LEGG STREET
CHELMSFORD
ESSEX

ASSESSMENT OF AN
ARCHAEOLOGICAL EXCAVATION

CF63

MAY 2011

PRE-CONSTRUCT ARCHAEOLOGY

DOCUMENT VERIFICATION

LEGG STREET
CHELMSFORD
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EXCAVATION

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An Assessment of an Archaeological Excavation of Land at Legg Street, Chelmsford, Essex, CM1

Site Code: CF 63

Central National Grid Reference: TL 7086 0709

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Pre-Construct Archaeology Limited, May 2011

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1 ABSTRACT

1.1 This report details the working methods and results of an archaeological excavation at Land at Legg Street, Chelmsford, Essex, CM1 (Site Code: CF 63). The excavation was conducted between March and May 2010 in advance of the proposed redevelopment of the site. The archaeological works consisted initially of the monitoring of a series of boreholes and window samples followed by a single large open area excavation, encompassing trenches 3, 4 & 6 of the 2005 evaluation, in the area of highest impact by the proposed development. The project was commissioned by Galliford Try and undertaken by Pre-Construct Archaeology Ltd, under the supervision of Neil Hawkins. This report was prepared and written by Neil Hawkins.

1.2 The excavation encountered multi-phase archaeological activity from the medieval period to the 19th century. This was broken down into six distinct chronological phases. These are; Phase 1 – Natural brickearth, Phase 2 – Medieval, Phase 3 – Early post-medieval AD 1480-1600, Phase 4 – Later post-medieval AD 1600-1800, Phase 5 – 19th century and Phase 6 – Modern. The archaeological record is dominated by activity on the periphery of the town of Chelmsford, including brickearth quarrying and refuse pitting, from the medieval through to the post-medieval period. Of particular note was the remains of a brick kiln dating to the late 17th and early 18th centuries.

1.3 Legg Street is situated c. 200m north of the historic town of Chelmsford. Chelmsford has grown from two historic centres, a Romano-British 'small town' in the Moulsham area south of the river Can and a medieval market town to the north of the Can, in the area of the modern High Street (Ceolmaer's Ford)[1]. The market town continued to prosper throughout the medieval period and into the post-medieval as the county town of Essex.

1 http://unlockingessex.essexcc.gov.uk/content_page.asp?content_page_id=111&content_parents=48,94

1.4 The underlying geology of the site, as illustrated on the British Geological Survey 1:50,000 Series Sheet 241 (Chelmsford, Solid & Drift 1965), is comprised of Chelmer first terrace gravels patchily capped by brickearth. This was revealed across the site during the excavation at 27.05m OD to the west of the site and 26.42m OD to the east.

1.5 The earliest evidence of archaeological activity on site was a series of brickearth quarry pits dating to the medieval period. This quarrying appears to start from at least the second half of the 12th century and continued into the 13th and 14th centuries. This activity, on the periphery of the medieval core of the town of Chelmsford may relate to the expansion of the medieval town northwards towards the parish church of St Mary (now the Cathedral) established in the early 13th century and the 14th century expansion along New Street.

1.6 The early post-medieval period saw continued expansion of the town of Chelmsford and therefore more intense activity on the site. This activity was represented by continued quarrying of the abundant natural brickearth and small groups of refuse pits. Again this activity, albeit more intense, was on the periphery of settlement areas. Walker's Map of Chelmsford of 1591 gives an impression of the late medieval layout of Chelmsford and illustrates the site to be occupied by buildings. No evidence of these buildings was recorded, however the various quarries and refuse pitting may be directly related to this settlement activity.

1.7 The later post-medieval period recorded large groups of refuse pits from which artefacts relating to general domestic activity were recovered. The quarrying activity of the medieval and early post-medieval appears to have ceased within the area of the site during this phase. What was recorded however, was the remnants of a kiln structure used to manufacture bricks. This kiln was dated to the late 17th and early 18th centuries. The presence of this kiln is of local and regional significance as it provides vital information regarded the expansion of the urban centre of Chelmsford and the industrial processes of brick manufacture in the post-medieval era. This brick kiln, still apparently on the periphery of the town, most likely corresponds to the continued expansion and rebuilding of post-medieval Chelmsford.

1.8 The 19th century saw continued refuse pitting on the site along with the construction of a series of brick foundations. These brick foundations most likely correspond to buildings illustrated on the first and second edition Ordnance Survey maps of the 19th

century. These illustrate that the frontages of New Street and Legg Street were heavily developed by the late 19th century

1.9 Sealing the late 19th century remains were a series of 20th century dump deposits overlain by gravel and tarmac, representing the modern surface level. Modern truncations were recorded across the area of the excavation including services and a basement.

2 INTRODUCTION

2.1 An archaeological excavation was conducted by Pre-Construct Archaeology Limited at Land at Legg Street, Chelmsford, Essex, CM1 (Fig. 1). These works were carried out in advance of the proposed redevelopment of the site, and occurred between March and May 2010. The commissioning client was Galliford Try. The excavation was supervised by Neil Hawkins. Tim Bradley and Jon Butler managed the field work and post-excavation respectively for PCA. Teresa O'Connor, Planning Officer for Essex County Council monitored the work.

2.2 The site was previously an open area used as a car park and is bounded by buildings fronting onto Cottage Place to the north, by New Street to the east, by Legg Street to the south and by buildings fronting onto Legg Street to the west (Fig. 1). The central National Grid Reference of the site is TL 7086 0709.

2.3 The site has previously been the subject of a series of reports:

- Gilman, P. J. (ed) 1990. 'Excavations in 1989' *Essex Archaeology and History* 21, 126-139.
- Barker, B., 2005. *An Archaeological Evaluation at Legg Street Car Park, Chelmsford, Essex*. Essex County Council Field Archaeology Unit, unpublished report.

2.4 The site lies within an area of high archaeological potential due to its location c. 200m north of the historic town of Chelmsford. Chelmsford has grown from two historic centres, a Romano-British 'small town' in the Moulsham area south of the river Can and a medieval market town to the north of the Can, in the area of the modern High Street (Ceolmaer's Ford). The importance of Chelmsford's archaeological and historical resource, form the prehistoric period to the modern era is highlighted in a number of publications:

- Medlycott, M., 1998. *Chelmsford. Historic Towns Project Assessment Report*. Essex County Council.
- Brown, N. & Glazebrook, J., 2000. *Research and Archaeology: A framework for the Eastern Counties 2. Research agenda and strategy*. East Anglian Archaeological Occ. Pap. 8.
- Essex County Council Historic Environment Branch, 2006. *Chelmsford Borough Historic Environment Characterisation Project*. Essex County Council.

2.5 The northern area of the site was subject to an archaeological excavation in 1989. This investigation was carried out after the demolition of the former service station and removal of underground petrol storage tanks at the street frontage. The investigation revealed that the site was heavily disturbed, especially the frontage onto New Street, although evidence of medieval rubbish pits and brickearth quarries was recorded. The medieval (14th century) pits are thought to represent peripheral activity at the northern limit of the medieval town[2].

2.6 In 2005 the area south of the former service station was evaluated by trial trenching[3]. As indicated by the 1989 investigation, the earliest datable features appeared to be large medieval brickearth quarries representing peripheral activity to the northern limit of the medieval town. The site appears to become part of the town by the post-medieval period as indicated by a large volume of rubbish pits and a possible foundation slot recorded. The archaeological deposits on the western side of the site appeared to be relatively undisturbed.

2.7 This phase of archaeological investigations consisted of the initial monitoring of a series of boreholes and window samples[4] followed by a single large open area excavation, encompassing the 2005 evaluation trenches 3, 4 & 6, in the location of the areas to be most heavily disturbed by the proposed development. These include large pile clusters and areas of attenuation tanks along the western extent of the site (Fig. 2). The methodology involved in these works is discussed in more detail in Chapter 6 of this report.

2.8 The completed archive comprising written, drawn and photographic records and artefacts will be stored by Pre-Construct Archaeology Limited until their eventual transfer to the appropriate museum (Chelmsford). Site matrices form part of the archive and can be provided by PCA on request.

2.9 The site was given the site code CF 63.

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[2] Gilman, P.J., 1990. Excavations in Essex. *Essex Archaeology and History* 21, 129.

[3] Barker, B., 2005. *An Archaeological Evaluation at Legg Street Car Park, Chelmsford, Essex.* Essex County Council Field Archaeology Unit unpublished report.

[4] Hawkins, N., 2010. *An Archaeological Watching Brief at the Junction of New Street and Legg Street, Chelmsford, Essex*. Pre-Construct Archaeology Ltd unpublished report.

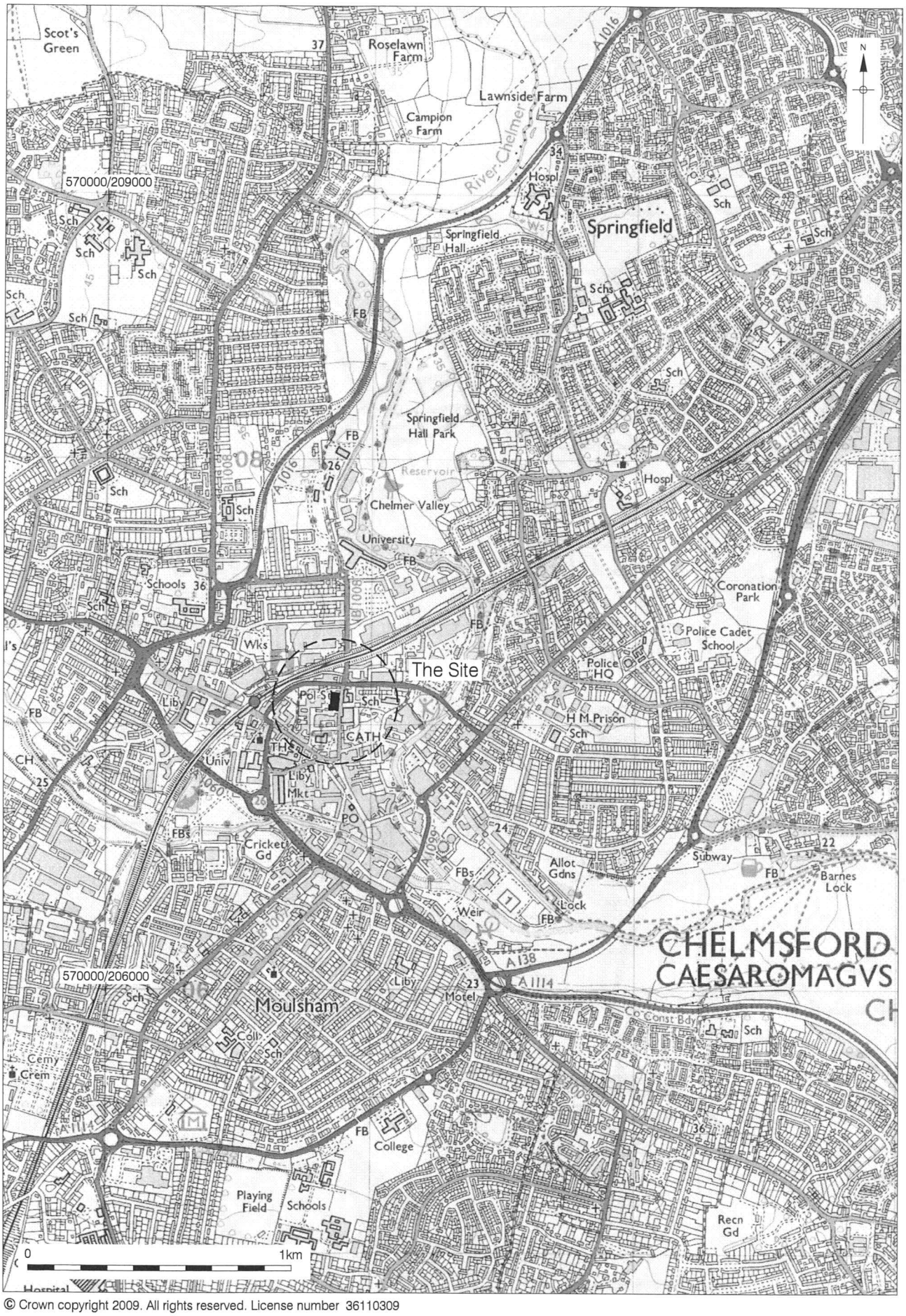


Figure 1
Site Location
1:20,000 at A4

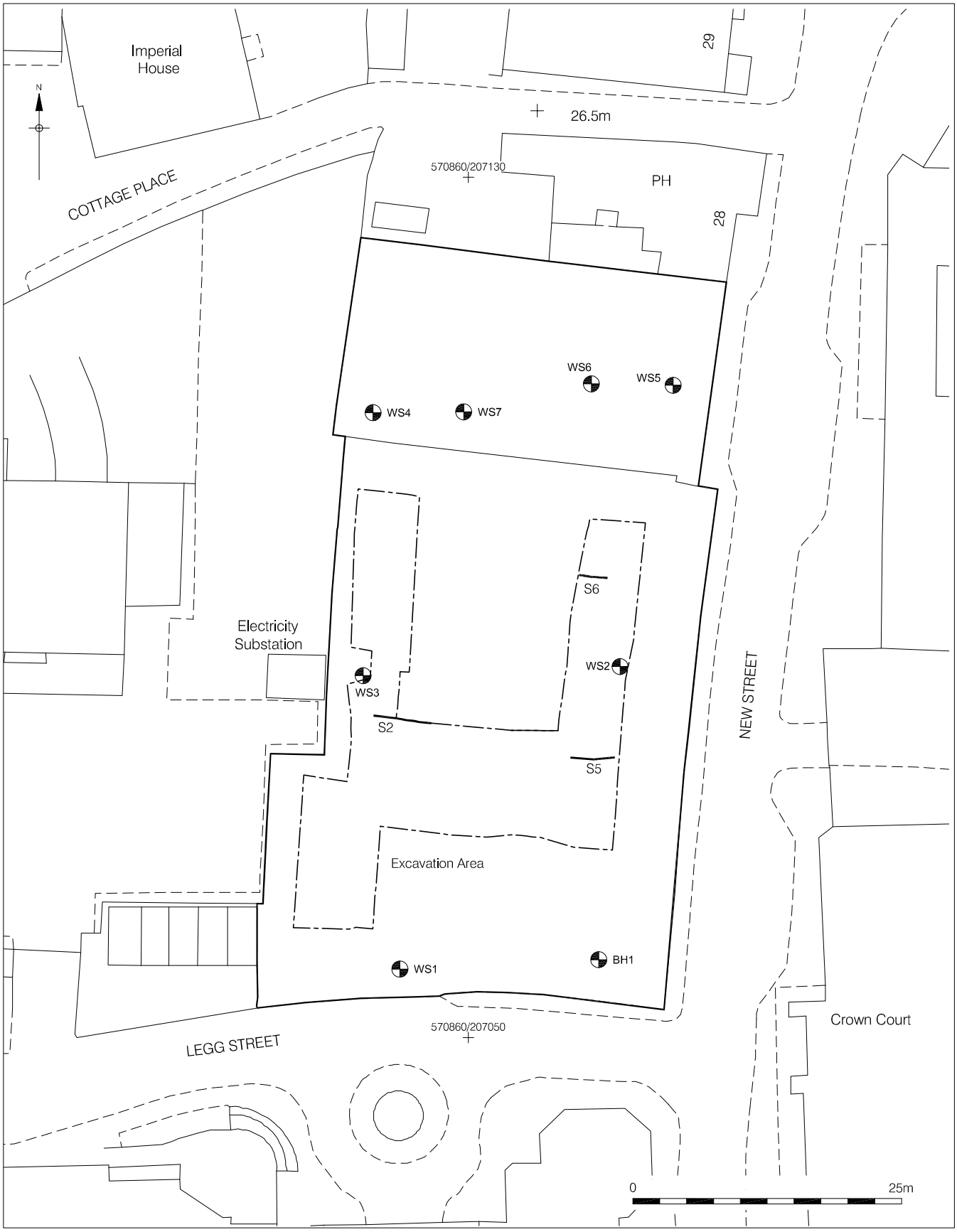


Figure 2
Trench Location
1:500 at A4

3 PLANNING BACKGROUND

3.1 Planning Policy Statement 5 (PPS 5)

3.1.1 In March 2010 the Department for Communities and Local Government issued PPS5: Planning for the Historic Environment which provides guidance for planning authorities, property owners, developers and others on the investigation and preservation of archaeological remains. PPS5 replaced Planning Policy Guidance Note 16 (PPG 16) 'Archaeology and Planning' issued in November 1990 by the Department of the Environment.

3.1.2 In considering any planning application for development, the local planning authority will be guided by the policy framework set by government guidance, in this instance PPS5, by current Local Development Frameworks and by other material considerations.

3.1.3 The Chelmsford Borough Local Development Framework 2001-2021 (adopted February 2008) states:

'POLICY DC21-Archaeology

Planning permission will be granted for development affecting archaeological sites providing it protects, enhances and preserves sites of archaeological interest and their settings taking account of the archaeological importance of those remains, the need for development, the likely extent of any harm, and the likelihood of the proposal successfully preserving the archaeological interest of the site by record.

The Borough of Chelmsford contains numerous sites of archaeological importance. They constitute a finite and non-renewable resource and are in many cases highly fragile and vulnerable to damage and destruction. Many locations within the Borough have sites that may have archaeological potential but have no statutory protection. They rely on the sympathetic application of planning and management policies for their survival and protection. Where development affects sites of archaeological significance, or potential significance, the Borough Council will require the result of an archaeological evaluation to be submitted as part of any planning application.

When new sites of archaeological importance are identified, the Borough Council will seek to ensure they are afforded appropriate protection and, where possible, are retained in situ. In some circumstances it might be possible to retain and incorporate archaeological investigation and recording either through conditions or as part of a planning obligation.

3.1.4 The client was granted full planning permission for development (Application Number 04/01403/OUT, 09/00677/REM) which included an archaeological condition:

'No development, or preliminary groundworks of any kind shall take place until the applicant has secured the implementation of a programme of archaeological work

and recording in accordance with a written scheme of investigation which has been submitted by the applicant, and approved by the planning authority'

3.1.5 Following an archaeological evaluation in 2005 which recorded significant medieval and post-medieval remains[5] a mitigation strategy was formulated by Teresa O'Connor. This mitigation involved an open area excavation in locations which will be most heavily impacted upon by the proposed development. A brief for the work was prepared by Teresa O'Connor, Development Control Archaeologist for Essex County Council[6]. Ms O'Connor inspected and monitored the archaeological works.

3.1.6 There were no Scheduled Ancient Monuments within the footprint of the development.

[5] Barker, B., 2005. *An Archaeological Evaluation at Legg Street Car Park, Chelmsford, Essex*. Essex County Council Field Archaeology Unit, unpublished report.

[6] O'Connor, T., 2010. *An Archaeological Brief for an Archaeological Excavation at the New Magistrates Court House, New Street/Legg Street, Chelmsford*. Essex County Council Historic Environment Branch, unpublished report.

4 GEOLOGY AND TOPOGRAPHY

4.1 Geology

4.1.1 The British Geological Survey 1:50,000 Series Sheet 241 (Chelmsford, Solid & Drift 1965) indicates that the site is comprised of Chelmer first terrace gravels patchily capped by brickearth.

4.1.2 The archaeological evaluation in 2005 recorded natural brickearth in all six of the excavated trial trenches. The various archaeological features recorded during this evaluation were all cut through this natural brickearth. The excavation in the northern area of the site in 2005 also recorded natural brickearth across the entire area of the excavation where not truncated by modern features. One deeper feature also recorded the natural terrace gravels below the brickearth[7]. This is consistent with the underlying geology as described on the BGS Sheet 241.

4.1.3 The monitoring of the window samples recorded gravel covered by brickearth across the site. The gravel was recorded between 25.20m OD and 25.90m OD to the north of the site, at 25.00m OD in the central part of the site and at 25.10m OD to the south, which might reflect a slight slope from north to south. The brickearth was generally 0.20-0.30m in thickness with the exception of WS3 in the western central part of the site where it was 1.40m thick. It was recorded between 25.40-26.20m OD to the north of the site, between 25.70-26.40m OD in the centre and at 25.40m OD to the south[8].

4.1.4 The archaeological excavation recorded natural brickearth across the entire area. This natural brickearth was recorded at a highest level of c. 27.05m OD on the western side of the site and sloped down slightly to c. 26.42m OD on the eastern side. This deposit is again consistent with the results of the 1989 excavation to the

[7] Barker, B. 2005 'An Archaeological Evaluation at Legg Street Car Park, Chelmsford, Essex' Essex County Council Field Archaeology Unit, unpublished report

[8] Hawkins, N., 2010. *An Archaeological Watching Brief at the Junction of New Street and Legg Street, Chelmsford, Essex*. Pre-Construct Archaeology Ltd unpublished report.

north[9], the 2005 evaluation and the underlying geology as described on the BGS Sheet 241.

4.2 Topography

4.2.1 The area of the site is currently used as a car park with an artificial slope down from the west, c. 28.24m OD, to the east, c. 26.60m OD. The northern area of the site, the location of the 1989 excavation, remains somewhat lower than the rest of the site.

[9] Gilman, P.J., 1990. Excavations in Essex. *Essex Archaeology and History* 21, 129.

5 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

5.1 Introduction

5.1.1 The following is a summary of the archaeological and historical background to the site[10]. A more detailed examination of the background of Chelmsford can be found in Medlycott's 1989 'Chelmsford. Historic Towns Project Assessment Report'[11]. Chelmsford has grown from two historic centres, a Romano-British 'small town' in the Moulsham area south of the river Can and a medieval market town to the north of the Can, in the area of the modern High Street (Ceolmaer's Ford). Moulsham, site of the Roman town, was re-occupied in the medieval period and became a suburb of Chelmsford.

5.2 Prehistoric

5.2.1 A number of significant prehistoric settlement sites are located around the area of Chelmsford. These include a Neolithic cursus monument 1km east of the town centre, a Late Bronze Age defended settlements at Springfield and Great Baddow and a large Middle Iron Age settlement at Little Waltham. Mesolithic flints and two post-built structures of probably Early Iron Age date have been found in the area of the Roman town.

5.3 Roman

5.3.1 The Roman town of Chelmsford (Caesaromagus) lay to the south of the River Can at Moulsham. It was probably established around a fort constructed in the aftermath of the Boudican revolt of AD 60-61. The civilian settlement developed along the London-Colchester road (Moulsham Street) and a side road to the southeast that led to Heybridge and Wickford. The town included a mansio (government posting station) and its bathhouse, and a temple precinct. The mansio and bathhouse were rebuilt on a larger scale in the mid 2nd century AD. In c. AD 160-175 substantial earthwork

[10]http://unlockingessex.essexcc.gov.uk/content_page.asp?content_page_id=111&content_parents=48,94

[11] Medlycott, M., 1998. *Chelmsford. Historic Towns Project Assessment Report*. Essex County Council.

defences were constructed around the town's core but the southern side of the circuit at least was abandoned by the mid 3rd century, and settlement continued to extend along the road frontages to the south and east. Occupation of the town probably continued into the early fifth century though there is clear evidence for the abandonment of building plots in the 3rd and 4th centuries implying a gradual decline.

5.4 Saxon

5.4.1 The Roman town of Chelmsford was apparently abandoned in the Saxon period with settlement becoming based on rural estates in the surrounding area. However, there is some evidence of post-Roman and Saxon buildings. The princely 6th century burial at Broomfield is thought to have been related to a large estate based on Great and Little Waltham. An early Saxon cemetery and late Saxon manor are known at Springfield. During the Saxon period the London-Colchester road was diverted via Writtle, 3km to the west. At some later date it regained the direct route to Colchester by means of a ford over the Chelmer (Ceolmaer's Ford) near the modern bridging point. By Domesday Writtle was a royal manor and market making it a major settlement. Chelmsford and Moulsham by contrast were held by the Bishop of London and were minor settlements, containing only 4 and 12 households respectively.

5.5 Medieval

5.5.1 The medieval town of Chelmsford was founded at the end of the 12th century by the Bishop of London on a site to the north of the Can, in the area of the modern High Street. Royal charters were granted for a market in 1199, rights and tax concessions for freeman-tenants in 1200, and an annual fair in 1201. The small hamlet of Moulsham, south of the Can, became part of Chelmsford from 1199 albeit it remaining in separate lordship. Chelmsford became the main staging point between London and Colchester and its central location made it convenient for administration of the county. The itinerant justices first met at Chelmsford in 1202-3, and by the 1250s the town had become the regular seat for royal justice in Essex, effectively replacing Colchester as the county town.

5.5.2 The original line of the London-Colchester road was restored in the early 12th century when new timber bridges were built over the rivers Can and Chelmer. The Can bridge was replaced by a stone bridge in 1372 and finally by the present 'Stone bridge' in

1787. The bridge on the Springfield side of Chelmer had been rebuilt in stone by the 16th century, but the one on the Chelmsford side remained a timber structure until 1820.

5.5.3 The parish church of St Mary (now the Cathedral) was established at the head of the market in the early 13th century. It was completely rebuilt in the later 15th-early 16th century. Walker's map of 1591 gives an impression of the medieval layout of Chelmsford. Excavation has shown that expansion along the south end of New Street occurred in the 14th century, linking the town with the manorial centre at Bishop's Hall.

5.6 Post-Medieval

5.6.1 Chelmsford continued to prosper in the 16th, 17th and 18th centuries both as a market and county town. This resulted in the town becoming more intensely built up although with little expansion of its overall area. Much rebuilding took place in the 18th century, notably the Shire Hall of 1791. The parish church was partially rebuilt in 1800-3 following collapse of the nave and south aisle. During the Napoleonic wars Chelmsford was a major military centre which protected the northeastern flank of London. Barracks were constructed in several places in and around the town. Extensive earthworks linking forts at Widford and galleywood Common were constructed in 1803-5 following an invasion scare.

5.6.2 The Chelmer and Blackwater navigation of 1797 which included the construction of a basin and wharves off Springfield Road saw trade prosper. The mid 19th century saw major expansion take place around the town. This was further encouraged by the opening of the London-Colchester railway to Chelmsford in 1843. A number of engineering industries developed in Chelmsford during the Victorian period due to cheap land and good communications with London. These companies include Marconi, Crompton and Hoffman all of which were pioneers in their respective industries.

5.6.3 Chelmsford became a borough in 1888 and the parish church became the cathedral for the new diocese of Chelmsford in 1914.

5.7 Previous Work

5.7.1 The northern area of the site was subject to an archaeological excavation in 1989. This investigation was carried out after the demolition of the former service station and removal of underground petrol storage tanks at the street frontage. The investigation revealed that the site was heavily disturbed, especially the frontage onto New Street, although evidence of medieval rubbish pits and brickearth quarries was recorded. The medieval (14th century) pits are thought to represent peripheral activity at the northern limit of the medieval town[12].

5.7.2 In 2005 the area south of the former service station was evaluated by trial trenching[13]. As indicated by the 1989 investigation, the earliest datable features appeared to be large medieval brickearth quarries representing peripheral activity to the northern limit of the medieval town. The site appears to become part of the town by the post-medieval period as indicated by a large volume of rubbish pits and a possible foundation slot recorded. The archaeological deposits on the western side of the site appeared to be relatively undisturbed.

[12] Gilman, P.J., 1990. Excavations in Essex. *Essex Archaeology and History* 21, 129.

[13] Barker, B., 2005. *An Archaeological Evaluation at Legg Street Car Park, Chelmsford, Essex*. Essex County Council Field Archaeology Unit unpublished report.

6 ARCHAEOLOGICAL METHODOLOGY

6.1 An archaeological evaluation was conducted in 2005, which consisted of six trenches[14]. The evaluation encountered medieval quarry pits representing activity on the periphery of the medieval core of Chelmsford and later post-medieval refuse pits. Based upon this evaluation a mitigation strategy was formulated by Teresa O'Connor, Essex County Council Archaeological Planning Officer[15] in conjunction with Phil Emery of Gifford. This methodology is described in detail in the Written Scheme of Investigation[16] but a brief account will be summarised below.

6.2 The mitigation consisted initially of the monitoring of 7 window samples (WS1-7) and a borehole (BH1)[17] followed by the archaeological excavation of a single irregular shaped open area measuring c. 567m^2 in area (Fig. 2). This excavation area targeted archaeological features recorded during the 2005 evaluation and areas which were going to heavily impacted upon by the new development, such as the attenuation tanks. The excavation of this area involved the removal of modern overburden and any deposits below these by 360^o mechanical excavators with a flat bladed ditching bucket until archaeological horizons were encountered. This work was undertaken under archaeological supervision. All spoil was removed to the northern periphery of the site by mechanical dumper. All investigation of archaeological levels, features and structures was then continued by hand, with cleaning, examination and recording both in plan and in section.

6.3 The site archive was organised as to be compatible with its eventual deposition with Chelmsford Museum. Individual descriptions of all archaeological strata and features excavated and exposed were entered onto prepared *pro-forma* recording sheets which include the same fields of entry as found on the recording sheets of the Museum of London. Sample recording sheets, sample registers, finds recording sheets, accession catalogues, and the photography record cards followed the

[14] Barker, B., 2005. *An Archaeological Evaluation at Legg Street Car Park, Chelmsford, Essex*. Essex County Council Field Archaeology Unit unpublished report.

[15] O'Connor, T., 2010. *An Archaeological Brief for an Archaeological Excavation at the New Magistrates Court House, New Street/Legg Street, Chelmsford*. Essex County Council Historic Environment Branch unpublished report.

[16] Bradley, T., 2010. *New Street/Legg Street, Chelmsford, Essex, CM1. Written Scheme of Investigation for an Archaeological Excavation*. Pre-Construct Archaeology Ltd, unpublished report

[17] Hawkins, N., 2010. *An Archaeological Watching Brief at the Junction of New Street and Legg Street, Chelmsford, Essex*. Pre-Construct Archaeology Ltd unpublished report.

Museum of London equivalents. This requirement for archival compatibility extends to the use of computerised databases.

6.4 A record of the full extent in plan and section of all archaeological deposits as revealed in the investigation was made; these plans were on polyester based drawing film, were related to the site grid and at a scale of 1:10 and 1:20. 'Single context planning' was used on stratified deposits. Where possible the information was digitised for eventual CAD application.

6.5 OD heights of all principal strata and features were calculated and indicated on the appropriate plans and sections.

6.6 A 'Harris Matrix' stratification diagram was used to record stratigraphic relationships. This record was compiled and fully checked during the course of the excavations. Spot dating was incorporated where applicable during the course of the excavation.

6.7 Full photographic records of the investigations were prepared. This included digital, black and white prints and colour transparencies (on 35mm film), illustrating in both detail and general context the principal features and finds discovered. The photographic record also included 'working shots' to illustrate more generally the nature of the archaeological investigation. The transparencies were mounted in suitable frames for long-term curation in preparation for deposition with the archive.

6.8 The excavation area was surveyed into the National Grid and a CAD drawing produced showing its location.

6.9 Two temporary benchmarks were established on the site during the excavation, 27.14m OD and 17.09m. These temporary benchmarks were installed using a GPS survey system.

6.10 The site was given the site code CF 63.

7 THE ARCHAEOLOGICAL SEQUENCE

7.1 Phase 1: Natural Brickearth

7.1.1 The earliest deposit recorded across the site was the natural brickearth, [24], [67] & [243]. This natural brickearth was encountered throughout the entire excavation area and was the level at which all archaeological features were cut from. The natural brickearth was recorded during the excavation phase of the investigation at a highest level of c. 27.05m OD on the western side of the site and sloped down slightly to c. 26.42m OD on the eastern side.

7.1.2 The natural brickearth recorded during the excavation phase is consistent with the known underlying geology recorded during the 1989 excavation and the archaeological evaluation of 2005[18]. It is also consistent with the underlying geology as described on the British Geological Survey Sheet 241 (Chelmsford).

7.2 Phase 2: Medieval (Fig. 3)

Quarry pitting and other features

7.2.1 The earliest phase of human activity recorded on the site was a series of medieval features, located in the northeastern corner of the excavation. Cutting the natural brickearth in the northeast corner of the excavation were two pits, [248] & [233]. Both these apparent pits were sub-circular in shape but had been heavily truncated by later activity. The fills of both of these pits, [249] & [232] respectively, contained pottery dating to AD 1150-1400. Due to the aforementioned later truncations the original dimensions of these features cannot be determined but they were encountered at c. 26.61m OD. These features may originally have been for quarrying the natural brickearth but may later have been used as simple rubbish pits. Cutting through pit [233] was a small pit or posthole, [181]. This feature was circular, being 0.64m in diameter and was 0.10m deep. Recovered from the fill of this feature, [180], was pottery dating to AD 1150-1400, the same as the other medieval features encountered. However, the presence of medieval pot within this feature may be due to it being cut through the earlier pit and this is where the pot derives from. The relatively shallow nature of this feature is also unusual and it may be that it is somewhat later, being originally cut from higher up.

[18] Barker, B., 2005. *An Archaeological Evaluation at Legg Street Car Park, Chelmsford, Essex*. Essex County Council Field Archaeology Unit unpublished report

7.2.2 Just to the south of pits [248] and [233] the possible remnants of ditch, [257], were recorded cutting the natural brickearth. This ditch measured c. 2.20m long by 1.10m wide and was c. 0.90m deep. No dateable material was recorded from the fill of this feature. This small ditch was subsequently cut by a small linear feature [235]. Small linear feature [235] was aligned north-south, measuring 1.32m long by 0.48m wide and was 0.30m deep. Pottery from the fill of this linear, [234], dated to AD 1300-1400/1500. Both the ditch and linear were recorded at c. 26.68m OD. Linear feature [235] is unusual and difficult to interpret. The general dimensions of the linear appear to resemble a beamslot with the obvious exception of its length which appears to be too short to represent anything structural. Of interest from the fill, [234], of the small linear was a ceramic culinary mould (sf 116). Such items are thought to have been used as a mould for the cooking of a soft mixture or batter, representing cheaper ceramic versions of the wafer or waffle-iron. Such artefacts are relatively rare and seem to be predominantly an Essex phenomenon (Appendix 1).

7.2.3 A large amount of residual medieval pottery was also recovered from the varying later features recorded during the excavation, reflecting medieval activity on and in the vicinity of the site. Both the archaeological evaluation of 2005 and the excavation in 1989 also recorded features dating to the medieval period.

7.3 Phase 3: Early Post-Medieval c. AD 1480 - 1600 (Fig. 4)

Continued quarry pitting and refuse pits

7.3.1 During the early post-medieval period the site seems to have seen an increase in activity, most notably large scale quarrying of the abundant natural brickearth. The activity during this period is spread almost entirely across the area of the excavation with the exception of the northwest corner. In the southwest corner a series of intercutting quarry pits were recorded, [43], [46], [54], [56], [62] & [66], together with a probable rubbish pit [30]. These extensive pits were predominantly sub-circular in shape and ranged in size from 1m by 1m to over 5m by 2m; the depths also varied between 0.60m to over 1.20m. The backfill of these features was all virtually identical, a homogenous silty-clay, predominantly containing pottery dating to AD 1480-1600. These quarry pits were recorded at c. 26.70m OD. Two small square postholes, [48] and [58] were also recorded in the southwest corner. Posthole [48] measured 0.56m by 0.50m and was 0.19m deep. Posthole [58] was set approximately 0.75m to the north of posthole [48] and measured 0.50m by 0.70m and was 0.40m deep. These two postholes were again recorded at c. 26.70m OD. These reflect activity during this

period other than simple quarrying of the brickearth. To the north an isolated sub-rectangular quarry pit, [223], measuring 2.10m by 1.70m was revealed.

7.3.2 The central southern area and southeastern corner of the excavation also saw a number of pits dating to the early post-medieval period, [70], [72], [76], [107], [108], [109], [110], [111], [115] & [227]. These pits again appeared to represent widespread quarrying of the underlying natural brickearth but had a somewhat different character. Whereas the pits in the southwest corner were sub-circular, many of these appeared to be rectangular and somewhat shallower. These pits ranged in size from 2.50m by 3.30m to 3.50m by 4.00m. The depths of these pits ranged between 0.20m to 0.40m. Only pit [227] was somewhat deeper, being 1.05m deep. Again pottery recovered from some of these features dates to AD 1480-1600 and is mostly represented by local redwares including Transitional redwares and Early post-medieval redwares (Appendix 1). These pits were recorded at c. 26.41m OD. To the west two probable quarry pits, [121] and [132], were revealed in the base of a slot which was excavated to determine the extent of the brick kiln (see below)

7.3.3 A group of smaller intercutting circular pits were also recorded slightly further to the east, [161], [163], [197], [209], [211], [237], [239], [251] and [253]. These various intercutting pits were predominantly sub-circular in shape, ranging in size between 2.50m by 2m to 0.65m by 0.55m. These pits also ranged in depth between 0.30m to 0.50m. The fill of these features was somewhat different to the pits just to the west, described above. This group of pits had similar homogenous dark greyish brown clayey-silt deposits within them. These pits may again represent small scale quarrying of the natural brickearth which may then have been used as small domestic rubbish pits. Pottery recovered from some of these features again dates to AD 1480-1600 and again is represented by local redwares including Transitional redwares and Early post-medieval redwares (Appendix 1). This group of pits was recorded at c. 26.40m OD.

7.3.4 Recorded in the northeastern and central eastern areas were two extensive quarry pits, [255] & [187]. Pit [255] was sub-circular in shape measuring 3.90m by 3.50m and was recorded at c. 26.52m OD. Pit [187] was also sub-circular in shape measuring 2.80m by 3.30m and was recorded at 26.63m OD. Neither of these large pits were fully bottomed due to health and safety reasons; pit [187] had a recorded depth of at least 1.70m and pit [255] was at least 1.20m deep. Both these large pits again represent extensive quarrying of the abundant underlying natural brickearth.

7.3.5 A small number of other features dating to this phase were also located in the northeastern area of the site. A small rectangular rubbish pit, [247], was recorded cutting the larger quarry pit [255]. This feature measured 1.60m by 1m and was only 0.15m deep. Just to the north of this pit was another square pit, [189]. This feature measured 0.85m by 0.93 and was 0.22m deep. Pit [189] again appeared to represent a small rubbish pit. Just east of this was a circular rubbish pit [245]. This pit measured 1.20m by 1.10m and was c. 0.80m deep. Again just to the north another pit was encountered, [229]. This sub-circular feature measured 0.90m by 0.80m and was 0.29m deep. These three features, which appear to represent small rubbish pits on the periphery of settlement, were recorded between 26.70m OD and 26.62m OD.

7.3.6 Also recorded in the northwestern area was a group of four postholes, [150], [179], [183] & [225]. Postholes [150], [179] & [183] were all square, measuring c. 0.25m by 0.25m and were c. 0.25m deep. Postholes [183] and [179] were aligned north-south c. 2m from one another. Posthole [150] was off-set to the northeast. These postholes were recorded between 26.62m OD and 26.54m OD. Posthole [225] was somewhat different. It was located some distance to the south of the other three, was sub-circular in shape measuring 0.38m by 0.32m, and was only 0.08m deep. It is unclear whether all these postholes represent a single structure and are therefore difficult to interpret, especially as little associated evidence to their function was recorded.

7.3.7 Of note during this phase was the recovery of a complete dog skeleton, [32], within its own cut, [33]. Pottery from the fill, [31], of this dog burial dated to AD 1480-1550. This feature was located in the northwestern area of the excavation where no other features dating to this period were recorded. The pit within which the animal was clearly buried was recorded at c. 27.07m OD, cutting the natural brickearth. The dog was relatively large, between 58 and 64cm at the shoulder, and had an estimated age between 1.25 and 1.5 years at the time of death. It is suggested that the apparent reverence involved with the burial of this animal, with no use of the carcass post mortem illustrates that it was a valuable member of the household (Appendix 4).

7.3.8 The overriding activity during this phase clearly relates to quarrying of the natural brickearth. This quarrying appears to be a large scale and widespread event across the area of the excavation. The date of this quarrying episode may coincide with an expansion of early post-medieval Chelmsford away from its original medieval core.

7.4 Phase 4: Later Post-Medieval c. AD 1600 - 1800 (Figs. 5 & 6)

Brick kiln and refuse pitting

7.4.1 The next phase of activity across the site is represented again by a series of pits and also by a kiln structure (Figs. 5 & 6). Located in the western area of the site was a large rectangular cut, [96]. The cut measured 11.72m north-south by 4.10m east-west and was recorded at a highest level of c. 26.90m OD. In the base of this cut, c. 1.90m deep was the remnants of a masonry structure for a brick kiln, [258]. This structure comprised of three rows of parallel brick walls aligned north-south, [151], [153] / [89] and [155] / [98]. The central spine of the masonry structure, [153] & [89], was c. 1m wide with the two outer brick walls, [151] & [155]/[98], being c. 0.50m wide. These unfrogged red bricks were lain on-edge un-mortared upon each other forming the base of the structure. Bricks from the structure dated to the late 17th/early 18th century (Appendix 2). Only the southern area of the kiln was recorded, the northern half extended beyond the limit of the excavation area, whilst the southern part of the cut was truncated by later brick basement [68]. The southern end of the kiln structure was recorded fairly centrally within the cut. The brick base of the kiln was badly truncated, in some places only a single course of brickwork survived with the best surviving area having four courses extant. The western brick wall, [151], survived at 25.23m OD, the central brick wall, [153] / [89], at 25.32m OD and the eastern brick wall, [155] / [98], was recorded at 25.57m OD, the highest point of brickwork surviving within the structure. The kiln structure only encompassed half of the overall cut it sat within, the area of the structure measured 6m north-south but encompassed the cut's entire width 4.10m.

7.4.2 Recorded in between the brickwork of the kiln structure were two areas of burnt clay representing the kilns vents, [152] and [154]. These were recorded at 25.12m OD and 25.08m OD respectively. Two small areas of charcoal and burnt clay, [176] and [177], directly south of the vents, and external to the kiln structure, represent the flue areas. These were recorded at c. 25.14m OD and 25.11m OD respectively. Charcoal samples analysed from the two vent areas illustrate that fuel used in the kiln was wood, largely from deciduous trees and shrubs commonly found in hedgerows, scrub and at the edges of woodland in southern England (Appendix 7). To the south of the vents, external to the kiln structure, an open area of burnt clay, [175], represented the stoking pit. Although no evidence was recorded for it similar kiln structures usually have an arch in the brick above the area of the vents. The presence of the brick kiln within this phase seems unusual as it would appear little quarrying was actually taking place at this time on the site itself. It may have been that the actual quarry pits relating to the kiln were located near to the site, possibly even in an adjacent field.

7.4.3 Located just to the east of the kiln structure was a group of four intercutting pits, [134], [136], [142] & [146]. These pits were sub-rectangular in shape and ranged in size from 1.47m by 1.10m to 3.50m by 2.20m. These also varied in depth between 0.22m to over 1.20m. These all had domestic refuse material within them and represented rubbish pits. They were all recorded at c. 26.46m OD. Recovered from fill [133] of pit [134] were a hair curler and a piece of stone balustrade. The hair curler was stamped with 'W B', a London maker which dates to c. 1750 (Appendix 3). The piece of balustrade was made from Portland stone, dating it to the 18th century, and is from a relatively high status domestic building most likely within the local vicinity[19].

7.4.4 Recorded to the south of the kiln structure were two pits and two postholes dating to this period. Pits [52] and [35] both truncated earlier quarry pits and were rectangular in shape, continuing outside the excavation limit. These rubbish pits were c. 0.80m deep and were encountered at c. 26.90m OD. Pottery recovered from these pits dated to AD 1580-1800 and 1670-1800 respectively (Appendix 1). A square posthole, [50], which measured 0.50m by 0.44m and 0.19m deep, was located c. 4m south of a smaller sub-circular posthole, [60]. This posthole measured 0.19m by 0.27m and was only 0.09m deep. These two features were recorded at c. 26.75m OD and represent activity other than refuse pitting.

7.4.5 The northwest corner of the excavation area also recorded a small group of pits, [4], [9], [21], [23] & [26]. These pits, with the exception of rectangular pit [23], were all sub-circular in shape ranging in size between 0.52m by 0.54m to 2.00m by 1.42m. They also varied in depth between 0.15m to 0.90m. These features were recorded at c. 27.02m OD and all represent rubbish pits. Pottery recovered from the fills of these features dated to AD 1580-1800 (Appendix 1). Pit [4], which was cut through pit [9] contained pottery which dated to AD 1770-1780-1800, placing at the latter part of this phase, unsurprising as it cuts pit [9].

7.4.6 A number of pits and postholes were recorded along the eastern side of the excavation area. Rectangular and circular rubbish pits were encountered all along the eastern frontage, [144], [168], [171], [191], [200], [203], [213] & [231]. These pits varied in size between 1.04m by 1.08m and 4m by 1.50m. They also varied in depth between 0.20m and 1.10m. They were all recorded at c. 26.48m OD and once again represent rubbish pits of varying shape and size. Recovered from fill [202] of pit [203]

[19] K. Hayward pers comm

was a fairly rare sherd of a tin-glazed ware bowl with a portrait of Queen Anne, dated to 1702-1714 (Appendix 1). Within fill [230] of pit [231] was a group of large group of fresh sherds of pottery dating almost entirely to the late 16th century. A single sherd of Combed slipware however suggested a depositional date of post c. 1660. However, it is suggested that it is unlikely that the vast majority of the pottery dating to the late 16th century was c. 60 years when discarded (Appendix 1). Therefore this feature may relate to the earlier phase (Phase 3) of activity. A small number of postholes were also recorded in the southeastern corner of the excavation area, [128], [80], [205], [193], [207] & [165]. The smaller postholes ranged from 0.20m to 0.35m in diameter and from 0.13m to 0.32m in depth, with posthole [80] measuring 0.70m by 0.40m. These postholes did not appear to form any coherent structure and may only relate to small temporary structures.

7.4.7 The character of the activity on the site during this period appears to have changed from the predominance of brickearth quarrying of the early post-medieval period. The vast majority of the pits now represent the disposal of domestic detritus on the periphery of the town. Pottery assemblages from the various pits date from AD 1600-1800. This is unsurprising as Chelmsford most likely expanded outwards during the early post-medieval period encroaching on to the area of the site. The location of the brick kiln is interesting however, especially given the apparent lack of quarry pits located on the site during this period. It is reasonable to assume that the brickearth that would have been required to make bricks within the kiln has come from another source, most likely close by, possibly even a neighbouring field.

7.5 Phase 5: 19th Century (Figure 7)

Masonry structures and refuse pitting

7.5.1 The 19th century is represented across the site by a number of pits and brick features and foundations. In the northwestern corner seven pits cut earlier features and the natural brickearth, pits [2], [6], [11], [15], [17], [19] & [28]. These pits are all sub-circular in shape, except pits [17] and [28] which were rectangular. The pits vary in size between 0.50m by 0.74m to 2.50m by 2.40m. They were all recorded at c. 26.89m OD, varying in depth between 0.20m to over 1.05m. They all represent rubbish pits of varying size and shape. Pottery recovered from the varying fill of these rubbish pits dates invariably from 1800-1900. Pit [2] was of note as it contained the remains of an adult pig and at least five piglets (Appendix 4). No evidence was encountered for the consumption of the pig's meat, which may possibly be due to it dying of some disease. It was not possible to ascertain the cause of death of this

animal however, although the presence of the piglets may suggest that it was a contributing factor. Whether these piglets were still in the womb or born at the time of death is impossible to deduce and therefore cannot explain the presence of this animal.

7.5.2 Located in the southwest area was a single 19th century pit and a substantial brick foundation. Small pit [39] was sub-circular in shape and measured 0.65m by 1.00m. It was recorded at c. 27.05m OD and was 0.30m deep. It represents a small domestic rubbish pit. Extensive brick foundation [68] represents an early 19th brick basement comprised of unfrogged red bricks. It measured 10m long (N-S) by 5m wide (E-W) and was over 10 courses deep, continuing below the excavation area. Internal walls partitioned three small areas at its northern end for an unknown purpose. This foundation was recorded at c. 28m OD.

7.5.3 Just to the east of the brick foundation was an area of brick surface, [105]. This surface measured 1.75m wide (E-W) by 2.68m long (N-S) and continued north outside the limit of the excavation area. A single course of early 19th century unfrogged red bricks comprised the surface. The function of this brick surface is at present unknown. Its dimensions appear unusual but study of cartographic may help to ascertain its function.

7.5.4 In the northeastern corner of the site two 19th century pits and a small brick surface were also recorded. Pits [242] and [215] were sub-circular in shape, cutting one another and cutting the earlier features in the area. Pit [215] measured 2.12m by 1.60m and was 0.40m deep. Pit [242] measured 1.20m by 1.86m and was 0.37m deep. Both these features were recorded at c. 26.55m OD and again represent rubbish pits. Remnants of a small brick surface, [156], were also recorded. Consisting of a single course of bricks it measured 0.62m by 0.70m. This feature was recorded at c. 26.52m OD. Much like brick surface [105] some distance to the southwest the function of this smaller brick feature is unknown.

7.5.5 The 19th century remains recorded on site are unsurprising. The area of the site is known to have been occupied by structures during the 19th century. The brick foundations and surfaces may well be identified after more detailed study of the cartographic evidence.

7.6 Phase 6: Modern (not illustrated)

7.6.1 Cutting the various archaeological features along the eastern frontage of the site was a number of 20th century intrusions. These included brick and concrete walls, service trenches and an extensive 20th century basement. These were sealed by modern made ground and a compacted gravel surface representing the current ground level.

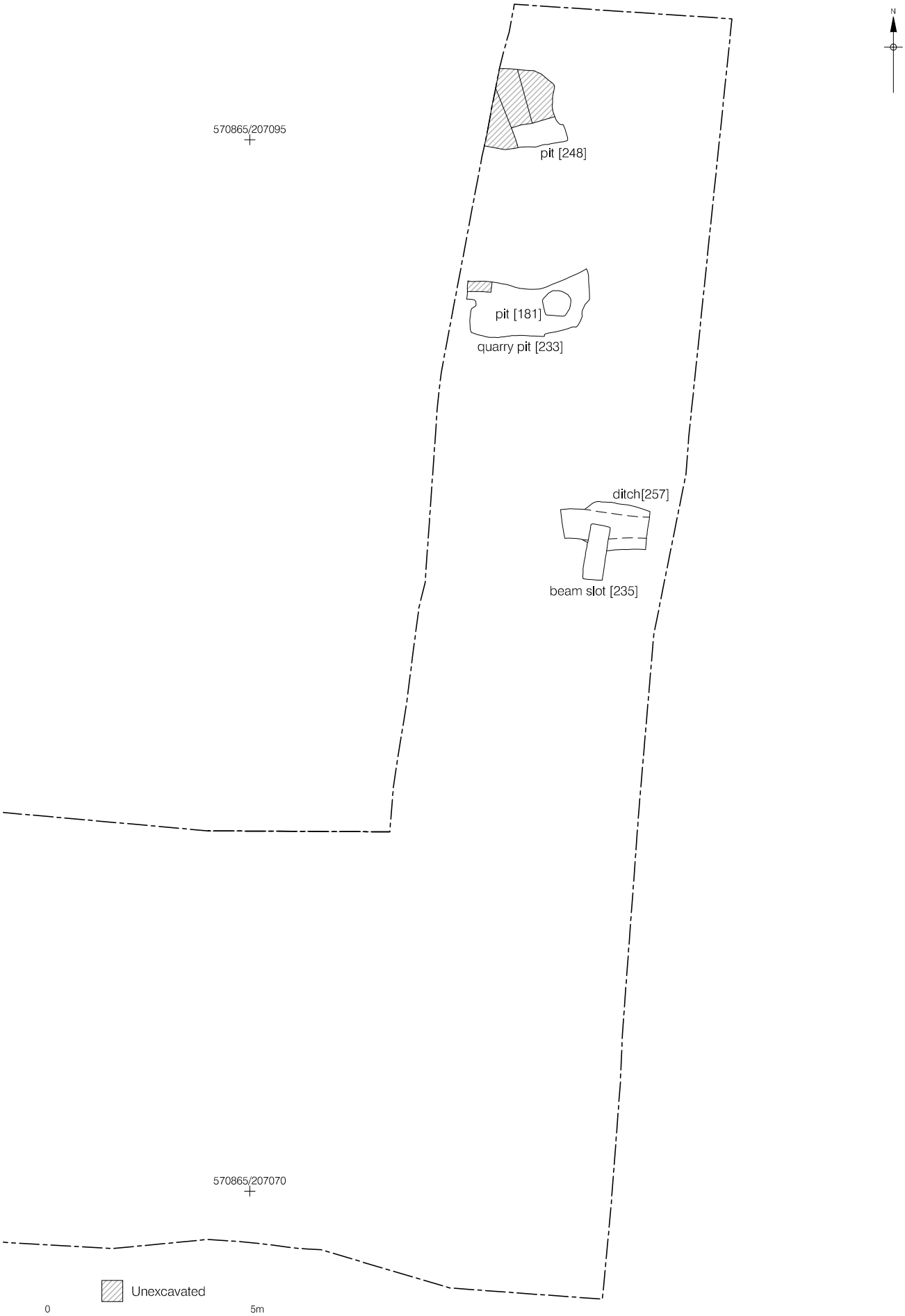


Figure 3
Phase 2: Medieval
1:125 at A4

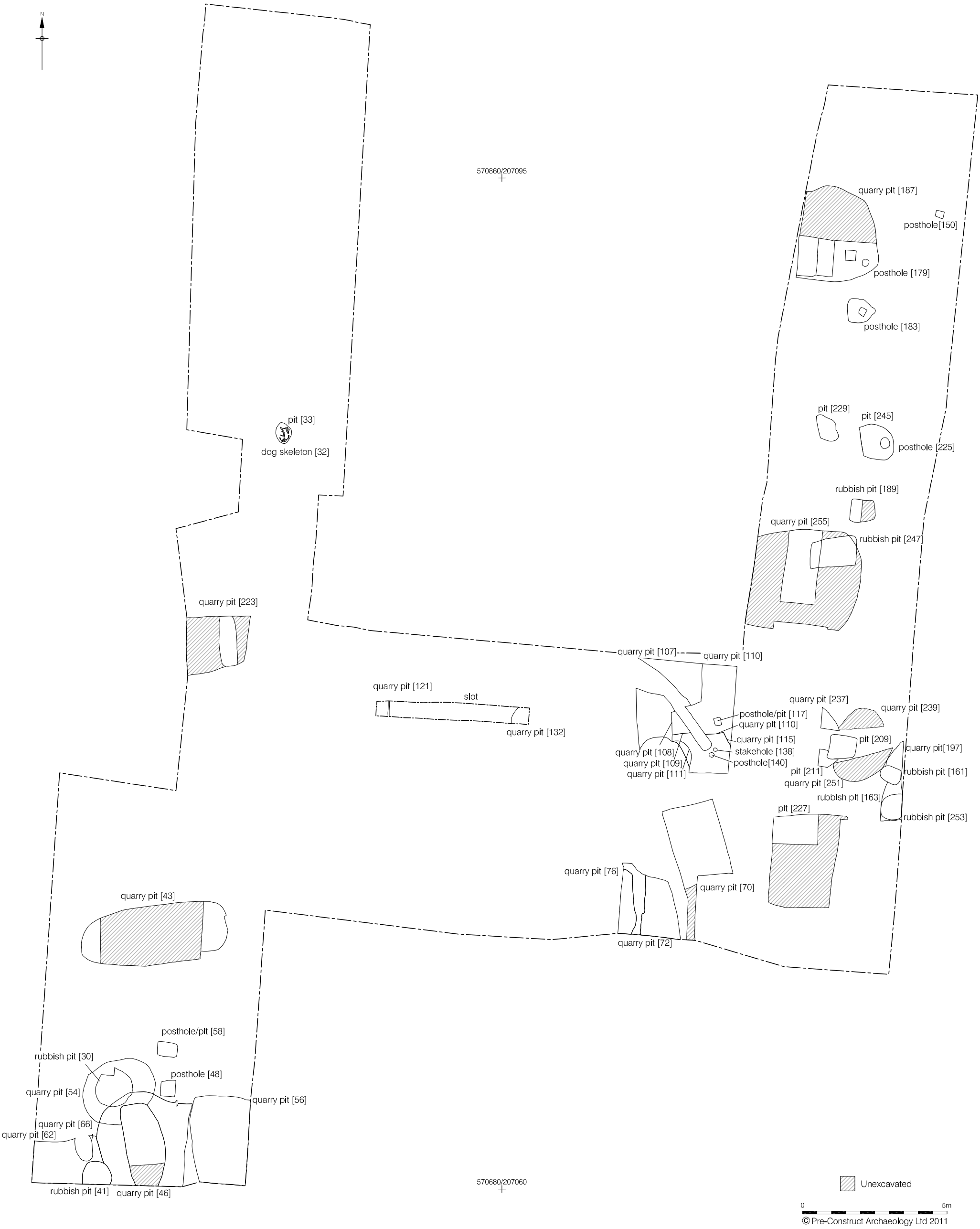


Figure 4
Phase 3: Early Post-Medieval; 1480- 1600
1:125 at A3

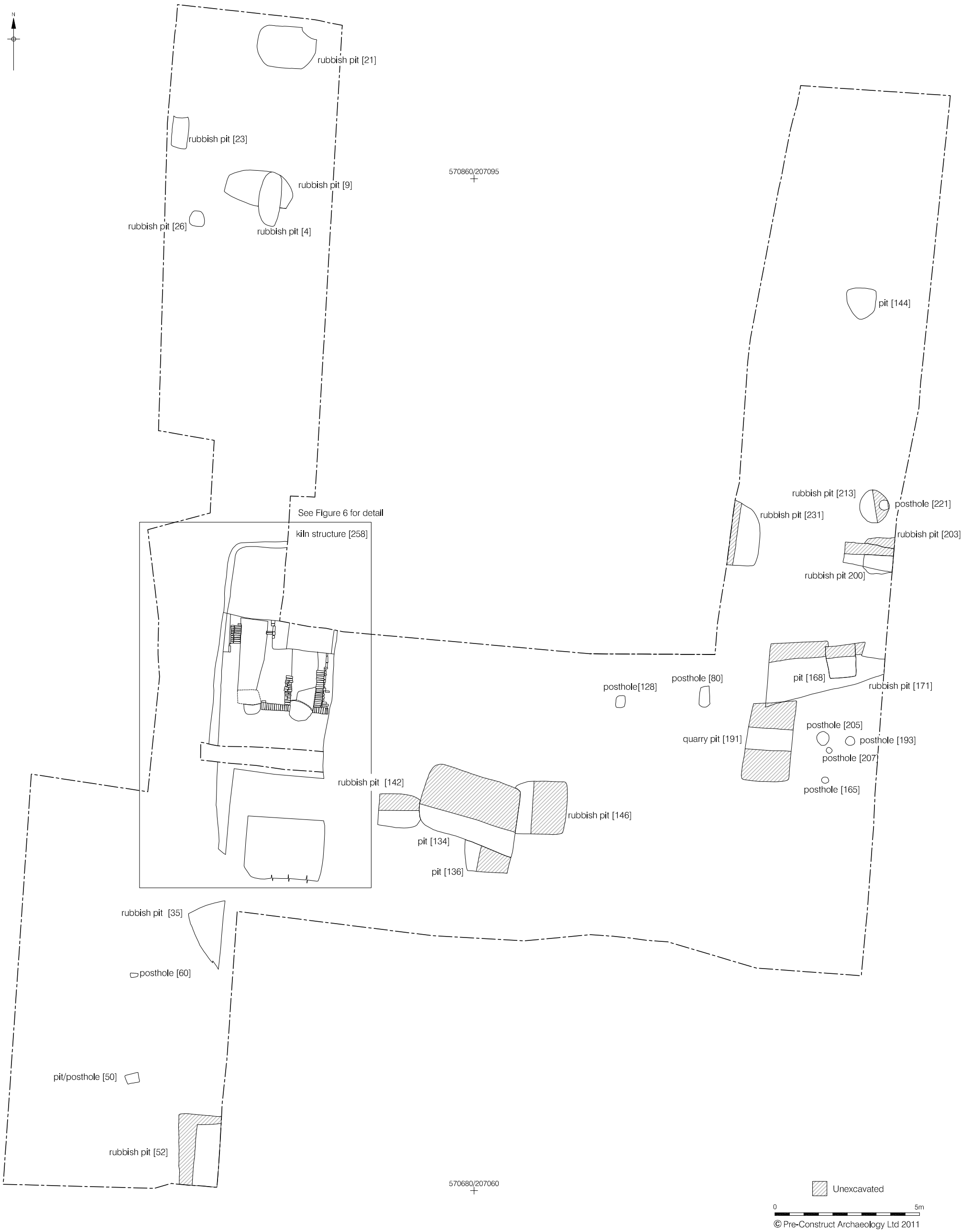


Figure 5
Phase 4: Later Post-Medieval; 1600-1800
1:125 at A3

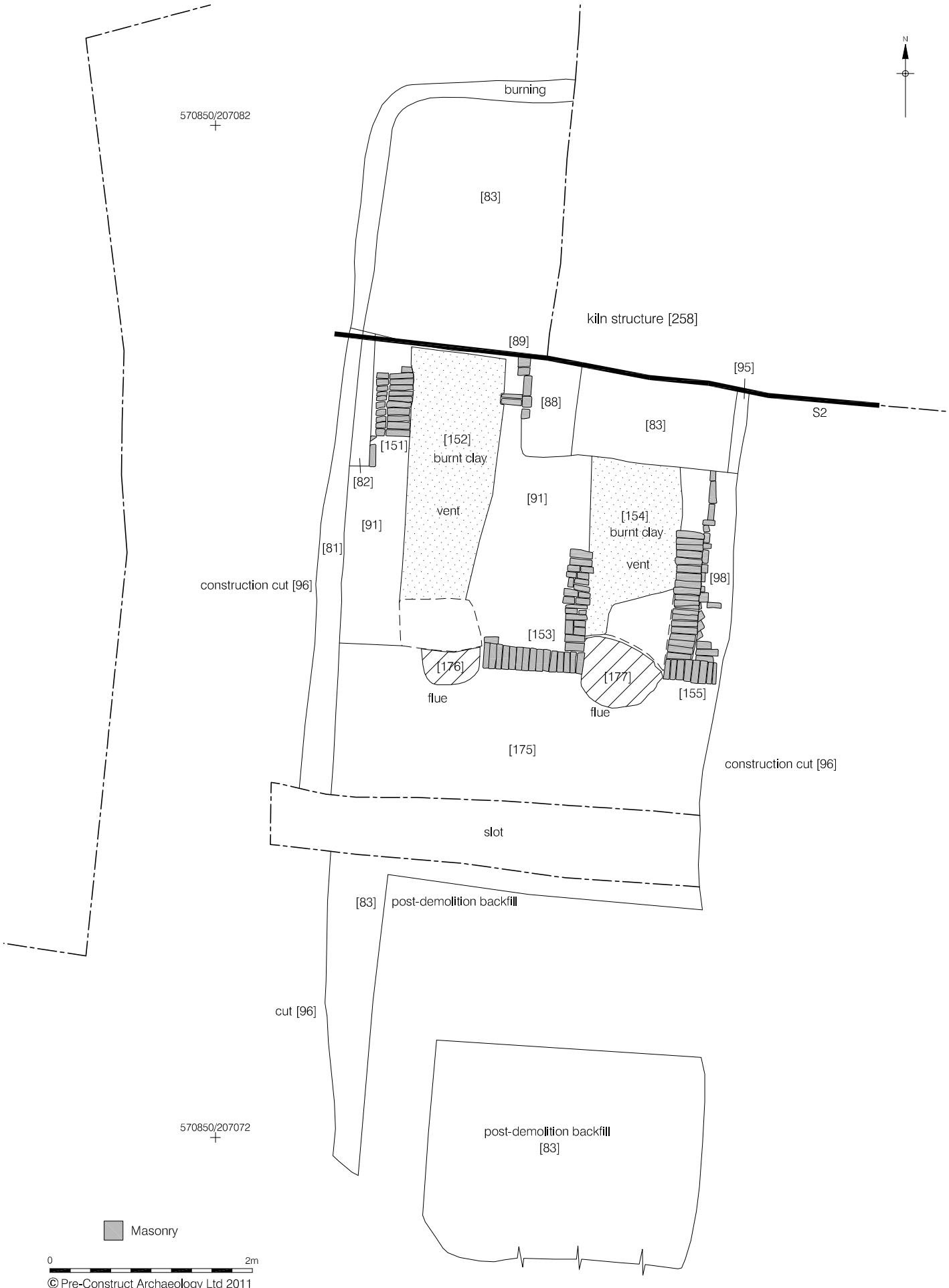


Figure 6
Detail of Kiln Structure [258]
1:50 at A4

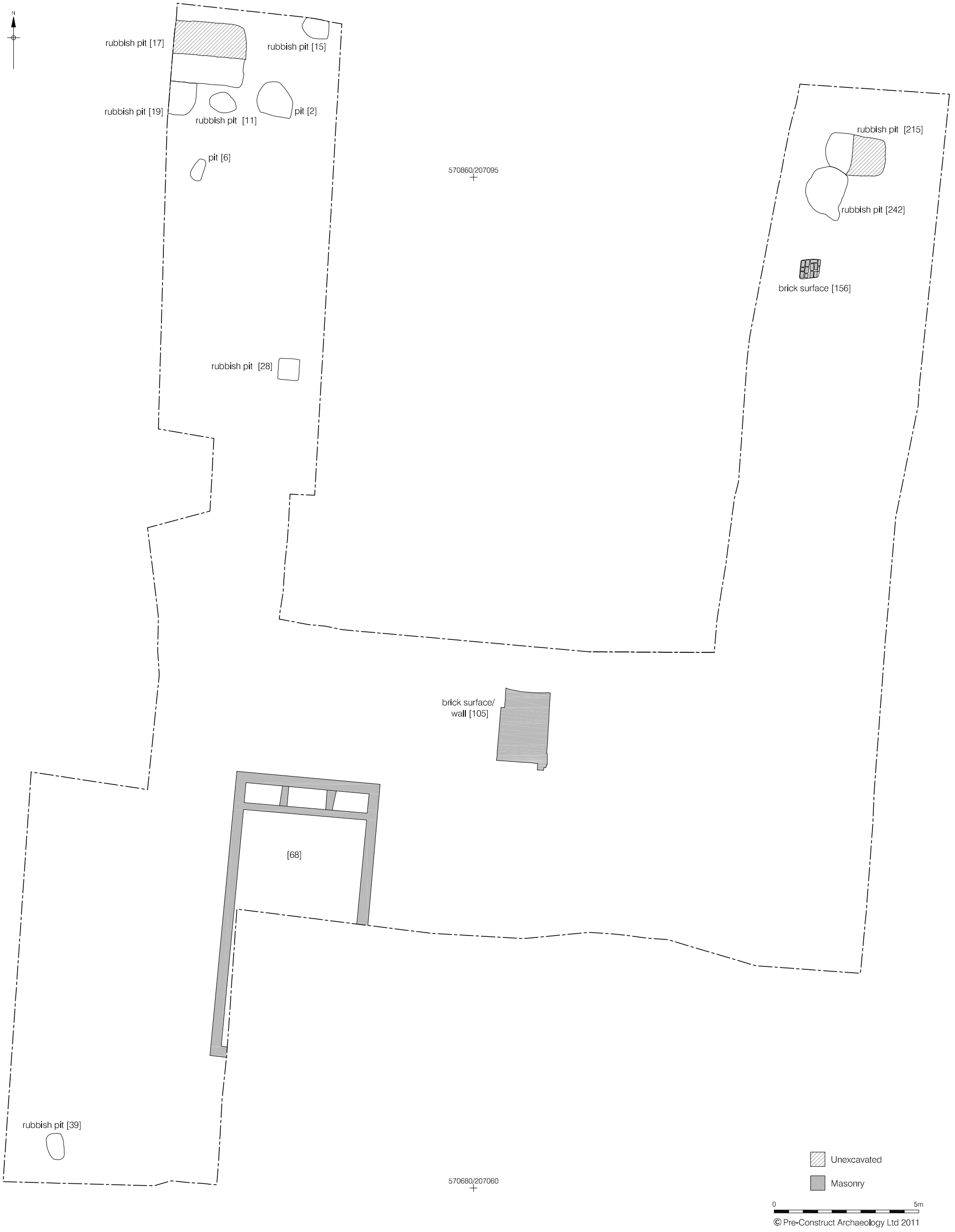
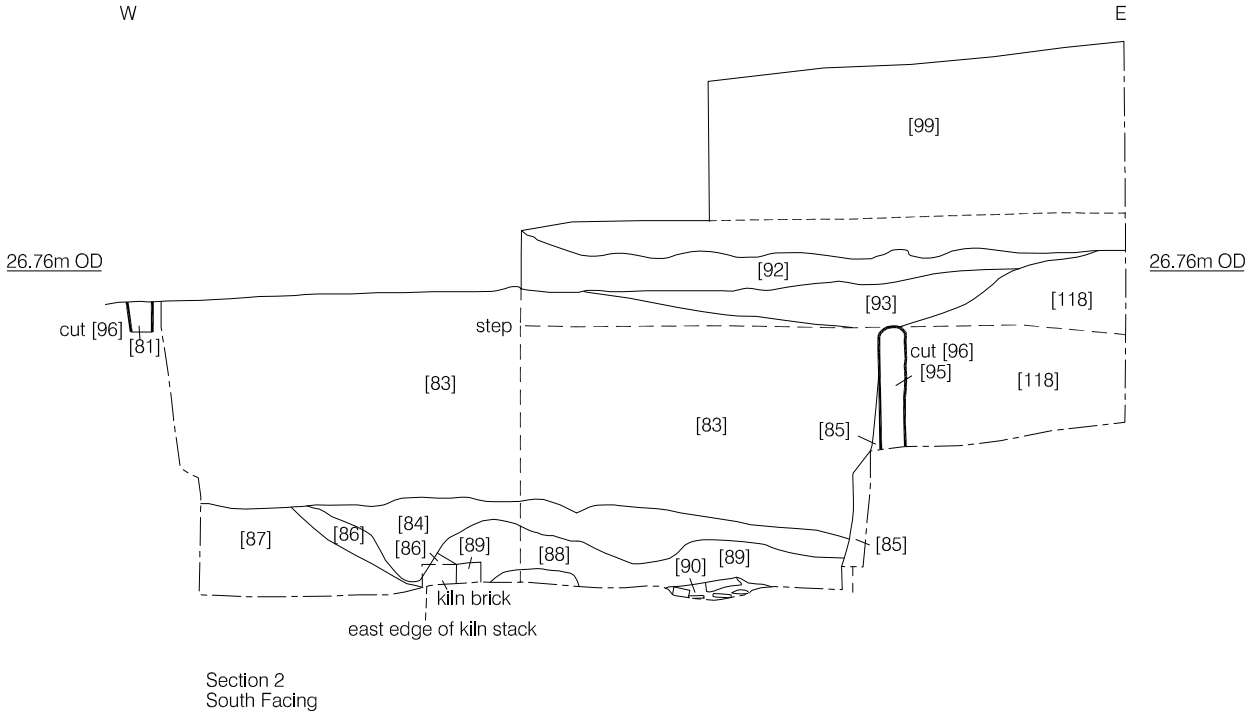
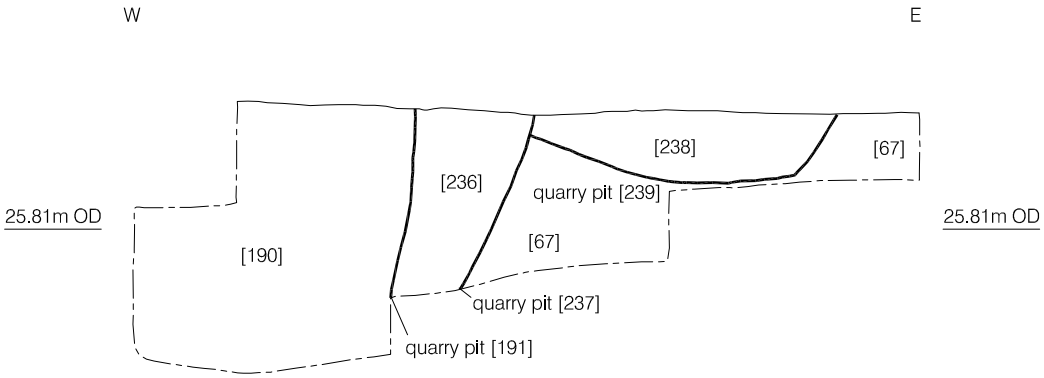


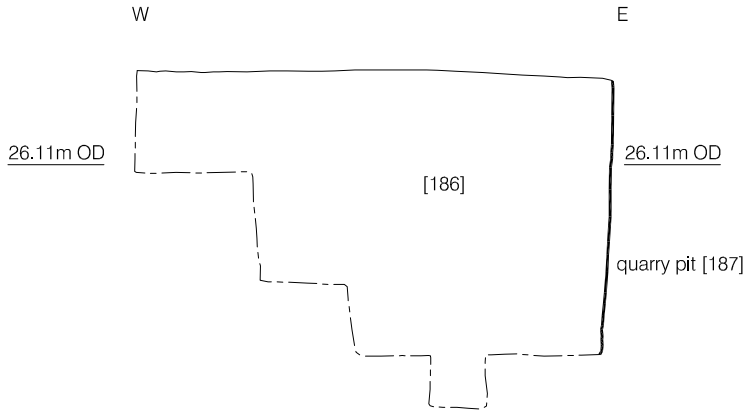
Figure 7
Phase 5: 19th Century
1:125 at A3



Section 2
South Facing



Section 5
South Facing



Section 6
South Facing

0 2m

Figure 8
Sections 2, 5 and 6
1:40 at A4

Plate 1: Site view looking south

Plate 2: Brick kiln looking north

8 ARCHAEOLOGICAL PHASE DISCUSSION

8.1 Discussion of Phase 1 – Natural Brickearth

8.1.1 Recorded throughout the excavation area was the natural brickearth. This natural brickearth showed a slight slope down from the west to the east across the site. The slope of the natural was mirrored somewhat by the modern topography. This brickearth material is well documented as a source for the tile and brick making industries from the medieval period and through the post-medieval.

8.1.2 The natural brickearth recorded during the excavation phase is consistent with the known underlying geology recorded during the 1989 excavation and the archaeological evaluation of 2005[20]. It is also consistent with the underlying geology as described on the British Geological Survey Sheet 241 (Chelmsford).

8.2 Discussion of Phase 2 – Medieval

8.2.1 The first evidence of human activity recorded during the excavation on the site was represented by a small number of features dating to the medieval period. These features were all located in the northeastern extent of the excavation area. Two extensive pits were recorded, one of which was truncated by a later smaller pit. These larger pits most likely represent quarrying of the abundant natural brickearth. The excavation of 1989 and the evaluation of 2005 both recorded medieval features. These features were interpreted as quarry pits, dating to the 13th and 14th centuries. The medieval town of Chelmsford was thought to have been founded at the end of the twelfth century by the Bishop of London within his manorial lands north of the River Can. The town was centred on a central market place, now represented by Tindal Square, Tindal Street and High Street. The parish church of St Mary (now Chelmsford Cathedral was established at the head of the market by at least the early 13th century. It has been suggested that the medieval town of Chelmsford expanded along the south end of New Street during the 14th Century[21]. The date range of the pottery recovered from the two quarry pits, 1150-1400, fits with the foundation of, and subsequent expansion of medieval Chelmsford. The beginnings of the town and any

[20] Barker, B., 2005. *An Archaeological Evaluation at Legg Street Car Park, Chelmsford, Essex.* Essex County Council Field Archaeology Unit unpublished report.

[21] Medlycott, M., 1998. *Chelmsford. Historic Towns Project Assessment Report*. Essex County Council.

expansion would have increased demand for building materials. Quarrying of the brickearth to provide raw material for daub walls and tiles would have been integral to this and is therefore of local significance. The investigation of urban development is highlighted as a research priority within the Eastern Counties Research Agenda illustrating the significance of the results recorded during the excavation[22].

8.2.2 Of note from the medieval phase was the recovery of a ceramic culinary mould. This find is discussed in more detail in Appendix 1 with a short summary following below. Such culinary moulds can date from the 13th to 17th century, but previous examples identified in Chelmsford date from the 16th to 17th century. Such finds are relatively rare and seem to be predominantly an Essex phenomenon, although two examples have been found in London. Of interest with this mould is that the fabric is not like that of the many other moulds, Mill Green. Such items are thought to have been used as a mould for the cooking of a soft mixture or batter, representing cheaper ceramic versions of the wafer or waffle-iron.

8.2.3 A large amount of residual medieval pottery was recovered from the various post-medieval features recorded across the excavation area. The evaluation of 2005 also recorded residual medieval pottery within later features. The residuality of artefacts is a common phenomenon in urban contexts and can sometimes produce conflicting results. The residual pottery on the site does reflect further medieval activity in the more general area but cannot define or characterise it.

8.3 Discussion of Phase 3 – Early Post-Medieval AD 1480 - 1600

8.3.1 The post-medieval period saw continued development and exploitation of the resources on site. Pits of varying size representing quarrying of the natural brickearth were recorded virtually throughout the excavation area. This brickearth quarrying is a continuation of the same industry previously discussed from the medieval period. Into the early post-medieval period this quarrying appears to continue on a much larger scale. This is unsurprising and most likely relates to the expansion northward of post-medieval Chelmsford. Walker's map of 1591 illustrates buildings occupying the area of the site. No archaeological evidence for the structures was recorded during the excavation but depending on their nature they may not have had substantial

[22] Brown, N. & Glazebrook, J., 2000. *Research and Archaeology: A framework for the Eastern Counties 2. Research agenda and strategy*. East Anglian Archaeological Occ. Pap. 8.

foundations which would have survived in the archaeological record. It is conceivable however that the brickearth quarried during this phase was used in the construction of the buildings on Walker's map or others in the vicinity. A smaller number of refuse pits were also recorded during this phase of activity. These are indicative of activity on the periphery of the town. They may even relate to the latter end of the date range for this phase, the late 16th century, when buildings had been erected on the site. As has already been mentioned the investigation of urban development is highlighted as a research priority within the Eastern Counties Research Agenda[23]. Therefore the brickearth quarrying industry is of local significance with regard to the expansion of the town of Chelmsford.

8.3.2 Pitting relating to quarrying and rubbish pits were not the only features recorded during this phase. A small number of other, possibly structural features were encountered during the excavation. Groups of postholes and stakeholes were recorded in various areas of the excavation. A handful of stakeholes were recorded in the southeastern corner of the excavation but do not appear to form any coherent structure at this point. Two similarly sized square postholes were also recorded in the southwest corner of the excavation. Despite being on a regular alignment only two of them were recorded and therefore very little about what they represent can be interpreted. In the northeastern corner of the site a handful of postholes do appear to form some kind of structure, possibly rectangular. If these do form a structure the size of the postholes suggests that it was not substantial. Possible further study of the cartographic sources, including Walker's map of 1591, could possibly yield more information about these features. A possible foundation slot, recorded during the evaluation of 2005, was suggested to possibly relate to the buildings illustrated on Walker's map. Despite being in close proximity to some of the stakeholes they do not appear to relate and therefore may correspond to a different phase.

8.3.3 The virtually complete skeleton of a dog was recorded on the western side of the excavation. This dog was buried within its own cut or grave. This apparent reverence of burying the dog within its own grave coupled with no evidence of use of the carcass post mortem suggests that it was a valued member of the farm or household. However, very fine cut marks observed on the anterior ends of the nasal bones and also on the mid part of the right nasal at the nasal/maxillary border demonstrate that the dog was skinned. This dichotomy is unusual, however, during the early post-

[23]Brown, N. & Glazebrook, J. 2000 'Research and Archaeology: A framework for the Eastern Counties 2. Research agenda and strategy' East Anglian Archaeological Occ. Pap **8**

medieval period various small mammal furs, including cats and dogs, were in fashion and used variously as trim on garments[24].

8.3.4 A small number of metal and small finds were recovered from this phase of activity. These are mostly fragments of iron objects and fittings, including a copper-alloy curtain ring, representing general domestic occupation. Dress accessories are well represented with a number of lace-chapes and pins. These lace-chapes are highly characteristic in the late 15th and 16th centuries and are associated with the use of lace-up clothing (Appendix 5). The pottery assemblage from this phase also illustrates a general domestic character with mostly jars, jugs and pitchers being recovered (Appendix 1). A number of interesting imports were recovered from this phase, most notable amongst these was a sherd of a Valencian blue bowl with briony foliage decoration, provisionally dated 1400-1450. The rest of the pottery from the same assemblage suggests a depositional date of 1480-1550 and therefore the Valencian bowl may have been old when deposited. This ware is rare even in London and potentially at this date only the wealthiest households would have access to such imports. The animal bone assemblage also consists of the general domestic butchery remains of cattle, sheep, goat and pig (Appendix 4). These are all consistent with activity of the periphery of a town during this period.

8.3.5 No features dating to this phase were recorded during the evaluation of 2005. The next activity recorded during the evaluation after the medieval quarry pits were post-medieval refuse pits (see below). These dated to the 17th and 18th centuries[25]. This lack of features relating to this phase may be due to the recovery of medieval pottery only from the small areas of the features recorded in the evaluation trenches. As has been mentioned already residual medieval pottery was recovered from many of the later features. With the benefit of open area excavation larger areas of the features can be excavated and therefore a broader range of pottery fabric types are recovered. This enables more accurate dating of the features. A 16th century buckle recovered from one of the evaluation pits was highlighted as possibly suggesting earlier occupation and attests to the possible problems discussed above.

[24] Serjeantson, D., 1989. Animal remains and the tanning trade. In D. Serjeantson and T. Waldron (eds.) *Diets and crafts in town*. BAR Brit. Ser. 199, Oxford, 129-146.

[25] Barker, B., 2005. *An Archaeological Evaluation at Legg Street Car Park, Chelmsford, Essex*. Essex County Council Field Archaeology Unit unpublished report.

8.4 Discussion of Phase 4 – Later Post-Medieval AD 1600 - 1800

8.4.1 Arguably the most important remains recorded during the excavation are those of the brick kiln. This kiln was located on the western side of the site. The kiln was only partially excavated, its northern extent remained un-excavated due to health and safety reasons. What survived of this kiln were the basal structural elements in the form of three parallel rows of brick walls, two forming the outer limits of the structure within the central wall forming the spine. On either side of the spine were internal open areas representing the vents. The southern limit of the kiln was marked by two areas of burning where the vents expelled smoke from the structure, representing the flues. To the south of this an open area again showed burning and represented the stoking pit. The overall dimensions of the kiln, if it continued to the northern limit of the cut it sat within, was 6m long (north-south) by 4.10m wide (east-west). The kiln was unusually set within a deep cut into the ground; with the base of the structure being c. 1.90m below modern ground. This deeper cut was also larger than the kiln it housed, being 11.72m in length (north-south) but the kiln filled the entirety of the cuts width (4.10m east-west). Brick samples were taken from the kiln structure itself and from the backfill post-use of the kiln. Both were of a very similar fabric with those used to form the kiln structure and probably represent products from the kiln itself. The fabric of these bricks is very similar to 3032nr3033 type bricks found in the London dating to c. 1664/6 to 1725. Clay pipe recovered from the backfill of the structure dates to c. 1690 to 1710. Pottery also recovered from the backfill dates to the 17th century; all of which point to a date of use for the kiln of late 17th to early 18th century.

8.4.2 No known brick kilns of this date have been excavated within Chelmsford; however a similar kiln was excavated in the nearby town of Danbury[26]. The area of Danbury is well documented as having a number of tile and brick kilns. Tile manufacture had begun in Danbury by the 13th century and most likely continued, along with brick manufacture throughout the post-medieval period into the 19th century. Documentary evidence suggests many brick makers in the area in the 17th, 18th and 19th centuries. The brick kiln at Runsell Green, Danbury, was one of two excavated in the 1960s. The earliest, dating to the 17th century was a smaller tile kiln. This was truncated by the later brick kiln dating to the late 17th to early 18th century, making it an interesting comparison to the kiln excavated on site. This kiln, like the one encountered on site was of the updraught type common in the medieval and post-medieval periods. Much

[26] Drury, P. J., 1975. Post-Medieval Brick and Tile Kilns at Runsell Green, Danbury, Essex. *Post-Medieval Archaeology* 9, 203-211.

like the Runsell Green kiln, fuel used in the kiln recorded on site was wood, locally sourced from trees, scrub and hedgerows. The dimensions of the Runsell Green kiln were similar; it measured 4m by 5.5m. The structure was also composed of three parallel rows of bricks, with two vent areas between the bricks and a stoke pit at one end. The dimensions of the brick walls were also comparable; between 0.45-0.65m. The bricks from the Runsell Green kiln also had similar dimensions and fabric type. The Runsell Green kiln had three springing courses of the wall surviving suggesting an arch in this area. The kiln recorded on site had no such evidence surviving but it is assumed it would also have been arched.

8.4.3 There are some differences between the Runsell Green kiln and the kiln excavated on site. Most notable amongst these is the location of the kiln recorded on site within a sunken cut at least 1.50m deep. The Runsell Green kiln, along with most kilns, was located at ground level. The reasons why the kiln structure recorded on site was housed within a deep cut is unclear. It may have been an opportune re-using of a large quarry pit already open. It may have been dug specifically for the purpose of housing the kiln structure. The sunken nature of this kiln may mean that the top level, when loaded with bricks, may have been at surface level, making it easy to cover from the elements which normal kilns would have been exposed to. The over sized length of the cut, double the length of the kiln structure, may have been required for working space and access alongside the kiln in the area of the stoking pit. It may never been known which is true but further research of similar sunken kilns may provide an insight.

8.4.4 It is of note that no features associated with the kiln were recorded during the excavation. Although a large number of quarry pits were recorded virtually none, unless re-used as small rubbish pits, were recorded within the same phase as the kiln. This seems unusual as the kiln would have needed a relatively large amount of source material to manufacture bricks. This material, the abundant natural brickearth, would most likely have come from a source close by. As no evidence of this was recorded during the excavation it must have come from slightly further afield, possibly from the open fields to the west and northwest. Similarly the business of brick manufacture would have necessitated other areas of activity, including preparation and drying areas. Some of these activities may even have taken place within buildings. Again no evidence of any associated activities was recorded during the excavation and therefore may lie to the west or northwest of the site in open areas. Study of documentary and cartographic evidence, including Walker's map of 1591,

may yield information about the kiln, associated features and the location of the source material being quarried.

8.4.5 The life of kilns of this type is difficult to estimate. Its volume of usage is also problematic to estimate. Documentary evidence suggested that the brick kiln at Runsell Green, Danbury, produced some 500-700 bricks in a full day using approximately 1.5-2m³ of clay[27]. An interesting comparison was a large brick clamp of similar date excavated at New Cross in London which contained an average number of 30,000-45,000, with larger examples of clamps containing up to 150,000 bricks[28]. However, such clamps were left for weeks to burn and the uncontrolled nature of the firing meant that large amounts of bricks were either under or over fired, creating large amounts of waste bricks. Also the requirements of a brick clamp on the edge of a large city like London would have been considerable and would have been required rapidly. Due to the similarities in size and material to the Runsell Green kiln, the kiln recorded on the site would probably have had a similar output. The similarity of brick fabrics in the backfill of the kiln and kiln structure itself suggests multiple firing episodes in the kiln. This is unsurprising as kilns, unlike clamps which were usually single uses, were designed to be used on multiple occasions. However, how many times the kiln recorded on site was used is almost impossible to estimate. A similar study of the documentary and cartographic evidence as undertaken on the Runsell Green kiln may provide further insight.

8.4.6 The other archaeological features recorded within this phase of activity are predominantly represented by rubbish pits. These rubbish pits were recorded across virtually the entirety of the excavation area and varied in size and shape. These varying pits were dated, via pottery and other artefacts, to the 17th and 18th centuries. The archaeological evaluation of 2005 also recorded a series of refuse pits dating to the 17th and 18th centuries[29]. These were interpreted as corresponding with the northward expansion of post-medieval Chelmsford. The presence of these numerous rubbish pits, and the brick kiln, illustrates that the area of the site still remained on the periphery of the town of Chelmsford into the 18th century. The change in the nature of activity on site from the predominance of quarrying in the previous phase to the deposition of domestic detritus within these refuse pits reflects the growth of Chelmsford. This does suggest that the town is expanding ever closer to the area of

[27] Drury, P. J., 1975. Post-Medieval Brick and Tile Kilns at Runsell Green, Danbury, Essex. *Post-Medieval Archaeology* 9, 203-211.

[28] Proctor, J., Sabel, K., & Meddens, F., 2000. Post-Medieval Brick Clamps at New Cross in London. *Post-Medieval Archaeology* 34, 187-202.

the site with domestic activity happening close enough by for the area to become an area of rubbish pitting. The conclusion of the evaluation is therefore correct, the rubbish pitting undoubtedly corresponds to the northward expansion of post-medieval Chelmsford during the 17th and 18th centuries.

8.4.7 Much like the previous phase a number of potentially structural features were recorded across the excavation area. These were all represented by postholes with a pair being recorded in the southwestern corner of the site and a group located in the southeastern area. The two postholes in the southwestern area appear to be on north-south alignment but as only two were recorded interpretation is difficult. The small group recorded in the southeastern area appear to form an 'L' shape but would only form a small structure unless more of them continued outside the excavation limits. Again little information can be accurately interpreted from these features and may only represent singular actions such as signposts as oppose to other structures.

8.4.8 The artefactual assemblage recovered from this phase of activity was the largest of all the phases recorded during the excavation. The animal bone assemblage recovered from the various rubbish pits illustrates the usual dominance of cattle along with poultry, small game and non-food domestics including horse, dog and cat. The cattle again showed signs of butchery reflecting domestic usage in the local vicinity (Appendix 4). The pottery assemblage again represented general domestic items such as bowls, dishes, jars, jugs and pitchers. Two relatively rare items were recovered during this phase; a tin-glazed bowl with a portrait of Queen Anne, dated from 1702 to 1714 and a vase with Chinese influenced decoration (Appendix 1). A number of imports, tin-glaze and refined wares suggest that occupants of some households in the vicinity were enjoying a high standard of living. This is more visible in the 17th and 18th centuries but may be a reflection of the increase in population and expansion of post-medieval Chelmsford during this period. Further evidence of high status domestic settlement was a fragment of balustrade, made from Portland stone, dating it to the 18th century. The small find assemblage recovered from this phase includes dress accessories, some possibly associated with textile production, personal belongings and household furnishings (Appendix 5). The dress accessories include buttons, pins, part of a shoe buckle and a braid of fine copper-alloy wire, likely from clothing. The recovery of two incomplete iron scissors indicates at least household textile production. Architectural and household furnishings included a fragment of lead window came, pieces of iron barrel binding, and upholstery pins. The

[29] Barker, B., 2005. *An Archaeological Evaluation at Legg Street Car Park, Chelmsford, Essex*. Essex County Council Field Archaeology Unit unpublished report.

overall artefactual assemblage corresponds with the archaeological interpretation of activity on the periphery of a town centre, predominantly in a domestic setting.

8.5 Discussion of Phase 5 – 19th Century

8.5.1 The 19th century remains recorded on the site were represented by a series of pits and brick foundations. By the 19th century the area of the site was well developed with buildings being located along the whole of the New Street and Legg Street frontages. Some buildings were also located set back from the street frontages. These buildings can clearly be seen on the first and second edition Ordnance Survey Maps. A series of pits containing refuse dating to the 19th century were recorded in the northwestern and northeastern corners of the site. These represent rubbish pits external to the various buildings which were extant on the site at this time as described above. Of note within one of these pits in the northwestern corner were the remains of virtually an entire adult pig and at least five piglets. It would appear that the meat from the pig was not consumed. This suggests that it may have died from some disease and then discarded into the pit. The cause of the animal's death was not ascertained but the presence of the piglets may have been a contributing factor. Whether these piglets were still in the womb or born at the time of the pigs death again could not be determined. If the animal had died of disease it would seem odd to dispose of it so close to well populated area. Pottery recovered from the fill of the pit which contained the pig remains dates to 1800-1830. This date may place the pit in the early 19th century when the area was not quite as developed as it would subsequently become in the mid 19th century. However, the frontages of New Street and Legg Street were thought to be settled at this time and so remains an unusual location to dispose of a diseased animal. No other evidence of unusual faunal remains was recovered from the other pits in this phase. The animal bones recovered from these are predominantly domestic butchery remains of mammals, dominated by cattle and poultry. Therefore this pig burial, much like the dog burial from Phase 3 but for different reasons, stands out as being of some interest.

8.5.2 A small number of brick features were recorded dating to the 19th century during the excavation. The most substantial was the rectangular brick foundation located in the southwestern area of the site. This brickwork foundation had an unusual layout of small partitioned areas at its northern end. The reason for these small internal partitioned areas is unknown. Just to the east of this brick foundation a brick floor surface was recorded but was badly truncated. Again the exact nature of this floor surface is unknown but it probably represents a small outbuilding associated with

buildings fronting onto either New Street or Legg Street. The first and second edition Ordnance Survey maps, as mentioned above, do illustrate buildings fronting onto Legg Street with other buildings just to the north. Both these brick features may represent those illustrated on the maps. Another much smaller brick surface was recorded in the northeastern area of the site. This small feature is again anomalous but may be part of a larger surface which was disturbed. More detailed study of documentary and cartographic sources should provide more information on all the brick structures within this 19th century phase of activity.

8.5.3 Observed during a visit to the site following the end of the excavation work were a number of deep brick foundations. These were all located in the southeastern corner of the site and were aligned along the Legg Street and New Street frontages. They clearly represent brick basements to the buildings which fronted onto New Street and Legg Street during this period as illustrated on the Ordnance Survey maps of the 19th century.

9 ORIGINAL AND REVISED RESEARCH OBJECTIVES

9.1 Research Objectives

9.1.1 A number of research objectives were outlined following the results of the archaeological evaluation undertaken in 2005[30]. These are set out in the written scheme of investigation for the archaeological excavation. These are addressed below.

- **To further define the nature, extent, character and chronology of the medieval and post-medieval occupation on the site.**

A small amount of medieval activity was recorded on the site during the excavation. This activity appears to have started in the late 12th century and continued into the 14th century and possibly even into the 15th century. The remains were recorded along the eastern frontage of the site during the excavation phase and were represented by quarry pits, and a possible ditch and beamslot. A small amount of medieval features were recorded during both the excavation in 1989 and the evaluation of 2005. Again this was predominantly represented by quarry pits although a possible well was recorded during the 1989 excavation. It is thought that medieval Chelmsford expanded along the southern end of New Street during the 14th century[31]. This date of expansion would certainly fit with the activity recorded on site during the 1989 excavation, 2005 evaluation and 2010 excavation. The brickearth quarrying taking place on site probably relates directly to this expansion as building materials would have been an integral part to the development of the medieval town.

Activity increased substantially in the early post-medieval period c. 1480-1600. Quarrying of the abundant natural brickearth was still a major activity during this phase however. This continuing quarrying industry again most likely represents the continued growth of Chelmsford into the early post-medieval period. A smaller number of refuse pits was also recorded during this phase. This suggests that settlement had become somewhat closer in the surrounding area with domestic

[30] Bradley, T., 2010. *New Street/Legg Street, Chelmsford, Essex, CM1. Written Scheme of Investigation for an Archaeological Excavation*. Pre-Construct Archaeology Ltd unpublished report.

[31] Medlycott, M., 1998. *Chelmsford. Historic Towns Project Assessment Report*. Essex County Council.

detritus being deposited on the site. Walker's map of the area of 1591 illustrates the area of the site occupied by buildings. No structural evidence for these buildings was recorded during the excavations but the brickearth quarrying and/or the refuse pitting, could all be associated with these buildings.

The later post-medieval period from c. 1600-1800 saw continued development on the site. The nature of activity on the site changes somewhat during this phase however. The quarrying of brickearth appears to have ceased on site, being replaced by a large number of refuse pits which in turn yielded a larger artefactual assemblage. This illustrates the continuing expansion of the town of Chelmsford along with population increase which goes with it. Again no definitive structural evidence was recorded on the site during this phase. This along with the presence of the domestic rubbish pitting still suggests that the area of the site remains just on the periphery of the town. The most important feature recorded during this phase, and arguably the most important encountered during the excavation, was the remains of a brick kiln. This kiln structure was sunken into the ground on the western side of the excavation area. Artefactual evidence dated this kiln to the late 17th to early 18th century. The 17th and 18th centuries saw Chelmsford continue to prosper and develop. A large amount of rebuilding was also known to have taken place during the 18th century[32]. It seems likely that this kiln manufactured bricks used in the construction and rebuilding of structures in the local and wider area. It seems unusual that no substantial quarrying pits were located on the site during this phase which related to the kiln. The continued encroachment of Chelmsford to the south of the site, to which the various features recorded during the excavation correlate to, may have pushed such activity slightly further away just beyond the town's periphery or the actual 'periphery' area has been pushed outwards by the town's continued expansion.

- **To further determine the date, extent, nature and duration of habitation of the site and the wider area.**

The excavation on the site in 1989 and evaluation of 2005 both recovered a small amount of prehistoric worked flint and Roman pottery[33]. A single sherd of Roman

32 http://unlockingessex.essexcc.gov.uk/content_page.asp?content_page_id=111&content_parents=48,94

33 Barker, B., 2005. *An Archaeological Evaluation at Legg Street Car Park, Chelmsford, Essex*. Essex County Council Field Archaeology Unit unpublished report.

pottery and Roman tile were also recovered during this excavation. However, all these artefacts were residual in later features and therefore do not represent activity of prehistoric or Roman date on the site. They do however imply activity in the general area dating to the prehistoric and Roman periods, unsurprisingly given the known archaeological record for the town of Chelmsford.

As discussed above the first activity recorded on the site dates to the medieval period, from the late 12th century onwards. This was predominantly represented by quarrying of the underlying brickearth. The early post-medieval period saw this quarrying continue on a larger scale. Refuse pitting was also recorded on a smaller scale. Both these activities directly relate to the northward expansion of the medieval core of Chelmsford during the 15th and 16th centuries with the area of the site remaining on the periphery. Activity intensified in the later post-medieval period with larger scale refuse pitting occurring across the majority of the excavation area. A kiln structure manufacturing bricks dating to the late 17th and early 18th centuries was also recorded in the excavation area. Again these combined features illustrate activity on the periphery of the town centre. The kiln is of greater importance as it directly relates to the development of Chelmsford at this time.

The 19th century saw more formalised settlement taking place on the site in the form of buildings. These various buildings, the majority of which fronted onto New Street and Legg Street can be seen on the first and second editions of the Ordnance Survey maps.

The archaeological findings recorded during the excavation not only provide information about habitation of the site itself but also of the wider area. The various features recorded and the artefacts recovered from them predominantly represent domestic activity in the wider area. The majority of the pottery, small finds and animal bones consist of artefacts illustrating this domestic activity. Some more specific finds hint at pharmaceutical storage (Appendices 1 & 6) and household textile production (Appendix 5). However, the general nature of the site seems to be domestic activity which increases in scale from the early to late post-medieval eras. As discussed above the features recorded on site attest to an open area on the periphery of the settlement core of the continually expanding town of Chelmsford.

- **To ascertain whether specific local activities can be determined from the observed evidence.**

The archaeological evidence recorded during the excavation, and previous 1989 excavation and 2005 evaluation, highlight very particular activities taking place on the site. The most obvious and widespread activity is the quarrying of the underlying natural brickearth. This activity began on a small scale during the medieval period and increased to a more widespread activity into the early post-medieval period until the early 17th century. This quarrying may have provided material for daub walls and tiles in the medieval period and later material for brick and tile in the post-medieval period.

Also recorded during the excavation were the remains of a post-medieval brick kiln. This illustrates another specific activity, associated with the brickearth quarrying, the manufacture of bricks. Unusually it would appear that very little quarrying of the brickearth was taking place during the same phase as the kiln and must therefore have taken place elsewhere. The brick kiln appears to date to the late 17th to early 18th centuries and may relate to expansion and rebuilding of the town of Chelmsford during this period.

The various artefacts recovered during the excavation also suggest activities taking place within the local area. Animal bones recovered from Phase 3 (early post-medieval) onwards are dominated by cattle, sheep, goat and pig and represent butchery waste (Appendix 4). This is unsurprising as butchery in its various forms goes hand in hand with settlement activity. Pins and buttons recovered from pits associated with Phase 4 (AD 1600-1800) suggest household textile production occurring within the general area (Appendix 5). The small glass assemblage includes forms associated with alcohol and pharmaceutical storage, predominantly from Phase 4 (AD 1600-1800) illustrating another activity taking place in the general area (Appendix 6). Further evidence of pharmaceutical storage in the form of ceramic ointment pots and a storage jar were recovered from Phase 4 (Appendix 1).

9.2 Further Research Questions

9.2.1 The excavation work undertaken raises further research questions, most notably with regard to the presence of the kiln.

- Can further analysis of the dog burial in Phase 3, in particular the evidence for it being skinned, provide information about animal usage and human and animal relationships during the early post-medieval period?

- Can the pottery, glass and small find assemblages provide more detailed information about the nature of activity, particularly industrial, in the local area of the site?

- Can more detailed investigation of the results of the excavation provide information about the nature of the buildings illustrated on Walker's map of Chelmsford 1591?

- Can the brick kiln be associated with any particular structures, or complex of structures, in the local or wider area?

- Can comparable sunken kiln structures be identified and used to elucidate the reason for the kiln to be sunken?

- Can study of documentary and cartographic sources provide further information about the brick kiln and its associated quarrying areas?

- Can more detailed information about the brick kiln's usage and output be quantified by detailed investigation of the archaeological data along with comparable structures and documentary evidence?

- Can further study of documentary and cartographic sources provide more information about the 19th century brick features?

- What are the differences between brick kilns and brick clamps?

10 IMPORTANCE OF THE RESULTS, PROPOSALS FOR FURTHER WORK AND PUBLICATION OUTLINE

10.1 Importance of the Results

10.1.1 The excavation at Legg Street recorded significant information regarding peripheral activity to the historic town of Chelmsford and its northward expansion from the medieval period to the 19th century.

10.1.2 Quarrying of the abundant underlying natural brickearth appears to have started across the site in the medieval period. This activity continued into the early post-medieval period along with refuse pitting, both of which represent activity on the periphery of the town of Chelmsford. These quarry pits are of local significance as they are an integral part to the industry of expansion and redevelopment of the town of Chelmsford. The investigation of urban development, which this quarrying activity is part of, is highlighted as a research priority within the Eastern Counties Research Agenda[34] and is therefore of significance. Likewise the areas of refuse pitting recorded throughout the post-medieval period are of local interest as they provide information on the nature of local activity and occupation.

10.1.3 The excavation yielded valuable artefactual evidence from the various features which can provide information about trade and industry during the medieval and post-medieval periods. In particular rare pottery imports, such as the culinary mould from Phase 2 and the Valencian tin-glaze bowl from Phase 3, provide important information about trade with mainland Europe and beyond. The study of trade and industry in the medieval and post-medieval period is highlighted as a research theme with regard to finds studies in the Eastern Counties Research Agenda[35]. Therefore the artefactual assemblages recovered during the excavation are of local and regional interest.

10.1.4 The brick kiln recorded within Phase 4, dating to the late 17th to early 18th century, is of local and regional significance. As previously mentioned, the investigation of urban development is highlighted as a research priority within the Eastern Counties Research Agenda. Such industrial structures are integral elements of urban development, expansion and rebuilding, in this case directly relating to the evolution

[34] Brown, N. & Glazebrook, J., 2000. *Research and Archaeology: A framework for the Eastern Counties 2. Research agenda and strategy*. East Anglian Archaeological Occ. Pap. 8.
[35] ibid

of the post-medieval town of Chelmsford. It is also suggested that a representative sample of brick kilns should be studied in order to further understand the historical and technological development of the industry[36]. Brick kilns of similar date have been recorded elsewhere in Essex such as Runsell Green, Danbury[37]. However no known brick kilns dating to the 17th and 18th centuries have been previously recorded in Chelmsford which places further emphasis on its local importance.

10.2 Further Work

10.2.1 Further analysis of the artefactual dating evidence recovered during the excavation will attempt to refine the dating of the various features, from the medieval period to the 19th century. A study of the documentary and cartographic sources after initial consultation with Pat Ryan, with specific regard to the brick kiln, will attempt to associate the varying quarrying episodes and brick manufacture within the wider context of the expansion and rebuilding of medieval and post-medieval Chelmsford. The large corpus of knowledge from sites in Chelmsford will also be consulted to place the Legg Street excavations in their wider setting in relation to the medieval and post-medieval town of Chelmsford. Local structures in the vicinity of the subject site will be investigated to see if the bricks from the kiln can be matched to specific buildings.

10.2.2 The results of the present investigations, in particular the brick kiln structure will be compared to other kilns in the area of Chelmsford such as those excavated in Danbury including the sites at Runsell Green[38], Eves Corner[39] and Danbury Palace[40]. Pat Ryan will be initially consulted to determine what sites and types of structures that will need to be studied.

Brick and Tile

[36] Glazebrook, J., 1997. *Research and Archaeology: A framework for the Eastern Counties 1. Resource assessment*. East Anglian Archaeological Occ. Pap. 3.
[37] Drury, P. J., 1975. Post-Medieval Brick and Tile Kilns at Runsell Green, Danbury, Essex. *Post-Medieval Archaeology* 9, 203-211.
[38] ibid
[39] Eddy, M. R. & Priddy, D. (eds.), 1981. Work of the Essex County Council Archaeology Section, 1980. *Essex Archaeology & History* 13, 42-45.
[40] ibid

10.2.3 The brick and tile assemblage associated with the kiln structure will be further analysed by in house brick and ceramic building material specialists along with local experts familiar with regional diversity (including Pat Ryan).

Pottery

10.2.4 A publication report will be produced for all periods. Further analysis should in part focus on dating and distribution to establish a clearer reflection of the level and nature of activity taking place in the vicinity during each period. This may help to elucidate further upon the apparently early occurrence of Metropolitan slipware. The medieval coarsewares and glazed wares have been only provisionally identified and will require further research and refinement, particularly those from primary groups. Further analysis of the culinary mould should also be undertaken in order to confirm date and establish a possible source. As several previous culinary moulds have to be subjected to chemical analysis the source and thus the possible date of the pottery may be achieved through chemical analysis of the fabric (ICP AES).

Clay Tobacco Pipe

10.2.5 A short (500 words) publication report will be produced which will include up to 5 illustrations.

Animal Bone

10.2.6 While the quantities of bone, disregarding the dog and pig skeletons, are not great, these assemblages could still provide limited information on animal usage, particularly regarding the availability of particular meats, the manner in which the major domesticates were exploited (using the age and butchery evidence) and possible livestock changes, here referring to size and 'type'. The redistribution of meats can also be mentioned, as shown by the probable butcher's waste deposits, including the concentration of cattle skulls from Phase 4 and of chicken head and foot fragments from Phase 5. It is recommended that these collections receive further attention, concentrating principally on the dog and pig skeletons but also pursuing the information available concerning animal usage at this site throughout the post-medieval era. A Tudor dog which has been buried after being skinned and an early 19th century pig which probably died while giving birth are both unusual finds from an archaeological site. The significance of any further study of the dog clearly has a bearing to the 'context of the site' as its burial clearly shows a measure of care, although not to the extent of leaving the carcass undisturbed. The skinning is suggestive of some connection to a local furrier as well as demonstrating the local

following of a fashion trend of the period, where garments were adorned with various furs, including those from cats and dogs.

Small Finds

10.2.7 The metal and small finds from Legg Street form an integral component of the material recovered during excavation and, where relevant, should be included in any further publication. This is particularly significant for the finds from early modern Phases 3 and 4 that include material relating to activities and settlement on or near the site. Notable finds here include the bodkin pin (sf 31), so characteristic of the region, the cutlery handle and cap (sf 2 and 38), the rowel spur (sf 18), the scissors (sf 17 and 23), the copper-alloy watch winder (sf 10) and the vessel sheet repair (sf 48). For the purpose of publication, a selected group of objects will require x-ray and further identification.

Glass

10.2.8 The glass has some significance at a local level, but the forms are on the whole associated with alcohol and pharmaceutical storage. A short (500 words) publication is recommended on the glass with three items requiring illustration to supplement the text.

10.3 Publication Outline

10.3.1 It is anticipated that the results of the archaeological investigations conducted at Legg Street will be published as part of the 'Essex Archaeology & History' journal series. The sequence of medieval and early medieval brickearth quarrying along with the later medieval brick kiln and refuse pitting will be the main focus of the publication. The publication will attempt to place the brick kiln within a documentary context and compare and contrast the results with similar sites in the surrounding area.

10.3.2 A brief outline of the publication as it may appear is shown below.

Archaeological investigations at Legg Street, Chelmsford

Contributors
Contents
Summary

Preface

Introduction (400 words)

Circumstances of the investigations

Geology and Topography

The excavation (3000 words)

Natural deposits

The medieval brickearth quarrying

Early post-medieval brickearth quarrying and refuse pitting

Later post-medieval brick kiln and refuse pitting

The specialist reports

Ceramic building material by Berni Sudds (750 words)

Pottery by Berni Sudds (500 words)

Clay Tobacco Pipe by Chris Jarrett (500 words)

Animal Bone by Kevin Rielly (600 words)

Small Finds by Märit Gaimster (400 words)

Glass by Chris Jarrett (500 words)

Illustrations

The report will be fully illustrated with AutoCAD phased figures, historic maps and drawings of the most important finds especially those relating to the brick kiln.

Discussion (1000 words)

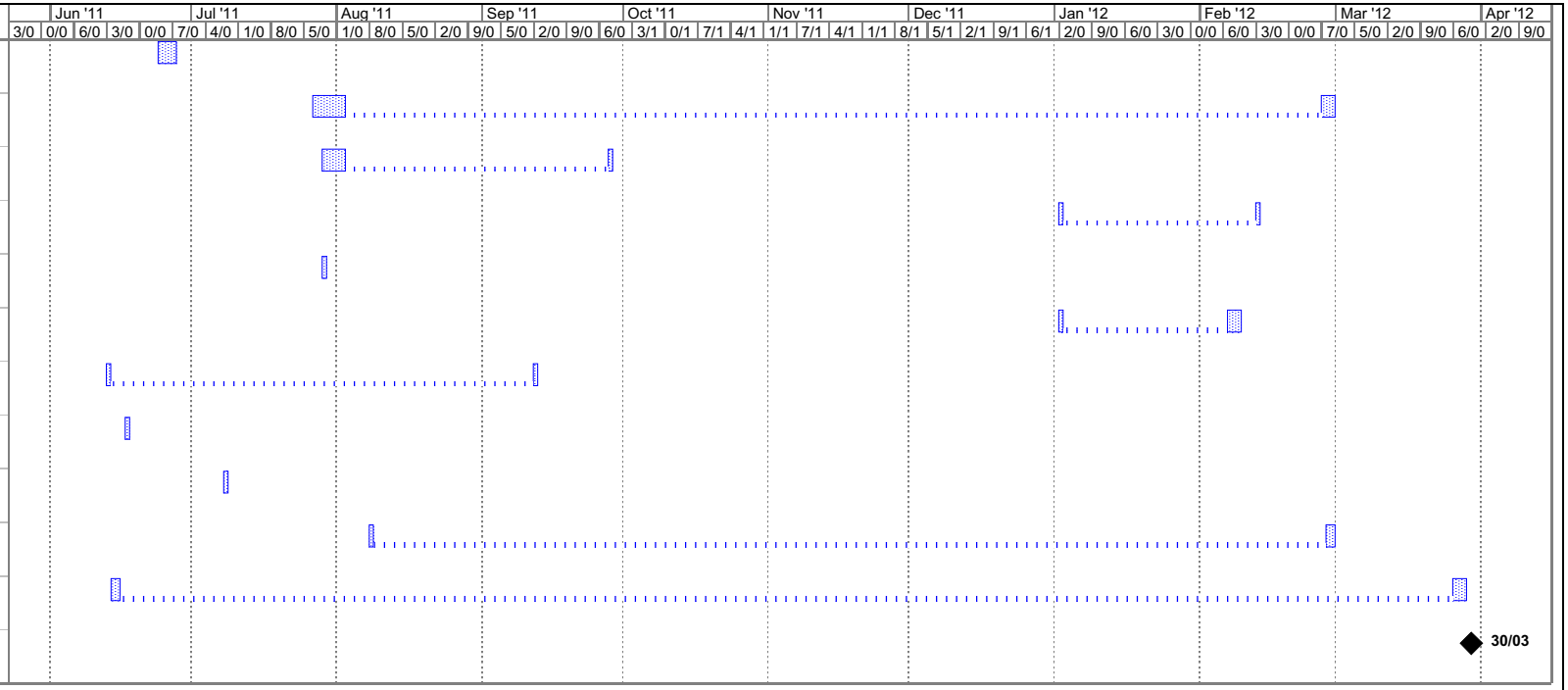
The results of the archaeological investigation will be put in a local context and be compared and contrasted with nearby sites in Chelmsford and Essex.

Acknowledgements

Bibliography

Publication Programme

ID	Task Name
1	Publication research (N.Hawkins)
2	Publication text (N.Hawkins)
3	AutoCAD illustrations (J. Brown)
4	Pottery (B.Sudds)
5	Glass (C. Jarrett)
6	CBM (B.Sudds)
7	Small Finds (M.Gaimster)
8	Animal bone (K.Rielly)
9	Clay Tobacco Pipe (C. Jarrett)
10	Finds illustrations (C. Davies)
11	Project management & editing (J. Butler)
12	Production of draft publication



Project: Legg St publication programm
Date: Thu 19/05/11

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

11 CONTENTS OF THE ARCHIVE

11.1 PAPER RECORDS

Context sheets	258 sheets
Plans	170 sheets
Sections	6 (15 sheets)

11.2 THE FINDS

Pottery	8 boxes
Clay Tobacco Pipe	1 box
Glass	3 boxes
Animal Bone	10 boxes
Ceramic Building Material	12 boxes & 9 crates
Stone	1 box
Small finds	c. 80 objects

11.3 PHOTOGRAPHS

35mm Colour Slide	79 shots
35mm Black & White Prints	80 shots
Colour Medium Format	39 shots
Digital	76 shots

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APPENDIX 1: POTTERY ASSESSMENT

By Berni Sudds

Quantity

Total number of boxes: 6 small; 1 large.

Total sherd count: 1336 sherds (1123 vessels).

Total number or contexts producing pottery: 67 contexts.

Introduction and condition

The pottery recovered from Legg Street is predominantly of post-medieval date but also includes a small but interesting medieval assemblage, incorporating a rare early culinary stamp or mould. A few isolated sherds of Roman date were also identified residually within later features. The post-medieval pottery is also of interest including well-dated closed groups of late 15th and 16th century date, in addition to later material. The presence of a range of imports and some more unusual and high status tin-glaze and 18th century refined wares may indicate a degree of affluence in the locality. The pottery is generally in good condition with large fresh sherds and some near complete vessels.

Methodology

The material was quantified for each context by fabric, vessel form and decoration using sherd count (with fresh breaks discounted) and estimated vessel numbers. A ceramic database cataloguing these attributes has been generated using Microsoft Access. The numerical codes designated to fabrics are taken from the post-Roman pottery codes for Essex (Cunningham 1985; Cotter 2000). Where comparable the equivalent Museum of London code has also been given to aid in any future comparative analysis.

The pottery

The ware types encountered at Legg Street are listed below in date order in Table 1. The range of fabrics and forms are largely typical and can be well-paralleled within the town (Cunningham 1985).

Essex Fabric Number	MOLA Fabric Code	Expansion	Date range	Total SC	Total MNV
-	ROMAN	Unsourced Roman greyware	50 – 400	1	1
12	-	Early medieval shelly ware	1000 – 1225	1	1
13	EMS	Early medieval sandy ware	1000 – 1225	1	1
36	LCOAR	Coarse London-type ware	1080 – 1200	1	1
36	LOND	London-type ware	1080 – 1350	1	1
22	HEDI	Hedingham-type ware	1140 – 1350	2	1
20	-	Medieval sandy greywares	1175 – 1400	35	34
21	-	Medieval sandy orange wares	1200 – 1400	11	8
27	SAIM	Saintonge ware with mottled green glaze	1250 – 1650	1	1
23F	CBW	Coarse Surrey-Hampshire border ware	1270 – 1500	1	1
35	MG	Mill Green ware	1270 – 1350	1	1
31	DUTR	Dutch red earthenware	1300 – 1650	12	10
23E	CHEA	Cheam whiteware	1350 – 1500	2	2
46		Mature Valencian Blue	1400 – 1450	1	1
40	LMT	Transitional redware	1480 – 1600	200	193
40	LMT SLIP	Transitional redware with slip-painted decoration	1480 – 1550	34	29
40	PMRE	Early post-medieval redware	1480 – 1600	30	26
40	PMREM	Early post-medieval redware with metallic glaze	1480 – 1600	13	12
40	PMSR	Post-medieval slipped redware	1480 – 1650	4	3
40C	CSTN	Cistercian ware	1480 – 1600	10	5
42	EBORD	Early Surrey-Hampshire border whiteware	1480 – 1550	3	2
45C	RAER	Raeren stoneware	1480 – 1610	4	4
42	BORDG	Surrey-Hampshire border whiteware with green glaze	1550 – 1700	5	5
42	BORDY	Surrey-Hampshire border whiteware with yellow glaze	1550 – 1700	4	4
45D	FREC	Frechen stoneware	1550 – 1700	4	4
45N	NORS	Normandy stoneware	1550 – 1800	1	1
95	GERWY	German whiteware with yellow glaze	1550 – 1630	1	1
46A	TGW	English tin-glazed ware	1570 – 1846	21	13
44A	WESE	Weser slipware	1580 – 1630	1	1
44B	WERR	Werra slipware	1580 – 1650	1	1
40	PMR	Post-medieval redware	1580 – 1900	151	136
40B	PMBL	Post-medieval Essex black-glazed redware	1580 – 1700	46	42
48A	CHPO BW	Chinese blue and white porcelain	1590 – 1900	2	2
40A	METS	Metropolitan slipware	1600 – 1700	15	11
46A	TGW BLUE	Tin-glazed ware with plain pale blue glaze	1630 – 1846	1	1
46A	TGW C	Tin-glazed ware with plain white glaze (Orton style C)	1630 – 1846	4	1
50	STSL	Combed slipware	1660 – 1870	3	3

Essex Fabric Number	MOLA Fabric Code	Expansion	Date range	Total SC	Total MNV
45F	WEST PURP	Westerwald stoneware with purple and blue decoration	1665 – 1750	2	2
45	LONS	London stoneware	1670 – 1900	9	9
47	SWSG	White salt-glazed stoneware	1720 – 1780	5	5
48	AGAT	Agate ware	1730 - 1780	1	1
47	SWSG SPRG	White salt-glazed stoneware with sprigged decoration	1740 – 1780	1	1
48C	CREA	Creamware	1740 – 1830	1	1
48B	ENPO	English porcelain	1745 – 1900	1	1
48C	CREA DEV	Creamware with developed pale glaze	1760 – 1830	8	8
48C	CREA PNTD	Creamware with polychrome painted decoration	1760 – 1800	1	1
48P	PEAR	Pearlware	1770 – 1840	3	3
48P	PEAR BW	Pearlware with underglaze blue painted decoration	1770 – 1820	2	2
48P	PEAR TR	Pearlware with underglaze transfer-printed decoration	1770 – 1840	2	2
45M	ENGS	English stoneware	1800 – 1900	1	1
51A	PMR SLIP	Slipped redware	1800 – 1900	1	1
51A	SUND	Sunderland-type coarseware	1800 – 1900	1	1
48D	REFW	Plain refined white earthenware	1805 – 1900	1	1
48E	YELL SLIP	Yellow ware with industrial slip decoration	1820 - 1900	2	1
98	XX	Miscellaneous/ unidentified	1400 – 1900	4	3

Table 1: Fabric types in date order. MNV = Minimum number of vessels.

Distribution and dating

The majority of the assemblage is attributed to Phases 3 to 5. A relatively small group of pottery was retrieved from the medieval Phase 2 features, although a considerable proportion of the pottery of this date was found re-deposited in later features. Indeed, fairly continuous activity on site from the medieval period has resulted in fairly high levels of residual pottery through disturbance and re-deposition. The pottery is discussed below by phase.

Phase	Total sherd count	Total MNV
Unstratified	42	38
2: Medieval	48	39
3: Early post-medieval	177	160
4: Later post-medieval	261	233
5: 19th century	188	171

Table 2: Distribution of the pottery by phase.
MNV = Minimum number of vessels.

Phase 2: Medieval

The stratified medieval assemblage amounts to 48 sherds, but a further 56 sherds of medieval date were recovered as residual finds in later contexts. Both the primary and re-deposited pottery is in good condition, including many large fresh sherds.

The fabrics identified are typical to the region, dominated by local sandy grey coarsewares (Fabric 20) and sandy orange fine tablewares (Fabric 21). Other local and regional fabrics include Early medieval sandy and shelly wares, London-type wares, Hedingham-type ware and Mill Green ware. Later medieval Surrey whiteware products were also recovered, namely Coarse border ware and Cheam whiteware, and imports in the form of Dutch redware. The Dutch redwares were imported into Britain over a long period from c.1300 until the 17th century. Most of the examples from Legg Street are post-medieval in date but at least one may pre-date c.1500 from fill [234]. The forms identified are also typical of the period comprised primarily of jars and jugs but also include a specialised culinary mould which is discussed further below. Residual forms from later deposits include medieval sandy greyware jars and London-type ware, Mill Green ware and Cheam whiteware jugs.

Although pottery dating from c.1000, represented by Early medieval shelly and sandy ware, was identified on site the earliest deposits ([180], [232] and [249]) date from c.1150 containing wheel thrown medieval sandy greywares (Fabric 20) in isolation.

Beamslot fill [234] also contained medieval sandy greywares including the typical jar forms but also produced a culinary mould (sf 116). The latter is formed of a circular disk with 'v' shaped incised lines forming a grid of squares and rectangles with bevelled edges. A scar is evident on the back where a pedestal base is likely to have been attached. These can be paralleled on the continent, namely in France, and to a lesser extent in Britain where they appear to be predominantly an Essex phenomenon (Nenk 1992, 290). Two examples have also been found from London but these are also likely to have had a source somewhere in Essex (ibid).

Culinary moulds can date from late 13th to 17th century (Nenk 1992, 294), but other examples so far identified in Chelmsford are dated from the early 16th to 17th century (Drury 1985, 80). A Dutch redware base from the same deposit would suggest a deposition date post c.1300 and if primary the presence of London-type ware, medieval sandy greywares and sandy orange ware slip-painted and slipped and glazed jugs would provide a terminal date of c.1350 or

1400. Unlike many of the other culinary moulds found the fabric is not Mill Green. On description alone it appears to bear a greater similarity to the coarser examples recovered from London but is visually different in having a grey core and surfaces. Indeed, the example from Legg Street is similar to some of the medieval sandy greyware variants recovered from site. A provisional date of c.1300 to 1400 is suggested for the context although a later date remains possible.

A variety of possible functions have been suggested for these objects but the most plausible suggestion is that they represent culinary stamps or moulds (Nenk 1992, 296). It is possible that they were hand-held stamps used in the preparation of pastry or confections, or perhaps for making prints on butter (Drury 1985, 80). However, the complete vessels are likely to have been too heavy and the bases too wide to be held easily in hand (Nenk 1992, 296). Instead they may have been used as a mould for the cooking of a soft mixture or batter, representing cheaper ceramic versions of the wafer or waffle-iron (ibid). In this way they may have stood upright in or near a fire to heat up and have had batter poured on top to cook. The examples from London are sooted, supporting this suggestion (ibid). They may also have been used in a pairs, with one inverted, to form a press. The Legg Street mould is not evidently sooted but is dipped towards the centre to more readily hold a liquid batter.

The last group attributed to Phase 2 is from pit [245] and includes early medieval shelly ware, medieval sandy greywares, orange sandy slip-painted wares and Hedingham-type ware. The medieval sandy greywares include a bowl with an everted flat-topped rim and a jug with a thumbed and incised handle and the Hedingham-type ware a thumbed jug base. The additional presence of transitional and slip-painted redwares, however, would suggest a deposition date post c.1480.

Phase 3: Early post-medieval (c.1480 – 1600)

The early post-medieval assemblages are dominated by local redwares probably produced at Stock (Fabric 40). They first appear in Chelmsford in the late 15th century where they continue to manufacture late medieval forms with the slip-painted designs of the earlier East Anglian redware tradition (Cunningham 1985, 73-4; Cotter 2000, 189). The vessels at this date are mostly plain, however, with very little or no glaze. During the first half of the 16th century the slip-painted designs began to disappear and the use of glaze increases, often found in bibs on jug forms. The vessel forms also take on a more post-medieval appearance and sagging bases become flat or pad. By the late 16th century, c.1580, the use of plain lead glaze increases, either covering vessels internally or all over.

Groups dated from c.1480 to 1550 thus include, amongst other contemporary products, Transitional slip-painted redware (LMT SLIP) and deposits dated from c.1480 to 1600 on the presence of Transitional redwares (LMT), Early post-medieval redwares (PMRE) or Early post-medieval redware with metallic glaze (PMREM). Finally, those dated from c.1580 to 1600 or 1650 include Post-medieval redwares (PMR) and Post-medieval black-glazed redware (PMBL), both post-dating c.1580, in combination with Transitional redwares, Early post-medieval redwares, Early post-medieval redware with metallic glaze or Post-medieval slipped redware (PMSR).

By far the most common fabric during this period is the plain unglazed Transitional redwares, followed by the Transitional slip-painted redwares and the partially glazed Early post-medieval redwares. The later fully glazed post-medieval redwares are also evident in some number but this is probably due to the high proportion of late 16th century deposits. Fewer Early post-medieval redwares with metallic glaze, Post-medieval slipped redwares and Post-medieval black-glazed redwares were identified, although this is to be expected.

Transitional redware forms include bowls and dishes of varying profile but often with an everted broad rim, jars, jugs, pitchers, and a possible cauldron or pipkin with a lid-seated rim. Typically, slip-painted Transitional redware forms appear to be limited largely to jugs and pitchers. Early post-medieval redware forms include a bowl or dish, a cauldron with a lid-seated rim a jug and a jug or pitcher. Jugs in Early post-medieval redware with metallic glaze and Post-medieval slipped redware were also identified in addition to a metallic glazed tripod pipkin.

The developed post-medieval redwares include jar forms, a bowl or dish and, interestingly, a copy of a Raeren style rounded drinking jug with a thumbed base from rubbish pit fill [246]. Another example was identified in rubbish pit fill [230], provisionally assigned to Phase 4, although both are very similar and probably came from the same production centre or even the same firing that is likely to have taken place during the late 16th century. The all over glaze suggest a date post c.1580 but the form, in imitation of Raeren imports, likely pre-dates 1610, the date at which the latter were superseded by other Rhenish stoneware products. Additional pre 1600 redware forms were found residually within later deposits and are discussed below. The post-medieval black-glazed redwares are represented, as is commonly observed, by mugs and tygs.

A small number of non-local, regionally sourced wares were also identified including two thin-walled Early border ware (EBORD) vessels from the Surrey-Hampshire borders, dating from c.1480 to 1550, and Cistercian ware (CSTN) produced at a number of centres in the Midlands from c.1480 to 1600.

A number of imports were also recovered from Phase 3 deposits including Dutch redwares, Raeren stoneware, including a drinking jug, and Frechen stoneware. More unusual, however, is a sherd from a Valencian blue bowl with briony foliage decoration, provisionally dated from c.1400 to 1450 (Gutierrez 2000, 38). The sherd was retrieved from fill [192] along with Transitional redwares (including slip-painted vessels), Early post-medieval redwares and a Dutch redware suggesting a deposition date from c.1480 to 1550. The group is small and the sherd may potentially have been old when deposited, or residual, but may require further research and identification. Indeed, it may be Paterna Blue, deriving from a particular part of Valencia, and dating later, into the 16th century. Two possible imported whitewares were also recovered including a sherd of Saintonge ware with mottled green glaze, from an unidentified perforated thumbed vessel, and a German whiteware with yellow glaze, dating from c.1550 to 1630, although residual in a 19th century context.

Two particularly notable groups of late 16th century pottery, namely from fills [83] and [230], have been provisionally included under Phase 4 due to the presence of very small quantities of later, or traditionally later dated fabrics. These are discussed more fully below.

Phase 4: Later post-medieval (c.1600 – 1800)

The largest assemblage of pottery from site was recovered from Phase 4 features, dating to the 17th and 18th centuries, but this does include a significant quantity of residual material of medieval and early post-medieval date.

Local redwares continue to dominate 17th deposits, mostly with an even all over glaze, although Transitional redwares and Early post-medieval redwares still crop up in some quantity. Some of this material may be long-lived or residual but a significant amount derives from assemblages of pottery of late 16th century date that, for reasons discussed below, are provisionally dated to the 17th century. The same may be said for the Cistercian ware and other 16th century fabrics attributed to this phase. Post-medieval black-glazed redwares become more prevalent during the 17th century and Metropolitan slipwares (METS) are introduced.

Transitional redware forms again include bowls and dishes, jars, jugs and pitchers but also a colander and more unusually a divided dish. Early post-medieval redwares include a bowl or dish with a broad rim and a possible cauldron or pipkin. The range of Post-medieval redware forms increases, reflecting a greater specialisation of form taking place across the country during this period, and includes rounded and flared dishes and bowls, chamber pots, cauldrons, pipkins or skillets, jugs and a single cup and chafing dish. The thumbed base of a drinking jug was also recovered from fill [230]. The vessel is identical to one recovered from fill [246] and both represent late 16th century copies of Raeren drinking jugs. Post-medieval black-glazed redware forms include tygs and a mug as before but also jugs and a chamber pot. Flared and rounded dishes and bowls comprise the main form type identified in Metropolitan slipware but a rounded jug was also recovered, albeit residually from an 18th century deposit ([201]).

Regional pottery of 17th century date is represented by Surrey/ Hampshire Border ware (BORDG; BORDY) and tin-glazed wares. The Border wares include bowls and dishes, one with a decorated rim and, of less frequent occurrence outside London (the main market for these wares), a small number of yellow glazed bedpans.

The imported wares again include Dutch redwares but are dominated by products from Germany. Fragments of a Werra ware dish (WERR) and a Weser ware dish (WESE), both dating to the late 16th to early 17th century, were recovered from the same deposit ([230]). A number of Frechen jugs and drinking jugs were also identified, including two late 16th century examples with portrait medallions, moulded acanthus palmettes and cobalt glaze ([83], [230]). The Dutch redwares include a possible cauldron or pipkin and a flared handled bowl and chamber pot (the latter two also from fill [230]).

Two groups of pottery, from fills [83] and [230], stand out because of their size and freshness. Fill [83] is provisionally dated to the 17th century, due to the presence of Metropolitan slipware, although the rest of the pottery from the group appears to date to the late 16th century including Transitional redwares, Cistercian ware and a Frechen portrait medallion jug. Given the condition of the pottery it is unlikely that the late 16th century pottery is residual. It is possible that this material was old when deposited, although again this seems unlikely when it is considered that the late 16th century pottery represents the bulk of the assemblage. The other possibility is that Metropolitan slipware was in circulation in south Essex earlier than observed elsewhere. Indeed, it may have been in production in the final years of the 16th century with the arrival of the Dutch potter Emmanuel Emmyngs in 1592 (Davey and Walker

2009, 97). However, it is only this, and other circumstantial evidence that suggest an early date and it does not appear to make it to consumer sites, namely in London, in any number until c.1630. As primarily made for the London market it would therefore be unusual to find such a long gap between the commencement of production and first vessels arriving in London (ibid). Manufacture is thus considered unlikely to have begun until just before c.1630.

Metropolitan slipware was recovered from groups dated from c.1560-90 at Moulsham Street in Chelmsford (Cunningham 1985, 64) but upon re-examination no reason could be provided why these groups may not also be of early 17th century date (Cotter 2000, 222). It is interesting that Metropolitan slipware again appears to be deposited with material of late 16th century date at Legg Street. Of course again there is no incontrovertible proof, other than condition, that the group cannot be later in date. A closer analysis of the stratigraphy may shed further light.

The second group from fill [230] is also almost entirely of late 16th century date, comprised of large fresh sherds and semi-complete profiles. The assemblage includes Transitional redware dishes, bowls and a colander, Post-medieval black-glazed redware tygs and mugs, a Dutch redware bowl and chamber pot, the second late 16th century Frechen portrait medallion jug and the Werra and Weser ware dishes. The Post-medieval redware forms include bowls and dishes in addition to the other late 16th century Raeren drinking jug copy. The majority of the group thus dates from c.1580 to 1600 or possibly 1630 but a single sherd of Combed slipware (STSL) was also identified, post-dating c.1660. The late 16th century material is unlikely to have been re-deposited or c.60 or more years old when discarded. The sherd of Combed slipware by contrast is small and abraded and is probably intrusive in what is a late 16th or early 17th century assemblage.

Post-medieval redwares continue to form an important component of 18th century deposits on site but this period also witnesses an increase in the quantity and range of tin-glazed products and the introduction of indigenously manufactured stoneware and mass produced refined wares.

The tin-glazed wares include plates and pharmaceutical vessels in the form of ointment pots and a single storage jar with a stacked crescent design from fill [34]. The plates include polychrome and blue painted examples in addition to blue painted and purple sponged designs. Two fairly rare vessels were also identified represented by a bowl with the portrait of Queen Anne, dated from 1702 to 1714, from fill [202] and a vase with Chinese influenced decoration from fill [22], dated to the mid 18th century. The indigenous stonewares come

primarily from London where production began during the last decades of the 17th century. The vessels from Legg Street, however, are of 18th century date with tankards and a single jug representing the only identifiable forms. Tankards were not produced until after 1704 and some examples from site also have the excise mark 'WR' further confirming an 18th century date. Other regional products include Combed slipwares, predominantly with a pink body, including a posset pot ([133]) and cup ([198]).

The mass produced refined wares first appear c.1720 with White salt-glazed stoneware, produced at a number of centres but mainly in Staffordshire. White salt-glazed stoneware with sprigged decoration, dating from c.1740 to 1780, was also identified. Forms for both variants include teapots, bowls and tea bowls. A single sherd of Agate ware was also identified dating from c.1730 to 1780. During second half of the 18th century Creamwares and Pearlwares were introduced. The Creamwares include a less frequently seen painted vessel (CREA PNTD). Serving forms, in this case plates and bowls, are again typical.

The imported assemblage is comprised of Chinese porcelain (CHPO BW) and Westerwald stoneware with purple and blue decoration (WEST PURP). The latter dates from the late 17th to mid 18th century and was recovered from fill [22], spot dated from c.1745-50/80. The Chinese porcelain includes rounded bowls ([22], [201], [202], [133]) and a tea bowl and saucer from fill [198]. Fill [22] also produced an English porcelain (ENPO) saucer decorated with a floral design, providing the post 1745 date for the group.

Phase 5: 19th century

The majority of the pottery attributed to Phase 5 is residual. The size of 19th century assemblage is actually quite small and probably reflects a change in the type of activity taking place on site and possibly in broader methods of rubbish disposal.

A proportion of the Post-medieval redware may be residual but at least some is likely to be contemporary including some of the bowls and possibly a colander. The residual material includes a fuming pot and porringer. Regional wares include Combed slipware, London stoneware and possibly some of the plain white tin-glaze including a chamber pot. Refined factory made wares include a few sherds of Creamware and Pearlware, the latter including a late 18th or early 19th century blue and white painted oval dish. Other definitively 19th century wares include Refined white earthenware (REFW), Yellow ware (YELL SLIP), Sunderland-type coarseware (SUND) and Late slipped kitchen ware (PMR SLIP). The Imported

assemblage includes just one residual sherd from a Westerwald stoneware tankard with purple and blue decoration.

Summary

The pottery suggests the site may have been used continually for the disposal of rubbish from perhaps as early as the late 12th century. The quantity of material being dumped significantly increases during the 16th century and may reflect broader changes taking place in the town. The nature of activity represented in all periods is domestic in character. Status can be difficult to detect in ceramic assemblages but the presence of some more unusual and rare imports, tin-glaze and refined wares would suggest the occupants of at least certain households in the vicinity were enjoying a high standard of living. This may be more visible in 17th and 18th century deposits but is evident as early as the 15th century with the Valencian tin-glazed bowl. Occurrences of this ware are rare even in London and at this early date only the wealthiest and best connected individuals or households could have had access to imports of this type.

Recommendations

The assemblage from Legg Street includes well-dated closed groups and some interesting and unusual forms and rare imports. It is recommended that a publication report be produced for all periods. Further analysis should in part focus on dating and distribution to establish a clearer reflection of the level and nature of activity taking place in the vicinity during each period. This may help to elucidate further upon the apparently early occurrence of Metropolitan slipware.

The medieval coarsewares and glazed wares have been only provisionally identified and will require further research and refinement, particularly those from primary groups. Further analysis of the culinary mould should also be undertaken in order to confirm date and establish a possible source. The latter may be achieved through chemical analysis of the fabric (ICP AES).

Dating table

Context	Spot date	Comments
1	1800 – 1830	Residual medieval pottery

Context	Spot date	Comments
3	1800 – 1830	
5	1770 – 1820	
8	1580 – 1700	Residual early post-medieval pottery
10	1670 – 1900	Residual medieval and early post-medieval pottery
12	1580 – 1610	Residual medieval pottery
14	1770 – 1840	One sherd dated 1770+. Rest of group c.1580 – 1600/10
16	1820 – 1900	Residual post-medieval pottery
18	1704 – 1900	
20	1580 – 1800	Residual early post-medieval pottery (pre 1600)
22	1745 – 1750/80	Residual/ long-lived post-medieval pottery
29	1480 – 1600	Residual medieval pottery
31	1480 – 1550	
34	1704 – 1750	
38	1800 – 1900	Residual post-medieval pottery
40	1580 – 1600	
42	1480 – 1600	Residual medieval pottery
44	1580 – 1700/1800	Residual medieval pottery
45	1580 – 1900	
47	1480 – 1600	
49	1730 – 1780	
51	1580 – 1600	Residual medieval pottery
53	1580 – 1600/50	Residual medieval pottery
79	1580 – 1700	
83	1600 – 1700	Mostly pre 1600 but Metropolitan slipware probably early 17th century
97	1480 – 1600	
112	1580 – 1600	
119	1480 – 1600	
120	1480 – 1600	
133	1720 – 1780	Residual/ long-lived early post-medieval pottery
135	1580 – 1900	Residual medieval and early post-medieval pottery
141	1580 – 1700	Residual early post-medieval pottery
144	1200 – 1400	
149	1480 – 1550	
157	1200 – 1400	
158	1670 – 1700	
160	1580 – 1600	
162	1480 – 1600	
166	1720 – 1780	Residual early post-medieval pottery
167	1580 – 1600	Possibly to 1700
170	1580 – 1600	Possibly to 1700
178	1480 – 1600	
180	1150 – 1400	
182	1480 – 1550	
184	1480 – 1550	Residual medieval pottery
186	1580 – 1650/1700	
188	1480 – 1600	
190	1720 – 1780	Residual post-medieval pottery
192	1480 – 1550	Including Valencian blue
198	1720 – 1780	
199	1720 – 1780	
201	1720 – 1780	
202	1704 – 1714	Queen Anne plate (1702-14). Stoneware tankard post 1704
208	1480 – 1600	
210	1480 – 1550	
212	1670 – 1800	Residual early post-medieval pottery

Context	Spot date	Comments
214	1805 – 1900	?Residual early post-medieval pottery
222	1480 – 1600	
224	1480 – 1600	Residual medieval pottery
226	1580 – 1600	
228	1480 – 1600	Residual medieval pottery
230	1660 – 1700	One abraded sherd post 1660. Rest of group c.1580-1600/30
232	1150 – 1400	
234	1300 – 1400/1500	Including culinary mould SF.116
244	1480 – 1550	
246	1580 – 1600	
249	1150 – 1400	
254	1580 – 1600	A lot of residual medieval pottery

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APPENDIX 2: CERAMIC BUILDING MATERIAL ASSESSMENT

By Berni Sudds

Total number of boxes: 11 boxes and 9 rubble sacks.
Total count: 236 fragments.
Total weight: 95,099g
Total number or contexts producing building material: 53

Methodology

In lieu of direct comparison to material excavated and published from elsewhere in Chelmsford a provisional fabric assessment has been undertaken. The material was examined under magnification (x20) and quantified by number, weight and dimension. A database cataloguing this information has been generated using Microsoft Access.

Introduction

The assemblage of ceramic building material from Legg Street is comprised of a series of samples from the brick kiln and loose brick and tile from various backfill deposits across site. Bricks were also sampled from a surface phased to the 19th century ([105]).

Form	Number	Weight
Roman tile/ brick	4	231
Brick	5	370
Moulded brick	3	7185
Unfrogged brick	46	56053
Other/ kiln structure	8	4134
Tile	2	286
Curved tile	1	164
Peg tile	165	26020
Mortar	2	656

Table 1: Breakdown of the assemblage by form.

The majority is post-medieval in date, composed largely of roof tile and brick (Table 1), although a small quantity of residual Roman and medieval tile were identified.

Distribution

An analysis of distribution reveals that the loose assemblage represents little more than background noise to building activity in the vicinity. The majority was derived from the backfill of discrete pit or posthole features attributed to Phases 3 and 4 (Table 2). Peg tile dominates, as perhaps to be expected with both timber framed and brick structures being roofed with tile, particularly in urban settings, during the post-medieval period.

Phase	Form	Number	Weight	Phase total	
				Number	Weight
2: Medieval	Unfrogged brick	1	67	4	184
	Peg tile	2	71		
	Mortar	1	46		
3: Early post-medieval	Roman tile/ brick	1	148	80	14354
	Roman tile	2	63		
	Brick	2	155		
	Unfrogged brick	7	2938		
	Peg tile	68	11050		
4: Later post-medieval	Roman tile	1	20	98	67930
	Brick	2	123		
	Moulded brick	3	7185		
	Unfrogged brick	34	46386		
	Other/ kiln structure	8	4134		
	Tile	1	173		
	Curved tile	1	164		
	Peg tile	47	9135		
	Mortar	1	610		
5: 19th century	Brick	1	92	54	12631
	Unfrogged brick	4	6662		
	Tile	1	113		
	Peg tile	48	5764		

Table 2: Distribution of the ceramic building material by phase.

The assemblage is discussed further by form type below, including a consideration of fabric and date. The samples from the kiln are discussed separately.

The brick kiln samples

Total samples: 33 (brick, tile and kiln material)

Brick samples were retrieved from elements of the kiln structure and from the backfill of the cut containing the kiln. The bricks are homogenous in terms of fabric and very similar in form

and dimension, excluding three moulded bricks from fill [90]. It is likely that at least some of the bricks from the fill, including both the plain and moulded bricks, represent products. The similarity between these and those used to construct the kiln is notable. A similar clay source was obviously being exploited for the production of both and may imply the existence of other contemporary brick kilns in the vicinity.

The fabric of the bricks is invariably dense, moderately sandy and fully oxidised with a colour ranging from orange red to red. Some examples also include small black clinker-type inclusions and iron-ore. Varying amounts of calcareous material or silt are also evident, some examples with a heavily speckled white matrix. The bricks are all unfrogged and well-moulded by hand with sharp arrises and fine moulding sand. Indented borders are also evident, although not on all samples, and there are often creases to the sides and sometimes bases. The bricks from the kiln structure range in size from 219-239mm x 107-115mm x 54-61mm. The samples from the fill range from 207-225mm x 102-117mm x 46-61mm.

The three moulded bricks from backfill [90] are probably products of the kiln, possibly in addition to some of plain bricks, and bear diagonal marks to the sides from stacking. The bricks are moulded very crisply to one header with a stepped ogee profile. Similarly to the remaining samples they occur in the same fabric and are also dense and well-moulded with sharp arrises and fine moulding sand. They would have been intended for use in a decorative plinth, surround or other similar architectural feature.

A fragment of clay pipe was retrieved from the backfill of the kiln dating from c.1690 to 1710. The size, form and manufacture of the bricks would be consistent with this date and the fabric, with the admixture of fine clinker-type inclusions, is very similar to 3032nr3033 type bricks found in London and dated c.1664/6 to 1725. Pottery from the backfill ([83]) is spot dated to the 17th century but includes material of earlier date. The diagonal stacking marks may also be significant as the way in which kilns were loaded for firing changed chronologically and this may further confirm or refine dating.

Along with brick base and supports it is evident from other kiln debris from the backfill ([83] and [84]) that both broken brick and peg tile were also used in construction. The majority of the peg tile has fine moulding sand and is very similar to the remaining loose roof tile assemblage in both fabric and form. A similar oxidising clay to that used for the bricks was also recorded cementing fragments of broken brick together, possibly forming part of the kiln structure, and as lining or cladding covering the bricks. Other misshapen and vitrified brick fragments were recovered and slag concretions.

Loose assemblage

Roman tile

Four abraded fragments of Roman tile were recovered from Phase 3 and 4 features (fills [8], [184], [186]), including the top of a tegula flange. The Roman occupation of Chelmsford is well attested and these fragments represent little more than re-deposited evidence for activity of this date in the vicinity.

Medieval and later roof tile

A single fragment of medieval roof-tile was recovered residually from Phase 4 fill [230]. The tile is in a sandy fabric with oxidised surfaces and is 19mm thick with a thick glaze to the edge. It may be a bat tile but could also represent an early peg tile.

The remaining roof tile is likely to be transitional or later in date and is of the peg type. The fabrics are fine and sandy with varying inclusions including silt / clay chunks and streaks, red iron ore and calcareous material. Some have a micaceous matrix or have iron stained or calcareous moulding grit. The tiles are mostly evenly oxidised throughout, although some have grey cores. A few vitrified and warped examples may derive from the brick kiln. As recorded elsewhere in Essex peg holes are almost exclusively round. Just one square and one diamond shaped hole were recorded. The tiles range in width from 155mm to 166mm and are commonly 12-14mm thick, although range from 11-15mm.

Peg-tile is not closely datable, produced from as early as late 12th century and remaining in widespread production until the 18th century. There is a tendency, however, for the sand used in the tile mould to become finer as the period progresses. An uneven profile and coarse moulding sand are often characteristic of medieval roof tile and more evenly made examples with fine moulding sand diagnostic of a post-medieval date. The majority of those recovered from site are even and well made and have medium or fine moulding sand and are likely to be post-medieval in date. There is, however, no observable progression in the moulding sand from medium to fine as the phases develop at Legg Street. Indeed, both medium and fine moulding sand are evident on tiles from transitional and early post-medieval contexts through to the 19th century. There is, however, proportionally more medium moulding sand

represented in earlier deposits than later ones and examples from the later deposits could be residual or old when deposited.

Post-medieval brick

With the exception of the samples from surface [105] the brick from the loose assemblage is all fragmented and somewhat abraded. The bricks are all post-medieval in date and universally occur in an oxidised orange or orange red fabric, similar to the bricks from the kiln but often with a more porous open texture. Sand, iron ore, flint and calcareous material or silt represent the most frequent inclusions in the body.

The bricks are all unfrogged where identifiable but some are better moulded than others. Examples from Phase 3 deposits are generally thinner ranging in thickness from 44-60mm, although more commonly fall around 50-52mm. 17th century examples demonstrate a similar range in thickness but by the 18th century bricks over 60mm thick become the norm. As the 18th century develops thicknesses of up to 68mm are evident ([34]; [201]). The moulding of the bricks also generally appears to become sharper and the body of the brick denser as the post-medieval period progresses. Examples recovered from early 18th century deposits ([34]) demonstrate diagonal pressure marks from stacking in the kiln, similar to those seen on the moulded bricks from the kiln on site.

Generally the brick from the loose assemblage is fragmented and demonstrates varying degrees of abrasion and thus provides little more than background information about structures in the vicinity. Two samples were, however, recovered from brick surface [105]. Both are oxidised and unfrogged and measure 222-227mm x 109mm x 64mm. Similar to the bricks from the kiln they are dense and well-moulded with sharp arrises. They also have indented borders, creasing and diagonal pressure marks to the sides. They are a little thicker, though and may have been manufactured later in the 18th century or perhaps even early 19th century.

Potential and recommendations

The assemblage from Legg Street is of local and regional significance due solely to the existence of the post-medieval brick kiln. Any future analysis or publication should focus on

characterising this structure and placing it within the context of the town and broader region. Questions to be considered include:

- What other brick kilns are known about in Chelmsford, either through documentary sources or excavation.
- Are there any contemporary examples and if so how do they compare.
- Further consideration and discussion should also focus on the construction of the kiln and how typical this is of other contemporary examples locally and regionally. In particular why was the kiln constructed within a cut when most brick clamps are built directly off the ground.
- Was the kiln built and fired to make bricks for the construction of a particular structure or complex of buildings in the near vicinity and if so can this/these be identified.
- Further analysis should involve consultation with regional brick expert Pat Ryan who has an in depth knowledge of local manufacture and the chronological significance of technology.

The potential of the loose assemblage is limited by the fact it cannot be directly related to a specific building but the group is, however, of local interest informing on the general character and development of the built heritage of the town.

APPENDIX 1

Context	Form	Total Number	Provisional date
1	Peg tile	3	1480 - 1900
3	Peg tile	8	1480 - 1900
5	Peg tile	19	1480 – 1900
8	Roman tile, peg tile	3	1480 - 1900
10	Unfrogged brick, peg tile	3	1480 - 1900
12	Peg tile	2	1480 - 1900
16	Peg tile	9	1480 - 1900
18	Brick, peg tile	6	1480 - 1900
22	Peg tile	2	1480 - 1900
29	Peg tile	2	1480 - 1900
34	Unfrogged brick, peg tile	5	1680 - 1900
38	Unfrogged brick, peg tile	3	1480 - 1900
40	Unfrogged brick, peg tile	3	1480 – 1900
42	Brick	1	1480 – 1900
45	Peg tile	4	1480 – 1900
47	Peg tile	3	1480 – 1900

Context	Form	Total Number	Provisional date
49	Peg tile	1	1480 – 1900
53	Brick, peg tile	13	1480 – 1900
83	Unfrogged brick, peg tile, clay lining/ cladding, lime and sand mortar	12	1664 – 1725
84	Unfrogged brick, peg tile, slag concretions, kiln structure/ debris	17	1664 – 1725
89	Unfrogged brick	2	1664 – 1725
90	Moulded brick	3	1664 – 1725
105	Unfrogged brick	2	1650 – 1800
112	Unfrogged brick. Peg tile	7	1480 – 1900
116	Peg tile	4	1480 – 1900
119	Peg tile	2	1480 – 1900
135	Peg tile	1	1480 – 1900
149	Peg tile	1	1480 – 1900
151	Unfrogged brick	3	1664 – 1725
153	Unfrogged brick	2	1664 – 1725
155	Unfrogged brick	3	1664 – 1725
160	Peg tile	3	1480 – 1900
162	Unfrogged brick, peg tile	13	1480 – 1700
166	Peg tile	1	1480 – 1900
177	Brick, peg tile	3	1664 – 1725
182	Peg tile	1	1180 – 1600
184	Roman tile or brick, peg tile	3	1480 – 1900
186	Roman tile	2	Residual Roman
188	Peg tile	1	1480 – 1900
192	Unfrogged brick, peg tile	7	1480 – 1700
198	Peg tile	1	1480 – 1900
199	Peg tile	1	1480 – 1900
201	Unfrogged brick, peg tile	5	1650 – 1800
202	Peg tile	1	1480 – 1900
212	Unfrogged brick, peg tile	3	1650 – 1800
214	Peg tile/ modern machine pressed tile	6	1850 – 1900 +
222	Unfrogged brick	1	1650 – 1800 +
224	Peg tile	1	1480 – 1900
226	Peg tile	3	1480 – 1900
230	Medieval roof tile, unfrogged brick, peg tile, curved tile.	14	1480 – 1700
244	Unfrogged brick, peg tile, mortar	4	1480 – 1800
246	Peg tile	6	1480 – 1900
254	Unfrogged brick, peg tile	6	1480 – 1900

Table 3: List of contexts containing ceramic building material and provisional date.

APPENDIX 3: CLAY TOBACCO PIPE ASSESSMENT

By Chris Jarrett

Introduction

A small sized assemblage of clay tobacco pipes was recovered from the site (1 box). Most fragments are in a fairly good condition, indicating that they had not been subject to too much redeposition or were deposited soon after breakage. However, it has to be noted that some contexts produced earlier bowl types with contemporary ones, but this is quite a common phenomenon and probably due to intercutting features. Clay tobacco pipes occur in 28 contexts as mostly small groups (under 30 fragments) except for one medium sized group (31-100 fragments).

All the clay tobacco pipes (198 fragments, of which none are unstratified) were recorded in an ACCESS 2007 database and classified by Atkinson and Oswald's (1969) typology (AO) and 18th-century examples by Oswald's (1975) typology and prefixed OS. The pipes are further coded by decoration and quantified by fragment count. The degree of milling has been noted and recorded in quarters, besides the quality of finish. The tobacco pipes are discussed by their types and distribution.

One fragment of an 18th-century hair curler is recorded and it was classified according to Le Cheminant (1978; 1982).

THE CLAY TOBACCO PIPE TYPES

The clay tobacco pipe assemblage from the site consists of 82 bowls, 114 stems and two nibs or mouthpart. The bowl types range in date between 1610 and 1800.

1610-1640

AO4: one bowl occurs as a bulbous variant and is waisted above the angled heel. It has full milling of the rim and a good finish, but it has a light red surface and was possibly subjected to an intense, but indirect heat.

AO5: one bowl and present as a variant, being noticeably waisted above the heel. The front of the bowl is missing and only half the milling survives, but it has a good quality finish.

The heel of another bowl dating to this period was recovered with a shield shaped stamp in relief with a surround containing two opposed fronds. The centre of the stamp has a star surrounding three 'tied bags'. This stamp has been noted in East London at 43-53 Narrow Street, Ratcliffe, Limehouse (site code: NHU99). There it occurred on an AO5 type bowl (Jarrett 2005, 59, fig. 31.3).

1640-60

AO10: two heeled bowls but with damaged rims, but one has surviving half milling, but both are of a fair finish.

1660-80

AO13, one example of this heeled type of bowl with a rounded profile and it has half milling of the rim and a good finish.

AO15: one spurred bowl with three quarters milling and a poor finish.

AO18: five heeled bowls with straight or very slightly curved sides. These bowls either have half or three quarter milling of the rim and a fair finish, but one bowl has a finger dent near the rim caused by poor handling after being taken out of its mould.

AO13/18: one bowl has slightly more rounded sides than is typical for the AO18 type but does not quite fall into the AO13 type. It is damaged but has a fair finish.

Non-local bowl?

A possible non-local bowl is present but the back of the bowl is missing. It has a heel and slightly rounded front and was very nicely finished. It dates to the mid 17th century.

1680-1710

AO20: one heeled bowl with a rounded profile, a fair finish and typically for this time, a quarter milling on the back of the bowl.

AO21: two heeled bowls (the predecessor of the later AO25 type) with a rounded front and straight back profile of a poor quality finish, but usually they have a good quality. One bowl has poorly moulded initials on the heel of ? H and may possibly refer to James Hayes, a Colchester pipe maker recorded in 1688.

AO22: ten heeled bowls with straight sides. The bowls either have no or a quarter milling and are of a fair or good quality. Many of these bowls are damaged and some survive only as heels. Two bowls are maker marked: H ? and M S but can not presently be identified with Essex pipe makers.

1700-1770

AO25: seven heeled bowls that are too damaged to be further sub-divided into Oswald's 18th-century typology. Three are initialled with either M ?, ? G/C and T T, but the moulding is often poor and therefore difficult to ascribe to possible makers. No Essex pipe maker at present can be ascribed to the well defined initials T T.

1700-40

OS10: ten heeled bowls with upright bowls and thick stems are recorded and three are marked, two with crowns above the letters but one has totally illegible initials, while the other is I T. The third bowl has the initials W R. The two legible initials of pipe makers are again not recorded in Essex to date.

1730-1780

OS12: twenty heeled, upright bowls with thin stems and a number are maker marked, but again no Essex pipe makers are known for them to date. One of the bowls has the first initial I surviving while the family name has the letter missing and this may have been deliberately removed by another pipe maker who bought moulds from someone else in the profession. The other marked bowls are I A (two bowls), T A or R, T L (two bowls), W R and B S.

1740-1780

AO26: one damaged bowl with its spur and the front of the bowl missing. The heel shows some evidence that it was initialled, but the letters can not be read.

1760-1800

OS23: one upright bowl type but the spur is missing and may have been initialled from the evidence of the surviving marks.

Undetermined types

Fourteen bowls are represented as fragments, they survive only as undiagnostic bowl fragments or as mostly stems with part of the bowl. Many of these bowls appear to date to between the end of the 17th and 18th century.

THE HAIR CURLER

One bulbous end of a hair curler was recorded in context [133]. It has a maximum diameter of 20mm and a surviving length of 27mm. The bulbous end has an incuse stamp featuring the letters 'W B' with a dot above and below the initials. This stamp is dated c.1750-1800. The hair curler can be classified as Le Cheminant's type 10, dated c.1750, but with a date bracket of ten years. The hair curler was made in London as that is where the makers stamp is most commonly found (Le Cheminant 1978, 190, fig. 2).

DISTRIBUTION

Table 1 shows the distribution of the clay tobacco pipes, showing the number of fragments, the date range of the types and the latest bowl, the types of bowls present, together with a spot date for each context tobacco pipes occur in. The clay tobacco pipes are found in Phases 3 to 6.

Context	Phase	Fragment count	Date range of bowl types	Latest dated bowl type	Bowl types (and makers)	Spot date
1	5	1			Stem	1580-1910
3	4	7			Stem	1580-1910
10	5	1			Stem	1580-1910
12	5	2			Stem	1580-1910

Context	Phase	Fragment count	Date range of bowl types	Latest dated bowl type	Bowl types (and makers)	Spot date
16	5	28	1660-1800	1760-1800	X1 AO18, x1 AO21, x1 AO22, x1 AO25, x2 OS10, x1 AO26, x1 OS23	1760-1780
22	4	1				1580-1910
34	4	12			Stems and a bowl fragment	?Late 17th C
42	3	3	1680-1710	1680-1710	X1 AO20, x1 AO22	1680-1710
47	3	1			Stem	1580-1910
79	4	1	1680-1710	1680-1710	x1 AO22	1680-1710
83	4	20	1660-1770	1700-1770	X1 AO15, X1 AO18, X2 AO22, X2 AO25 (? G/C, T T), X2 OS10	1700-1740
88	4	16	1640-1740	1700-1740	X1 Non-local bowl, X1 AO10, X1 AO13/18, X1 AO22, X 2 OS10 (I T)	1700-1740
112	3	3	1660-1710	1680-1710	X1 AO13, X1 AO18, X1 AO22	1680-1710
133	4	7	1640-1780	1730-1780	X1 AO10, X1 OS10, X2 OS12 (T L, B S)	1730-1780
135	4	9			Stem	1580-1910
170	4	1	1700-1770	1700-1770	X1 AO25 (?M ?)	1700-1770
184	3	2	1660-1740	1700-1740	X1 AO18, X1 OS10 (W R)	1700-1740
190	4	1			Bowl fragment	L17th-E18th C.
198	4	4	1700-1770	1700-1770	X2 AO25	1700-1770
199	4	14	1730-1780	1730-1780	X5 OS12 (I, I A)	1730-1780
201	4	38	1660-1780	1730-1780	X1 AO18, X1 AO21 (? H), X1 AO25, X1 OS10, X13 OS12 (T A/R, T L, WR)	1730-1780
202	4	4	1700-1740	1700-1740	X1 OS10 (? ?)	1730-1780
212	4	2	1680-1710	1680-1710	x2 AO22 (M S)	1680-1710
214	5	2			Stem	1580-1910
222	3	2	1680-1710	1680-1710	X1 AO22 (H ?)	1680-1710
226	3	6	1700-1740	1700-1740	X1 OS10	1700-1740
230	4	9	1610-1640	1610-1640	X1 AO4, AO5, x1 early 17th century heel with relief stamp	1610-1640
254	3	1			Stem	1580-1910

Table 1. CF63. Distribution of clay tobacco pipes. A spot date of 1580-1910 indicates that only stems were present in the context

SIGNIFICANCE OF THE COLLECTION

The clay tobacco pipes are of significance at a local level. The clay tobacco pipes on the whole follow the same profile as that for London and the south east and show little regional variation. There is no evidence for clay tobacco pipe production amongst the assemblage.

POTENTIAL

The clay tobacco pipes have the potential to date the contexts they were found in. They are extremely important as a dating tool for the construction of the brick kiln. Up to five bowls require illustration.

RESEARCH AIMS

Can the initials on the clay tobacco pipes be better related to pipe makers?

RECOMMENDATIONS FOR FURTHER WORK

A short publication report is recommended and should include up to five clay pipe illustrations.

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APPENDIX 4: ANIMAL BONE ASSESSMENT

By Kevin Rielly

Introduction

The site is located in Chelmsford, Essex, just at the northern perimeter of the medieval town. It included a series of pits dating to the medieval, early post-medieval, later post-medieval and the 19th century. The majority of these pits were dug for rubbish disposal with the notable exception of those from the second phase where the intention was to remove the underlying brickearth. There are some structures, including a late 17th/early 18th century brick kiln and then, in the last phase, a number of brick foundations signifying the development of this area.

Animal bones were found in most areas of the site, dating to each of the major periods of occupation. All of the bones were collected by hand and all where in a good state of preservation.

Methodology

The bone was recorded to species/taxonomic category where possible and to size class in the case of unidentifiable bones such as ribs, fragments of longbone shaft and the majority of vertebra fragments. Recording follows the established techniques whereby details of the element, species, bone portion, state of fusion, wear of the dentition, anatomical measurements and taphonomic including natural and anthropogenic modifications to the bone were registered.

Description of faunal assemblage

The site provided a grand total of 593 animal bones, all recovered by hand. These have been assigned to their respective phases (Table 1), with bones arising from Phase 2 – Medieval, Phase 3 – Early Post-Medieval, Phase 4 – 17/18th centuries and Phase 5 – 19th century.

Phase 2: Medieval

This phase provided just 3 bones (see Table 1), derived from pit [233] and linear feature [235] located in the northeastern corner of the site. Dating evidence for the fills of these cuts is relatively wide but it would appear that both essentially date to the latter part of the medieval era.

Phase 3: Early Post-Medieval 1480 to 1600

Bones from this phase were taken from a number of quarry pits and rubbish pits, situated in each corner of the site with the exception of the north-western (this area limited to a single feature containing an entire dog skeleton, see below). The great majority of these 16 quarry and rubbish pits provided relatively few bones, the largest collections coming from rubbish pit [163] with 15 bones and from quarry pits [255] and [187] with 19 and 10 fragments respectively. Most of the bones from the combined assemblage were identified as cattle with reasonable quantities of sheep/goat and pig and a lesser proportion of chicken and dog. Each of the main species is represented by a general mix of skeletal parts, a large proportion of which show butchery marks (mainly cleaver cuts).

Phase:	**2**	**3**	**4**	**5**
Species				
Cattle	1	32	78	22
Equid			4	1
Cattle-size		16	24	15
Sheep/Goat		13	20	16
Sheep	1	5	8	4
Pig		8	8	123
Sheep-size	1	9	21	28
Dog		100	11	
Cat			1	
Rabbit			1	
Chicken		4	2	15
Goose			1	
Grand Total	**3**	**187**	**179**	**224**

Table 1. Species abundance by phase.

Ninety-five out of the 100 dog bones (see Table 1) belong to the relatively complete skeleton unearthed from the cut feature [33]. This is clearly a burial. The fill did provide one other bone, a sheep scapula, but this is undoubtedly an accidental inclusion. The shape of the skull (after The and Trouth 1976) as well as the absence of the bacculum, suggest that this was a male dog. Judging by the wear on the teeth, it could be proposed that this animal was quite old, except that the limb bones are not totally fused. The actual age can be estimated between 1.25 and 1.5 years, based on the fusion of the proximal ulna and the unfused state of the latest fusing limb bone epiphyses (Amorosi 1989, 107-110). It was a relatively large dog, probably between about 58 and 64cm at the shoulder. It can be assumed that animal had been a valuable member of the farm/household, as suggested by its burial. Contrasting with this apparent empathy for ‘man’s best friend’, however, is the fact that it appears to have been skinned. This is demonstrated by very fine cut marks noticed on the anterior ends of the nasal bones and also on the mid part of the right nasal at the nasal/maxillary border.

Phase 4: Later Post-Medieval 1600-1800

Bones were recovered from the fills of 19 cut features, all of which were rubbish pits, with the exception of cut [96] containing the brick kiln and the posthole [193]. As with Phase 3, these features were spread throughout most of the site and again, a large proportion provided rather small bone assemblages. The larger collections were taken from [96] (28 bones) and from two each of the northwestern and eastern pits:- [8] (16 bones) and [23] (17 bones); [231] (36 bones) and [213] (16 bones) respectively. There is a similar spread of major domesticates, dominated by cattle, again represented by a wide distribution of skeletal parts and again featuring a large number of butchered bones. Yet there is one possible collection of butcher's waste, as shown by a concentration of cattle skull fragments in pit [8]. Some of the cattle bones in pit [231] are rather large, perhaps signifying a large 'type' or perhaps a bull. This deposit is dated between 1660 and 1700 and so these bones are unlikely to represent one of the improved 'types', these generally dated to the late 18th/early 19th centuries (Rixson 2000, 215). The other species include poultry – chicken and goose; small game – rabbit; and various non-food domesticates – equid, dog and cat. Amongst the chicken bones there is a rather large metatarsus. It is insufficiently complete to suggest whether a spur was present, however, its size would suggest it is either a large male or a capon. The horse bones include a pair of adult mandibles from the fill of [96], the crown heights of the teeth suggesting this animal was about 7 years old (after Levine 1982). Most of the dog bones are taken from partial skeletons, including most of the foreleg bones from one animal within pit [231] and from a single foreleg from pit [223].

Phase 5: 19th century

These bones were recovered from 7 rubbish pits with most of the collection arising from pit [2] - 121 bones, [17] - 66 bones and [19] with 24 bones. There is the usual mix of domesticates, mammals and poultry, but without the obvious dominance of cattle. The abundance of pig bones is almost entirely related to the articulated skeleton, plus foetal/neonate fragments, found in pit [2] (comprising 119 out of the total of 123 pig bones). Similarly 13 out of the 15 chicken bones were found in one feature, pit [19], these comprising a selection of head and foot bones (3 and 10 bones respectively) representing at least 4 female birds (3 adult and 1 juvenile). The pig bones from pit [2] include the major part of an adult individual. It was quite large and may well represent one of the new 'types' developed by crossing native breeds with imported varieties from south-east Asia (Rixson 2000, 220). There are no butchery cuts on any of the bones and it can be surmised that the meat wasn't consumed due to the manner in which the animal died, perhaps of some heinous disease. Some gross pathologies were noticed on a number of bones, with pitting and lesions on the posterior articular surface of the 12th thoracic, 6th lumbar and anterior sacrum. These may not have any connection with the death of this animal and indeed it may not be possible to ascertain the cause of death. One contributory factor, however, can be suggested with the recovery of the remains of at least 5 piglets in the same context. It isn't possible to deduce whether there were more piglets in

association with the adult skeleton or if these youngsters were still within the womb or had been born but died. The age taken from the maxillary and mandibular teeth is consistent with newborn pigs (Amorosi 1989, 93), but unfortunately there is some variation regarding the eruption ages and thus this evidence is far from conclusive.

Conclusion and recommendations for further work

The bone collections recovered from this site are clearly well preserved and well dated. While the quantities, disregarding the dog and pig skeletons, are not great, these assemblages could still provide limited information on animal usage, particularly regarding the availability of particular meats, the manner in which the major domesticates were exploited (using the age and butchery evidence) and possible livestock changes, here referring to size and 'type'. The redistribution of meats can also be mentioned, as shown by the probable butcher's waste deposits, including the concentration of cattle skulls from Phase 4 and of chicken head and foot fragments from Phase 5.

Obviously, the major two features of the site assemblage are the 15/16th century dog and the 19th century pig. Both items can provide information on 'type' or most probably 'breed' considering the pig, as well as information on certain aspects of animal usage, including disease awareness. Any further analysis of the dog should take into account the peculiar situation where an animal no older than 1.5 years should have such well worn teeth, plus the apparent conflict between the care of this dog, worthy of burial, and the fact that it appears to have been skinned. It should be mentioned that various small mammal 'furs', including cats and dogs, were in fashion during the early post-medieval period (Serjeantson 1989). It has been assumed that the pig had died of some infectious disease, thus accounting for its burial and the fact that the skeleton is complete i.e. no use made of the carcass after death. The noted pathology may have had nothing to do with its death, but it would be worthwhile investigating this issue. The presence of piglets is certainly interesting. Five piglets would have made a rather small litter and as each of these youngsters is represented by a partial skeleton, it can be assumed that others were indeed present. It was also mentioned that it is difficult to suggest the age of these young pigs, however, further information could be available either from published works or through studies of foetal/neonate piglets of known age. A final note on the pig remains concerns their location. The archaeology appears to indicate that this area was under development during the 19th century. An awareness of infection could have prompted the burial of this animal, but would such a burial take place in an occupied area? Conversely, the general date for this feature is 1800 to 1830, perhaps at a time just preceding development.

It is certainly recommended that these collections receive further attention, concentrating principally on the dog and pig skeletons but also pursuing the information available concerning animal usage at this site throughout the post-medieval era.

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APPENDIX 5: SMALL FINDS ASSESSMENT

By Märit Gaimster

Nearly 80 metal and small finds were retrieved from the excavations; they are listed in the table below. All finds were post-medieval, with the majority from Phase 4. Identified objects include a wide range of dress accessories, personal belongings and household furnishings, and there is also some evidence for metalworking in the form of rough or unfinished copper-alloy objects. While Phase 3 is characterised by brickearth quarrying, the finds from Phase 4 are likely to relate to settlement on site and likely to be related to the presence of a brick-making kiln at this time.

Phase 3: Early post-medieval (1480-1600)

Eighteen finds came from Phase 3 contexts, with several nails and fragments of iron objects and fittings. There is also a copper-alloy curtain ring (sf 32) and a small vessel sheet repair (sf 48). The latter consists of a lozenge-shaped piece of copper-alloy sheet, folded into a staple; this could be inserted in the crack of a vessel and then hammered out to be fixed (cf Egan 2005, 101 and fig. 128 no. 697).

Dress accessories are represented by three copper-alloy lace-chapes (sf 4, 29 and 42) and at least three copper-alloy pins (sf 49). The lace-chapes are a highly characteristic dress accessory in the late 15th and 16th centuries, associated with the use of lace-up clothing but increasingly a purely ornamental fashion element (cf. Margeson 1993, 22). Another characteristic object is the fragmentary so-called bodkin pin of copper alloy (sf 31). This is a type of dress pin with a rectangular eye, similar to a needle, but with the additional feature of a small ear scoop. One of the main uses for these pins would have been to thread bands or cords in lace-up corsets and bodices, but these multi-purpose objects were also often used as hair- or headdress pins; the ear scoop was used to collect ear wax, useful in sewing to keep the thread from unravellling (Beaudry 2009). The bodkin pin is a well-known 17th-century artefact, and so may be intrusive in Phase 3. The type is commonly found in East Anglia, where it has been associated with Dutch immigration and trade contacts, with numerous silver examples reported through the Treasure Act (eg. Barton and Hitchcock 2008, 135–37). The simpler copper-alloy versions are less well-known, but there are examples from excavations (cf. Margeson 1993, fig. 4 no. 21).

Also likely to be intrusive in this phase is the tapering ivory cutlery handle with a bulbous end (sf 2). This is a design that appears to date from the late 17th and early 18th centuries (cf. Thompson *et al* 1984, 101 no. 35).

Phase 4: Later post-medieval 1600-1800

The 56 objects retrieved from Phase 4 contexts include a range of dress accessories – some possibly associated with textile production – personal belongings and household furnishings. In addition to the brick kiln, the phase is also characterised by numerous rubbish pits and some traces of buildings and settlement on site.

Dress accessories include six copper-alloy buttons (sf 6, 11, 13, 30 and 40) and at least six copper-alloy pins (sf 34, 35, 41, 45 and 47), along with the loop chape of a copper-alloy shoe buckle (sf 33) and a braid of fine copper-alloy wire (sf 8), likely from clothing. There is also a further sturdy copper-alloy pin with a large globular head (sf 36), of a type likely to have been used for a headdress or to pin up clothing. Some of the pins and buttons came from rubbish pits at the eastern frontage of site, which also yielded two incomplete iron scissors (sf 17 and 23), indicating at least household textile production. Other personal belongings are reflected in the heel of a leather shoe or boot, and a copper-alloy watch winder (sf 10).

Architectural and household furnishings include a fragment of lead window came, pieces of iron barrel binding and two copper-alloy upholstery pins (sf 37 and 44). At least two metal vessels are among the finds, including parts of a tin or pewter tankard (sf 14) and a shallow round iron vessel (sf 28), and there is also the complete octagonal copper-alloy cap from a 17th-century cutlery handle (sf 38). Two further objects, an iron ferrule (sf 27) and an openwork iron fitting (sf 19), require further identification.

Besides household objects, there are also horse-related finds in the form of an incomplete rowel spur (sf 18) and part of a horseshoe (sf 26). Finally, some finds may be related to the production of metal work, notably in the form of an apparently unfinished petal-shaped copper-alloy mount (sf 43). There are also some pieces of copper-alloy sheet waste (sf 7 and 50).

Phase 5: 19th century

Only four finds were retrieved from Phase 5, including a piece of metalworking slag and the possible tip of an iron knife blade.

Recommendations

The metal and small finds from Legg Street form an integral component of the material recovered during excavation and, where relevant, should be included in any further publication. This is particularly significant for the finds from early modern Phases 3 and 4 that include material relating to activities and settlement on or near the site. Notable finds here include the bodkin pin (sf 31), so characteristic of the region, the cutlery handle and cap (sf 2 and 38), the rowel spur (sf 18), the scissors (sf 17 and 23), the copper-alloy watch winder (sf 10) and the vessel sheet repair (sf 48). For the purpose of publication, some finds will require x-ray and further identification; these are all marked in the table below.

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PHASE 3: early post-medieval (1480-1600)				
context	**sf**	**description**	**pot date**	**recommendation**
29	29	copper-alloy lace-chape; incomplete; L 20mm+	1480-1600	
45	21	iron strap/fitting; W 5mm; L 90mm+	1580-1900	x-ray
	31	copper-alloy bodkin pin; incomplete; part of rectangular eye extant; L 120mm+	1580-1900	
	32	copper-alloy flat-section curtain ring; complete; diam. 26mm	1580-1900	
		iron nail; L 55mm	1580-1900	
112	2	complete ivory cutlery tang-hafted handle; tapering with slightly bulbous end; L 68mm; part of iron implement still extant	1580-1600	x-ray
	3	copper-alloy slag; one piece; 20 x 25mm	1580-1600	
	4	copper-alloy lace-chape; incomplete; L 18mm+	1580-1600	
	39	copper-alloy pin/handle; incomplete; gauge 2.17mm; L 32mm+	1580-1600	
119		iron nail; L 70mm	1480-1600	
188	42	copper-alloy lace-chape; incomplete; L 28mm+	1480-1600	
222		iron ?vessel; heavily corroded fragment; 35 x 60mm	1480-1600	x-ray
226	48	copper-alloy sheet vessel repair; complete; 8 x 20mm; ?unused	1580-1600	
		iron nail; incomplete	1580-1600	
228	25	iron object; flat and in three conjoining pieces; W 25mm; L 70mm+	1480-1600	x-ray
	49	copper-alloy pins; at least three incomplete; one Type C; gauge 0.83mm	1480-1600	
PHASE 4: Later post-medieval 1600-1800				
context	**sf**	**description**	**pot date**	**recommendation**
22	20	iron ?strap/fitting; W 250mm; L 110mm+	1745-1750/80	x-ray
34		iron nail; incomplete	1670-1800	
44	30	copper-alloy buttons; two plain disc/livery buttons with loop fastenings; diam. 18 and 20mm	1580-1700/1800	
		iron binding; two lengths; W 30mm; L 170 and 370mm	1580-1700/1800	
49	33	copper-alloy shoe buckle; complete 'cooking-pot' loop chape only; W 22mm	1730-1780	
79	34	copper-alloy pin; incomplete; gauge 0.85mm	1580-1700	
83	35	copper-alloy pin; incomplete; gauge 0.8mm; L 37mm+	1600-1700	
	36	copper-alloy headdress pin; complete with large bulbous head; gauge 1.26mm; L 40mm		
	37	copper-alloy upholstery stud; domed head only; diam. 10mm	1600-1700	
	38	copper-alloy knife cap; complete; pointed octagonal with knop for through-tang; ht. 29mm	1600-1700	
		iron ?vessel; fragment only; 45 x 110mm	1600-1700	x-ray
		iron pin/handle; incomplete; gauge. 2.9mm; L 48mm+	1600-1700	
		iron nails; three complete; L 75, 75 and 155mm	1600-1700	
		lead window came; fragment only; L 35mm	1600-1700	
88		iron nail; incomplete	n/a	
133	6	copper-alloy ?button; flat disc with raised edge on the back; no trace of fastening; diam. 17mm	1720-1780	x-ray
	7	copper-alloy sheet waste; cut strip; L 100mm; W 9mm	1720-1780	
	8	braid of ?seven strands of fine copper-alloy wire; gauge 0.15mm; L 225mm+	1720-1780	further id
166	40	slightly domed composite button of copper alloy with traces of bone back; diam. 11mm	1720-1780	x-ray
	41	copper-alloy pin; incomplete Type C; gauge 0.96mm	1720-1780	
		iron nail; L 140mm	1720-1780	
170	22	iron ?tanged knife blade; incomplete	1580-1600	x-ray
190	23	iron scissors; incomplete	1720-1780	x-ray
	24	iron ?pin/handle; incomplete; gauge. 3.4mm; L 100mm+	1720-1780	x-ray
	43	copper-alloy roughly cut disc; ?unfinished mount; slightly angular and partly petalled; diam. 28mm	1720-1780	x-ray
	44	copper-alloy tack; complete with pin and domed head; diam. 12mm; probably for upholstery	1720-1780	
		iron nail; L 55mm	1720-1780	
192		iron nail; L 45mm	1580-1800	
199	10	copper-alloy watch winder; near-complete cranked type with only the key missing	1720-1780	x-ray
	45	copper-alloy pins; three Type C; gauge 0.9mm; two complete L 23 and 25mm	1720-1780	
		iron ?hob/shoe nails; at least six	1720-1780	x-ray

201	11	copper-alloy button; complete plain disc/livery type with slightly conical back for loop fastening; diam. 18mm	1720-1780	
	12	copper-alloy ?incomplete bell or steeply domed cap; diam. 14mm	1720-1780	x-ray
	13	copper-alloy button; complete plain disc/livery type; diam. 18mm	1720-1780	
	14	tin/pewter tankard; incomplete; diam. *c*.90mm; rim piece with part of 30mm-wide handle	1720-1780	
	27	iron ?ferrule; tapering and socketed object; L 170mm; diam. of opening 30mm	1720-1780	x-ray
	47	copper-alloy pin; incomplete; gauge 1.4mm	1720-1780	
		?tin/pewter vessel; fragment only	1720-1780	
		leather shoe with iron ?hob/ shoe nails; heel only	1720-1780	
202	28	shallow iron vessel; incomplete; diam. 100mm; ht. 35mm	1704-1714	x-ray
		iron ?nail; heavily corroded; L 80mm	1704-1714	x-ray
		iron nail; L 50mm	1704-1714	
230	17	iron scissors; one complete shank only; L 155mm	1660-1700	x-ray
	18	iron rowel spur; complete tapering D-section side with terminal and possibly part of spur attachment extant; neck with heavily corroded rowel; L 135mm	1660-1700	x-ray
	19	iron fitting; complete; rectangular openwork panel with five rectangular openings; set at 90° angle in oval base with ?trefoil finials; W 10mm; L 85mm; ht. 18mm	1660-1700	x-ray and further id
	26	iron horseshoe; incomplete; L 90mm; branch W 250mm	1660-1700	x-ray
	50	copper-alloy ?waste; roughly cut strap with roughly semi-circular out-cuts at each end; W 15mm; L 28mm+	1660-1700	
		iron nails; four complete; L 50, 55, 65 and75mm	1660-1700	
PHASE 5: 19TH CENTURY				
context	**sf**	**description**	**pot date**	**recommendation**
1		slag; one piece; 35 x 35mm	1800-1830	
16		iron objects; strap with flattened edge; W 30mm; L 65mm+; corroded ?nail/rivet; incomplete	1820-1900	further id
18		iron ?knife blade; tip only; W 15mm; L 60mm+	1704-1900	x-ray
214		copper-alloy ?object; 20 x 25mm	1805-1900	x-ray

APPENDIX 6: GLASS ASSESSMENT

By Chris Jarrett

Introduction

A small sized assemblage of glass (three boxes: 74 fragments and none are unstratified) was recovered from the excavation. The assemblage contains unabraded, fragmentary and intact items and probably represents secondary and tertiary deposition conditions. The forms could be identified and date to between the mid 17th and 19th centuries. The information was entered on to an Access 2007 database.

Vessel types

Bottles

Cylindrical wine bottles

Context [5]: Dark green glass. Base sherd, kicked with a pontil rod scar, one shard. c. 1735-1830.

Context [133]: Light olive green glass. Complete profile with a string rim construction difficult to match, but similar to c.1680-90 types where the rim is everted and directly over the cordon. Two shards. c. 1750.

Mallet wine bottles

Context [84]: Light olive green glass. Deep kicked base and wall. Three shards. c.1740.

Context [135]: Light olive green glass. Near complete profile with a kicked base and pontil rod scar, c.1720-40 string rim construction, simple rim with flange.

Non-diagnostic wine bottle shards

Context [82]: Light olive green glass. One body shard. Late 17th -18th century.

Context [83] Olive green glass. Two body shards. Late 17th -18th century.

Context [112]: Light olive green glass. One body shard. Late 17th -18th century.

Context [135]: Dark green glass. One body shard, fresh breaks, possibly from an onion type. c.1710

Context [190]: Light olive green curved fragment. One shard. Late 17th -18th century.

Context [198]: Dark green glass, low kicked base. One shard. Late 17th -18th century.

Context [198]: Light olive green glass wall shards. Two shards. Late 17th -18th century.

Context [190]: Dark green glass curved fragment. One shard. Late 17th -18th century.

Context [222]: Dark green glass curved fragment. One shard. Late 17th -18th century.

Context [230]: Pale olive green glass body shard. One shard. Late 17th -18th century.

Jug?

Context [190]: dark green glass. One shard from a handle with an oval cross section. Post-medieval.

Phials/bottles

Context [166]: Pale olive green glass. Rim sherd with a flat top, short neck and rounded shoulder. Base sherd is kicked with a pontil rod scar. ?Cylindrical wall profile. Two shards. Mid 18th century.

Context [199]: Mid green glass. Rim is flat and narrow, short neck, part of a kicked base. Two shards. Mid 18th century.

Context [199]: Mid green glass. Rim is flat and narrow, short neck, rounded shoulder, cylindrical wall, kicked conical base with a pontil rod scar. Six shards. Mid 18th century.

Context [199]: Light bluish green glass. Rim is everted and narrow, short neck, rounded shoulder, cylindrical wall. Six shards. Mid 18th century.

Context [201]: clear glass. Intact short bottle with a conical profile, narrow everted rim, short neck, rounded shoulder, kicked base, pontil rod scar, manufacturing dent on the shoulder. Late 18th-early 19th century.

Context [201]: clear glass. Narrow everted rim, short neck, rounded shoulder. One shard. Late 18th-early 19th century.

Context [201]: pale blue glass. Everted rim and short neck with a tapered applied cordon above a rounded shoulder. One shard. Late 18th-early 19th century.

Context [202]: Mid green glass. Body sherds, possibly conjoin to examples in context [199]. One shard. Mid 18th century.

Indeterminate form vessel glass

Context [3]: Light green glass. Kicked base sherd with pontil rod scar. Late 17th-early 19th century.

Context [112]: Pale olive green glass. One very small shard. Post-medieval.

Window pane glass

Context [3]: Pale green glass, one shard.

Context [16]: Pale green glass, five thin shards.

Context [45]: Clear glass, one sherd. 19th-20th century.

Context [166]: Light olive green glass, corners with lead cane 'shadows'. ?hexagonal shaped panes. Four shards. 18th century.

Context [166]: Pale blue glass, one edge. Four sherds. 18th century.

Context [170]: Pale green glass, one shard.

Context [190]: Light blue glass, one shard.

Context [190]: Pale green glass: one shard.

Context [201]: Light olive green glass, two shards.

Context [202]: Pale green glass, one shard.

Context [214]: Dark green glass with ribbed surface. One shard, 1850 onwards.

Context [230]: Dark green glass with a central pontil rod scar; broad sheet window pane. One shard. Late 17th-early 18th century.

Distribution

Table 1 shows the contexts the glass was found in, the number of fragments and a spot date for the deposit.

Context	Phase	Fragment count	Spot date
[3]	4	2	Late 17th-Early 19th century
[5]	5	1	1735-1830
[16]	5	5	Post-medieval
[34]	4	8	c.1720-40
[45]	3	1	19TH-20TH century
[82]	4	1	Late 17th-18th century
[83]	4	2	Late 17th-18th century
[112]	3	2	Late 17th-18th century
[133]	4	2	c.1750
[135]	4	1	c.1710
[166]	4	10	Mid 18th century
[170]	4	5	18th century
[190]	4	4	Post-medieval
[198]	4	3	Late 17th-18th century
[199]	4	14	Mid 18th century
[201]	4	5	Late18th - early19th century
[202]	4	4	Mid 18th century
[214]	5	1	1850+
[222]	3	1	Late 17th-18th century
[230]	4	2	Late 17th-18th century

Table 1: CF63. Glass spot dating index.

Significance, potential, research questions and recommendations for further work

The glass has some significance at a local level, but the forms are on the whole associated with alcohol and pharmaceutical storage. The glass has some potential to date the features it was found in. Three items require illustration. There is one research question:

Does the glass relate to any professions on the site, such as a drinking establishment or apothecary or is it all domestic rubbish?

A short publication is recommended on the glass with three items requiring illustration to supplement the text.

APPENDIX 7: CHARCOAL ASSESSMENT

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INTRODUCTION

This report summarises the findings arising out of the charcoal assessment undertaken by Quaternary Scientific (University of Reading) on samples excavated from a post-medieval kiln at Legg Street, Chelmsford, Essex (Site Code: CF63; NGR TL 7086 0709; Hawkins 2010). Two samples containing fragments of wood charcoal were submitted for analysis: Samples <15> and <16> were collected from the flots of Contexts [176] and [177], respectively. Both samples were described as deriving from burnt rake out material associated with brick kiln structure [258] (Hawkins 2010). Charcoal analysis was undertaken to gain information relating to the range of woody taxa used to fuel the kiln and to assess the potential for further study of the charcoal assemblage to address issues relating to wood procurement strategies.

METHODS

Each sample was weighed and put through an Endecott sieve (aperture size 4mm) to separate fragments of charcoal of a suitable size for identification. Fragments of charcoal collected in the 4mm sieve were weighed and identification was attempted on all pieces. No attempt was made to identify charcoal pieces less than 4mm in size. Identification of taxa to family, genus or species level was attained by comparison to wood anatomy atlases (e.g. Hather 2000; Schweingruber 1990) and to wood thin-section reference material held in SHES, The University of Reading. An Olympus epi-illuminating microscope was used to examine charcoal at magnifications ranging from x250 to x400 magnifications. All fragments were fractured along at least two planes (transverse section [TS]; tangential longitudinal section [TLS] and/or radial longitudinal section [RLS]) to study anatomical characteristics for identification. Growth-ring curvature was recorded as flat; moderately curved or strongly curved wherever possible to provide information relating to whether charcoal derived from trunk wood, branches or twigs, respectively. Wood taxa identifications are ordered following Stace's (1997) taxonomic classification.

RESULTS AND DISCUSSION

The total weight of wood charcoal submitted for analysis is provided in Table 1 along with percentage proportions of fragments greater than 4mm per sample. Table 2 provides the results of charcoal identification and frequencies in terms of numbers of fragments positively identified per sample.

Table 1: Percentage proportion of wood charcoal examined from Contexts [176] [and] 177 (Samples 15 and 16, respectively), Legg Street, Chelmsford (Site Code: CF63)

Context	Sample Number	Total Weight (g)	Identifiable Charcoal > 4 mm
(176)	15	3.60	35 %
(177)	16	10.33	39 %

Table 2: Wood charcoal identifications and frequencies, Legg Street, Chelmsford (Site Code: CF63)

Woody Taxa		Frequency	
Scientific Name	**Common Name**	**Context 176**	**Context 177**
Quercus spp.	Oak	2	3
Corylus avellana	Hazel	0	1
Salicaceae	Willow family	1	1
Rosaceae (sub-family Amygdaloideae [Prunoideae])	Cherries	0	1
Rosaceae (sub-family Maloideae [Pomoideae])	Fruits	2	0
Acer campestre	Field Maple	1	0
Viburnum lantana	Wayfaring-tree	0	1
Indeterminate		1	2
Total number of fragments examined		20	31

Frequency key: 0 = 0 fragments; 1 = 1 to 5 fragments; 2 = 6 to 10 fragments; 3 = 11 to 15 fragments; 4 = 16 to 20 fragments; 5 = +20 fragments

Sample <15> (Context [176]) consisted predominantly of wood charcoal fragments less than 4mm in size (65% of the total weight; Table 1). In total, 20 fragments were retained in the 4mm sieve and examined. Of these, 16 were identified to family, genus or species, while four pieces were recorded as indeterminate (Table 2). *Quercus* spp. and members of the Rosaceae family (sub-family Maloideae) were equally represented (between 6 to 10 fragments) as the principle taxa in the wood charcoal assemblage of Context [176], while members of the Salicaceae family and *Acer campestre* were also represented at low frequencies (between 1 and 5 fragments). Sample <16> (Context [177]) provided the largest fragments of charcoal for identification as indicated by the total weight (10.33g) and the percentage of fragments retained in the 4mm sieve (39%; Table 1). Twenty-two fragments were identified to family, genus or species, while nine fragments were recorded as indeterminate (Table 2). *Quercus* spp. dominated the wood charcoal assemblage (11 to 15 fragments) from Context [177] with members of the Rosaceae (sub-family Amygdaloideae) and Salicaceae families also represented at lower frequencies (between 1 to 5 fragments). Low frequencies (between 1 and 5 fragments) of woody taxa identified to species in Context [177] included *Corylus avellana* and *Viburnum lantana*.

Quercus spp. is well-represented in both contexts from Legg Street, Chelmsford. Indigenous species of *Quercus* include *Quercus robur* (Pendunculate oak) and *Q. petraea* (Sessile oak), the former commonly planted in woodland and hedgerows. However, it was not possible to further differentiate between these species of *Quercus* using anatomical characteristics of wood. Modern distributions of these species indicate that both species are commonly found in the Chelmsford area (Preston *et al* 2002). Members of the Salicaceae family were represented at low frequencies in both contexts and are likely to derive from species of *Salix* spp. (Willow) and/or *Populus* spp. (Poplar). Further distinctions were not attempted due to the relatively small fragment sizes preserved in the assemblages and the difficulties inherent in distinguishing between these two genera on the basis of wood anatomy. Members of the Rosaceae family (sub-family Maloideae) are also difficult to differentiate on the basis of wood anatomy. The preservation of wood charcoal examined from Context [176] did not permit further distinctions to be made beyond sub-family level within this group. Indigenous members of the Rosaceae family (sub-family Maloideae) with a likely distribution in the Chelmsford area include *Malus sylvestris sens. lat.* (Apples), a variety of *Sorbus* spp. (Whitebeams) and *Crataegus monogyna* (Hawthorn). *Pyrus communis sens. lat.* (Pears) may also be suspected as it has been grown in gardens since at least AD 995 (*ibid*). *Acer campestre* was recorded in low frequencies in Context [176] and is a deciduous tree native in woodland, scrub and old hedgerows in southern Britain. Members of the Rosaceae family (sub-family Prunoideae) were represented at low frequencies in Context [177], most probably deriving from *Prunus* spp. (Cherries). It was not possible to differentiate beyond the sub-family level but species that may be suspected include *Prunus spinosa* (Blackthorn) which commonly forms trees and shrubs in hedgerows, scrub and wood borders. Other species may include *P. domestica* (Wild Plum) introduced to gardens as early as AD 995 and *P. laurocerasus* (Cherry Laurel) introduced during the 1600s. Low frequencies of *Corylus avellana* were recorded in Context [177], along with *Viburnum lantana*. Both commonly form shrubs in hedgerows, with colonies also favouring the edges and openings in woodland.

Examination of growth ring curvature indicated a predominance of wood charcoal deriving from small branches and twigs, while many of the indeterminate fragments of charcoal appeared to derive from junctions or knot wood as anatomical features in these pieces exhibited a high degree of distortion.

CONCLUSION & RECOMMENDATIONS

The overall impression of the wood charcoal assemblage from Legg Street, Chelmsford is one that is likely to derive largely from species of deciduous trees and shrubs commonly found in hedgerows, scrub and at the edges of woodland in southern England. Further analysis of the wood charcoal from these samples is not recommended as it is unlikely to yield new information beyond that presented here.

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APPENDIX 8: CONTEXT INDEX

Context No	GdSq	Phase	Type	Description	High	Low	notes
1	NW Area	5	Fill	Fill of pit [2]	26.84		Fill of pit [2] containing articulated animal remains
2	NW Area	5	Cut	Pit	26.84	26.65	Pit containing articulated animal bone
3	NW Area	4	Fill	Fill of pit [4]	27.02		Fill of rubbish pit [4]
4	NW Area	4	Cut	Rubbish pit	27.02	26.79	Post-med rubbish pit
5	NW Area	5	Fill	Fill of pit [6]	26.5		Fill of pit [6]
6	NW Area	5	Cut	Pit	27.04	26.75	Post-med rubbish pit
7	NW Area	5	Fill	Fill of pit [6]	27.04		Fill of rubbish pit [6]
8	NW Area	4	Fill	Fill of pit [8]	27.02		Fill of rubbish pit [8]
9	NW Area	4	Cut	Rubbish pit	27.02	26.5	Post-med rubbish pit
10	NW Area	5	Fill	Fill of pit [11]	26.89		Fill of rubbish pit [11]
11	NW Area	5	Cut	Rubbish pit	26.89	26.61	19th century rubbish pit
12	NW Area	5	Fill	Fill of pit [13]	26.85		Fill of rubbish pit [13]
13	NW Area	5	Cut	Rubbish pit	26.85	26.4	19th century rubbish pit
14	NW Area	5	Fill	Fill of pit [15]	26.72		Fill of rubbish pit [15]
15	NW Area	5	Cut	Rubbish pit	26.72	26.45	19th century rubbish pit
16	NW Area	5	Fill	Fill of pit [17]	27.91		Fill of rubbish pit [17]
17	NW Area	5	Cut	Rubbish pit	27.91	25.8	19th century rubbish pit
18	NW Area	5	Fill	Fill of pit [19]	26.91		Fill of rubbish pit [19]
19	NW Area	5	Cut	Rubbish pit	26.91	26.46	19th century rubbish pit
20	NW Area	4	Fill	Fill of pit [21]	26.79		Fill of rubbish pit [21]
21	NW Area	4	Cut	Rubbish pit	26.79	26.49	Post-med rubbish pit
22	NW Area	4	Fill	Fill of pit [23]	26.98		Fill of rubbish pit [23]
23	NW Area	4	Cut	Rubbish pit	26.98	26.83	Post-med rubbish pit
24	NW Area	1	Layer	Natural brickearth	27.08	26.79	Natural brickearth in the NW Area
25	NW Area	4	Fill	Fill of pit [26]	27.7		Fill of rubbish pit [26]
26	NW Area	4	Cut	Rubbish pit	27.7	26.85	Post-med rubbish pit
27	NW Area	5	Fill	Fill of pit [28]	27.08		Fill of rubbish pit [28]
28	NW Area	5	Cut	Rubbish pit	27.08	26.83	19th century rubbish pit
29	105/200	3	Fill	Fill of pit [30]	27.05		Fill of rubbish pit [30]
30	105/200	3	Cut	Rubbish pit	27.05	26.77	Early post-med pit
31	NW Area	3	Fill	Fill of pit [33]	27.07		Fill of pit [33] which contained dog skeleton [32]
32	NW Area	3	Skeleton	Animal skeleton	27.07		Complete dog skeleton within cut [33] NO CONTEXT SHEET
33	NW Area	3	Cut	Pit	27.07	26.82	Early post-med pit containing complete dog skeleton [32]
34	110/205	4	Fill	Fill of pit [35]	26.58		Fill of rubbish pit [35]
35	110/205	4	Cut	Rubbish pit	26.58	26.25	Post-med rubbish pit
36	105/195 110/195 105/200 110/200	5	Fill	Backfill of construction cut [37]	27.01		Backfill of construction cut [37] for 19th century brick wall
37	105/195 110/195 105/200 110/200	5	Cut	Construction cut	27.01	26.81	Construction cut for 19th century wall

Context No	GdSq	Phase	Type	Description	High	Low	notes
38	105/200	5	Fill	Fill of pit [39]	27.05		Fill of rubbish pit [39]
39	105/200	5	Cut	Rubbish pit	27.05	26.74	19th century rubbish pit
40	105/195	3	Fill	Fill of pit [41]	27.08		Fill of rubbish pit [41]
41	105/195	3	Cut	Rubbish pit	27.08	26.77	Early post-med rubbish pit
42	105/205 110/205	3	Fill	Fill of pit [43]	26.69	26.26	Fill of quarry pit [43]
43	105/205 110/205	3	Cut	Quarry pit	26.69	25.87	Early post-med quarry pit
44	110/195 110/200	4	Fill	Fill of pit [52]	26.93		Fill of rubbish pit [52]
45	105/195 105/200	3	Fill	Fill of pit [46]	26.9		Fill of poss quarry pit [46]
46	105/195 105/200	3	Cut	Quarry pit	26.9	26.1	Post-med quarry pit
47	105/200	3	Fill	Fill of posthole [48]	26.75		Fill of square posthole [48]
48	105/200	3	Cut	Square posthole	26.75	26.56	Early post-med square posthole
49	105/200	4	Fill	Fill of pit [50]	26.75		Fill of square pit/posthole [50]
50	105/200	4	Cut	Square pit/posthole	26.75	26.56	Post-med square pit/posthole
51	105/205	3	Fill	Fill of pit [43]	26.69		Fill of quarry pit [43]
52	110/195 110/200	4	Cut	Rubbish pit	26.93	26.59	Post-med rubbish pit
53	105/200	3	Fill	Fill of pit [54]	26.99		Fill of quarry pit [54]
54	105/200	3	Cut	Quarry pit	26.99	26.39	Early post-med quarry pit
55	105/200 110/195 110/200	3	Fill	Fill of pit [56]	26.88		Fill of quarry pit [56]
56	105/200 110/195 110/200	3	Cut	Quarry pit	26.88		?Early post-med quarry pit
57	105/200	3	Fill	Fill of square pit/posthole [58]	26.57		Fill of square pit/posthole [58]
58	105/200	3	Cut	Square pit/posthole	26.71	26.31	Early post-med square pit/posthole
59	105/205	4	Fill	Fill of square posthole [60]	26.57		Fill of small square posthole [60]
60	105/205	4	Cut	Square posthole	26.57	26.5	Post-med small square posthole
61	105/200	3	Fill	Fill of pit [62]	27.04		Fill of quarry pit [62] NFE
62	105/200	3	Cut	Quarry	27.04		Early post-med quarry pit NFE
63			VOID	VOID			VOID
64			VOID	VOID			VOID
65	105/195 105/200	3	Fill	Fill of pit [66]	26.86		Fill of quarry pit [66] NFE
66	105/195 105/200	3	Cut	Quarry pit	26.86		Early post-med quarry pit NFE
67		1	Layer	Natural brickearth	27.07		Natural brickearth
68		5	Masonry	Brick basement			19th century brick basement NO CONTEXT SHEET
69	125/210	3	Fill	Fill of pit [70]	26.13		Fill of quarry pit [70]
70	125/210	3	Cut	Quarry pit	26.13	25.85	Early post-med quarry pit
71	120/205 120/210	3	Fill	Fill of pit [72]	26.15		Fill of quarry pit [72]
72	120/205 120/210	3	Cut	Quarry pit	26.15	25.75	Early post-med quarry pit
73	120/205 120/210	3	Fill	Fill of pit [74]	26.11		Fill of quarry pit [74]

Context No	GdSq	Phase	Type	Description	High	Low	notes
74	120/205 120/210	3	Cut	Quarry pit	26.13		Early post-med quarry pit
75	120/205 120/210	3	Fill	Fill of pit [76]	26.16		Fill of quarry pit [76] NFE
76	120/205 120/210	3	Cut	Quarry pit	26.16		Early post-med quarry pit NFE
77			VOID	VOID			VOID
78			VOID	VOID			VOID
79	125/215	4	Fill	Fill of pit [80]	26.11		Fill of rubbish pit [80]
80	125/215	4	Cut	Rubbish pit	26.11	25.97	Post-med rubbish pit
81	110/210 110/215 110/220	4	Fill	Fill of cut [96]	26.59		Lining of cut [96] for brick kiln structure [258]
82	110/215	4	Fill	Fill of cut [96]	26.5		Lining of cut [96] for brick kiln structure [258]
83	110/210 110/215 110/220	4	Fill	Backfill of cut [96]	26.52		Backfill post demolition of brick kiln structure [258] in cut [96]
84	110/215	4	Fill	Fill of cut [96]	25.56		Backfilled demo material from brick kiln structure [258] in cut [96]
85	110/215	4	Fill	Fill of cut [96]	26.24		Burnt clay lining of cut [96] containing brick kiln structure [258]
86	110/215	4	Fill	Backfill of cut [96]	25.22		Backfill post demo of brick kiln structure [258] within cut [96]
87	110/215	4	Fill	Fill of cut [96]	25.53		Collapsed lining of cut [96] which contained brick kiln structure [258]
88	110/215	4	Fill	Backfill of cut [96]	25.44		Backfill post demo of brick kiln structure [258] within cut [96]
89	110/215	4	Masonry	Brick structure	25.24	25.23	Brick structure, part of brick base of kiln structure [258]
90	110/215	4	Fill	Backfill of cut [96]	25.14		Backfill post demo of brick kiln structure [258] within cut [96]
91	110/215	4	Fill	Fill of cut [96]	25.12		Bedding layer within cut [96] for masonry kiln structure [258]
92	110/215 110/220	4	Fill	Backfill of cut [96]	26.97		Backfill post demo of brick kiln structure [258] within cut [96]
93	110/215	4	Fill	Backfill of cut [96]	26.79		Backfill post demo of brick kiln structure [258] within cut [96]
94			VOID	VOID			VOID
95	110/215	4	Fill	Fill of cut [96]	26.46		Burnt clay lining of cut [96] which contains brick kiln structure [258]
96	110/210 110/215 110/220	4	Cut	Construction cut	26.65	25.09	Large rectangular cut which housed brick kiln structure [258]
97			VOID	VOID			VOID
98	110/215	4	Masonry	Brick structure	25.21		Brick structure, part of brick base of kiln structure [258]
99	110/215	6	Layer	Modern made ground	28.26		Modern made ground, recorded in section 2
100			VOID	VOID			VOID
101			VOID	VOID			VOID
102			VOID	VOID			VOID
103			VOID	VOID			VOID

Context No	GdSq	Phase	Type	Description	High	Low	notes
104	120/210 120/215	5	Fill	Backfill of construction cut [106]	26.26		Backfill of construction cut [106] for brick surface [105]
105	120/210 120/215	5	Masonry	Brick surface	26.26	26.11	19th century Brick surface
106	120/210 120/215	5	Cut	Construction cut for brick surface [105]	26.26	26.13	Construction cut for brick surface [105]
107	125/215	3	Cut	Quarry pit	25.84		Early post-med quarry pit
108	125/215	3	Cut	Quarry pit	26.02	25.92	Early post-med quarry pit
109	125/215	3	Cut	Quarry pit	26	25.92	Early post-med quarry pit
110	125/215	3	Cut	Quarry pit	26	25.82	Early post-med quarry pit
111	125/215	3	Cut	Quarry pit	25.97	25.86	Early post-med quarry pit
112	125/215	3	Fill	Fill of pit [107]	26.02	25.82	Fill of quarry pit [107]
113	125/215	3	Fill	Fill of pit [109]	26.02	25.84	Fill of quarry pit [109]
114	125/215	3	Fill	Fill of pit [111]	25.97		Fill of quarry pit [111]
115	125/215	3	Cut	Quarry pit	26	25.82	Early post-med quarry pit
116	125/215	3	Fill	Fill of pit/posthole [117]	26.1		CBM/Tile dump within small pit/posthole [117]
117	125/215	3	Cut	Small pit/posthole	25.88	25.54	Small pit or posthole which contain tile dump [116]
118	115/215 120/215	3	Fill	Fill of pit [126]	26.5		Fill of quarry pit [126]
119	115/215 120/215	3	Fill	Fill of pit [126]	26.31		Fill of quarry pit [126]
120	115/215 120/215	3	Fill	Fill of pit [121]	25.94		Fill of quarry pit [121]
121	115/215 120/215	3	Cut	Quarry pit	25.94		Early post-med quarry pit recorded in a slot and then in section
122	115/215	4	Fill	Fill of pit [123]	26.58		Fill of pit [123] only recorded in section
123	115/215	4	Cut	Quarry pit	26.58	25.63	Quarry pit, only recorded in section
124	110/215 115/215	3	Fill	Fill of pit [126]	26.58		Fill of quarry pit [126]
125			VOID	VOID			VOID
126	110/215 115/215	3	Cut	Quarry pit	26.58	25.82	Early post-med quarry pit, recorded in a slot and in section
127	120/215	4	Fill	Fill of cut [128]	26.1		Fill of pit [128]
128	120/215	4	Cut	Square pit	26.1	25.97	Post-med square pit
129			VOID	VOID			VOID
130			VOID	VOID			VOID
131	115/215 120/215	3	Fill	Fill of pit [132]	25.64		Fill of quarry pit [132]
132	115/215 120/215	3	Cut	Quarry pit	25.64	25.57	Early post-med quarry pit, recorded within a slot and in section
133	115/210 120/210	4	Fill	Fill of pit [134]	26.46		Backfill of pit [134]
134	115/210 120/210	4	Cut	Large pit	26.46	25.45	Large pit, poss originally a quarry pit later backfilled NFE
135	115/210 120/210	4	Fill	Fill of pit [136]	26.44		Backfill of pit [136]
136	115/210 120/210	4	Cut	Large pit	26.44	25.46	Large pit, poss originally a quarry pit NFE
137	125/215	3	Fill	Fill of stakehole	25.99		Fill of stakehole [138]

Context No	GdSq	Phase	Type	Description	High	Low	notes
				[138]			
138	125/215	3	Cut	Stakehole	25.99	25.95	Early post-med stakehole
139	125/215	3	Fill	Fill of posthole [140]	25.99		Fill of posthole [140]
140	125/215	3	Cut	Posthole	25.99	25.93	Early post-med posthole
141	115/210	4	Fill	Fill of [142]	26.54		Fill of rubbish pit [142]
142	115/210	4	Cut	Rubbish pit	26.54	25.96	Post-med rubbish pit
143	130/230	4	Fill	Fill of [144]	26.48		Fill of pit [144]
144	130/230	4	Cut	Pit	26.48	26.38	Post-med pit
145	120/210	4	Fill	Fill of [146]	26.27		Fill of post-med pit [146]
146	120/210	4	Cut	Rubbish pit	26.27	26.05	Post-med rubbish pit
147			VOID	VOID			VOID
148			VOID	VOID			VOID
149	130/230	3	Fill	Fill of [150]	26.62		Fill of posthole [150]
150	130/230	3	Cut	Posthole	26.62	26.37	Early post-med posthole
151	110/215	4	Masonry	Brick base	25.23		Part of brick base for post-med brick kiln
152	110/215	4	Layer	Burnt layer	25.12	25.05	Burnt clay layer representing the flue area of a brick kiln
153	110/215	4	Masonry	Brick structure	25.32	25.22	Brick base, part of post-med brick kiln structure
154	110/215	4	Layer	Burnt layer	25.08	25.04	Burnt clay layer representing the flue area of a brick kiln
155	110/215	4	Masonry	Brick base	25.57	25.21	Brick base, part of brick kiln structure
156	130/230	5	Masonry	Brick foundation	26.52		Small square brick foundation
157			VOID	VOID			VOID
158			VOID	VOID			VOID
159			VOID	VOID			VOID
160	130/210 130/215	3	Fill	Fill of [161]	26.41		Fill of rubbish pit [161]
161	130/210 130/215	3	Cut	Rubbish pit	26.41	26.09	Early post-med rubbish pit
162	130/210 130/215	3	Fill	Fill of [163]	26.41		Fill of rubbish pit [163]
163	130/210 130/215	3	Cut	Rubbish pit	26.41	25.8	Early post-med rubbish pit
164	130/210 130/215	4	Fill	Fill of [165]	26.41		Fill of posthole [165]
165	130/210 130/215	4	Cut	Posthole	26.41	26.27	Post-med posthole
166	130/215	4	Fill	Fill of [168]	26.21		Fill of square pit [168]
167	130/215	4	Fill	Fill of [168]	26.01		Fill of square pit [168]
168	130/215	4	Cut	Square pit	26.21	25.32	Square post-med rubbish pit
169	130/215	4	Fill	Fill of [171]	26.29		Fill of rubbish pit [171]
170	130/215	4	Fill	Fill of [171]	26.49		Fill of rubbish pit [171]
171	130/215	4	Cut	Rubbish pit	26.49	25.87	Post-med rubbish pit
172	110/210 110/215	4	Fill	Fill of [96]	25.51	25.37	Backfill within cut [96] for brick kiln structure [258] but outside the area of the kiln itself
173	110/210 110/215	4	Fill	Fill of [96]	25.32	25.22	Backfill of cut [96] post-demolition of brick kiln structure [258]

Context No	GdSq	Phase	Type	Description	High	Low	notes
174	110/210 110/215	4	Fill	Fill of [96]	25.67	25.22	Burnt backfill material within cut [96] post-demolition of brick kiln structure [96]
175	110/215	4	Fill	Fill of [96]	25.18	25.09	Fill of cut [96] for brick kiln structure [258] external to the structure itself
176	110/215	4	Fill	Fill of [96]	25.14		Burnt rakeout material associated with brick kiln structure [258]
177	110/215	4	Fill	Fill of [96]	25.11		Burnt rakeout material associated with brick kiln structure [258]
178	130/230	3	Fill	Fill of [179]	26.54		Fill of posthole [179]
179	130/230	3	Cut	Posthole	26.54	26.32	Early post-med posthole
180	130/230	2	Fill	Fill of [181]	26.58		Fill of shallow pit [181]
181	130/230	2	Cut	Shallow pit	26.58	26.48	Med shallow pit
182	130/230	3	Fill	Fill of [183]	26.63		Fill of posthole [183]
183	130/230	3	Cut	Posthole	26.63	26.3	Early post-med posthole
184	125/230 130/230	3	Fill	Fill of [187]	26.63		Fill of large quarry pit [187]
185	125/230 130/230	3	Fill	Fill of [187]	26.63		Fill of large quarry pit [187]
186	125/230 130/230 125/235 130/235	3	Fill	Fill of [187]	26.63		Fill of large quarry pit [187]
187	125/230 130/230 125/235 130/235	3	Cut	Quarry pit	26.63	24.92	Large early post-med quarry pit
188	130/220	3	Fill	Fill of [189]	26.62		Fill of small rubbish pit [189]
189	130/220	3	Cut	Rubbish pit	26.62	26.4	Small early post-med rubbish pit
190	125/210 130/210 125/215 130/215	4	Fill	Fill of [191]	26.49		Fill of quarry pit [191]
191	125/210 130/210 125/215 130/215	4	Cut	Quarry pit	26.49	25.01	Post-med quarry pit
192	130/215	4	Fill	Fill of [193]	26.39		Fill of posthole [193]
193	130/215	4	Cut	Posthole	26.39	26.02	Post-med posthole
194	130/205 130/210	6	Masonry	20th century basement	26.07		Structure number give to 20th century basement
195	125/215 130/215 125/220 130/220	6	Masonry	Modern brick and concrete wall	26.59		Structure number given to 20th century brick and concrete wall
196	130/215	3	Fill	Fill of [197]	26.4		Fill of quarry pit [197]
197	130/215	3	Cut	Quarry pit	26.4	26.11	Early post-med quarry pit
198	130/220	4	Fill	Fill of [200]	26.47		Fill of rubbish pit [200]
199	130/220	4	Fill	Fill of [200]	26.33		Fill of rubbish pit [200]
200	130/220	4	Cut	Rubbish pit	26.54	26.06	Later post-med rubbish pit
201	130/220	4	Fill	Fill of [203]	26.44		Fill of rubbish pit [203]
202	130/220	4	Fill	Fill of [203]	26.05		Fill of rubbish pit [203]

Context No	GdSq	Phase	Type	Description	High	Low	notes
203	130/220	4	Cut	Rubbish pit	26.57	25.7	Later post-med rubbish pit
204	130/215	4	Fill	Fill of [205]	26.42		Fill of posthole [205]
205	130/215	4	Cut	Posthole	26.42	26.1	Later post-med posthole
206	130/215	4	Fill	Fill of [207]	26.4		Fill of posthole [207]
207	130/215	4	Cut	Posthole	26.4	26.17	Later post-med posthole
208	130/215	3	Fill	Fill of [209]	26.42		Fill of square pit [209]
209	130/215	3	Cut	Square pit	26.42	25.75	Early post-med square pit
210	130/215	3	Fill	Fill of [211]	26.4		Fill of pit [211]
211	130/215	3	Cut	Pit	26.4	26.11	Early post-med pit
212	130/220 130/225	4	Fill	Fill of [213]	26.67		Fill of rubbish pit [213]
213	130/220 130/225	4	Cut	Rubbish pit	26.67	25.6	Later post-med rubbish pit
214	130/235	5	Fill	Fill of [215]	26.39		Fill of rubbish pit [215]
215	130/235	5	Cut	Rubbish pit	26.39	26.1	19th century rubbish pit
216	130/220 130/225	5	Fill	Backfill of construction cut [217]	26.67		Backfill of construction cut [217] for 19th century brick wall [218]
217	130/220 130/225	5	Cut	Construction cut	26.67	26.52	Construction cut for 19th century brick wall [218]
218	130/220 130/225	5	Masonry	Brick wall	26.7	26.61	19th century brick wall
219	130/225	6	Service trench	Modern service trench	26.7		Modern service trench
220	130/220	4	Fill	Fill of [221]	26.54		Fill of posthole [221]
221	130/220	4	Cut	Posthole	26.61	26.38	Later post-med posthole
222	105/215 110/215	3	Fill	Fill of [223]	26.66		Fill of quarry pit [223]
223	105/215 110/215	3	Cut	Quarry pit	26.66	25.57	Early post-med quarry pit
224	130/225	3	Fill	Fill of [225]	26.68		Fill of posthole [225]
225	130/225	3	Cut	Posthole	26.68	26.6	Early post-med posthole
226	125/210 130/210	3	Fill	Fill of [227]	26.41		Fill of pit [227]
227	125/210 130/210	3	Cut	Pit	26.41	25.36	Early post-med pit
228	125/225	3	Fill	Fill of [229]	26.7		Fill of pit [229]
229	125/225 130/225	3	Cut	Pit	26.7	26.41	Early post-med pit
230	125/220	4	Fill	Fill of [231]	26.64		Fill of rubbish pit [231]
231	125/220	4	Cut	Rubbish pit	26.64	25.74	Later post-med rubbish pit
232	125/230 130/230	2	Fill	Fill of [233]	26.61		Fill of quarry pit [233]
233	125/230 130/230	2	Cut	Quarry pit	26.61	25.87	?Med quarry pit
234	130/225	2	Fill	Fill of [235]	26.68		Fill of poss beamslot [235]
235	130/225	2	Cut	?Beamslot	26.68	26.38	Poss medieval beamslot
236	130/215	3	Fill	Fill of [237]	26.59		Fill of quarry pit [237]
237	130/215	3	Cut	Quarry pit	26.59	24.61	Early post-med quarry pit
238	130/215	3	Fill	Fill of [239]	26.57		Fill of quarry pit [239]
239	130/215	3	Cut	Quarry pit	26.53	26.06	Early post-med quarry pit
240	130/220 130/225	6	Cut	Modern service	26.75		Modern service trench

Context No	GdSq	Phase	Type	Description	High	Low	notes
241	130/230 130/235	5	Fill	Fill of [242]	26.55		Fill of rubbish pit [242]
242	130/230 130/235	5	Cut	Rubbish pit	26.55	26.18	19th century rubbish pit
243			Layer	Natural brickearth			Natural brickearth along the eastern half of the site
244	130/225	2	Fill	Fill of [245]			Fill of pit [245]
245	130/225	2	Cut	Pit			Poss med pit
246	125/220 130/220	3	Fill	Fill of [247]	26.23		Fill of rubbish pit [247]
247	125/220 130/220	3	Cut	Rubbish pit	26.23	26.18	Early post-med rubbish pit
248	125/235 130/235	2	Cut	Pit	26.44	25.81	Medieval pit
249	125/235 130/235	2	Fill	Fill of pit [248]	26.44		Fill of med pit [248]
250	130/210 130/215	3	Fill	Fill of [251]	26.39		Fill of quarry pit [251]
251	130/210 130/215	3	Cut	Quarry pit	26.39	26.06	Early post-med quarry pit
252	130/210	3	Fill	Fill of [253]	25.8		Fill of pit [253]
253	130/210	3	Cut	Rubbish pit	26.01	25.51	Early post-med rubbish pit
254	125/220 130/220	3	Fill	Fill of [255]	26.52		Fill of large quarry pit [255]
255	125/220 130/220	3	Cut	Quarry pit	26.52	25.29	Extensive early post-med quarry pit
256	130/225	2	Fill	Fill of [257]			Fill of ditch [257]
257	130/225	2	Cut	Ditch			Poss medieval ditch
258	110/210 110/215 110/220	4	Structure	Brick Kiln			Structure number assigned to late 17th/early 18th century brick kiln. Brickwork [151], [153], [89], [155] & [98] form its foundation. Kiln lies within sunken cut [96]

APPENDIX 9: OASIS FORM

OASIS ID: preconst1-91131

Project details

Project name	Land at Legg Street, Chelmsford, Essex.
Short description of the project	Following an archaeological evaluation of 2005 which recorded medieval quarry pits and post-medieval rubbish pits an archaeological excavation was undertaken in 2010. The excavation area recorded four phases of archaeological activity; medieval, early post-medieval (1480-1600), later post-medieval (1600-1800) and 19th century, cutting into the natural underlying brickearth. The medieval activity was represented by brickearth quarry pits. The early post-medieval phase saw continued quarrying of the natural brickearth along with a series of rubbish pits. By the later post-medieval phase quarrying of the natural brickearth appeared to have ceased with a large number of refuse pits now being located across the site. However, recorded during this phase was a kiln structure manufacturing bricks dated to the late 17th to early 18th centuries. This kiln structure was unusual as it was sunken within a cut as opposed to being at ground level. The medieval and post-medieval activity on site represents activity on the periphery of the town of Chelmsford to the south. The 19th century saw further groups of refuse pits together with brick foundations.
Project dates	Start: 29-03-2010 End: 14-05-2010
Previous/future work	Yes / No
Any associated project reference codes	CF 63 - Sitecode
Type of project	Recording project
Site status	Local Authority Designated Archaeological Area
Current Land use	Vacant Land 2 - Vacant land not previously developed
Monument type	REFUSE PIT Post Medieval
Monument type	POSTHOLES Post Medieval
Monument type	BRICK KILN Post Medieval

Monument type	BRICK FOUNDATIONS Post Medieval
Monument type	QUARRY PIT Medieval
Monument type	QUARRY PIT Post Medieval
Significant Finds	POTTERY Medieval
Significant Finds	POTTERY Post Medieval
Significant Finds	CULINARY MOULD Medieval
Significant Finds	BODKIN PIN Post Medieval
Significant Finds	GLASS Post Medieval
Significant Finds	CBM Post Medieval
Significant Finds	ANIMAL BONE Medieval
Significant Finds	ANIMAL BONE Post Medieval
Significant Finds	POTTERY Roman
Investigation type	'Open-area excavation'
Prompt	Direction from Local Planning Authority - PPG16

Project location

Country	England
Site location	ESSEX CHELMSFORD CHELMSFORD Land at Legg Street, Chelmsford, Essex.
Postcode	CM1 1JS
Study area	567.00 Square metres
Site coordinates	TL 7086 0709 51.7359362029 0.474724742841 51 44 09 N 000 28 29 E Point

Height OD / Depth	Min: 26.42m Max: 27.05m

Project creators

Name of Organisation	Pre-Construct Archaeology Ltd
Project brief originator	Essex County Council
Project design originator	Teresa O'Connor
Project director/manager	Tim Bradley
Project supervisor	Neil Hawkins
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Galliford Try

Project archives

Physical Archive recipient	Chelmsford Museum
Physical Contents	'Animal Bones','Ceramics','Environmental','Glass','Metal'
Digital Archive recipient	Chelmsford Museum
Digital Contents	'Animal Bones','Ceramics','Environmental','Glass','Metal','Stratigraphic','Survey'
Digital Media available	'Database','Survey','Text'
Paper Archive recipient	Chelmsford Museum

Paper Contents	'Animal Bones','Ceramics','Environmental','Glass','Metal','Stratigraphic'
Paper Media available	'Context sheet','Diary','Drawing','Matrices','Photograph','Plan','Report','Section','Survey','Unpublished Text'

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	An Assessment of an Archaeological Excavation of Land at Legg Street, Chelmsford, Essex, CM1
Author(s)/Editor(s)	Hawkins, N.
Date	2011
Issuer or publisher	Pre-Construct Archaeology Ltd
Place of issue or publication	London
Description	A4 Bound Report

Entered by	Jon Butler (jbutler@pre-construct.com)
Entered on	1 February 2011

APPENDIX 10: ESSEX HER DOCUMENT

ESSEX HISTORIC ENVIRONMENT RECORD/ESSEX ARCHAEOLOGY AND HISTORY SUMMARY SHEET

Site name/Address: Legg Street, Chelmsford, Essex, CM1	
Parish: Chelmsford	District: Chelmsford
NGR: TL 7086 0709	Site Code: CF 63
Type of Work: Excavation	Site Director/Group: Pre-Construct Archaeology Ltd
Date of Work: March 2010 – May 2010	Size of Area Investigated: 567m^2
Location of Finds/Curating Museum: Chelmsford Museum	Funding source: Commercial Developer
Further Seasons Anticipated? No	Related EHER No.s:
Final Report: Hawkins, N 2011 'Land at Legg Street, Chelmsford, Essex, CM1: An Archaeological Excavation', Pre-Construct Archaeology Ltd unpublished report	
Periods Represented: Medieval to 19th Century	
SUMMARY OF FIELDWORK RESULTS: Following an archaeological evaluation of 2005 which recorded medieval quarry pits and post-medieval rubbish pits an archaeological excavation was undertaken in 2010. The excavation area recorded four phases of archaeological activity; medieval, early post-medieval (1480-1600), later post-medieval (1600-1800) & 19th century, cutting into the natural underlying brickearth. The medieval activity was represented by brickearth quarry pits. The early post-medieval phase saw continued quarrying of the natural brickearth along with a series of rubbish pits. By the later post-medieval phase quarrying of the natural brickearth appeared to have ceased with a large number of refuse pits now being located across the site. However, recorded during this phase was a kiln structure manufacturing bricks dated to the late 17th to early 18th centuries. This kiln structure was unusual as it was sunken within a cut as opposed to being at ground level. The medieval and post-medieval activity on site represents activity on the periphery of the town of Chelmsford to the south. The 19th century saw further groups of refuse pits together with brick foundations.	
Previous Summaries/Reports: Gilman, P. J. (ed) 1990. 'Excavations in 1989' Essex Archaeology and History **21** 126-139 Barker, B. 2005 'An Archaeological Evaluation at Legg Street Car Park, Chelmsford, Essex' Essex County Council Field Archaeology Unit, unpublished report	
Author of Summary: Neil Hawkins, PCA	Date of Summary: January 2011

P C A

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