterised on macroscopic features and with the aid of x20 hand lens.

Forms

Bricks

B.5.3 The brick (21 fragments, 21257g) is all similar in character and all appears to derive from a single source. Two types of brick are in evidence: one of standard rectangular form and a 'special' where one header end had been cut pre-firing. The standard bricks measured 50-61 x 97-117 x 215-222mm (2-2½ins thick, 4-4½ins wide and c 8¼-8½ins) long except for one rather larger example 65 x 116 x 250mm (2 9/16" x4 9/16"x 10ins) long. The 'specials' are all slightly larger than the standard bricks and can be divided into two subtypes. Three examples (contexts 7026, 7037) measuring 52-55 x 106-8 x 222mm (2 x 4¼ x 8¾ins) had the header cut diagonally to a bevel across its whole width, removing a wedge of clay 21-24mm deep on one side. A single example (context 7037) measuring 59-63 x 106 x 228mm (2½ x 4¼ x 9ins) had a different moulding cut into the end in the form of a quarter circle with a radius of 70mm (2¾ins) removing one corner, whilst the opposite corner of the same end was cut to a small bevel 28mm long and 25mm deep. All the bricks appeared to have been cut to shape prefiring when leather hard, rather than made in a special mould.

B.5.4 The bricks were stock moulded as evidence by indented borders on several bricks. The upper face was generally smooth or striated from the strike removing surplus clay from the mould. The sides and base were rough and sanded: the base could be particularly irregular and pitted, frequently with grass and stem impressions; edges tended to be more regular and even, sometimes creased and sometimes one might be quite smooth.

B.5.5 The bricks were made in fabric Qfe, the fabric that was produced in the clamps on Site 3. This was generally brownish red-orange in colour and contained frequent medium-coarse quartz sand subangular-subrounded, common maroon, dark brown or black ferrous oxide grits up to 5mm and flint grits generally up to 7mm, but occasionally up to 20mm. Several of the bricks were very intensely fired or overfired resulting in a grey vitrified surface over areas of the brick. (This fabric was given the code GG in earlier assessments and evaluation reports.)

B.5.6 The similarity of the brick to that found on Site 3 in the vicinity of the brick clamps suggests all the bricks were fired (and probably manufactured) on that site.

Roof tile

B.5.7 The roof tile (8 fragments, 1229g) was all fragmentary, but included two tiles with complete widths surviving. All were of flat rectangular form, of which five had peg holes surviving in part or complete. It is probable all fragments derive from peg tiles in the absence of any evidence for nib tiles.

B.5.8 The roof tile was made in three fabrics:

- Fabric C: a coarse, red or orange sandy fabric containing a moderate density of medium-coarse subangular-subrounded quartz sand. One example additionally contained a scatter of chalk grits 3-6mm.

- Fabric D: a fine sandy red-orange fabric containing fine quartz and ferrous oxide sand, rarely coarser and in one example small clay pellets.

B.5.9 Thickness was fairly uniform with all measuring between 12 and 15mm, though it was not uncommon for tiles to thicken to the edge. The two complete widths were 150 and 153 mm (5⅞ and 6 ins). Overall finish could be quite variable from quite rough to neat. Upper surfaces were usually smooth and sometimes finely striated. Bases and edges were sand and varied from flat and even to rough or irregular. Lower arrises and

corners were generally more rounded than the upper arris. Only a single grass stem impression was observed and two pieces each had a finger print from handling while the clay was still soft.

B.5.10 Peg holes were circular measuring 13-20mm in diameter and usually tapered to the base. The two best preserved tiles had a halo of thickened clay c 30mm diameter around the base of each peg hole. The pegholes are centred between 24 and 31mm from the top edge and 34-50mm from the nearest side edge.

Provenance

B.5.11 The brick was sampled from the kiln structure, layers of collapse or demolition from within the kiln and from excavated examples of the brick pads. Observation on site indicated all the bricks in the kiln were of the same type and made in the same fabric. Dimensions of brick in the kiln structure exhibited a range of values: thickness measured 45-60mm with the majority centred at 55mm, widths 105-115mm and lengths were 230-250mm (1¾-2½ x 4-4½ x 9-9½ins). Indented borders of about 10mm width were common on the smooth upper surfaces and organic impressions of straw or grass were present on bases when visible. Most of the bricks were of standard firing, but a significant number that had vitrified ends with a thick green vitreous surface were scattered randomly through the kiln structure. This suggests the characteristic relates to the original firing conditions rather than the use of the kiln, especially as some vitrified bricks occurred in the external facades away from the main firing chamber. This would be consistent with firing in a clamp.

B.5.12 The ceramic building material observed on site in the brick pads consisted mostly of broken brick, but included roof tile and also mortar, with both the latter being the major constituent in a few pads. Although the bricks are of the same type and fabric as those in the lime kiln, the mix of materials suggest the pads may utilise demolition material rather than waste debris from construction, but this is not conclusive.

Cntxt	Spot Date	Nos	Wt (g)	Class	Fab	TH mm	TH ins	W mm	W ins	L mm	L ins
6260	LC15-C16	1	1191	Brick	Qfe	55	2 3/16"	108	4¼"	>140	>5½"
6320	Pmed	1	53	Roof	C	13	0	0	0	0	0
6320	Pmed	2	32	Brick	Qfe	>27	0	0	0	0	0
6370	Pmed	1	13	Brick	Qfe	>28	0	0	0	0	0
6370	Pmed	1	13	Roof	D	13	0	0	0	0	0
6378	Pmed	2	109	Roof	D	15	0	0	0	0	0
7026	LC15-C16	1	1988	Brick (special)	Qfe	54	2⅛"	108	4¼"	200 – 222	7¾" - 8¾"
7026	LC15-C16	1	1945	Brick (special)	Qfe	53	2"	108	4¼"	198 – 222	7¾" - 8¾"
7026	LC15-C16	1	1994	Brick	Qfe	50	2"	100	4"	215	8⅜"
7026	LC15-C16	1	2020	Brick	Qfe	50-54	2" - 2⅛"	101	4"	220	8⅝"
7026	LC15-C16	1	1722	Brick	Qfe	50	2"	97-103	3 13/16" -4"	222	8¾"
7026	LC15-C16	1	1663	Brick	Qfe	57-61	2¼"-2⅜"	114	4½"	>160	>6¼"
7026	LC15-C16	1	1127	Brick	Qfe	56	2⅜"	117	4⅝"	>125	>5"
7026	LC15-C16	1	1148	Brick	Qfe	55-61	2⅛"-2⅜"	115	4½"	>113	>4¼"
7034	C15-C16	1	431	Roof	C	12-14mm	0	153	6"	>135	0
7037	LC15-C16	1	1906	Brick (special)	Qfe	59-63	2 1/16" - 2½"	106	4 3/16"	167-228	9"-6 ½"
7037	LC15-C16	1	1926	Brick (special)	Qfe	52-55	2" - 2⅛"	106	4⅛"	201-222	7⅞-8¾"

7058	Pmed	5	8	Brick	Qfe	0	0	0	0	0	0
7068	LC15-C16	1	2621	Brick	Qfe	65	2 9/16"	116	4 9/16"	250	10"
7068	C15-C16	3	623	Roof	C ch	14, 15	0	150	5⅞"	>120; >120	0

Table 9: summary of CBM assemblage

Appendix C. Environmental Reports

C.1 Faunal Remains

By Zoe Ui Choileain

Introduction

C.1.1 A total weight of 345g of animal bone was recovered from the excavation, from a single context, the fill of a post-medieval brick pad.

Methodology

C.1.2 All identifiable elements were recorded using a version of the criteria described in Davis (1992). Identification of the assemblage was undertaken with the aid of Schmid (1972) and France (2009) plus use of the OAE reference collection. Preservation condition was evaluated using the 0-5 scale devised by Brickley and McKinley (2004).

C.1.3 Cattle is the only species represented here. Overall surface preservation was very poor (Grade 3-4 McKinley 2004) and bone was highly fragmented. It is probable most of this material represents a single animal.

Context	Element	No. of frags	Taxon	Collection method	Erosion	Weight (g)
6301	Molar	4	Cattle	Hand	4	191
	Humerus	1	Cattle	Hand	3	114
	Metapodial	1	Cattle	Hand	4	13
	Long Bone	4	Large mammal	Hand	4	27

Table 10: Faunal remains

Erosion grades (simplified version of Brickley & McKinley 2004, 14-15): 0 (surface morphology clearly visible, fresh appearance), 1 (light and patchy surface erosion), 2 (more extensive surface erosion than grade 1), 3 (most of bone surface affected by some degree of erosion, 4 (all of bone surface affected by erosive action), 5 (heavy erosion across whole surface, completely masking normal surface morphology).

C.2 Environmental Remains

By Rachel Fosberry

Introduction

C.2.1 Eighteen bulk samples were taken from features within the excavated areas of Zone E, Beaulieu, Essex in order to assess the quality of preservation of plant remains and their potential to provide useful data as part of further archaeological investigations. Samples were taken from Late Iron Age / Early Roman features encountered in the west of the excavation area, several pits that formed east-west alignments and a lime kiln (**7026**). Only selected samples from the lime kiln and the pits have so far been assessed.

Methodology

C.2.2 Five samples were selected for processing for this initial assessment based on contextual information. One bucket (up to 10 litres) of each bulk sample was processed by water flotation (using a modified Siraff three-tank system) for the recovery of charred plant remains, dating evidence and any other artefactual evidence that might be present. The floating component (flot) of the samples was collected in a 0.3mm nylon mesh and the residue was washed through 10mm, 5mm, 2mm and a 0.5mm sieve.

Both flot and residues were allowed to air dry. A magnet was dragged through each residue fraction prior to sorting for artefacts. Any artefacts present were noted and reintegrated with the hand-excavated finds. The dried flots were subsequently sorted using a binocular microscope at magnifications up to x 60 and a list of the recorded remains are presented in Table 11.

Results

C.2.3 Preservation of plant remains is by carbonisation and is limited to wood charcoal only. Significant quantities of charcoal (up to 6L) were recovered from kiln **7026**. The two pits (**6319** and **6377**) from the pit alignment both also contain significant amounts of charcoal.

Sample No.	Context No.	Feature No.	Feature Type	Comments	Volume processed (L)	Charcoal volume
856	7065	7026	Kiln	In-situ burning near base of kiln	<1	350
858	7069	7026	Kiln	Charcoal from base of kiln	5	6000
859	7066	7026	Kiln	Lime debris from base of kiln	4	15
953	6320	6319	Pit	Single fill containing charcoal and CBM.	10	380
954	6378	6377	Pit	Single fill containing some charcoal.	8	175

Table 11: Selected environmental samples

Discussion and recommendations

C.2.4 Charcoal is evidence of the burning of wood and further analysis could identify the species used as as fuel for the lime kiln. The charcoal recovered from the pits is possibly the remnants of posts that have had the ends charred prior to insertion or the charcoal fills may have accumulated after the posts have been removed, possibly along with waste produced by the lime kiln.

Appendix D. Radiocarbon Dating Certificate

Scottish Universities Environmental Research Centre

Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride, Glasgow G75 0QF, Scotland, UK
Director: Professor R M Ellam Tel: +44 (0)1355 223332 Fax: +44 (0)1355 229898 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE

26 October 2016

Laboratory Code SUERC-69648 (GU42118)

Submitter

Rachel Fosberry
Oxford Archaeology East
15 Trafalgar Way
Bar Hill
Cambs. CB23 8SQ

Site Reference SPBP14
Context Reference 7065
Sample Reference 856

Material Charcoal : ?Quercus

$\delta^{13}C$ relative to VPDB -24.6 ‰

Radiocarbon Age BP 1987 ± 30

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

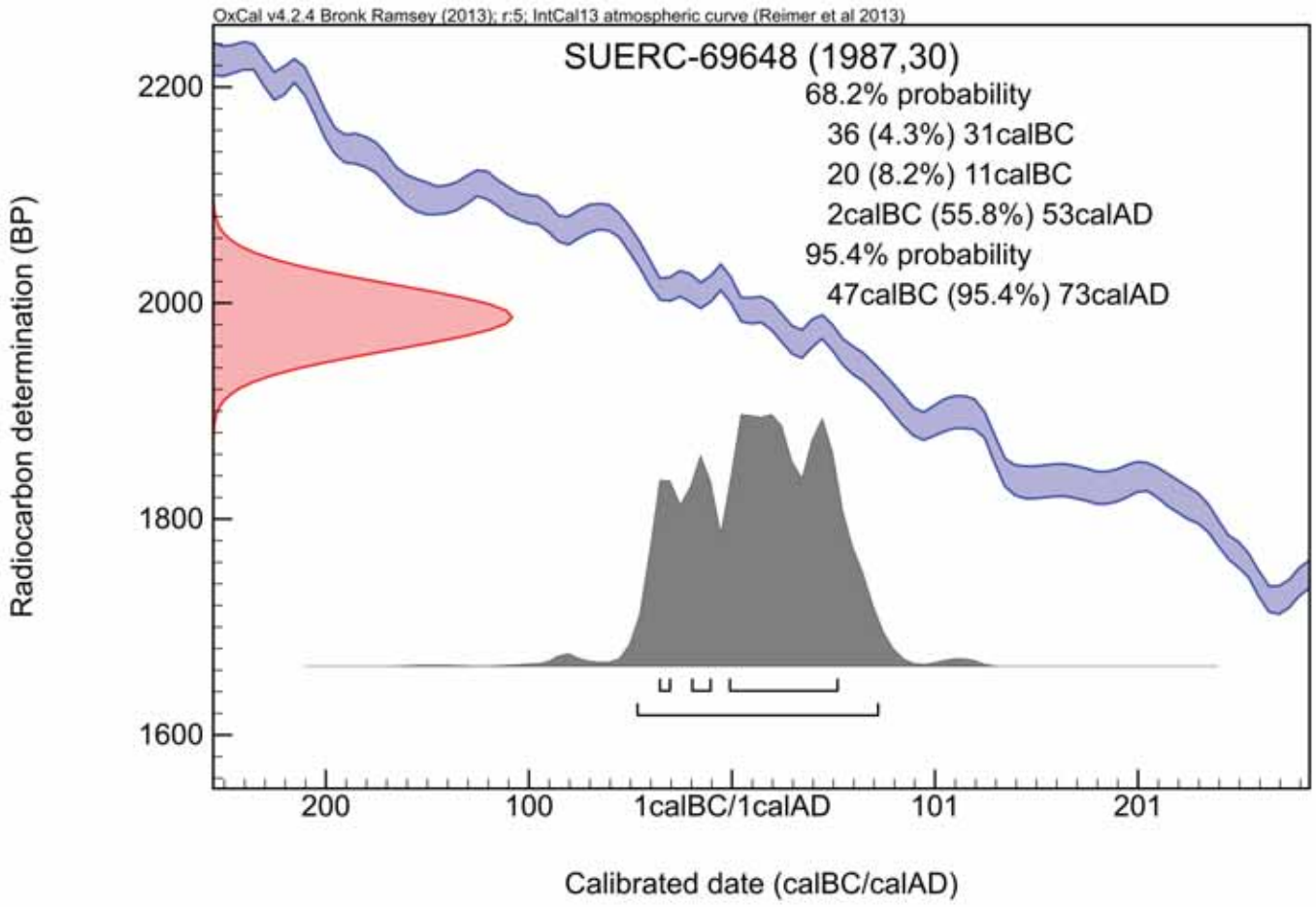
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

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

Conventional age and calibration age ranges calculated by :- Date :- 26/10/2016

Checked and signed off by :- Date :- 26/10/2016

Calibration Plot



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http://scpr.co/PDFs/Resources/White%20BAR%20Appendix%204.pdf *consulted 29/11/2016*

Appendix F. OASIS Report Form

Project Details

OASIS Number	oxfordar3-277666		
Project Name	Zone E excavation, Beaulieu, Chelmsford, Essex		
Project Dates (fieldwork) Start	22-08-2016	Finish	13-09-2017
Previous Work (by OA East)	Yes	Future Work	Yes

Project Reference Codes

Site Code	SPBP16	*Planning App. No.*	09/01314/EIA
HER No.	SPBP16	*Related HER/OASIS No.*	

Type of Project/Techniques Used

Prompt: Direction from Local Planning Authority - PPG15

Please select all techniques used:

☐ Field Observation (periodic visits)	☐ Part Excavation	☐ Salvage Record
☐ Full Excavation (100%)	☐ Part Survey	☐ Systematic Field Walking
☐ Full Survey	☐ Recorded Observation	☐ Systematic Metal Detector Survey
☐ Geophysical Survey	☐ Remote Operated Vehicle Survey	☐ Test Pit Survey
☒ Open-Area Excavation	☐ Salvage Excavation	☐ Watching Brief

Monument Types/Significant Finds & Their Periods

List feature types using the NMR Monument Type Thesaurus and significant finds using the MDA Object type Thesaurus together with their respective periods. If no features/finds were found, please state "none".

Monument	Period	Object	Period
ring gully	Iron Age -800 to 43	pottery	Iron Age -800 to 43
pit	Post Medieval 1540 to 1901	worked stone	Post Medieval 1540 to 1901
brick pad	Medieval 1066 to 1540	pottery	Post Medieval 1540 to 1901

Project Location

County	Essex	Site Address (including postcode if possible)	
District	Chelmsford	LAND OFF WHITE HART LANE, CHELMSFORD ESSEX	
Parish	Springfield		
HER	Essex Historic Environment		
Study Area	0.779ha	National Grid Reference	TL 7307 1008

Project Originators

Organisation	OA EAST
Project Brief Originator	Alison Bennett (Essex County Council)
Project Design Originator	Iain Williamson (AECOM)
Project Manager	RIchard Mortimer (OA East)
Supervisor	Helen Stocks-Morgan (OA East)

Project Archives

Physical Archive	Digital Archive	Paper Archive
Chelmsford Museum	Oxford Archaeology East	Chelmsford Mueseum
SPBP16	SPBP16	SPBP16

Archive Contents/Media

	Physical Contents	Digital Contents	Paper Contents
Animal Bones	☒	☐	☐
Ceramics	☒	☐	☐
Environmental	☒	☐	☐
Glass	☒	☐	☐
Human Bones	☐	☐	☐
Industrial	☐	☐	☐
Leather	☐	☐	☐
Metal	☐	☐	☐
Stratigraphic		☐	☐
Survey		☐	☐
Textiles	☐	☐	☐
Wood	☐	☐	☐
Worked Bone	☐	☐	☐
Worked Stone/Lithic	☒	☐	☐
None	☐	☐	☐
Other	☐	☐	☐

Digital Media	Paper Media
☒ Database	☐ Aerial Photos
☐ GIS	☒ Context Sheet
☐ Geophysics	☐ Correspondence
☒ Images	☐ Diary
☒ Illustrations	☒ Drawing
☐ Moving Image	☐ Manuscript
☐ Spreadsheets	☒ Map
☒ Survey	☐ Matrices
☒ Text	☐ Microfilm
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	☐ Research/Notes
	☒ Photos
	☒ Plans
	☒ Report
	☒ Sections
	☐ Survey

Notes:

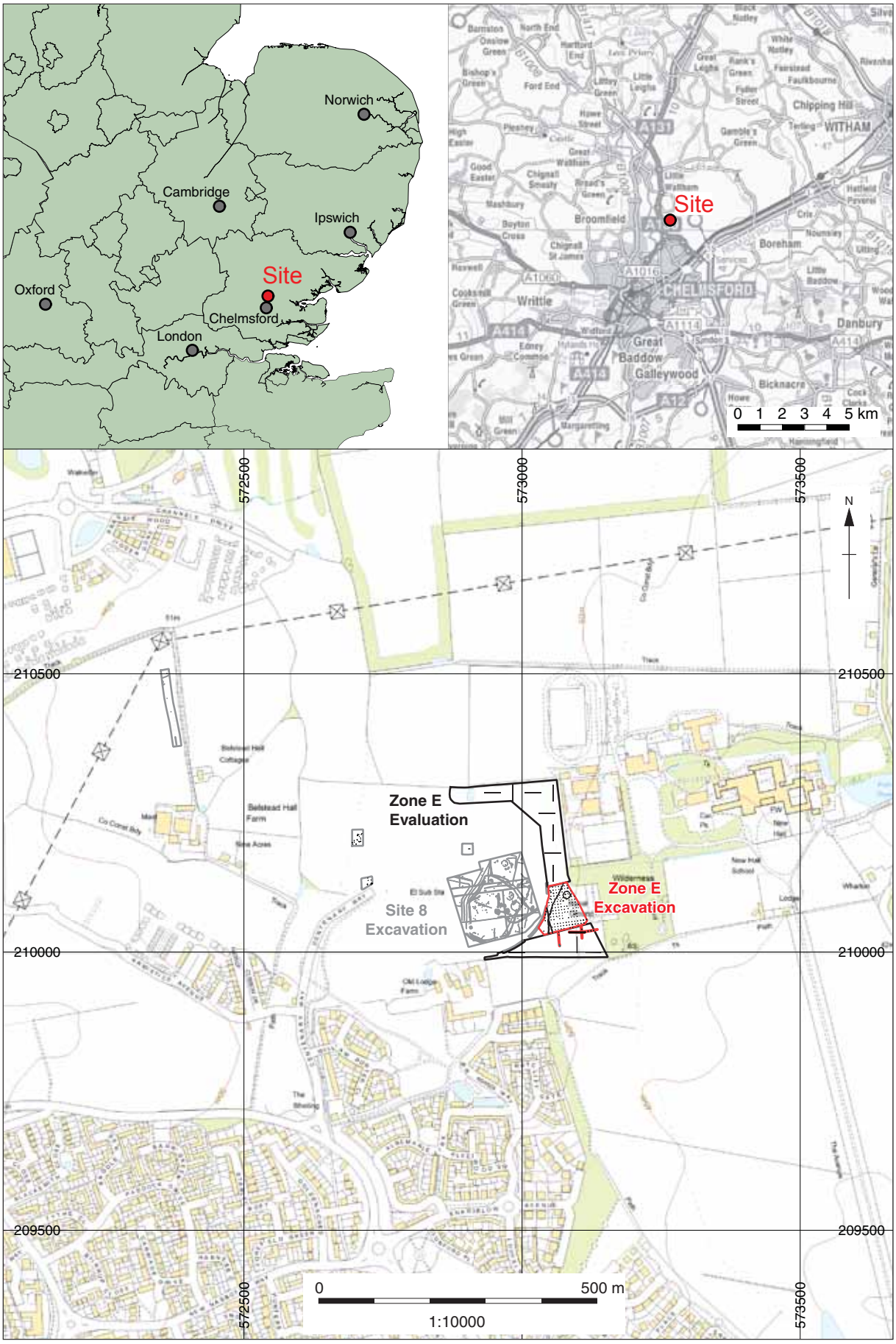

Figure 1: Site location

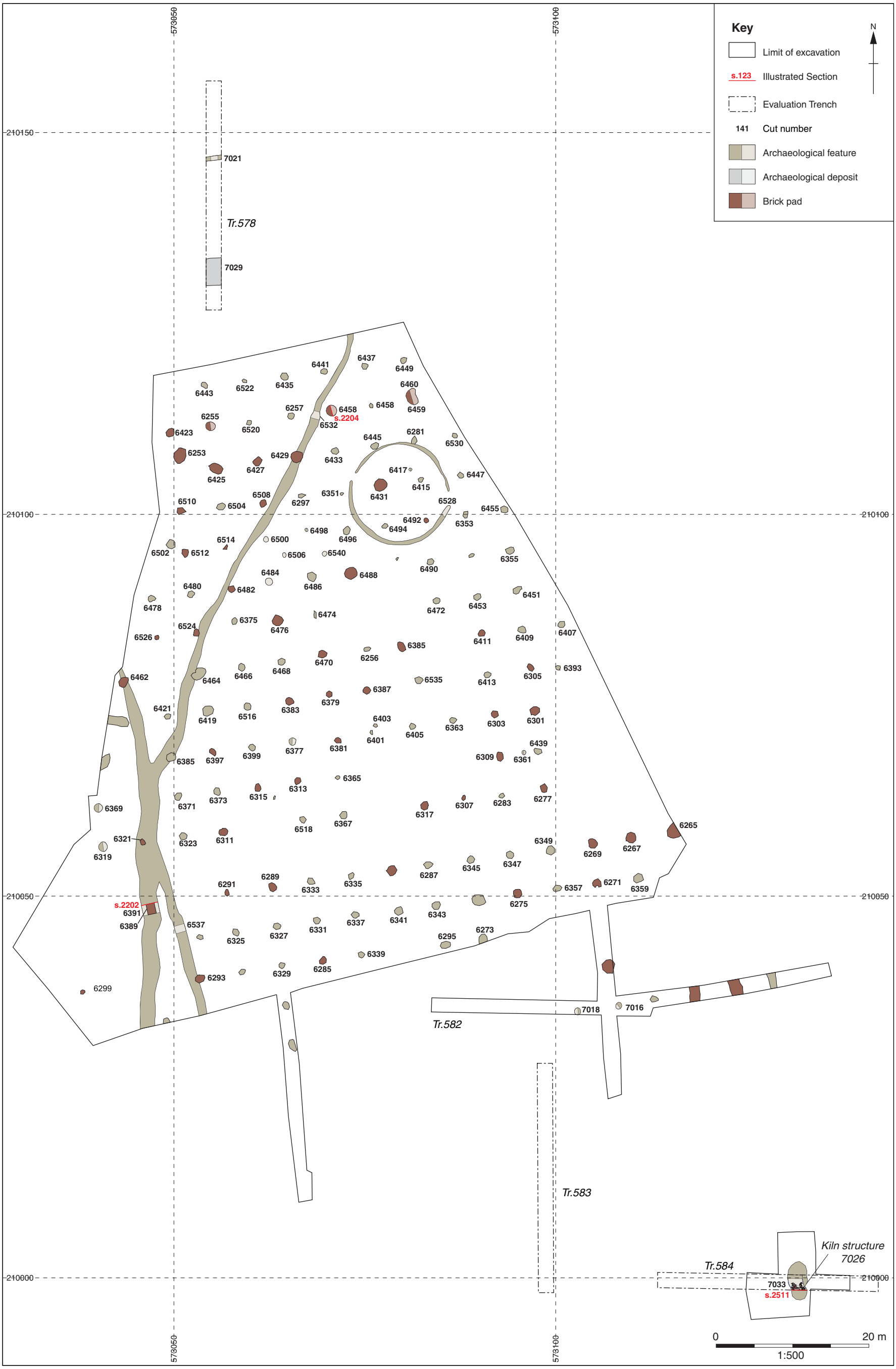

Figure 2: Archaeological remains

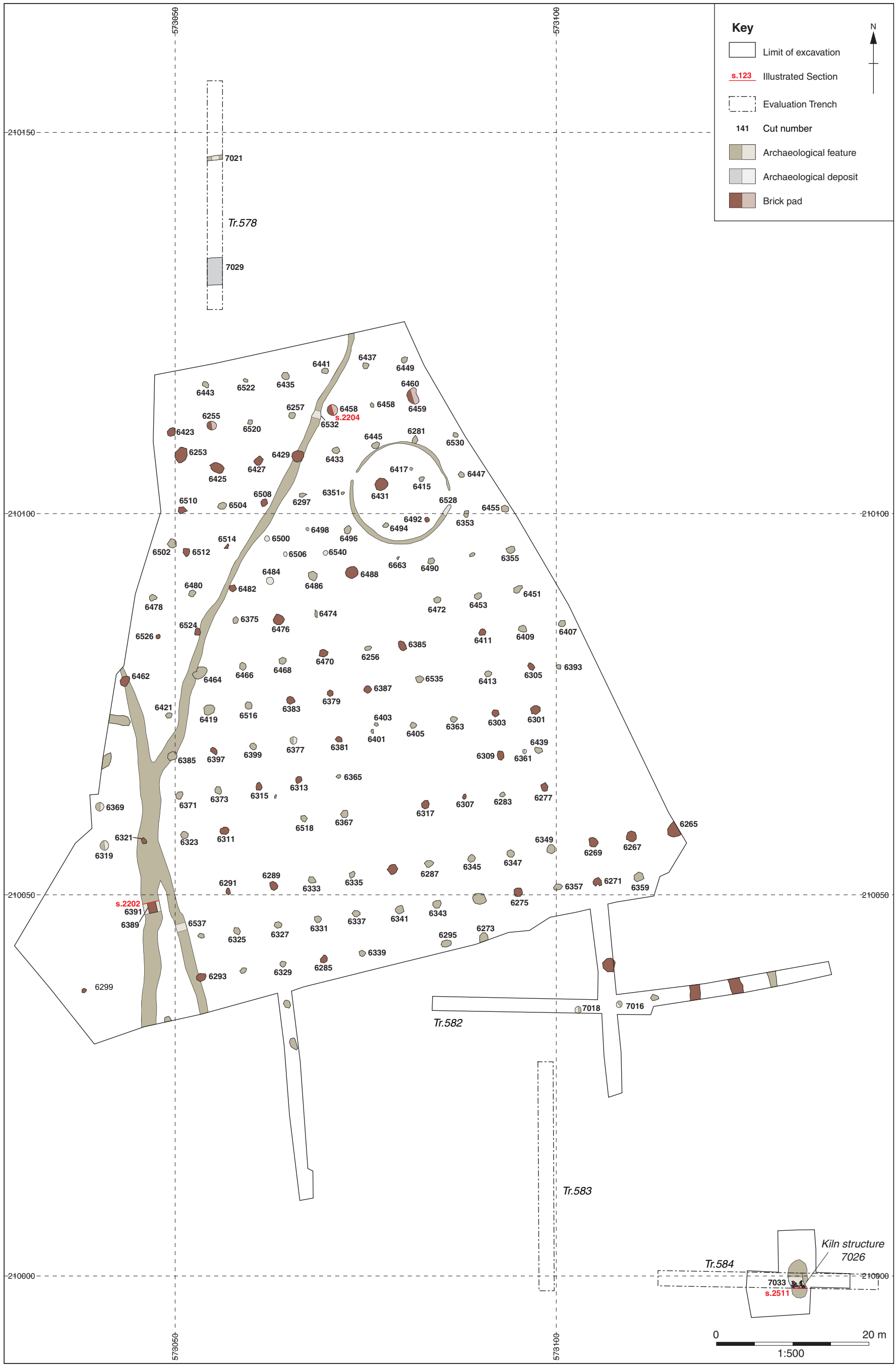

Figure 2: Archaeological remains (Zone E)

Figure 3: Archaeological remains in Zone E combined with Site 8

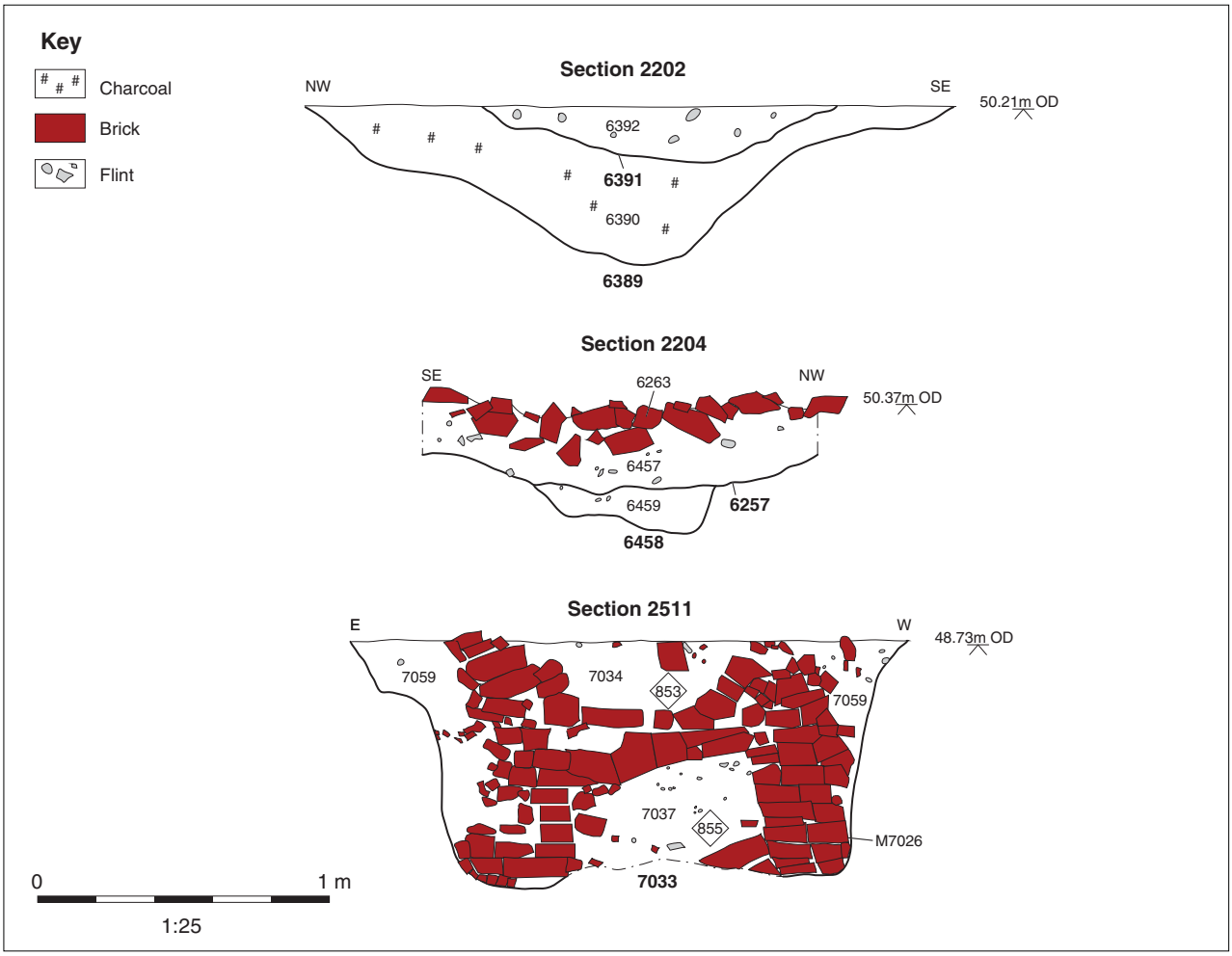

Figure 4: Selected sections

Plate 1: Lime kiln **7026**, from the north

Plate 2: Lime kiln **7026**, from above

Plate 3: Brick pad **6458**, from the east

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