



LATHOM PARK GARDENS, LATHOM Lancashire

Archaeological Evaluation Report

Oxford Archaeology North

February 2011

Lathom Park Trust

Issue No: 2010-11/1143

OA North Job No: L10169

NGR: SD 4602 0914



Document Title: LATHOM PARK GARDENS, LATHOM, WEST LANCASHIRE

Document Type: Archaeological Evaluation Report

Client Name: Lathom Park Trust

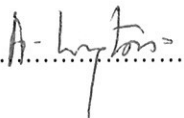
Issue Number: 2010/1143
OA North Job Number: L10169
National Grid Reference: SD 4602 0914

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SUMMARY

In July and August of 2009 a programme of archaeological evaluation excavation was undertaken within the Lathom Park gardens owned by NSG Group/Pilkingtons, near Ormskirk (NGR SD 4602 0914), West Lancashire (Fig 1). The Lathom Park Trust (LPT) and Oxford Archaeology North (OA North) conducted the works as Stage III of a multi-stage Heritage Lottery Funded (HLF) project. Stage I comprised a review of available documentary evidence relating to the site (S Baldwin pers comm; Lewis 1999), and Stage II was a geophysical survey of the area undertaken by ArchaeoPhysica (2009). Stage III comprised the excavation of six trial trenches and two test pits, within the extant gardens of the former Lathom House. They were located so as to identify, and record, the remains of the medieval Lathom House, a large castle, that was built in the 1490s and slighted in 1645.

The site of Lathom House has been identified as having enormous potential to address research questions pertinent to the site itself and the medieval/early post-medieval period within the wider North West region (LUAU 1997; Baldwin 2010). The aim of the current phase of works was to investigate scientifically areas of archaeological potential, identified by the preceding geophysical survey and documentary research, within the pleasure garden and adjacent parkland.

Electromagnetic induction (EMI) and GPR surveys were undertaken by ArchaeoPhysica Ltd, and the results were superimposed with high-resolution digital elevation model (DEM) LiDAR data. These revealed the location of the moat on the southern side of the castle, and a section of the outer defensive around the northern side.

The Stage III field evaluation was designed as a community project, open to as wide a segment of the local community as possible. OA North and Lathom Park Trust supervisors worked closely with local volunteers to provide the professional supervision, guidance and the training required to complete the work to modern professional standards. This report sets out the results of this work, drawing upon the Stage I results as part of the historical background, and incorporates a summary of the geophysical works (Stage II).

The excavations identified three phases of archaeological activity. The medieval period was represented by remains identified in Trench 14 and probably Trench 9. However, the substantive and frequently complex archaeology of the early post-medieval period (sixteenth to seventeenth century) meant that investigation of the medieval period was limited. This second phase included the substantial remains of buildings, including partially upstanding walls, floors, drains, external cobbled surfaces and other features located in Trenches 7b, 8, 9 and 14. The third and final phase comprised levelling deposits and structures associated with the construction of the eighteenth century Leoni building. The excavations, although limited, identified deposits rich in artefacts and ecofacts.

Repton's Red Book of Lathom (1792) depicts proposed changes to the gardens of Lathom House, but it has been unclear historically whether any of this work was undertaken. Modelling of LiDAR data undertaken by ArchaeoPhysica Ltd (2009), compared to Repton's before and after views of his proposed works show that Leoni's original forecourt was removed, and its platform was truncated to form the present

smooth slope. The low wooded banks running away from the house in Repton's 'after' images survive as very low earthworks visible in the modelling of the LiDAR data. The wooded banks and change in slope are aligned to give an uninterrupted view from the central wing of the house. Repton's landscaping is also evidenced by wall 308 in Trench 7b, the location and alignment of which is a good match for Repton's perimeter wall that enclosed the lawns to the south, east and west of the main house.

The EMI survey identified the moat located on the southern side of the castle's defences, to the south of the current Ha-Ha, which meets with the curving elements of the exiting Ha-Ha to the east and west. Similarly, the GPR results identified a wall at least 2m wide to the north of the West Wing, interpreted as the medieval and early post-medieval defensive curtain wall. Previous excavations by OA North, in its previous guise as Lancaster University Archaeology Unit (LUAU 1997) and by Steve Baldwin (Baldwin 2010), located the moat to the south of the west wing and the wall and moat beneath the west wing of the Leoni building.

The work undertaken in 2009 has advanced significantly the understanding of the site, identifying excellent preservation of archaeological remains and highlighting its research potential. It has identified the extensive area that appears to have been enclosed by the castle's defences, and demonstrated that Repton's proposed eighteenth-century landscaping of the house was implemented.

Lathom Park Trust undertook the excavation of trial trenches as a community project. This drew in people of all age groups, who had specific interests in the site and the surrounding area or a general interest in Archaeology. The combination of volunteers supervised by professional archaeologists proved to be a very successful strategy to investigate the site to a professional standard which will benefit future archaeological research, whilst providing essential training.

ACKNOWLEDGEMENTS

Oxford Archaeology North (OA North) would like to thank NSG Group/Pilkingtons, who own the land, for allowing the work to be undertaken by the Lathom Park Trust, and for their continued interest and support during the project. OA North would also like to thank the landowners Richard and Dawn Corlett for allowing the geophysical surveys to be undertaken on their land. OA North would also like to thank the Heritage Lottery Fund for financing the work, and the Lathom Park Trust (LPT) for commissioning OA North to contribute to the project. The overall project was managed by Trustees Stephen Baldwin and Jamie Quartermaine and OA North is grateful for their support. OA North would also like to thank the LPT trustees who provided support throughout and, in particular, to David and Susan Dunn, the Trust chairman and secretary.

OA North would also like to thank all the members of the LPT and other volunteers for their hard work and enthusiasm during the project, and include the following:

Fay Alexander; Andrew Beeston; David Blackburn; Stephanie Boswarva; Pat Boylett; Martin Charlesworth; Sally Evans; James Ford; Sean Gallagher; Tom Hodgson; Antony Keeting; Doug Lennie; Leticia Malone; Paula Rivas-Torrecillas; Brian Sharples; Beth Shelley; Jonathan Shelley; Danielle Soper; John Taylor; Sara Vernon and Jan Vickers. The main supervisors were Steve Baldwin, Alastair Vannan and Liz Callander; Kelly Clapperton, Liz Murray and Pascal Eloy, of OA North, also assisted with the archaeological supervision. The evaluation was directed by Andy Bates.



Plate 1: Some of the volunteers and staff

The Geophysical work was undertaken by ArchaeoPhysica Ltd and Trust Environmental. The initial finds cataloguing was undertaken by Sally Evans. The pottery finds were assessed by Jeff Speakman of the National Museum of Liverpool (NML), the animal bone by Andy Bates and all other finds by Chris Howard-Davis of OA North. Environmental samples were assessed by Elizabeth Huckerby of OA North.

The report was compiled by Andy Bates, Steve Baldwin, Jeff Speakman, Chris Howard-Davis, Martin Roseveare (ArchaeoPhysica) and edited by Jamie Quartermaine of OA North. The drawings were by Ann Stewardson. The OA North project was managed initially managed by Stephen Rowland and latterly by Jamie Quartermaine.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF PROJECT

- 1.1.1 A programme of evaluation was undertaken within the Lathom Park gardens, near Ormskirk (NGR SD 4602 0914), West Lancashire (Fig 1), in July and August 2009. The works were conducted by the Lathom Park Trust (LPT) and Oxford Archaeology North (OA North) as **Stage III** of a multi-stage Heritage Lottery Funded (HLF) archaeological project. **Stage I** comprised a review of available documentary evidence relating to the site (S Baldwin pers comm; Lewis 1999), undertaken by Stephen Baldwin during the project set-up, and **Stage II** was a geophysical survey of the area (ArchaeoPhysica 2009). **Stage III** comprised the excavation of six trial trenches and two test pits, within the extant gardens of the former Lathom House, owned by NSG Group/Pilkingtons. They were located so as to identify, and record, the remains of the medieval Lathom House, a large castle, that was built in the 1490s and slighted in 1645.
- 1.1.2 Previous programmes of intrusive and non-intrusive field and documentary investigation (LUAU 1997; Baldwin 2010) have highlighted the enormous potential of the site to address research questions pertinent to the site itself, and to the North West region as a whole in the medieval and post-medieval periods. The aim of the archaeological evaluation was to investigate scientifically, through the strategic placement of trial trenches, areas of archaeological potential established by the preceding geophysical survey within the pleasure garden and adjacent parkland associated with the house.
- 1.1.3 The field evaluation was designed to be as open to as wide a segment of the local community as possible. During the intrusive evaluation, OA North worked closely with members of the Lathom Park Trust and local volunteers, together with appointed specialists, to provide the professional supervision, guidance and the training required to complete the work. All works were undertaken under close professional archaeological supervision to ensure that modern professional standards are met at all stages. Throughout the project, the OA North and LPT supervisors provided considerable training in the use of modern evaluation techniques.
- 1.1.4 **Geophysical Survey:** as part of the current works, geophysical electromagnetic induction (EMI) and GPR surveys were undertaken by ArchaeoPhysica Ltd, and the results were superimposed with high-resolution digital elevation model (DEM) LiDAR data. These revealed the location of the moat on the southern side of the castle, and a section of the outer defensive around the northern side.
- 1.1.5 This report sets out the results of **Stage III** of the Heritage Lottery Funded investigations of Lathom House. It draws upon the **Stage I** results as part of the historical background, and incorporates summary geophysical results (**Stage II**), but the primary geophysical survey results report are presented within a separate report (ArchaeoPhysica 2009). A brief description of the techniques employed is presented in the methodology and summary conclusions are presented as *Appendix 4*.
- 1.1.6 **Lathom Park Trust:** the Lathom Park Trust was established in 1998 using a grant provided by West Lancashire District Council and is now both a limited

company and a registered charity. Although essentially focussed on investigating, promoting and preserving the archaeology and history of the land covered by the medieval deer park, a number of other aspects of local history have been developed. Community involvement in educational schemes has always been an important remit of the Trust. Previous LPT/HLF talks and walks in Lathom have informed over 1,000 people of the existence and richness of many historic and archaeological features contained within the local landscape. The Trust recognises that it is not only professionals who have a role to play in research, although their guidance and knowledge is valuable. The local public are encouraged to get involved in undertaking research, subject to the correct training, and the Trust will continue to encourage and foster public involvement in future projects.

- 1.1.7 ***Oxford Archaeology North:*** OA North, formerly Lancaster University Archaeology Unit, has been serving the archaeological needs of the region since 1979. It has on many occasions had a close involvement with amateur groups on projects throughout the region. At Lathom OA North has undertaken extensive programmes of work involving fabric survey of the surviving West Wing of the eighteenth-century mansion designed by Leoni, evaluations on the site of the late medieval fortified house which preceded this (LUAU 1997), and more recently has overseen a vernacular building survey for the Lathom Park Trust Local Heritage Initiative funded 2001-04 project, which looked at the development of over 45 post-medieval buildings surviving within the present day Civil Parish and beyond (OA North 2004).

1.2 AIMS AND OBJECTIVES

- 1.2.1 ***Academic Aims:*** the basic aim of the field evaluation was to establish the character, form and extent of archaeological remains identified by the non-intrusive surveys, and to investigate their depth, complexity and state of preservation, thus allowing an assessment of their significance within the known history of Lathom, and their potential for further investigation. The locations of evaluation trenches were targeted so as to maximise the academic value of the trenches relative to investigated area. The evaluation aimed to maximise data recovery, and great care was taken to enable appropriate sampling from secure contexts for palaeoenvironmental remains, technological residues, absolute dating and finds recovery.
- 1.2.2 ***Academic Objectives:*** the following objectives contributed to the completion of the above aims:
- to excavate a series of trial trenches targeted on geophysical and topographical anomalies, using where appropriate, a mechanical excavator to remove modern deposits to backfill and to assist with the management of spoil;
 - to recover a well-stratified assemblage of finds in order to assist with establishing a chronology for the site;
 - to process on site all finds recovered from the works under the direction of a specialist appointed by the Lathom Park Trust;

- to recover samples from secure and well-stratified contexts for palaeobotanical remains and industrial residues;
- to undertake an assessment of sediment samples recovered during the fieldwork;
- to produce an illustrated report on the results of the programme of works;

1.2.3 **Community Aims:** the project included a broad community involvement in the research and investigation of the area, to raise awareness in the wider community of the rich cultural heritage in the surrounding landscape and to make this a more ‘hands on’ activity by providing training and instruction into modern archaeological methods and aims. It used the present project as a means of training both members of the Trust and members of the wider community in modern archaeological recording techniques, so that they thereby obtain a greater understanding of the archaeological landscapes that abound in the Lathom area. Similarly, it is important that the results of the investigation are presented to the wider Lathom community in a way that is both accessible and comprehensible to the wider public in order to encourage their continued involvement.

2. HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

2.1 LOCATION AND GEOLOGY

- 2.1.1 Lathom House is located on the Lancashire and Amounderness plain (Fig 1), an area of rich lush pasture and arable fields (Countryside Commission 1998, 86) (NGR SD 4602 0914). The solid geology below the house and surrounding area comprises Carboniferous Lower Coal Measures (OS/Geol Survey 1937). There is a legend of the fifteenth century house having had its own mine within the confines of its walls (Swarbrick 1993). The drift geology map sheet (OS/Geol Survey 1950) shows the Leoni house as standing within an island of Lower Coal Measures outcrop (coded d5'), ringed by an area of boulder clay, itself surrounded by Shirdley Hill Sand, which is economically important in glass manufacture.
- 2.1.2 The soils around the site, developed upon the Carboniferous Coal Measures, are of the Sollom 1 Association (641a), with a tongue of Flint Association (5721, formerly called Salwick Association) immediately to the south-west of it (Lawes Agricultural Trust 1983). The Sollom 1 Association comprises typical gley-podzols (Ragg *et al* 1984, 295-8; Hall and Folland 1970, 111-17 and 121). The Flint Association comprise mainly stagnogleyic argillic brown earths in thick reddish drift; the principal soils being fine loam over clays (Ragg *et al* 1984, 200-202).

2.2 HISTORICAL BACKGROUND

- 2.2.1 **Earlier Medieval Period:** references to a manor at Lathom date from the mid-eleventh century, when Uctred was named as the lord, but it cannot be conclusively proved that the capital messuage of Uctred and successive lords through the next four centuries lay in the vicinity of the present building (Coney and Lewis 1990, 1). The only standing structure of any antiquity which survives within Lathom Park is the chapel of St John, which dates to the early sixteenth century: this does not relate directly to the house, but to the college of almshouses founded by the Earl of Derby in 1500 (Farrer and Brownbill 1907, 256).
- 2.2.2 Grants of land to the Augustinian Canons at Burscough, dating from the early thirteenth century onwards, contain references to *Burnardescastel* and *Castlegate siche* (denoting a small stream). The location of this 'castle' cannot be conclusively identified, but Lewis supposes that the buildings must have been associated with the park mentioned in these deeds, which she further identifies with the 'Great Park', in which stood the fifteenth century house (Lewis 1999, 150). Robert de Lathom had founded the priory at Burscough in or before 1189. His younger son, Robert, was knighted in 1243, and in 1249 the county and castle of Lancaster were committed to him by the king; hence the male line of the family became hereditary dukes of Lancaster. Probably in 1385, Isabel de Lathom married Sir John Stanley, and the manor and other lands descended in that family until the estate sale of c1721.

- 2.2.3 **Later Medieval to Civil War Period:** in the last decade of the fifteenth century, Thomas Stanley, first Earl of Derby and father-in-law of Henry VII, created a large and impressive fortified residence; the appearance, scale, and location of which have been a matter of speculation and debate for several historians. Baines (1825, 457), quoting earlier sources, describes the house at the time of Henry VII's visit in July-August 1495, as having '*eighteen towers, nine in the outer and as many in the inner wall, the whole surmounted by a deep fosse, eight yards wide and two deep, immediately within which, and beyond the drawbridge, was a strong gateway, and in the centre a lofty tower, called the Eagle Tower*'. It has been suggested that Henry rebuilt Richmond Palace shortly after his visit to Lathom, influenced by his impressions of the new house erected by Stanley (Ormerod (ed) 1844).
- 2.2.4 Various authorities have suggested that Lathom House is represented on two misericords in Manchester Cathedral (the former Collegiate Church), carved between 1485 and 1506, when James Stanley, a son of the first Earl of Derby, was warden. A depiction of the Lathom legend, the story of the Eagle and Child, is represented on the Dean's stall (Hudson 1924, 18-20, and 43-4, and Pl 6), and includes a countryman knocking at the castle gateway, which has two towers and machicolated battlements, to appraise the inmates of the discovery of the baby discovered safe and well. Another stall depicts the Elephant and Castle, with the castle consisting of an octagonal keep, curtain walls, and corner towers (Hudson 1924, 46-7 and Pl 18).
- 2.2.5 *The Northern Court:* the epithet 'the Northern Court' was used to describe Lathom in the will of Edward, 3rd earl of Derby in 1572 (Lewis 1999, 150). The name seems to be a reflection of the place's size and facilities, including its accommodation and parks, as well as the influence which the 1st Earl of Derby and Lady Margaret Beaufort are likely to have wielded from there. It is likely that Lathom first gained this reputation with the visit of Henry VII to Lathom and Knowsley in July - August 1495. Lewis (1999, 165) has estimated that the *inner* court of the fifteenth-century house at Lathom must have been in the order of 10,000 square metres in area, and the area enclosed by the outer walls considerably greater. Assuming that Thomas Stanley enlarged Lathom after his remarriage, Lewis (*ibid*) considers that this may have been 'to provide Lady Margaret with accommodation comparable with that at Bourne [in Lincolnshire]'. Where Lathom - on the basis of the descriptions from the time of the Civil War, 140 years later - seems to have been surprising and unusual for the late fifteenth century is in its defensive capability, which clearly remained prodigious. Even allowing for later strengthening, it could not have held out during two prolonged sieges in the 1640s had its late fifteenth century defences been merely for show. Furthermore, Lathom's design was in other ways innovative and influential - the *c* 1562 poem by Thomas Stanley, Bishop of Sodor and Man, makes it clear that Lathom's design influenced the building of Henry VII's Richmond Palace, which had already commenced by October 1485 (Lewis 1999, 150). John Leland, the King's antiquary, visited the site in about 1540, stating: '*Lathom, most part of stone. The chiefest house of the earl of Derby. Two miles from Ormskirk*' (Leland 1964).
- 2.2.6 **Post-Civil War Period:** the story of the protracted siege of Lathom House by the Parliamentary Army under the command of Sir Thomas Fairfax in 1644, and of the spirited defence by Charlotte de la Tremouille, Countess of Stanley, is well-

known (Beamont (ed) 1864). However, in a subsequent siege the house fell to Parliamentary forces in December 1645, when the countess was not in attendance, and the fabric of the castle and the site were sequestered and plundered. The lead was stripped from the roofs (the men of Wigan, formerly staunch Royalists, being most active in carrying the material away) and several of the buildings were pulled down and thrown into the moat. The account concludes with a lament for the loss of what had been *'the glorie of the county'* and with the observation that *'when it will be repaired again is doubtful'* (Beamont (ed) 1864, 63). According to another source, the buildings of Lathom House were razed to the ground, leaving only *'two or three small timber buildings alone left to mark the site of the palatial mansion'* (Seacombe 1793, 164).

2.2.7 However, other documentary evidence suggests that this may be interpreted not as the complete destruction of the house, but as a slighting, common in castles and heavily fortified houses, to ensure that the site could not again be used for military purposes. The Hearth Tax, called Chimney Money in the Derby accounts, was levied from 1662 until 1689 (Muir 2004, 113), though the records for Lancashire are far from complete, and houses as such are rarely named. As far as can be determined, the Hearth Tax records of 1664 show just two hearths for what is presumed to be Lathom House, implying that there were only two usable hearths in the building. Farrer's transcript in Manchester Central Library (MCL L1/54/2) shows that by Michaelmas 1665 the number had increased to 17, implying extensive rebuilding in the intervening period (Farrer and Brownbill 1907, 239). The increase over the Earl's estate in Lathom as a whole was 29 hearths. For comparison, Cross Hall near Ormskirk had 8 hearths, and Scarisbrick Hall 18 (*ibid*).

2.2.8 *The rebuilding of The Eagle Tower:* Seacombe (1793, 405) says that William 9th earl created 'a sumptuous and lofty new front and covered it in'. Thomas Pennant (1801, 55), who visited Lathom in 1773, claimed that Thomas Bootle had completed the Earls of Derby's work 'in a most magnificent manner', but goes on to say that the earlier house was 'even inhabited at the beginning of this [ie the eighteenth] century when the Eagle Tower and some parts of the wooden house were still standing'. However, until the Lathom Park Trust's 2001-04 Project, further contemporary evidence had been lacking. At the Cheshire and Chester Archives and Local Studies Service a letter dated 13 March 1670/1 was located using on-line catalogues. It was sent from Thomas Matley at Lancaster, to Somerford Oldfield in Somerford, Cheshire, and relates to Oldfield's plans to repair and extend his house at Claythorpe, Westmorland. In passing, Matley refers to the current difficulty in obtaining workmen, as:

'you cannot get masons and carpent[er]s for the works bicause the all such workmen take soo much worke in winter as will (?)force to keep them in imployment all the summer following, and now all the masons in this part of the country are imployed in the buildinge up the Eagle tower at Lathom [Hall]' (C&CAL S DSS 1/7/81(1)).

2.2.9 We may assume that the eighth Earl continued with building work until his death in December 1672. Bagley (1985) considers that William, the ninth earl, also yearned to recreate Lathom's former splendour, but on his death in 1702, his descendants moved to their other residence at Knowsley. While there is no

reason why we should expect extensive building work to continue between 1702 and 1721, when the sale by the ninth earl's daughter, Henrietta Maria, Lady Ashburnham, to Henry Furnesse of London, was completed (LRO DDLM 1/8/13), the financial accounts indicate continued expenditure on maintaining the house and park. An item of expenditure in the accounts of 1715 (LRO DDK DDK 1805/6, f10) suggests either that repairs to the Civil War damage were still being completed after 70 years, or, perhaps more likely, that there had been some further setback.

2.2.10 In or about 1724 Henry Furnesse sold Lathom to Thomas Bootle of Melling, who was later responsible for the construction of the eighteenth-century house (Lewis 1999, 6).

2.2.11 ***The Eighteenth-Century House:*** in the first half of the eighteenth century, whatever remained of the medieval house was cleared and covered by levelling deposits to create a square platform upon which was constructed a new mansion for Sir Thomas Bootle. This new house was designed by the fashionable architect Giacomo Leoni (c 1686-1746) (Colvin 1995, 608-11). Leoni described himself as a Venetian, and came to England in c 1713-14, probably having worked previously at Schloss Bensberg, near Cologne. His greatest claim to fame was an edition (in English, French, and Italian) of *The architecture of A Palladio... revis'd...*, published in five parts 1715-20. Of nineteen commissions listed by Colvin, only four survive. Bold Hall, St Helens (c 1730-32) was his only other work in Lancashire, and only part of its stables survives. In the 1720's he also made alterations to the Elizabethan house at Lyme Park of Cheshire in the Palladian and Baroque styles (Pevsner and Hubbard 1971, 259-61). Most sources for the Leoni house at Lathom give a date of 1724-34, but Colvin (1995, 610) gives c 1740. The building was altered by T H Wyatt in 1862. The small number of sources available includes published versions in *Vitruvius Britannicus*, Vol 4, of Leoni's own ground floor plan and several elevations, including the surviving stables wing (the West Wing) (Woolfe and Gandon 1767, 10 and Pl 94-8). A plan of the 1860s refurbishment (Kerr 1865, 456-7 and Pl 39) gives the use of the ground floor rooms, which should aid the identification of the locations of nineteenth century discoveries. A number of illustrations of the house also exist (eg Gregson 1817; Twycross 1847; Fleetwood-Hesketh 1955, 63; and West Lancashire District Council c 1990, 2 and 35).

2.2.12 Repton's 1792 Red book of Lathom details proposals to deformatise the gardens at Lathom, with before and after views of his proposed work. The text concerns infilling the pond in front of the house which 'is so near the eye that its glare prevents the lawn from being seen beyond it' and creating lines of trees on low banks (Lathom Park Trust 2004, 21). It was unclear, until the current phase of works, as to whether this work was ever carried out.

2.2.13 The central block of the Leoni house was demolished in 1926 (Anon 1926), and the East Wing in c 1960 (J Champness *pers comm*), leaving only the West Wing to survive in splendid isolation.

2.2.14 ***Antiquarian Research:*** the Civil War siege, subsequent slighting, and final destruction of the late medieval house, by c 1740, gave rise to one of the more enduring and best known of the county palatine legends.

- 2.2.15 Thomas Pennant had visited Lathom in c 1780, and wrote '*Latham is placed on a most barren spot, and commands a view as extensive as dull. The back-front was begun by William earl of Derby; the rest completed in a most magnificent manner by Sir Thomas Bootle*', and then '*The ancient Latham, the celebrated seat of nobility and hospitality, stood between the north-east offices of the present house and the kitchen-garden*', followed by '*On the Restoration it was repossessed by the family; was repaired, and even inhabited the beginning of this century, when the Eagle Tower and some parts of the wooden house were standing.*' (Pennant 1801).
- 2.2.16 The location of the medieval house had been clear enough to Pennant, but in subsequent years this knowledge seems to have been lost. Between 1857 and 1884, various discoveries were made on the site, including, during the restoration of the saloon or drawing room it was found '*that the north wall of the room is extremely old and built of rubble stone; and that the whole of the south front of the present house is built up to and abuts upon this ancient wall*' (Lea 1893). In addition, there were accounts of nineteenth century discoveries of burials and re-used stonework and foundations, made during refurbishment work (Anon 1859; Smith 1873, 122-6; Buxton 1889, 47-9). Pilkington (nd) stated that parts of the old building were also discovered during the 1920s demolition.
- 2.2.17 In recent years, a school of thought developed that the house had stood within the extensive earthworks at Spa Roughs (NGR SD 4665 0844), c 900m to the south-east of the West Wing (Scheduled Monument 13506; Lancs HER PRN 0759). Proponents of this idea included the National Monuments Record, Lawson (quoted in Anon 1989), Swarbrick (c 1993), and Critchley (1994).

2.3 ARCHAEOLOGICAL BACKGROUND

- 2.3.1 ***Lathom House, Assessments and Excavations 1996-2003***: the first professional archaeological work at the site of the eighteenth century Lathom House was undertaken by the Lancaster University Archaeological Unit (now Oxford Archaeology North) in the spring of 1996. Six trenches excavated on the site of a proposed new bungalow behind the West Wing revealed the existence of a very large rock-cut ditch nearly 3 metres deep. It contained finds no later than 1750, which strongly suggested that the ditch had been backfilled by that time. The excavators interpreted the large ditch as the defensive moat of the late-medieval Lathom House, the palatial fortified residence built c 1460-85 by Thomas Stanley, either just before or after he became first earl of Derby (LUAU 1997).
- 2.3.2 The plotted curvature of the ditch appeared to coincide with that of the sunken fence (Ha-Ha) in the pleasure garden to the south-west of the West Wing. The excavators believed that the 1720s Ha-Ha may have been partially constructed within the medieval moat, and that the course of the Ha-Ha to the east may define the limits of the medieval enclosure. It was notable, that the curvilinear form of the moat was clearly defined in plan by its respective position within Trenches 4, 5 and 6 (*ibid*). This would imply that the medieval platform, buildings and towers would be mostly contained within the pleasure garden to the north-east of the Leoni House.
- 2.3.3 The fills of the putative moat were clearly derived from demolition of a substantial sandstone-built structure, most likely the medieval house, and since

these were tipped from the north-east, it strongly suggested that the building lay in this direction (LUAU 1996 and 1997).

- 2.3.4 **Medieval Structures found inside the Eighteenth-Century West Wing:** pieces of reused decorative masonry and a number of structural timbers were removed from the West Wing before the start of a restoration programme in 1996. Some of the timbers possessed mouldings, jointing and peg holes which would have not been consistent within the context of an early eighteenth century classical house. Tree ring dating has shown that, as for the stonework, these timbers were derived from the medieval Lathom House (WYAS 1998).
- 2.3.5 In October 1997 permission was granted to the Lathom and District Archaeological Society to place a number of evaluation trenches and test pits within the then derelict West Wing stable block during restoration. The main objective of the project was to identify the presence or absence of medieval sub-surface structures within the confines of the eighteenth century building. The first exploratory trench was put in place soon after the demolition of the south front wall. The excavation revealed massive (pre-Leoni) sandstone footings beneath the tiled floor of the stable (Baldwin 2010).
- 2.3.6 More sandstone wall footings were found beneath the harness room floor in February 1998. An evaluation trench was excavated to investigate if the linear wall to the south of the West Wing continued throughout the northern half of the building. The trench was cut through a layer of seventeenth and eighteenth-century demolition debris which included numerous fragments of highly ornate mouldings, window mullions, and door jambs. Pottery and glass recovered from the trial trenching and the test pits were of medieval, late-medieval and post-medieval date. The wall footings found inside the West Wing building have been interpreted as having once supported the walls and towers (adjacent to the defensive moat) of a large high status late-medieval building (*ibid*).
- 2.3.7 **Previous geophysical work in the garden:** West Yorkshire Archaeological Services (WYAS) and the Lathom and District Archaeological Society undertook a geophysical and ground probing radar survey of the Pleasure Garden in 1998; an additional plot to the north on farmland belonging to Mrs Tyrer was also surveyed. Results and data from that survey revealed areas of high resistance possibly caused by spreads of demolition rubble, and a broad linear low resistance anomaly possibly locating an infilled moat arm. GPR profiles undertaken by Leeds University revealed several potential upstanding features thought to represent masonry footings, with other profiles identifying what were thought to be broad ditches and banks (WYAS 1998).
- 2.3.8 **Continued professional work:** the first opportunity for an archaeological investigation of the moated platform to the east of the West Wing occurred in July 2001. Two large trenches were excavated, in advance of a sewage treatment plant, by Matrix Archaeology and LUAU. These trenches revealed the presence of massive walls and other extensive medieval and post-medieval features (J Quartermaine pers comm).
- 2.3.9 During September 2002, following an application to construct a pair of garage blocks on the site of the main part of the eighteenth-century house, Matrix Archaeology was commissioned to excavate three evaluation trenches at this location (S Baldwin pers comm). These revealed that substantial footings of the

eighteenth-century house had survived, and also that there were footings related to an earlier, possibly medieval, building on the same site. Subsequently, in March 2003, Matrix Archaeology undertook an area excavation of the westernmost third of the eighteenth-century house site (S Baldwin pers comm). The partial ground plan of the Leoni house, including cellared areas, was exposed; and within this were four earlier walls, of red sandstone construction. Two of these extended from north to south, and were associated with an extensive area of cobbling. The third ran from east to west, and its rubble core had been refaced with eighteenth-century brickwork. The fourth survived as a basal course set within a shallow footing trench, and seemed to indicate a small tower or turret. The east/west wall appeared to be the same wall as described by the Revd T Buxton in 1889 (Buxton 1889), which was said to be an ‘ancient wall’ of rubble construction, including a window of ecclesiastical appearance, which was revealed during work at the first floor level within the eighteenth-century house (Fletcher 2004).

3. METHODOLOGY

3.1 GEOPHYSICAL SURVEY

- 3.1.1 A series of geophysical surveys was undertaken by ArchaeoPhysica, and the following outline methodology is derived from the survey report (ArchaeoPhysica 2009). The primary objective of these surveys was to locate, if possible, the castle moat, using a coarse appraisal method to attempt to delineate the extent of medieval structures. The EMI survey was used to achieve this and an area of detailed GPR survey was undertaken where the remains of what appeared to be the medieval curtain wall had previously been discovered.
- 3.1.2 To aid interpretation of these data sets existing LiDAR coverage of the estate core was enlarged and examined to develop an understanding of the topography and, especially, how the later phases of the site were manifest within the landscape. This helped, in particular, with assessing how ground levels had changed during the construction of the house by Leoni in the eighteenth century and also after Repton's proposals for naturalisation of the parkland in the early nineteenth century.
- 3.1.3 Three techniques were used:
- EMI - Quadrature (electrical conductivity)
This measured Variable Out-of-phase induced electromagnetic field
Instrument Geonics EM31 MKII
 - EMI – In-phase (magnetic susceptibility)
This measured Variable In-phase induced electromagnetic field
Instrument Geonics EM31 MKII
 - Ground probing radar
This measured Variable Reflected electromagnetic intensity
Instrument GSSI SIR-3000 with 270 MHz antenna

3.2 TRIAL TRENCHES

- 3.2.1 Following on from the results of the geophysical survey 14 trenches were planned, on the basis of geophysical anomalies, in the event due to a variety of circumstance only six of the planned fourteen trenches were excavated: Trenches 7a, 7b, 8, 9, 10 and 14 (Fig 2).
- 3.2.2 All trenches were excavated in a stratigraphical manner, whether by machine or by hand. Trenches were located by a Total Station Theodolite (TST), which is accurate to +/- 0.25m, with the grid of the TST survey located in respect of the Ordnance Survey (OS) co-ordinate system using differential Global Positioning System (dGPS) equipment. All survey data was incorporated into a CAD system. Altitude information will be established with respect to Ordnance Survey Datum.
- 3.2.3 Selected pits and postholes were normally half-sectioned, linear features subjected to no more than a 10% sample, and extensive layers, where possible, were sampled by partial rather than complete removal. All information identified in the course of the site works was recorded stratigraphically, using a system

adapted from that used by Centre for Archaeology Service of English Heritage, with sufficient pictorial record (plans and sections) to identify and illustrate individual features. Field investigations were recorded on *pro forma* sheets. Plans and sections were drawn at sections at an appropriate scale (1:50, 1:20 and 1:10). The photographic record comprised digital and 35mm monochrome formats. All spoil was metal detected for ferrous and non-ferrous metals by Brian Sharples of the Lathom Park Trust.

3.3 FINDS

- 3.3.1 The recovery of finds and sampling programmes were in accordance with current best practice (*eg* IFA 1992, and other specialist guidelines) and subject to appropriate expert advice. Handling of finds, their management and storage during and after fieldwork followed professional guidelines (IFA 1992; UKIC 1984). No artefact category was neglected, in order to provide as full a record as possible, including those relevant to the post-Leoni building abandonment. Other finds recovered during the removal of overburden were retained only if of significance to the dating and/or interpretation of the site or specific features. Following the removal of overburden, artefacts were collected by hand and identified by stratigraphic and spatial units. Animal bone was recovered, by hand, without sieving, from stratified deposits only. The spoil of the trenches were examined by a local metal detector enthusiast who was able to identify a number of lead musket balls, and although unstratified these finds have been reported on (*Section 6.5.1*).
- 3.3.2 Finds were processed and administered at regular intervals on site. They were washed as appropriate, dried, marked, bagged and packed in stable conditions; no attempt at conservation was made unless special circumstances required prompt action. In such a case, guidance and/or expertise was sought from a suitably qualified conservator. Numbers were issued to every individual item or bag of finds for the purposes of tracking the large quantity of material. All finds recorded on site were grouped by a member of the local team into loose pottery types and entered onto an Access Database.
- 3.3.3 All waterlogged finds were treated as necessary to ensure their continued survival. In the case of large deposits of waterlogged environmental material (*eg* unmodified wood) discussion was sought with the client, consultant and archaeological curator with regard to an appropriate sampling strategy.
- 3.3.4 Where possible, spot dates were obtained on pottery and other finds recovered from the site at regular intervals during the project, in order to inform ongoing excavation strategies. In the case of medieval and post-medieval pottery, the artefacts were examined, and in the first instance commented upon, by OA North in-house specialists, and Jeff Speakman of National Museums Liverpool.
- 3.3.5 **Ceramic Processing:** the pottery was rapidly sorted into typological groups within each individual bag/record number. These types were recorded onto the Access Database listing all types held in the bag in a new text field – for ease of assessment by the excavators. The records created by the local excavators have not been separated and different types identified during this process were only recorded into the text field listing and not given new unique numbers.

- 3.3.6 The count for each record therefore remains unchanged in the database but the different types identified have been taken into account for the statistics in this report. Weights have not been recorded. Only a superficial attempt was made to assess vessel joins – further joins may exist.

3.4 ENVIRONMENTAL ASSESSMENT

- 3.4.1 A single ten litre samples from fill **275** of drain **297** was assessed for charred and waterlogged plant remains. The sample was hand-floated, the flots were collected on a 250 micron mesh and air dried. The flots was scanned with a Leica MZ6 stereo microscope and the plant material was recorded and provisionally identified. The heavy residues were sorted for small finds and charcoal that did not float. Botanical nomenclature follows Stace (2001). Plant remains were scored on a scale of abundance of 1-4, where 1 is rare (up to 5 items) and 5 is abundant (>100 items). The components of the matrix were also noted.

3.5 ARCHIVE

- 3.5.1 A full professional archive has been compiled in accordance with current IFA and English Heritage guidelines (English Heritage 1991). The paper and digital archive will be provided in the English Heritage Centre for Archaeology format and will be submitted to the Lancashire Record Office in Preston on completion of the project. Copies of the report will also be submitted to the Historic Environment Record. The Arts and Humanities Data Service (AHDS) online database *Online Access index of Archaeological Investigations* (OASIS) will be completed as part of the archiving phase of the project.

4. TRIAL TRENCH EXCAVATION RESULTS

4.1 INTRODUCTION

- 4.1.1 In total, six trial trenches and two test pits were excavated of varying sizes and depths. Trenches 8 and 9 were extended and stepped to provide safe working conditions. Trench 10 was only briefly recorded, with the trench abandoned and, subsequently, backfilled following the discovery of a fragment of asbestos cement. A full list of excavated contexts is listed in *Appendix 3* and the finds are discussed in *Section 5 and 6* and listed in *Appendix 4*.
- 4.1.2 A further two test pits were excavated, to the west of the Ha-Ha where it defines the eastern perimeter of the grounds of the Leoni building. No archaeological features were located within the two test pits. A description of these excavations, and the deposits encountered, are given below.
- 4.1.3 The trenches have been separated into three broad phases, detailed in the period table below:

Phase	Period
Phase 1	Medieval (14th to 15th century)
Phase 2	Early post-medieval (16th to 17th century)
Phase 3	Late post-medieval (18th to 19th century)

Table 1: Period table

4.2 TRENCH 7A

- 4.2.1 Trench 7a measured 13.5m by 2.7m and was excavated on an east/west orientation, and reached a maximum depth of 0.9m (Fig 2; Plate 2). Three layers were present overlying Shirdley Hill Sands, deposit **601**. These comprised 0.35m of topsoil, deposit **303**, 0.15m of crushed red brick fragments, deposit **399**, and 0.3m of subsoil, deposit **400**. A single stone- filled field drain truncated the natural sands, located at the western end of the trench on a north-east/south-west orientation. No further archaeological deposits were located within Trench 7a.

4.3 TRENCH 7B

- 4.3.1 Trench 7b measured 46.5m in length and 4.5m wide, and was excavated on an east/west orientation (Fig 2). Sondages excavated at either end of the trench revealed at least 1.9m worth of made ground.
- 4.3.2 **Natural deposits:** the western sondage encountered a mid-blue grey sandy clay glacial till, **602**, at a depth of 1.9m below the current ground surface and at least 0.7m thick (Plate 3; Fig 3). Overlying **602**, and measuring 0.7m thick, was a layer of mid-orange grey clay with bands of crushed shale and clay, deposit **603**. Overlying **603** was deposit **341**, a dark grey clay with fragmented shale fragments, 0.2m thick which extended across most of the trench.
- 4.3.3 At the base of the eastern sondage, some 1.8m below the current ground surface was a mid-blue grey sandy clay **324** (Plate 4; Fig 4), very similar in nature to **602** and **603**. Overlying **324**, was a loose yellowish-white sand, 0.3m thick, deposit

- 323.** Deposits **602**, **603**, **324** and **341** are considered to be *in situ* glacial till, while **323** is potentially a thin layer of Shirdley Hill Sand.
- 4.3.4 **Phase 2:** only feature **393** from the western half of the trench, dated to this period. It measured 2.8m long, 1.5m wide and 0.3m deep (Fig 3). Slightly amorphous in shape, it possibly represents a clay extraction pit although its function was not absolutely resolved. It was filled with redeposited topsoil, **327**, containing frequent angular stone inclusions and significant quantities of seventeenth century pottery sherds, including fragments of a sixteenth or seventeenth century Baartman jug (*Section 5.5.38*). Both a very small eighteenth century sherd, as well as a fragment of a thirteenth to fourteenth century glazed floor tile, are thought to be intrusive (*Section 5.11*).
- 4.3.5 **Phase 3:** boundary wall **308** (Figs 3 and 5; Plate 5), was aligned north/south, and was of a dry stone construction measuring 1.3m in height and 1.7m wide. The east-facing elevation contained a greater number of larger and evenly coursed stone than the west-facing elevation. These stones include a fragment of ornate mullion window tracery which was dated to seventeenth or eighteenth centuries. The wall had been cut into natural deposit **341**, but all evidence of the original construction cut had been removed by later activity. The wall marked the boundary between the higher ground to the west and the lower to the east, with the original ground level being denoted by putative buried topsoil, **317**, which had then been levelled using layer **316**.
- 4.3.6 This higher ground bounded by wall **308** coincides with the rectilinear platform of the eighteenth century Leoni construction. Wall **308** was subsequently buried by a series of further re-deposited levelling deposits (Fig 5), the uppermost of which were represented by among others **237**, **357** and **361-310**, which form a sloping revetment which extended the beyond platform. A robbing cut **341** had been placed on the east of the wall. Further material was then dumped to the west (deposits **345-6** and **348**) and to the east by deposits **352-4** and **363-4**. The date of this activity is uncertain but both the extended platform and wall **308** were subsequently truncated by two drain features **334** and **390**. A tile drain from cut **334** was a nineteenth century tilepipe of a horse-shoe form, with the 'sole' attached (Harvey 1980, 720). The western end of the trench was then sealed by topsoil deposits **350-51**.
- 4.3.7 In the western third of the trench, and overlying layer **341**, was a preserved soil horizon comprising topsoils **380** and **382** and subsoils **379** and **385**. This was associated with a grubbed up footing for a building, **375**, at least 12.86m long, with a wall width of 0.65m, with a short return at its eastern end. The bulk of wall was orientated east/west and the return north/south. The fill of the footing, **374**, contained significant quantities of window glass suggesting that the building was a greenhouse. The interior of the structure comprised deposits **376** and **378** both of which represent levelling deposits upon which the floor was probably laid. To the exterior of the building was **325**, a further levelling deposit upon which was constructed **326**, a red brick floor, which may represent an entrance to the greenhouse.
- 4.3.8 The remains of the greenhouse were subsequently covered with a variety of demolition deposits, including **377**, **381**, **383** and **384**. A small red brick footing, **605**, is of a later construction. Its purpose remains unresolved, but it was

constructed on a north-east/south-west orientation and is thought to post-date the demolition of the earlier greenhouse.

4.4 TRENCH 8

- 4.4.1 Trench 8 was located over the demolished East Wing of the Leoni building (Fig 2), it originally measured 10.5m by 3.5m and was excavated on an east/west orientation, reaching a maximum depth of 0.96m. It was subsequently extended a further 0.8m to the west and 2.2m to the south to allow stepping to explore deposits at a depth of 2.26m below the ground surface. These extensions joined Trenches 8 and 9, leaving wall **431**, the western wall of the East Wing, between the two trenches; Wall **431** has been included in the description of Trench 8. Natural glacial till was not reached in the trench due to the depth of the archaeological remains and health and safety constraints.
- 4.4.2 **Phase 1 to 2:** the northern portion of a substantial stone foundation, **435**, was identified 2m below the current ground surface (Figs 6 and 9; Plate 6). It was constructed on an east/west orientation, measured at least 1.17m wide, and comprised roughly-coursed irregularly-shaped stone. The southern edge of the foundation extended into the trench section. The full extent of the northern edge of the cut could not be identified, but its fill comprised stone sand with mortar inclusions, **440** and **441**.
- 4.4.3 **Phase 3:** overlying **435** and its associated deposits was up to 1.38m of levelling deposits, including layers **413**, **414**, **416**, **417** **436**, **437**, **438** and **439** (Fig 9). These deposits provided the base upon which the Leoni building was constructed.
- 4.4.4 Masonry **431**, which is orientated north/south comprised the foundation of the west-facing elevation of the East Wing of the Leoni building (Fig 6; Plate 7). The foundation thickens from 0.75m, to the south, to 1.2m, to the north, providing additional support for a projecting central bay, mirroring the extant example in the West Wing. The inset of the bay is associated with a cobbled surface, **433**, and a drain, **434**. The internal face of this wall was rendered with a lime mortar; however, an internal wall, **432**, has been built against this face (Fig 6; Plate 7).
- 4.4.5 To the east of **431** was the foundation of an internal division within the East Wing, on a north-east/south-west orientation, **404** and **405** (Fig 6; Plate 8). Wall **404** and **405** comprised a red brick structure with sandstone facing and lime mortar bonding, **426**, and measured 1.08m wide. An alcove, measuring 0.8m long by 0.23m wide and 80mm deep, was located in the east-facing elevation of **404**, and had been blocked with brick, **422**, and crushed masonry and mortar, **411** and **426** (Fig 6; Plate 8). The bricks were not heat affected, precluding the possibility of a fire place, and it was thought to be a blocked stepped entrance leading down to the sunken interior to the east. This comprised a series of levelling deposits, **407**, **409**, **410** and **425**, upon which was laid a red brick floor **403** and **402**. Both the floor and the levelling deposits were subsequently cut by a stone drain **408**. Individuals visiting the site who were the last to utilise these buildings remember a wash room being in the East Wing of the house, and it is quite possible that the drain was put in to take waste water away from the washtubs. The subsequent demolition of the wall above foundation **404** created two overlying deposits **418**, to the east of **404**, and **406** to the west of **408** (Fig 7).

4.5 TRENCH 9

- 4.5.1 Trench 9 was located in the area adjacent to the East Wing of the Leoni building and originally measured 20m in length and 2m wide, and was excavated on a north/south orientation, and reached a maximum depth of 2m (Fig 8). In the northern half of the trench an east/west orientated wall, **237/261**, was located, and the trench was stepped some 8.5m to the east to allow the feature to be recorded (Fig 8). Given the depth of the deposits natural glacial till was not located within the trench.
- 4.5.2 **Phase 1:** located within a small sondage in the north-west of the trench was a small area of flagstone floor, **294**, which had been sealed below bedding layer **296** upon which the later sixteenth/seventeenth century brick surface, **263**, was lain (Fig 8; Plate 9).
- 4.5.3 **Phase 2:** some 0.18m above flags **294**, was a sixteenth or seventeenth century building comprising western and northern walls, **260-262** and **273**. The building has an internal partially flagged floor to the east **264**, and an entrance between walls **260** and **262**, marked by a threshold stone **267** and a red brick surface **263** (Fig 8; Plate 10). Fixed by lead to the upper surviving stone of wall **260** was an iron gudgeon, upon which the door of the building pivoted (OBJ 1005). The red brick surface **263** continues to the west of the entrance, into what might be another room or perhaps a courtyard. Despite, the surfaces surrounding **263** being 0.49m lower, they are likely to be contemporary.
- 4.5.4 Immediately inside the building's entrance the flagging comprised a greater range of material including more irregular flags, cobbles and bricks, presumably reflecting running repairs in the area of greatest erosion. At this location there were traces of what may have been an earlier occupation horizon **280**.
- 4.5.5 A number of disturbed flags were also located, **281** and **266**, and it is thought that the floor was largely removed prior to the demolition of the building. A deposit of red crushed brick, **279**, in the south-west corner of the building probably represents a foundation deposit. Overlying a fair proportion of the floor area were deposits of lime mortar, deposits **272**, **274**, **282** and **285**. It is thought that these deposits originated from the mortar which rendered the internal elevations of the surrounding walls, and is still visible on the remaining portions of walls **206** and **262**. This mortar would have been deposited when the aforementioned walls were demolished and the masonry removed from the site.
- 4.5.6 Two sondages were dug into the floor deposits within this room. The first, to the east of flags **264**, was excavated through mortar **282**. A moulded stone, **277**, was uncovered 70mm below the surface **280** (Fig 8; Plate 11). It measured 2.29m in length, 0.8m wide and 0.26m thick, with a well worn shallow 'trough' in the middle running from north to south forming a drain or sink. The 'trough' of the stone measured 0.12m deep and fell 40mm from south to north. At the southern end of the 'trough' was a square socket, 40mm by 45mm in size. The moulded stone had evidently been set in the flagged floor **264**, and is considered to be *in situ* and to have taken fluid into dry stone drain **297**. Two remaining upper flag stones form part of a circular aperture, giving access to the drain (Plate 11). The fill of this drain, deposit **275**, contained significant quantities of bone, including bird bone, fish scales, oyster shell, and seventeenth century pottery (Sections 5.6, 6.8 and 6.9).

- 4.5.7 The second sondage at the southern end of the trench extension, proved to be inconclusive. The earliest deposit **286**, was overlain by a north/south stone alignment, which was in turn overlain by sand and rubble layer **278**, which contained a high number of oyster shells, and lay to the south-east of an L-shaped alignment of stones **265**, which was potentially part of the disturbed stone floor (Fig 8; Plate 12). The purpose of these stones was not resolved, but the bone and shell of the overlying deposits is highly suggestive of kitchen waste. These features were then sealed below mortar layer **274**.
- 4.5.8 An L-shaped line of stones, **265**, were present, below **274**, and were potentially part of the disturbed stone floor (Fig 8; Plate 12). Deposit **278**, to the south and east of these stones, was similar in character to **280** but contained a high number of oyster shells, and overlay a second stone alignment, **284**, laid upon an earlier horizon, **286**. The purpose of these stones was not resolved, but the bone and shell of the overlying deposits is highly suggestive of kitchen waste.
- 4.5.9 The western room or courtyard, to the west and north of walls **260** and **261=237**, produced a second drain, **242** (Figs 8 and 9; Plate 13), which had an east/west orientation. It comprised a clay-bonded northern wall, **255**, and capping flags **238**, with wall **237** acting as the southern side of the drain (Fig's 8 and 9). Wall **255** was not fully excavated but measured at least 1.27m wide; the drain flags, **238**, had been laid up to three courses thick (Fig 9). Three bricks, **239**, including bull nosed stretchers, were placed on their side to form part of the 'rim' upon which the drain cover presumably sat (Plate 13). The drain had three fills, **254**, **249** and **250**, the lower two of which contained quantities of bone, including bird bones, oyster shell and seventeenth century pottery (*Sections 5.6, 6.8 and 6.9*).
- 4.5.10 The deposit overlying much of the masonry of this drain, layer **251**, contained significant quantities of bird, rabbit and fish bones, as well as oyster shells, and pottery dating from the sixteenth/seventeenth centuries to the eighteenth century. A second dumped deposit **259** was located to the north of the red brick surface **263** (Fig 8) comprising a silty soil.
- 4.5.11 **Phase 3:** up to 2m of levelling deposits were placed over these earlier structures, creating the platform on which the Leoni house was constructed. These deposits include layers, **204**, **209**, **212**, **213**, **214**, **225**, **229**, **232**, **233**, **234** and **235**, all sealed by a layer of imported topsoil, layer **100** (Plate 14).
- 4.5.12 These levelling deposits were truncated by two eighteenth or nineteenth century probable drainage features (Fig 7): an east/west aligned stone and brick culvert, **213**; a north-west/south-east linear, **224**, which contained cast iron pipe **223**.

4.6 TRENCH 10

- 4.6.1 Trench 10 was excavated to the south-east of the surviving wing of the Leoni building (Figs 2 and 10; Plate 15). It measured 10m in length and 2m wide, and reached a maximum depth of 0.85m. Within the overburden of the trench a fragment of asbestos cement was located. No further work was undertaken after the fragment was noted and the trench was subsequently backfilled.
- 4.6.2 **Phase 3:** before work at the trench ceased, a flagstone floor, **503**, was recorded across most of the trench, which was laid upon a levelling deposit, **506**, similar in nature to material identified from other trenches used to create Leoni's platform.

At the trench's northern end, floor **503** abutted a curving redbrick floor or path, **507**, and in turn both of these surfaces abutted wall **508**. Both the wall and the path were constructed from the same eighteenth to nineteenth century red bricks. While **508** could not be located on any historical maps it presumably relates to the gardens associated with the Leoni house.

- 4.6.3 A further levelling deposit, **505**, an orange-yellow sand subsequently sealed all of these features (**503**, **507** and **508**). In turn, deposit **505**, and the underlying flags, **503**, were cut by a field drain **504**.

4.7 TRENCH 14

- 4.7.1 Trench 14 was located to the south-east of the surviving wing of the Leoni Mansion House and to the immediate south of Trench 10, and was excavated on an north-north-east/south-south-west alignment to a maximum depth of 0.98m (Fig 11; Plate 16). Glacial till, **154**, **158**, **171**, was located within three sondages through the overlying archaeology at a depth of *c* 0.8m below the ground surface.
- 4.7.2 **Phase 1:** the earliest surface located within the trench comprised three areas of stone cobbles **141**, **149** and **155**, all located within the southernmost half of the trench and considered to originally have formed a single layer (Fig 11; Plate 17 and 18). They consisted of small, sub-rounded stones, a maximum of 0.15m by 0.15m in size, with worn upper surfaces, tightly packed as a layer above the glacial till.
- 4.7.3 Above surface **141**, with traces visible below Phase 2 foundation **106**, was a preserved occupation horizon, **140**, measuring 0.2m thick and containing medieval pottery, including a fragment of bunghole pitcher of the fifteenth or sixteenth centuries (Fig 12; Plate 18). Two similar deposits were identified in sondages to the north: **153** and **172**, both of which overlay the glacial till.
- 4.7.4 **Phase 2:** the occupation layers **140**, **153** and **172** were sealed by levelling deposits **118**, **146** and **156**. At the northern end of the trench a cobbled surface, **123**, was constructed over **118** (Fig 11; Plates 16 and 19) and was bounded by a series of kerb stones. A path, **104** (= **119**), perpendicular to surface **123**, was constructed in the same manner, and ran south-south-east towards building foundation **106**.
- 4.7.5 The areas defined by deposit **118**, may represent areas of timber buildings on either side of path **104**, with flagstones **133**, built over **118** to the south-west of path **107** representing a floor (Fig 11; Plate 19).
- 4.7.6 In the approximate centre of the trench were two foundations: **106** on an approximately east/west orientation, and **138** perpendicular to it (Fig 11; Plate 20). It seems highly likely that these, along with path **104**, formed a coherent whole, unfortunately, Phase 3 field drain **145** was cut into the critical junction between them and their relationship remains unproven.
- 4.7.7 Faced stones **128**, were probably associated with foundation **106** (Plate 20). The squared face of the stones, as opposed to the roughly-hewn internal face, pointed towards foundation **106**, but it is thought that these stones have tumbled from the wall, reversing the direction of their faces in the fall. To the south of **106** was an internal floor represented by flag stones **107** and **114** (Fig 11; Plate 17 and 21).

Cobbling deposit **150** may represent an element of this flooring or perhaps its foundation.

- 4.7.8 **Phase 3:** the Phase 2 building was subsequently reduced, represented by a demolition deposit, **124**, which in turn was capped by a layer of clay **109**, probably associated with the construction of the Leoni building's gardens.
- 4.7.9 These deposits and all earlier deposits were subsequently truncated by four field drains, **111**, **112**, **144** and **176** placed at regular intervals on an east/west orientation as well as a cast iron water pipe, **120**, on a north-east/south-west orientation.

4.8 TEST PIT 1

- 4.8.1 Test pit 1 measured 2.7m by 1.9m in size, and was excavated on an east/west orientation, reaching a maximum depth of 0.55m. The current soil horizon was removed from the test pit by machine to reveal the underlying Shirdley Hill Sands at a depth of 0.45m. No archaeologically significant structures or deposits were located within the test pit.

4.9 TEST PIT 2

- 4.9.1 Test pit 2 measured 2.8m by 2.0m by 0.55m in size, and was excavated on a east/west orientation. The excavation reached a maximum depth of 0.55m, but, as with Test Pit 1 natural Shirdley Hill Sands were located at a depth of 0.45m. No archaeologically significant structures or deposits were located within the test pit.

5. POTTERY ASSESSMENT

5.1 INTRODUCTION

5.1.1 The full pottery report (Speakman 2010) has been placed with the project archive, the following précis presents the key findings of the assessment. In total, 549 sherds of pottery were assessed and the pottery falls into three broad groups:

- There is a single small sherd in a fine, refined, oxidised-fabric with slip coating to the interior and exterior. The fabric and slip, plus a lack of glaze, combined with a marked change in angle in the body sherd, e.g. carination, are similar to Roman Samian forms. Although on closer examination the fabric would appear too sandy to be Samian;
- Earthenwares of local origin, which are likely to be the product of local potteries, made from local clays. A large industry existed in the area of former south-west Lancashire (now Merseyside and West Lancashire). These earthenwares include tablewares, such as cups and jugs, as well as larger vessels used in the dairy or for cooking. Many of these vessels are sooted, showing that they have been used over a fire. This group can be sub-divided by period.
 1. Medieval pottery.
 2. Early post-medieval pottery – mainly fineware cups from the late sixteenth or seventeenth-century.
 3. Seventeenth to eighteenth century pottery.
- Finewares, probably originating in the North West.
 1. These consist of a few fragments of tin-glazed earthenware which is likely to be the product of the Liverpool potters.
 2. Midland types: these include material probably of Staffordshire origin, as well as a quantity of brown stoneware which is probably of Nottinghamshire/Derbyshire origin. The stoneware bottle types may be Staffordshire but were also made in large quantities around St Helens.
 3. Imported German stoneware.

5.2 ROMAN POTTERY

5.2.1 **?Samian:** there is a single, tiny, sherd in a fine, refined, oxidised-fabric with deep red slip-coating to the interior and exterior. The fabric and slip, plus a lack of glaze, combined with a marked change in angle in the body sherd, eg carination, are similar to Roman Samian forms but without more detailed assessment this remains speculative.

5.3 MEDIEVAL

- 5.3.1 There are a total of eighteen sherds of medieval pottery recovered from 10 contexts (**106, 117, 118, 124, 140, 148, 150, 152** and **160**) plus unstratified deposits (*see Appendix 3*). Seventeen of the eighteen sherds were recovered from Trench 14, the one other sherd from Trench 7. The pottery is fragmentary but generally in relatively good condition for medieval pottery from the region.
- 5.3.2 **The Fabrics:** the quality and quantity of the material recovered was insufficient to provide more than a very basic outline of the material contained in a fabric type. Two major clay sources occur naturally in the area; the sandy boulder clays providing a source for orange or red-firing fabrics and carboniferous coal measures clays for the paler, buff or white bodies. Boulder clay is common to large parts of the West Midlands, North-West England and North Wales, whilst the coal measures clays are found across the old south Lancashire area. The clays are naturally very sandy making it difficult to determine whether inclusions are present naturally or have been added deliberately.
- 5.3.3 Most of the sherds have a splashed glaze with an uneven, patchy coverage, often with a mottled surface and thin in places where the body shows through, although there is some more even glaze covering. The small size of sherds makes it often impossible to determine whether the variation in glaze coverage and quality represents true differences between fabrics, or whether they are the result of variations between individual pots or, parts of the same vessel.
- 5.3.4 **Forms:** although, no rims are present in the assemblage a single handle and the glaze coverage over other sherds would suggest the presence of jugs. The bung-hole pitcher, a form generally associated with the making of beer, appears in the fourteenth and fifteenth centuries across Britain and this suggests a slightly later date for this vessel than may appear from its fabric.
- 5.3.5 **Decoration:** only one sherd, from a jug, shows any thumb impressed decoration Object 1148 from context **117**.

5.4 EARLY POST-MEDIEVAL

- 5.4.1 From the turn of the sixteenth century potters began to produce a much wider range of vessels. One of the most significant developments was in the development of smaller drinking vessels for use with the new range of drinks that were becoming available. The English potters began for the first time to produce finely thrown tablewares, represented by a range of cups and other related fine vessels. In the north of England the changes took the form of the so-called 'Cistercian-type' wares, vessels made in highly-fired, impervious fabrics with dark-coloured, often metallic, glazes.
- 5.4.2 **'Cistercian-type' Finewares:** there are a total of 84 sherds of Cistercian-type finewares (or early post-medieval finewares) recovered from 12 contexts and unstratified deposits. Almost 24% (31 sherds) were recovered from a single context in Trench 9, **215**. The next largest groups were unstratified from Trenches 9, with 9 sherds, and Trench 14, with 15 sherds. No other context held more than five sherds and most had only one or two.
- 5.4.3 Cistercian-type wares were first recognised on Cistercian Abbey sites in the north of England in the 1880s (Micklethwaite 1893, in Barker 1986, 52). A type

series was published by Le Patourel (Le Patourel 1965, 116-9) and revised by Brears (Brears 1971a). Almost all are cup fragments with a few sherds from a probably bottle or jug with constricted neck.

- 5.4.4 **Dating:** excavations at Speke Hall revealed Cistercian-type wares associated with deposits immediately prior to and after 1550 (Higgins 1992, 56). Documentary and fieldwork evidence suggests that south-west Lancashire was a significant production centre for Cistercian-type wares by the early part of the sixteenth century (Davey 1991, 132-6).
- 5.4.5 **Provenance:** 'Cistercian-type' wares, are known, to have been produced throughout the West Midlands and the north of England. The south-west Lancashire area seems to have become a significant production centre for 'Cistercian-type' wares and their coarse relatives during the early sixteenth century (Davey 1991, 127 and 136).
- 5.4.6 **Coarsewares:** alongside the fineware cups, there were coarser vessels for the kitchen that developed during the fifteenth to sixteenth centuries out of the late medieval sandy bodied wares. They are usually thick-walled with a thin, patchy, purple glaze and gritty surface. They largely disappear through the seventeenth century and were completely replaced by the turn of the eighteenth century.
- 5.4.7 There are relatively few coarsewares amongst the assemblage, considering the quantities of finewares, possibly a result of the status of the house or the use of this part of the house and gardens. Indeed, only three fragmentary sherds were identified during the assessment: two unstratified fragments from Trenches 7 and 9, and one from context **151** (Trench 14).
- 5.4.8 Overfiring and or reduction is a common characteristic of these coarsewares. The glazes are clear but vary from purple to dark brown and black and often appear quite metallic depending on the colour of the fabric, the amount of iron in the clay and on the firing temperature and thickness of glaze. On the lower fired, oxidised, fabrics the colour tends to be brown and on overfired or reduced metallic they are purple to black. The glazes are generally often thin and patchy, being splashed or brushed on, with little care.
- 5.4.9 The coarsewares are represented by a range of vessel forms used in the kitchen or dairy, being larger and cruder with relatively thick walls, such as storage jars, or jugs with functional, rather than decorative, vertical handles.
- 5.4.10 **Dating:** similar material excavated from the Billiard Room at Speke Hall can be dated to c 1550 (Higgins 1992), when the building was extended over the moat, and are found in association with Cistercian ware. At Kemble Street, in Prescot, excavations during 1987 there were recovered purple glazed sandy coarse wares, with gritty surface, that were dated to the second half of the sixteenth century (Philpott 1989b). These appear to represent the latest stage development of the medieval pottery tradition before the finer, typically post-medieval fabrics began.

5.5 POST-MEDIEVAL

- 5.5.1 From about 1670 there was a massive development in English ceramics stimulated by the enormous growth in demand for durable and decorative ceramics. This led to a period of sustained technical innovation, and change,

leading to the development of industrial mass production of a wide variety of relatively cheap, fine quality, white bodied, sophisticated British pottery which came to dominate the world market.

- 5.5.2 The increased competition led to many of the small-scale regional potters going out of business, or to specialise in the production of coarse earthenwares, whilst the rest tried to improve their products. Despite the competition coarse earthenwares continued to be made until shortly after World War II with little change in style or form, although the fabrics were more refined and vessels were produced to a better quality than before.
- 5.5.3 **Seventeenth Century Yellow Wares and Self-Coloured wares:** in total 20 seventeenth century fine yellow wares were recovered from Trenches 7, 327, and 14 (106, 124 and unstratified). A small proportion of most pottery groups are made up of vessels made in white-firing clay, with a clear glaze, which takes on the pale-yellow colour from impurities within the glaze and/or from iron-oxides in the clay or slip. Iron inclusions in the body can give a dark-brown speckled or mottled effect. The characteristic early pale-yellow would seem to have been a deliberate attempt to produce such an effect by applying the glaze sparingly, resulting in a butter-like texture. However, particularly amongst the coarsewares, a rich-yellow glaze colour is found and it seems to be the case that these vessels are often less likely to be made from pure light-firing clays; resulting in many of the coarsewares having a white slip to reproduce the same effect.
- 5.5.4 Yellow wares were produced anywhere light-firing clays occurred and were made from the fifteenth to the twentieth centuries. Examples of this ware have been found amongst the products of a seventeenth century kiln site at Rainford (Davey and Morgan 1978); forms include cups, plates and bowls.
- 5.5.5 **Coarser wares:** a further 13 sherds were recovered in coarser fabrics (Table 2) resulting in a yellow to orangey-brown speckled glaze, often from a limited range of conical bowl forms, which were common at the seventeenth century Rainford kiln site. The sherds were recovered from five contexts from three trenches.

NML NO	Object	Context/ Trench	Description	No of pieces
420	1226	327/7	17th century self-coloured interior glaze brown speckled with darker spots	4
518	1259	409/8	Self-coloured or yellow ware bowl fragment with exterior red slip coat over pale fabric	1
414	1095	US/9	Self-coloured	1
383	1106	215/9	Self-coloured/dark-glazed flatware base joined	2
385	1126	271/9	Self-coloured ware	3
362	1116	148/14	Self-coloured earthenware	2
Total				13

Table 2: Coarser wares

- 5.5.6 The bowls are fairly small, in a truncated conical shape, with flanged rims and vertical side loop handle. The form has been found widely across the North-West e.g. Rainford, Prescott and Bewsey Old Hall (Davey and Morgan 1978;

Philpott 1989a, 27) and also at Potovens (Brears 1971b) and Beeston Castle in a blackware (Noake 1993, 194, 41; period 7 (civil war)); although the form is common without handles. This may indicate some specific use for this vessel form. Many of these vessels show evidence of sooting on the exterior suggesting they were used for cooking over an open fire.

- 5.5.7 *Provenance:* yellow wares are known to have been a staple of the Rainford potters. Whilst it cannot be certain that the Lea Green yellow wares are from Rainford it is likely that they were made in the south-west Lancashire area, with a strong probability that they were the product of a local potter.
- 5.5.8 *Dating:* the unpublished Rainford types have been dated by association with a group of clay tobacco pipes to the mid-seventeenth century; the forms seen elsewhere are also dated to this period.
- 5.5.9 ***Dark-Glazed Earthenwares:*** by the beginning of the seventeenth century a range of darker and glossier glazed wares, which appear to have been based heavily on the forms and techniques of the 'Cistercian-type' wares, began to be produced throughout the country. At the same time the true 'Cistercian' fabrics began to disappear.
- 5.5.10 The term dark-glazed earthenware is used here to describe these new fine and coarse dark brown- to black lead-glazed earthenwares of the seventeenth to twentieth century. The colour of the glaze is derived from iron either present in the fabric or deliberately added to the glaze. Dark-glazed earthenwares generally have a red to purple fabric with a thick dark-coloured glaze, the precise colour depending on the colour of the fabric, the presence of slip and the amount of colorant (iron) added to the glaze, and the firing conditions. The quality of the glaze is also determined by its thickness; a thick layer equating to a smooth, glossy even finish, whereas a thin coating allows for inclusions present in the fabric to create a gritty appearance. Glazing on the finer wares is generally more even and the unglazed areas of the coarsewares are often splashed and the effect can be patchy and careless.
- 5.5.11 There was a total of 157 sherds of dark-glazed earthenware. By far the majority, 102, fall into a group characterised by the uneven purple to black glaze and generally overfired fabric dating to the seventeenth century (Contexts **100, 101, 103, 106, 114, 124, 130, 151, 162, 215, 249, 257, 259, 271, 275, 293, 325, 327, 385, and 376**). A further 30 sherds have been conservatively dated to the seventeenth to eighteenth centuries (contexts **102, 114, 151, 162, 222, 223, 257, 259, 271, 274, 278, 301 and 409**). The other 25 sherds are characteristic of the eighteenth century glazes, fabrics and forms (contexts **100, 104, 162, 215, 217, 222, 233, 325, 327, 331, 380, 396 and 407**).
- 5.5.12 *Dating:* some chronological developments are evident in the colour and finish of the glaze. In the seventeenth century the glaze colour would appear to have been determined by the underlying body and the degree of oxidisation or reduction. Hard, high-fired, often over-fired and reduced fabrics occur, usually purple in colour. The glaze is dark, glossy black but where thin has a purple colour; overfiring giving them a dull, dark-brown glaze. The less highly fired, oxidised sherds, with a lighter fabric, have lighter glaze colours. By the early eighteenth century a black finish was achieved more regularly, possibly as a result of the addition of iron to lead glazes and greater control of the kiln firings.

- 5.5.13 Some time in the mid-eighteenth century a distinctive even, glossy black glaze, often with a metallic finish, was introduced. On the larger coarser wares glazing usually stops short of the rim to avoid sticking during firing. For most of the eighteenth century, as the pots became larger, coarseware fabrics became increasingly mixed with grog and/or have laminations of buff firing clay streaked within them.
- 5.5.14 By the nineteenth century the fabrics become much finer, and were well mixed, probably due to the increased use of milling machinery to mix the clays. Vessels also have well applied, glossy, even glazes. The forms largely remain unchanged, although, due to different stacking methods in the kiln, they are generally glazed over the top of the rims.
- 5.5.15 *Provenance:* pottery making in Merseyside was centred on Prescott, St Helens and Liverpool, with the apparent specialism in, and more industrialised, production of sugar-moulds from dark-glazed earthenwares and stonewares. There is no indication that the finer grades of pottery were ever made near St Helens, as was the case in Liverpool. This more industrialised production is reflected in the increasing quality and control of the production process. The clays used derived from the local boulder clay and coal measures, and the differences within the vessel fabrics would seem to represent differences in the preparation of the clays and not of the source.
- 5.5.16 *Forms:* the forms represent the general household wares used for cooking, food preparation and storage (the large pitchers, pancheons and storage vessels) and for serving food and drink. They represent the cheapest vessels available at that time and were, therefore, in use in most of the houses in the area. This is particularly the case in the more rural settlements and farms which were less acquainted with the more sophisticated fashions of the larger towns where other finer products were more common.
- 5.5.17 The rounded and flaring profiles of the Cistercian-type ware cups were replaced by straight-sided, often multi-handled, drinking vessels, which were either cylindrical or sub-conical. While new round-bodied forms of single and two handled cups appeared, jugs or bottles were usually only glazed externally with the exception of the interior of the rim/neck of the vessels.
- 5.5.18 *Coarseware:* vertical loop handles were superseded by horizontal strap handles on large storage vessels by the early eighteenth century; the pancheon form would appear to have lost its handle altogether during the eighteenth century as the rim became flatter, squarer and more pronounced. The new rim form was both easier to handle and carry and allowed for greater efficiency during firing as the vessels could be more easily stacked.
- 5.5.19 *Storage vessels/Jars:* the storage vessels were large vessels with slightly bowed sides, horizontal strap handles and heavy flat-topped rims. They developed from smaller types during the seventeenth century into quite large stylised rim forms during the eighteenth century.
- 5.5.20 *Eighteenth Century:* the number of forms of dark glazed earthenwares declined in number by the middle of the eighteenth century, reflecting competition from other higher quality, cheap finewares, such as white stoneware and eventually Staffordshire fine chinaware, and also a change in eating and drinking habits. Many

forms disappeared, such as the multi-handled cups, while others, such as chamber pots, continued in use.

- 5.5.21 *Forms*: fineware forms were dominated by globular cups/mugs, jugs/bottles and bowls in various shapes. The predominant forms in coarsewares were large storage vessels, pancheons, cauldrons/cooking jars barrel-shaped vessels and pipkins or small pans. The cooking vessels were often made in a much coarser rougher fabric, with larger inclusions, presumably a fabric that was more suitable for use as cooking vessels.
- 5.5.22 ***Mottled Wares***: there are a total of 27 sherds from mottled wares (contexts **103, 114, 215, 259, 271, 301, 327** and **409**). Mottled wares are characterised by a hard, fine, buff-coloured fabric with occasional streaks of white or red. The distinctive glaze is honey or straw coloured with dark brown streaks. There is also a dark version, with the same fabric colour but much darker almost black glaze, due to the overloading of the streaks in the glaze.
- 5.5.23 *Dating*: mottled wares are likely to have been in production by the 1670s. They were in extensive use in the early eighteenth century and continued to be produced until at least 1780.
- 5.5.24 *Provenance*: mottled wares are known to have been produced in Prescott, amongst other south-west Lancashire towns, from the local coal measure clays.
- 5.5.25 *Forms*: mottled ware forms include jugs, globular flaring cups, conical and straight-sided mugs, chamber pots, large flatware bowls/plates or 'chargers' and handled bowls. The finer cups and especially mugs have characteristic repeated turned decoration.
- 5.5.26 ***Slip-Decorated Wares***: only three sherds were recovered from three contexts in separate trenches (contexts **152, 217** and **407**). A slip is a liquid clay often in a different colour to the surface of the vessel which is used to decorate the vessel. The form of decoration varies from simple trailed designs, through to complicated designs of multiple coloured slip trails, and additional combing or joggling of the liquid clays to form unique patterns on each vessel.
- 5.5.27 The development of slip-decorative techniques was one of the earliest attempts by British potters to meet the new consumer demands. Slip decoration gave potters a rapid, simple and versatile decorative technique, enabling them to produce more attractive and marketable wares.
- 5.5.28 Slip-trailed decoration became a standard feature of earthenwares produced between the late sixteenth and eighteenth centuries, reaching its high point between 1670 and 1730. During the eighteenth century the quality of trailed slip decoration declined and became dominated by increasingly simplified combed and trailed slip designs and moulded techniques. It was from this time that slipwares were increasingly produced by the numerous, small-scale, regional potteries.
- 5.5.29 ***Red Slip-Coated Fine Earthenwares***: in total 33 sherds of red slip-coated fine earthenwares were recovered from contexts **151, 305, 327** and **407**. These are a thrown earthenware characterised by the use of a dark-red slip coat beneath a clear glaze dating to the early to mid-eighteenth century. Dr Plot in 1686 records 'the red slip, made of a dirty reddish clay ...which... gives wares a black colour' (Plot 1686, 122). Although this description could refer to dark-

glazed earthenwares and, indeed, many eighteenth century coarse dark-glazed earthenwares do have a pale fabric with a red slip, this material principally appears in fine tableware forms with a very even glossy glaze covering. The use of lead glaze on a thick slip achieves a very even finish, superior to the majority of equivalent dark-glazed table wares. The glaze is usually a very dark even black but can appear brown in certain lighting conditions.

- 5.5.30 *Dating:* red slip-coated fine earthenwares are generally found in similar contexts to mottled wares and have a similar date range although they may have been more popular in the later eighteenth and into the nineteenth century. Similar wares are described at Brookhill in Buckley in contexts dated 1690-1720 and were still being made on the Hancock pottery between 1810-30 (Amery and Davey 1979). They are found in pre-1726 contexts at South Castle Street (Innes 1985, 106); in pit groups from Stafford of 1715-20 date and also 1790-1810 (Barker and Holland 1986) and in a large pit at Bewsey Old Hall c 1800 (Lewis, Heawood and Howard Davis forthcoming). There is a sgraffito posset pot dated 1723 (City of Stoke on Trent Museum Glaisher collection 1726-1732 vessel from Rous Leach collection 1730).
- 5.5.31 ***Tin-glazed earthenwares:*** there are a total of seven sherds of tin-glazed pottery recovered from the site, from contexts **217** and **327**. Tin-glazed earthenwares began to be produced in Britain in an attempt to compete with the fashion for expensive, fine, Chinese porcelain which was imported into Europe in increasing quantities, during the seventeenth and eighteenth centuries (Fisher 1971, 5; Smith 1970, 16). The potters failed to copy the transparency of the fabric but early attempts were successful in copying the white surface colour by adding white, tin-oxide to an ordinary, but low fired, earthenware body. The glaze was then decorated. The tin-oxide was a 'flux', a base oxide that lowers the melting point of the glaze. Unfortunately, the clay body was not durable, the white glaze was easily chipped and the tin-glaze was unsuitable for making domestic tablewares.
- 5.5.32 *Dating:* the production of tin-glazed pottery started in England in 1567. By 1700 the English manufacturers had developed their own tradition and factories were set up in London, Liverpool, Bristol, Dublin and Glasgow. During the eighteenth century pottery making, especially the production of tin-glazed wares, developed as an industry of some importance in Liverpool, and was mainly centred on Dale Street and Shaws Brow. Between 1710 and 1760, there were at least fourteen factories in Liverpool, producing a massive quantity of tin-glazed pottery, much of which was made for the expanding American trade.
- 5.5.33 The production of tin-glazed wares peaked in the middle decades of the eighteenth century and then sharply declined as other more suitable fabrics were devised which stood up to the rigours of everyday use better than the low-fired, soft and fragile, tin-glazed wares. The inability of the tin-glazed wares to stand up to the thermal shock, caused by pouring boiling water into the vessel, was a severe weakness for vessels that were designed to copy vessels used for making tea. Tin-glazed wares were superseded by creamwares from the 1770s and only a few factories continued manufacture into the nineteenth century, when all production ceased.
- 5.5.34 ***Brown Stoneware:*** there was a total of 11 sherds of brown stoneware recovered from contexts **271**, **302**, **327** and **376**. Two fine pieces probably from tankards;

one a body sherd, one a handle. They are likely to have been made in either Nottinghamshire/Derbyshire or Staffordshire, although, such wares are known to have been made in the Lancashire potteries.

- 5.5.35 *Dating*: they are likely to be eighteenth or early nineteenth century in date.
- 5.5.36 **Brown Salt-Glazed Stoneware**: there are nine sherds of brown salt-glazed stoneware from three contexts. Eight of the sherds are from one vessel with seven sherds recovered from context **327** and one other joining sherd from context **302**. The ninth sherd may also be part of this vessel but was not checked.
- 5.5.37 **Form**: the sherds come from a globular bottle with a slightly flaring foot. The necks of these vessels normally have a bearded facemask and sometimes the body has an oval moulded medallion, as in the example from layer **327** (Trench 7a). The medallion often carries the image of a coat of arms. The form is known as a 'Baartman' (commonly called a 'bellarmine') after Cardinal Bellarmine whose image is assumed to be the face that appears on the facemask. The vessels were made in Germany (in Cologne and Frechen) in the sixteenth and seventeenth centuries although copies were made in London.
- 5.5.38 **Staffordshire Pottery**: a total of 32 sherds of various English Staffordshire pottery was recovered, the majority from contexts **100, 151, 380, 501** and **502**.

5.6 CERAMIC TILE

- 5.6.1 There was a total of 227 fragments of ceramic tile recovered from the site. By far the majority, 207, are roof tiles, probably ridge-tile fragments, a number of which have applied decoration (as detailed below). The roof tiles fall into two distinct groups – those with green-glaze and those with a darker purplish/brown often metallic glaze. The difference in glaze colour may be indicative of date, the green-glaze being more likely to correspond with the green-glazed medieval pottery and the darker glazes as indication of a change in pottery glazes during the early post-medieval period.
- 5.6.2 There are also 20 fragments of floor tile, a number of these pieces have moulded decoration. The decorative pieces all seem to share the same pattern with four hearts in the corners and probably a cross in the centre as shown below.
- 5.6.3 **Medieval Roof tile**: there are a total of 20 pieces of medieval roof tile from eight contexts plus unstratified deposits. All were recovered from Trench 14 (contexts **114, 124, 139, 142, 147, 148** and **226**), apart from one fragment from context **226** in Trench 9.
- 5.6.4 **Early Post-Medieval roof tile**: there are a total of 187 fragments of early post-medieval roof tile, recovered from eleven contexts, all from Trench 14. By far the majority were recovered from only one context, **124**, from which 142 fragments were recovered. The tiles are likely to be ridge tiles and a number of them have decorative motifs; applied points or the very unusual 'handle-like' applied decoration.
- 5.6.5 **Dating**: during the sixteenth century there was a dramatic change in the fashion of decorating ceramics at the same time as new pottery forms were introduced

associated with more individual rather than communal drinking. These changes in the pottery were closely linked to the development of new darker high-fired glazes, purple or purple brown in colour generally with a metallic look. The presence of both green-glazed and darker glazed tiles mirrors the changes in the North-West pottery and it must be presumed that the new glazes began to be applied to the ceramic roof tiles around the same time. This material was recovered from contexts **102, 106, 107, 108, 114, 124, 125, 130, 147, 151** and **152**.

- 5.6.6 **Ceramic Floortile:** in total, twenty fragments of medieval floor tile were recovered from four context in two trenches; **103, 118**, and **130** from Trench 14 and context **327** from Trench 7. Half were recovered from context **130** in trench 14, with a further eight from context **327** Trench 7 and one each from **103** and **118**.
- 5.6.7 **Decorated Floortile:** there are four tile fragments with stamped decoration; sf547 context **118**, sf556 and sf557 from context **130** and sf558 from context **327**, three recovered from Trench 14 and one from Trench 7. The tiles vary in thickness from 19mm to 22mm but would appear to be relatively small and square measuring approximately 110mm. Although there are no complete examples or any joining pieces, it would appear that the decorated pieces all seem to share the same design, having four hearts in the corners and probably a cross and dot motif in the centre.
- 5.6.8 From the early thirteenth century onwards decorative earthenware pavements were a regular feature of English churches and monasteries and less commonly civil architecture. There were many varieties of tile in use; but there were three main types; tile-mosaic, decorated and plain. Plain glazed tiles were regularly used often in combination with decorated tiles or as part of a floor mosaic. The most common form of decoration was to use a wooden stamp to impress an imprint of the design onto a partly dry square of clay. The resulting cavity was then either filled with carefully prepared plastic white clay (inlaid) or the surface was coated in slip and the slip scraped off the areas not impressed (stamped and slipped). The tiles were then glazed and fired.
- 5.6.9 Inlaid tiles were introduced into England during the twelfth century and were in common use by the end of the thirteenth century. Line-impressed tiles were introduced into England from Germany during the fourteenth century, and were common in Cheshire. They have the appearance of a hand-crafted design but were stamped on to the tile.
- 5.6.10 Relief decorated tiles have a raised design on their upper surface, and counter relief have an impressed design; these are similar to inlaid tiles but without the inlay. Relief and counter relief tiles can either be slipped and glazed all over the upper surface or just glazed.
- 5.6.11 The Lathom tiles have a line impressed decoration with no added slip or inlaid decoration. Damage to the raised area of decoration is likely to come from wear during use. The same stamp would have been used to produce many tiles and analysis of the distribution can provide a key to interpreting the structure and organisation of a tile industry.
- 5.6.12 **Dating and Discussion on the floor tile:** the limited evidence available suggests that the tiles were of late fifteenth century date. Decorative tiles are not common

between 1350-1450; after this date there was a revival in decoration and English production which appears to have been associated with rural monasteries in the North. During the late fifteenth century heraldic designs, showing specific individuals or institutions, are found across the north of England, including those of the Earls of Derby. The triskelion, or three conjoined legs, the device of the Isle of Man appears on tiles associated with the bird's feet which were a badge of the Stanley's, Earls of Derby, who were granted the Isle of Man in 1405 (Stopford 2005, 230 design 23.29 & 241 design 24.30). Tiles of this design were found at Cockersands, Fountains, Rievaulx and Sawley Abbeys and at Lord Mayor's Walk, York. Stopford suggests that one of the designs in the Huby/Percy group was specifically linked to Thomas Stanley and is dated between 1483-1505 (Stopford 2005, 245). This is based on work by John Cherry on tiles from 28 Lord Mayor's Walk, York, where he identified the design as similar to one shown on the stall plates of the Knights of the Garter (Stopford 2005, 343). Holy Trinity Church, Hull, also has heraldic tile designs including that of the Earls of Derby dating from c 1370 (Stopford 2005, 303). None with this motif on tiles have been identified from Lathom.

- 5.6.13 The more complete design, with the heart motif, is similar to a line-impressed design found at Whalley Abbey and is classified by Stopford as being part of the Trans-Pennine Group of production (Stopford 2005, 233 Design 23.37). Whalley Abbey tiles are dated to the late fourteenth century or possibly later. Other examples from Wales, Chester and Norton Priory are of similar date (*op cit*, 2005, 235).
- 5.6.14 The heart motif may reflect the new popularity of playing cards in England at the time of Elizabeth of York (Henry VIII's mother) and Queen Elizabeth (Stopford 2005, 235). There would have been close links between the Stanleys and royalty after Sir Thomas Stanley rode to the aid of his stepson, later Henry VII, at the Battle of Bosworth in 1485, for which the new king rewarded him with the title of Earl of Derby.

5.7 CONDITION OF MATERIAL

- 5.7.1 The material is relatively fragmentary and little work has been done to assess internal context joins or cross-context joins. There are a few larger pieces but where possible joining sherds have been located. The floor-tile is generally in a stable condition and unlikely to deteriorate.

5.8 ARCHAEOLOGICAL SIGNIFICANCE

- 5.8.1 ***The potential value of the data-collection to local, regional and national research priorities:*** this group of early post-medieval and seventeenth century wares should be looked at much more closely within a regional framework. Small groups exist from excavations across south and west Lancashire and a synthesis of these groups would provide much greater information on forms and fabrics of this little studied group from the area.
- 5.8.2 All ceramics dating to the eighteenth century and earlier should be retained for further study. Few of the nineteenth and twentieth century sherds provide much

information of any value, having already been recorded. There is one near complete green-glazed modern vessel which may be worthy of retaining as a near complete vessel.

6. OTHER FINDS ASSESSMENT

6.1 CLAY TOBACCO PIPE

- 6.1.1 **Quantification and evaluation:** a full copy of the assessment report has been placed in the archive. In all, 56 fragments of clay tobacco pipe were assessed. Of this material five bowls are probably of seventeenth-century date, and two of eighteenth-century date.
- 6.1.2 **Potential for further analysis:** there is very limited potential for further analysis, but the stamped bowls will contribute to dating the stratigraphic sequence. The distribution of the early pipes could also contribute to any consideration of the relative socio-economic status of the areas excavated, but otherwise can make no further contribution towards the understanding and interpretation of the site.

6.2 VESSEL AND WINDOW GLASS

- 6.2.1 **Quantification and Evaluation:** some 84 fragments of vessel glass were recovered from Trenches 7-10 and 14. Of these, 35 items, many of them complete vessels of recent date, were recovered unstratified. There were, in addition, 126 fragments of window glass, coming from Trenches 7, 8, 9, and 14. The condition of the glass varies considerably, with earlier vessels demineralised or flaking. All the fragments were examined for the purposes of this assessment and an outline catalogue was created.
- 6.2.2 One small fragment of dark-olive green bottle was recovered from context **380** in Trench 7, and although not particularly diagnostic, it is probably of eighteenth-century date. Most of the 37 fragments from Trench 9 were from dark olive green bottles of late seventeenth or eighteenth-century date (**215, 224, 257, 271, 274, 278, and 293**), but only two (from **215** and **257**) were sufficiently well-preserved to be dated with any accuracy; both can be placed in the late seventeenth century. All six fragments from context **100** are of twentieth-century date.
- 6.2.3 Only five fragments came from Trench 8, and all are unstratified. Two are small fragments of dark-green bottles, and three are from colourless or bluish machine-made vessels and all probably date to the late nineteenth or early twentieth century. All the vessel glass from Trench 10 (29 complete or almost complete vessels) was unstratified. There is a range of containers for food, drink, and household products, and all probably date to the mid-twentieth century.
- 6.2.4 It is likely that all of the window glass from Trenches 7, 8, 9, and 14 (43, 33, 10, and three fragments respectively) is of nineteenth-century or more recent date. The material from Trench 9 (contexts **209, 215, 217, 224, 257, 259, 271, 274, and 293**) was, however, appreciably earlier, with 36 mid-pane fragments in the thin, dirty-greenish metal typical of seventeenth to early eighteenth-century 'Forest glass' (Crossley 1990). As no edge fragments survive, nothing can be said of the shapes of individual quarries. A single fragment of a lozenge-shaped quarry in somewhat thicker flat glass was found unstratified in the same trench, its thickness, and indications that its edges have been grozed, raise the possibility that this is of medieval date.

- 6.2.5 **Potential for further analysis:** there is very limited potential for further analysis, but the earlier vessels and the window glass will contribute to dating the stratigraphic succession. The distribution of the early bottle glass could also contribute to any consideration of the relative socio-economic status of the areas excavated, but otherwise can make no further contribution towards the understanding and interpretation of the site

6.3 COPPER ALLOY OBJECTS

- 6.3.1 **Quantification and evaluation:** only 12 fragments of copper alloy objects were recovered; stratified objects came from contexts **303** (Trench 7), **271** (Trench 9), and **502** (Trench 10), the remainder of the objects were recovered unstratified. All were in fair condition, except for a few highly corroded crumbs from context **271**, which have not been included in the quantification. All of the objects were examined, and an outline catalogue was created for the purpose of this assessment.
- 6.3.2 Few, if any, of the objects are of any antiquity. Those from Trench 7 comprise two nickel silver dessert spoons, both likely to be of twentieth-century date, and a George VI halfpenny, dated 1945. In Trench 9, only one recognisable object was from a stratified context, being a small drop handle from context **271**, which could be of late seventeenth or eighteenth-century date. An unstratified decorative catch or latch from the same trench is broadly of the same date, whilst a small, plain bolt is probably more recent. A cast button, found unstratified in Trench 9, is also probably of late nineteenth- or twentieth-century date. A single late button was recovered from Trench 10, context **502**. It can be no earlier than the late nineteenth century, and is probably more recent.
- 6.3.3 **Potential for further analysis:** there is no potential for further analysis.

6.4 IRONWORK

- 6.4.1 **Quantification and evaluation:** a total of 29 fragments of ironwork was recovered, of these, nine objects were unstratified, the remainder coming from contexts **304**, **325**, **374**, **380**, and **385** (all Trench 7), contexts **257** and **271** (Trench 9), and contexts **124** and **146** (Trench 14). All were in poor condition, and fragmentary. All were examined for this assessment, but none were subject to X-radiography. An outline catalogue was created for the purpose of this assessment.
- 6.4.2 None of the objects could be dated with any certainty, being simple and long-lived forms. Almost 50% of the group comprised nails, which, where the shaft-section could be observed, were hand-forged. Fragments of narrow strip from context **374**, and unstratified in Trench 8, could have been from hinges, or other structural elements, although this could not be confirmed with certainty, and a simple window latch came from Trench 8, but was again unstratified.
- 6.4.3 A U-shaped fragment from context **304** has been identified as the iron reinforcement from the sole of a wooden clog, and a small square buckle frame was found unstratified in Trench 14. Both are likely to be relatively recent, but cannot be dated with any precision.

6.4.4 **Potential for further analysis:** There is no potential for further analysis

6.5 LEAD OBJECTS

6.5.1 **Quantification and evaluation:** eighty fragments of lead were recovered during the evaluation, all of which were examined for this assessment. Over half (49; 61.25%) were recovered unstratified, many as the result of a search of the spoil heaps by metal detector (*Section 3.3.1*). Stratified material came from Trench 7 (**301-304**, **306**, and **307**), Trench 8 (**409**), Trench 9 (**100**, **217**, **233** and **271**), and Trench 14 (**101**, **104**, **106**, **124** and **140**). All were in fair to good condition, and mostly complete. An outline catalogue was created for the purpose of this assessment.

6.5.2 Only one group of artefacts is of any particular interest. A large group of 43 pieces of cast spherical shot were recovered, several of them deformed by impact. They range between *c* 10 mm and *c* 18 mm in diameter, and are similar in size to examples from Beeston Castle in Cheshire (Courtney 1993), Sandal Castle in West Yorkshire (Credland 1983), and Camber Castle in East Sussex (Scott 2001), where they are regarded as appropriate for use in sixteenth- and seventeenth-century firearms. This would fit well with the use of muskets during the Civil War siege of Lathom in 1644, and certainly, several of the balls appear to have struck hard surfaces with considerable force. The remainder of the lead objects from the site comprised sheet lead offcuts, solidified drips and runs, and unidentifiable fragments.

6.5.3 **Potential for further analysis:** there is little potential for further analysis. Whilst it cannot be dated with any precision, the group of musket shot is of interest, and should be reviewed with regard to their stratigraphic contexts and any other available dating, in order to ascertain the likelihood of a Civil War origin.

6.6 OTHER MATERIALS

6.6.1 A single bone object came from Trench 10, context **502**, and was probably a handle; it can be dated to the late nineteenth century. Parts of two telephone handsets, made from materials including copper alloy and wood, were found unstratified in the same trench, and date to the early-mid twentieth century.

6.6.2 **Potential for further analysis:** there is no potential for further analysis.

6.7 CERAMIC AND OTHER BUILDING MATERIALS

6.7.1 In all, 168 fragments of ceramic building material were recovered, weighing 76.359 kg, and they came from 32 stratified contexts, with 19 fragments (10.458 kg) unstratified. There were no particular concentrations, and on the whole, the fragments were small and abraded. There were, in addition, 23 relatively small fragments of stone, from seven stratified contexts and unstratified. As most of these are of irregular shape and mortar-covered, it has been assumed that they represent building stone, perhaps from a rubble-built wall. The material was scanned for the purpose of this assessment, and an outline database created.

- 6.7.2 Effectively all of the ceramic building material examined was from hand-made bricks, one or two survived more or less whole, but most fragments were very small and abraded. It can be assumed that this material derived from the demolition or modification of early post-medieval brick buildings on the site. All but one fragment of the stone recovered appeared to be sandstone rubble, and as several fragments bore residual fragments of mortar, it is reasonable to assume that they also derive from buildings on the site. A single dressed fragment from context **336** was tentatively identified as a column drum from a small-diameter column of the sort that could have been used in architectural detail.
- 6.7.3 **Potential for further analysis:** there is no potential for further analysis of either the ceramic or the stone building material. None of the brick is suitable for scientific dating and, as yet, the new dating method is not available commercially (Stallybrass *pers comm*).

6.8 THE ANIMAL BONE

- 6.8.1 **Introduction and methodology:** a relatively small assemblage of animal bone was recovered during the evaluation excavations conducted at Lathom House, and all of the assessed material was retrieved by hand collection only. For the purpose of the assessment, the animal bone was grouped into five broad stratigraphic phases.
- 6.8.2 Identification was completed using reference material held by the author. Reference was also made to Halstead and Collins (1995), Schmid (1972), and Cohen and Serjeantson (1996) for the identification of mammal and bird bone. The separation of red and fallow deer was completed following Lister (1996), and sheep from goat following Boessneck (1969) and Kratochvil (1969).
- 6.8.3 **Quantification and Condition:** in total, 1182 animal bones and teeth were recovered from stratified deposits during the course of the excavations, of which 261 were identified to a species level. The assessed assemblage is quantified by period in Table 3, below. In each period the sheep/goat category is likely to be predominantly sheep rather than goat, although the presence of goat can not be ruled out.

Species	Medieval	Medieval to 16th/17th century	16th/17th century	18/19th century	16th to 19th century	Total
Horse		1				1
Cattle	5	2	74	21	3	105
Pig			7	1	6	14
Sheep/Goat	1		36	4	13	54
Sheep			7			7
Dog	1		4			5
Rabbit			12	1	6	19
Red Deer			1	2		3
Fallow Deer			1			1
Roe Deer	2					2
Unidentified Deer			1			1
Cattle/Red Deer			6	1		7
Sheep/Goat/Roe Deer			6			6
Red/Fallow Deer			4			4

Medium Mammal	3	4	169	2	80	258
Large Mammal	30	2	225	30	9	296
Small Mammal			7	2		9
Unidentified Mammal	7		180	66	10	263
Bantam					1	1
Dom. Fowl			25		12	37
Mallard			1			1
Teal			1			1
Swan			1			1
Woodcock			1		3	4
Woodcock ?			1			1
Snipe			3			3
Lapwing ?			1			1
Dom. Fowl/Bantam			8			8
Dom. Fowl/Pheasant			5		2	7
Greylag/Pinkfooted Goose			1			1
Wading bird				1		1
Unidentified Duck			2			2
Unidentified Galliform			2		4	6
Unidentified Seagull					1	1
Unidentified Bird			28		14	42
Fish			9			9
Total	49	9	829	131	164	1182

Table 3: Species NISP by period

Period	Normalised Data	N
Medieval	0.33	50
Medieval to 16th/17th century	0.40	8
16th/17th century	0.56	809
16th to 19th century	0.67	162
18/19th century	0.46	134

Table 4: Bone preservation presented as normalised data

Period	Species	Fusion data	Tooth wear data	Biometric data	Butchery data	N
Medieval	Cattle	20.0	0.0	20.0	0.0	5
	Sheep/Goat	0.0	0.0	0.0	0.0	1
Medieval to 16th/17th century	Cattle	50.0	0.0	0.0	0.0	2
16th/17th century	<i>Cattle</i>	<i>17.6</i>	<i>0.0</i>	<i>14.9</i>	2.7	74
	<i>Sheep/Goat</i>	27.9	2.3	23.3	2.3	43
	Pig	14.3	14.3	14.3	0.0	7
16th to 19th century	Cattle	0.0	0.0	0.0	0.0	3
	Sheep/Goat	23.1	7.7	7.7	38.5	13
	Pig	83.3	16.7	0.0	0.0	6
18/19th century	<i>Cattle</i>	<i>22.6</i>	<i>0.0</i>	<i>32.3</i>	3.2	31
	Sheep/Goat	50.0	0.0	50.0	0.0	4
	Pig	100.0	0.0	100.0	0.0	1

Table 5: Potential epiphysial fusion, tooth wear, biometric and butchery data; larger sample sizes given in *italics*

6.8.4 Generally, the bone was in a good state of preservation with little erosion to the bone surface (Table 4). The bone from each period was fragmented, with few whole bones, but the overall condition of the bone was good. Table 5 quantifies the potential number of bones or teeth from which epiphysial fusion, tooth wear, biometric and butchery data may be obtained. Tooth wear and epiphysial fusion

data are used to estimate the mortality or slaughter rate of animals at specific age stages, to assess which of the potential products the animals were primarily husbanded for. Biometric data is used to assess the size of animals and the presence of improved breeds in the stock, and in some instances the ratio of male to female animals. Butchery data informs the butchery practises and post-mortem animal products utilised. Overall, the total sample size is low for each species in each category, as expected from the limited evaluation excavations. However, Table 5 suggests that where significant numbers of bone are present, given in italics in Table 5, reasonable numbers of epiphysial fusion and biometrical records maybe obtained.

- 6.8.5 **Potential:** despite the relatively small sample size of bone and teeth fragments from the evaluation excavations, a wide range of species are present reflecting the broad eating habits of the medieval and early post-medieval periods. These animals include wild mammals, such as deer and rabbit, as well as wild birds including swan, woodcock, snipe, ducks, as well as seagull, which may also have been eaten. The breaking and distribution of the body of deer hunted in deer parks was a highly ritualised process in the medieval and post-medieval periods, with specific parts of the body presented and consumed by individuals with specific roles in the hunt or social status. Typically, it was the rear quarters of the deer which was taken by the aristocrats to be served at their table Sykes (2007). It may, therefore, be significant that of the six deer bones from the site, five were from the rear limbs of these animals.
- 6.8.6 Overall, the current animal bone assemblage has little potential for further analysis. However, the results of this work suggest that the site has the potential to produce a well preserved and significant sixteenth to seventeenth century mammal and bird bone assemblage from a high status castle site. Similarly, assuming the presence of further medieval deposits below the recorded sixteenth to seventeenth century structures as present in Trench 14, well preserved medieval material would also be present. In the event of further excavations at Lathom House, such material may inform on diet, husbandry of animals, social status of the consumers, hunting and wild fowling, butchery and distribution of carcasses, function of buildings associated with food preparation, or potentially bone used as a raw material. Much of the above suggested analysis would be combined with the spatial analysis, looking at distributions of material across the site.

6.9 MARINE MOLLUSCS

- 6.9.1 Marine mollusc shell, predominantly single valves of the native oyster, but also muscle and cockle, was recovered from 15 contexts. It presumably derives from food debris, and was undoubtedly imported to the site from a number of sources.
- 6.9.2 **Potential for further analysis:** there is no potential for further analysis.
- 6.9.3 **Proposed programme of work:** no further work is proposed.

6.10 ENVIRONMENTAL ASSESSMENT RESULTS

- 6.10.1 **Introduction:** a single environmental bulk sample from fill 275 of drain 297 was assessed for charred and waterlogged plant remains. The drain was adjacent to a

stone trough or sink, **264**, and is thought to date to the sixteenth/seventeenth century.

6.10.2 **Results:** the results are shown in Table 6. Fill **275** contained occasional charred plant remains including a seed of fat-hen (*Chenopodium album*) and plantain sp (*Plantago* sp) and a charred bilberry (*Vaccinium myrtillus*) leaf. There were more waterlogged plant remains, including large numbers of elder (*Sambucus nigra*) seeds and occasional seeds of henbane (*Hyocyamus nigra*), hemlock (*Conium maculatum*), mustard/cabbage sp (*Brassica* sp) and sedge (*Carex* with trigonous seed).

6.10.3 The matrix was dominated by coal and heat affected vesicular material with abundant small (<2mm) fragments of charcoal, large and small mammal bone pieces, claws, fish bones and scales, snails and a few insect remains. A single, small, lead shot was identified in the heavy residue.

Species/material	Colloquial name	Abundance	Potential
Food and economic plants			
<i>Sambucus nigra</i>	Elder	4	None
Arable weeds			
<i>Chenopodium album</i>	Fat-hen	1	
Ruderals			
<i>Brassica</i> sp	Mustard/cabbage	1	
<i>Hyocyamus niger</i>	Henbane	1	
Woodland plants			
<i>Betula</i> sp	Birch may be modern	2	
Wet ground plants			
<i>Carex trigonous</i>	Sedges three sided fruits	1	
Plants of broad ecological groupings			
<i>Conium maculatum</i>	Hemlock	1	
Matrix			
Wood fragments	Possibly modern	+	
Amorphous plant remains		++	
Charcoal <2mm		++++	
Insect remains		+	
Large mammal bone		++++	
Small mammal bone		++	
Small animal claws or bird		+	
Fish bone		++	
Fish scales		++	
Fungal sclerotia		++	
Molluscs	Snails	++	
Coal		++++	
Heat affected vesicular material		++++	
Mortar		+++	
Lead shot		+	

Table 6: Environmental assessment of remains in fill **275** of drain **297**. Seeds are recorded on a scale of 1-5 where 1 is less than five items and 5 is more than 100 items.

6.10.4 The environmental assessment of fill **275** of drain **297** demonstrated that very few plant remains were preserved in the deposit, except for frequent uncharred elder pips. The other seeds recorded were single charred seeds of plantain and fat-hen and a charred bilberry leaf and occasional uncharred seeds of henbane,

hemlock and mustard/cabbage. The taxa that were recorded suggest that conditions were not truly anaerobic, as the seeds identified were either woody or more resistant to decay suggesting that preservation was differential resulting in a skewed dataset. This means that the interpretation of the plant data are inconclusive, although the elder pips and the bilberry leaf may suggest that native plants were being utilised as a food source.

- 6.10.5 The high frequency of coal fragments and heat-affected vesicular material, probably from coal clinker and cinders, in fill **275** suggest that coal was an important fuel source. However, the abundant, (<2mm) charcoal fragments suggest that wood was still being utilised, possible as kindling.
- 6.10.6 The environmental assessment of fill **275**, which identified frequent fragments of mammal and fish bones and scales, confirms the interpretation in *Section 3.4.6* that the stone trough or sink, **264**, adjacent to drain, **297**, was indeed used to catch fluids from the preparation of carcasses. The assessment would suggest that that the building in Trench 9 was associated with food preparation or storage in the sixteenth/seventeenth centuries (*Section 7.1.3*).
- 6.10.7 **Potential:** there is no potential for the further analysis of the plant remains in fill **275** of drain **297**.

7. CONCLUSIONS

7.1 DISCUSSION OF THE EVALUATION TRENCHES

- 7.1.1 Essentially three phases of archaeological activity were located by the excavations. Glimpses of the earliest phase, the medieval period, were located in Trench 14 and probably Trench 9. However, the substantive and frequently complex archaeology of the early post-medieval (sixteenth to seventeenth century) buildings and surfaces has meant that this investigation of the medieval archaeology was limited. This second, sixteenth to seventeenth century, phase of archaeology included substantial remains of buildings, including partially upstanding walls, floors, drains, external cobbled surfaces and other features which were located in Trenches 7b, 8, 9 and 14. The third phase comprised levelling deposits and structures associated with the construction of the eighteenth century Leoni building.
- 7.1.2 **Medieval period:** within Trench 9 a possible medieval flag stone floor, **294**, was located below the later sixteenth to seventeenth century building. In addition, what was probably the remains of a single cobbled surface (**141**, **149** and **155**) was located in three areas of Trench 14, and had evidently been disturbed by later activity. Overlying this surface was up to 0.2m of sediment, and occupation horizon, which contained medieval pottery of the fourteenth or fifteenth centuries.
- 7.1.3 **Post-medieval (sixteenth to seventeenth centuries) period:** substantial remains of a building with partially upstanding walls, floors, drains and external surfaces were found in Trench 9. Finds from these deposits suggest an early post-medieval date for at least the buildings use, although it is quite feasible that the building had an earlier late medieval construction. The examination of the structures, and the results of the environmental assessment and mammal and bird bone assessment, strongly suggest that this building was associated with food preparation or storage. Although no firm conclusion was reached, the building located within Trench 9 is thought to be in the immediate vicinity of the kitchens, and possibly the pantry.
- 7.1.4 A sizeable early foundation, **435**, was also located in Trench 8, and it could be speculated that this formed the footing for a tower, and potentially dates to the preceding period. The amount of levelling deposits placed over the area, prior to the construction of the Leoni building, has meant that the archaeology of these two trenches were at such a depth that they needed to be substantially stepped to make them safe to work in.
- 7.1.5 At the shallower depth of c 0.5m below the modern surface a well preserved external cobbled surface, **123**, was located in the north-eastern corner of Trench 14. Path **104** is thought to extend from this yard area between two timber buildings or sheds, up to a stone building constructed upon foundations **106** and **138**. It is unclear from these results as to whether foundation **138** was for an internal dividing wall or an external wall, but it is quite feasible that path **104** continued down the western side of this building.
- 7.1.6 Within Trench 7b a slightly amorphously shaped oval feature, **393**, was identified. The function of this feature was not clear, but a significant quantity of

sixteenth or seventeenth century pottery, as well as a medieval floor tile, was recovered from it.

- 7.1.7 ***Eighteenth Century Leoni Buildings and Grounds:*** the structures of the previous periods were demolished to make way for the construction of the Leoni house built for Thomas Bootle. In Trenches 8 and 9 it is evident that the standing structures were partially removed, and then buried below extensive levelling deposits. Similar deposits were also seen covering contemporary structures in excavations which took place in the West Wing of the Leoni building (Baldwin 2010, 46). The depth of these deposits identified in the current phase of works varied, and it is clear that the original ground surface fell to the north between Trench 14 and Trenches 8 and 9.
- 7.1.8 In Trench 8 the foundations and a brick floor of East Wing of the Leoni house were located; the East Wing was demolished c 1960. This included the foundations for the East Wing and an internal division within it. In Trench 7 an external wall was located, together with a path and flag stone surface that was around the main house.
- 7.1.9 Trench 7 located a substantial dry-stone boundary wall, **308**, which clearly stepped the landscapes natural slope to the east towards the Ha-Ha. This is a very good match for a wall marked on a map in Humphry Repton's Lathom Red Book of 1792, illustrating his proposals for the grounds at Lathom House. It is unknown how much, if any, of his scheme was implemented, but the wall on the plan was intended to form a perimeter enclosing land to the sides and rear on the house. If this plan was implemented, then wall **308** pre-dates the Ha-Ha, which would have cut across this enclosed area.
- 7.1.10 In the western end of Trench 7 the remains of a building, possibly a greenhouse, were located. This may well be the east/west orientated building that is depicted on the 1st edition Ordnance Survey (1848) map.

7.2 THE LANDSCAPE MODEL

- 7.2.1 The following summarises what has been suggested for the re-modelling of the landscape during the eighteenth century to create its current form, and how it has affected the potential for archaeological remains. As such, the discussion draws heavily on the data and conclusions presented in ArchaeoPhysica Ltd (2009) (*Appendix 4*). The modelling of the LiDAR data clearly delineated the platform that was put in place for the construction of the Leoni house and gardens (Figs 13 and Fig 14). Trenches 8 and 9 show that much of this platform was created by infilling the area by at least 2m. Modelling of LiDAR data suggests that this platform was created as a wedge of fill, with the thin edge of the wedge adjacent to the natural ground surface to the south, reaching a maximum depth of c 3m below the northern edge of the platform (Fig 14). To the north of this was a second forecourt, directly in-line with the main house, which was potentially no more than 2m above the original ground level on its western and northern limits.
- 7.2.2 Until the work undertaken by ArchaeoPhysica Ltd, it has been unclear as to whether Repton's proposed changes to the gardens, detailed in his 1792 Red book of Lathom, were ever carried out. The modelling of the LiDAR data by comparison to Repton's before and after views of his proposed works, show that Leoni's original forecourt was removed, and its platform was truncated to form

the present smooth slope (ArchaeoPhysica 2009, 10-11). The ‘after’ images in Repton’s red book show low wooded banks running away from the house (Plate 22), which survive today as very low earthworks visible in the modelling of the LiDAR data (Figs 13 and 14). The wooded banks and change in slope align with the house, and would have given an uninterrupted view from the house. Further evidence of Repton’s landscaping is evidenced by wall **308** in Trench 7b, which is thought to be a good match for the perimeter wall which enclosed the lawns to the south, east and west of the main house.

- 7.2.3 The EMI survey (*Appendix 4*) identified a large ditch interpreted as the moat located on the southern side of the former defences identified by previous excavation work, to the south of the current Ha-Ha, which meets with the curving elements of the Ha-Ha to the east and west. Previous excavations by OA North, in its previous guise as Lancaster University Archaeology Unit, located the moat to the south of the west wing (LUAU 1997). This work suggested that the current Ha-Ha has been constructed at least partially within the pre-existing moat (*ibid*). In addition, GPR results of this phase of work identified a wall at least 2m wide to the north of the West Wing, interpreted as the medieval and early post-medieval defensive curtain wall, and which is broadly in line with the section of wall and moat identified beneath the West Wing (Baldwin 2010). Figure 14, therefore, presents the suggested course of the former moat along its southern, eastern and western extents, based on the results presented in LUAU 1997, the current phase of geophysics, and where it is reasonably assumed to share the same position as the Ha-Ha.

8. RECOMMENDATIONS

8.1 RECOMMENDATIONS FOR FURTHER WORK

- 8.1.1 The archaeological investigation has identified a very significant archaeological resource that provides a new insight into the high status medieval castle at Lathom; however, it has also raised a number of questions that could be resolved by further investigation.
- 8.1.2 ***Lines of medieval defences:*** as a result of the geophysics work, coupled with analysis of the topographic form of the site, it has been possible to propose a plan of the moat / wall that extends to the eastern extent of the present gardens (Fig 14). At present this is a theoretical model and there is a case for testing it by trenching at selected points. It is suggested that a series of north/south orientated trenches are excavated in the field due south of the gardens and located so as to intersect with the interpolated line of the moat. These trenches need to be sufficiently long so as to be able to also record the line of the corresponding wall.
- 8.1.3 There is considerable uncertainty as to the alignment of the castle wall or moat in the northern part of the area, as the area has not been adequately investigated by either excavation or geophysics. It is recommended that a series of east/west orientated trenches be excavated immediately south of the walled garden and located so as to intersect with the interpolated line of the north-eastern part of the moat (Fig 14). Similarly a series of east/west trenches should be excavated in the field to the north of the West Wing and the eighteenth century forecourt and located so as to intersect with the north-western interpolated line of the moat/defensive wall.
- 8.1.4 The documentary records indicate that there were two lines of defences, but it is unknown where the inner line of wall was located. It has been suggested that the line was in the area of Trench 14 given the substantial number of musket balls recovered in the trench, although there were no structural indications identified to confirm. It is therefore recommended that an additional north/south trench be excavated to the north of the ha-ha in the southern part of the garden and near to Trench 14 to explore the possibility of walled defences in the area.
- 8.1.5 ***Internal Structures:*** the arrangement of the internal buildings is still very uncertain given the limited number of trenches that have identified domestic structural remains. Part of the issue is that it is not known to what extent the remains of early buildings have been lost to truncation as a result of the winning of material to construct the large platform which accommodated the Leoni Mansion. It is therefore recommended that a series of test pits be undertaken around the platform to identify the depth of natural deposits and the extent of any truncation.
- 8.1.6 Further trenching should be undertaken within the extent of the interpolated moated defence line to explore the potential for internal domestic structures. The locations for these would be in part within the extent of the Leoni House platform, where there is confirmed survival of internal structures, but where there will also be considerable overburden. Subject to the proposed test pitting (*Section*

8.1.5) there may also be a case for undertaking trenching beyond the extent of the platform in areas where there is no evidence of truncation.

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APPENDIX 1: PROJECT DESIGN

1. THE PROJECT

- 1.1.1 **Introduction:** the following document has been prepared by Oxford Archaeology North (OA North) on behalf of the Lathom Park Trust and represents a project design for a programme of archaeological evaluation to be undertaken as **Stage III** of the multi-stage Heritage Lottery Funded Phase 3 investigations of Lathom House, near Ormskirk, West Lancashire. The location of individual trial trenches will be based upon the results of **Stage II**, which will comprise a geophysical survey of the area, and will be undertaken by an appropriately experienced and qualified professional organisation. Both the geophysical survey and the trial trench evaluation will be informed by a **Stage I** review of available documentary evidence relating to the site. This rapid review was undertaken by Stephen Baldwin (SB) during project set-up. Previous programmes of intrusive and non-intrusive field and documentary investigation have highlighted the enormous potential of the site to address research questions pertinent to the site itself, and to the North West region as a whole, in the medieval and post-medieval periods. The aim of the archaeological evaluation is to scientifically investigate, through the strategic placement of trial trenches, areas of archaeological potential established by the preceding geophysical survey within the Pleasure garden and adjacent Parkland. It is proposed that the programme of intrusive evaluation (including trench locations and dimensions, specific aims, objectives and research questions) will be designed in full following assimilation of the results of the geophysical survey. The trenches would be limited in extent but would be intensively and carefully excavated to ensure that all evidence is recorded. Care would be taken to enable the taking of appropriate palaeoenvironmental and absolute dating samples, and there may be a need for a range of analyses of industrial and other waste products.
- 1.1.2 It is intended that the field evaluation should be open to as wide a segment of the local community as possible. During the intrusive evaluation, Oxford Archaeology North will work closely with members of the Lathom Park Trust together with appointed specialists and will provide the professional supervision, guidance and training in order to undertake the proposed programme. All archaeological works would be undertaken under close professional archaeological supervision to ensure that modern professional standards are met at all stages. Throughout the project, the OA North and Lathom Park Trust (LPT) supervisors would provide considerable training in the use of modern evaluation techniques; such methods are rarely demonstrated and made accessible to non-professionals, yet these are now the most common form of archaeological work undertaken. The field work would be followed by a tightly controlled programme of post-excavation works which will process the data generated by the field programme, including the assessment of palaeoenvironmental samples and analysis of absolute dating samples. The results of the programme will be detailed within a report to the Lathom Park Trust. It is envisaged that the results of the investigations should be disseminated through academic publication, but also a more popularised publication that will be targeted at the general public.
- 1.1.3 **Lathom Park Trust:** the Lathom Park Trust was established in 1998 using a grant provided by West Lancashire District Council and is now both a limited company and a registered charity. Although essentially focussed on the investigating, promoting and preserving the archaeology and history of the land covered by the medieval deer park, a number of other aspects of local history have been developed. Community involvement in educational schemes has always been an important remit of the Trust. Previous TRUST/LHI funded talks and walks in Lathom have informed over 1,000 people of the existence and richness of many historic and archaeological features contained within the local landscape. The Trust also recognises that it is not only professionals who have a role to play in research, although their guidance and knowledge is valuable. The local public can carry out useful and valid research with the correct training and the Trust will continue to encourage and foster public involvement in all of our future projects.
- 1.1.4 **Oxford Archaeology North:** OA North, formerly Lancaster University Archaeology Unit, has been serving the archaeological needs of the region since 1979. It has on many occasions had a close involvement with amateur groups on projects throughout the region. At Lathom OA North has undertaken extensive programmes of work involving fabric survey of the surviving West Wing of the eighteenth-century mansion designed by Leoni, evaluations on the site of the late medieval fortified house which preceded this, and more recently has overseen a vernacular

building survey for the Lathom Park Trust LHI funded 2001-04 project which looked at the development of over 45 post-medieval buildings surviving within the present day Civil Parish and beyond.

2. PROJECT AIMS

2.1 The primary aims of the project are as follows:

2.1.1 **Academic Aims:** the basic aim of the field evaluation is to establish the character, form and extent of archaeological remains identified by the non-intrusive surveys, and to investigate their depth, complexity and state of preservation, thus allowing an assessment of their significance within the known history of Lathom, and their potential for further investigation. The locations of evaluation trenches will be targeted so as to maximise the academic value of the trenches relative to investigated area. The evaluation will aim to maximise data recovery, and great care will be taken to enable appropriate sampling from secure contexts for palaeoenvironmental remains, technological residues, absolute dating and finds recovery. The following objectives will contribute to the completion of the above aims:

- following the assimilation of the results of the geophysical survey, to produce a revised project design detailing the location and size of evaluation trenches, specific research questions and objectives, and the allocation of a priority order, in acceptance of the fact that voluntary resources may fluctuate;
- to excavate a series of trial trenches targeted on geophysical and topographical anomalies, using where appropriate, a mechanical excavator to remove modern deposits to backfill and to assist with the management of spoil;
- to recover a well-stratified assemblage of finds in order to assist with establishing a chronology for the site;
- to process onsite all finds recovered from the works under the direction of a specialist appointed by the Lathom Park Trust;
- to recover samples from secure and well-stratified contexts for palaeobotanical remains and industrial residues;
- to undertake an assessment of sediment samples recovered during the fieldwork;
- to produce an illustrated report on the results of the programme of works;

2.1.2 **Community Aims:** the project proposes broad community involvement in the research and investigation of the area, and to raise awareness in the wider community of the rich cultural heritage in the surrounding landscape and to make this a more 'hands on' activity by providing training and instruction into modern archaeological methods and aims. It is intended to use the present project as a means of training both members of the Trust and members of the wider community in modern archaeological recording techniques, so that they thereby obtain a greater understanding of the archaeological landscapes that abound in the Lathom area. Similarly, it is important that the results of the investigation are presented to the wider Lathom community in a way that is both accessible and comprehensible to the wider public and encourage their involvement. A new dedicated project website will be set-up, presenting the results of the programme, including video diaries and technical data etc, whilst summaries would be placed on main LPT web-site, www.lathom-park-trust.org.uk.

3. METHODOLOGY

3.1 EVALUATION TRENCHING

3.1.1 The following section outlines a generic methodology for the undertaking of a trial trench evaluation; following the finalisation of the trench locations, it may be necessary to modify this methodology in various specific instances to ensure that the methodology is appropriate to the situation on the ground. The trenches would be of limited extent, in order to minimise the disturbance to the site, and all works would be under the close supervision of OA North staff and LPT supervisors. Only limited numbers of people will be able to excavate at any one time, typically five untrained excavators per OA North supervisor. This will require OA North to provide four supervisory staff, with assistance from other experienced personnel such as Steve Baldwin of the Lathom Park Trust and John Trippier. It is recognised that inadequately supervised excavation by inexperienced excavators can result in unacceptable disturbance to the

archaeological deposits, therefore the project has been designed to accommodate the demands of conservation and long term research as well as those of training and community participation.

- 3.1.2 The number of trenches to be excavated will be dependent upon the available time and resources, together with the complexity and depth of stratigraphy to be investigated. It is envisaged that each team led by an OA North and LPT supervisor will operate within a separate trench. The location of the trenches will be defined as a result of the geophysical surveys and will be subject to discussions with Lancashire County Archaeology Service (LCAS).
- 3.1.3 Where permissible, topsoil and overburden deposits will be removed by a mechanical excavator fitted with a toothless ditching bucket, operating under archaeological supervision down to the level of the natural geology or uppermost significant archaeological horizon. Such a machine could also be used to remove extensive and homogenous deposits, and to cut sondages to test natural deposits. To minimise disturbance, particularly in the pleasure garden, a rubber tracked mini-digger would be used. Boards and planks will be used to protect garden paths and lawns. Canvas sheets would be laid down to for spoil and turf storage. Where it is not possible to use a mechanical excavator, the top soil and turf will be removed manually, and then the site will be cleaned before proceeding. Following cleaning of the site and the establishment of a plan of the features present, detailed excavation will be undertaken in areas where features have been identified. The programme will investigate and appropriately record all identified features. An attempt will be made to establish an overall chronology for activity within the excavation area.
- 3.1.4 The excavation will use a variety of techniques, from rapid cleaning to delicate excavation, to suit differing conditions. The aim of this work will be to explore all features stratigraphically and to produce a clear plan of the complex. Detailed excavation will be targeted in areas of identified archaeological features and deposits encountered during the excavations will be sampled according to the appropriate professional standards to enable palaeoenvironmental analysis. A sample of at least 25% of each major feature will be excavated, including all key relationships (a sample of 50% will be made of discrete features such as postholes). Layers and features will be cleaned and excavated by an appropriate technique.
- 3.1.5 **Recording Methodology:** all elements of the work will, as a matter of course, be recorded in accordance with current English Heritage guidelines (*MAP2*) and the best practices formulated by English Heritage's Centre for Archaeology (CfA). Where practicable recording will be by Group members under the supervision of OA North staff.
- 3.1.6 **Planning:** archaeological planning will be by a combination of instrument and manual survey. Within the trenches all features will be manually excavated, but the location of the trenches will be surveyed using a total station and the data will be digitally incorporated into a CAD system. The drawings will be generated at an accuracy appropriate for 1:20 scale but can be output at any scale required. Section drawings will for the most part be generated manually, although a total station has proved to be a cost effective tool for drawing very long sections or profiles across the site.
- 3.1.7 **Context Recording:** the features will be recorded using *pro-forma* sheets which are in accordance with those used by CfA. Similar object record and photographic record *pro-formas* will be used. All written recording of survey data, contexts, artefacts and ecofacts will be cross referencable from *pro-forma* record sheets using sequential numbering.
- 3.1.8 A full and detailed photographic record of individual contexts will be maintained and similarly general views from standard view points of the overall site at all stages of the excavation will be generated. Photography will be undertaken using 35mm cameras on archivable black and white print film as well as digital photography. Photographs records will be maintained on special photographic *pro-forma* sheets.
- 3.1.9 **Training:** the participants in the excavation will be encouraged to get closely involved in all aspects of the excavation. They will be trained in excavation techniques, context recording, planning, site surveying, site photography, and finds handling. All training will be practical demonstration by experienced professional supervisors.
- 3.1.10 **Finds:** finds recovery and sampling programmes will be in accordance with best practice (current IFA guidelines) and subject to expert advice. All material will be collected and identified by stratigraphic unit. Hand collection by stratigraphic unit will be the principal method of collection. Sensitive stratified archaeological deposits will be dry sieved to ensure recovery of

artefacts and ecofacts. The location of findspots for objects deemed to be of potential significance to the understanding, interpretation and dating of individual features, or of the site as a whole, will be recorded in 3-D. Post-excavation finds processing will be undertaken by a specialist appointed by the Lathom Park Trust, who will treat the finds in accordance with IFA and UKIC Guidelines. In general this will mean that (where appropriate or safe to do so) finds are washed, dried, marked, bagged and packed in stable conditions; no attempt at conservation will be made unless special circumstances require prompt action. In such case guidance will be sought from Ancient Monuments Laboratory (AML) conservator Jennifer Jones at Durham University. Finds storage during fieldwork and any site archive preparation will follow professional guidelines (UKIC).

- 3.1.11 **Use of Metal Detectors on Site:** spoil heaps will be scanned for ferrous and non-ferrous metal artefacts using a metal detector capable of making this discrimination, operated by an experienced metal detector user (if necessary, operating under the supervision of the contracting archaeologist). If a non-professional operative is to be used to carry out the metal-detecting, a formal agreement of their position as a sub-contractor working under archaeological direction must be agreed in advance of their use on site. This formal agreement will apply whether they are paid or not. To avoid financial claims under the Treasure Act a suggested wording for this formal agreement with the metal detectorist is: "In the process of working on the archaeological investigation at [location of site] between the dates of [insert dates], [name of person contributing to project] is working under direction or permission of [name of archaeological organisation] and hereby waives all rights to rewards for objects discovered that could otherwise be payable under the Treasure Act 1996."
- 3.1.12 **Treasure Act:** the terms of the Treasure Act 1996 must be followed with regard to any finds that might fall within its purview. Any such finds must be removed to a safe place and reported to the local coroner as required by the procedures as laid down in the "Code of Practice". Where removal cannot be effected on the same working day as the discovery, suitable security measures must be taken to protect the finds from theft.
- 3.1.13 **Recording and analysis of architectural fragments:** concurrent with the trial-trenching, it is proposed to undertake a programme of detailed recording of the re-used architectural fragments derived from this and earlier excavations at Lathom House, West Wing. These would be issued with a unique identification number, cross-referenced to context, and individually recorded through photography and detailed description on *pro-forma* sheets.
- 3.1.14 **Human Remains:** any human remains that are discovered must initially be left *in-situ*, covered and protected. The Ministry of Justice, Lancashire Police, the local coroner and environmental health officer will be informed of the find, and their advice sought. If removal is necessary, this must comply with the relevant legislation; exposure, examination, lifting and storage of human remains would adhere to any directives issued by the Ministry of Justice and local Environmental Health officer, together with English Heritage and Church of England document *Guidance for best practice for treatment of human remains excavated from Christian burial grounds in England* (2005), where relevant. Ethical guidance for burial grounds of non-Christian faiths would be sought from the relevant religious authorities where appropriate.
- 3.1.15 **Publicity:** the project will be publicised through the LPT website. All other forms of public dissemination (including media releases, publications, etc), would be issued only with the prior consent of LPT, the landowners, and following advice from LCAS. Any journalists seeking interviews on site should have been cleared with LPT before any interview is given. *NSG Group/Pilkingtons have yet to state their views on publicity.*
- 3.1.16 OA North employs artefact and palaeoecology specialists with considerable expertise in the investigation, excavation, and finds management of sites of all periods and types, who are readily available for consultation.
- 3.1.17 **Environmental Sampling:** the site has potential for significant environmental analysis, and a programme of palaeoenvironmental sampling will be undertaken at the site under the guidance of the OA North palaeoenvironmental specialist (Elizabeth Huckerby). The contexts will be sampled as appropriate, subject to palaeoenvironmental survival, and an assessment of the samples will be undertaken by Elizabeth Huckerby. It is proposed that floatation be undertaken off site following completion of the fieldwork.

3.2 POST-EXCAVATION AND REPORTING

- 3.2.1 **Introduction:** it is important that an effective and precise account of the results is compiled, and this will be undertaken mostly by OA North personnel. Where there is an opportunity to involve Lathom Park Trust members under close supervision of OA North staff and LPT supervisors, this will be taken. Defined below are the tasks for the proposed analysis and how they will be undertaken.
- 3.2.2 **Archive:** an archive for the project will be prepared during and immediately following the excavation programme, supplemented as necessary during any phase of analysis to professional standards for deposition in an appropriate repository. This will be undertaken by Trust members under supervision of OA North staff. The results of the excavation will form the basis of a full archive to professional standards, in accordance with current English Heritage guidelines (*Management of Archaeological Projects*, 2nd edition, 1991). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. The deposition of a properly quantified, ordered, and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the Institute of Field Archaeologists in that organisation's Code of Conduct. The project archive would be deposited, in an appropriate local public museum, in agreement with LPT, the landowners and the county archaeologist.
- 3.2.3 **Assessment and Reporting:** an appropriate programme of assessment will be undertaken to prepare a research archive, as detailed in Appendix 6 of *Management of Archaeological Projects* (English Heritage 1991). A Harris Matrix will be compiled and checked as part of the assessment. A provisional programme of post-excavation assessment is proposed, on the basis of the anticipated recovery of material from the excavation; however, the extent of the programme can only be reliably assessed on completion of the fieldwork. The proposed programme anticipates assessment of the artefactual evidence and of the site stratigraphy leading to the production of a final report, which will be edited (and thus co-authored) by SB and JQ on behalf of LPT. The final report will be issued under cover of LPT and will present, summarise, and interpret the results of the programme and will incorporate specialist reports on artefact assemblages and environmental reports. It will include an index of archaeological features identified in the course of the project, with an assessment of the site's development. It will incorporate appropriate illustrations, including copies of the site plans and section drawings all reduced to an appropriate scale. The report will consist of a statement of acknowledgements, lists of contents, executive summary, introduction summarising the brief and project design and any agreed departures from them, methodology, interpretative account of the site and associated structures, gazetteer of features, a complete bibliography of sources from which data has been derived, and a list of further sources identified during the programme of work.
- 3.2.4 **Palaeoenvironmental Assessment:** subject to the results of the evaluation an assessment of any environmental samples will be undertaken by the in-house palaeoecological specialist, who will examine the potential for further analysis. The assessment would examine the potential for macrofossil, arthropod, palynological and general biological analysis. A programme of detailed analysis may be recommended subject to the results of the assessment, but the extent and requirements of such work can not be determined at this early stage of the project.
- 3.2.5 **Absolute Dating:** subject to the availability of material from secure contexts, it may be appropriate to undertake dendrochronological dating of preserved timbers, or radiocarbon dating of sampled organic material if the possibility can be demonstrated that this technique will aid the establishment of a tight chronology. Absolute dating could be particularly useful for the interpretation of archaeological remains from which no other dating material is available, and for palaeoecological material. It is anticipated that insufficient quantities of organic material will be available for conventional C14 dating, and it is therefore proposed that accelerator C14 dates be allowed for from the outset. Sufficient dates will be required to improve the reliability and accuracy of dating. The actual number required will be subject to the results of the trenching. The dates will be taken by the OA North palaeobotanist (Elizabeth Huckerby), who will undertake the initial processing of the dates and submit them to the radiocarbon laboratory (Leibniz AMS Laboratory, Kiel, Germany).
- 3.3 OTHER MATTERS**
- 3.3.1 **Access:** access to the site will be agreed with NSG Group/Pilkingtons through a formal contract, covering matters such as extent of works, siting of cabins and toilets, reinstatement, and insurance. As the trenches will be within the park and garden, and there is the potential for a

reasonable number of visitors (the permissible number of which will be established with the landowners prior to commencement), the access routes to the trenches will be defined at the outset so as to minimise disturbance to the rest of the site, and these will be fenced-off using non-disturbing heras barrier fencing. Terram or equivalent materials will be lain over vulnerable earthworks to provide additional protection. Where trenches are situated in areas of livestock grazing, suitable arrangements will be made with the appropriate farmer; excavation trenches will be secured with stockproof fencing.

- 3.3.2 **Health and Safety:** full regard will, of course, be given to all constraints (such as services) during the evaluation, as well as to all Health and Safety considerations. The health and safety policy will be in accordance with the OA North Health and Safety Statement, which conforms to all the provisions of the SCAUM (Standing Conference of Unit Managers) Health and Safety manual, as well as the Oxford Archaeology Health and Safety Statement. A full risk assessment will be undertaken. The Oxford Archaeology health and safety Policy Statement will be provided to HLF. As a matter of course, a U-Scan device is used prior to the commencement of excavation.
- 3.3.3 The excavation of the trenches will not extend to a depth of greater than 1.25m without being stepped in by at least one metre in order to satisfy health and safety guidelines for unshored sections. There is no provision for shoring within the present proposals.
- 3.3.4 **Pre-excavation preparation and reinstatement:** it is understood that there will be a basic requirement for the reinstatement of the excavated trenches. This will comprise backfilling and grading with a machine, with the subsoil and topsoil returned to the trench in the appropriate order. In areas of turf, turf will be cut by hand prior to the excavation of the trench, and reinstated accordingly. If the park have access to a turf cutting machine and operator, this will greatly facilitate this operation. In areas of vegetation, this will need to be cleared prior to the trenching taking place.
- 3.3.5 **Insurance:** insurance in respect of claims for personal injury to or the death of any person under a contract of service with the LPT and arising out of any accident in the course of such person's employment shall comply with the employers' liability (Compulsory Insurance) Act 1969 and any statutory orders made there under. For all other claims to cover the liability of OA North in respect of personal injury or damage to property by negligence of OA North, there applies insurance cover of £3m for any one occurrence or series of occurrences arising out of one event. LPT will need to provide insurance cover for the volunteers and members of the public that work on the site.

APPENDIX 2: TRENCH DESCRIPTIONS

Trench 7a Dimensions: 13.5m by 2.7m

Orientation: East/West

Context	Description	Depth 9m)
303	Topsoil. A mid- brown sandy silt.	0.35
399	Layer of crushed red brick.	0.15
400	Subsoil. A mid-brown sandy silt	0.3
601	Shirdley hill sand	Unknown

Trench 7b Dimensions: 46.5m by 4.5m

Orientation: East/West

Context	Description	Depth (m)
301	Levelling layer. Number used during machining of the eastern end of trench. Any finds attributed to 301 effectively from the levelling deposits of this area.	-
302	Levelling layer comprised of demolition debris. A mid-orange reddish brown fine sand silt clay with <i>c</i> 10% small to medium sized sub-rounded and sub-angular stone inclusions.	0.04
304	Topsoil. A very dark grey fine sand silt clay with small to medium sub-angular stone inclusions	0.28
305	Void	-
306	Void	-
308	Dry-stone wall. It measured 0.7m wide aligned on a north/south orientation, and comprised mid-grey sandstone roughly faced stone on its external eastern and western faces, with an angular stone core. It was largely unevenly coursed, being roughly coursed in places.	1.3
310	Levelling deposit. A brownish red silty sand comprised <i>c</i> 80% sandstone fragments less than 80mm in diameter.	0.36
311	Levelling deposit. Comprised orange and grey mudstone/shale, crushed to less than 60mm in diameter.	0.19
312	Levelling deposit. A mixed deposit including mid-brown, brown-grey, and brown-yellow silty sands.	0.4
313	Levelling deposit. A mixed deposit of grey, yellow, orange and brown loose sandy clay, containing <i>c</i> 5% angular stones less than 80mm in diameter.	0.5
314	Levelling deposit. A dark reddish brown humic sandy silt.	0.26
315	Levelling deposit. A mixed deposit of mid-brown sandy silt and firm mottled orange grey clay, with lenses of greyish white silty sand.	0.2
316	Levelling deposit. A greyish- brown silty sand.	0.46
317	Levelling deposit. A deposit of mid-greyish brown silty sand with yellowish white mottles, including less than 2% small rounded stones a maximum of 40mm in diameter.	0.37
318	Levelling deposit. A greyish reddish, grey, yellow sandy clay with <i>c.</i> 10% sub- rounded stones inclusions a maximum of 0.15m in diameter.	0.35
319	Cut for land drain. A linear U-shaped cut, with mainly vertical sides (although irregular in places) on a north-east/south-west orientation, a maximum of 1.3 wide.	0.3
320	Fill of 319 . A mixed greyish orange silty clay and mid-brown sandy silt.	0.45

321	Levelling deposit. A dark brown silty sand deposit.	0.3
322	Levelling deposit. A greyish brown silty sand deposit.	0.5
323	Natural Shirdley Hill Sand. A yellowish white loose sand.	0.28
324	Glacial till. A mid-yellow orange and blue grey clay.	0.4
325	Levelling deposit. A mid-brown silty clay, with c 5% sub- rounded stone inclusions a maximum of 50mm in diameter.	0.36
326	Brick floor. Comprised red bricks measuring 0.23 x 0.10 x 0.07m in size. In total, the floor measured 1.5m by 0.9m in size.	0.07
327	Levelling deposit. A mid-greyish brown loamy clay, with c 1% coal fragments, 1% brick fragments and 1% small gravel inclusions.	0.3
328	Layer. Comprised roughly hewn sandstone, a maximum of 0.40m by 0.38m and a minimum of 0.10m x 0.07m in size.	0.6
329	Void	-
330	Fill of drain/robber trench 334. A mid-orangy brown sandy silt, comprised less than 2% sub-rounded stone c 30mm in diameter and 5% red brick and sandstone fragments c 10mm in diameter.	0.3
331	Fill of drain/robber trench 334. A mid-brown sandy silt, with less than 5% sub-angular and sub-rounded stone inclusions, 10mm to 35mm in diameter.	0.2
332	Fill of drain/robber trench 334. A dark brown sandy silt, with less than 10% sandstone fragments a maximum of 30mm to 40mm in diameter.	0.23
333	Fill of drain/robber trench 334. A dark brown grey coarse sand silty clay with less than 1% sub- rounded stone inclusions measuring between 10mm x 10mm x 10mm. The deposit also contained c 1-5% clinker inclusions.	0.3
334	Drain cut, which has extensively robbed out wall 308, on a north-east/south-west orientation. A linear cut with a flat bottomed 'U' shaped profile and steep sides.	1.14
335	Levelling layer. A dark brown grey clayey coarse sand silt, with less than 1% sub-angular and angular stone measuring a maximum of 80mm by 40mm by 10mm in size.	0.36
336	Fill of construction cut 340. A mid-grey fine sand silt clay, with c 10% sub-angular stones measuring between 40mm by 50mm by 30mm and 10mm by 10mm by 10mm in size. It had c 20% mid-grey orange mottles clay inclusions, a maximum of 0.12m x 0.08m in size	0.17
337	Fill of construction cut 340. A dark grey fine sand silty clay with c 1% sub-angular stone a maximum of 10mm by 10mm by 10mm in size.	0.32
339	Fill of construction cut 340. A mid-grey silty clayey fine sand with less than 1% sub- angular stone a maximum of 0.11m by 0.08m by 0.02m in size.	0.18
340	Construction cut. A flat bottomed 'U' shaped linear cut with straight, steep, sides. The cut was aligned on a north/south orientation, truncated by a drain 334, and measured 2.29m wide	0.80
341	Natural deposit. A dark grey compacted clay, with c 10% to 20% angular shale and coal inclusions a maximum of 40mm by 30mm by 2mm in size.	Unknown
342	Fill of robber trench 334. A mid-brown sandy silt with c 90% angular quarried stone inclusions between 0.15 and 0.25m in diameter.	0.3
343	Fill for drain 334. A mid-orange brown silty clayey coarse sand, with c 10% sub-angular stone inclusions a maximum of 10mm by 10mm by 10mm in size.	0.11
344	Layer. A dark brownish grey fine sand silty clay with sub-angular stone inclusions a maximum of 10m by 10mm by 10mm in size.	0.05
345	Sub-soil. A dark orangy brown fine sand silt, with less than 1% angular stone inclusions a maximum of 40mm by 30mm by 20mm	0.2

	in size.	
346	Soil deposit. A mid-orange brown fine sand silt clay, with c 10% sub-angular and angular stone inclusions a maximum of 0.11m by 0.02m by 0.02m in size.	0.25
348	Fill of construction cut 340. A dark brown grey fine sand silty clay, with c 5% sub-rounded and sub-angular stone inclusions a maximum of 0.12m by 0.10m by 0.04m in size.	0.24
349	Layer of root disturbance. A very dark grey brown fine sand silty clay, with c 5% sub-rounded and rounded stone inclusions a maximum of 40 x 40mm by 20mm in size.	0.46
350	Soil horizon. A very dark grey fine sand silty clay with less than 1% sub-rounded stone a maximum of 30mm by 20mm by 10mm in size.	0.36
351	Sub-soil. A dark orangey brown fine sand silty clay, with c 5% sub-rounded and sub-angular stone inclusions a maximum of 0.26cm by 0.20cm by 0.12cm in size.	0.42
352	Levelling layer. A mid-orange brown fine sand silty clay, with c 10% sub-angular stone inclusions a maximum of 80mm by 70mm by 20mm in size.	0.2
353	Levelling layer. A mid- orange brown fine sand silty clay, with c 5% sub-angular stone inclusions a maximum of 0.13m by 0.08 by 0.04m in size.	0.33
354	Levelling layer. A dark reddish brown clayey coarse sand, with c 70% stone inclusions measuring a maximum of 30mm by 10mm by 10mm at the east end of the trench. At the west end of the trench this deposit comprised 20% coarse component.	0.6
355	Void	-
356	Levelling layer. A dark yellow brown clayey coarse sand, with c 50% large light orange yellow clay mottles a maximum of c 0.13m by 0.09m by 0.04m in size.	0.2
357	Levelling layer. A mid-reddish brown loose silty coarse sand.	0.3
358	Levelling layer. A mid-grey orangey yellow mottled clay, with less than 5% rounded stone inclusions a maximum of 5mm by 5mm by 5mm in size.	0.14
359	Levelling layer. A mid greyish yellow brown coarse sandy silt, comprised c 30% coarse component. The deposit is 0.5m in length.	0.06
360	Levelling layer. A mid-orangey brown silty coarse sand.	0.3
361	Levelling layer. A mid-yellowish grey mottled orangey sandy clay with c 35% stone inclusions a maximum of 0.17m x 0.09x0.07m.	0.36
362	Levelling layer. A dark black brown with mottles of orange brown sandy silt comprised c 20% rounded stones with a maximum measurement 0.01x0.01x0.005m, and 70% coal inclusions of a maximum of 10x10x10mm.	0.1
363	Levelling layer. A mid-brown red sandy clay with 10% stone inclusions a maximum of 0.08 by 0.04 by 0.02m in size. The deposit measured 1.6m in length.	0.28
364	Levelling layer. A light greyish yellow clay containing dark brown grey silty clay mottles, and less than 5% stone inclusions a maximum of 20 by 10 by 10mm in size.	0.3
365	Levelling layer. A dark redish brown coarse sand with c 70% crushed coal inclusions a maximum of 10mm by 5mm by 10mm in size. The deposit is 0.6m in length.	0.04
366	Levelling layer. A mid-yellow brown silty sand with less than 1% stone inclusions less than 5mm in diameter. The length of the deposit is 0.5m.	0.04
367	Levelling layer. A black deposit of crushed coal layer. The coal measured a maximum of 0.01m by 0.01m by 0.01 in size The length of the deposit was 1.0m.	0.08
368	Fill of 390. A greyish orange brown silty coarse sand, with yellow	0.27

	orange grey clay mottles, and c 25% stone inclusions a maximum of 0.10m by 0.02m by 0.05m in size. The deposit measured 1.05m in length.	
369	Levelling layer. A mid-orangy brown silty coarse sand deposit with mid-blue yellow grey clay mottles and c 5% stone inclusions a a maximum of 70mm by 110mm by 90mm in size. The deposit measured 0.72m in length.	0.54
370	Levelling layer. A mid-yellow grey clay deposit containing c 75% stone inclusions a maximum of 0.02m by 0.05m by 0.001m in size.	0.2
371	Levelling layer. A mid yellow brown silty sand deposit. The deposit is 1.10m in length.	0.12
372	Fill of drain 334. A mid-orangy brown coarse silty sand with mid-orange clay mottles, containing c 10% stone inclusions a maximum of 50mm by 30mm by 15mm in size. The deposit is 1.6m in length.	0.28
373	Levelling layer. A dark orangy brown silty coarse sand, containing c 25% stone and brick inclusions a maximum of 100mm by 90mm by 50mm in size. Deposit length is 0.9m.	0.34
374	Fill of foundation trench 375. A mid-brown deposit, containing c 50% white plaster and flat clear glass inclusions.	Unknown
375	Cut of foundation trench. Cut on an east/west alignment, north/south aligned return at eastern end continuing beyond the northern limit of excavation. The cut had vertical sides and a flat base.	0.20
376	Layer. A mixed deposit of brick and crushed very light grey lime mortar.	Unknown
377	Layer of demolition debris. A mid-brownish coarse friable deposit, with c 70% brick inclusions of which some are still mortared together.	Unknown
378	Layer. Deposit comprised light grey stones. The stones are between 0.06 and 0.20m in diameter, packed closely together.	0.15
379	Layer of sub-soil. A dark brown friable clayey silt, comprised c 15-20% charcoal fragments and brick flecks.	Unknown
380	Layer of sub-soil. A mid-brown friable silty clay, comprised c 15% charcoal fragments and brick flecks..	Unknown
381	Layer. A dark brown loose clayey loam with c 40% charcoal, clinker, brick and stone inclusions. Deposit was 1.10m in width and 1.20m in length.	Unknown
382	Topsoil. A medium brown loose clayey loam, with c 10% charcoal and brick flecks.	0.1
383	Layer of demolition debris. A dark grey brown soft clayey loam, comprised c 50% stone and brick inclusions.	Unknown
384	Layer. A dark brown black loose coarse clinker and sand deposit, comprised c 70% small stone inclusions and c 5% brick and medium sized stone inclusions.	Unknown
385	Layer of subsoil. A mid-greyish brown soft clayey loam, comprised c 5% to 10% charcoal and brick flecks with rare small to medium sized stone inclusions.	Unknown
386	Void of empty cut 387.	Unknown
387	Circular feature or void, with vertical straight sides. The base of this cut or void was not located. The feature measured 0.13m in diameter.	Min 0.65
390	Linear feature. A U-shaped feature with vertical straight sides.	Unknown
391	Layer of subsoil. A mid-greyish brown firm clayey loam deposit, with c 1% angular stone inclusions a maximum of 0.10m by 0.10m by 0.10m in size. The deposit also has very occasional inclusions of orange clay. It measured 3.4m in length.	0.75
392	Layer. A mid-grey blue clay, with c 20% shale fragments and rare small coal fragments. The deposit measured 1.6m in length.	0.45
393	Cut of possible pit. A sub- circular wide 'U' shaped cut with	0.3

	irregular sides and a concave base. In measured at least 2.80m be 1.5m in size, continuing beyond the southern limit of excavation. .	
394	Layer. A mid-greyish brown firm sandy clay, comprised c 2% small gravel, 1% brick debris, 1% shale. The deposit is 4m in length, and 4.5m in width.	0.2
395	Make up deposit. A mid-greyish brown firm sandy clay with c 2% small gravel, 1% brick debris, 1% shale inclusions. Deposit measured 2.8m in length.	0.38
396	Levelling layer. A dark grey friable fine sand silt clay, with c 20% sub-angular stone inclusions a maximum of 0.12m by 0.08m by 0.05m in size.	0.28
397	Levelling layer. A mid-grey friable silty fine sand, with c 20% sub-rounded stone inclusions a maximum of 0.10m by 0.08m by 0.03m.	unknown
398	Natural clay deposit. A mid-bluish grey brown clay with c 10% shale fragments.	Unknown
602	Natural glacial clay. A mid-blue grey sandy clay till	Unknown
603	Natural glacial clay. A mid-orange grey clay with bands or lenses of crushed shale and clay	0.7
604	Ceramic field drain	Unknown
605	Late post-medieval red-brick footing. It measured 0.23m wide and at least 0.48m in length, continuing beyond the northern limit of excavation	Unknown

Trench 8 Dimensions: 10.5m by 3.5m Orientation: East/West

Context	Description	Depth
401	Drain within construction cut 408 . Mid-reddish grey roughly hewn sandstone, measuring between 0.18m by 0.23m and 0.27m by 0.72m in size. The context as a whole measures 2.65m x 0.68m.	Unknown
402	Masonry floor. A brick surface, each brick measured 0.23m by 0.11m by 0.08m, bonded with a light grey lime mortar. The floor as a whole measured 2.5m by 1.5m by 0.18m.	0.18
403	Masonry floor. A brick surface, each brick measured c 0.23 x 0.11 x 0.07m, bonded by a light grey lime mortar. The context as a whole measures 2.70 x 1.40m.	0.07
404	Masonry wall. Handmade bricks and angular sandstone blocks, measuring 0.23 x 0.11 x 0.07 and 0.30 x 0.20 x 0.08m respectively. The masonry was randomly coursed, and bonded with a light grey lime mortar. The structure as a whole measured 1.60 x 1.10 x 0.5m.	0.5
405	Wall foundation. Comprised sandstone blocks measuring between 0.15m by 0.15m by 0.13m and 0.48m by 0.20m by 0.16m. Some of the blocks are squared and dressed, whilst others are roughly quarried and subangular. The foundation has irregular courses, bonded by light grey lime mortar, on an east/west alignment. The structure as a whole measures 3.4m by 2.0m by 0.43m.	0.43
406	Layer of demolition debris. A mixed deposit of sandstone and slate fragments up to 0.18m in diameter. Occasional red bricks measuring 0.75mm thick also present. The matrix between the stones is a mid- brown loose humic silt, up to 0.4m thick.	0.4
407	Levelling layer. A mid-brown, firm, sandy clay with c 1% light grey lime mortar fragments.	Unknown
408	Cut for drain 401 . A linear cut, with straight parallel edges, sharp break of slope- top and vertical sides. The base was not excavated. The cut was aligned north/south.	Unknown
409	Levelling layer. A mid-greyish brown stiff sandy clay, with c 25% fine gravels, brick and stone inclusions.	0.7
410	Levelling layer. A mid-brown firm sandy clay, with c 1% lime	Unknown

	mortar fragments and 2% small stone inclusions.	
411	Layer. A dark greyish black, firm, sandy clay which is ashy in places, with <i>c</i> 1% charcoal, and 1% crushed brick and mortar inclusions.	Unknown
412	Masonry. Two sandstone flags, the first of which measured 0.8m by 0.80m and the second measures 0.70m by 0.80m in size. Both are dressed masonry, presumably part of largely removed floor surface. Together the flags measured 1.5m by 0.8m.	Unknown
413	Levelling layer. A mixed deposit of mid-greyish brown and mid-greyish orange loose silty sand, with <i>c</i> 2% small sandstone inclusions.	0.13
414	Levelling layer. White loose crushed lime, with <i>c</i> 2% sub-rounded stone inclusions a maximum of 40mm in diameter.	0.12
415	Make up layer. A dark grey friable sandy silt with <i>c</i> 50% charcoal flecks, measuring less than 5mm diameter.	0.007
416	Make up layer. An orange yellow loose sand deposit with <i>c</i> 50% sandstone fragments measuring between 40mm and 0.3m in diameter.	0.27
417	Layer. A compacted white crushed lime.	0.18
418	Layer. Demolition debris. A light grey friable sandy silt with <i>c</i> 5% lime based mortar flecks measuring 0.5m diameter, 20% demolition rubble including red ceramic brick and sandstone fragments with a maximum diameter 0.15m.	0.16
419	Corroded iron pipe filled with firm greenish black silty clay, within layer 414 .	0.007
420	Make up layer. A brownish grey friable sandy silt, with <i>c</i> 80% stone, slate and brick inclusions up to 0.15m in diameter.	0.18
421	Topsoil. A dark greyish black friable sandy loam with <i>c</i> 1% small gravel and occasional brick inclusions.	0.20
422	Masonry surface. Grey bricks measuring 0.23m by 0.11m by 0.08m in size bonded with light grey lime mortar. The bricks have been laid as stretchers, which either forms a thresh-hold or fills in a void.	0.08
423	Levelling layer for 403 . A light yellow brown loose sand with <i>c</i> 20% lime mortar inclusions.	Unknown
424	Layer. A mid-grey brown firm sandy clay loam with occasional mortar flecks.	Unknown
425	Layer. A mid-grey brown friable sandy loam with <i>c</i> 5% mortar fragments, 5% stone, 2% brick, and rare slate and coal inclusions.	Unknown
426	Layer. Light grey lime mortar.	Unknown
427	Demolition layer. A greyish brown friable sandy clay, with 25% crushed sandstone inclusions.	0.25
428	Layer. A mid- brown grey friable sandy loam with <i>c</i> 20% brick and stone rubble, 5% lime mortar, and 2% small angular pebble inclusions..	0.8
429	Light grey lime mortar render on wall 404 .	0.03
430	Void	-
431	Masonry. Wall comprised yellow sandstone a maximum of 1.12m by 0.56m in size. The stone is dressed on its eastern and western elevations, but is otherwise roughly hewn. The structure was randomly coursed, with a stone rubble infill, and measured he wall measures 1.6m wide.	0.6
432	Masonry. A wall comprised yellow sandstone, the largest measured 0.28m and 0.22m. The stones are roughly squared with the occasional faced stone, and regularly coursed. The masonry was bonded with a very light grey lime mortar, and measured 0.26m wide.	0.4
433	Masonry surface. Cobbled surface. Comprised rounded river-worn stones which measured a maximum of 0.06m by 0.03m in size The surface measured 0.9m x 1.70m.	0.1

434	Drain. Comprised stone, possibly York type, which measured 0.78m by 0.62m by 0.29m in size. The stone is dressed smooth.	0.29
435	Masonry foundation. Comprised angular red sandstone of a maximum size of 0.57m by 0.34m by 0.20m. The stone was roughly coursed, with three courses are visible, aligned north/south.	0.55
436	Levelling layer. A dark grey firm clay with <i>c</i> 5% sub-angular sandstone inclusions measuring a maximum of 90mm by 80mm by 20mm in size, and less than 1% charcoal flecks.	0.36
437	Levelling layer. A light grey loose medium sand with <i>c</i> 10% sub-angular stone inclusions a maximum of 90mm by 80mm by 20mm.	0.15
438	Levelling layer. A mid-orange brown friable silty medium sand with <i>c</i> 10% sub-angular stone inclusions a maximum of 0.11m by 0.09m by 0.07m	0.11
439	Levelling layer. A mid- orange brown loose medium sand, containing some red brick (0.11x0.11x0.06m). Context as a whole measures 0.37x0.62x 0.13m.	0.13
440	Layer. A dark grey firm silty clay with <i>c</i> 90% sub-angular stone inclusions a maximum of 0.36m by x0.16m by 0.11m.	Unknown
441	Layer. A dark brown grey firm fine sand silt clay with <i>c</i> 70% light grey lime mortar inclusions a maximum of 85mm by 80mm by 15mm in size, and less than 1% sub-angular stone inclusions a maximum of 60mm by 50mm by 40mm in size.	0.13

Trench 9 Dimensions: 20.0m by 9.45m**Orientation: North/South**

Context	Description	Depth
100	Topsoil. A very dark brown friable sandy silt, with less than 2% clay mottles measuring between 5mm to 7mm in diameter. The context also has frequent lenses of mottled reddish brown and yellowish grey silty sand.	0.4
201	Service pipe. A bronze or copper pipe, 0.56m in length and 35mm in diameter.	0.035
202	Levelling layer. An orange red compacted shale deposit with <i>c</i> 35% stone inclusions.	0.10
203	Levelling layer. A mid-grey coarse sand with <i>c</i> 65% sandstone with small stones inclusions.	0.10
204	Levelling layer. A mid- to dark brown grey friable sandy silt with <i>c</i> 5% small rounded stone inclusions.	0.36
205	Layer. A friable mottled light yellow sand and mid-brown silt deposit, with occasional small rounded stone inclusions.	Unknown
206	Layer. A mottled light orange brown compacted silty clay with rare charcoal inclusions.	Unknown
207	Masonry. Wall comprised of mainly angular stones, with some stones roughly shaped, and some red brick. The stone measured a maximum of 0.27m by 0.24m by 0.17m and the brick a maximum of 0.08m by 0.06m by 0.05m in size. The wall is randomly coursed with dark brown grey firm silty sand used as bonding material it measured 0.60m wide.	0.15
208	Deposit. A very dark brown grey loose silty clay with <i>c</i> 98% clinker inclusions.	Unknown
209	Levelling layer. A loose mottled mid- brown sandy silt with sandy patches with <i>c</i> 80% stone inclusions.	Unknown
210	Same as (209).	Unknown
211	Masonry. Culvert comprised angular stone and red brick on an east/west alignment. The stone measured between 0.56m by 0.36m by 0.04m and 0.09m by 0.08m by 0.02m in size, and the brick 0.23m by 0.11m by 0.075m. The culvert measured 0.37m wide.	0.21

212	Levelling layer. Mixed deposit of mid-brown sandy silt.	0.15
213	Masonry. Drain comprised red brick measuring 0.23m by 0.11m by 0.075m, built in regular courses with some light grey lime mortar and some mid reddish brown sand bonding material. The drain leads vertically down to join culvert 211 , measuring 0.32m square. Same as 219 .	0.18
214	Levelling deposit. A light yellowish grey loose medium to coarse sand with c 20% angular stone inclusions measuring a maximum of 90mm by 40mm by 50mm.	0.78
215	Levelling layer. A mid-grey friable fine sand silt clay with c 20% angular stone inclusions measuring a maximum of 70mm by 30mm by 20mm in size. Same as deposit 236 .	0.18
216	Levelling layer. A mid-brown orange friable medium sand with c 25% angular and sub- angular stone inclusions a maximum of 90mm by 60mm by 40mm in size.	0.24
217	Fill of 218 .. Deliberate backfill comprising mid-orange grey consolidated clay with less than 1% sub- rounded stone inclusions a maximum of 10mm by 10mm by 10mm in size.	Unknown
218	Linear feature. A U-shaped feature with near vertical sides and a concave base, aligned east/west.	0.81
219	Same as 213	0.18
220	Foundation construction cut. A linear U-shaped feature with a flat base on an east/west alignment.	Unknown
221	Construction cut for culvert 211 . A linear U-shaped feature with vertical sides and a flat base, on an east/west alignment. The cut measured 0.40m wide.	0.1
222	Fill of 224 . A mid-grey brown friable medium sandy with c 20% angular stone inclusions. Deliberately backfill of pipe trench.	0.30+
223	Cast iron pipe. The pipe is 0.16m in diameter and 0.72m in length as exposed in sondage, on a north-west/south-east alignment.	0.16
224	Cut. Pipe trench with straight near vertical sides on a north-west/south-east alignment.	0.48+
225	Levelling layer. A mid-reddish brown, firm, medium sandy silt with c 20% angular and sub-angular stone inclusions a maximum of 90mm by 50mm by 20mm in size.	Unknown
226	Levelling layer. A light reddish brown, loose, coarse sand with c 35% stone inclusions.	0.1
227	Fill of 221 . A dark grey brown soft clayey sand with c 15% stone inclusions. Deposit backfilled around culvert 211 ,	0.1
228	Fill of 224 . A dark grey friable fine sandy silt with less than 1% sub-angular stone inclusions a maximum of 70mm by 50mm by 30mm.	0.17
229	Levelling layer. A dark grey friable fine sand silt.	0.32
230	Masonry surface. Red sandstone flagstones measuring a maximum of 0.66m by 0.60m by 0.10m. The stones are roughly shaped and form a floor surface. The surface measures 0.24m within the length of the section of the trench where they are exposed, projecting 0.66m beyond the section.	0.1
231	Layer. A very dark grey firm fine sand silty clay.	Unknown
232	Levelling layer. A mid-brown orange loose coarse sand with c 25% sub-angular stone inclusions a maximum of 50mm by 40mm by 20mm in size.	0.08
233	Levelling layer. A dark grey friable silt coarse sand with c 10% to 20% angular and sub-angular stone a maximum of 0.14m by 0.12m by 0.06m in size.	0.33
234	Levelling layer. A light greyish orange loose medium sand with c 25% sub-angular and angular stone inclusions between 0.23m by 0.18m by 0.05m in size.	0.13
235	Levelling layer. A light yellow grey loose medium to coarse sand	Unknown

	with c 20% angular stone inclusions a maximum of 0.12m by 0.09m by 0.04m in size.	
236	Levelling layer. A dark grey friable medium sand silt clay with c 20% sub-angular stone inclusions a maximum of 0.13m by 0.08m by 0.03m in size. Same as deposit 215 .	Unknown
237	Masonry foundation. A light purple red sandstone measuring a maximum of 0.70 by 0.30m in size in the lower course, whilst the upper two courses measure a maximum of 0.70, by 0.41m by 0.12m in size. The rubble course comprised c 50% sub-angular sandstone measuring a maximum of 90mm by 70mm by 40mm. The structure is bonded by a light grey lime mortar.	0.6
238	Masonry drain SG242. Comprised a mid-grey micaceous sandstone, forming part of the northern wall and capping stone of drain SG242. The stones are mainly roughly shaped, although straight edges on some stones demonstrate that this is re-used material from a pre-existing flag floor. One of the well preserved flags continued into the eastern baulk, and measured at least 0.63m by 0.52m by 0.05m in size, whilst the remainder measured a maximum of 0.67, by 0.47m by 0.05m in size. The masonry appears roughly coursed, with a maximum of four courses visible. The stone was bonded by very dark grey fine sand silt clay.	0.16
239	Masonry drain cover surround. Bull nosed red bricks measuring a maximum of 0.225m by 0.125m by 0.06m in size have been used to create a brick surround for a drain cover. Only part of the surround is surviving.	0.115
240	Void	-
241	Masonry of drain where foundation 237 has been disturbed. Comprised a mid-purple red sandstone measuring a maximum of 0.32m by 0.25m by 0.13m in size. The sandstone is coursed and roughly faced on the northern face, with a loose rubble and stone core, bonded by dark brown grey fine sand.	0.13+
242	Stratigraphic group of drain. Group comprises of flags 238 , northern wall 255 , base 256 , fills 250 , 249 , and 254 , and foundation 237 , and wall of drain 295 .	0.55
243	Levelling layer. A light orange brown loose sandy silt with c 50% stone inclusions.	0.15
244	Fill of 220 . A light orange brown loose medium sandy silt with c 80% stone inclusions.	0.2
245	Fill of 220 . A mixed deposit of dark black brown and mid-grey loose silty clay clinker, with c 50% small stone inclusions.	0.04
246	Levelling layer. A dark grey orange brown loose coarse sandy silt with c 50% small stone inclusions.	0
247	Fill of 221 . A very dark grey loose silty fine sand with less than 5% small stone inclusions.	0.06
248	Levelling layer. A dark brown grey loose fine sandy silt with less than 5% small stone inclusions.	0.19
249	Fill of drain SG242. A mid-orange brown friable fine sand silt with c 10% angular red sandstone inclusions a maximum of 50mm by 40mm by 20mm in size.	0.42
250	Layer. A dark orange brown grey, firm, fine sand silt with less than 1% sub-angular stone inclusions a maximum of 10mm by 10mm by 10mm in size.	0.1
251	Layer. A mid-brownish orange firm clay.	0.15
252	Layer. A dark orange grey firm clay with c 80% sub-angular red sandstone a maximum of 90mm by 80mm by 40mm in size.	Unknown
253	Masonry. Comprised angular red sandstone a maximum of 0.26m by 0.20m by 0.08m in size. The stones were roughly shaped, if shaped at all, within only one course present lain in a north-north-west/south-south-east alignment. The stone was bonded by a dark	0.08

	orange brown medium sand.	
254	Drain fill. A mid-grey friable fine sand silt with c 10% small sub-rounded stone a maximum of 70mm by 50mm by 30mm.	0.15
255	Wall of drain SG242. Sub-angular stones, measuring a maximum of 0.42m long and 0.09m deep. The finish of the stones was irregular, but the masonry was coursed where visible. The wall was on a north/south alignment, with the masonry bonded by dark grey silty fine sand.	0.48
256	Masonry. Sub-angular stones a maximum of 0.30m in length and 0.28m wide. The context appears to be the floor of a drain SG 242. The bonding material for the masonry was mid-orange grey clay.	Unknown
257	Cleaning layer used for finds at interface between 19th century levelling deposits and underlying 16/17th century structures after T9 extension.	-
258	Layer. A mid-greyish brown loose silty coarse sand with less than 5% coarse sand small stone inclusions.	0.02
259	Layer. A mid-grey brown loose sandy silt, with c 30% sub-angular sandstone inclusions a maximum of 70mm in diameter.	Unknown
260	Masonry wall. Wall comprises of sandstone quarried blocks with the outer faces squared, measuring between 80mm by 80mm by 60mm and 0.34m by 0.34m by 0.11m in size. The coursing is irregular, with sandy lime mortar rendering the east-facing elevation.	0.63
261	Masonry. Wall comprised roughly squared sandstone blocks measuring between 0.2m by 0.3m by 0.13m and 0.62m by 0.32m by 0.08m in size. The stones are roughly squared, with irregular courses, forming a wall with north and south facing elevations. The masonry was bonded with a lime based mortar.	0.57
262	Masonry. Wall comprised roughly squared angular sandstone, with stones measuring between 0.42m by 0.43m by 0.08m and 0.12m by 0.10m by 0.08m in size. The wall was evenly coursed and roughly faced, with the east and west facing elevations.	0.33
263	Masonry. Brick path comprised reddish orange brick measuring 230mm by 65mm in size laid on their side. The masonry forms a pathway 2.5m in length and 0.94m wide.	0.065
264	Masonry. Sandstone floor with occasional red brick. The stone ranges from between 140mm by 50mm and 36mm by 68mm in size, and the red half bricks 65mm thick. The stone is sub-rounded and sub- angular in form, with a number of roughly squared blocks,	Unknown
265	Masonry. Wall comprised sandstone measuring a maximum of 0.40m in length. The stone is roughly hewn with some squared blocks, and are randomly coursed, bonded by limited amounts of light grey lime mortar. The wall elevations are south and west facing.	0.14
266	Internal floor. Stone slabs measuring a maximum of 0.80m by 0.40m by 0.30m in size. The stone is squared, with traces of lime mortar in the surrounding deposit.	Unknown
267	Masonry. Threshold stone comprised dressed sandstone measuring 0.86m, by 0.26m by 0.08m.	0.08
271	Deposit. A mid-blackish brown loose silty sand, with c 2% coal brick fragments included within the deposit.	0.02
272	Layer. A mid-white grey loose silty sand, with c 80% crushed lime mortar, 5% small sub-angular stone, and 5% red brick fragments a maximum of 20mm by 150mm in size.	Unknown
273	Masonry. Wall comprised roughly hewn sandstone bonded, measuring between 140mm by 80mm by 40mm and 0.45m by 0.3m by 0.3m in size, 0.86m wide. The stone was bonded by a light grey lime mortar, with north and south facing elevations.	0.3
274	Layer. A very light grey consolidated medium sand, with c 2% sub-	0.06

	angular stone, measuring a maximum on 0.11m by 0.07m by 0.06m in size.	
275	Fill of drain 277. A dark grey brown soft clayey silt with <i>c</i> 50% sub-angular and angular small stone inclusions,	0.49
276	Fill of drain SG298. A dark brown grey soft clayey silt, with <i>c</i> 90% sub-angular stones, measuring between 50mm by 50mm and 0.34m by 0.08m in size.	0.34
277	Masonry. Sandstone slab measuring 1.29m by 0.8m by 0.26m at thickest and 0.14m at its thinnest. The stone is squared with a shallow channel carved from the centre, which begins at 0.15m from the south end, and continues through to the north end of the block	0.26
278	Layer. A very dark grey friable coarse sand silt, with <i>c</i> 10% sub-angular stone inclusions measuring a maximum of 10m by 10mm by 18mm in size. The context contained <i>c</i> 40% oyster shells.	0.01
279	Layer. A mid-red friable medium sand with <i>c</i> 70% red brick fragments measuring between 0.12m by 0.10m by 0.06m and 10mm by 10mm by 10mm in size.	Unknown
280	Layer. A very dark grey friable fine sand clayey silt, with <i>c</i> 50% very light grey lime mortar inclusions measuring between 60mm by 60mm by 20mm and 10mm by 10mm by 10mm in size, and <i>c</i> 10-20% charcoal flecks.	Unknown
281	Masonry. Stone flags of robbed out floor comprised fragmented light orangey red sandstone measuring between 0.22m by 0.22m by 0.03 and 0.11m by 0.14m by 0.035m in size. One of the larger slabs goes into the baulk and measured a minimum of 0.48m by 0.30m by 0.04m in size. The stones are roughly squared.	0.04
282	Layer. A mix of very light grey consolidated medium sand.	0.04
283	Levelling layer. A very light grey consolidated coarse sand, with less than 1% sub-rounded stone inclusions, a maximum of 10mm by 10mm by 10mm in size.	0.025
284	Bedding layer. A mid-orange brown firm fine sand clay.	0.22
285	Layer. A very light grey consolidated medium sand, measuring 0.60x0.40x0.01m.	0.01
286	Layer. A dark grey friable fine sand silty clay, with <i>c</i> 10-15% very light lime mortar inclusions a maximum of 4mm by 2mm by 2mm in size, and <i>c</i> 1-5% charcoal flecks.	Unknown
287	A dark grey friable fine sand silt clay, with <i>c</i> 10% sub-angular stone inclusions a maximum of 20mm by 10mm by 5mm in size.	Unknown
288	Layer. A mid-grey consolidated medium sand with <i>c</i> 1% sub-angular stone inclusions a maximum of 5mm by 5mm by 4mm in size.	Unknown
289	Masonry, Wall comprised of stone and two brick fragments, bonded with mid-yellow brown lime mortar. The stone measured between 100mm by 70mm by 20mm and 190mm by 120mm by 30mm, and the bricks between 110mm by 80mm by 70mm and 70mm by 40mm by 60mm, in size.	0.3
290	Fill of drain 298. A dark yellow brown firm clay with black decayed wood flecks.	0.14
291	Layer. A dark brown yellow grey soft fine sand clayey silt.	0.08
292	Bedding layer. A mid-brown orange soft fine sandy clay, with some darker grey brown flecks.	0.05
293	Levelling layer. A very light grey friable coarse sandy silt.	0.13
294	Masonry. Floor comprised red sandstone a maximum of 0.45m by 0.27m by 0.05m in size. The stones are roughly squared in the form of a floor with a dark grey clay bond.	Unknown
295	Masonry. Wall comprised red sandstone measuring between 0.45m by 0.40m by 0.24m and 0.10m by 0.10m by 0.07m in size. Stone roughly squared, with north and south facing elevations. The	0.4

	masonry was bonded by a mid-brown orange clay.	
296	Bedding layer. A dark orange brown loose medium sand.	0.24
297	Masonry. Large stone slabs measuring between 0.30m by 0.05m by 0.46m and 0.36m by 0.05m by .19m in size. Masonry uneven courses, but no bonding material present.	0.1
298	Stratigraphic group of drain. The group includes drain fill 275 , drain fill 276 , bottom layers of drain 290 and 291 , wall of drain 289 , bedding layer 292 , and masonry 277 and 297 .	0.8

Trench 10 Dimensions: 11m by 1.9m**Orientation: North-east/south-west**

Context	Description	Depth
501	Topsoil. A very dark grey fine sand silty clay with abundant quantities of 19th century finds.	0.50m
502	Cleaning layer.	-
503	Flag floor.	Unknown
504	Field drain.	Unknown
505	Levelling deposit. A mid-orangey yellow medium sand.	Unknown
506	Soil horizon. A dark grey fine sand silty clay.	Unknown
507	Red brick path. Bricks measured 210mm by 120mm by 75mm in size.	Unknown
508	Red brick wall. Bricks measured 210mm by 120mm by 75mm in size, laid in an English Garden Wall bonding pattern, bonded by a light grey lime mortar.	0.50m

Trench 14 Dimensions: 18.0m by 3.8m**Orientation: North-east/south-west**

Context	Description	Depth
101	Topsoil. A dark grey loose silty sand, with inclusions of less than 1% ceramic building material less than 5mm in size, 5% sub-rounded pebbles between 10mm and 40mm in size.	0.3
102	Rubble deposit. A mid-brownish yellow hard grit with c 70% broken sandstone inclusions.	0.25
103	Demolition layer. A dark grey orange brown loose clayey coarse sand, with c 50% small stone inclusions.	0.08
104	Masonry. Path comprised light grey brown hard smooth and gritty deposit, with inclusions of c 25% sandstone rubble and 75% small glacial and river worn pebbles. The sandstone and bricks measured between 0.15m by 0.1m by 0.02m and 0.1m by 0.05m by 0.02m in size.	0.3
105	Masonry. Cobbled surface comprised mid-reddish brown fine sandy silt, with c 90% sub-rounded stone inclusions and sub-rectangular edging stone a maximum of 0.50m by 0.40m in size. mid brown sand bonding material. The deposit covers an	Unknown
106	Masonry. Wall comprised roughly hewn and squared sandstone bonded by a mid-blueish grey sandy clay. The stone blocks measured a maximum of 0.50m by 0.50m by 0.25m in size. The	0.3

	wall measured 0.80m in diameter.	
107	Masonry. Wall footing comprised bluish grey roughly squared and rectangular sandstone, measured between 0.55m by 0.55m and 0.30m by 0.25m in size.	0.3
108	Layer. Rubble deposit comprised red and mid-brownish yellow firm sandy silt, with c 80% angular sandstone and 20% small lime mortar inclusions.	0.3
109	Layer. A mid-brown yellow firm clay.	0.1
110	Land drain. Orange clay pipe.	Unknown
111	Field drain. 19th century ceramic field drain, with the base plate attached to the horse-shoe top. Backfilled by very dark grey fine sand silt clay.	Unknown
112	Cut of field drain. A linear, 'U' shaped cut with straight near vertical sides and a flat base, on a west-south-west/east-north-east alignment.	Unknown
113	Cut of field drain. A linear, 'U' shaped cut with straight near vertical sides and a flat base, on a west-south-west/east-north-east alignment.	Unknown
114	Masonr. Floor comprised light grey roughly hewn sandstone flags with a smooth upper surface, measuring between 0.59m by 0.50m by 0.07m and 0.33m by 0.21m by 0.07m in size.	Unknown
115	Foundation cut. Number allocated as construction cut for wall 114 , although upon further work 114 was interpreted as a flagged floor.	-
116	Void	-
117	Layer. A mid-yellowish brown soft fine sandy clay, with c 15% sub-angular and angular sandstone inclusions measuring between 5mm by 10mm in size and some brick fragments.	Unknown
118	Levelling layer. A firm sandy silt with c 90% angular red sandstone inclusions measuring between 0.7m by 0.4m and 0.01m by 0.01m in size.	0.23
119	Masonry. Cambered path comprised light grey brown medium sandy silt, with c 25% sandstone and 75% rounded pebbles.	0.3
120	An iron pipe, 45mm in diameter, which cuts all archaeological layers.	0.045
121	Linear cut for cast iron pipe 120 . Cut was not clearly visible in the soil horizon. On a north/south alignment.	0.045
122	Layer. A mid-bluish grey firm sandy silt, with c 70% oval pebbles and 30% angular sandstone inclusions.	0.1
123	Masonry. Cobbled surface comprised mid-reddish blue coarse sandy silt, with sub-rounded sandstone blocks forming a kerb, and c 90% sub-rounded sandstone forming a cobbled surface.	Unknown
124	Layer. A mid-yellowish brown soft clay, with c 70% stone and lime mortar fragments.	0.3
125	Construction cut. A linear flat-bottomed cut on a west-south-west/east-north-east alignment.	Unknown
126	Layer. A mottled light grey and mid-orange friable sandy silt with c 80% flecks and small fragments of highly degraded lime mortar.	0.08
127	Backfill of drain 145 . A mid-brown fine friable sandy silt with c 70% roughly hewn sandstone block rubble a maximum of 0.33m by 0.24m by 0.07m in size.	0.3
128	Masonry. Tumbled sandstone blocks measuring between 0.68m by 0.27m by 0.15m and 0.65m by 0.30m by 0.16m in size. These are largely dressed stone, being roughly hewn on one side, with tool/chisel marks on the upper visible face.	0.16
129	Layer. Demolition debris comprised mid-brownish yellow coarse sandy silt, with c 70% sandstone rubble and small sub-rounded stone inclusions.	0.4
130	Levelling layer. A mid- grey brown friable sandy silt, with over 60% sub-rounded and sub-angular sandstone blocks and angular	0.26

	inclusions, measuring a maximum of 0.60m by 0.39m by 0.1m in size, and less than 2% charcoal flecks.	
131	Demolition deposit. Red soft clayey sand, comprised 55% stone, and 45% clayey sand. The deposit measures 1.9x0.23m.	0.23
132	Deposit. A mid-brown brown soft clay sand, with <i>c</i> 70% small angular stone inclusions.	Unknown
133	Masonry. Floor comprised sandstone measuring between 0.45m by 0.45m by 0.03m and 0.15m by 0.10m by 0.03m in size. The stones were evidently originally squared but have been fragmented. The bonding material was a very dark grey fine sand silt clay.	0.03
134	Layer. A very dark grey friable sandy silty clay, with <i>c</i> 25% sub-angular stone inclusions measuring a maximum of 0.18m by 0.15m by 0.14m in size.	0.4
135	Same as 145 .	Unknown
138	Masonry. Wall foundation comprised red gritty hard tabular sandstone measuring between 0.51m by 0.28m by 0.08m and 0.12m by 0.10m by 0.08m in size, bonded by a dark grey clay. The wall measured at least 2.30m in length and 1.10m wide.	0.4
139	Levelling layer. A mid-grey brown gritty clay silt, with <i>c</i> 60% sub-rectangular sandstone inclusions measuring a maximum of 0.28m by 0.22m by 0.07m in size, less than 1% charcoal flecks.	0.3
140	Layer. Burnt deposit comprised dark brown grey, firm, fine sand silty clay with <i>c</i> 5% charcoal, 35% angular sandstone fragments a maximum of 0.20m by 0.10m in size.	0.2
141	Layer. Cobbled surface comprised <i>c</i> 85% sub-rounded stone measuring between 0.15m by 0.15m and 50mm by 40mm within a dark brown grey, firm, fine sand silt clay matrix.	Unknown
142	Layer. A firm dark brown clayey sand with <i>c</i> 20% small sandstone inclusions.	Unknown
143	Fill of 145 . Backfill over drain 144 comprised light grey clay with <i>c</i> 90% angular sandstone fragments.	Unknown
144	Orange horseshoe shaped field drain.	Unknown
145	Cut for drain 144 , on an east/west alignment	Unknown
146	Levelling layer. A soft mid-brown clay sand, with <i>c</i> 15% angular stone inclusions.	0.26
147	Layer. A grey brown coarse sandy silt with <i>c</i> 90% angular stone inclusions.	0.3
148	Same as 103 .	0.08
149	Layer. Cobbled surface comprised 90% sub-rounded stone measuring between 110mm by 20mm by 70mm and 18mm by 30mm by 20mm in size within dark orange brown lightly compacted coarse sandy clay and less than 1% charcoal flecks.	Unknown
150	Layer. Stone surface comprised 30% large blue grey sub-rounded stone measuring between 0.25m by 0.20m and 50mm by 50mm, and 30% angular sandstone measuring between 0.30m by 0.15m and 100x100mm Stones set within a mid-brown clayey sand matrix with charcoal inclusions.	Unknown
151	Same as 155 .	0.05
152	Same as 140 .	0.2
153	Layer. A grey brown soft clay sand, occasional sandstone inclusions a maximum of 0.01m by 0.01m in size.	0.2
154	Glacial till. A mid-reddish brown medium sand clay.	Unknown
155	Layer. Cobbled surface comprised 80% sub-rounded stone set in a mid-greyish brown coarse sandy silt,	0.05
156	Layer. Bedding deposit of 107 , comprised light yellow firm clayey sand.	0.08
157	Same as 156 and 163	0.08
158	Same as 171	0.04
159	Levelling layer. A firm mid-orangy yellow clay, with <i>c</i> 30%	0.05

	rounded stone inclusions.	
160	Layer. A soft grey brown clayey sand.	0.07
161	Layer. A soft grey brown clay sand, with <i>c</i> 2% charcoal flecks.	0.12
162	Same as 117	Unknown
163	Same as 156 and 157 .	0.08
171	Layer. Stone surface comprised <i>c</i> 60% sub-rounded stone measuring from 30mm to 0.17m in diameter within a firm mid-orange brown fine sandy clay.	0.04
172	Layer. A dark grey brown firm fine tacky clayey silt, with less than 1% charcoal flecks.	0.08
173	Fill of 174 . A firm dark orange brown fine sand silty clay.	0.30
174	Foundation cut. A linear cut, with straight near vertical sides on a north-north-west/south-south-east alignment.	Unknown
175	Layer. Small sub-rounded stone.	0.1

APPENDIX 3: FINDS CATALOGUE

MATERIAL	PERIOD	CATEGORY	NO FRAGS
Pottery	Roman		1
	Medieval		18
	Early Post-Medieval	‘Cistercian-type’ finewares	84
	Early Post-Medieval	Coarsewares	3
	Post-Medieval	17 th century yellow and self-coloured wares	20
	Post-Medieval	Coarser wares	13
	Post-Medieval	Dark-glazed earthenwares	157
	Post-Medieval	Mottled Wares	27
	Post-Medieval	Earthenware	33
	Post-Medieval	Stoneware	11
	Post-Medieval	Staffordshire pottery	32
Ceramic Tile	Medieval	Roofing tile	20
	Medieval	Floor tile	20
	Medieval	Decorative floor tiles	4
	Early post-medieval	Roofing tile	187
Ceramic and Other Building Material	Early post-medieval		168
Clay Pipe	Post-medieval		56
Vessel and Window Glass	Post-medieval to modern		84
Copper Alloy Objects	Post-medieval to modern		12
Ironwork	Undated		29
Lead Objects	Post-Medieval	16 th /17 th century cast spherical shot	43
	Undated	Other objects	37

Marine Molluscs	16 th to 17 th century		76
	18 th to 19 th century		19
Animal and Bird Bone	Medieval		49
	Medieval to 16 th /17 th century		9
	16 th to 17 th century		829
	18 th to 19 th century		131
	16 th to 19 th century		164
Worked Bone	Late 19th century	Handle	1
Other Objects	Early 20 th century	Telephone handsets	2

APPENDIX 4: SUMMARY CONCLUSIONS OF THE GEOPHYSICAL SURVEY (AFTER ARCHAEOPHYSICA 2009)

The following summary conclusions are derived from the report of the excellent geophysical survey undertaken by ArchaeoPhysica (2009; DWG 01). We are grateful for permission to reproduce them here. Only selected drawings from ArchaeoPhysica (2009) are presented in this Appendix.

ENVIRONMENT, SURVEY AND THE GROUND MODEL

In geophysical as well as archaeological terms Lathom is complex with quite different geophysical settings across the site. The core is heavily dominated by fills and buried structures to considerable depths, consequent upon the formation of a raised platform by Leoni upon which his building sat. Further north, away from the buildings, there are still substantial landscape features, mostly fill. Close to the house, the truncated remains of Leoni's forecourt survive. It is not until one is some 80m north of Leoni's platform that the 'natural' ground level is reliably reached but even here caution is needed because Repton had raised a pair of low wood banks to frame the vista northwards from the house.

In contrast, the south façade of Leoni's house appears to have been built pretty much at the contemporary ground level and although landscaping has occurred south of the house this has apparently been on a much more limited scale. Leoni's platform thus lent increased dignity to the house when viewed from the lower land to the south.

The geophysical environment therefore ranges from a rich mix of structural debris and the structures themselves to depths approaching 3m in some places to only about 0.5m in others. In other locations the soil profile is essentially natural with ploughsoil above clays and sands. This natural variation is not well understood; a divide between these two classes is understood to pass through the site but the scale of post-medieval landscaping alone has limited exposure to natural ground in many of the areas investigated. In geophysical terms, these materials are chalk and cheese with radically different properties and a soil derived from one will display differing electrical and magnetic properties of the ground differently from the other even if the same structures exist in both.

The use of LiDAR data by ArchaeoPhysica, in combination with a limited assessment of recorded depths of features and detailed examination of Repton's proposed landscaping has allowed a ground model to be developed that was not attainable during earlier surveys. This ground model, bolstered by the geophysical data, has meant that perhaps for the first time it is possible to see how the landscape has evolved away from the medieval form so important for locating contemporary features.

One immediate consequence is that it is now apparent that the search for the medieval defences in particular has arguably been within the areas where it is most likely to be deeply buried and therefore least easily sought by geophysical methods. However, it has also shown where the medieval surface is most likely to correspond to the present and indeed, where those areas have been prospected more encouraging results have been obtained. This includes the probable sweep of castle ditch buried south-east of the house at [7] and explains the apparent lack of detected ditch fills north of the West Wing (DWG 7).

In addition it is clear from historical references (Lewis 1999) that Leoni's building incorporated sections of the castle and that these were substantial and obviously had not been demolished after the Civil War. Previous excavations and chance discoveries suggest that extensive medieval structures existed below the forecourt level of Leoni's building, something confirmed by the 2009 excavations. While of limited relevance to the geophysical problem it does suggest that the medieval core can be located and that much remains preserved below later landscaping.

THE GROUND MODEL

It is fundamentally clear that in line with many neo-Palladian structures erected in the eighteenth century the engineering of the landscape was as major a construction as that of the house itself. That, combined with the ravages inflicted upon this by the naturalistic movement pioneered by Kent and its later implementation by Brown and, at Lathom, Repton means that any attempt to find an earlier landscape based upon textual descriptions only is unlikely to succeed.

Formation of the model has been driven by examining landscape change in reverse temporal progression, looking at why the present landscape exists and how that fits within less modified topographies away from the structural core. By doing this, it is possible to draw out particular structural themes common to the work of Repton and the neo-Palladians before him and identify how these combined to create the present landscape. This basic logical system has then been compared with evidence from the four different geophysical techniques brought to bear, LiDAR generated topographic data and the results of excavations past and present, checking overall validity and confirming what the topography seems to show.

There is a question of scale; ArchaeoPhysica has looked at this from a geophysical landscape perspective rather than an archaeological and hence the model is fairly coarse and seeks only to provide basic context. It could be substantially improved in a spatial sense through incorporation of detailed excavation data and of course further investigative work at the site. The model itself has three main phases: Leoni's house and platform, Repton's platform and landscape modifications and modern filling.

Leoni: the earliest of the modelled landscaping events was the construction of Leoni's house upon the site, and was the biggest single cause of relative invisibility of the medieval landscape today. The neo-Palladian movement was heavily concerned with setting and scale and the need to match these to the outlook of the intended owner. There is no doubt, judging by the scale of Leoni's composition, that his works here should be regarded as a major undertaking, not only creating a new dwelling from the remains of the old but also ensuring that it made the right impression upon the landscape. The earlier landscape seems to have been incidental; there appears to have been no conservative ethos at work here.

At this stage it is helpful to consider where the natural ground level appears to be / have been. The area covered by the LiDAR data extends beyond any significant landscaping associated with Repton or Leoni and as already observed at a point approximately 80m north of the West Wing the ground seems unaltered with elevation 46m OD. South of the house the field level is variable but appears to be at a natural height of about 52m OD, dropping about 0.5m off the garden plat edge [9] to the east (DWG 01). Overall therefore the ground rises southwards by approximately 6m in 220m, in the vicinity of the house itself apparently a fairly constant slope.

This of course is no longer evident within the complex of structures due to landscaping; however, it is apparent in the depths of burial of medieval structures at the site. Those found roughly east of the house itself are only about 0.5m below the present surface, however, further north, around the site of the East Wing they are buried up to 2.5m down beneath re-deposited materials associated with the construction of the East Wing (and by association the rest of Leoni's complex). At a distance approximately halfway along the 220m distance stated above this depth is about what would be expected.

The medieval structures seem therefore to have been built upon the natural ground level and subsequently buried by Leoni who, as the LiDAR data makes very clear, constructed a broad level platform rising above the ground to the north above which his building rose. The platform itself has its top at approximately 51m OD although later changes have slightly obscured this. It measures approximately 200m east to west and is symmetrical about the house itself with its eastern edge bounded by a wall found in 2009 buried within the artificial slope [6] (DWG 07). The northern edge is basically the north wall of the West Wing and the southern is undefined, being the natural ground level but giving a width north to south of approximately 110m.

The ground beneath this platform can be basically modelled as a wedge of fill above the medieval surface, reaching a maximum thickness of approximately 3m below the northern edge of the platform and tapering to nothing at the southern.

North of this platform was a second one, narrower and again symmetrical about the house, supporting a large forecourt illustrated by Repton but which has long since been removed. It measured approximately 90m east to west and about 55m north to south, raised slightly above the natural surface to the west but broadly level with the land to the east. It is not known whether the interior sloped but it would seem to have sat a little below the level of the main platform and, depending upon the accuracy of Repton's paintings, perhaps no more than 2m above the ground level to the west at its northern edge.

The forecourt itself was raised above the western ground level and therefore may have buried medieval structures beneath it. It is also another area of originally filled ground, now partly truncated on Repton's advice to form the present slope down to the north. The position of the western edge [3] survived until recently as a low bank, and it is also apparent in the LiDAR data as a distinct change in slope (DWG07). Although this wall is an eighteenth century structure, it is significant, as it seemingly continues the line of the medieval curtain wall found beneath the West Wing (S Baldwin pers comm), and presumably was built upon medieval footings. It was therefore perhaps the longest surviving indication of the location of medieval fabric, providing a convenient retaining wall to support Leoni's forecourt.

Adjacent to this wall was found the top of a large ditch, assumed to be the defensive ditch of the medieval structure. Rather conveniently, the top of this appeared about 3m below Leoni's platform and where the ground model would predict the older ground level to be. This level changes by about 3m north to south within the 110m of Leoni's platform and depending upon the northwards extent of the ditch, perhaps by another 1m or so.

Repton: the second major change was the implementation of Repton's suggested alterations to the immediate environment of the house. To what extent these were carried out has in the past been unclear, however, examination of the LiDAR data combined with matching his before and after views of the north front with the present topography has to some extent resolved this. His scheme for this front was carried out, ie Leoni's forecourt

was removed and its slight platform cut away to create the present smooth slope bounded by wood banks running away from the house. These survive as low ridges [1] and [2] apparent in the LiDAR data bounding an area where the direction of slope has been turned to align with the view from the house (DWG 07).

There is therefore a zone of truncated Leoni-era fill, once beneath his forecourt, extending about 54m north of his house platform. A slight change of slope combined with matching Repton's views to the ground seems to confirm this distance. Beyond this, Repton's suggestions seem to have resulted in a slight modification (re-grading) of the pre-Leoni ground surface but by 80m north it would appear that the present surface is essentially natural and therefore likely to reflect the medieval form.

The effect of this truncation seems to have been the loss of about 1m of ground at the point of greatest change approximately 60m north of Leoni's house platform and approximately where the lone tree now stands north of the West Wing. However, this was ground raised by Leoni to support the forecourt and Repton's 'before' painting shows clearly the slight step up to this from the lower ground to the west. This step survived in smoothed-out post-Repton form until recently when it was buried during the recent renovation, as demonstrated by a 1998 photograph.

At no point do the Repton-inspired changes north of the house seem to have penetrated significantly below the natural ground level, their intended effect being merely to remove the architectural form superimposed upon the landscape here by Leoni. They also appear to be constrained within a band no wider than 140m centred on the house, in effect, as shown by his 'after' paintings, the width of the vista to be seen looking north from the house itself.

Modern Landscaping: the latest phase the effects of the modern reconstruction, mainly levelling of areas and a large amount of filling north-west of the West Wing. Preceding this is of course a period of abandonment but there is no evidence to suggest this had an affect upon the topography and before that there is a period of Victorian alternations but again this appears to have little effect, except to the south of the house where a garden platform [9] and [10] may have been removed at this date (DWG 07).

Conclusion: the ground model therefore has a number of parts, each with a different evolutionary history and hence the mix and depth of materials present. They can be summarised thus:

- The southern field, basically natural ground into which features have been cut and with some low landscaping in the area of the garden platform
- Leoni's platform, containing up to 3m of re-deposited natural and other materials including sand, clay and rubble, above the medieval ground level which is apparently also the level of the garden to the east
- The partly truncated site of Leoni's forecourt, presumably of similar construction to the platform with the deepest fills along the southern edge but probably severely truncated on Repton's suggestion for much of its northwards extent. Again it rests on the medieval level
- An area north of Leoni's forecourt situated between Repton's wood banks where the ground slope of the ground has been turned to fall away from the house rather than the natural oblique angle. The banks are obviously fill material but the land between has probably been re-graded slightly rather than anything more significant

- The ground to the west of Leoni's forecourt and Repton's wood banks and also from about 80m north of Leoni's platform is where the medieval topography probably survives as the present surface. The exception to this is the ground immediately north-west of the West Wing which has recently been raised to match the post-Repton Leoni forecourt level
- East of Leoni's platform and east of Repton's eastern wood bank the ground level appears to be 'natural', i.e. approximately the medieval surface.

GEOPHYSICAL MECHANISMS

Electrical resistance / EMI quadrature conductivity: electrical resistance variations are fundamentally a measure of moisture content, itself a function of hydraulic potential and for shallow investigations, soil porosity. Like magnetic survey it is not a direct measure of the presence or absence of archaeological features. The measurement is strongly weather dependent with response varying seasonally and during abrupt changes during and after rainfall. The reasons for this are complex but reflect the differing ability of materials to absorb and subsequently retain soil moisture; a open-textured fill may saturate more quickly than the surrounding material but will also drain more quickly and therefore its relative electrical resistance can change from below to above background.

When resistance or, more accurately, its inverse (quadrature conductivity) is measured by an electromagnetic device, extra factors are involved that affect the propagation of the electromagnetic wave in the ground. The devices usually have a lower spatial resolution and respond to a different volume of ground than probe based electrical resistance arrays. An oscillating electric current is induced into the ground which will either dissipate through the soil if conductivity is high or retain current sufficient density to re-emit a secondary wave detectable at the surface. The separation of the transmitter and receiver coils of the instrument governs the depth of investigation and for the EM31 MKII a 4m separation gives up to 6m penetration.

Strong variations close to the surface will influence the data more than deeper ones; however, a deeply buried variation can produce a strong response if the ground above is relatively uniform. However, small variations with the search volume will not normally be detected except in the case of metal, also complex stratigraphies will not be well represented. At Lathom this means that although penetration into fill, e.g. the Leoni platform, will be good, any strong changes in the electromagnetic character of that fill would potentially unduly influence the measurement relative to deeper more interesting materials. This appears to be the case to the north-west of the West Wing where modern fill has obscured what should be a sizeable contrast between the ditch fill beneath and the material into which the ditch has been cut and again in the vicinity of Repton's wood banks.

Complex intercutting deposits, with significantly differing materials, will present a wide range of possible paths for an electric current, although in practice some current will flow through all conductive materials. This imparts fuzziness to surface measurements and the coarser the survey resolution the less representative the measurement will become.

Penetration into conductive materials is limited, with clay being far more conductive than sand and thus easily differentiated from it. This can be seen within the eastern edge of Leoni's platform where the clay ground is significantly more conductive than the mixed sandy fill of the bank [6] east of the retaining wall (DWG 07).

Most variations in ground structure are associated with a fairly smooth variation in moisture context around them; hence a narrow structure with high resistance contrast will normally produce an anomaly of significantly greater spatial extent. This can mean that trends in resistance data often reflect much smaller and more definite changes in structure; however, there is not necessarily a direct relationship. An impervious wall can trap moisture uphill producing a strongly reduced resistance anomaly alongside it, sometimes stronger than any anomaly associated with the wall itself. With increasing distance uphill this reduced resistance would disappear, but the result is an anomaly that would not be expected from the simplistic model based on the wall in isolation.

Ground Probing Radar: radar is again an electromagnetic technique but operating at a much higher frequency than that used for EMI survey where the beam of radiation behaves more like light and induces only a limited secondary field in the ground. Propagation, refraction and deflection of the beam depend upon the electrical permittivity of the ground, different materials exhibiting different relative dielectric permittivity (RDP). A change in RDP creates a partial reflection at the interface, the size of which is proportional to the size of the change. The physical size of the change is also important and if it is gradual relative to the wavelength of the electromagnetic wave, then there will be little or no reflection. Interfaces less than one quarter of a wavelength apart cannot be resolved as discrete reflections.

For the wave to remain stable in the ground and thus propagate, the ground must be neither electrically conductive nor strongly magnetic. In practice, all soil is conductive to some extent and hence dissipation of the energy of the wave as electric currents is inevitable, limiting penetration. The 270 MHz antenna used at Lathom has an average penetration of between 2.5m and 3.5m on average soils; in very dry soils or sand penetration can be higher and in wet or clayey soils penetration can be substantially less. To increase penetration a lower frequency must be used but with this comes an increase in the wavelength and hence reduced resolution. The strongest contrasts tend to occur between clay and other materials and between intrinsically dry structures like masonry and the surrounding soil. A transition between air and soil produces the strongest reflection.

INTERPRETATIVE FRAMEWORK

EMI quadrature conductivity interpretation: in general the response is similar to a deep penetrating electrical resistance survey, albeit at a fairly coarse resolution. The intention at Lathom was to seek just the ditch itself, utilising the penetration of the EM31 rather than seeking sufficient horizontal resolution to image masonry for example. In theory, a ditch fill with moist lower deposits should contrast well with the rock into which it is cut. The alternative situation, where rubble in the ditch was above wetter deposits, would in theory contrast with the soil to each side so in either case some sort of anomaly would be expected. As a basic prospection tool this should be adequate to map out the likely line of the ditch and to some extent this has proved to be the case.

Ground probing radar interpretation: the idea behind the radar was simply to assess whether it was possible to use this technique to locate deeply buried masonry and perhaps the ditch fill if penetration was adequate. However, the depth of post medieval fill above these features north of the West Wing (which is the only location in which they are known to exist) was too great to image through, although the detection of the likely wall

lower down the slope where the fill is much thinner demonstrates the technique to have potential at Lathom.

ARCHAEOLOGICAL SUMMARY

At Lathom the archaeological interpretation of the data is holistic and depends as much upon the LiDAR, excavation data as upon the geophysics. DWG 08 (Fig 14 of this report) essentially draws together everything that is known about the major structural phases of the site, not least the almost proven western circuit of the medieval defensive ditch and curtain wall. A key result, confirmed by rather than driven by the geophysics has to be the ground model as this provides a framework within which everything else can be fitted. A small number of specific findings are discussed below.

Radar result: the most significant discovery has to be probable wall [16] which in this location and given its thickness (2m +) seems likely to be the medieval curtain itself (DWG 07). It is likely continuous with the section beneath the West Wing but the large depth of Leoni-era fill between this and the radar reflection seems to have effectively masked it. The radar result does confirm the ground model in that it is only some 40m north of Leoni's platform that the fill becomes thin enough to image through, i.e. the medieval ground level is closest to the modern surface.

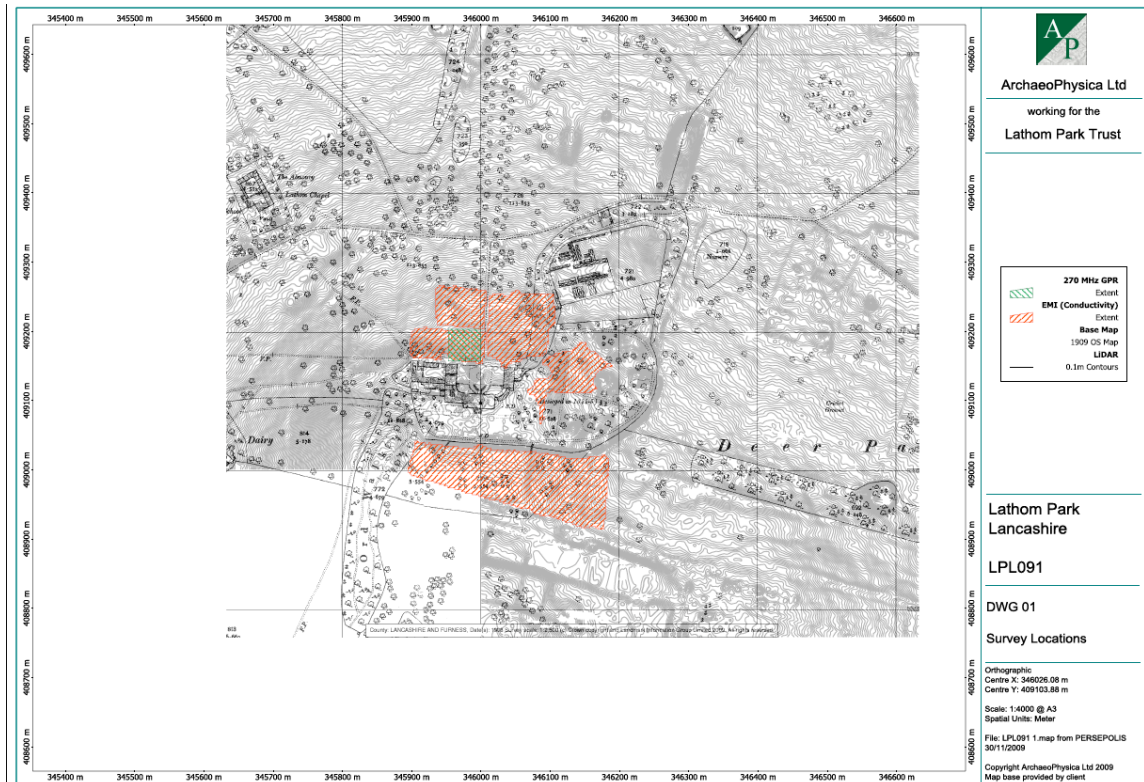
Within the radar data there are linear reflections that correspond to known services as well as others, e.g. an east to west linear north of [18] that seem to correspond to an earlier drive (DWG 07). These have not been explored in detail as the emphasis has been placed on locating medieval elements of the structure and thus demonstrating the potential or otherwise of GPR in this context.

EMI result: the EMI quadrature conductivity result was not as useful as hoped due to interference from services and again the depth of fill over parts of the site. However, several useful diagnostic results were obtained. Repton's wood banks, surviving as low earthworks, are associated with low conductivity regions that might suggest they contain rubble, perhaps from demolished Leoni-era structures.

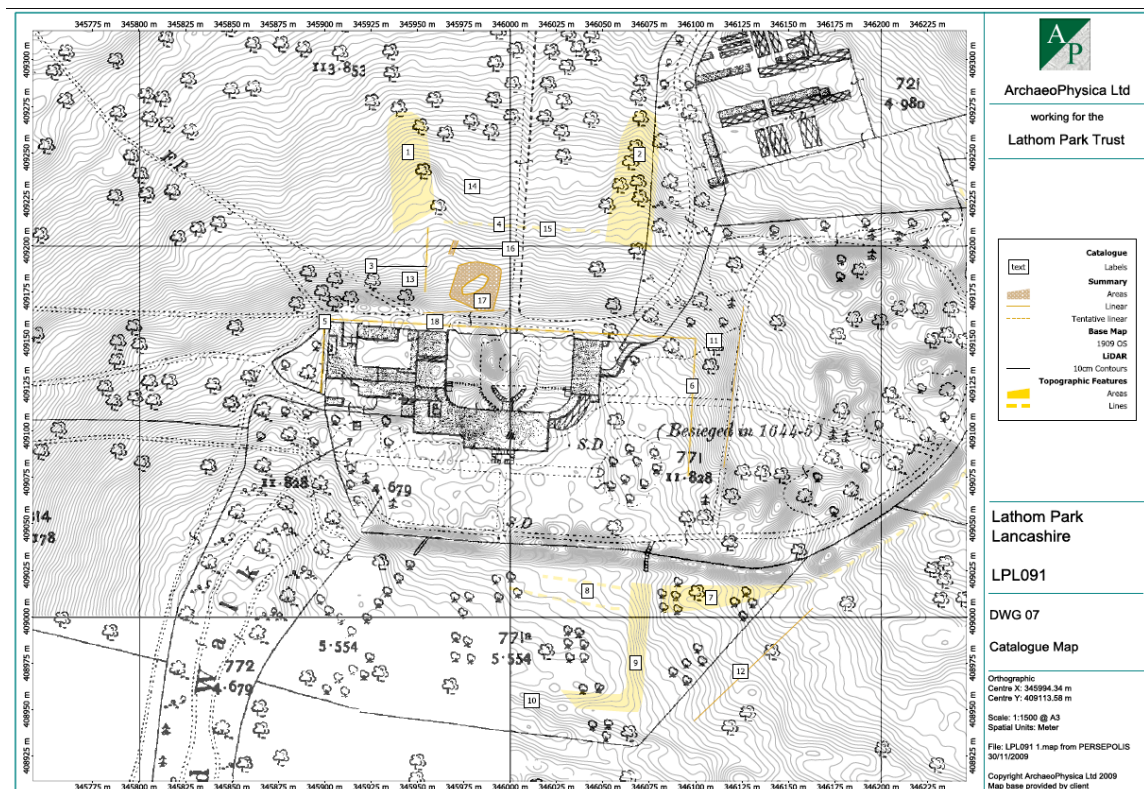
The clay within Leoni's platform, seen in excavations in 2009 immediately west of what appears to be his retaining wall beneath bank [6], exhibits the expected low high conductivity in clear contrast to the sandier fill to the west (DWG 07).

There is also a band [7] of slightly higher conductivity south of the east garden that continues the curve of the eastern section of Ha-Ha (DWG 07). Circumstantially at least, and taking into account the absence of any other evidence for the moat it seems likely that this is the fill of the moat. It would be expected to be more visible here than elsewhere because there is little (0.5m or less) or no later fill above the medieval level. Possible confirmation of the line westwards is a slight topographic expression [8] and with the eye of faith, a slight conductivity anomaly that between them extend nearly to where the ditch was seen by excavation south-west of the house (DWG 07).

North and west of the house there are large trends in conductivity that relate to landscaping. The most interesting is an increase in conductivity northwards from the house as Repton's fill thins and the site of Leoni's forecourt is passed. This probably corresponds to increasing penetration into the wetter natural soils beneath fill deposits as the latter thin.



DWG 01 Survey Locations



DWG 07 Geophysical Survey Catalogue Map

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- Plate 22: 'After' image of proposed view from Lathom House, taken from Repton's red Book' of 1792, showing low wooded banks

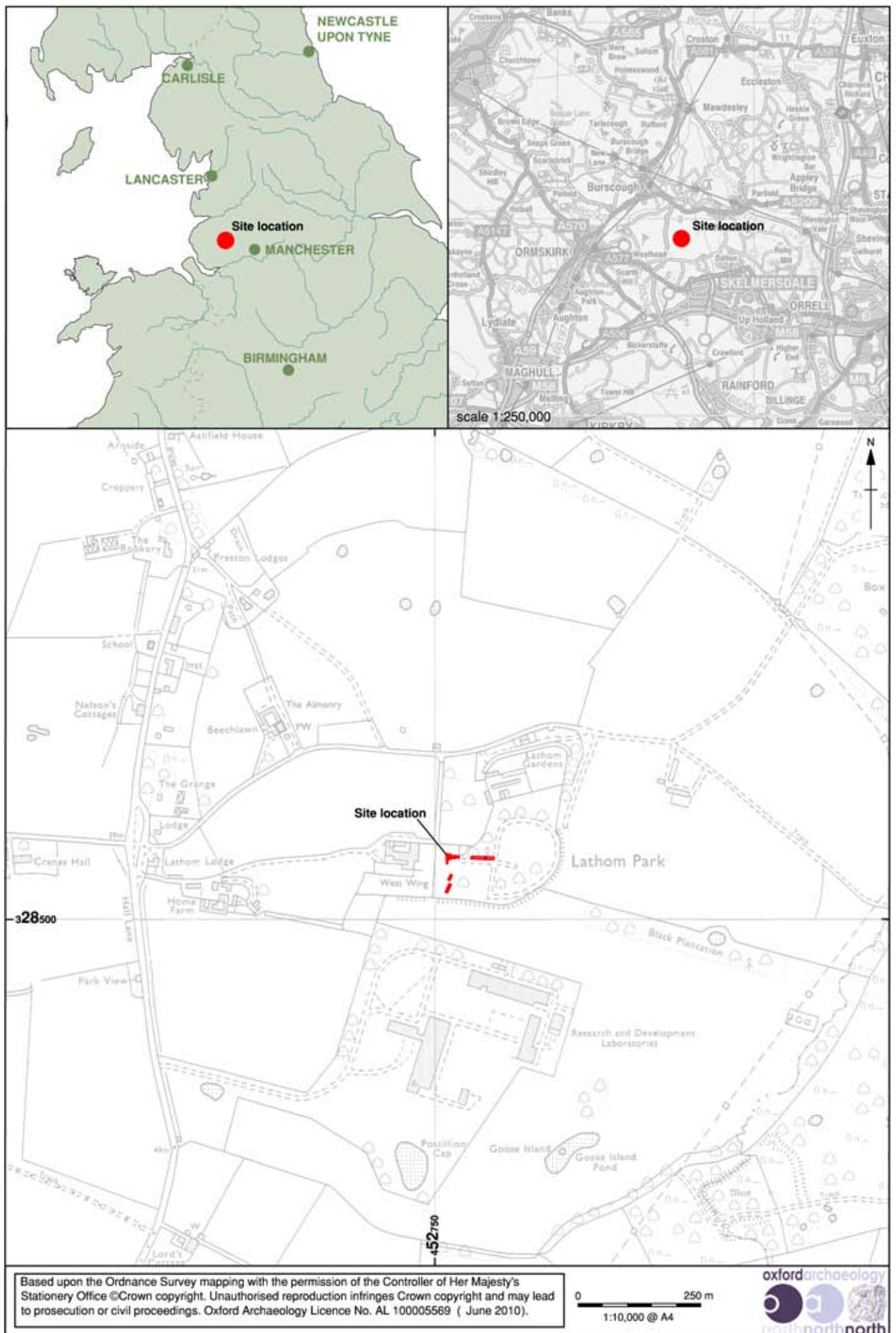


Figure 1: Site location

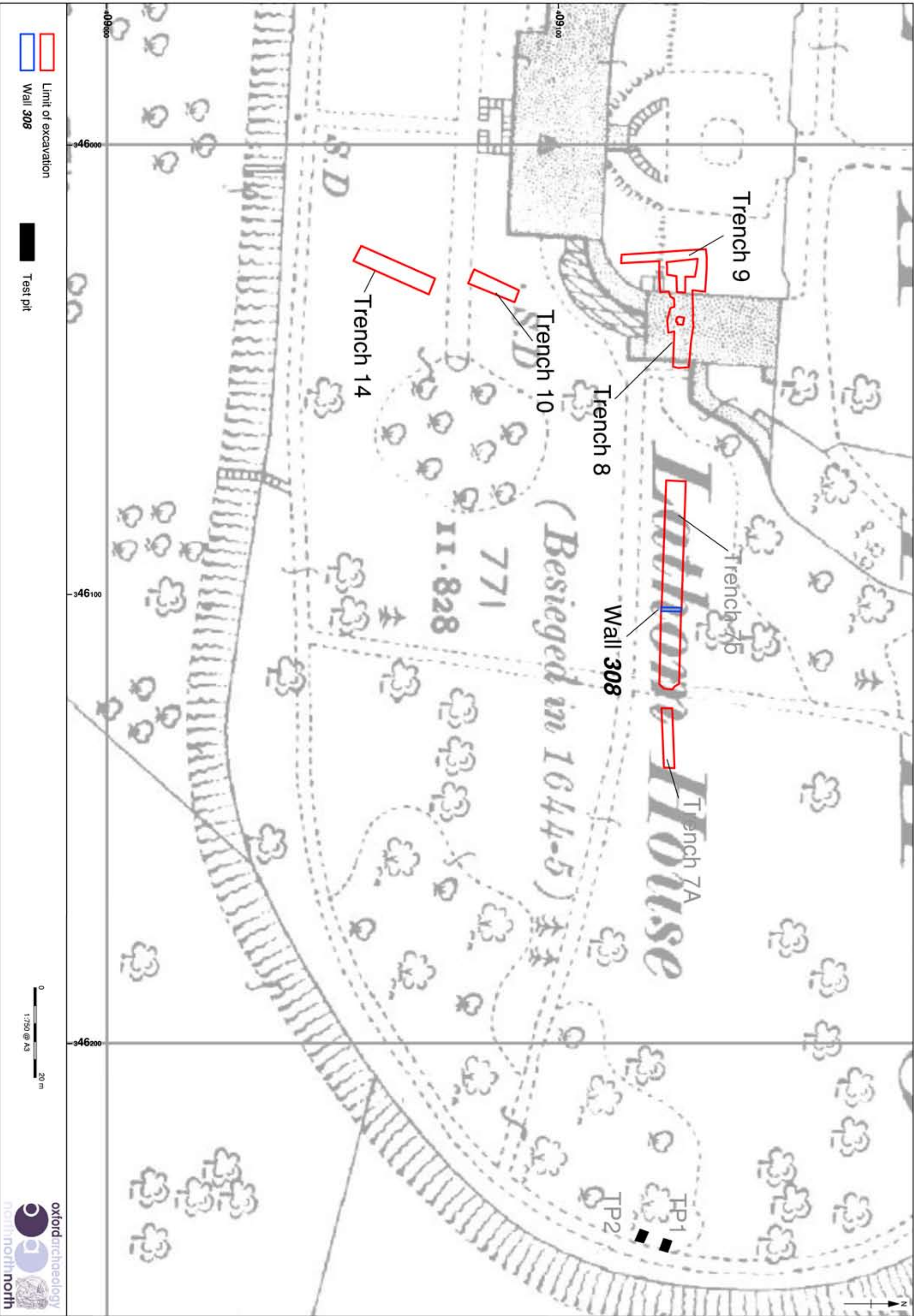


Figure 2: Trench location plan

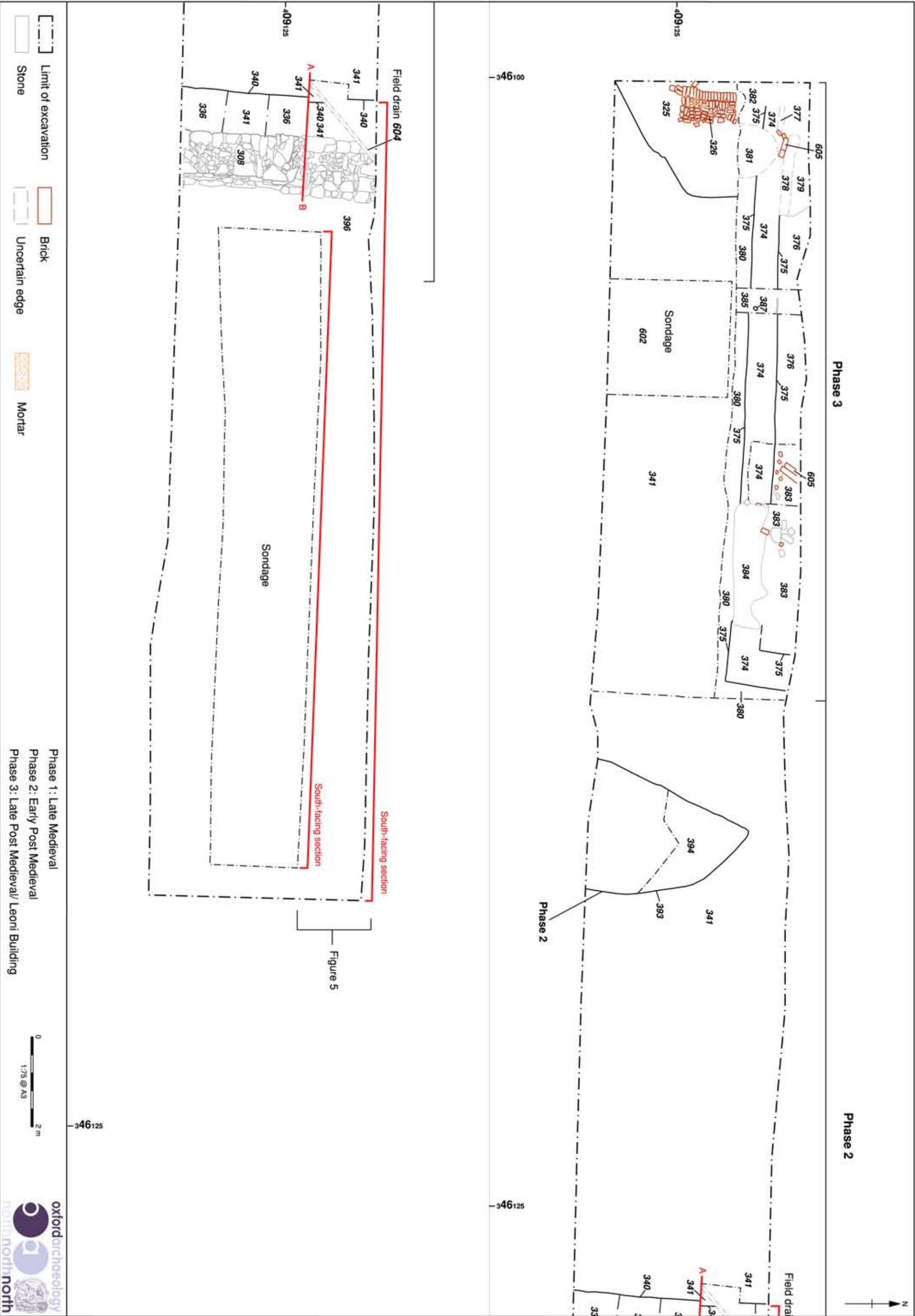


Figure 3: Plan of Trench 7b

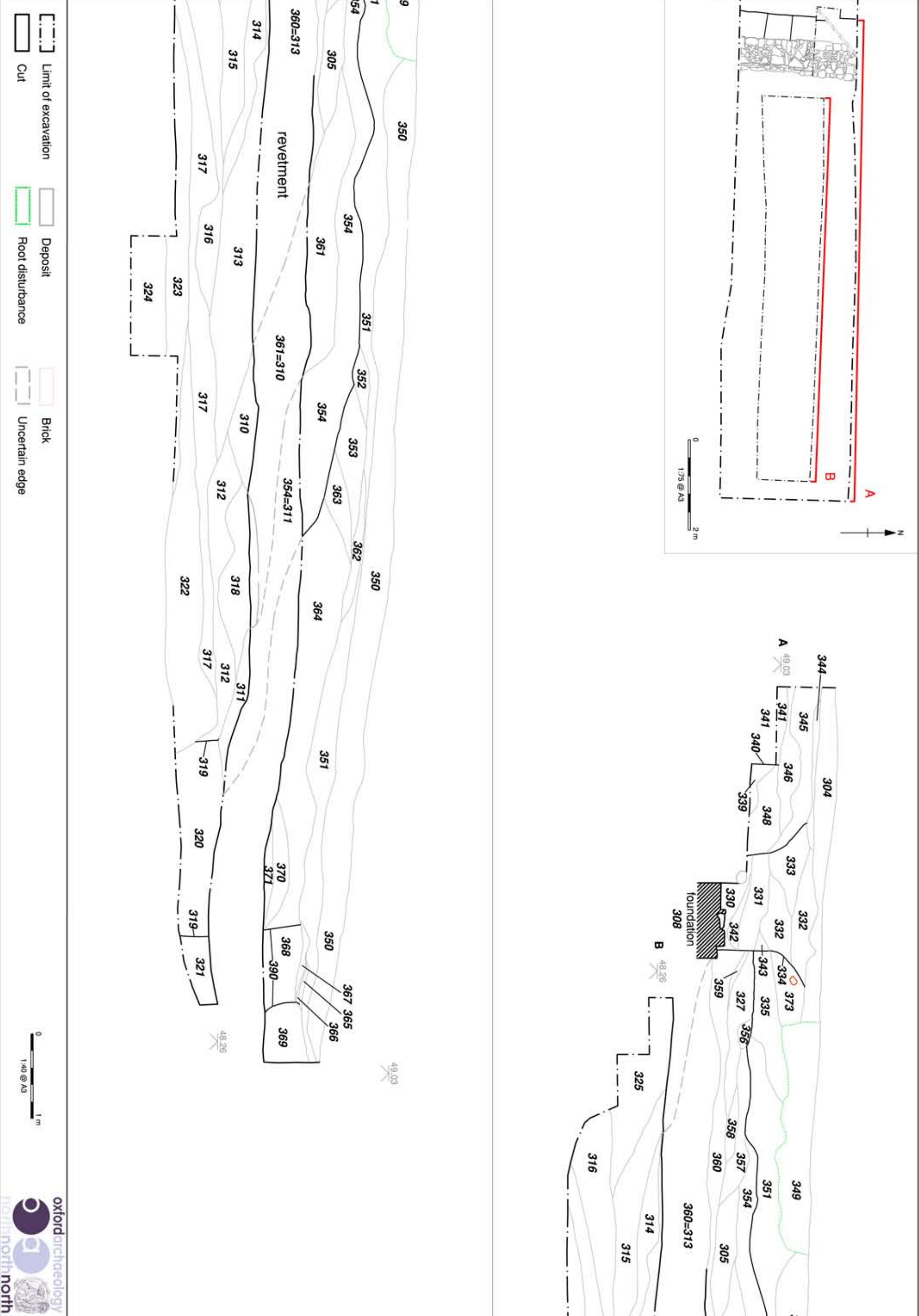


Figure 4: South-facing section of eastern end of Trench 7b, with south-facing section of eastern sondage below

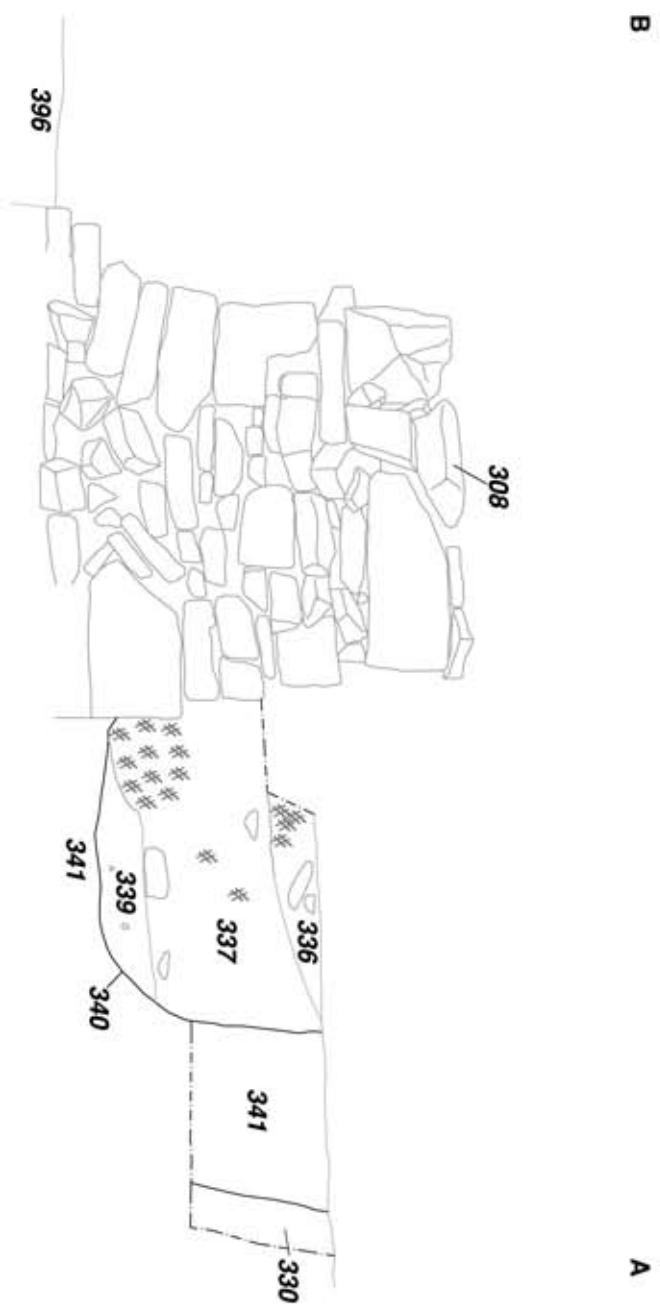


Figure 5: North-facing section through wall 308, of Trench 7b



Figure 6: Plan of Trench 8

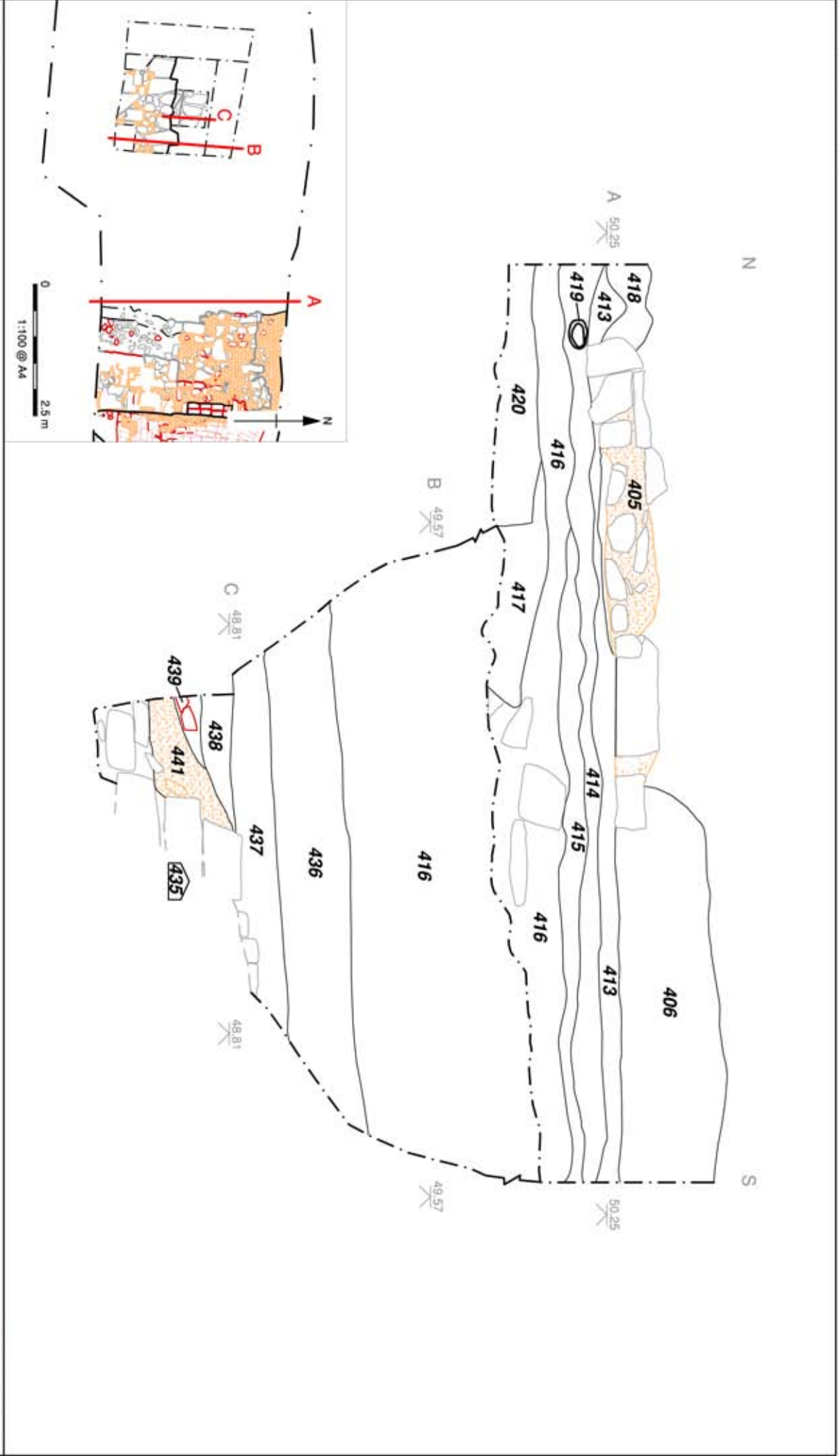
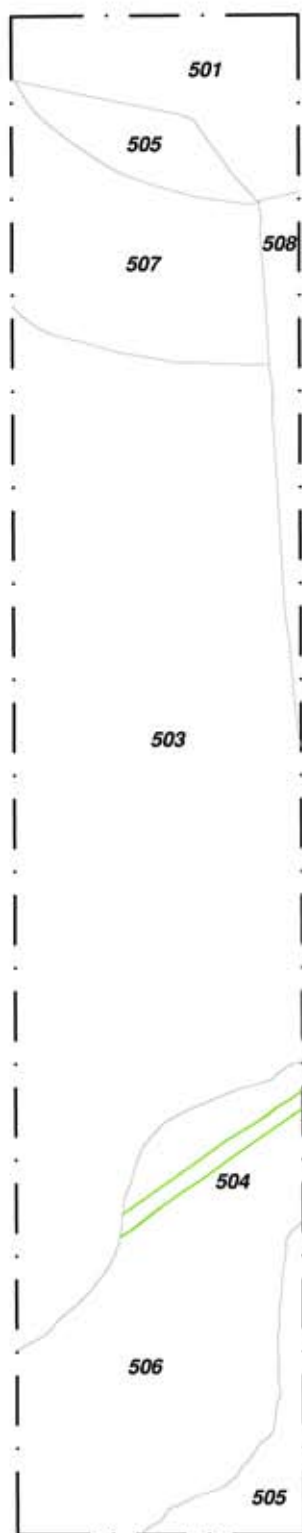


Figure 7: West-facing section of Trench 8 through the East Wing foundation





Figure 9: West facing section through drain **SG242**, of Trench 9



 Limit of excavation Field drain
 Deposit

0 1 m
 approx. 1:50 @ A4

Figure 10: Plan of Trench 10, based on measured sketch



Figure 11: Plan of Trench 14

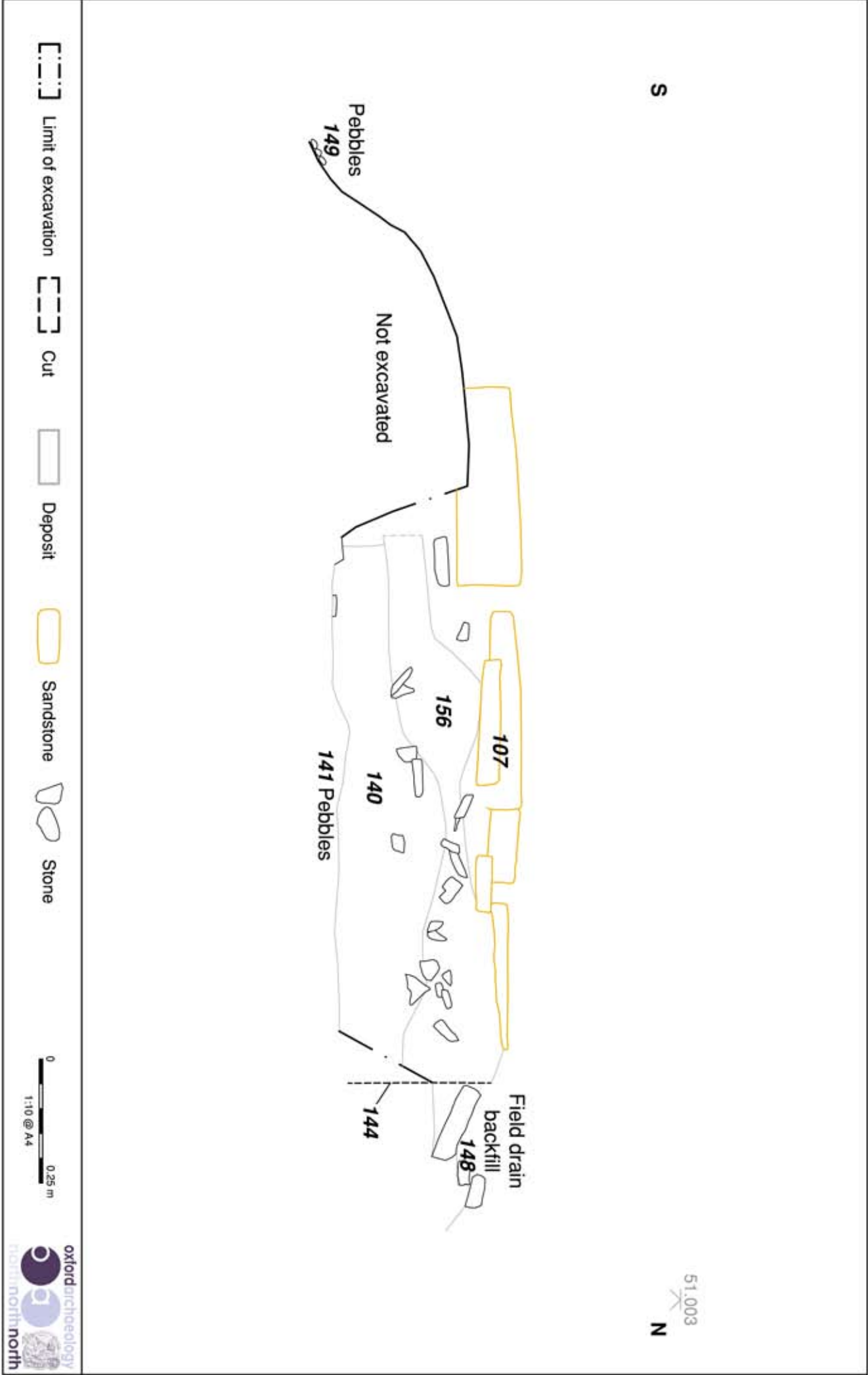


Figure 12: East-facing section of medieval cobbles and soil horizon, **141** and **140**, and sixteenth-seventeenth-century levelling and stone flags, **156** and **107**, of Trench 14

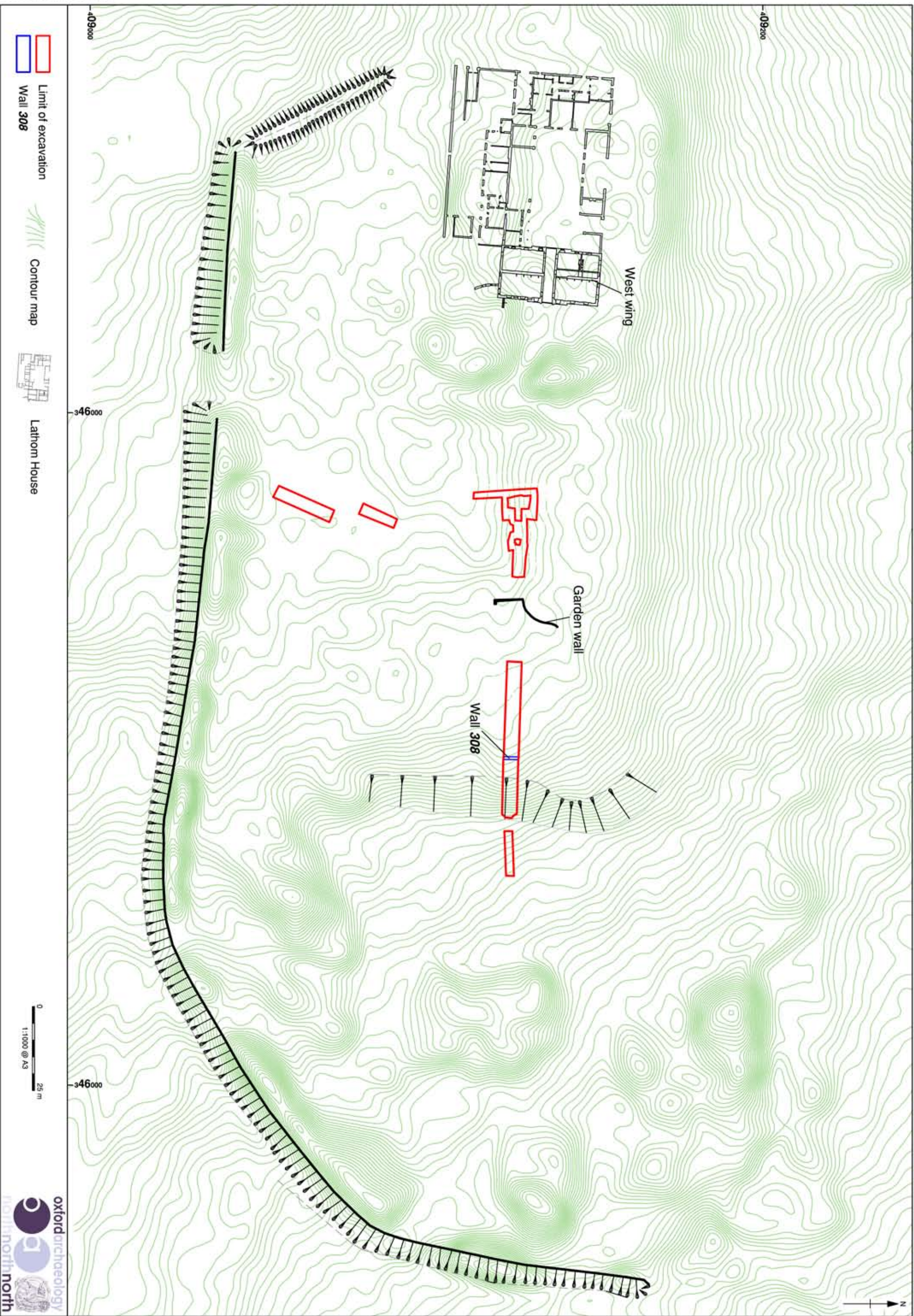
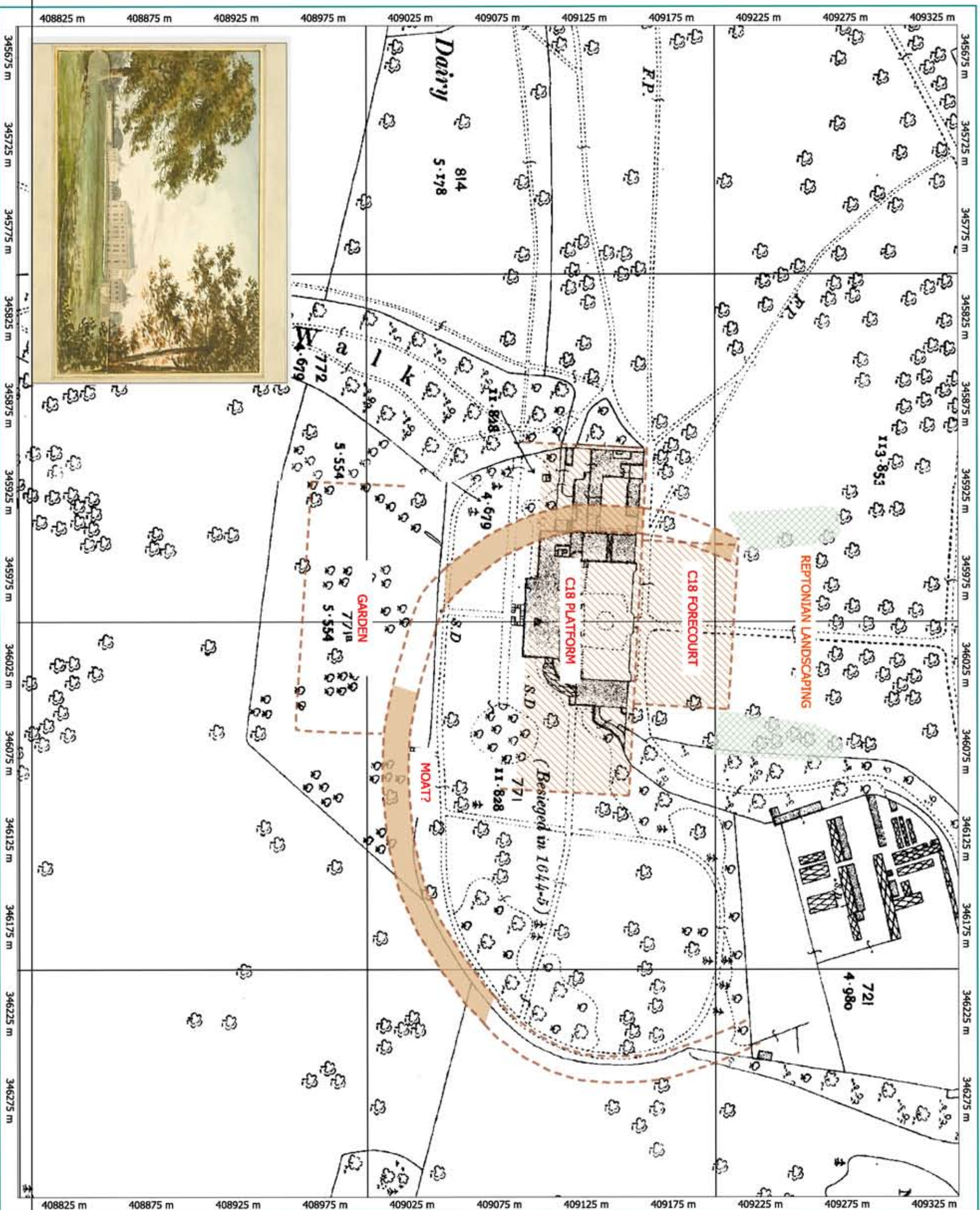


Figure 13: Digital Elevation Model (DEM) produced from LIDAR and Geophysical data, ArchaeoPhysica Ltd (2009)



ArchaeoPhysica Ltd

working for the
Lathom Park Trust

Lathom Park
Lancashire
LPLO91

DWG 08 Summary of Major Landscape Elements from LIDAR & Geophysical Data

Orthographic
Centre X: 345983.91 m
Centre Y: 409068.77 m
Scale: 1:2000 @ A3
Spatial Units: Meter
File: LPL091 1.map from PERSEPOLIS
30/11/2009

Copyright ArchaeoPhysical Ltd 2009
Map base provided by client



Plate 2: Trench 7a, looking east



Plate 3: Trench 7b, sondage at the western end of the trench, looking east



Plate 4: Trench 7b, sondage at the eastern end of the trench, looking north-east



Plate 5: Wall **308** within Trench 7b, looking south-west



Plate 6: Foundation **435** in Trench 8, looking east



Plate 7: Foundation **431** in Trench 8, looking north



Plate 8: Foundation/wall **404**, brick floor **403** and drain **408** in Trench 8, looking west



Plate 9: Flagstone floor **294** in Trench 9, looking east



Plate 10: Sixteenth/seventeenth century walls and floor surfaces of Trench 9, looking south



Plate 11: Stone trough/sink **277** and entrance to drain **297** of Trench 9, looking south



Plate 12: Stone **265** and other deposits within southern intervention into internal floor of building located in Trench 9, looking east



Plate 13: Drain **SG242**, as located in original evaluation Trench 9, looking east



Plate 14: Extended area of Trench 9, showing eighteenth century levelling deposits in the sides of the trench, looking north



Plate 15: Trench 10, looking south



Plate 16: Trench 14, looking south



Plate 17: Trench 14, looking north



Plate 18: Medieval cobbled surface **141** and **149** in Trench 14, looking west



Plate 19: Cobbled surface **123** and path **104** in Trench 14, looking south



Plate 20: Foundation **106**, with tumbled stones **128** and flags **133** to right, of Trench 14, looking west



Plate 21: Flagstone floor **107** of Trench 14, looking east



Plate 22: 'After' image of proposed view from Lathom House, taken from Repton's 'Red Book' of 1792, showing low wooded banks