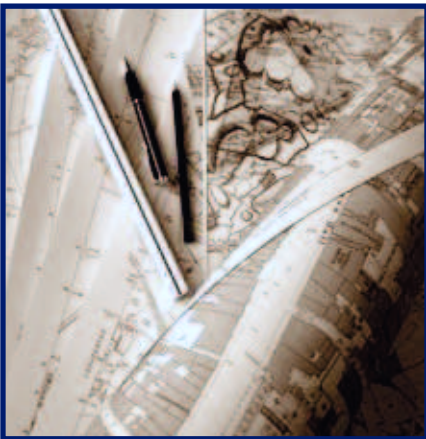


New Hall School Essex (Time Team Palaces Special)



Archaeological Evaluation Report



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New Hall School, Essex

(Time Team Palaces Special)

Archaeological Evaluation Report

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Summary

In February 2009 Oxford Archaeology conducted an archaeological evaluation of a site at New Hall School, Chelmsford, Essex on behalf of Videotext Communications Ltd, 49 Goldhawk Road, London, W12 8QP, as a part of Channel 4 documentary Henry VIII's Lost Palaces: a Time Team Special.

Three evaluation trenches were excavated in order to establish the extent, condition and date range of archaeological remains of a Tudor Palace of New Hall (otherwise known as Beaulieu Palace). The trench location addressed the specific Project Aims outlined for three major areas of investigation: the Gatehouse, the Chapel and the West Wing (Trenches 1, 2 and 3 respectively).

Trench 1 produced evidence for several phases of activity. A number of possible prehistoric pits was found as well as remains of a medieval wall pre-dating the Tudor gatehouse. The main body of evidence was represented by the extant brick foundation walls of Tudor Gatehouse and related remains of cobble surface of the courtyard.

Trench 2 revealed substantial brick foundations for the south eastern corner of the Tudor Chapel, along with internal walls and related construction debris. The east wall of the chapel was built before the south wall. The latter butted up to the east wall rather than being bonded into it. Evidence for mortar floor sub-base and extensive levelling was found. The evidence for extensive World War II bomb damage was also found.

Trench 3 revealed brick foundations for the wall of the western façade and two bay windows of the western range of the Palace. Two small rooms with brick floors and integral drains were revealed immediately behind the windows suggesting a change of plan during construction. Evidence for further changes including the insertion of an additional drain was noted. A modern pit containing large amount of worked stone derived from the bomb damage was found in the north-eastern part of the trench.



1 INTRODUCTION

1.1 Location and scope of work

- 1.1.1 The evaluation took place in the grounds of New Hall School, Chelmsford, Essex, which is located approximately 4 miles north east of Chelmsford, 40 miles north east of London and approximately 40 miles south west of Harwich (Fig. 1).
- 1.1.2 The site may be defined as the area of the grounds of New Hall School demarcated to the north by the main range and to the south by a ha-ha boundary. It is effectively contained within the main drive and the front lawn.
- 1.1.3 Three evaluation trenches were excavated, as detailed in Appendix A. The location of the trenches is shown in Fig. 2.

1.2 Geology and topography

- 1.2.1 The site is located at NGR TL734102 at a height of approximately 45m OD.
- 1.2.2 The site lies on the boulder clays drift geology at c. 45 m OD.

1.3 Archaeological and historical background

The following incorporates text and research from Tony Tuckwell's New Hall and its School (Free Range Publishing, 2006) by kind permission of the author. For full historical bibliography and references refer to Project Design sect. 1.2 (Willers 2009).

New Hall Origins: 1062 – 1516

- 1.3.1 The site of New Hall is first recorded as belonging to the Augustinian Canons of Waltham Abbey who acquired it from King Harold in 1062 as part of an endowment of seventeen manors. Situated halfway between London and Harwich, the manor became a popular place to entertain nobility and royalty as they travelled to and from the continent. Notable visitors include Adelais of Louvain who stayed at New Hall en route to her marriage to Henry I in 1121, and Princess Maud, daughter of Henry II.
- 1.3.2 In 1301 the Abbot erected a large residence which became his summer home. In 1347, John de Vere, the then Lord Abbot of Waltham, entertained Queen Philippa, wife of Edward III at New Hall.
- 1.3.3 In 1350 New Hall was acquired from the Abbot by Sir John de Shardelowe in exchange for family properties in Epping, and in 1373 the manor passed to Sir Henry de Coggeshale in a similar exchange of properties. The manor remained in the Coggeshale family for the next fifty years until, through lack of male heirs, it passed to John de Boreham. The subsequent sequence of owners is unclear, but it appears that de Boreham sold the manor to Queen Margaret of Anjou, wife of Henry VI, who then granted the manor to Richard Alred, a favourite servant. New Hall was seized by Edward IV in 1461, and in 1480 he held his Whitsuntide court at the property. Following the Wars of the Roses, New Hall was seized by Henry VII in 1485.
- 1.3.4 Henry VII granted the manor to Thomas Boteler, Earl of Ormond, and in November 1491 Ormond received a license to crenellate – probably in recognition of the family's loyalty. Ormond's supposedly rebuilt New Hall "after the model of an ancient palace of the Kings of Ulster." The manorial house would certainly have had towers and walls to crenellate, was probably brick built due to the shortage of local stone, and according to David Andrews, was "almost certainly surrounded by a moat". Oxburgh Hall in Norfolk would probably provide the best comparison.



- 1.3.5 Ormond entertained Henry VIII at New Hall in 1510, and in 1515 two months before he died, when the house passed to his daughter Margaret and his son-in-law, Sir William Boleyn. Sir William was Ann Boleyn's grandfather. Henry VIII was so struck by his stay at New Hall that he promptly purchased the manor from Boleyn for £1,000 and began work there in January 1516.

An Henrician Palace: 1516 – 1547

- 1.3.6 In all, Henry spent over £17,000 on the building works at New Hall – a staggering amount at the time, but dwarfed by subsequent spending at Hampton Court (£62,000) and Whitehall (£28,676, not including costs incurred immediately after acquisition). It was Henry's first major building project, and he left the details to Cardinal Wolsey, who in turn appointed William Bolton, Prior of St Bartholomew's, Smithfield, as Master of Works. Bolton was an experienced administrator who had been involved in the completion of Henry VII's Chapel at Westminster and had some responsibility for Wolsey's works at Hampton Court.
- 1.3.7 None of the building accounts survive, but entries in the Chamber accounts do record the monthly payments to Prior Bolton. In March 1519 he was paid £200 'for buying of lead, painting and fretting of certain roofs at Newhall' and a further £200 in July 'to buy lede, glasse & [for] fynisshing of Newhall.' By the autumn of that year sufficient progress had been made for the King to stage an elaborate masque.
- 1.3.8 Work continued through to 1521 when, in January, Bolton was paid £200 'for the conduit at Newhall'. In April of that year another payment was "in part payment of a warrant of £1000 for making of a newe galerie, diverse payntings and other necessaries to be done at Newhall."
- 1.3.9 The Palace was certainly magnificent. A contemporary account describes it as having eight courtyards, a five hundred foot entrance façade adorned with the royal coat of arms, a great hall, a tennis court, a vast kitchen and a gallery. The royal apartments were in a wing three storeys high. Although no contemporary plans survive, two prints from the 17th century (see Plate 4) do exist, as well as three similar plans which date from the 17th and 18th centuries (see Plates 1 and 2).
- 1.3.10 The plans show the building as being laid out around a central courtyard, with the current surviving wing forming the north side. Facing each other on either side of the courtyard are the Chapel and the Great Hall, and a large Gatehouse formed the southern end of the courtyard. However, the original Tudor Palace must have been much larger – remains uncovered during the construction of buildings to the north of the current wing in 1968 suggest that the Palace extended in this direction (see Archaeological Background and Plate 3).
- 1.3.11 Henry was so pleased with his new palace at New Hall, that he renamed it Beaulieu, and in 1523 made it the centre of a new Honour of royal estates in Essex. Despite being confirmed by an Act of Parliament, the new name, however, 'never prevailed among the common people' and did not survive long after Henry's death.
- 1.3.12 After 1521 in Henry's lifetime there were no major alterations to the building. Possibly the Palace's association with Anne Boleyn and her family was enough to keep Henry away after the Anne's execution in 1536. New Hall had been the venue of a ball held to celebrate the birth of Princess Elizabeth.
- 1.3.13 In 1529 New Hall was listed as one of several houses, which Thomas Floure was paid to maintain, and in 1532-3 James Needham was paid 12s 'for rydyng to the manor of



Bewlowe other wise callyd New Hall and beyng there for the survaying the said mannor by the space of iij dais.'

- 1.3.14 The Palace was, however, still used as the permanent residence of Mary Tudor, Henry's daughter by Katherine of Aragon.

After Henry: 1548 – 2005

- 1.3.15 After Henry's death New Hall quickly fell into disrepair. In 1553 Mary I leased the estate to Sir Thomas Wharton, and in a letter signed by him he complains that the house is in poor condition due to a fire that occurred during Henry's reign: "the house is in great ruin, being burned in Henry VIII's time and not repaired since." It is possible that the fire is responsible for the reduced ground plan shown in 17th- and 18th-century plans.
- 1.3.16 Dilapidation continued into Elizabeth's reign, and in 1559 the house is reported to be in poor structural condition – so much so that several of the principal chambers were shored up to prevent them falling down. This, however, did not stop Elizabeth staying at New Hall during her summer progress in 1561, and between 1565-7 repairs to the fabric of the building were carried out by the Surveyor of Works.
- 1.3.17 In 1573, however, New Hall underwent a substantial overhaul after the building was granted by Elizabeth to Thomas Radcliffe, Earl of Sussex. Sussex it was who had the entire North Range rebuilt. It is the North Range built by Sussex that survives today.
- 1.3.18 New Hall estate continued to be held by the Radcliffe family for a further fifty years, until 1622 when it was sold to George Villiers, 1st Duke of Buckingham for £30,000. Buckingham appears to have invested in major landscaping work around the house, paying Cornelius Drebbel, an engineer, for works at New Hall in 1624 and 1626 for "divers modells", suggesting elaborate waterworks, fountains and hydraulic automata.
- 1.3.19 Following the defeat of George Villiers, 2nd Duke of Buckingham at the Battle of Kingston-on-Thames in 1648, New Hall was seized by Parliament and subsequently bought by Oliver Cromwell for the nominal price of 5s (at the time New Hall's yearly revenue was calculated as £1,309 12s 3d). In 1657 Cromwell sold New Hall for £18,000 to three unnamed London merchants who held the estate until the Restoration.
- 1.3.20 After the Restoration, New Hall was granted by the Crown to George Monck in 1660, and ten years later to his son, Christopher Monck, 2nd Duke of Albemarle. At this stage, New Hall was still a very substantial property – indeed, Hearth Tax records show it was the second largest house in Essex, with over 100 chimneys. Given that the current North wing has only 25 chimneys, the other 75 must have been represented by the now demolished wings which made up the main courtyard.
- 1.3.21 In 1713 the estate passed to Benjamin Hoare, Lord Mayor of London, who removed a large amount of material from New Hall to his new property, Boreham House. Dilapidation began to take hold once more, and around this time the building was described as 'ruinous'. It is presumably for this reason that when the manor was purchased by John Olmius, Lord Waltham, in 1737, most of the building is demolished leaving only the current north wing standing. During the latter part of the 18th century, further landscaping work was undertaken. In 1767 Richard Woods was paid £250 for work in the garden, possibly involving the creation of an ornamental lake to the north of the current building.
- 1.3.22 In 1798 New Hall was granted to the Canonesses of the Holy Sepulchre, who continued to own the estate until the New Hall School Trust took it over in 2005. The only notable events during this period was the German bomb that in 1943 destroyed a



large portion of the Elizabethan façade, which was rebuilt, and the discovery in 1968 of possible Tudor remains (see Archaeological Background paragraph 1.3.23).

Archaeological Background

- 1.3.23 According to the Essex Historic Environment Record, no formal archaeological work has been undertaken at New Hall. However, in 1968, during the construction of a new building to the north of the current wing, foundations were unearthed by workmen and recorded on a plan by Sister Mary Stephen (see plan, Plate 3):

“When digging at the back of the house in connection with a new building, we came across what our architect considered to be the earth floor of a medieval manor, revealed by layers of oyster shells. This was six or seven feet below ground. And in front of the house, nearly four feet below ground level, we found a floor of large, irregular cobblestones.”(Stephen 1996)

- 1.3.24 In dry years, crop marks have also been observed on the front lawn which appear to confirm existing plans of the house.

1.4 Acknowledgements

- 1.4.1 OA extends its thanks to all at Time Team for cooperation and support throughout the duration of the project.
- 1.4.2 OA wishes to thank all from New Hall School, particularly Annabel Brown for help and hospitality.
- 1.4.3 The excavation was carried out over four days by OA's Ben Ford (PM), Dan Sykes (PO), Jacek Gruszczynski (Supervisor), Becky Griffin (Assistant Supervisor), Emily Plunkett (Assistant Supervisor) and Time Team 's Phil Harding, Matt Williams, Raksha Dave, Tracey Smith, Faye Simpson. On site finds supervision and coordination was carried out by Geraldine Crann (Assistant Supervisor). Anne Kilgour (Supervisor) conducted the survey.



2 EVALUATION AIMS AND METHODOLOGY

2.1 Aims

- 2.1.1 The primary objective of the investigation was to establish the extent, condition and date range of archaeological remains. The archaeological rationale behind the project was to fulfil these aims in order to improve the understanding of the archaeology of New Hall School and inform future management and interpretation.
- 2.1.2 The project aimed to carry out a limited programme of non-intrusive investigation and intrusive evaluation over three days. The site under investigation is a monument of national importance with the ability to answer regional and national research questions about the period already known to be represented on this site. The results of this work will also form an important resource for the future management of the site.
- 2.1.3 Locating the features and structures described below will improve understanding of the Tudor workings of New Hall (otherwise known as Beaulieu Palace), specifically with regards to the layout of the building. This will in turn inform future research into the phasing of the Palace.
- 2.1.4 The results of the project will feed into a graphic representation of the historical development of the land now occupied by the school, and will also lead to the generation of digital mapping incorporating rectified historic mapping and the location of known archaeological structures and remains. This will be a valuable tool for future management of the site, and will facilitate the assessment of the potential effect of any development on the underlying historic and archaeological deposits and structures.

2.2 Specific research aims:

Project Aim 1: Gatehouse

- 2.2.1 The Gatehouse was designed to be the most impressive element of the Henrician Palace, and was an architectural focus for the building. 17th century prints show it to be a substantial four-storey structure, and originally it had the Tudor crest now in the Chapel mounted above the archway. Locating the Gatehouse was to achieve three main aims:
- Validate the accuracy of historic plans of the site
 - Define the southern extent of the building
 - Allow analysis of foundation material (types of stones, brick, mortar etc. used) which will provide a basis for comparison around the site

Project Aim 2: Chapel

- 2.2.2 The Chapel at New Hall was an equally impressive structure. The extraordinary stained glass window now in St Margaret's church, Westminster, was originally placed in the east window of New Hall Chapel.
- 2.2.3 An excavation here was designed to improve our understanding of the layout and workings of a Henrician Chapel, and further verify known plans of the interior of the building. Furthermore, an investigation of the Chapel was to focus on:
- Locating the altar
 - Locating the vestry
 - Locating the six supports for a gallery with viewing closets



- Finding evidence of Italianate or Renaissance craftsmanship.

Project Aim 3: West Wing

- 2.2.4 The western wing was intriguing because large bay windows and a view over a main garden suggest that this area of the Palace may have been intended for particularly high status residents.
- 2.2.5 Sister Mary Stephen's plan recording archaeological discoveries at New Hall in the 20th century (Plate 3) shows that walls that were revealed in the West Wing area probably during the installation of services. However, a number of features do not correspond with the known plans of the Palace.
- Validate the accuracy of historic plans,
 - Determine whether an earlier ground plan predates that recorded in the 17th and 18th centuries.
 - Ascertain whether the lodgings in the West Wing were intended for high status occupants. To this end, excavation in this part of the building was to focus on the windows themselves and the quality of building materials and finds.

2.3 Methodology

Topographical survey

- 2.3.1 A full contour survey of the site was carried out by Anne Kilgour of Oxford Archaeology using a Trimble Real Time Differential GPS survey system. Work was undertaken following the methodology outlined in Chapman, & Van de Noort 2001.

Geophysical survey

- 2.3.2 A full geophysical survey was carried out within the area of the site by Dr John Gater, Director of GSB Prospection Ltd . The instruments used were a Geoscan FM36/FM256 gradiometer, a Bartington Grad 601-2, and an RM15 resistance meter. The survey area was divided into 20 x 20m grids and sampled at 0.25m intervals / 1m transects (magnetometer) and 1m transects (resistance meter). For Ground Penetrating Radar the instrument used was a Noggin Smartcart Plus with 250 MHz Antennae, in transects, typically 1.0m / 0.5m.
- 2.3.3 This work was conducted and was carried out in accordance with English Heritage Professional Guidelines No 1, *Geophysical Survey in Archaeological Evaluations* (David 1995), and Institute of Field Archaeologists Paper No 6, *The Use of Geophysical Techniques in Archaeological Evaluations* (Gaffney, et al 2002). The results were analysed using a mixture of GSB and commercial software.

Landscape survey

- 2.3.4 Stewart Ainsworth, landscape archaeologist, undertook analytical survey of the site to level 2 standards as defined in Ainsworth, et al 2007, *Understanding the Archaeology of Landscapes: a guide to good recording practice*. See Section 3.7 below for the Landscape Survey.

Proposed Investigation Areas (Fig. 2)

- 2.3.5 The paragraphs below outline the proposed areas of investigation formulated in response to a research visit to the site and following discussions with Jonathan Foyle, Architectural Historian, and David Andrews, Essex County Council. These trenches were intended to address Project Aims described in 2.2.



Area 1: Gatehouse

- 2.3.6 The Gatehouse is located on the lawn to the south of the current building. The exact location of the Gatehouse was extrapolated from historic plans, aerial photo evidence and geophysical survey. Trench 1 was placed to maximise the probability of locating structures and other evidence to establish and characterise a dated sequence for archaeological deposits. Trench placement addressed Project Aims described above.

Area 2: Chapel

- 2.3.7 The Chapel was located immediately to the south of the western end of the present building. The exact location of the Chapel was determined by geophysical survey. Trench 2 was placed to maximise the probability of obtaining data to characterise structures and deposits, and to date archaeological sequences. Trench placement addressed Project Aims described above.

Area 3: West Wing

- 2.3.8 The area of the western wing in question lies to the south of the Chapel. The exact location of lodgings of interest was determined by geophysical survey. Trench 3 was placed to maximise the probability of obtaining data to characterise structures and deposits, and to date archaeological sequences. Trench placement addressed Project Aims described above.

Excavation methodology

- 2.3.9 Archaeological investigations were not to be made at the expense of any features or finds which might reasonably be connected with the Palace or which would merit preservation *in situ*. Nor were the investigations to prejudice in anyway the protection of any surviving structures. Nonetheless a sample was to be studied sufficient to allow the resolution of the principle Project Aims described above.
- 2.3.10 Mechanical excavators were used on-site for the removal of topsoil and tarmac. All machine excavation trenches was carried out under archaeological supervision and ceased immediately when significant archaeological evidence was revealed.
- 2.3.11 All archaeological remains were hand excavated and all significant relationships were defined and investigated within the limitations defined above. Deep intrusions were excavated to a safe depth only.
- 2.3.12 Artefact assemblages were recovered by context by hand to assist in dating the stratigraphic sequences and to obtain ceramic assemblages for comparison with other sites. The finds provide an invaluable contribution to the interpretation of the functions and activities taking place on (and off) the site, as well as revealing aspects of trade and economy. All artefacts from excavated contexts were retained.
- 2.3.13 A flexible environmental sampling strategy was employed during excavation. Archaeological deposits, which were identified as having potential for environmental data and therefore the potential to contribute to achieving the Project Aims stated above, were sampled using appropriate techniques.

On-site recording and conservation

- 2.3.14 The standard Oxford Archaeology recording systems were used in accordance with the requirements of the *OAU Field Manual* (ed. D Wilkinson 1992). All contexts and features were recorded using standard pro-forma context record sheets; a record of the full extent of all archaeological deposits encountered was made in plan (scale 1:20); appropriate sections were drawn (scale 1:20); the heights in relation to OD of all



principal strata and features were indicated on appropriate plans and sections; a photographic record of the investigations and individual features was made.

- 2.3.15 All surveys, both earthworks and geophysics, are compatible with each other. Surveys were related to the National Grid/Ordnance Datum by local control using the 1:25000 digital maps.
- 2.3.16 A qualified conservator was available throughout the excavation should artefacts requiring immediate stabilisation have been discovered. Conservation work was carried out to appropriate professional standards.

Reinstatement

- 2.3.17 Reinstatement of the site to protect the surviving archaeological structures and deposits was carried out following excavation. This work was carried out to a high standard by qualified archaeological staff aware of all relevant Health and Safety legislation.

3 RESULTS

3.1 Introduction and presentation of results

- 3.1.1 All three evaluation trenches revealed archaeological deposits and artefacts.
- 3.1.2 The results of the archaeological mitigation are organised by trench with descriptions of the archaeological deposits presented in a stratigraphic order. The descriptions are followed by a summary of results of the analysis of artefacts retrieved during the evaluation, and of the environmental data.

3.2 Trench 1 (Figs 3-4; Plates 5-7)

- 3.2.1 Trench 1 was machine excavated to a depth of c. 0.20 m (c. 44.32 m OD), effectively removing the topsoil (101), and exposing the archaeological deposits directly below. Subsequent excavation was by hand.
- 3.2.2 The natural clay 130 was exposed in a number of sondages at c. 43.83 m OD. The excavation of a modern service trench [102] provided a section through the deposits in this trench, and revealed a layer of compacted gravel 166 at a depth of c. 43.40 m OD. The deposit probably represents a horizon of natural gravels, however no relationship with clay horizon 130 was established.
- 3.2.3 A probable pit [168], was exposed in the section provided by the service trench 102. This cut the gravel layer 166 (Fig. 4, Section 100). Because of later truncation by the construction cut for wall 115, the relationship of the pit with the natural clays (130) was not established. However it is probable that the feature originally truncated horizon 130. The size and extent of feature 168 was not established within the limited evaluation trench.
- 3.2.4 A group of shallow features were identified cutting into natural clay 130. These were probable pits 128, 151, 140 and 153, which were partially exposed in sondages but only features 140 and 128 were excavated. In no case could the full dimensions of features be established.
- 3.2.5 The pits were sealed by brown silty clay layer (127), presumably representing a horizon of buried soil, or more likely a subsoil layer. Subsoil 127 was overlain by a layer of sterile yellow clay 126, c. 0.06 m thick, which appears to have formed a platform for wall 122 (Fig. 4, section 105).



- 3.2.6 Wall 122 (Plate 6), which was aligned N-S, measured 0.40 m wide and was observed for a length of c. 1.9 m within the trench. A northern terminus was exposed in a sondage, however it appears that it was subjected to a heavy truncation, which might have removed a possible return to the west. The wall was preserved to a maximum height of 0.24 m. The structure was built of layers of flint nodules and horizontal ceramic roof tiles. Up to three such courses were preserved.
- 3.2.7 A series of probable occupation deposits (138, 143 and 147) abutted wall 122. They were in turn overlain by a substantial sand and gravel levelling SG169, into which a series of large brick-built wall foundations was cut.
- 3.2.8 In the western part of the trench a ENE-WSW aligned brick wall [112] 1.02 m (3 ft 4 in) wide was exposed in plan for a total length of 1.9 m. A sondage excavated by its eastern end revealed that it was built on a wider brick foundation. This extended a further 0.41 m (1 ft 4 in) beyond the line of the wall to the north. On the south side of the wall, 3 step courses (half a header wide) were exposed in the foundation. The overall width of the foundation is a notable feature
- 3.2.9 On the same alignment as wall 112 and approximately 3.05 m (10ft) from its E end was another nearly identical wall 115. This was exposed for a length of 3.2 m and was 1.02 m (3 ft 4 in) wide. The modern service trenches [102] and [164] revealed that this wall was also built on a wide brick foundation extending 0.9 m (3 ft) to the north of the line of the wall (Plate 7). As with wall 112, the foundation for 115 was very wide, and was at least 1,2 m deep. (Excavation stopped at this depth for safety reasons.)
- 3.2.10 Approximately 1.52 m (5 ft) from the eastern end of the wall 112, a brick wall 113 projected at a right angle from its S face. It was exposed in plan for 1.3 m and was 0.92 m (3 ft) wide. A sondage revealed that 113 was keyed into 112 and was built on a similar stepped foundation.
- 3.2.11 The presence of a brick wall corresponding to wall 113, and projecting S from wall 115, was suggested by a 0.2 m wide change in the brick alignment, c. 1.5 m (5 ft) from the W end of wall 115. The modern service trench [102] seems to have almost completely removed any trace of this wall projecting S from wall 115.
- 3.2.12 All the brick structures described above were built of red bricks measuring 230 mm x 115 mm x 50 mm (9 in x 4.5 in x 2 in) and bonded with fairly soft creamy white sandy lime mortar. No discernible bond was exposed, however the pattern visible in plan may suggest that a form of English bond might have been employed. A section through wall 115 revealed that a single course of horizontal roof tile was used, probably in order to level the brick coursing.
- 3.2.13 Probably contemporary with the brick structures was a rubble filled posthole [145], probably a remnant of the construction scaffold or shoring.
- 3.2.14 Built against the N side of wall 112 was brick wall or base 114. This was built on the wide foundation of wall 112 and was 0.8 m wide. It was exposed only for a length of 1.9 m, but the W edge of the brickwork was revealed. The original extent of the wall is difficult to establish in part because of a later robber cut [131]. The exposed top of the brickwork had a skim of mortar which formed a semicircular patch with its base against wall 112. It is likely that this represents the position of half round column based on the brick-built pier (114). The brick pier or base 114 was not bonded to wall 112 and therefore probably of later build.
- 3.2.15 A brick structure 116 was built against the N side of wall 115. Its position mirrored that of brickwork 114.. Structure 116 was partially truncated by the modern service trench



102, and only a small section of wall 116 was preserved, measuring c. 0.7 m x 0.6 m and 0.32 m deep, and no full size bricks were exposed. It clearly differed from wall 115, a fact accentuated by the large amount of roof tile and hard white lime mortar used in its construction.

- 3.2.16 A later robber cut (117) was cut above over structure 116, and also removed the northern part of foundations for wall 115. The robber cut measured 2.2 m x 0.7 m, and exceeded 1.2 m in depth (Fig. 4, section 101).
- 3.2.17 Robber cut 131, which measured 1.9 m x 0.8 m and 0.2 m, and which removed a portion of wall 114 down to the level of the foundations for wall 112, was located in a symmetrically similar position to trench 117 to the W. It was possibly contemporary with cut 117.
- 3.2.18 The brick walls were abutted by a gravel levelling layer (107) recorded throughout the trench. The deposit appeared to have served also as a base for rough stone surfaces 120 (Plate 7) and 121 which were partially preserved by the northern edge of the trench. It is noticeable that these patches lie in the courtyard to either side of the gateway. There was no evidence for any similar surfacing on the line of the gateway and driveways shown on the 1624 and 18th-century plans. Surface 120 was truncated by robber cut 117.
- 3.2.19 Overlying the levelling and abutting wall 115 from the south was a fragmentary brick and mortar feature 123 of unknown purpose, preserved to 0.6 m x 0.5 m x 0.1 m.
- 3.2.20 Sealing the structures and deposits was a series of brick and mortar rubble deposits (104), (105), (106) and (142). These were directly below the topsoil (101).

3.3 Trench 2 (Figs 5-6, Plates 8-10)

- 3.3.1 Trench 2 was machine excavated to a depth of approximately 0.90 m (c. 43.75 m OD), to reveal brick structures. The size of the trench was initially 7.3 m x 4.6 m, but subsequently a sloping access ramp measuring 3 m x 1.6 m was machine excavated by the NE corner of the trench.
- 3.3.2 The excavation did not expose the natural horizon. The earliest stratigraphic deposit was a layer of organic clay (215), presumably representing a buried soil horizon, overlain by equally organic layers (216) and (232), which were probably occupation layers.
- 3.3.3 The construction cuts for brick walls 207 and 208 truncated layers 218 and 232. Wall 208 aligned NNW-SSE was exposed in plan for a length of 9 m and was c. 1.2 m (4 ft) wide. No elevations were revealed, and thus it is unclear what bond may have been used in the construction, although the remains exposed in plan suggest it might have been a simple English bond. However, the uppermost course showed an apparently abrupt change in brick orientation, where the southernmost 2.84 m of the wall appeared to employ headers along the faces, whilst the rest of the wall consisted of stretchers. Furthermore, in the area where the two types of construction met, for the space of about 1.3 m, only half bricks rather than full bricks were used as the headers facing of the wall. The difference between the two constructions is accentuated further by a change in mortar. The section of the wall faced with half brick headers was bonded with a harder whiter lime mortar, whereas rest of the wall was bonded with creamy white sandy and fairly soft lime mortar. The bricks used measured c. 250 mm x 100 mm x 55 mm (10 in x 4 in x 2¹/₈ in).



- 3.3.4 Wall 208 was built on a brick foundation 209. At the S end of the trench the foundation was found about 0.4 m (1 ft 4 in) east of the line of wall 208. However this wider foundation was only exposed at the south end of the trench for a length of 3.1 m, and did not appear to continue further north. At the N end of the trench the east edge of wall 208 was about 0.1 m in from the edge of the foundation 209. But further S the alignment of wall and footing converged until just N of the wider foundation, the edge of wall 208 was aligned exactly on the east edge of the foundation. The wall was built with red bricks measuring c. 200 mm x 100 mm x 50 mm (8 in x 4 in x 2 in) bonded with creamy white sandy lime mortar.
- 3.3.5 Abutting wall 208 on the west was a ENE-WSW aligned brick wall 207. Wall 207 was built after wall 208 and not bonded to it. The structure was exposed in plan for a length of 2.9 m and measured c. 1.4 m (4 ft 7 in) in width. It was truncated by a modern service cut [206]. The wall was built with at least two types of red bricks measuring c. 250 mm x 100 mm x 55 mm (10 in x 4 in x 2¹/₈ in) and 210 mm x 100 mm x 55 mm (8¹/₄ in x 4 in x 2¹/₈ in) respectively, and bonded with soft creamy white sandy lime mortar.
- 3.3.6 Walls 207 and 208 were abutted from the north and east by a sequence of stone, brick rubble and mortar deposits 217 and 227 overlain by levelling layers of clay (218) and lime mortar (219).
- 3.3.7 Following the construction of the walls, levelling layers of compact clay (220 and 228) were deposited, and sealed beneath a layer of loose sandy mortar and broken peg tile (213) (fig. 6, section 200). The latter layer was 0.04 m thick and extended beyond the limits of excavation to the W and N. It was found N and S of wall, but not E of wall 208.
- 3.3.8 Following the levelling a series of internal brick walls set in fairly deep construction cuts [231] (exceeding 0.54m). was a constructed (Plate 9). The Wall 214, which appears to have been laid out as an L-shaped, 1.9m (NNW-SSE) x 1.6m (ENE-WSW), and was c. 0.6m (2ft) wide. was preserved to a height of 0.5m. The arms of the wall butted up against walls 207 and 208 forming a small square room, approximately 1.2 x 1.2 m (4 x 4 ft). Wall 214 was built with red bricks measuring c. 240 x 110 x 60 mm (9¹/₂ x 4¹/₄ x 2³/₈ in), bonded with creamy white sandy lime mortar. The bricks were laid in an English bond with abundant unpointed mortar 'snots' which spilled into the void of the construction cut.
- 3.3.9 Wall 214 was abutted to the west by wall 212 which followed the alignment of ENE-WSW arm. Wall 212 was exposed to a length of 1.24m and height of 0.18m and measured c. 0.62m (2ft) in width. It was built with red bricks, which measured 240 x 120 x 50mm (9¹/₂ x 4³/₄ x 2in) and were bonded with lime mortar identical to that used in wall 214. No discernible coursing pattern was observed, mostly due to later robbing [231].
- 3.3.10 Wall 211 was constructed probably at the same time, however due to the severe truncation by a modern service trench [206] its alignment and relationship to other structures is uncertain (Fig. 6, section 200).
- 3.3.11 A small square posthole [225] was found about 1.6 m N of the line of walls 214 and 212 (Fig. 6, section 200). Possibly this posthole, which measured 0.2 m x 0.2 m and 0.16 m deep was associated with the construction of the walls.
- 3.3.12 In the angle between walls 208 and 207 and within the line of wall 214 and a compacted layer of fragmentary bricks 210 was laid down to a fairly uniform surface (Plate 10). It is possible that this brick layer was needed to compensate for subsidence in the corner of the chapel. It maybe that there was soft spot at this point which might account for the wider footing for wall 208 at this point.



- 3.3.13 In the northern part of the trench in the area of the access ramp a linear, NE-SW aligned cut [222] was exposed by the machine. The function or the stratigraphic position of this unexcavated feature is unknown. It cut the lime mortar layer 219, which preceded walls 212, 214 and 211, but was very probable that 222 cut from a much higher level.
- 3.3.14 A substantial rubble deposit (204) sealed the sequence described above. This rubble layer resulted from the bomb damage to the school buildings during World War II.
- 3.3.15 Above the rubble layer was a series of compacted gravel deposits (202) and (203) for the current tarmac surface (201). These were cut only by the modern service trench [206].

3.4 Trench 3 (Figs 7-8, Plates 11-17)

- 3.4.1 Trench 3 was machine excavated to a depth of approximately 0.60 m (c. 44.60 m OD) revealing surviving brick structures. The trench was initially machined to a size of 7.5 m x 5.1 m, and subsequently extended to the east by an annex measuring 5.1 m x 1.4 m.
- 3.4.2 Stratigraphically, the earliest deposit exposed in the trench was a small area of yellowish brown clay (335) overlain by grey clay layer (334), presumably representing a natural horizon and buried soil respectively.
- 3.4.3 The natural horizon was truncated by the construction cut for a brick foundation or wall 312 aligned NNW-SSE. This was exposed for a length of 7.5 m. It measured a maximum of 0.15 m high and was c. 1.0 m (3 ft 4 in) in wide. The top of the foundation was levelled with a single course of fragmentary horizontal roof tiles, which obscured the bricks below, thus their full dimensions or coursing are not known. It supported a brick wall [319] which was c. 0.80 m (2 ft 8 in) wide and set c. 0.2 m (8 in) in from the E edge of the foundation. Only a short length of wall 319 measuring 0.6 m was exposed, and this was only preserved to a height of 0.12 m representing only two courses. The wall may have been built in a simple English bond. The red bricks measured 240 mm x 110 mm x 55 mm (9½ in x 4¼ in x 2¼ in) and were bonded with creamy white sandy lime mortar.
- 3.4.4 Brick structures 320, to the N, and 333 to the S, abutted the W face of wall 312/319. These structures were the brick foundations for bay windows:
- 3.4.5 The full dimensions of structure 320 were not revealed because of truncation, in part by a modern service trench [313] and by drain 321. The revealed structure was roughly rectangular in plan, and measured c. 3.8 m x 1.3 m. The top surface is further confused by truncation. Only traces of mortar and occasional *in situ* bricks indicate the position and shape in plan of the above ground portion of the bay window (Plate 15). It would have extended c. 0.9 m (3 ft) out from the line of wall 319 and was c. 2.15m (7ft) wide where it abutted the western façade of the wall. The two sides of the structure seem to have been aligned at angles of about 50° to 60° to the wall.
- 3.4.6 Foundation 333 (Plate 16) for the second of the two exposed bay windows was slightly better preserved, although still disturbed by service trench 313 on its W edge. It was only partly exposed, but up to three courses of brickwork were visible. The extant brickwork of 333 confirmed the trapezoid ground plan of bay windows as described above. Both bay windows, 320 and 333, were built of similar red bricks measuring c. 240 mm x 110 mm x 50 mm (9½ in x 4¼ in x 2 in) bonded with creamy white sandy lime mortar.



- 3.4.7 A short length of truncated brick-built drain [321] abutted the S edge of foundation 320. The drain 321 was aligned ENE-WSW and led away from wall 312 at a right angle. It appears to have been slightly recessed (c. 0.1 m) into wall 312. It was built with the same type of bricks and mortar as the bay window foundation 320.
- 3.4.8 The next phase of construction is represented by a series of internal walls butting up against the E side of wall 312, and clearly later than 312. Wall 324 formed an L-shaped with its ENE-WSW aligned arm measuring 2.6 m long and 0.4 m wide and its NNW-SSE arm measuring 1.7 m long and only 0.2 m wide. The bricks used measured 250 mm x 110 mm x 40 mm (10 in x 4¼ in x 1½ in). To the north, Wall 325 was aligned ENE-WSW and lay parallel to wall 324. It was exposed in plan for a length of 2.6 m and was 0.3 m wide. The red bricks used were 250 mm x 120 mm x 55 mm (10 in x 4¼ in x 2¼ in). Further north again only a small portion of wall 331 measuring 0.7 m long survived. Again it was aligned ENE-WSW and 0.3 m wide and was parallel to wall 325. It had been truncated by [310], [302] and presumably [340]. All three walls were bonded with similar hard white lime mortar. The coursing pattern was impossible to establish due to the fact that the walls were exposed only in plan, and the top course further obscured by mortar or confused by later truncations.
- 3.4.9 Walls 324 and 325 formed three sides of a small room measuring approximately 2.6 m x 2 m (8 ft 6 in x 6 ft 7 in). Both internal walls [324 and 325] abutted a rectangular brick-built plinth [328] at the NE corner of the room. The centre line of the the plinth [328], aligned with wall 325 and its E side aligned with the NNW-SSE arm of wall 324. The plinth measured 1.7 m x 1.3 m and exceeded 0.2 m in depth. It was built with red bricks measuring 240 mm x 110 mm x 50 mm (9½ in x 4¼ in x 2 in) bonded with hard white lime mortar, similar to that used in the internal walls themselves.
- 3.4.10 Internal walls 325 and 331 formed a second small room to the N of the first small room. Again the room measured approximately 2.6 m x 2 m (8 ft 6 in x 6 ft 7 in). Both small rooms contained similar elaborate brick floors, 323 in the S room and and 316=326 in the N room (Plates 12-13). The brick patterns in both rooms were divided by diagonal lines of bricks laid flat and header to header (Plates 12-13). Three of the triangles were filled with bricks laid flat in rows either parallel or perpendicular to the base of the triangle. In the eastern triangle in each room the bricks were laid parallel to each diagonal to form a pattern of chevrons. The bricks used in the floors measured 240 mm x 125 mm x 55 mm (9½ in x 5 in x 2¼ in) and were bonded with hard white lime mortar.
- 3.4.11 The west side of both small rooms was formed by the west wall of the wing 312. It is noticeable that in both rooms the line of wall 312 had been cut back in a rough but clear arc (Plates 12 & 17). It seems likely that the arcs were cut into wall 312 at the same time as the small internal rooms were built as part of the same as part of the phase of construction.
- 3.4.12 The north western corner of the floor surface [323] in the S room opened into a brick drain 322 which cut through the foundation wall 312 (Plates 12-13). The overall width of the drain was c. 1.2 m (or 4ft) and it is likely that the floor surface [316] in the N room also opened into the drain at its SW corner. However this relationship was removed by later truncation (Plate 14). However, the channel of drain 322 appears to have been Y-shaped in plan, with two outlets leading from the building's interior, and joining into one channel just outside wall 312. The channels would have draining the waste away from the two excavated rooms. The bricks used measured 240 mm x 110 mm x 50 mm (9½ in x 4¼ in x 2 in) and were bonded with a white lime mortar used in other structures of this construction phase.



- 3.4.13 A wall [330] built predominantly of roof tile abutted the E side of the NNW-SSE arm of wall 324. Wall 330 was aligned ENE-WSW and exposed for a length of 1.5 m. It measure c. 0.36 m (14 in) wide. The relationship between the two structures is not clear, but a slight recess in the line of wall 324 might suggest that it was cut rather than abutted by the construction of wall 330. A surface [329] consisting of flat laid and compacted brick fragments bonded with hard white lime mortar lay within the area defined by walls 324, 330 and the plinth 328.
- 3.4.14 The brick plinth 328 and brick floor 316=326 were both truncated by a construction cut [340] for another, rectangular, brick plinth 315=327. The structure as exposed in plan measured 1.5 m x 1.6 m. A sondage excavated by its SE corner revealed that it was c. 0.25 m deep. The structure was built with red bricks measuring 240 mm x 110 mm x 55 mm (9½ in x 4¼ in x 2¼ in) and bonded with hard white lime mortar.
- 3.4.15 A brick drain 318 was constructed on a broadly ENE-WSW alignment. It followed a very shallow S-curve across the trench, and truncated most of the earlier structures that lay in its path, including brick plinth 327. The drain was of a box construction. Its base was formed by a single layer of unbonded bricks laid flat and stretcher to stretcher. The side walls were three courses high and bonded with a hard white lime mortar (Fig. 8, section 300). The drain was capped by a layer of unmortared bricks laid stretcher to stretcher. The dark red bricks measured 240 mm x 110 mm x 55 mm (9½ in x 4¼ in x 2¼ in). The total length of exposed drain was 6.8 m and maximum width of the construction cut [317] was 0.7 m (2 ft 4 in), whilst the drain itself was c. 0.3 m (1 ft) wide externally.
- 3.4.16 It is probable that the new drain 318 superseded the original drain from the north room, but joined into the original drain 322 which led from the southern room (Plate 14). It is likely that the new drain fed into a brick culvert 337, a small portion of which was exposed in section 300 (Fig.8) at the western edge of the trench. Unfortunately the potential junction with drain 318 would have been located beyond the limit of excavation.
- 3.4.17 A series of demolition (338) and levelling deposits (307, 308, 309), were laid down after the construction of drain 318. These layers were truncated by a trench [313] for a lead pipe exposed at the eastern side of the trench. Trench [313] was subsequently sealed by another levelling layer (306), which in turn was truncated by an oval pit [302]. The feature contained large amounts of worked stone derived from the bomb damage to the school during World War II. The pit was truncated by 1968 pipe trench [310] recorded in plan by Sister Mary Stephen.
- 3.4.18 The stratigraphic sequence was sealed by a layer of topsoil (301).

3.5 Summary of finds

- 3.5.1 The archaeological excavation provided very limited artefactual evidence, which is summarised below. Fuller detail can be found in Appendices B1-B8.

Pottery by John Cotter

- 3.5.2 A total of 26 sherds of pottery weighing 629 g was recovered from eight contexts. The pottery assemblage is in a fresh but fragmentary condition. Ordinary domestic pottery types are represented. The pottery is summarised below.
- 3.5.3 The earliest pieces in the assemblage are those from context 215, which dates to c 1175/1200-1300 and possibly to c 1200-1250. These include a large piece of rim from a local shelly-sandy jar/cooking pot (Fabric 12B) with clear evidence of use (sooting) and



three sherds of local coarse grey sandy ware (Fabric 20). The only other definite medieval piece in the assemblage is a jug body sherd in Essex orange sandy ware (Fabric 21) with a white slip under a copper-flecked green glaze (context 108). This dates c 1225-1400.

- 3.5.4 All the remaining pottery is post-medieval, mainly red earthenwares (Fabric 40) and mainly, it would seem, of 17th-century date with some 18th-century material also present. A few common regional and imported wares of the period are also present - most notably six sherds from a 17th-century spherical Martincamp flask from Normandy (308). There are no 19th-century wares present but there is a single sherd from a bright blue-glazed 'studio' ware vase or coffee mug probably dating to the 1960s (300).
- 3.5.5 The composition of the assemblage as a whole is typical of many sites in Essex and is fairly unremarkable except perhaps that the range of 17th-century wares present, including continental imports, suggests a site of moderate prosperity.

Clay tobacco pipes *by John Cotter*

- 3.5.6 Seven pieces of clay tobacco pipe weighing 48 g were recovered from five contexts. Six stems pieces and one complete bowl are present, all are plain and unmarked. The complete bowl (context 101) is in a fresh condition and is a simple heeled type dating to c 1730-1780. The stem pieces are all wide-bored and of 17th-century date although some are fairly worn.

Glass *by Ian Scott*

- 3.5.7 Sixty three sherds of glass were recovered, mostly from Trench 3 contexts 307 and 308. The assemblage comprises 16 sherds of window glass and 47 sherds of vessel glass.

Vessel glass

- 3.5.8 Most of the vessel glass is from wine bottles. Trench 1 produced 2 sherds of vessel glass, one possibly from a wine bottle (context 106) and the other a weathered sherd from a vessel of uncertain type. Neither sherd is closely datable. There was no vessel glass from Trench 2.
- 3.5.9 Trench 3 produced 40 sherds from wine bottles, 2 sherds from wine glasses and 3 sherds from vessels of uncertain form. The wine bottle sherds from contexts 307 (n = 15) and 308 (n = 24) are all from thick walled early wine bottles, and many of the sherds are heavily weathered with opaque iridescent surfaces. None of these wine bottle sherds can be more closely dated than mid 17th to early 18th century. There is a single sherd from a late 18th- or early 19th-century cylindrical wine bottle from context 300. There are also two fragments from wine glasses: one fragment from the folded edge of the foot of an 17th- or 18th-century wine glass, which cannot be more closely dated, and a 'cigar' moulding from the stem of an early 17th-century wine glass. Both wine glass sherds are from context 307. Four sherds of vessel glass could not be identified to vessel type.

Window glass

- 3.5.10 The window glass is almost all quite heavily weathered and many sherds have the slightly irregularly surfaces found on hand-made glass. The glass is all probably of post-medieval date. The only exception is a sherd of modern window glass from context



300. Trench 1 produced 3 sherds all heavily weathered and probably of post medieval date. Trench 2 produced 2 sherds of window glass, both weathered and both probably post medieval in date. Trench 3 produced 11 sherds of window glass; 1 sherd from context 300 was modern, but the remaining sherds all from context 307 were weathered hand-made glass, again probably post medieval in date.

Conclusion

- 3.5.11 The glass from contexts 307 and 308 appears to form coherent assemblages of late 17th- or 18th-century date. The remaining glass, which numbers only 9 sherds is of less interest and represents scattered rubbish.

Metalwork by Ian Scott

- 3.5.12 The metalwork assemblage comprises 1 pendant with a gold frame, 10 copper alloy objects, 38 lead objects and 178 iron objects. Overall the assemblage was dominated by nails (n = 149), metal waste (n = 30), miscellaneous pieces (n = 12) and objects of uncertain identification (n = 10). Most of the metal finds are unstratified (n = 180) or from modern contexts (Phase 5; n = 55).
- 3.5.13 Trench 1 produced 63 metal finds, including 37 nails or nail fragments, and 12 pieces of waste. Forty metal items were from topsoil (context 101) and phased as modern. The finds from context 101 included 2 horseshoe nails, a plain flat circular button with cast in loop, 3 fragments of lead window came, 25 nails and 5 pieces of waste lead. Two contexts were assigned to Phase 4 (18th century), but these produced only a nail (context 104) and a small cast solid domed button originally with a cast loop (context 106). Four metal finds were recovered from Phase 3a context 107, but these comprise 3 nails and a fragment of encrusted iron plate.
- 3.5.14 Trench 2 produced only 10 metal objects, of which 9 were unstratified. The single stratified find was a nail from Phase 3 context 217. The unstratified finds comprise 4 nails, 4 pieces of lead waste and a curved fragment of an unidentified non-ferrous alloy.
- 3.5.15 Trench 3 produced the most finds (n = 154), but most of these were unstratified (context 300; n = 137). Only 17 metal finds were stratified, and 2 of these were from topsoil (context 301, Phase 5). Context 307, which is assigned to Phase 4 produced 15 metal objects, including 7 nails, and 3 objects of uncertain identification. It also produced a flat oval pendant of late 19th- or early 20th-century date with Catholic inscriptions and imagery (context 307 sf 313). It has an image of the Virgin Mary in low relief on one face with the motto 'O Marie conçue sans péché priez pour nous qui avons recours à vous', and on the other face images include a cross and sacred hearts. The dating of this item conflicts with the phasing and with the dating of the glass from the context. This suggests that the pendant is intrusive. There is a copper alloy lace tag from context 307, and 2 fragments of lead window came.
- 3.5.16 Unstratified finds (context 300) include a stamped metal button of late 19th- or 20th-century date, a pendant comprising a large oval semi-precious stone held in a gold frame or mount of later 19th- or 20th-century date, a dome headed furniture tack, fragments of window came, and 6 structural items. The latter include 3 screws or screw fragments, but also 2 holdfasts and a U-staple. Other finds include bindings nails, and miscellaneous pieces of strip, rod, bar, plate, etc.
- 3.5.17 Overall the composition of the assemblage does not suggest domestic occupation or craft activity. Most of the material comes from layers 101 and 300, and the composition of the assemblages suggests strongly the dumping of rubbish.

**Worked flint** by *David Mullin*

- 3.5.18 Two worked flints were recovered from context 129. Although found within a pit sealed by a buried soil, the material - a flaked lump which probably belongs within the later Bronze Age and a probably Mesolithic narrow blade - are likely to be residual.

Brickwork by *Alison Kelly*

- 3.5.19 Fifteen brick samples were recovered, of which only two fragments were found in pre-20th century contexts. The remainder were mostly from rubble resulting from World War II bomb damage and from topsoil contexts. Most of samples were fragments and therefore do not provide full dimensions for comparison of size with known samples. However there were three whole bricks within the assemblage. Sizes and description of whole bricks were compared to dated samples from other Essex buildings.
- 3.5.20 According to Pevsner ‘...the making of bricks in England seems to have started in Essex...’ (1954, 21) and locally made brick appears early in the 13th century although it is only widely used in secular buildings after the late 15th century. Raw materials for brick making were plentiful. The early 16th-century works at New Hall by Henry VIII would probably have used bricks made locally in brick clamps rather than kilns specifically for use in the works (Ryan 1999, 16). Unfortunately no reference to the purchase of bricks or tiles are mentioned with the Kings Works. Two brick kilns are mentioned in a tithe award of 1879, both in close proximity to New Hall and it is possible the same site had continued to be used in the production of brick for some time prior to this.

Date and nature of the assemblage

- 3.5.21 One sample, which was recovered from a demolition layer used as levelling and associated with the Henrician build of the Chapel (Trench 2, context 217, phase 3), comprised a fragment of the header end of a brick and is orange coloured with mixed stone inclusions. The upper face has strike marks. This is probably of late 15th- to early 16th-century date.
- 3.5.22 A fragment of brick recovered from an 18th-century rubble layer in Trench 1 (phase 4), consists of the header end of the brick and measures [70 mm] x 110 mm x 55mm. The upper face is smooth and there are crease marks to all other faces. The brick is probably of 16th- or 17th-century date.
- 3.5.23 Two fragments of 18th- to 19th-century hearth brick or tile were found in context (303), a rubble fill associated with bomb damage in Trench 3. The fragments are pale yellow/cream coloured with particles of pale orange coloured clay, possibly due to poor puddling. The upper surfaces are smooth and the lower surfaces have large amounts of sand/grit inclusions suggesting these pieces were laid out on a sandy surface prior to firing. One fragment has metal, which was probably part of a fixing, fused onto the upper surface. A whole brick was also found in this context. The brick measures 228 mm x 110 mm x 70 mm and is pale yellow coloured with the makers name W. CLOVER BOREHAM stamped within the ‘v’ shaped frog. William Clover owned the Hambro Hill brickworks in Boreham and the brick most likely dates from between 1878-1895 (Ryan *et al* 1993, 103). This brick highlights the continued availability of brick production close to the site.



- 3.5.24 The assemblage contained five brick fragments from the modern topsoil in Trench 1 (contexts 101 & 105), most of which could not be accurately dated. All fragments were orange and/or rose coloured with mixed stone inclusions. One fragment is vitrified brick with a grey/white mottled glaze which appears to be from accidental over firing rather than intentional glazing. Another fragment is rose coloured and has sharp arrises suggesting a 17th- or 18th-century date.
- 3.5.25 Four brick samples from the modern topsoil context in Trench 3 (context 301) included two whole bricks. One measures 230 mm x 115 mm x 58 mm, and is orange/red coloured and has cream coloured, friable, gritty textured lime mortar. This is probably of 16th-century in date. The size and fabric are similar to other dated Essex bricks including bricks excavated from Woodham Walter Hall (Ryan *et al* 1993, 100). The second whole brick measures 237 mm x 111 mm x 59 mm and is dark rose coloured with mixed stone inclusions and a cream coloured, friable, gritty textured lime mortar. This brick is also probably of 16th-century date. A fragment of red brick with bullnose type moulding probably dates to the 18th- or 19th-century. The upper face has strike marks and all other faces have minimal creasing. A further fragment of 16th- or 17th-century orange/rose coloured brick was also found in this context.
- 3.5.26 One sample of vitrified brick with a green glaze and of uncertain date came from an unstratified context (200) in Trench 2.

Ceramic building materials (CBM) other than brick *by Alison Kelly*

- 3.5.27 A total of 76 sherds of tile weighing 4.25 kg were recovered from 10 different contexts. The vast majority of samples were fragments and therefore could not provide full dimensions for comparison of size with known samples. Most of the assemblage consists of fragments of plain roofing tile with some samples of glazed floor tile and a smaller quantity of other material. The material was from each context was divided into three main functional types: flat roof tile, floor tile and other tile/CBM (e.g. ridge tile, hip tile, pantile etc.).
- 3.5.28 The majority of the material pre-dates the Henrician building phase of Beaulieu Palace. There are 42 samples from pre-Henrician contexts, and only 11 samples from the Henrician building phase.

Table 1 Tile assemblage finds by phase

Phase	Roof	Floor	Other	sherds	weight
1 Natural	0	0	0	0	0
2 Medieval, pre Henry VIII	42	0	0	42	986
3 Henry VIII (1516-21)	11	0	1	12	959
4 18 th century	5	4	0	9	452
5 Modern	9	1	2	12	1791
Unstratified	1	0	0	1	63
Total	68	5	3	76	4251

- 3.5.29 The assemblage is generally in a fresh but fragmentary condition. Many sherds have burnt cores suggesting overfiring and there are two fragments of vitrified tile, one of which has a slight glaze. No whole samples are included in the assemblage and there



were also no fragments that provided complete widths. Thickness measurements were taken where possible. The vast majority of samples have a smooth upper face with some strike marks and a rougher underside, showing the forming process. Gritty or sandy inclusions on the lower face show that the tiles were either formed on a sand strewn bench or laid out to dry before firing on a sandy/gritty surface.

- 3.5.30 The assemblage predominantly consists of fragments of flat roof tile with only five fragments of floor tile and three fragments of curved ridge tile or pantile. There are difficulties with assigning production dates to much of the assemblage as the characteristics of flat roof tile change very little over a long period and the majority of fragments do not have visible diagnostic features which would aid the dating of the material. Spot dates have been given but in some cases the date range is very broad.

Flat roof tiles

- 3.5.31 Fragments of plain red clay flat roof tiles were found in all phases, and most provides little detail to allow accurate dating. The largest part of the assemblage, a total of 42 fragments, was recovered from Trench 1 (context 126), and was located on the site of the gatehouse. This context dates to the pre-Henrician phase and probably relates to an earlier building demolished prior to the construction of the new Palace buildings. All are of red coloured clay, some fragments are very roughly formed suggesting an early date, which fits with the medieval dating of the context. Four fragments were vitrified and the majority of the remaining fragments have burnt cores suggesting overfiring.
- 3.5.32 Fragments of tile found in context 108, a rubble layer associated to the Henrician build also appear to be of early date with two fragments of one extremely vitrified roughly formed tile and one fragment of vitrified tile which has a rough grey glazed upper face. Glazed roof tiles are common throughout the medieval period. However, the glazing on this fragment appears patchy and unintentional. The other fragments from this phase have little diagnostic detail and are of a standard red clay type.
- 3.5.33 Very few fragments with nail holes formed part of the assemblage. A 9mm thick fragment of tile with a circular hole approximately 16mm wide, came from a Phase 3 demolition layer (context 217) in Trench 2 on the site of the chapel. Two further fragments with nail holes were recovered from context (301) a modern topsoil layer on the site of the west wing bay windows. One fragment has a round nail hole approximately 18mm in diameter and the other has a partial square-shaped hole approximately 8mm wide. This latter piece is very roughly formed and probably dates from before the 18th century. The former fragment is well formed and probably post dates the Henrician build making it of 17th- to 18th-century date.
- 3.5.34 In Essex the use of nibbed tiles as a roofing material declined during the 13th century and by the 14th century the standard peg tiles with two nail holes were the most commonly used form of roof covering and the excavation of a medieval tile factory at Danbury produced samples measuring 270 x 150-175 x 12-15mm (Ryan *et al.* 1993, 97). Essex had a large quantity of brick and tile manufacturers throughout the medieval and post medieval period (Ryan 1999, 3) and so it can be assumed that the tile fragments within this assemblage were locally produced.

Floor tiles

- 3.5.35 Five fragments of floor tile were recovered, all from Trench 3 which was located over the west wing bay windows of the Henrician Palace. All of the fragments were recovered from post-Tudor phase contexts. The small quantity of flooring tile found does not suggest the presence of an interior floor surface. Three fragments of tile were recovered from an 18th-century context (307). Two of the fragments might have been



'seconds'. The third fragment from this context has a mottled brown/cream colour very similar to other Tudor Flemish style floor tiles. A similar coloured fragment of tile was also recovered from context 308. This tile has an extremely gritty underside suggesting a pre 18th-century date. It is probable that all these fragments are Tudor in date, however the 18th-century context necessitates a broad spot date of c.1500-1800. A further fragment of glazed tile was recovered from context 301, a modern topsoil layer. This has a green/brown colour and the red clay material has small particles of lighter coloured clay suggesting poor puddling of the raw material. It can be only broadly dated c 1500-1900.

- 3.5.36 All five tile fragments had elements of added colour or glazing suggesting that they were Flemish style floor tiles. Flemish tiles are imported to England from the late 14th century onwards and reach a peak of popularity during the 15th and 16th centuries and were used in other early 16th-century royal Palaces (Musty 1990, 417). These plain coloured floor tiles were often laid in chequerboard patterns and nail holes can sometimes be seen in the corner (particularly on true Flemish made tiles). As Essex had a strong brick and tile industry it is probable that these tiles were locally produced and were not true Flemish tiles.

Other CBM

- 3.5.37 Only 3 fragments of other CBM were recovered. One fragment of curved ridge tile was recovered context 217 in Trench 2 (Phase 3: Henrician palace). This fragment has occasional stone inclusions, appears to have been formed by hand. There are no mortar traces suggesting the piece was unused. Two further fragments of curved ridge tile were recovered from topsoil (context 301, Phase 5) in Trench 3. Both fragments had over fired cores.

Architectural stone by Alison Kelly

- 3.5.38 A total of 16 pieces of stone were recovered as samples. Three fragments were found in early contexts and on examination proved to be natural rather than worked. The remainder of the assemblage was found within modern contexts associated with World War II bomb damage. It is therefore difficult to accurately phase or date.
- 3.5.39 Large window mullion fragment with ovolo and sunk chamfer moulding (SF 301, context 303). Ovolo mouldings become increasingly popular on mullions from the mid 16th century and throughout the 17th century it is the standard moulding type used. A similar mullion with a sunk chamfer from Essex dated to 1570, is shown in Hall (2003, 84) suggesting this fragment is of either late 16th- or 17th-century date. SF: 307 (context 303) is a smaller fragment of this mullion probably broken off at time of deposition in the ground.
- 3.5.40 Large moulded piece of uncertain date (SF 302) recovered from context 303. It is a corner block (380 mm x 300 mm x 165mm) with ogee and dentil moulding. The upper face is chamfered suggesting it was part of a coping stone level and there are traces of lime mortar to the underside.
- 3.5.41 Half of a stone ball finial (SF 310, context 303) of c 270 mm diameter, from context 303. Within the finial is a rebate for fixing c 100 mm deep and 30 mm wide. There is a white lime based mortar within this rebate which would have been used to hold the finial in place. The hole appears to have been later blocked with a grey cement mortar.
- 3.5.42 Large fragment of limestone with ovolo and fillet moulding (SF 304, context 303). It has traces of brick and mortar attached and because of its size is thought to be either a



plinth or part of a pedestal of a column. The presence of ovolo moulding is suggestive of a 17th-century date.

- 3.5.43 Two fragments of stone corning (SF: 305 and 308) were also recovered from context 303. The cornice consists of ogee and fillet moulding and is of uncertain date.
- 3.5.44 Two examples of paving were recovered. One piece recovered from context 303 is a sett with tapered sides and a worn upper face, measuring 225 mm x 255 mm x 55 mm. The second piece was recovered from a modern context (301) and is considerably thinner than the sett. It is sandstone and has a tapered edge with chisel marks and measures 130 mm x 160 mm x 25 mm.
- 3.5.45 An irregular shaped fragment of stone, labelled as slag and recovered from a modern context (103), is covered with a thick layer of highly vitrified glass (silica run). This layer could only have been produced by exposure of the fragment to an episode of extreme heat.

3.6 Summary of environmental data

- 3.6.1 The archaeological excavation provided environmental evidence, which is summarised below. Fuller detail can be found in Appendices C1-C2.

Charred plant remains by *Laura Strafford and Wendy Smith*

- 3.6.2 A single sample (Sample 200) was collected for the recovery of charred plant remains. The sample, which has been dated to 1200-1250 AD, was from a layer (context 215) consisting of organic rich clay, possibly a buried soil (context 215), in Trench 2.
- 3.6.3 A number of charred plant remains were observed in the sample, yet the quantity was poor, with no more than 10 identifications of any individual taxon observed. Several highly clinkered indeterminate cereal grain/large grass (*Poaceae*) fragments were noted. Small to minute-sized charcoal fragments abundant in flots - rare examples >2mm., all identified as oak (*Quercus* sp.). Three fragments of hazelnut (*Corylus avellana* L.) shell noted. Two vetch/vetchling (*Vicia* spp./ *Lathyrus* spp.) noted. Very small quantity of snails, all *ceciliodes* and very small (<2mm) abraded fragments of bone cortex also present.
- 3.6.4 Both wild grasses (such as oat or brome) and vetch can exist as weeds of crop, but also can be cultivated in their own right, especially as fodder crops. Neither were present in sufficient quantity to confirm the tentative interpretation (B. Ford, pers. comm.) of this deposit deriving from stable waste. Unfortunately, only CPR was preserved in this deposit, which to date has only rarely been used successfully to suggest stabling matter (e.g. Derreumaux 2005 – an exceptional case of catastrophic fire); usually identification of such material is made on the basis of waterlogged plant macrofossils and insect remains (e.g. Kenward and Hall 1997).
- 3.6.5 In addition to CPR and charcoal, a small quantity (<10 examples) of snails were noted, all of which were the burrowing species *Cecilioides*. This species can burrow to over 1m below ground surface and are probably modern and intrusive.
- 3.6.6 Some very small fragments (<4mm) of bone cortex were also observed, but these were highly abraded and unidentifiable.

Shell by *Leigh Allen*



- 3.6.7 A total of 26 fragments of hand collected shell weighing 241g was recovered from the archaeological investigation, no shell was recovered from environmental samples. All the fragments were from oyster shell (*ostrea edulis*) and they were recovered from 6 contexts 100, 101, 200, 215, 300 and 317. The largest quantities came from contexts 101, 300 and 307.
- 3.6.8 The shells are in reasonable condition with very little flaking, there are 10 examples of right valves and 15 left valves, the shells are in general of a small size measuring between 45-60mm across.
- 3.6.9 Oyster would have added variety to the basic diet but the small quantities recovered do not indicate that they formed a significant part of the diet.

3.7 Landscape survey

by Stewart Ainsworth

- 3.7.1 This report provides a summary of the analysis undertaken at New Hall to inform excavation strategy prior to the *Time Team* excavations in February 2009. The ground investigation to inform this report was limited to a single day in the field.

Summary

- 3.7.2 Investigation concentrated on the analysis of the location of specific elements of the palace of New Hall and was conducted to Level 2 standards (Ainsworth *et al* 2007). Existing maps, plans and background documentary materials provided as part of the project design (Willers 2009) were used as the base for analysis in combination with the ground inspection. The historical background of New Hall and previous work on the site is presented in Willers 2009. This report summarises the understanding of the relationship of New Hall and its gardens based on the 1-day investigation. No new survey was undertaken.
- 3.7.3 At present the few standing remains of the 16th-century palace are incorporated into the fabric of the present school but a number of 17th-century plans show the layout of the buildings at the start of the 17th century (eg ERO D/DAc 26 plan of 1624; Plate 2). Prior to excavation, rectification of the 1624 plan indicated that the present ha-ha to the south had been dug along the line of the southern frontage of the building range as shown in 1624. The ha-ha is shown on the late 19th-century First Edition Ordnance Survey 1:2500 scale map. It is likely therefore that the site of the principal gatehouse and other buildings on this side were in the areas of lawn and drives to the north of the ha-ha and that there was a strong probability that 16th- and 17th-century building remains would survive below the surface. Excavations were consequently focused on the site of the gate-house, the chapel, and a range of probable apartments at the west (referred to as the 'western wing' in the Project Design, Willers 2009).
- 3.7.4 Perambulation of the larger site indicated that there was also evidence for the survival of a series of garden layouts, some components of which may relate to the period when New Hall was developed as a palace in the early part of the 16th century by Henry VIII. The site is located on land with a gentle fall to the east and this seems to have dictated the orientation and layout of a succession of water-management features within the gardens, as well as an earlier moat on the site (see below), as the natural water flow is in this direction.
- 3.7.5 New Hall is mentioned in documents dating between the 12th and 16th centuries and before Henry VIII's interest in the site (Willers 2009, 2) although there is little indication



as to its form. However, the ground layout and map evidence would suggest that the original site may have been moated.

- 3.7.6 Although the site has had significant changes to its garden layout over time (evidenced in the sequence of maps) it seems that elements of an earlier moated site were successively incorporated into differing phases of the garden designs. The development of the site over time would suggest that the ditch to the north of the present buildings, which later formed the eastern section of a serpentine lake (see below), marks the original northern line of a moat ditch, and together with a right-angled turn to the south, continues to be traceable in mapping to the present day. It seems clear that this is essentially the north-east corner of a former moat, which has been adapted and altered as garden fashion, and fluvial decoration and management changed.
- 3.7.7 It seems likely that the ha-ha to the south may mark the southern arm of the moat although no trace now survives. Although there is also no trace of the western arm, the line is likely to run close to the line of the western range shown on the 1624 map (Plate 2) as it is at this point that the land rises gently to the west. The access into this moated site may have been from the south-east (see below).
- 3.7.8 The drain which runs east to west to the north of the present school clearly continues line of the large serpentine lake shown on a plan (date unknown) which shows the gardens in a semi-naturalistic layout with sweeping curves to the woodlands to the west, and south. Curving boundaries are shown immediately to the south of the main buildings and it is clear at this stage that the ha-ha would have been an essential component of this style of garden which is typical of the mid to late 18th century. Elements of this garden are still recognisable in the First Edition 19th-century mapping.
- 3.7.9 However, the linearity of this 18th-century serpentine lake suggests that it is in itself an adaptation of an earlier straight 'canal', which would have been created by extending the north arm of the original moat to the west. The length of this feature would be in keeping with the scale of what appears to have been a regular compartmentalised garden to the west shown as the Pleasure Ground on a map of 1730 (CRO T/B 165/37) although it is likely to have had earlier origins within the 16th- or 17th-century gardens on the site. The large walled garden to the west (which survives today as a nursery and tennis courts) is also shown on the 1730 plan and is clearly part of the same layout. It is mostly built of Tudor brick (Jonathan Foyle pers comm) indicating 16th-century origins. Although the 'canal' is not on the 1730 plan, an L-shaped lake to the east of the site, which was also retained through the various stages of gardens to the present day, is shown. The whole would suggest that there was a major expansion of garden mostly to the west outside the original medieval moated enclosure.
- 3.7.10 The most likely context for this is the acquisition of the site by Henry VIII in the early 16th century and the building of the palace. The creation of a large, rectangular block of gardens on an east-west orientation would be in keeping with the scale of building expansion. The suggested dimensions of this principal garden block are c 320m long and c 120m wide. The fall of the present ground from west to east would suggest this would have been stepped, and would have accommodated open parterres, knots, and walking terraces. At the south-west of this garden, an attached enclosure measuring c160m by 120m, which still contains woodland, may well have been an original 'Wilderness' - it was shown as such on the 1730 plan - as such features were common in high status 16th-century gardens.



- 3.7.11 The evidence – the small part shown as ‘Garden’ on the 1624 plan (Plate 2), and lack of any change of use through later maps and plans - would indicate that this block to the west of the house continued to be the principal garden area throughout the 17th century and later periods. The 1624 map shows a ‘Garden’ also to the north of the main entrance range. By this stage this may have replaced a former courtyard of buildings (including the King’s apartments), although it is likely that there would have been a ‘Privy’ garden on this north side, either to the east or west of this area. To the south of the ha-ha, a block of open ground c 360m long by c 120m wide, which continues the southern boundary of the ‘Wilderness’ appears also to have always formed part of the setting of the 16th-century palace and later house, probably as open space. The wide approach avenue called ‘The Walk’ which leads from the London Road to the south, and now truncated by the A138, forms a perfectly symmetrical approach to the gatehouse of the 16th-century palace. Although this may have had changes to it during the 17th century its origins are likely to be associated with Henry VIII’s development of the site.
- 3.7.12 This would suggest that the more sinuous road to the east known as General’s Lane was the original route to the moated site. This idea is reinforced by the fact that the field patterns respect General’s Lane. Furthermore, its sharp diversion to the north-east at the south-east corner of the block of open ground to the south of the palace suggests that the block was inserted in the early 16th century when the Palace was developed.

4 DISCUSSION

4.1 Reliability of field investigation

- 4.1.1 Most of the archaeological remains revealed during the mitigation were only exposed in plan, which in the case of extant brick structures in particular made the interpretation of the stratigraphic relationships problematic. A number of sondages were hand excavated in order to clarify relationships, but because of time constraints their number was limited. However, there were sufficient sondages to enable the understanding of the complex archaeology.
- 4.1.2 The limited quantities of finds recovered in the investigation were generally from well defined and stratigraphically secure contexts. There was no intrusive pottery and very little residual material. The pottery falls broadly into two chronological groups: medieval and 17th-century to early 18th-century. Only one context, wall 212, was dated to c 1450-1650, and could be attributed with some confidence to the Tudor occupation.
- 4.1.3 It is probable that this polarization of finds reflects the fact that excavation generally stopped at the level of structural remains. The mitigation strategy was designed to preserve extant structures *in situ*. Most of the excavated contexts therefore were stratigraphically and chronologically later than the structures, and mainly comprised demolition and levelling deposits. Earlier Tudor horizons were either not investigated or had been removed during demolition. The small quantity of medieval finds derived from contexts sealed by later activity and excavated in a very limited number of sondages.

4.2 Evaluation objectives and results

- 4.2.1 The results of the evaluation are listed below in relation to the specific project aims outlined in Section 2.2

Project Aim 1: Gatehouse



- 4.2.2 The excavation undertaken in Trench 1 achieved all three research aims designed for the Gatehouse area. The extant brick structures revealed in Trench 1 reflected accurately the building outline and even the thicknesses of the walls known from the 18th-century plan (Figs 3-4; Plate 1), but differ significantly from the gatehouse shown on 1624 survey (Plate 2).
- 4.2.3 The structures identified included the foundation walls of the northern part of the gatehouse together with two buttresses flanking the entrance, as well as short sections of the walls of the entrance passage within the Gatehouse. The fragmentary stone surface of the courtyard was also exposed.
- 4.2.4 The 18th-century plan shows substantial rectangular projections flanking the entrance on the N façade of the gatehouse. These projections were located in the excavation. To the W of the entrance a substantial brick rectangular footing [114] was revealed abutting the N wall 112 of the gatehouse. To the E on the N side of wall 115 a rectangular robber trench 117 was found together with fragment of brickwork [116]. The latter was badly truncated by a modern service trench.
- 4.2.5 The 1624 plan differs dimensionally and in detail from the structural remains and from the 18th-century survey. In particular the 1624 survey appears to show that the rectangular projections on the N face of the gatehouse were larger, hollow and built as an integral part of the N wall. Although the excavations revealed that there had been structural changes involving these projections, there is no structural evidence to support structural details shown on the 1624 survey. It is most likely that the differences between the 1624 survey and the surviving remains reflect inaccuracies on the survey. While correct in broad outline the 1624 survey appears to be inaccurate in detail.
- 4.2.6 The structural remains of the N part of the gatehouse revealed in Trench 1, the results of the geophysical survey and the evidence of historic plans suggest that the southernmost portion of the Gatehouse, comprising the two towers flanking the entrance, would have been removed by the creation of the later ha-ha.
- 4.2.7 The extant structures were exposed in plan and subsequently a series of sondages was hand excavated revealing a reliable sample of building materials, mortar and coursing patterns used in the construction of the Gatehouse.
- 4.2.8 The excavations revealed that the Tudor structures replaced earlier, medieval buildings, remains of which were represented by wall 122.

Project Aim 2: Chapel

- 4.2.9 The excavation in Trench 2 did not achieved all the research aims for the Chapel. The precise location and size of Trench 2 was determined in the light of the very strong geophysical response provided by the GPR survey. The trench that was excavated revealed the large brick foundations of the SE corner of the Chapel, but did not addressed the issue of the location of the vestry and gallery supports.
- 4.2.10 The walls of the SE corner of the chapel were reflected accurately by both the building outline and the wall thicknesses shown in the 18th-century plan (Fig. 5; Plate 1). The excavated brick structures also included a series of small internal walls and an extant mortar sub-base for a floor surface. The internal walls exposed in the south eastern corner of the Chapel may relate to large statute position in the SE corner and recorded on the 18th-century plan. The plan of the chapel area on the 1624 survey differs slightly in layout from the 18th-century plan.



- 4.2.11 The excavations provided very little evidence for either Italianate or Renaissance craftsmanship. Only two fragments of architectural stonework from this trench were identified. Both were recovered from context 204, which was a layer of rubble comprising World War II bomb damage material.

Project Aim 3: West Wing

- 4.2.12 The excavation undertaken in Trench 1 addressed all three research aims for the West wing area. The brick walls exposed in Trench 3 generally correlate with the building outlines known from the 18th-century plan (Fig. 7; Plate 1), and the position of the northern bay window 320 and the main NNW-SSE wall 312 appear to match the plan. The main discrepancy is the position of the southern bay window 333. Its northern edge is approximately 1.4m north of the location suggested by the 18th-century plan. While it is possible that the discrepancy between the surviving structure of bay window 333 and the 18th-century survey, is the result of a later rebuild, there is no record of such work. The surviving archaeological evidence is incomplete but it seems most likely that bay window 333 represents original Tudor construction, and that there is a discrepancy between archaeological evidence and historic plan.
- 4.2.13 The internal plan of the extant structures exposed in Trench 3 is also slightly different from the layout shown in the 18th-century plan (Plate 1) and quite different from that shown on the 1624 plan (Plate 2). The evidence is fragmentary and it is certain that the extant structures represent a phase of construction and occupation pre-dating the phase shown in the 18th-century plan.
- 4.2.14 It is uncertain whether the lodgings of the West Wing were designed for high status residents. No high status finds or stonework were found and the bricks used were the same as the bricks used elsewhere on site. Furthermore the extant internal layout suggests domestic offices (laundry, kitchens, etc) rather than high status lodgings. However, it is possible that the exposed archaeological remains reflect later use of the structure perhaps dating to the period when Beaulieu Palace was in decline. The Tudor west wing could have been designed and built originally for occupation by high status visitors.

4.3 Interpretation

- 4.3.1 The following interpretation of the results of the archaeological mitigation is organised by broad chronological phasing. A stratigraphic sequence of contexts was established independently for each of the evaluation trenches, and an Harris matrix was generated. The matrices were subsequently augmented with pottery spot-dates to further enhance the phasing process. The small quantity of datable artefacts retrieved during the mitigation proved to be of only a limited value to this process. As a result the suggested site phasing outlined below was effectively based on the correlation of discrete stratigraphic horizons with the known historic events, only complemented by the artefactual evidence where available. Five chronological phases were recognised.
- 4.3.2 Although up to three discrete construction horizons of the Palace could be identified, the scarcity of datable finds necessitated their attribution to a single broad phase of the Tudor Palace, followed by a phase of final demolition in 1737 (Tuckwell 2006, 104). Despite the fact that the period covered extends beyond the reigns of the Tudor dynasty, the term Tudor Palace seems justified, since according to the historic evidence, after Thomas Radcliffe, the Earl of Sussex rebuilt the north range in 1573 no major works were undertaken on the site (Colvin et al 1982, 174; Tuckwell 2006).

Phase 0 – Natural



4.3.3 The horizon of natural clay was exposed in Trench 1 at c. 43.83m OD. A section revealed by the excavation of a modern service trench revealed a layer of compacted gravel (166) at c. 43.40m OD. However no relationship between the gravel and clay was established within the limits of the excavation. It is probable that the gravel represents a natural horizon of underlying geology. However, because of the uncertain relationship with the natural clay, it is possible that layer 166 was be one of the lower fills of cut feature 168.

4.3.4 Another possible layer of natural clay (335) was also exposed in a small sondage in the SE corner of Trench 3, however it was found at a significantly higher level - 44.41m OD – and may therefore have been a make-up or landscaping deposit.

Phase 1 – Prehistoric

4.3.5 Cut into the natural clay was a cluster of shallow features [128], [151], [140], [153]. Because they were only partially exposed within the sondages, and because only 140 and 128 were excavated, their full dimensions, alignment or the spatial organization are not known. The size and outline of exposed features suggests that they were probably pits. The only find recovered from any of these features was a single flint flake from pit 128. This single find and the fact that the features were sealed by a silty clay layer (127), which is presumed to be the subsoil, suggest that the pits may be prehistoric in date.

Phase 2 - Medieval

4.3.6 The interpretation of a probable cut feature [168], exposed in section 100 (Fig. 4) is more problematic. The cut was only revealed at the bottom of section 100, and was not seen on the opposite side, in section 101. This could suggest that the cut was linear, aligned broadly NW-SE, and might have formed a substantial ditch. It is possible that it was part of the moat of the 15th-century manorial house of Thomas Boteler, the Earl of Ormond's, postulated by David Andrews (Andrews 2000, 2). Unfortunately, the complete lack of finds and the scarcity of other evidence does not provide any further support for this hypothesis. As the presence of this feature was not confirmed in sondage 2 m to the west, it is perhaps more appropriate on available evidence to interpret this feature as a large pit. The presence of a large cut feature in this position may be the explanation for the very wide and deep footings later constructed for the Tudor gatehouse (see 4.3.14 below).

4.3.7 The date and stratigraphical position of this unexcavated feature is no less problematic. It appeared to truncate gravel layer 166, but this relationship is not certain. Furthermore, due to a later truncation by construction cut for wall 116 the potential relationship with natural clay was lost. The only indication of its early stratigraphic position is the fact, that it is sealed by layer 159, which resembled the deposits of presumed medieval occupation. The dating and stratigraphic position of pit 168 may be subject to change.

4.3.8 Sondages in Trenches 2 and 3 revealed layers of buried soil (215 and 334 respectively). Layer 215 produced pottery which was spot-dated to c 1175/1200-1300, and which could probably be dated as closely as c1200-1250. This would place it in the period when New Hall was held by the Augustinian Canons of Waltham Abbey (Tuckwell 2004, 4). The pottery types and significant residual sooting suggest a domestic use for the pottery. The buried soil was overlain by layers of organic trample (216 and 232).

4.3.9 A series of similar trample deposits was exposed overlying buried subsoil horizon (127=137) in Trench 1, but no evidence of buried soil was found within the excavated



sondages. It may be argued however that these deposits may represent remnants of a heavily trampled soil.

- 4.3.10 Only Trench 1 produced structural evidence of medieval date. Subsoil 127 was also overlain by a fairly thick layer of compacted sterile clay (126) (Fig. 4, section 105). This probably served as a rudimentary floor surface for a building represented by the N-S aligned flint and tile wall 122 (Fig. 3). As only this single wall was exposed the size, shape, and the orientation of the building are unknown. Furthermore, because the wall was built directly on surface 126 there little chance of archaeologically discernible evidence for any robbing. The only indication of the position and alignment of the building may be provided by the extent of underlying clay (126). The latter seems to thin out a disappear approximately 0.6 m to the east and north of the wall remains, and is more substantial to the south and west. This may suggest that the building was aligned N-S, with wall 126 forming its eastern side.
- 4.3.11 Overlying the clay layer and abutting the wall was a series of silty deposits (in particular 143 and 147), which may represent internal and external occupation respectively. Unfortunately none of them deposits yielded finds.

Phase 3 – Tudor Palace

- 4.3.12 All three evaluation trenches produced structural remains, which could be confidently assigned to Henry VIII's construction works of 1516-1521 (Colvin et al 1982, 172), and also revealed evidence for modifications to the original design. Because of the lack of datable finds it is only possible to provide a broad dating of this phase based on historical evidence. Phase 3 begins with the start of building works in 1516 and ends with the final demolition of 1737 (Tuckwell 2006, 104).

The Gatehouse

- 4.3.13 Trench I revealed brick foundation walls of the northern part of the Gatehouse facing the main courtyard. The foundations were set in construction trenches which exceeded 1.2 m in depth. The construction trenches were cut through a thick gravel levelling layer (SG169), which was laid down after the demolition of the medieval building represented by wall 122.
- 4.3.14 The brick walls [112 and 115] of the Gatehouse measured approximately c. 1 m (3 ft 4 in) in width and were set on substantial stepped brick-built foundations, with a maximum width of c. 1.82 m (nearly 6 ft). The foundations may have been built to this size because there was a soft spot as result of the of feature represented by cut 168 (see 4.3.6 above). This suggests that they were perfectly capable of bearing significant loads, therefore allowing construction of walls of a considerable height.
- 4.3.15 The main axis of the Gatehouse passageway was aligned NNW-SSE. The entrance, marked by the gap between walls 112 and 115, measured 3.05 m (10 ft) in width. The passageway through the gatehouse was nearly twice as wide: wall 113, which formed one side of the passageway, was set nearly 1.52 m (5 ft) back from the end of wall 112 which marked edge of the entrance. A similar distance from the end of wall 115, which formed the other side of the entrance, a small fragment of brickwork projected S from 115. If it is assumed that this fragment of brickwork is all that remains of the other passage wall, this would make the passageway about c 6.1 m (c 20 ft) wide.
- 4.3.16 The brick foundations 114 and 116, and the robber trenches 117 and 131 confirm that on the inside face of the gatehouse the entrance was flanked by two substantial brick features, probably buttresses. These features appear to be secondary. Brickwork foundation 114 abuts wall 112 and, although built on its wide foundation, it was clearly



later in date. On the other side of the gateway brickwork 116 again abuts the main wall [115] of the gatehouse, but was partly truncated by a modern service trench. On both sides of the gateway there were later robber cuts (cuts 117 and 131).

- 4.3.17 The two brick foundations or piers are clearly shown on both the 18th-century survey (Plate 1) and the 1624 plan (Plate 2) although the latter is less accurate in detail. The surviving brick structure of foundation 114 and the outline of the robber trenches 117 and 131, both suggest that these two brick buttresses measured 2.44 m (8ft) wide and c 0.8 m (2 ft 7 in) deep and that they were broadly rectangular. Although it is probable that the rectangular robber trenches reflect the shape of the brick foundation, but not necessarily the form of the above ground structures. There was a clear semicircular patch of mortar on foundation 114 and this suggests that the above ground structures may have taken the form of half columns decorating the inner face of the gatehouse and flanking the entrance.
- 4.3.18 The sondages in Trench 1 provided little evidence for construction horizon of the Gatehouse. It was represented by fairly insubstantial layer of crushed brick and mortar (108). Only a limited portion of the layer was excavated, and it yielded a single sherd of pottery dated to c. 1250-1350. The pottery is probably residual, presumably derived from excavation of the foundations. Posthole 145 exposed in the southern section of the trench may represent the remains of scaffolding or shoring used during the construction of the Gatehouse.
- 4.3.19 Following construction the area was levelled with a thick layer of gravel (107). This appears to have formed a base for the rag stone courtyard surface, two isolated patches of which (120 and 121) survived by the northern edge of the trench. There is no evidence for the ragstone surface within or near the entrance way. Both the historic plans show a driveway running from the gatehouse into the courtyard and continuing to the north with branches to the east and west. It is likely that this driveway was paved with a higher quality surface, and that this material was subsequently removed or perhaps more correctly salvaged. The ragstone surface may have filled the quadrants between the driveways. It is quite possible that the ragstone surface was laid down quite late on, well after the Tudor period. The stone surfaces appear to be partly truncated by robber cuts 117 and 131 (see 4.3.16).

The Chapel

- 4.3.20 Trench 2 yielded evidence for substantial brick walls, which correlated with the historic 18th-century plan (Fig. 5; Plate 1) proved to accurately reflect the footprint of the south eastern corner of the Chapel.
- 4.3.21 Walls 208 and 207 formed the SE corner of the chapel. Both walls were very substantial - 1.22 m (4 ft) and 1.4 m (4 ft 7 in) wide respectively - and capable of supporting a significant structural load. The southern portion of wall 208 by the corner of the building was built on even wider foundations [209] measuring up to 1.6 m (5 ft 4 in) in width.
- 4.3.22 A construction sequence can be suggested on the evidence of the stratigraphic sequence and observation of the surviving structural evidence. Wall 207 the south wall of the chapel abuts the N-S wall 208 which forms the east wall of the West Wing. Furthermore evidence of the slight misalignment between wall 208 and its foundation 209 strongly suggest that the wall was constructed as a separate and later operation from the building of the foundation.
- 4.3.23 The fact that wall 207 and presumably its footings, were built after wall 208 was set out and constructed, suggests that the plan of the chapel was not fixed at an early date.



Possibly when the main walls and the foundations of the west wing were laid the interior arrangements were not finalised.

- 4.3.24 Once wall 28 and the south chapel wall 208 had been built, it would seem that a series of deposits of construction debris contained by the Chapel walls was subsequently levelled with clay layer (218). Cutting this levelling layer was a square posthole [225], presumably a remnant of the scaffolding used during the construction works.
- 4.3.25 After levelling of a series of internal brick walls [211, 212 and 214] was constructed in the SE corner of the building. The walls were set in fairly deep construction cuts and formed small square cells which were subsequently floored with brick fragments. The location of these walls by the eastern wall of the known Chapel, as well as their form designed to dissipate structural loads suggest that they might have formed foundations for the altar.
- 4.3.26 One of these walls, 212, produced a single fragment of pottery trapped in its mortar. This is dated to the 16th century, which correlates with the date of the construction of the Palace.
- 4.3.27 After the wall construction, the internal surface level was again raised by a series of clay and gravel layers (220 and 228) and sealed by mortar and roof tile layer (213) which formed a base a stone or tile floor, now completely lost.
- 4.3.28 Finally, in the SE corner of the chapel, within the angle formed by wall 214, a patch of brick [210] as laid down to form a new surface. It seems likely that this patch was necessary because of subsidence at this corner of the chapel. The foundation 209 of wall 208 was built wider adjacent to the SE corner of the chapel suggesting that there may have been a soft spot in the vicinity. It is also instructive to notice that there was some dipping of the courses in the brickwork of wall 208 near the SE corner of the chapel. Because the brick surface 210 had to be preserved in situ, it was clearly not possible to lift it in order to investigate whether or not there had been subsidence.

The West Wing

- 4.3.29 Trench 3 revealed a substantial brick foundation 312 aligned NNE-SSW for wall 319, which formed the western façade of of the West Wing of the Palace. It was subsequently abutted by brick foundations 320 and 333 for bay windows. Probably at the same time a brick drain 321 was built against the southern edge of bay window 320. It was slightly cut into the façade and might have drained rained water transported by a probable downpipe. This group of structures occupied the earliest stratigraphic position in the sequence of development of the Palace in phase 3. It is therefore possible that it may represent the original design of Henry VIII's Beaulieu, however it is important to note that no dating evidence was found to confirm this suggestion. The construction of the west wall with bay windows suggests the intention to build a high status structure with a façade to match.
- 4.3.30 The next phase of development is represented by the construction of two small rooms with brick floors and integral drains. A rectangular brick plinth 328 was built to the east of 312, approximately mid way between the bay windows. It was followed by construction of a series of internal walls 324, 325 and 331, which formed two rectangular rooms with brick floors laid in a fairly elaborate patterns (Plates 12-13). A brick and tile drain 322 was integral with the south brick room, and it is likely that a similar drain existed in the north room. These drains joined together and then cut through the west wall [312] of the range. Abutting plinth 328 from the south was a



rectangular surface of mortar bonded brick fragments [329] contained by a wall 320 built mainly of tile. The floor [329] and wall [320] were built after wall 324 and therefore are later in date of construction than the two small rooms with brick floors.

- 4.3.31 The fact that these rooms were constructed behind bay windows which were built for display in itself suggests a major change of plan. This is further reinforced by the fact that the line of wall 312 was cut back in shallow arc in each of the two small brick-built rooms indicates eloquently that there had been a major change of plan. Exactly what the rooms were for is unknown, but the brick floors, and integral drains suggest the significant presence of water. Possibly large basins or tanks to hold water were sited here. It is interesting to compare the layout of this part of the west range as revealed by archaeology with the 18th-century plan. The latter shows two small apparently oval rooms side by side and little set back from the west wall. These were located in a similar position to the Tudor brick-built rooms, though a little further east. Perhaps they were later versions of the Tudor rooms.
- 4.3.32 It has been suggested that the elaborate bay windows of the West Wing overlooking the main garden could indicate that the wing was intended for residents of particularly high status. This may have been the original intention, but the construction of the small brick floored rooms with their integral drains, whatever their use whether were kitchen or a laundry, seems to show that the plan for the use of the ground floor of the west range was changed to something more utilitarian. It is possible that the high status lodgings still existed on the upper floors, whilst the ground floor was converted to utilitarian facilities servicing the lodgings directly above.
- 4.3.33 Another phase of construction is represented by building of another rectangular brick plinth 315=327 to the north of existing 328. It appears to have partially removed one of the walls defining the north brick floored room, however it is still possible that all the earlier structures remained in use. The function or the date of the new addition is unknown.
- 4.3.34 The final phase of development recorded in trench 3 is represented by construction of a new brick drain 318. The feature cut through plinth 315=327 and through the northern of the two small rooms. It probably removed the drain that originally led from this room. It cut through the west wall [312] and then joined with drain 322 before emptying into the external brick culvert 337, which was partially exposed in the western section of the trench. The relationship between the two structures was removed by a later pipe trench [313], however both are likely to be contemporary. Unfortunately the excavation did not yield any finds that could provide a secure date for the construction of this new and fairly extensive drainage system. It possible, however, that the drain and the culvert may be related to the 1624 implementation of elaborate waterworks engineered by Cornelius Drebbel for George Villiers, the Duke of Buckingham (Andrews 2000, p. 89).

Phase 4 – Demolition

- 4.3.35 Phase 4 represents demolition of the majority of the Palace, of which only the modified northern wing survives to the present day. The demolition horizon is well documented in the archaeological record except for Trench 3 where the upper stratigraphy was confused by WWII bomb damage.
- 4.3.36 The demolition deposits in Trenches 1 and 3 provided datable artefactual evidence. The written record describes the final demolition of the main body of the Palace in 1737 by John Olmius, Lord Waltham, who also remodelled the north wing (Andrews 2000, p. 9, Colvin et al 1982, Essex Review 1908, p.20, Tuckwell 2006, p. 104).



- 4.3.37 The pottery obtained from demolition layer (106) in Trench 1 was spot-dated to c. 1600-1750 which confirms the historic date. Trench 3 however produced demolition layers with finds spot-dated to c. 1600-1700 (context 308) and even c. 1600-1650 (context 307). It is probable that this early pottery was residual, it does however leave open the possibility that the western wing of the Palace might have been demolished earlier, as it is known to have been described as a 'ruin' as early as 1713 (Essex Review 1908, p. 20, Tuckwell 2006, p. 104).
- 4.3.38 The demolition deposits of Trench 3 were subsequently cut by a NNW-SSE aligned service trench for lead pipe [313], which was sealed by substantial gravel levelling layer (306). Due to the lack of finds it is hard to establish whether this deposition was a part of demolition and remodelling of 1737, or was it part of landscaping works undertaken in 1767 (Andrews 200, p.9), or some other activity unrecorded in historic documents.

Phase 5 – Modern

- 4.3.39 The modern activity recorded in the evaluation trenches was confined to a series of service cuts and deposits related to the bomb damage sustained by the Palace during World War II (Tuckwell 2006, 170).
- 4.3.40 Trench 2 produced a substantial deposit of brick rubble (204) filling a bomb crater from 1943. Presumably related to the bomb damage was an oval pit [302] recorded in Trench 3 and backfilled with large amounts of worked stone.
- 4.3.41 A substantial modern service cut [102]=[206] aligned NW-SE and containing a salt glazed sewage/foul water pipe was exposed in Trenches 1 and 2.
- 4.3.42 Trench 3 revealed another service cut [310] for a lead pipe, which was recorded by Sister Mary Stephen during works in 1968 (Stephen 1996, 126).

4.4 Significance

- 4.4.1 According to the Essex Historic Environment Record no formal archaeological work had been undertaken at New Hall. The only exception is the drawn record made by Sister Mary Stephen of the structural remains unearthed by workmen in 1968 (Plate 3). The evaluation conducted in the School grounds was the first archaeological, geophysical and landscape study to attempt to explore the physical evidence in conjunction with the historical evidence of the site.
- 4.4.2 The excavations confirmed that the known historic plans of Tudor Beaulieu Palace dating from 1624 and the 18th century were broadly accurate. There were difference particularly in details between both historic plans and the archaeological remains uncovered. The main discrepancies are (i) between the historic plans and the physical evidence for the positions of bay windows in the west range found in Trench 3, and (ii) between the details of the 1624 plan and the physical remains of the Gatehouse in Trench 1.
- 4.4.3 The excavations confirmed the pre-Henrician occupation on site by revealing structural remains related probably to the medieval manor in Trench 1. Furthermore a series of prehistoric features was found in Trench 1, which push the known history of New Hall site back by some years.
- 4.4.4 The majority of structural remains were revealed at a comparatively high level; structural remains were found directly below the topsoil in Trench 1. The structures



were generally in a very good condition, despite some truncation by modern service trenches .

- 4.4.5 The results of the archaeological mitigation will be a valuable tool for future management of the site, particularly facilitating the assessment of the potential effect of any modern development on underlying historic and archaeological deposits and structures.
- 4.4.6 The excavations at New Hall were undertaken as a part of popular national television programme Time Team, and fulfilled the educational mission of Oxford Archaeology as an educational charity by helping the public to discover and enjoy their heritage through modern medium of television.



Appendix A. TRENCH DESCRIPTIONS AND CONTEXT INVENTORY

Trench 1						
General description				Orientation		ENE-WSW
The trench provided evidence for several phases of activity. A number of probably prehistoric pits was found as well as remains of presumably medieval structure. The main body of evidence was represented by the extant brick foundation walls of Tudor Gatehouse and related remains of cobble surface. A substantial modern service truncation was also found.				Avg. depth (m)		0.3
				Width (m)		3.9
				Length (m)		9.7
Contexts						
context no	type	Width (m)	Depth (m)	comment	finds	date
100	-	-	-	Unstratified		
101	Layer	-	0.2	Topsoil		c. 1650-1750; pipe: c. 1730-1780
102	Cut	0.9	>1.2	Service cut	-	-
103	Fill	0.9	>1.2	Service cut fill		pipe: 17thC
104	Layer	>1.20	0.02	Rubble layer	SF100	
105	Layer	>1.5	0.03	Rubble layer		
106	Layer	>2m	0.15	Rubble layer	SF101, SF 102	c. 1600-1750; pipe: 17thC
107	Layer	-	0.12	Gravel levelling		
108	Layer	-	0.06	Rubble layer		c. 1225-1400 (core date c.1250-1350)
109	Layer	-	0.2	Gravel levelling	-	-
110	Cut	>1.70	>0.24	Wall construction cut	-	-
111	Fill	>1.70	>0.24	Construction cut backfill	-	-
112	Structure	1	>0.4	Brick wall	-	-
113	Structure	0.9	>0.4	Brick wall	-	-
114	Structure	0.74	-	Brick wall	-	-
115	Structure	1	>1.2	Brick wall	-	-
116	Structure	0.7	0.3	Brick wall	-	-
117	Cut	0.7	>1.2	Robber cut	-	-
118	Fill	0.7	>1.2	Robber cut backfill	-	-
119	Structure	0.8	>0.1	Brick wall	-	-
120	Layer	>1.2	0.08	Cobble surface		
121	Layer	>2.4	0.08	Cobble surface	-	-
122	Structure	0.24	0.4	Flint/tile wall	-	-
123	Structure	0.6	-	Drain	-	-
124	Layer	>0.4	>0.16	Levelling layer	-	-
125	Layer	>0.8	>0.13	Gravel levelling	-	-



126	Layer	>1.14	>0.1	Clay platform	-	-
127	Layer	>2.24	0.12	Subsoil	-	-
128	Cut	>0.46	0.21	Pit	-	-
129	Fill	>0.46	0.21	Pit fill		
130	Layer	>3.6	>0.28	Natural clay	-	-
131	Cut	0.84	0.2	Robber cut	-	-
132	Fill	0.84	0.2	Robber cut backfill	-	-
133	Cut	-	-	Construction cut	-	-
134	Layer	>0.64	0.18	Gravel levelling	-	-
135	Layer	>0.65	0.06	Levelling layer	-	-
136	Layer	>0.64	0.12m	Occupation layer?	-	-
137	Layer	>0.64	0.06	Subsoil	-	-
138	Layer	>1.25	0.05	Occupation layer?	-	-
139	Layer	>0.7	0.08	Occupation layer?	-	-
140	Cut	>0.6	>0.3	Pit	-	-
141	Fill	>0.6	>0.3	Pit fill	-	-
142	Layer	>3.8	>0.1	Rubble layer		
143	Layer	>1.1	0.12	Occupation layer	-	-
144	Layer	>1.2	0.16	Gravel levelling	-	-
145	Cut	0.5	>0.5	Posthole	-	-
146	Fill	0.5	>0.5	Posthole fill	-	-
147	Layer	>0.4	0.04	Occupation layer?	-	-
148	Cut	>1	>0.9	Construction cut	-	-
149	Fill	>1	>0.9	Construction cut backfill	-	-
150	Layer	>1.4	0.04	Trample	-	-
151	Cut	>1	-	Pit	-	-
152	Fill	>1	-	Pit fill	-	-
153	Cut	1.12	-	Ditch/pit	-	-
154	Fill	1.12	-	Ditch fill	-	-
155	Cut	>1	-	Construction cut	-	-
156	Fill	-	0.24	Pit fill	-	-
157	Fill	-	0.34	Pit fill	-	-
158	Layer	-	0.02	Iron panning	-	-
159	Layer	>0.86	0.08	Occupation layer?	-	-
160	Layer	>0.9	0.12	Buried soil?	-	-
161	Layer	>0.9	0.1	Levelling layer?	-	-
162	Layer	>0.9	0.08	Crushed CBM	-	-
163	Layer	>0.9	0.06	Stone layer	-	-
164	Cut	0.56	>0.3	Service cut	-	-



165	Fill	0.56	>0.3	Service cut backfill	-	-
166	Layer	>0.26	>0.24	Natural? gravel	-	-
167	Layer	>1.1	0.12	Make-up layer	-	-
168	Cut	>0.78	>0.66	Pit?	-	-

Trench 2						
General description				Orientation		NNW-SSE
The trench revealed substantial brick foundations for SE corner of the Tudor Chapel, along with some internal division walls and related construction debris. Evidence for mortar floor sub-base and extensive levelling was found. Probable medieval occupation layers were partially exposed beyond Tudor structures.				Avg. depth (m)		1
				Width (m)		4.8
				Length (m)		9
Contexts						
context no	type	Width (m)	Depth (m)	comment	finds	date
200	-	-	-	Unstratified		
201	Layer	-	-	Tarmac	-	-
202	Layer	-	0.3	Gravel make-up	-	-
203	Layer	-	0.2	Gravel make-up	-	-
204	Layer	4.6	0.7	Rubble layer	-	-
205	-	-	-	Void	-	-
206	Cut	0.7	>1	Service cut	-	-
207	Structure	1.4	-	Brick wall	-	-
208	Structure	1.2	-	Brick wall	-	-
209	Structure	>1.6	-	Brick wall	-	-
210	Structure	1.3	-	Brick surface?	-	-
211	Structure	0.2	>0.4	Brick wall	-	-
212	Structure	0.64	>0.18	Brick wall		C1450-1650, prob. 16thC
213	Layer	>1.5	0.04	Surface make-up	-	-
214	Structure	1	>0.5	Brick wall	-	-
215	Layer	>3.4	0.14	Organic rich layer		c.1175/1200-1300
216	Layer	>3.4	0.1	Occupation layer	-	-
217	Layer	1.4	0.2	Demolition layer	SF201	
218	Layer	>1.5	0.1	Clay levelling	-	-
219	Layer	>1.5	0.08	Levelling layer	-	-
220	Layer	>1.5	0.26	Levelling layer	-	-
221	Fill	0.7	>1	Service cut backfill	-	-
222	Cut	>1.5	>0.7	Unknown cut	-	-
223	Fill	>1.5	>0.2	Clay fill	-	-



224	Fill	>1.5	>0.5	Clay fill	-	-
225	Cut	0.22	>0.16	Posthole	-	-
226	Fill	0.22	>0.16	Posthole fill	-	-
227	Layer	>1.3	0.05	Mortar dump	-	-
228	Layer	>0.58	0.32	Make-up layer	-	-
229	Cut	1.2	>0.54	Construction cut	-	-
230	Fill	>0.08	>0.4	Construction cut backfill	-	-
231	Cut	0.66	0.36	Robber cut	-	-
232	Layer	>1.42	>0.02	Occupation layer	-	-
233	Cut	1.3	-	Construction cut	-	-
234	Cut	1.2	-	Construction cut	-	-

Trench 3						
General description				Orientation		NNW-SSE
The trench revealed extensive brick foundations for W wall and two bay windows of the western range of the Palace. A series of internal brick rooms and drains was also exposed. A large modern pit containing large amount of worked stone resulted from WWII bomb damage was found in the NE part of the trench.				Avg. depth (m)		0.4
				Width (m)		6.5
				Length (m)		7.5
Contexts						
context no	type	Width (m)	Depth (m)	comment	finds	date
300	-	-	-	Unstratified		c. 1950-1970; pipe: 17thC
301	Layer	-	-	Topsoil		
302	Cut	>1.8	>0.5	Modern cut	-	-
303	Fill	>1.8	>0.5	Modern fill		
304	Layer	-	-	Turf	-	-
305	Layer	-	-	Subsoil	-	-
306	Layer	-	0.06	Levelling layer		
307	Layer	>0.5	0.02	Levelling layer		c. 1600-1650
308	Fill	0.3	0.3	Demolition fill		c. 1600-1700; pipe: 17thC
309	Layer	>2.5	>0.3	Levelling layer	-	-
310	Cut	0.26	0.35	Service cut	-	-
311	Fill	0.26	0.35	Service cut fill	-	-
312	Structure	1	>0.15	Brick wall	-	-
313	Cut	0.4	0.5	Service cut	-	-
314	Fill	0.4	0.5	Service cut backfill	-	-
315	Structure	0.5	-	Brick plinth	-	-



316	Structure	1.92	>10	Brick floor	-	-
317	Cut	0.7	0.4	Drain cut	-	-
318	Structure	0.27	0.4	Brick drain	-	-
319	Structure	0.7	0.12	Brick wall	-	-
320	Structure	1.3	-	Brick wall	-	-
321	Structure	0.52	0.2	Brick drain	-	-
322	Structure	0.6	>0.2	Brick drain	-	-
323	Structure	2.6	>0.10	Brick floor	-	-
324	Structure	0.34	>0.1	Brick wall	-	-
325	Structure	0.3	0.2	Brick wall	-	-
326	Structure	1.92	>10	Brick floor	-	-
327	Structure	0.74	>0.25	Brick plinth	-	-
328	Structure	1.34	0.2	Brick plinth	-	-
329	Structure	1.3	-	Brick floor?	-	-
330	Structure	0.36	0.1	Tile and brick wall	-	-
331	Structure	0.22	0.1	Brick wall	-	-
332	Layer	1.5	>0.2	Rubble layer		
333	Structure	1.15	-	Brick wall	-	-
334	Layer	>0.46	0.25	Buried soil?	-	-
335	Layer	-	-	Natural	-	-
336	Fill	0.84	>0.4	Construction cut backfill	-	-
337	Structure	-	-	Brick culvert	-	-
338	Layer	1.5	0.12	Rubble layer	-	-
339	Group	-	-	Internal walls and floors	-	-
340	Cut	2	>0.4	Construction cut	-	-
341	Fill	0.7	>0.1	Construction cut backfill	-	-



Appendix B. FINDS REPORTS

B.1 Assessment of the pottery

By John Cotter

Introduction and methodology

B.1.1 A total of 26 sherds of pottery weighing 629 g. were recovered from eight contexts. This is all of medieval and post-medieval date. All the pottery was examined and spot-dated during the present assessment stage. For each context the total pottery sherd count and weight were recorded on an Excel spreadsheet, followed by the context spot-date which is the date-bracket during which the latest pottery types in the context are estimated to have been produced or were in general circulation. Comments on the presence of datable types were also recorded, usually with mention of vessel form (jugs, bowls etc.) and any other attributes worthy of note (eg. decoration etc.). Fabric codes assigned in the comments are those of the Essex County Council medieval pottery reference collection (Cunningham 1985; Cotter 2007).

Date and nature of the assemblage

- B.1.2 The pottery assemblage is in a fresh but fragmentary condition. Ordinary domestic pottery types are represented. The pottery is described in detail in the spreadsheet and summarised below.
- B.1.3 The earliest pieces in the assemblage are those from context (215) which dates within c1175/1200-1300 and possibly within c 1200-1250. These include a large piece of rim from a local shelly-sandy jar/cooking pot (Fabric 12B) with clear evidence of use (sooting) and three sherds of local coarse grey sandy ware (Fabric 20). The only other definite medieval piece in the assemblage is a jug body sherd in Essex orange sandy ware (Fabric 21) with a white slip under a copper-flecked green glaze (context 108). This dates within c 1225-1400.
- B.1.4 All the remaining pottery is post-medieval, mainly red earthenwares (Fabric 40) and mainly, it would seem, of 17th-century date with some 18th-century material also present. A few common regional and imported wares of the period are also present - most notably six sherds from a 17th-century spherical Martincamp flask from Normandy (308). There are no 19th-century wares present but there is a single sherd from a bright blue-glazed 'studio' ware vase or coffee mug probably dating to the 1960s (300).
- B.1.5 The composition of the assemblage as a whole is typical of many sites in Essex and is fairly unremarkable except perhaps that the range of 17th-century wares present, including continental imports, suggests a site of moderate prosperity.

Recommendations

- B.1.6 In view of the small size and mixed nature of the assemblage, no further work is recommended. A more detailed catalogue and report could however be produced if the client desires this and if additional funding becomes available.



B.2 Clay pipes

by John Cotter

B.2.1 Seven pieces of clay pipe weighing 48 g. were recovered from five contexts. These have been catalogued and spot-dated in a similar way to the pottery. Six stems pieces and one complete bowl are present. These are all plain and unmarked. The complete bowl (context 101) is in a fresh condition and is a simple heeled type dating to c 1730-1780. The stem pieces are all wide-bored and of 17th-century date although some are fairly worn. Otherwise the pipe assemblage is unremarkable and no further work on it is recommended.

B.3 Glass

by Ian Scott

B.3.1 Sixty three sherds of glass were recovered, mostly from Trench 3 contexts 307 and 308 (Table 1). The glass comprises 16 sherds of window glass and 47 sherds of vessel glass.

Table 1: BONH 09: Summary of glass by Phase, Context and Type

Trench	Phase	Context	Wine bottle	Wine glass	Wine glass stem	unidentified vessel	Window	Total
Tr 1	4	106	1				1	2
	5	101					2	2
		103				1		1
Tr 1 total			1			1	3	5
Tr 2	u/s	200					2	2
Tr 2 total							2	2
Tr 3	4	307	15	1	1	3	10	30
		308	28					24
	u/s	300	1				1	2
Tr 3 total			40	1	1	3	11	56
			41	1	1	4	16	63

Vessel glass

B.3.2 Most of the vessel glass is from wine bottles. Trench 1 produced 2 sherds of vessel glass, one possibly from a wine bottle (context 106) and the other a weathered sherd from a vessel of uncertain type. Neither sherd is closely dateable. There was no vessel glass from Trench 2. Trench 3 produced 40 sherds from wine bottles, 2 sherds from wine glasses and 3 sherds from vessels of uncertain form. The wine bottle sherds from contexts 307 (n = 15) and 308 (n = 24) are all from thick walled early wine bottles, and many of the sherds are heavily weathered with opaque iridescent surfaces. None of these wine bottle sherds can be more closely dated than mid 17th to early 18th century. There is a single sherd from a late 18th- or early 19th-century cylindrical wine bottle from context 300. There are also two fragments from wine glasses: one fragment from the folded edge of the foot of an 17th- or 18th-century wine glass, which cannot be



more closely dated, and a 'cigar' moulding from the stem of an early 17th-century wine glass. Both wine glass sherds are from context 307. Four sherds of vessel glass could not be identified to vessel type.

Window glass

- B.3.3 The window glass is almost all quite heavily weathered and many sherds have the slightly irregularly surfaces found on hand made glass. The glass is all probably of post-medieval date. The only exception is a sherd of modern window glass from context 300. Trench 1 produced 3 sherds all heavily weathered and probably of post medieval date. Trench 2 produced 2 sherds of window glass, both weathered and both probably post medieval in date. Trench 3 produced 11 sherds of window glass; 1 sherd from context 300 was modern, but the remaining sherds all from context 307 were weaehered hand-made glass, all probably post medieval in date.
- B.3.4 The glass from contexts 307 and 308 appear to form coherent assemblages of late 17th or 18th-century date. The remaining glass, which numbers only 9 sherds is of less interest and represents scattered rubbish.

B.4 Metalwork

by Ian Scott

- B.4.1 The metalwork assemblage comprises 1 pendant with a gold frame, 10 copper alloy objects, 38 lead objects and 178 iron objects. Overall the assemblage was dominated by nails (n = 149), waste (n = 30), miscellaneous pieces (n = 12) and objects of uncertain identification ('Query'; n = 10). The nails are all iron, and all the waste, except one piece, comprises melted lead.

Provenance and assemblage composition

- B.4.2 Most of the metal finds are unstratified (n = 180) or from modern contexts (Phase 5; n = 55).
- B.4.3 Trench 1 produced 63 metal finds, including 37 nails or nail fragments, and 12 pieces of waste. Forty metal items were from topsoil (context 101) and phased as modern. The finds from context 101 included 2 horseshoe nails, a plain flat circular button with cast in loop, 3 fragments of window came, 25 nails and 5 pieces of waste lead. Two contexts were assigned to Phase 4 (18th century), but these produced only a nail (context 104) and a small cast solid domed button originally with a cast loop (context 106). Four metal finds were recovered from Phase 3a context 107, but these comprise 3 nails and a fragment of encrusted iron plate.
- B.4.4 Trench 2 produced only 10 metal objects, of which 9 were unstratified. The single stratified find was a nail from Phase 3 context 217. The unstratified finds comprise 4 nails, 4 pieces of lead waste and a curved fragment of an unidentified non-ferrous alloy.
- B.4.5 Trench 3 produced the most finds (n = 154) , but most of these were unstratified (context 300; n = 137). Only 17 metal finds were stratified, and 2 of these were from topsoil (context 301, Phase 5). Context 307, which is assigned to Phase 4 produced 15 metal objects , including 7 nails, and 3 objects of uncertain identification. It also produced a flat oval pendant of late 19th- or early 20th-century date with Catholic inscriptions and imagery (context 307 sf 313). It has an image of the Virgin Mary in low



relief on one face with the motto 'O Marie conçue sans péché priez pour nous qui avons recours à vous', and on the other face images include a cross and sacred hearts. The dating of this item conflicts with the phasing and with the dating of the glass from the context. This suggests that the pendant is intrusive. There is a copper alloy lace tag from context 307, and 2 fragments of lead window came.

- B.4.6 Unstratified finds (context 300) include a stamped metal button of late 19th- or 20th-century date, a pendant comprising a large oval semi-precious stone held in a gold frame or mount of later 19th- or 20th-century date, a dome headed furniture, fragments of window came, and 6 structural items. The latter include 3 screws or screw fragments, but also 2 holdfasts and a U-staple. Other finds include bindings nails, and miscellaneous pieces of strip, rod, bar, plate, etc.
- B.4.7 Overall the composition of the assemblage does not suggest domestic occupation or craft activity. Most of the material comes from layers 101 and 300, and the composition of the assemblages suggests strongly the dumping of rubbish.

B.5 Worked flint

by David Mullin

- B.5.1 A total of two worked flints were recovered from context 129. Although found within a pit sealed by a buried soil, the material: a flaked lump which probably belongs within the later Bronze Age and a probably Mesolithic narrow blade are likely to be residual.

B.6 Bricks

by Allison Kelly

Introduction and methodology

- B.6.1 A total of 15 brick samples were recovered, of these pieces only two fragments were found in pre-20th century contexts with the remainder mostly from WWII bomb damage rubble fill and modern topsoil contexts. The vast majority of samples were fragments and therefore could not provide full dimensions for comparison of size with known samples, however there were three whole bricks within the assemblage.
- B.6.2 All the samples were individually examined for striations and imprints, mortar, size (stretcher/header/ depth - in mm), inclusions and colour and the information entered into an excel spreadsheet. Sizes and description of whole bricks were compared to dated samples from other Essex buildings. A catalogue is included within this report.

Date and nature of the assemblage

- B.6.1 According to Pevsner '...the making of bricks in England seems to have started in Essex...' (1954, 21) and locally made brick appears early in the 13th century although it is more widely used in secular buildings after the late 15th century. The plentiful quantity of raw materials made it possible for the high quantity of locally made brick. The early 16th-century works at New Hall by Henry VIII would probably have used bricks made locally specifically for use in the works in brick clamps rather than kilns (Ryan 1999, 16) Unfortunately no reference to the purchase of bricks or tiles are mentioned with the Kings Works. Two brick kilns are mentioned in a tithe award of



1879, both in close proximity to New Hall and it is possible the same site had continued to be used in the production of brick for some time prior to this.

- B.6.2 The majority of the assemblage showed evidence of the forming process with strike marks made during removal of excess material from the moulds and only one brick had evidence of sunken margins. Sunken margins found on the upper face are probably indentations following removal from the moulds where the raised lip formed by the mould removal has been pushed down using the mould (Betts 1996, 7). Unusually no fragments have straw indentations on the lower face but two fragments of hearth brick/tile (SF: 311 and 312) have large amounts of sand and grit on the lower face suggesting once formed in the mould, these were laid to dry on a sandy surface.
- B.6.3 One sample was recovered from a phase 3 context (217) in trench 2, a demolition layer used as levelling associated with the Henrician build of the Chapel. This piece is a fragment of the header end of a brick and is orange coloured with mixed stone inclusions. The upper face has strike marks. This probably of late 15th- or early 16th-century date.
- B.6.4 A fragment of brick was recovered from an 18th-century rubble layer in trench 1 (Phase 4). The sample consists of the header end of the brick and measures (70) x 110 x 55mm. The upper face is smooth and there are crease marks to all other faces. The brick is probably of 16th- or 17th-century date.
- B.6.5 Two fragments of 18th- or 19th-century hearth brick/tile were found in context (303) , a rubble fill associated with bomb damage in Trench 3. The fragments are pale yellow/cream coloured with particles of pale orange coloured clay, possibly due to poor puddling. The upper surfaces are smooth and the lower surfaces have large amounts of sand/grit inclusions suggesting these pieces were laid out on a sandy surface prior to firing. One fragment has metal fused onto the upper surface which was probably part of a fixing. A whole brick was also found within this context. The brick measures 228 x 110 x 70 and is pale yellow coloured with the makers name W.CLOVER BOREHAM stamped within the 'v' shaped frog. William Clover owned the Hambro Hill brickworks in Boreham and the brick most likely dates from between 1878-1895 (Ryan *et al* 1993, 103). This brick highlights the continued availability of brick production close to the site.
- B.6.6 The assemblage contained five brick fragments from the modern topsoil contexts (101) and (105) in trench 1, most of which were unable to be accurately dated. All fragments were orange and/or rose coloured with mixed stone inclusions. One fragment is vitrified brick with a grey/white mottled glaze which appears to be from accidental overfiring instead of intentional glazing. Another fragment is rose coloured and has sharp arrises suggesting a 17th- or 18th-century date.
- B.6.7 Four brick samples from the modern topsoil context (301) in trench 3 included two whole bricks. One brick measures 230 x 115 x 58 and orange/red coloured with a cream coloured, friable, gritty textured lime mortar. This is probably 16th century in date, the size and fabric similar to other dated Essex bricks including bricks excavated from Woodham Walter Hall (Ryan *et al* 1993, 100). The second whole brick excavated measures 237 x 111 x 59 and is dark rose coloured with mixed stone inclusions and a cream coloured, friable, gritty textured lime mortar. This brick is also probably 16th century in date. A fragment of red brick with bullnose type moulding probably dates to the 18th or 19th century. The upper face has strike marks and all other faces have minimal creasing. A further fragment of 16th- or 17th-century orange/rose coloured brick was also found in this context.



- B.6.8 One sample of brick came from an unstratified context (200) within trench 2. This is a fragment of vitrified brick with a green glaze of uncertain date.

Recommendations

- B.6.1 In view of the small size and mixed nature of the assemblage, no further work is recommended at this stage. A more detailed catalogue and report could however be produced if the client desires this and if additional funding becomes available enabling research could possibly be undertaken into the supply of construction material for New Hall.

B.7 Assessment of the CBM (excluding bricks)

by Allison Kelly

Introduction and methodology

- B.7.1 A total of 76 sherds of tile weighing 4.25 kg were recovered from 10 different contexts. The vast majority of samples were fragments and therefore could not provide full dimensions for comparison of size with known samples. This assessment deals with all categories of ceramic building material (CBM) excluding brick samples, which are discussed in a separate assessment report.
- B.7.2 Most of the assemblage consists of fragments of plain roofing tile with some samples of glazed floor tile and a smaller quantity of other CBM (see below). The CBM was recorded on an excel spreadsheet with the total samples for each context divided into three main functional types: flat roof tile, floor tile and other tile/CBM (e.g. ridge tile, hip tile, pantile etc.). The overall weight for each context of all CBM (minus brick rubble) was recorded. Measurable dimensions were recorded where possible, however no complete samples were included in the assemblage. More detailed descriptive comments were recorded for fairly complete or significant pieces. An approximate spot date was assigned where possible. Measurable data (mainly thickness of tile and diameter of nail holes) was taken where possible.

Date, nature and condition of the assemblage

- B.7.3 The majority of the material pre dates the Henrician phase build of Beaulieu Palace, with the Henrician build phase contexts having only 11 samples in the assemblage.
- B.7.4 The assemblage is generally in a fresh but fragmentary condition. Many sherds have burnt cores suggesting these were overfired and there are two fragments of vitrified tile, one of which has a slight glaze. No whole samples are included in the assemblage and there were also no fragments that provided complete widths, however thickness measurements were taken where possible. The vast majority of samples have a smooth upper face with some strike marks and a rougher underside, showing the forming process. Gritty or sandy inclusions on the lower face show that the tiles were either formed on a sand strewn bench or laid out to dry before firing on a sandy/gritty surface.
- B.7.5 The assemblage predominantly consists of fragments of flat roof tile with only five fragments of floor tile and three fragments of curved ridge tile/pantile. There are difficulties with assigning production dates to much of the assemblage as the characteristics of flat roof tile change very little over a long period and the majority of fragments do not have visible diagnostic features which would aid the dating of the



material. For this reason, spot dates have been given but in some cases the date range is very broad.

Flat roof tiles

- B.7.6 Within Essex the use of nibbed tiles as a roofing material declined during the 13th century and by the 14th century the standard peg tiles with two nail holes were the most commonly used form of roof covering and the excavation of a medieval tile factory at Danbury produced samples measuring 270 x 150-175 x 12-15mm (Ryan et al. 1993, 97). In 1477 there was a statue which fixed the dimensions of roof tiles at 267 x 160 x 13mm (Salzman 1952, 230) however it is known that size alters during the firing process as the clay dries out and so size cannot be generally used as an indicator of date. Essex had a large quantity of brick and tile manufacturers throughout the medieval and post medieval period (Ryan 1999, 3) and so it can be assumed that the tile fragments within this assemblage were locally produced.
- B.7.7 Fragments of plain red clay flat roof tiles were found in contexts from all phases, the vast majority providing little detail to enable accurate dating. The largest part of the assemblage, a total of 42 fragments, were recovered from context (126) which was from trench 1 located on the site of the gatehouse. This context dates to the pre-Henrician build and probably relates to an earlier building demolished prior to the construction of the new Palace buildings. All of red coloured clay, some fragments are very roughly formed suggesting an early date, which fits with the medieval dating of the context. Four fragments were vitrified and the majority of the remaining fragments have burnt cores suggesting overfiring.
- B.7.8 Fragments of tile found in context (108), a rubble layer associated to the Henrician build also appear to be of early date with two fragments of one extremely vitrified roughly formed tile and one fragment of vitrified tile which has a rough grey glazed upper face. Glazed roof tiles are common throughout the medieval period as the glazing was thought to provide greater protection, however, the glazing on this fragment appears patchy and unintentional. The other fragments from this phase have little diagnostic detail and are of a standard red clay type.
- B.7.9 Very few fragments with nail holes formed part of the assemblage. A 9mm thick fragment of tile was from context (217), a phase 3 demolition layer in trench 2 on the site of the chapel. This fragment had a circular hole approximately 16mm wide. Two further fragments with nail holes were recovered from context (301) a modern topsoil layer at the site of the west wing bay windows. One fragment has a round nail hole approximately 18mm in diameter and the other has a partial square shaped hole approximately 8mm wide. This latter piece is very roughly formed and probably pre 18th century in date. The former fragment is well formed and probably post dates the Henrician build making it 17th -18th century in date.

Floor tiles

- B.7.10 A total of 5 fragments of floor tile were recovered, of which all had elements of added colour or glazing suggesting these were Flemish style floor tiles. Flemish tiles are imported to England from the late 14th century onwards and reach a peak of popularity during the 15th and 16th centuries and were used in other early 16th century royal Palaces (Musty 1990, 417). These plain coloured floor tiles were often laid in chequerboard patterns and nail holes can sometimes be seen in the corner (particularly on true Flemish made tiles). As Essex had a strong brick and tile manufacturing



industry it is probable that these tiles were locally produced and therefore not true Flemish tiles.

- B.7.11 The floor tile fragments were all recovered from trench 3 which was located at the west wing bay windows of the Henrician Palace. All of the fragments were recovered from post-Tudor phase contexts and it is likely that these deposits were not in situ. The small quantity of flooring found is not suggestive of an interior floor surface.
- B.7.12 Three fragments of tile were recovered from 18th century context (307). One fragment was, at 30mm, fairly deep and mostly unglazed, however there were small traces of glazing suggesting this is either a second, perhaps used as fill. One other fragment is unglazed but has upper surface covered in a yellowish cream colour wash, this piece was probably unfinished and possibly also used as fill. The remaining fragment from this context is of unknown thickness but has a mottled brown/cream colour very similar to other Tudor Flemish style floor tiles seen. A similar coloured fragment of tile was also recovered from context (308). This tile is 17mm thick and has an extremely gritty underside suggesting a pre 18th century date. It is probable that all these fragments are Tudor in date, however the 18thC context date necessitates a broad spot date of c.1500-1800.
- B.7.13 A further fragment of glazed tile was recovered from context 301, a modern topsoil layer. This has a green/brown colour and the red clay material has small particles of lighter coloured clay suggesting poor puddling of the raw material. This tile is 35mm thick which is larger than usually seen on Tudor floor tiles, however a spot date of c.1500-1900.
- B.7.14 A fragment of roof tile recovered from topsoil in Trench 1(context 101), had probably been used as slip, most likely on a brick structure as there is a solid lime mortar approximately 17mm thick to both the upper and lower faces. This fragment is of unknown date but the tile appears well formed so probably dates to after the Henrician building works.

Other CBM

- B.7.15 Only three fragments of other type CBM were recovered. One fragment of curved ridge tile was recovered from Henrician phase context (217) in trench 2. This fragment has occasional stone inclusions, appears to have been formed by hand and has a thickness of 17mm. There are no mortar traces suggesting the piece was unused. Two further fragments of curved ridge tile were recovered from phase 5 modern topsoil context (301). These fragments are approximately 15mm thick and have a burnt core from overfiring.

Recommendations

- B.7.16 In view of the small size and mixed nature of the assemblage, no further work is recommended at this stage. A more detailed catalogue and report could however be produced if the client desires this and if additional funding becomes available. Further funding would enable research into the supply of construction material for New Hall, which is one of the least understood Henrician Royal Palaces.



B.8 Assessment of the CBM (excluding bricks)

by Allison Kelly

Introduction and methodology

- B.8.1 A total of 16 pieces of stone samples were recovered. Three fragments were found in early contexts and on examination found to be natural rather than worked. The remainder of the assemblage was found within modern contexts associated with WWII bomb damage and therefore difficult to accurately phase.
- B.8.2 Each piece was examined and any features recorded on an Excel spreadsheet including the presence of tool marks and type of moulding. The different types of stone were recorded but without specialist lithological knowledge the majority of the finds can only be classed as unidentified limestone or sandstone. A catalogue of the samples is included within this report.

Date and nature of the assemblage

- B.8.3 The earliest piece is a small fragment of natural stone from context (135) a medieval occupation layer forming part of phase 2. Two small pieces of chalk found in context (111) are also probably natural and not part of the Phase 3a building works.
- B.8.4 The assemblage is dominated by fragments from contexts associated with WWII bomb damage and the most interesting are described here. These fragments are of uncertain date as they are no longer in situ however with comparison of moulding types a tentative date can be assigned to some pieces. SF: 301 is a large fragment of window mullion with ovolo and sunk chamfer moulding. Ovolo mouldings become increasingly popular on mullions from the mid 16th century and throughout the 17th century it is the standard moulding type used. A similar mullion with a sunk chamfer from Essex dated to 1570, is shown in Hall (2003, 84) suggesting this fragment is of either late 16th or 17th century date. SF: 307 is a smaller fragment of this mullion probably broken off at time of deposition in the ground.
- B.8.5 A large moulded piece of uncertain date (SF: 302) was recovered from context (303) and this is a corner block (380 x 300 x 165mm) with ogee and dentil moulding. The upper face is chamfered suggesting it was part of a coping stone level and there are traces of lime mortar to the underside.
- B.8.6 SF: 310 from context (303) is one half of a stone ball finial approx. 270mm in diameter. Within the finial is a rebate for inserting a fixing approx. 100mm deep and 30mm wide. There is a white lime based mortar within this rebate which would have been used to hold the finial in place. The hole appears to have been later blocked with a grey cement mortar, however the reason for this is unknown.
- B.8.7 A large fragment of limestone (SF: 304) with ovolo and fillet moulding has traces of brick and mortar attached and because of its size is thought to be either a plinth or part of a pedestal of a column. The presence of ovolo moulding is suggestive of a 17th century date. Two fragments of stone corning (SF: 305 and 308) were also recovered from context (303). The cornice consists of ogee and fillet moulding and is of uncertain date.
- B.8.8 Two examples of paving were recovered. One piece recovered from context (303) is a sett (measuring 225 x 255 x 55mm) with tapered sides and a worn upper face. Another piece recovered from a modern context (301) is of sandstone and has a tapered edge



with chisel marks and measures 130 x 160 x 25mm which is considerably thinner than the stone sett.

- B.8.9 An object labelled as slag recovered from a modern dated context (103) A single irregular shaped fragment of stone is covered with a thick layer of highly vitrified glass (silica run). This layer could only have been produced by exposure of the fragment to an episode of extreme heat.



Appendix C. ENVIRONMENTAL REPORTS

C.1 Charred plant remains

By Laura Strafford and Wendy Smith

Introduction

- C.1.1 A single sample was collected for the recovery of charred plant remains. The sample was from a layer consisting of organic rich clay, possibly a buried soil (context 215), within trench 2 which has been dated to 1200-1250 AD.

Method

- C.1.2 Samples were processed by water flotation with the resulting flot (the material which floats) sieved to 0.25 mm and the heavy residues (the material which does not float) sieved to 0.5 mm. Charred plant remains (including charcoal) have been sorted from the heavy residue fractions >4mm by environmental supervisors at Oxford Archaeology South. Charred plant remains (hereafter CPR) were assessed from both the flot and sorted heavy residue fractions using a low-power binocular microscope at magnifications between x12.5 and x40.
- C.1.3 The entire flot was scanned for CPR and the sample was evaluated for CPR and charcoal on a semi-quantified scale whereby: + = <5 items, ++ = 5 - 25 items, +++ = 25 - 100 items, ++++ = >100. The quantification of CPR (including charcoal) for the assessment should be viewed as a subjective approximation. Nomenclature for economic plants follows Zohary and Hopf (2000) and indigenous taxa follows Stace (1997).

Results

- C.1.4 Table 1 presents the CPR and charcoal results for the sample.
- C.1.5 Charcoal analysis requires fragments >2mm in all three dimensions and at least two-years' ring growth for secure identification (Gale and Cutler 2000; Hather 2000). Only a small quantity of suitably sized charcoal fragments were present in the flot. Eight larger fragments (>4mm) of charcoal were hand-picked from the 10-4mm heavy residue fraction of the sample, but even when combined with the charcoal from the flot, did not produce a sufficiently rich charcoal assemblage to merit detailed work. All charcoal which was identifiable is consistent with oak (*Quercus* sp.) .
- C.1.6 A number of charred plant remains were observed in the sample, yet the quantity was poor, with no more than 10 identifications of any individual taxon observed . The most commonly recovered plant macrofossil was indeterminate cereal grain/ large grass (POACEAE) however these were generally too highly clinkered to be identifiable. Vetch/ vetchling (*Vicia* spp./ *Lathyrus* spp.) was also recovered, again in a very small quantity. Less than five fragments of hazel (*Corylus avellana* L.) nutshell were observed, which in total do not represent more than one individual hazelnut.
- C.1.7 Both wild grasses (such as oat or brome) and vetch can exist as weeds of crop, but also can be cultivated in their own right, especially as fodder crops. Neither were present in sufficient quantity to confirm the tentative interpretation (B. Ford, pers. comm.) of this deposit deriving from stable waste. Unfortunately, only CPR was preserved in this deposit, which to date has only rarely been used successfully to suggest stabling matter (e.g. Derreumaux 2005 – an exceptional case of catastrophic



fire); usually identification of such material is made on the basis of waterlogged plant macrofossils and insect remains (e.g. Kenward and Hall 1997).

- C.1.8 In addition to CPR and charcoal, a small quantity (<10 examples) of snails were noted, all of which were the burrowing species *Cecilioides*. This species can burrow to over 1m below ground surface and are probably modern and intrusive.
- C.1.9 Some very small fragments (<4mm) of bone cortex were also observed, but these were highly abraded and unidentifiable.

C.2 Shell

By Leigh Allen

- C.2.1 A total of 26 fragments of hand collected shell weighing 241g was recovered from the archaeological investigation, no shell was recovered from environmental samples. All the fragments were from oyster shell (*ostrea edulis*) and they were recovered from 6 contexts 100, 101, 200, 215, 300 and 317. The largest quantities came from contexts 101, 300 and 307.
- C.2.2 The shells are in reasonable condition with very little flaking, there are 10 examples of right valves and 15 left valves, the shells are in general of a small size measuring between 45-60mm across.
- C.2.3 Oyster would have added variety to the basic diet but the small quantities recovered do not indicate that they formed a significant part of the diet.

Table: Summary of shell

Context	Fragt count	Weight (g)	Description
100	1	11	Left valve
101	8	46	3 right valves, 4 left valves, 1 fragt
200	1	15	1 right valve
215	2	14	1 right valve, 1 left valve
300	5	40	2 right valves, 3 left valves
307	9	115	3 right valves, 6 left valves



Appendix D. BIBLIOGRAPHY AND REFERENCES

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Appendix E. SUMMARY OF SITE DETAILS

Site name: New Hall School, Essex (Time Team Palaces Special)

Site code: BONH09

Grid reference: NGR TL 734 102

Type: Evaluation

Date and duration: 16/02/2009 – 19/02/2009

Summary of results: Trench 1 produced evidence for several phases of activity. A number of probably prehistoric pits was found as well as remains of a presumably medieval structure. The main body of evidence was represented by the extant brick foundation walls of Tudor Gatehouse and related remains of cobble surface. Trench 2 revealed substantial brick foundations for the south eastern corner of the Tudor Chapel, along with altar foundations walls and related construction debris. Evidence for mortar floor sub-base and extensive levelling was found. Probable medieval occupation layers were partially exposed beyond Tudor structures. The evidence for extensive World War II bomb damage was also found. Trench 3 revealed extensive brick foundations for the western façade wall and two bay windows of the western range of the Palace. Two small internal brick 'wet rooms' and related drains was also exposed immediately behind the West facade. A large modern pit containing large amount of worked stone resulted from the bomb damage was found in the north-eastern part of the trench.

Location of archive: The archive is currently held at OA, Janus House, Osney Mead, Oxford, OX2 0ES, and will be deposited with the Chelmsford Museum in due course, under the following accession number: TBC



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Figure 1: Site location

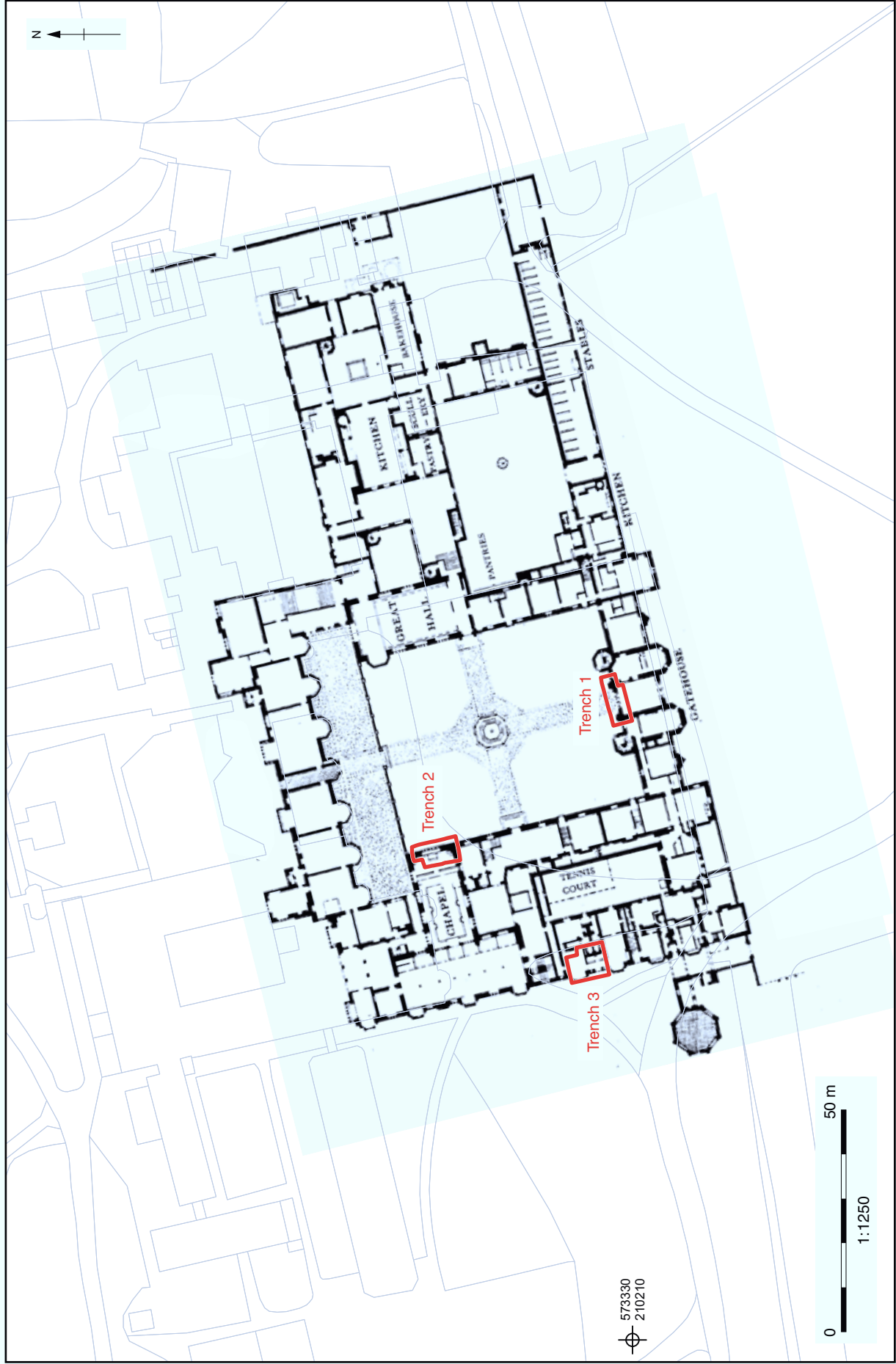
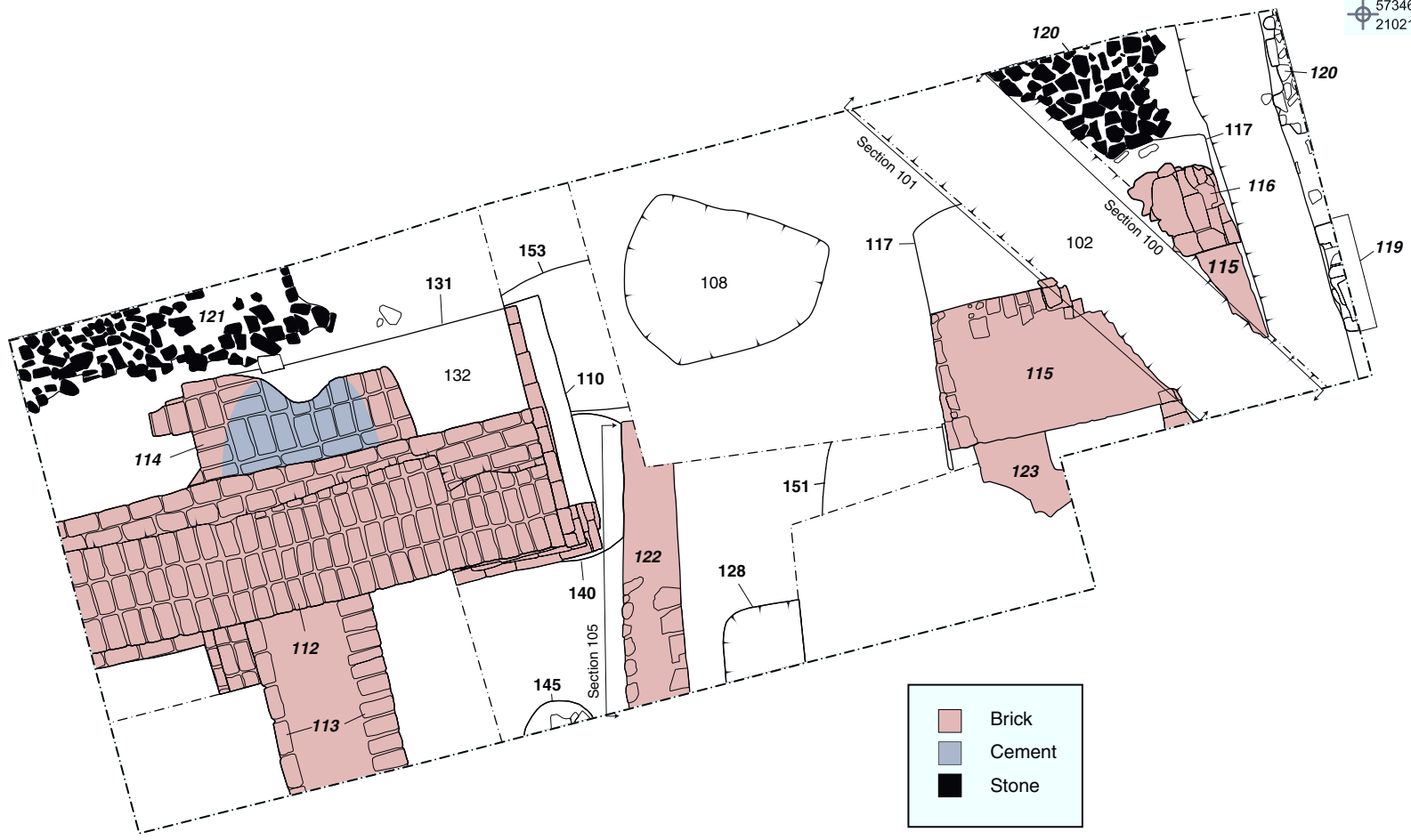


Figure 2: New Hall Essex, location of trenches

573450
210216

573461
210216



	Brick
	Cement
	Stone

573450
210210

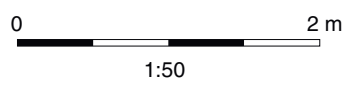
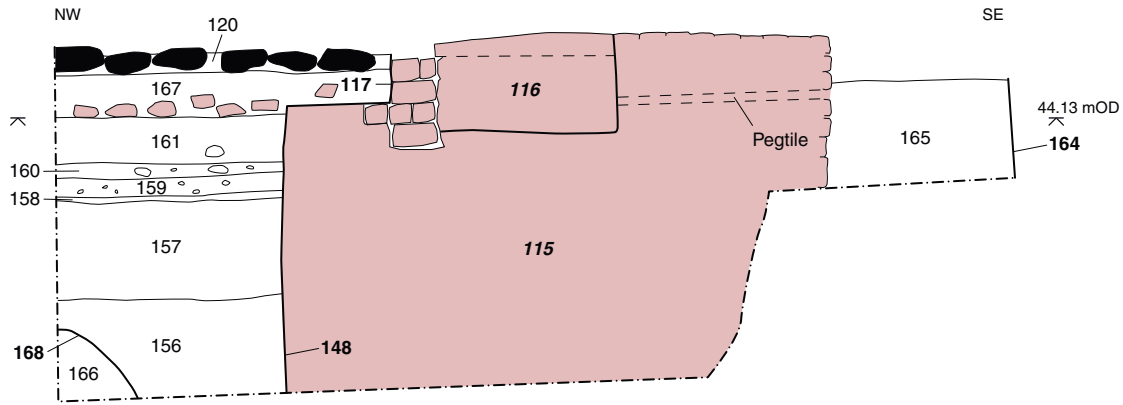
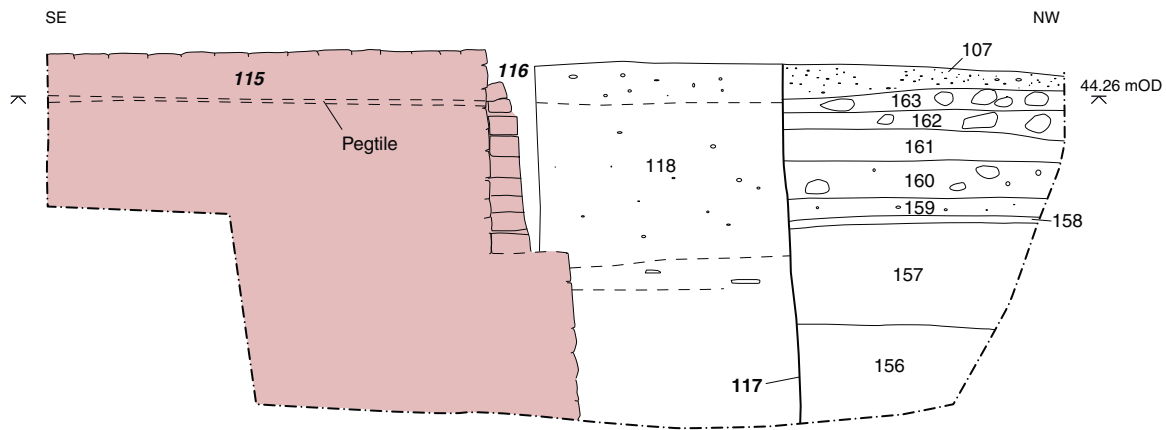


Figure 3: Trench 1

Trench 1 Section 100



Trench 1 Section 101



Trench 1 Section 105

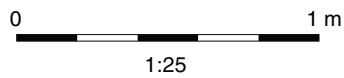
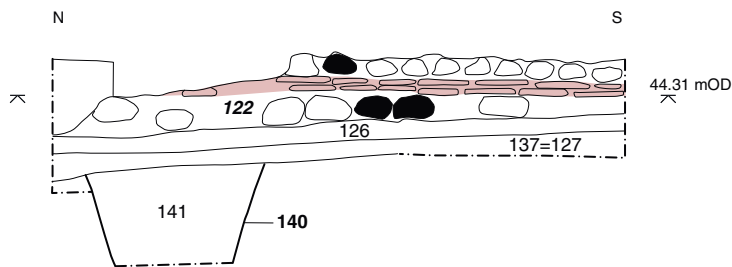
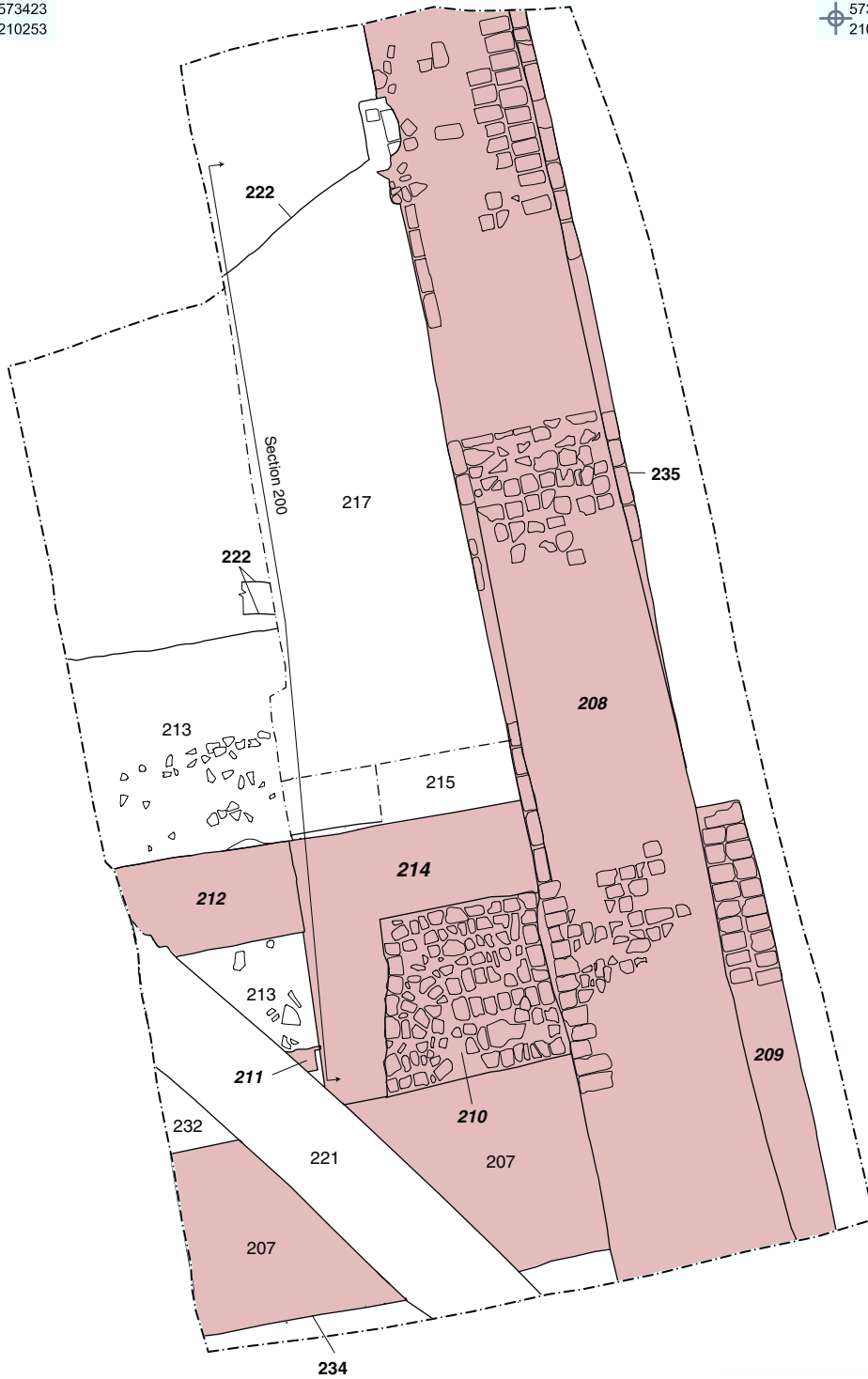


Figure 4: Trench 1, Sections 100, 101 and 105

573423
210253

573429
210253



573423
210243

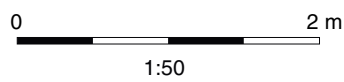
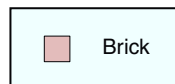


Figure 5: Trench 2

Trench 2 Section 200

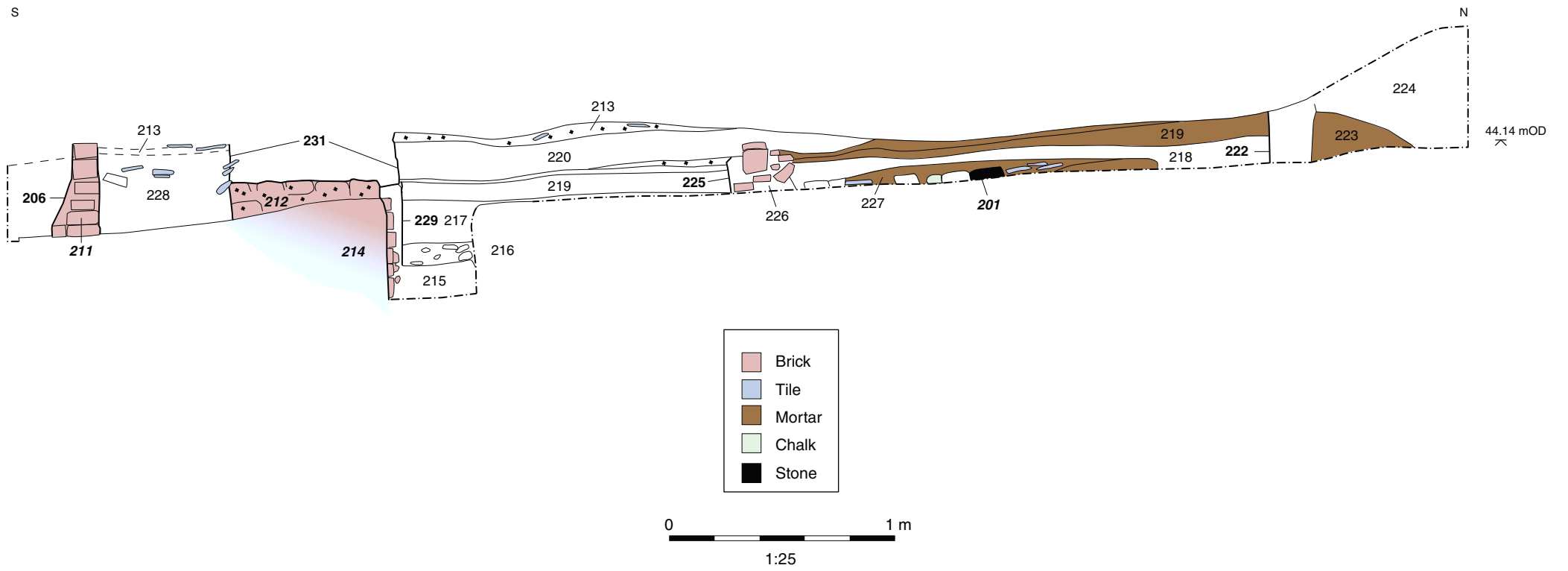


Figure 6: Trench 2, section 200

573401
210224

573407
210224



573401
210214

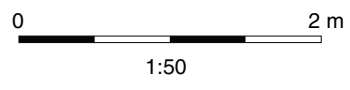
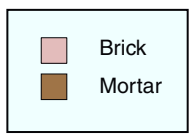


Figure 7: Trench 3

Trench 3 Section 300

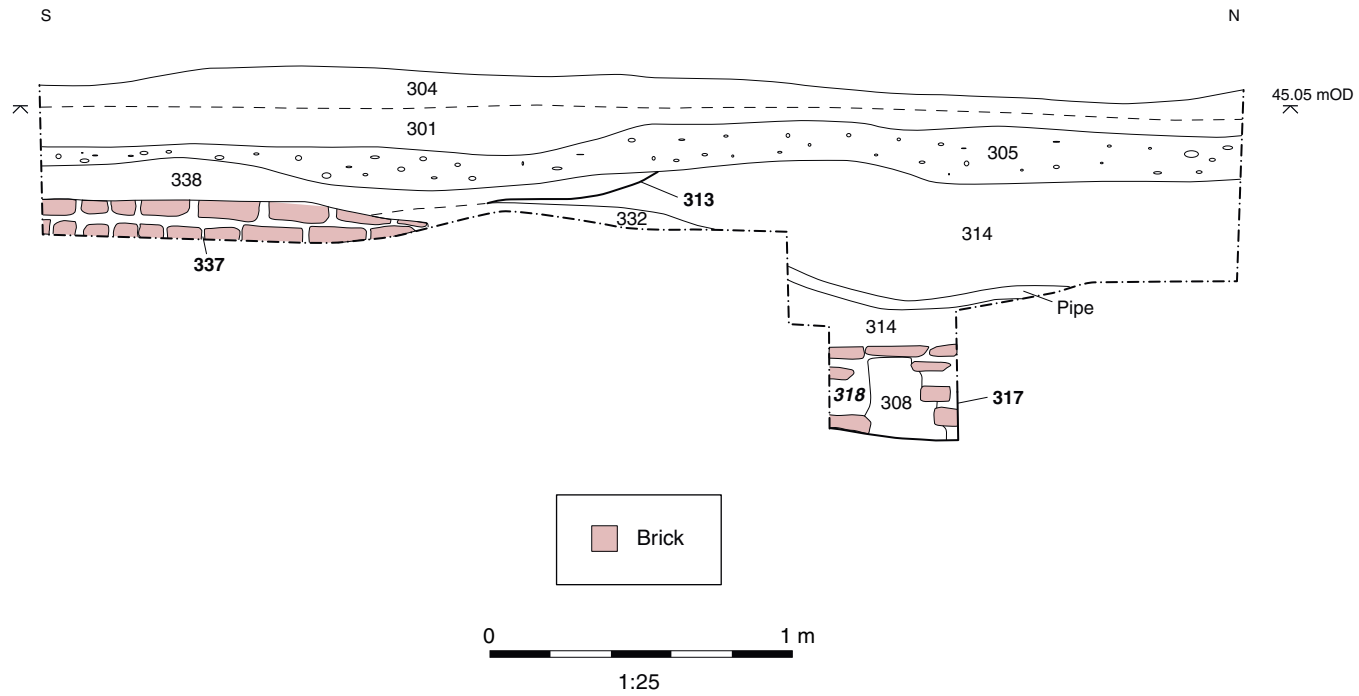


Figure 8: Trench 3, Section 300

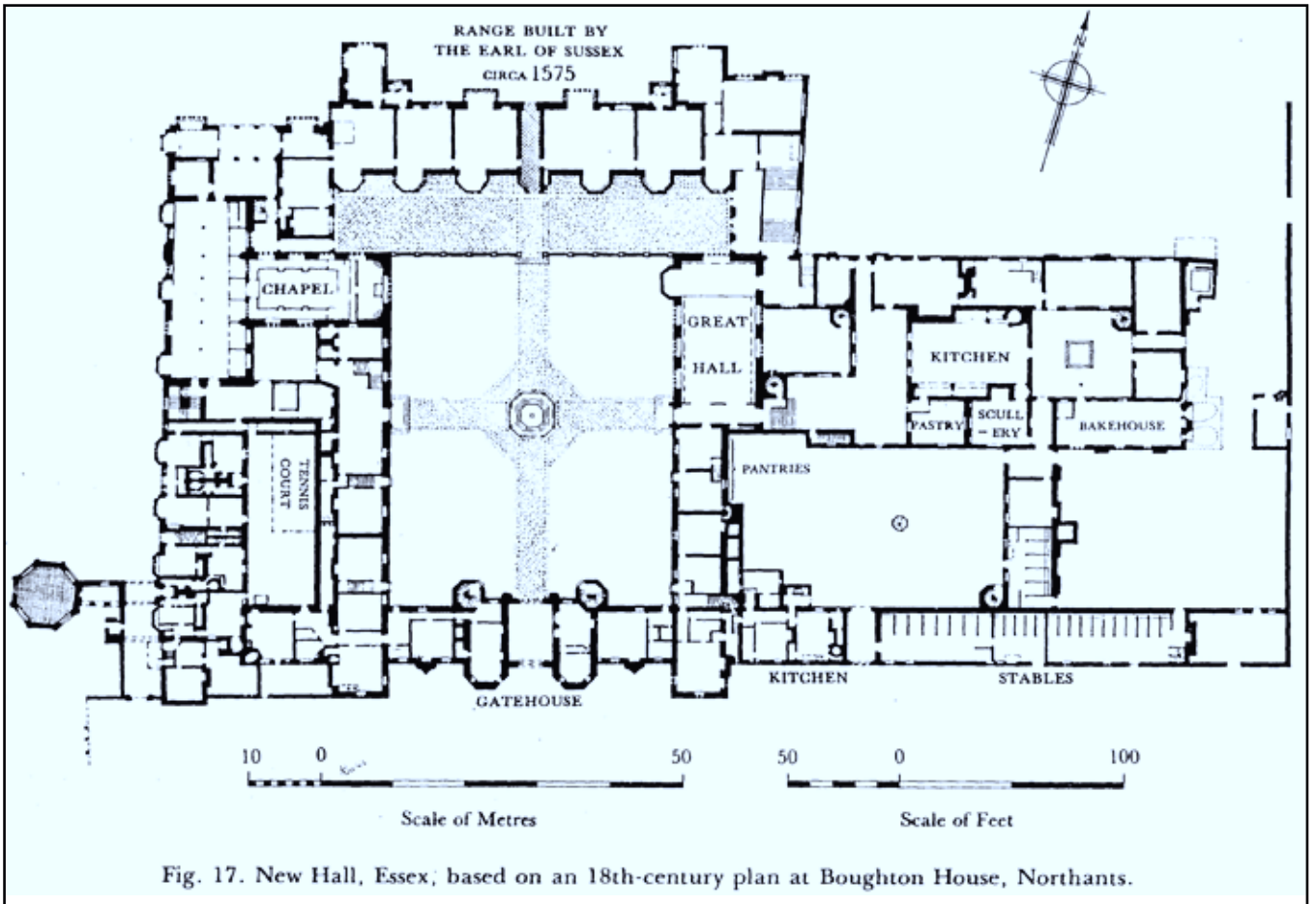


Plate 1: Composite plan of New Hall based on 18th C plan

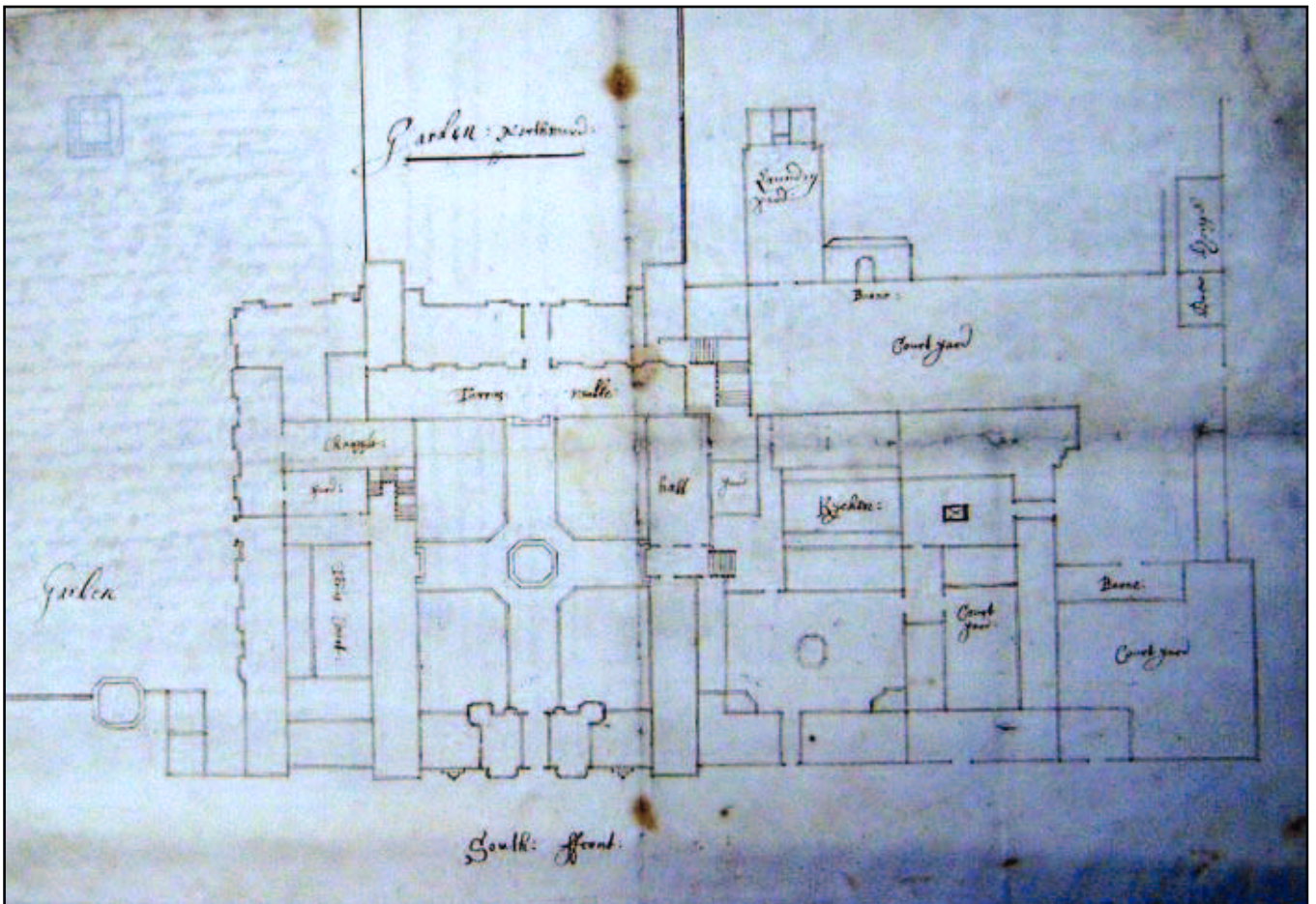


Plate 2: New Hall, 1624 plan

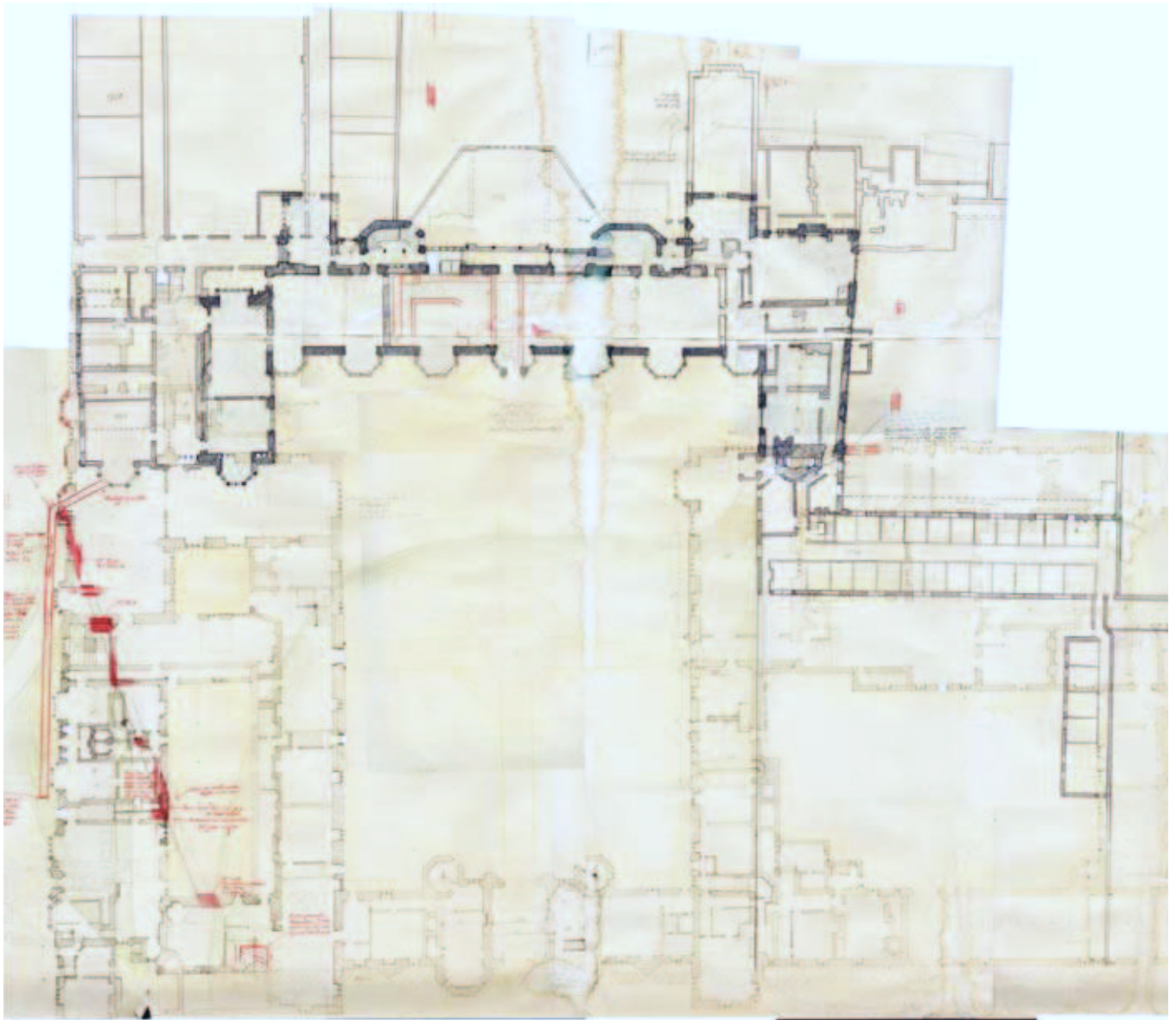


Plate 3: Plan showing archaeological discoveries at New Hall by Sister Mary Stephen

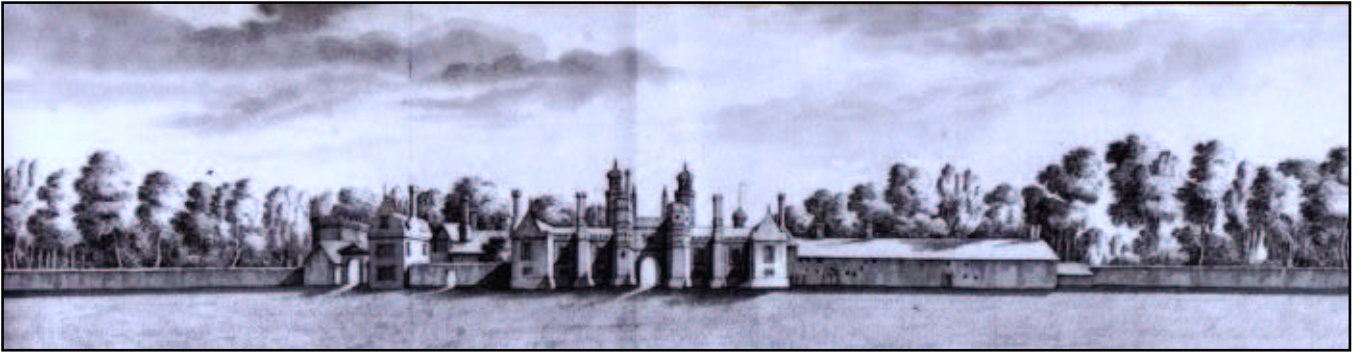


Plate 4a: New Hall, as drawn upon Cosimo III de' Medici's orders, 1669



Plate 4b: New Hall, as engraved for the Royal Society of Antiquaries, 1786



Plate 5: Trench 1, general view before full excavation of trench



Plate 6: Trench 1, Medieval wall *122*



Plate 7: Trench 1, Section through foundations of the Gatehouse, context 115 and later ragstone cobble 120



Plate 8: Trench 2, general view of excavated trench



Plate 9: Trench 2, showing walls *212* and *114* with their footings cut through floor makeup layers



Plate 10: Trench 2, showing wall *214*, with brick levelling *210* beyond in the angle between the main chapel walls *208* and *207*. Also clear is the straight joint between wall *208* and wall *207*.



Plate 11: Trench 3, general view of excavated trench

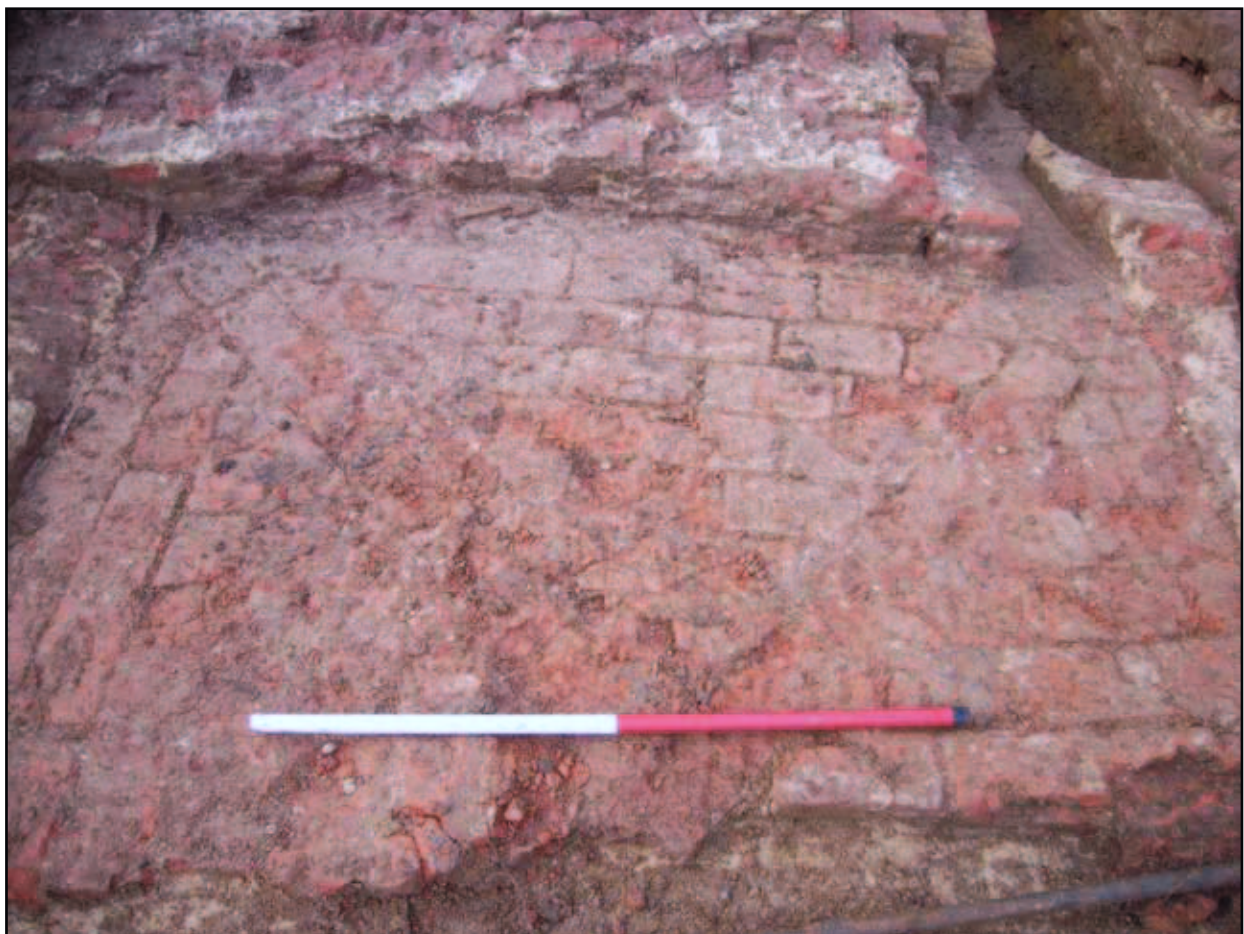


Plate 12: Trench 3, Detail of a brick floor 327. Note that wall 312 is cut back in an arc from floor 327



Plate 13: Trench 3, view of small rooms with brick floor sand associated drains



Plate 14: Drain sequence, contexts 318, 321, 322



Plate 15: Trench 3, view of footing of north bay window built out from wall 320, showing mortar traces revealing position of window structure



Plate 16: Detail of bay window 333



Plate 17: Trench 3, view showing arc cut into wall **312** at the west edge of floor **316**.



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