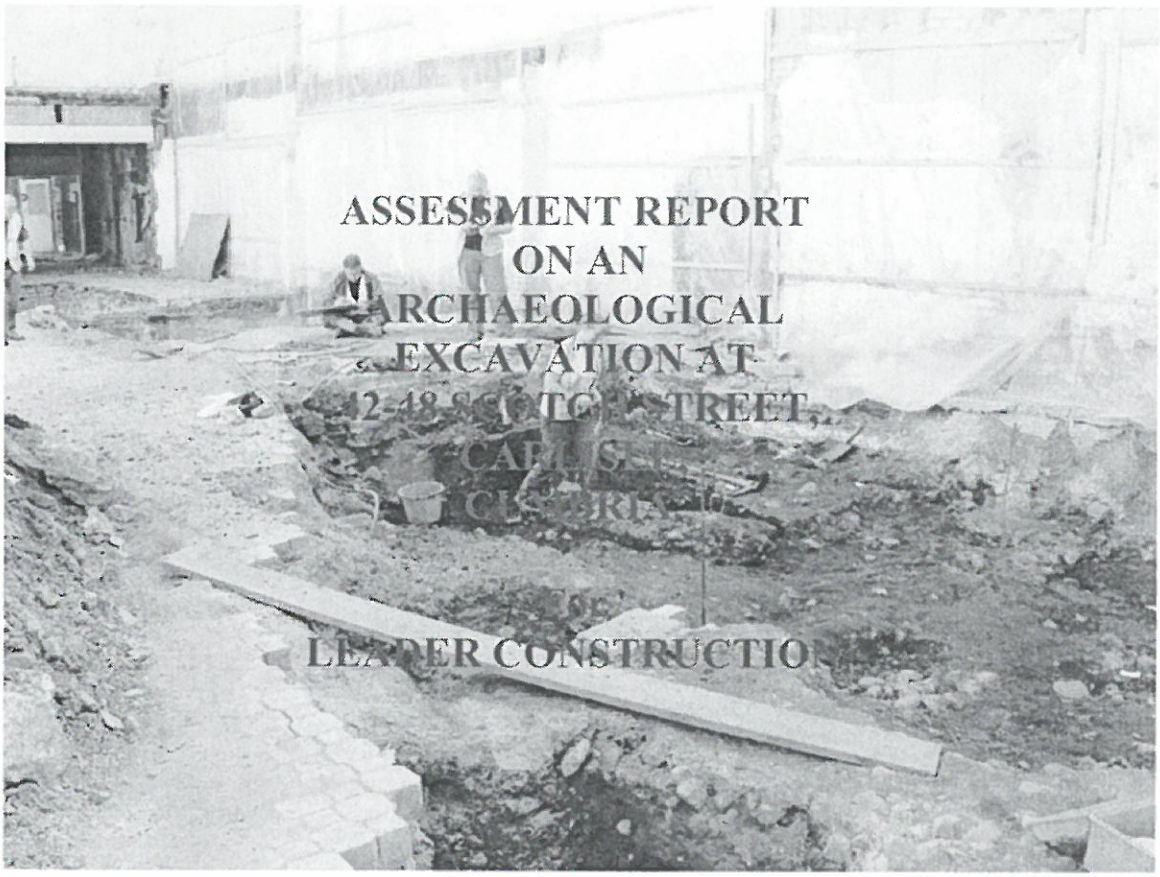
NORTH PENNINES ARCHAEOLOGY LTD

Project Designs and Client Reports No. CP/51/03



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Et al

29th November 2004

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NON TECHNICAL SUMMARY

Between the 7th of April and the 10th of July 2003 The North Pennines Trust, now North Pennines Archaeology Ltd, undertook a programme of archaeological works at 42-48 Scotch Street, Carlisle, in advance of building redevelopment. Multiple phases of archaeological activity were identified, possibly dating from the prehistoric period to the present day.

The earliest major phase of activity recorded on the site could relate to the putative *praetorium* recorded in previous excavations carried out by the former Carlisle Archaeological Unit during the northern Lanes excavation. Following the disuse and demolition of these substantial buildings a sequence of three low status probable agrarian buildings were constructed and the area became a backwater of Carlisle in the late Hadrianic/early Antonine period.

The rectangular timber buildings were constructed alongside a minor track way and probably related in some way to the more salubrious buildings identified in previous excavations, to the south (SCO-C) and to the north (MKT-C). The area exhibited a continuity of use throughout the late 2nd century to the 4th century, with limited agrarian activity, which may have included the butchering of livestock.

Following the late Roman period a sequence of two buildings was identified. These buildings have proved exceedingly difficult to date and could stratigraphically be placed anywhere between the late 4th century and 12th century.

The medieval sequence, broadly defined by the re-appearance of pottery, begins in the early 12th century and involved the cutting of numerous rubbish pits throughout the site. The most significant medieval activity present on the site was defined by a series of 14th century pottery kilns. Although heavily truncated these kilns represent the only medieval pottery kilns discovered within Carlisle. The kilns went out of use by the late 14th century and the site was covered with numerous rubbish pits, presumably associated with buildings fronting Scotch Street. No remains survive of these buildings as the frontage area was cellared.

In the late medieval and early modern period the area witnessed very little activity and appears to have been set aside as gardens. One possible property boundary, possibly the precursor to Tower Lane along with two wells were excavated in the area. The next major phase of activity corresponded to the late 18th /early 19th century redevelopment of Scotch Street.

CONTENTS

Page

CONTENTS

LIST OF FIGURES

Page

LIST OF PLATES

LIST OF TABLES

LIST OF APPENDICES

Page

1 ACKNOWLEDGMENTS

1.1 Thanks must go to all the contractors of the North Pennines Heritage Trust and the staff of Thomas Armstrong, without whose patience and enthusiasm the project would not have been the great success it was. On site work was carried out by Frank Giecco, Chris Jones, Chris Jones, Sarah Morton, Dan Miller, Ken Denham, Laura Scott, Gill Kirkley-Allsop, Fiona Wooller, Kevin Mounsey, Faye McNamara, Joanne Beaty, Patricia Crompton and Philip Cracknell. Fay McNamara and Joanne Beaty processed the finds, and Jennifer Jones of Durham University carried out the conservation assessment. The environmental assessment was carried out by Patricia Compton. Juliet Reeves carried out the final edit of this report.

2 INTRODUCTION

2.1 North Pennines Heritage Trust (now North Pennines Archaeology Ltd) was commissioned by E C Harris to carry out an archaeological excavation on land at 42-48 Scotch Street, Carlisle. The work was carried out between the 7th of April and the 11th of July 2003.

2.2 This work followed a desktop study carried out by LUAU in 2001 (Report number 200-2001/097/AUA8172). E C Harris prepared the archaeological brief. The brief required an intensive watching brief over an area of approximately 19m by 8.3m, followed by the total excavation of archaeological deposits down to a formation level of 19.43m OD. Removal of modern surfaces across the remainder of the development site had revealed extensive cellaring, however, several areas of intact archaeological deposits were observed which required total excavation down to the desired formation levels.

3 SITE LOCATION

3.1 The site is situated at 42-48 Scotch Street in the heart of Roman and Medieval Carlisle at NGR NY 404 533 on the site of former 19th century retail premises. Significant Roman remains had been discovered in the vicinity of the development site including a probable bath house a possible *praetorium* and high status *mansio*. The site was therefore surrounded by known archaeological sites, which have yielded evidence of high status and high intensity occupation.

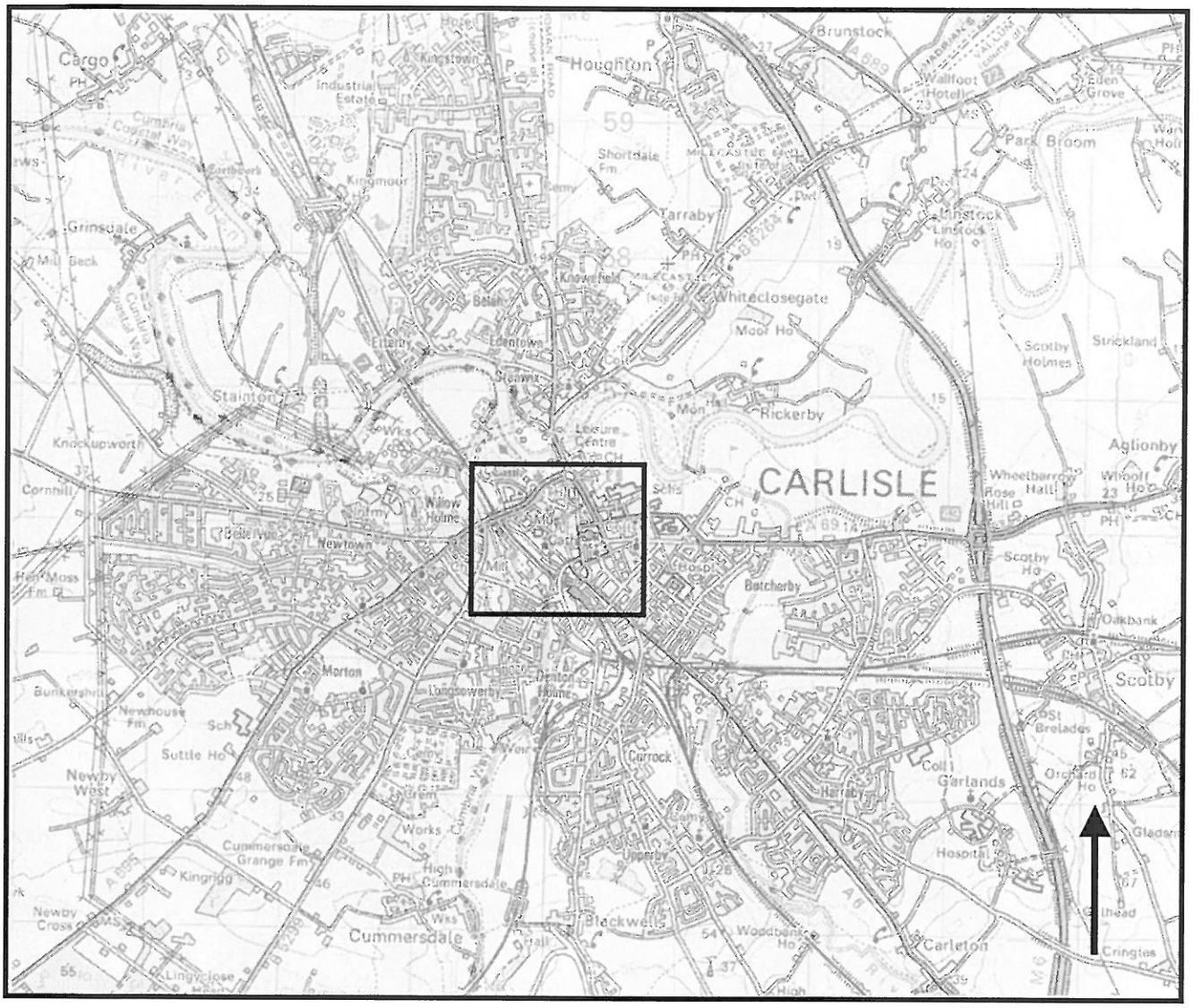


Figure 1: Area location

NGR: NY 404 533

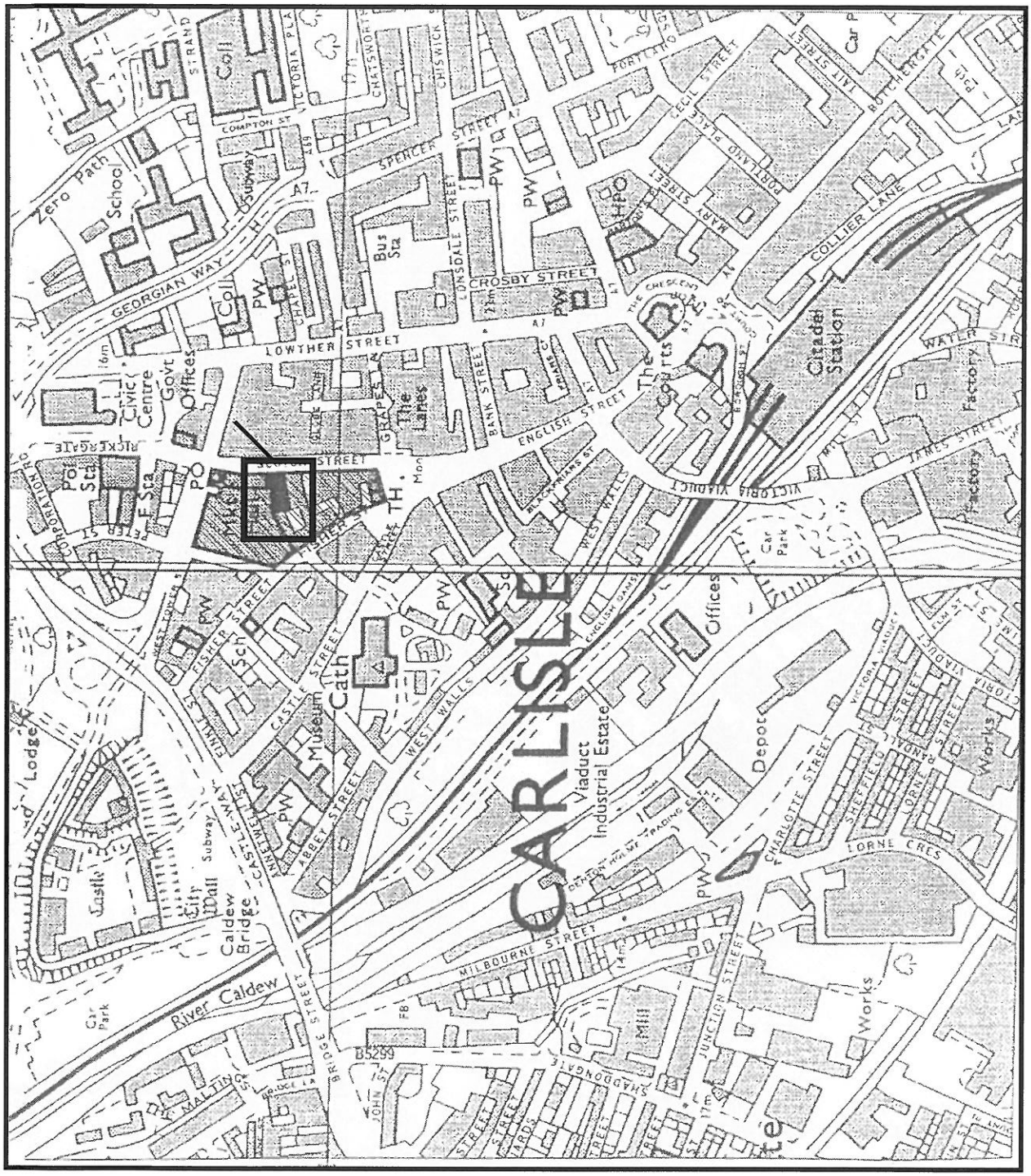


Figure 2: Site location

NGR: NY 404 533

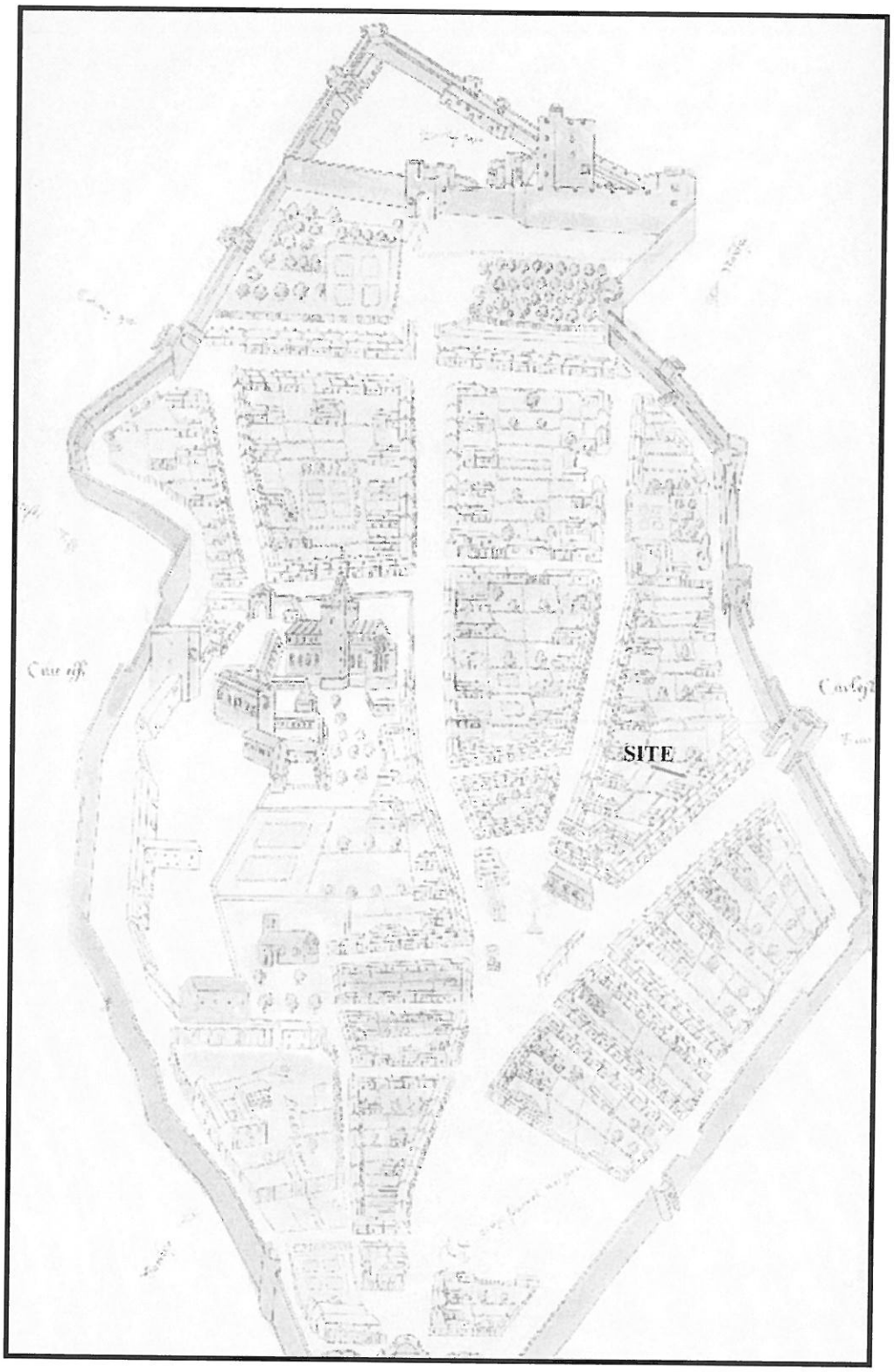


Figure 3: Anon about 1560- Bird's eye view of Carlisle (British Museum)

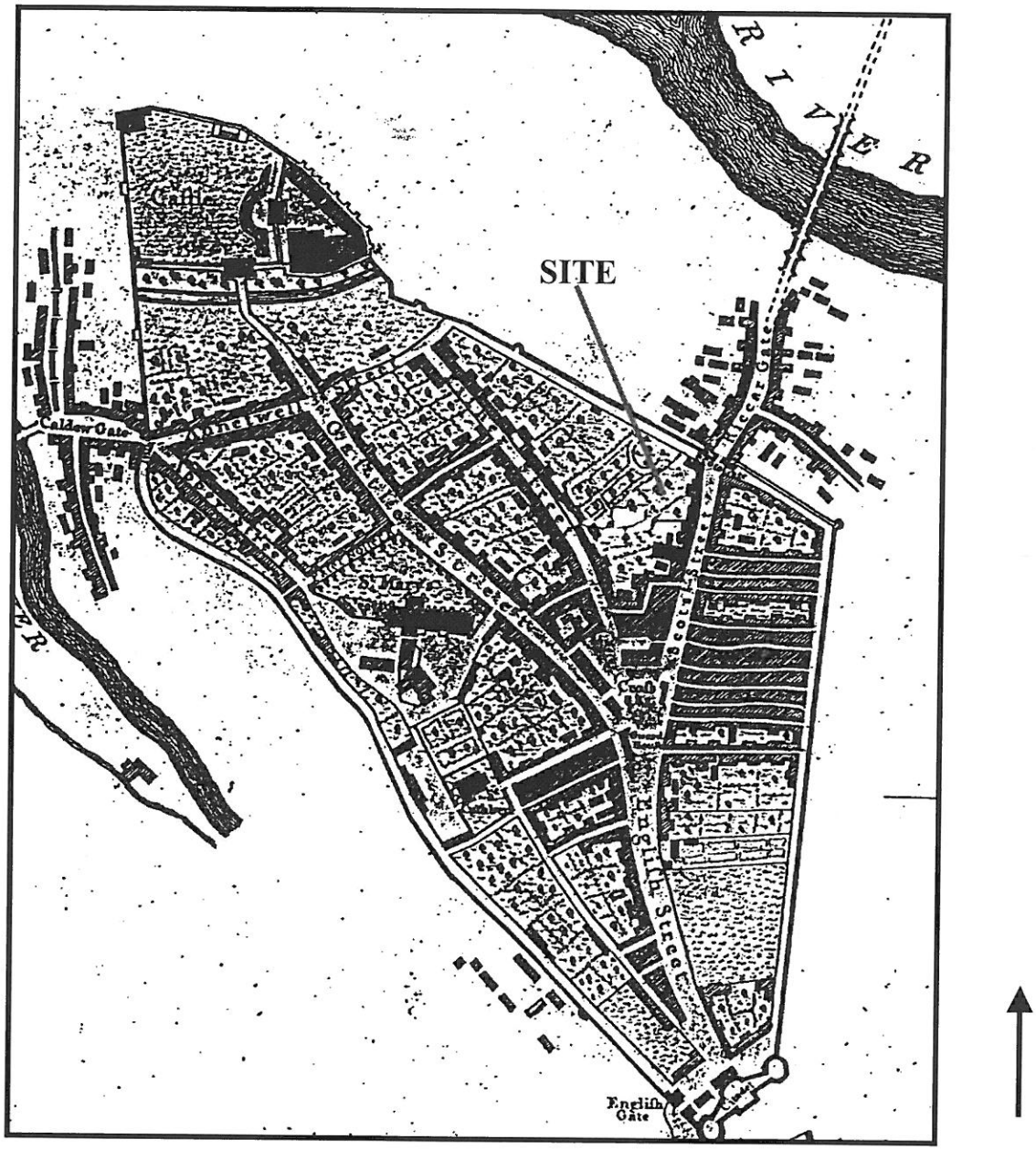


Figure 4: Hodgkinson and Donald map of 1774

Figure 5: 1853 Survey by Richard Asquith
Scale 10 feet to one mile

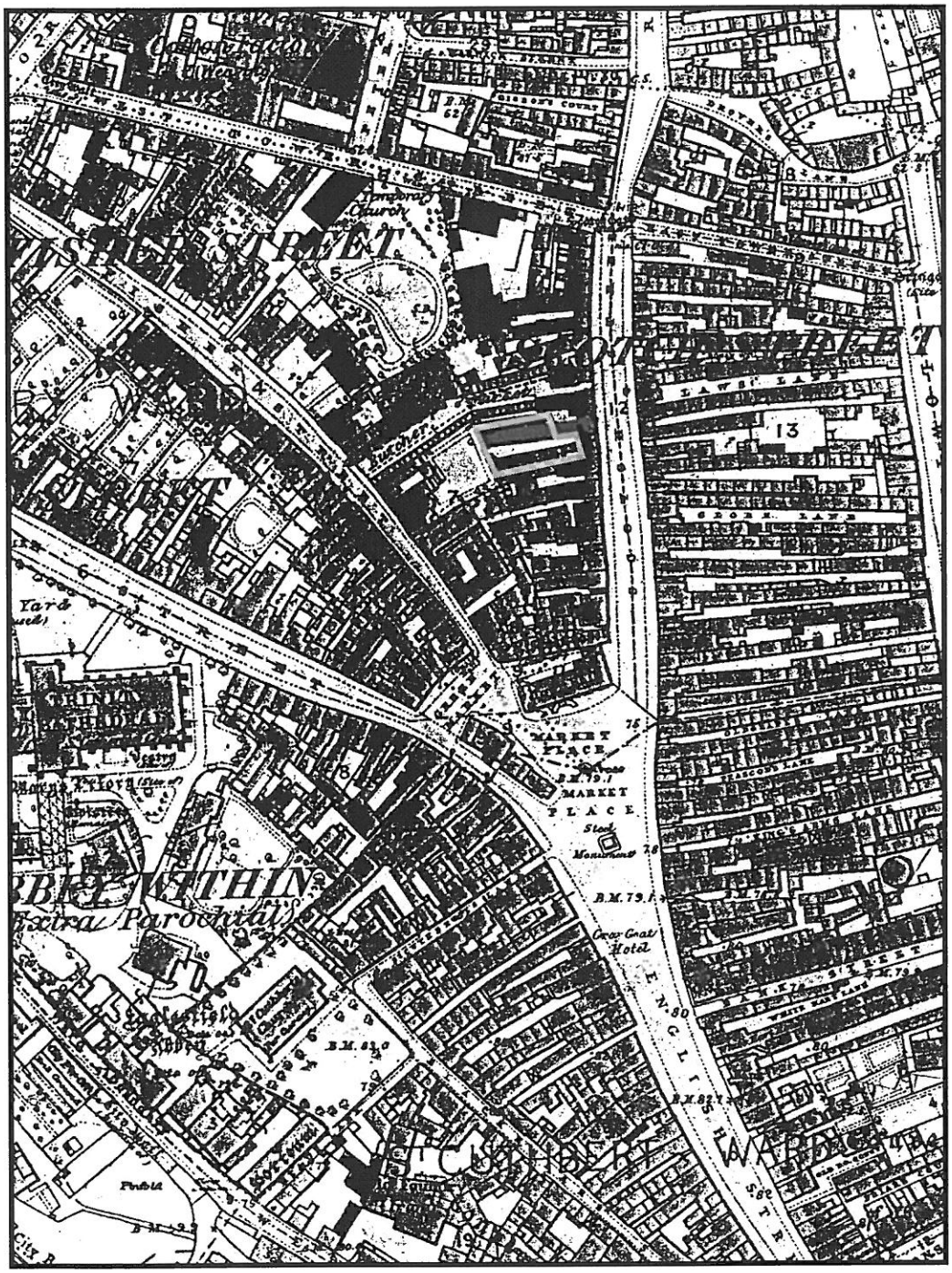


Figure 6: First Edition Ordnance Survey map of Carlisle 1864

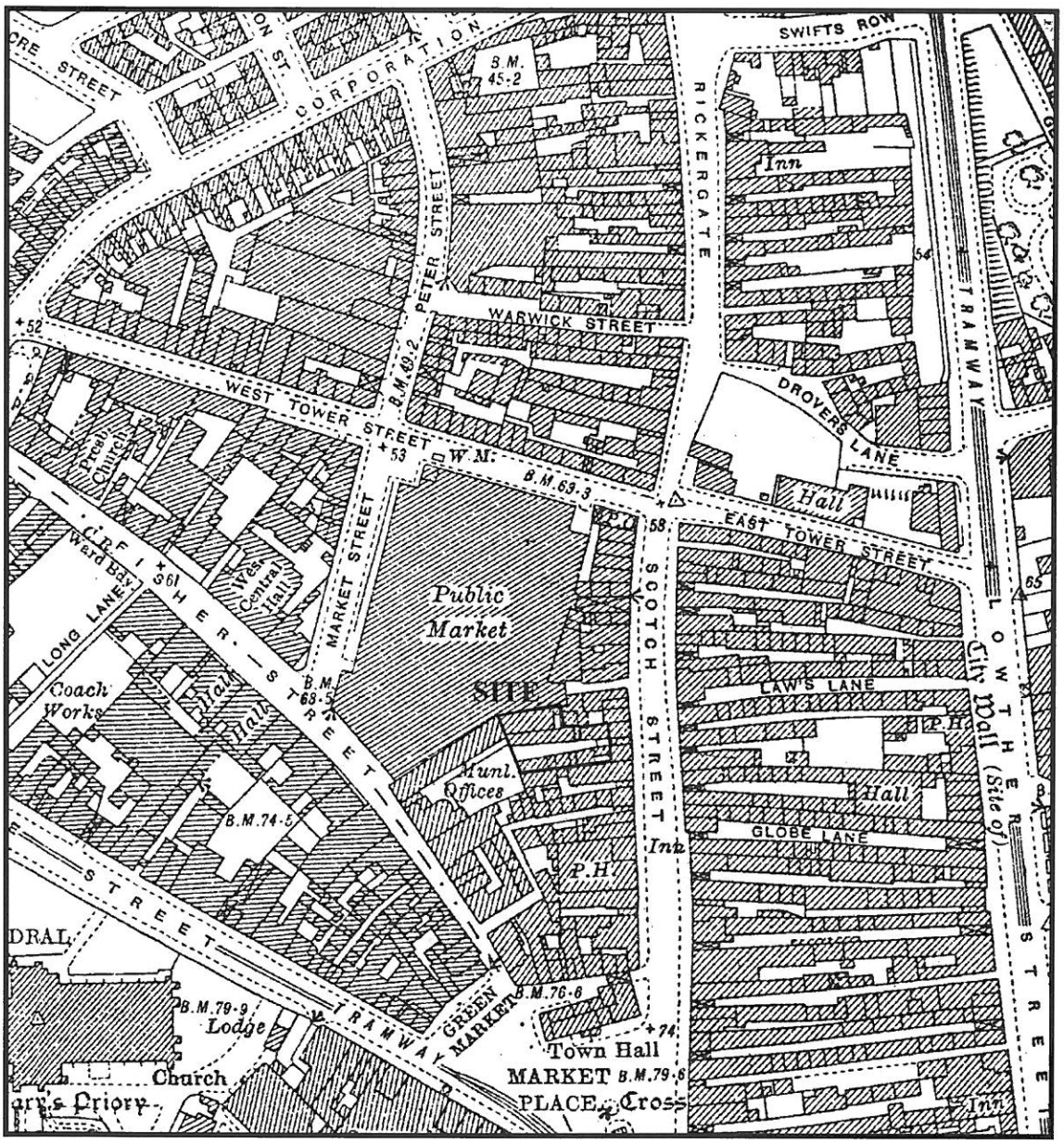


Figure 7: Second Edition Ordnance Survey map of Carlisle 1901

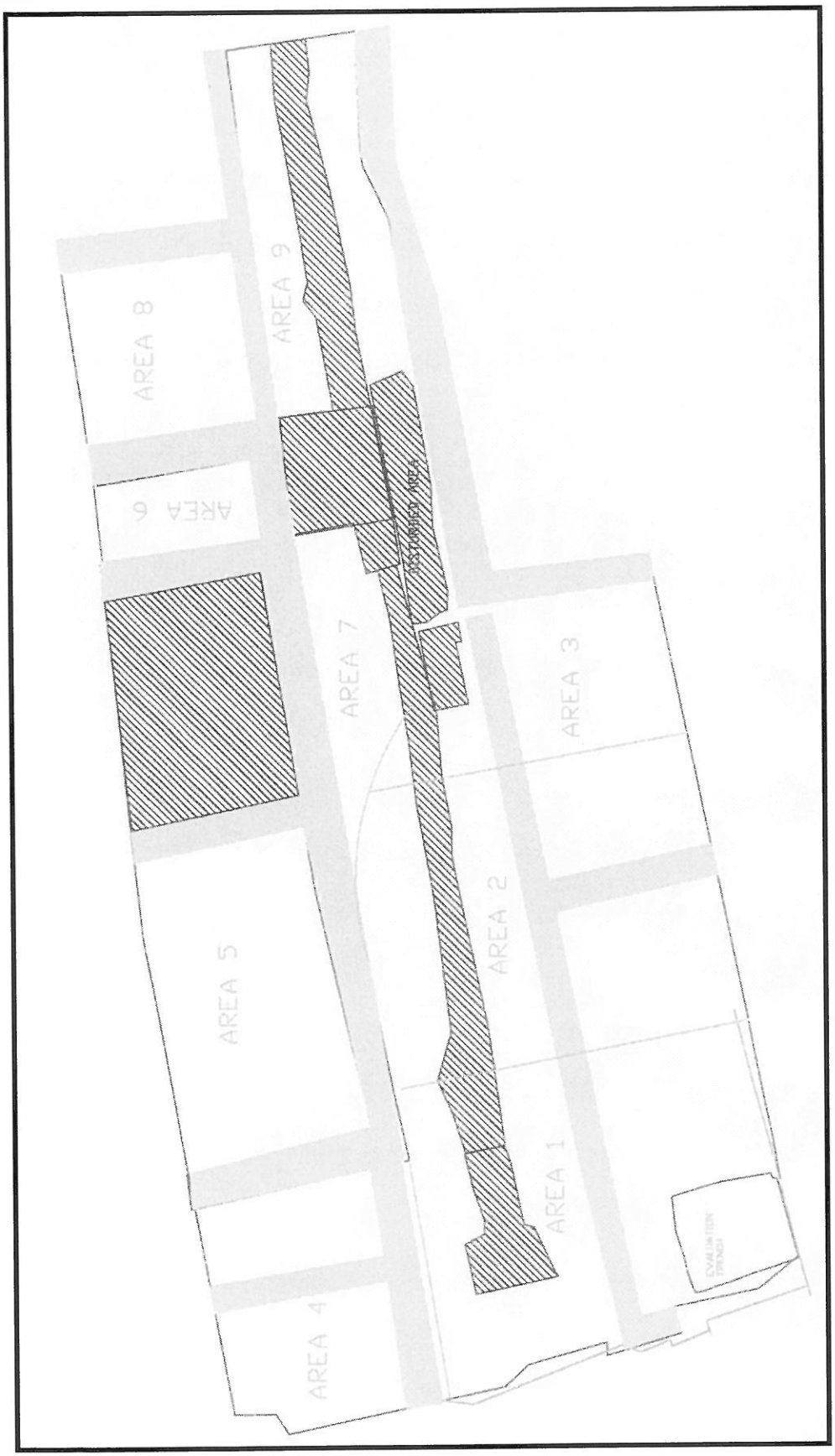


Figure 8: Location of Areas within the excavation area,
hatched areas indicate no surviving archaeology
Scale 1:200

4 AIMS

4.1 The aims of the watching brief and excavation were as follows:

- to supervise all topsoil stripping and excavation for footings and/or service trenches and clean and record any putative archaeological features and produce a stratigraphic record;
- to record archaeological deposits;
- to establish, wherever possible, the depth of archaeological remains;
- to establish, wherever possible, the condition of the remains;
- to recover artefactual material, especially that useful for dating purposes;
- to recover paleoenvironmental material where it survived;

4.2 The academic aims of the excavation and post-excavation programme were as follows:

- to produce a record of the site prior to the construction programme;
- to establish, wherever possible, the extent, complexity and depth of buried archaeological remains;
- to establish whether pre-Roman activity could be identified on the site;
- to supplement existing records of Roman activity in Carlisle;
- to determine whether any trace of early medieval activity could be identified;
- to establish, wherever possible, the condition of the remains for future management purposes;
- to recover artefactual material, especially that useful for dating purposes;
- to prepare an assessment report for the Client and County Archaeological Service. The report will also include any recommendations for further work and details of the method of final publication.

5 STAFFING AND METHODOLOGY

5.1 The work was undertaken under the overall direction of Frank Giecco BA, Dip Arch AIFA, Trust Archaeologist. Assistance was provided by an archaeological supervisor, a dedicated metal detector user and up to ten site assistants. All staff were highly experienced field archaeologists with experience of urban sites.

5.1 The archaeological work involved the supervision of all intrusive ground works in the locations specified in the brief. When deposits of archaeological significance were encountered they were cleaned by hand, excavated and recorded in detail in accordance to the guidelines set out in the North Pennines Heritage Trust's Excavation Manual.

5.2 A site diary was maintained detailing the nature of the work undertaken each day.

5.3 Finds were managed by Frank Giecco. The North Pennines Heritage Trust undertook first aid conservation, but further conservation work and assessment was carried out by Jennifer Jones at the University of Durham, the costs of subsequent conservation will be met by the client.

5.4 All finds will belong to the landowner, but initially will be taken to the Trust's premises at Nenthead, for study.

5.5 Roman coarse was assessed by Louise Hird, (former Roman pottery specialist for Carlisle Archaeology Ltd).

5.6 Samian pottery was assessed by Felicity Wilde

5.7 The inscriptions were assessed by Dr Roger Tomlin

5.8 Medieval pottery was assessed by Cathy Brooks, (former Medieval pottery specialist for Carlisle Archaeology Ltd).

5.9 Glass was assessed by Gill Kirkley-Allsop

5.10 Coins were identified by David Shotter.

5.11 Environmental processing took at the Trust's premises at Nenthead under the supervision of Patricia Crompton. All environmental evidence found during the work was sampled according to the North Pennines Heritage Trust standard environmental sampling procedure in consultation with appropriate specialists at the University of Durham. Samples were processed according to English Heritage guidelines (Jones 2002).

5.12 This process will conclude with the production of a Client report, this shall include:

- a site location plan related to the national grid;
- dates on which the project was undertaken;
- a concise summary of the data;
- a description of the methodology employed, work undertaken and results obtained;
- plans and sections at an appropriate scale showing the locations and positions of deposits and finds;
- a list of, and dates for, any finds recovered and a description of the deposits identified and a description of any environmental or other specialist work.
- recommendations for any further work on the site archive.

5.14 Ultimately it is recommended that the curation of both the finds and the site archive be vested in Tullie House Museum, Carlisle.

6 ARCHIVE AND REPORT

6.1 The results of the fieldwork form the basis of the archive, in accordance with current English Heritage guidelines (*The 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. It also includes summary processing and assessment of all features and finds.

6.2 The archive will initially be stored at premises of North Pennines Archaeology Ltd, at Nenthead, in a stable and secure environment for study. On completion of the final report NPA will deposit the archive with an appropriate repository.

7 HISTORICAL BACKGROUND

7.1 Desk-Based Assessment

7.1.1 NPA did not carry out an extensive desk based assessment as part of this project as Lancaster University Archaeology Unit (now Oxford Archaeology North) had been commissioned to carry this work out by the developers in 2001; however, some additional work was carried out and this has been incorporated with the work previously carried out by LUAU.

7.1.2 This additional work involved the collection of all readily available documentary, cartographic and aerial photographic material in order to assess the potential of the archaeological resource within the study area, which found a number of features of archaeological interest. Information was also collected regarding previous work undertaken in the area.

7.2 Visual Site Inspection

7.2.1 A visual site inspection was undertaken by Frank Giecco, Principal Archaeologist, North Pennines Archaeology Ltd, prior to the field evaluation. The inspection was carried out in order to note any surface features of potential archaeological interest and to identify any potential hazards to health or constraints upon archaeological work, such as the presence of live services and problems of access.

7.2.2 The inspection confirmed the presence of a number of services and substantial areas of infilled cellaring.

7.3 Previous work on site

7.3.1 There have been a number of archaeological investigations within the area defined as the City of Carlisle Hazard Area (SMR No. 3560). These include major excavations at The Lanes (Carlisle Archaeological Unit 1979-83), an evaluation at 40-78 Botchergate (Carlisle Archaeology Ltd 1998-99, Lancaster University Archaeology Unit May-July 2001); an assessment of 7-9 Fisher Street

(The Archaeological Practice, 2001); a watching brief at Cumbria College of Art and Design (Oxford Archaeology North/ The Archaeological Practice July 2001); and various excavations at Rickergate (Lanes extension) (Carlisle Archaeology Unit 1997, 1998, 1999). Building recording (EC Harris, Jan 2003) and a watching brief/excavation (North Pennines Heritage Trust April-July 2003) prior to the main excavation were carried out at 42-48 Scotch Street.

7.3.2 No archaeological work has been undertaken directly on the proposed development site.

7.4 Place Name Evidence

7.4.1 In Roman times the settlement at Carlisle was known as *Luguvalium*. During the Later Medieval period the settlement was referred to as *Caer-luel*, meaning 'city of the king' or *Carleil*. French influence later added a silent 's', from which the modern day spelling *Carlisle* derives (Ferguson 1892, 344).

7.5 Prehistoric Settlement

7.5.1 Little is known about settlement in Carlisle prior to the arrival of the Romans in AD 72-3. There have been a number of stray finds of Prehistoric significance recovered within the vicinity of Carlisle. These primarily date from the Bronze Age and include spearheads, arrowheads and food vessels. Two Bronze Age cemeteries and cist burials have also been discovered in the area. It is therefore possible that there may be further finds from the prehistoric period in the area of assessment (Gosling 1976, 171). Evidence of prehistoric agricultural activity in the form of ard marks have also been recorded on Castle way and Botchergate (Giecco pers com).

7.6 Roman Settlement

7.6.1 There is evidence of a Roman stone bridge over the Eden to the North of the city. It follows that the main Roman roads to the east and southwest of Cumbria would have been bridged in Roman times over the rivers Petteril and Caldew respectively but as yet no evidence of these has been seen. The northern boundary of this site forms the present Caldew Bridge with the possibility of Roman trafficking and outer city settlement remains in this area (Gosling 1976, 171).

7.6.2 Roman occupation of Carlisle is first indicated by the presence of a turf and timber fort (Hogg 1964). This fort, dating to the early seventies AD, was possibly centred on the present Castle Green. Two phases of this fort are known to have existed from excavation, but the limitations of the excavated area failed to delineate the boundaries, alignment and layout of the structure. A ditch excavated in Annetwell Street possibly forms the northern boundary of the fort in its first phase. This fort predates the later much richer Roman town of *Luguvalium*, and was post-dated by another fort across the Eden in the Stanwix area.

7.6.3 At that time the Romans established a fort at the northern end of the present city centre, and this quickly expanded to become a substantial civilian settlement over 40 acres in area. The withdrawal by the Romans from Scotland in the 80s, and

the building of Hadrian's Wall from AD 122, probably had a substantial impact on the settlement. By about AD 200 Carlisle, known as Luguvalium, seems to have been granted special status, and it continued to flourish, with a large number of houses, shops, administrative and other public buildings, until the end of the Roman occupation around AD 400.

7.6.4 The Roman roads which have been located through archaeological investigation may not form the total extent of the traffic system as seen by the discovery of the street found at Tullie House which failed to fit into any grid system yet devised. This suggests the Roman civil town had a different alignment to the earlier fort. Evidence for the existence of a post 2nd century ditch may relate to urban defences of the Roman civil town. The uncovering of the Roman cemeteries outside the civil town boundaries indicates that Roman Carlisle was similar in size to its medieval counterpart (Ferguson 1893, 365-374).

7.7 Medieval Settlement

7.7.1 A reference from the Anglo Saxon Chronicle which was compiled on the orders of King Alfred the Great in approximately 890 AD (Garmonsway 1960, 108) states that '*Carleil or Lugubalia was the same city, which, like others in those parts, was destroyed by the Pagan Danes 200 years before and remained deserted until that time*'.

7.7.2 Ferguson (1890, 6) makes comment that an "*ancient British track*" runs under the west of the castle-hill after entering Cumberland at the south. Further he says that by a line represented by Collier Lane and Backhouse Walk, and lanes in Willow Holm it '*sneaks under the west side of the hill on which Carlisle and its castle now stand*'.

7.7.3 During the 13th century Carlisle saw an extended period of peace after the Scottish siege of 1216, as the city benefited from increased trade with Scotland. The ever-present threat of war, however, had a negative effect on trade in the city. Developing suburbs beyond the city walls were abandoned during times of war due to defence strategies or destruction by the raiding Scots. The wood-built city of the period suffered from a series of damaging fires and outbreaks of plague. The city survived on local trade, much of it associated with the agriculture of the area such as wool and leatherworking. Apart from this there seems to have been little evidence of economic support by other methods, although the City's population was retained (McCord & Thompson 1998, 126-7).

7.7.4 The southern limits of the early medieval town are difficult to define, although a deed from *c.* 1250 suggests that the limits ran from the Grey Friars' lands to the highway, with hints of a possible extension of the limits of the town in that area with reference to the carrying of the Friars' conduit through the city walls (Jones 1976, 86-7).

7.7.5 Towards the end of the 15th century the population was growing and the defences were repaired and strengthened. The cathedral was constructed, the bishopric and associated clergy and friars also aiding the economic strength of the city (McCord & Thompson 1998, 127). A map drawn by Haschenberg from about 1542

(McCarthy 1990, 13) shows a tower just to the south of the Irish Gate, limited excavation in 1997 failed to identify any remains of this tower, which may have been intended but never actually built.

7.7.6 Accounts of St. Cuthbert's Church, begun in 1603, summarise the state of the city at that time. They say 'Carlisle then fell, from being one of the most important garrison towns in the kingdom, to a mere country town without commerce or manufactures' (Ferguson 1883, 312). The map of Carlisle from 1774 (Perriam 1976, 185) shows the main city walls with other buildings outside these associated with the various gates to the city. Later maps from 1790 and 1815 (ibid) also show buildings and associated streets in the area with the corporation dam now present.

7.8 Post Medieval Developments

7.8.1 The ascent of James VI of Scotland to the English throne in 1603 witnessed a period of instability in Carlisle. The associated marauders would almost certainly have camped outside the various city gates (Smith 1970, 49).

7.8.2 A map in the frontispiece of Towill (1991) shows the River Caldew with a millrace on each side. Two corn mills are shown on the older millrace, which runs somewhere under the West Walls. It also shows the Corporation Dam, English and Irish Damside. A map from 1781 (Perriam 1992, 34) of the River Caldew and its associated millraces shows a mill just below the Irish Gate and also the bridge of that period.

7.8.3 The end of the 18th century saw the collapse and disrepair of the Medieval city walls, with the 18th century in general being a period of stagnation for Carlisle. For ease of commerce and traffic the entrances to the city had to be widened and the walls repaired. The Scotch Gate, north and east walls were removed some time before 1811, this then allowing the thoroughfares to be widened (Perriam 1976, 196).

7.8.4 There was a comment made in the local newspaper for the date of 6th January 1816 that the River Eden was higher than for 40 years and that the Caldew Bridge was so much shaken that it had to be rebuilt. Another comment from later years says that the flood at Willowholme, to the northwest of the city, amounted to at least 4 feet of water (Kemp & Templeton 1990). For that period there is no evidence of re-directing of the rivers, either for use as transport or to regulate their flow and flooding.

7.8.9 The arrival of the railway brought new possibilities. It could be said that had it not been for the coming of the railway, and the joining at Carlisle of so many associated routes, the city would have amounted to nothing more than a provincial market town (Smith 1970, 52). In addition to new domestic buildings, the subsequent increase in prosperity brought by the railway saw an increase in the number of public buildings within the town and the major redevelopment of Scotch Street.

7.9 Previous work in Carlisle

7.9.1 A wealth of evidence for the study area exists from previous archaeological work in the vicinity of 42-48 Scotch Street. This section provides only a brief summary of the results obtained from these interventions; most of which have not as yet been published.

7.10 The Lanes, Scotch Street

Excavation and watching briefs (KLA-G; LAL A-D; LEL B; OBL B OGL A-C and J) (NY 4012 5608)

7.10.1 Investigations by the former Carlisle Archaeological Unit in The Lanes (1979-83) included over 30 separate excavations and watching briefs (McCarthy et al 1982; McCarthy 1984; Webster and Cherry 1980; the South Lanes excavations are published in McCarthy 2000, the North Lanes remain unpublished, but phasing is summarised in Zant and Padley 1996, and Zant 1996a; 1996b; the archive resides in Shaddon Mill, Carlisle. Every intervention encountered buildings or other deposits of Roman date, with a full sequence of deposits up to the post-medieval period. The largest excavation took place in the former Keays and Laws Lanes and Union Court, opposite the present development area (Zant 1996a; Zant and Padley 1996).

7.11 Prehistoric Periods

7.11.1 No pre-Roman structures were confirmed, though a metalled trackway (OGL J) crossing the site may be prehistoric, associated with plough-marks attesting agricultural activity. These remains were aligned north-west/south-east, and are contrary to the present road alignments which run north/south. A circular structure was found at Old Grapes Lane (OGL A), but dating appears to place this within the earliest part of the Roman sequence, probably in the late first century. Isolated finds, including barbed-and-tanged arrowheads, attest to prehistoric activity within the area (McCarthy 2000).

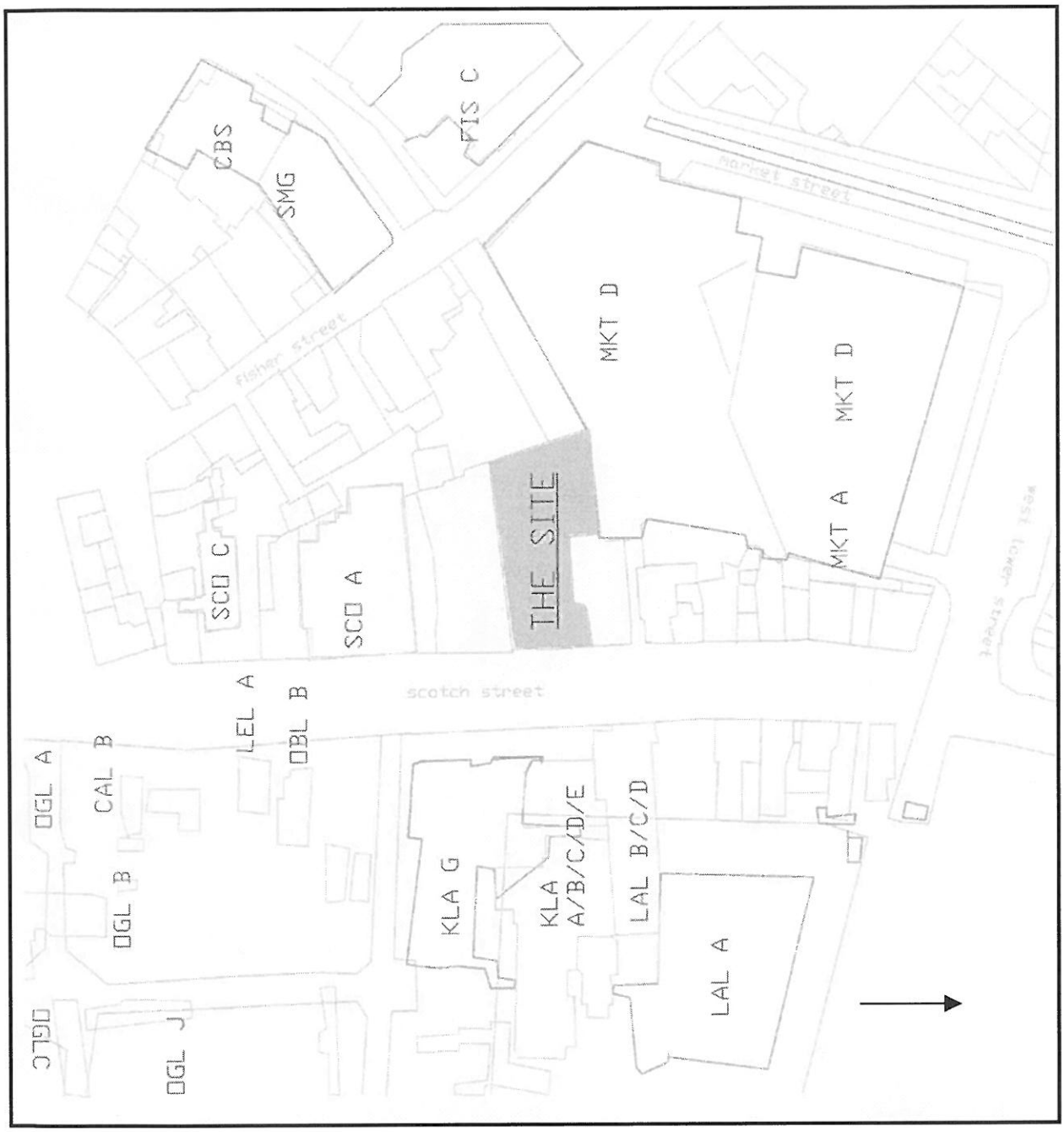


Figure 9: Location of previous archaeological investigations.
Areas highlighted in magenta indicate excavation
Areas highlighted in blue indicate watching brief
Scale 1:1000

7.12 The Early Roman Period

7.12.1 The earliest evidence for activity is a putative *praetorium*, dating from the 1st century. The *praetorium* was set within a ditched enclosure and was found in association with a possible temple complex to the east (LAL D, KLA F and KLA G) (Zant 1996a). The putative *praetorium* is arguably the finest piece of Roman timber architecture to be recognised in Carlisle. A shallow, but carefully levelled, foundation trench contained large oak sill beams, two of which were linked by a combination of a scarf and dovetail joints, perhaps to provide additional strength at a point of weakness.

7.12.2 The sills had substantial posts mortised into the upper face at regular intervals. A double thickness of panels, with vertically orientated wattling, was sprung into slots cut into the uprights, and the whole structure was coated with a thick layer of whitewashed or plastered daub (McCarthy 1984, 68). These building techniques are characteristic of Roman legionary construction and are most clearly paralleled at Valkenburg, close to the mouth of the Rhine in the Netherlands (ibid).

7.12.3 The floors in some rooms were of earth, but in others there were the impressions of squared joists indicating a boarded floor (ibid). Some parts of the building, perhaps the roof or drains, were made of lead on the evidence of many misshapen fragments found in the destruction deposits. The building was 10.25m wide and at least 55m long. Fragments of *opus signinum* and large stone *pilae* almost certainly indicate the presence of a building containing a hypocaust close by.

7.12.4 The whole complex was set within a ditched enclosure, although the ditch was clearly not defensive and no signs of an accompanying rampart were recognised. The ditch and the building excavated probably belong to the same complex, but the spatial arrangement suggests that they may not be strictly contemporary. The buildings were deliberately demolished, with the walls covered with thick deposits of burnt material, containing molten and shapeless lumps of lead, attesting to a destruction phase (Zant forthcoming).

7.12.5 The temple stood in isolation beyond the ditched enclosure, and is thought to post-date the putative *praetorium* though phasing is difficult, and it is likely to be of roughly the same period. The central feature consisted of an almost square cella or shrine with very deep foundations and opposed doors. Column bases on the eastern and western sides indicate the presence of porticos, whilst on the other two sides there were apparently identical ranges of rooms with shallower foundations (ibid).

7.12.6 During the 2nd and 3rd centuries open areas succeeded the putative *praetorium*, and a simple rectangular building with stone walls was progressively enlarged by the addition of rooms, including one with a channelled hypocaust (KLA-D) (Zant 1996a). Another wooden building, yards, and a stone-lined well belonged to this property, which was defined to north and south by narrow metalled lanes and to the east by open land (KLA C). The neighbouring land to the south appears to have been open and contained a tree, the root system of which was clearly identified (Zant and Padley 1996). On the northern side another property built on

large pad stones was associated with minor ancillary buildings, yards, and a stone-lined well (LAL D). This was found to contain a skeleton, which was probably the victim of a violent death, and a large quantity of leather shoes (McCarthy 1984).

7.12.7 Elsewhere, on the line of Crown and Anchor Lane, a major Roman road was identified (OGL J). This was probably the principal access into Carlisle from the east and became the main east/west axis within the settlement as far as the east end of the Cathedral; after this it turned north-west and was aligned on the gate of the fort (McCarthy 2000). Within The Lanes, however, this road probably formed a right-angled junction with Scotch Street, the Roman equivalent of which was seen in a watching brief (SCO B). It is not clear when these roads were first laid out, though it seems likely that they were relatively early features of the settlement.

7.12.8 The frontage along Roman Scotch Street was not excavated, although there is no reason to suppose that it was not relatively densely occupied, perhaps from the early Roman period. Buildings, initially of timber and later with clay and cobble foundations, clustered in the angle of Scotch Street and Crown and Anchor Lane (CAL B), and extended back about halfway to Lowther Street, on the evidence from excavations along the Grapes Lanes (OGL A) (McCarthy 2000). A section exposed behind cellars on the north side of Crown and Anchor Lane contained several hearths and areas of burning, hinting perhaps at some form of industrial activity (CAL B). Otherwise most of the buildings exposed were probably largely domestic in character (ibid).

7.13 Later Roman Period

7.13.1 Buildings excavated in the Keays and Laws Lanes areas may have continued to function through the first half of the 4th century, and conceivably as late as the reign of Valentinian I (364-375), but the quantities of pottery and coins recovered are not such as to suggest a flourishing community, and it may well be that many buildings in this area were abandoned well before the end of the fourth century (McCarthy et a11982; McCarthy 1984). Two sections across the Roman roads of Scotch Street and Crown and Anchor Lane (OGL J) appear to show an unbroken sequence of metallings from Roman through to more recent times. It is possible, therefore, that they continued in use (ibid).

7.14 Medieval

7.14.1 Following the Roman period, the site appears to have been largely abandoned, or at least evidence of activity becomes less archaeologically visible. Black soil deposits were found across the site, with some ephemeral structural features noted within these deposits (Zant 1996b; McCarthy 2000, 64). These included post-holes, a line of river cobbles (potentially a wall) and surfaces, associated with two Northumbrian stycas, northeast of a Roman house (KLA C). A late Saxon two-piece clay mould for casting strap-ends was found within a pit at the excavations on Crown and Anchor Lane, decorated in the Trewhiddle style and assigned to the 9th century (Taylor and Webster 1984).

7.14.2 Also found was a 10th century enamel disc brooch from Old Grapes Lane (OGL A) (McCarthy 2000, 47). Pits, post-holes and gullies cutting the soil were identified as possible agricultural activity. Following this, metalled road surfaces were laid out along lines formerly established by pit alignments; these surfaces followed the present alignments of known lanes, such as Keays Lane and Hodgsons Court (Zant forthcoming). From the 13th century or earlier, insubstantial buildings were built fronting onto these lanes (KLA B; Zant 1996b). The buildings comprised two-bay structures incorporating stone pads, ground sill beams, earth fast posts and hearths; they appear to have continued in use, possibly into the 17th century. A three-bay medieval hall occupied Lewthwaites Lane Trench A at around this time (LEL A; McCarthy 2000, 51).

7.15 Post-Medieval Period

From the 17th century onwards, medieval buildings appear to have been cleared, particularly from the frontages onto Scotch Street, to make way for later development. Between 1690 and 1750 most timber buildings were cleared to make way for brick structures, embellished with decorative sandstone features displaying social standing (McCarthy 2000, 66). Most of these buildings survived into the 20th century, when they were removed to build The Lanes shopping centre.

7.16 Minor sites

7.16.1 Vaseys, 58-62 Scotch Street (SCO A) (excavation-NY 4007 5601)

7.16.2 58-62 Scotch Street was subject to a rescue excavation in 1976. The work was carried out by Tom Clare, and remains unpublished but is summarised within SMR 5065. An earlier rescue excavation at 62 Scotch Street was undertaken by Redfearn in 1920. Excavations were published the following year (Redfearn 1921). Much of the 1976 investigation involved small areas, these being dictated by building operations, consequently much of the evidence is difficult to interpret. Only one layer was distinguished across the whole site and its date was unclear. The earliest dateable feature would seem to be a turf-built bank, dated to between the late 1st and mid 2nd century AD, with a probable associated ditch on the north side (SMR 5065). This appears to relate to a late 1st century ditch identified during the Lanes excavations at Keays Lane, Laws Lane and Globe Lane (KLA D/C/G; LAL C; and GLL A), which is thought to be the return of a ditched enclosure around the putative *praetorium* (Zant and Padley 1996).

7.16.3 At some time in the 2nd century the bank was demolished and a timber building erected (SMR 5065). Other late 2nd century buildings, possibly of stone, may have been associated with a gravel floor or road. Timber Roman buildings were identified as being roughly parallel to Scotch Street, suggesting the existence of a Roman road on a similar line to the present road. A minor road with ditches, the surface of which was overlain by mid 2nd to 3rd century pottery, may have been contemporary with the above wooden structures, but almost certainly went out of use in the Roman period; Clare suggests that most of the site formed part of back street *insula* (SMR 5065). Much of the Roman pottery is of late 2nd/early 3rd century date, and there were also three Roman coins recovered, including one of Hadrian (118-138), but another of Constantine II (337-340).

7.16.4 The medieval pottery recovered was mostly thin-walled, well-fired cooking vessel with no more than 10% being jugs or pitchers. The 1920 excavation recorded a well, which was published as being of Roman date (Redfearn 1921), but the description suggest a later date. It was rectangular, lined with rough red sandstone rubble in large stones, and measured 3ft x 2ft l0in (0.91m x 0.86m) at the top, and was 41ft (12.49m) deep below yard level. There was a 6in thick stone slab the bottom with a 4in diameter hole in the centre.

7.16.5 The well had been backfilled with loose stones and earth. Three pump-trees were recovered, one of larch, and two of oak; one tree was fitted with an iron collar and two pieces of chain. Other finds included a piece of very thin sheet glass (semi-opaque and iridescent); one segment of a glass bottle, 114mm in diameter (green and iridescent), two sherds of earthenware, and one sherd of samian. After excavation the well was backfilled with concrete.

7.16.6 Market Hall (MKTC) (watching brief-NY 40035607)

7.16.7 This work involved a watching brief undertaken by Paul Flynn, then of Carlisle Archaeological Unit, on works being undertaken in the Market Hall in 1990. The results have not been published in detail, although a very brief summary has been included in *Britannia* (Frere 1991), the present description is based on the primary archive held at Shaddon Mill Carlisle. A Roman metalled street was uncovered running east/west, adjacent to a large stone building, thought to be a bathhouse or *mansio*, since it contained hypocaust systems.

7.16.8 The street dates to the mid-Roman period, and appears to having linked street-lines previously noted at St Mary's Gate, Market Street and within Scotch Street. The building contained several rooms, two of which appeared to have been a *tepidarium* and *caldarium*, and a third, which was possibly a cold plunge bath (ibid). The works involved watching the removal of existing floor surfaces, which revealed that most of the archaeology lay directly below ground level (P Flynn pers comm). This building lay immediately northwest of, and adjacent to, the present study area, and it would appear that some part of the building would extend within the boundaries of the present development.

7.16.9 St Alban's Chapel, 66-68 Scotch Street (SCO C) (excavation-NY 40065598)

7.16.10 These excavations, directed by GD Keevill and funded by Cordwell Property Ltd in 1988, have been summarily published (Gaimster et al 1989) and a forthcoming publication text (Keevill forthcoming) is held, along with the archive in Shaddon Mill, Carlisle. The excavations revealed the foundations of the medieval chapel of St Alban, which was in existence by 1201 but disappeared at the Dissolution. It had at least three constructional phases, and, ultimately was at least 17m long. Surrounding it was a cemetery, of which 40 graves were excavated.

7.16. 11 The earliest activity on the site appeared to be Roman. Minimally sampled deposits, where medieval features had cut the Roman layers, attested to a date range around the 4th and 5th centuries, with one coin recovered from the 3rd century. A Roman building is known on the site, though the exact plan is unclear; it is thought to have had east and west wings ranged around a courtyard. A

hypocaust associated with the building held within it a gold solidus of Valentinian II, dated to AD 380-90. Three subsequent floors overlay the hypocaust sealing the coin, which suggest a continued use for the hypocaust into the 5th century, though it does not appear that the rest of the building continued in use. The earliest floor above the hypocaust was of *opus signinum*, indicating a continued high status for the building. The final collapse of the building has not been dated, but it appears the site gradually decayed after the 5th century.

7.16.12 Dark earth deposits covered the site and three stycas, a glass bead, and a pair of tweezers were recovered from them, with a strap-end and mould found in later deposits. The dark earth deposits were possibly deliberately dumped in the 9th century to provide gardens, or were possibly laid to facilitate grave-digging in the cemetery of a timber pre-Conquest chapel. One of the graves was cut by the earliest phase of 13th century stone building, which would indicate that it pre-dated the chapel (ibid). Although the stone-built chapel is known to have existed by 1201, all pottery found associated with the building was of 12th century date or even slightly earlier, and would therefore suggest an earlier foundation (ibid).

7.16.13 The building consisted of a possible tower to the west and the corner of a simple chapel to the east. The chapel was subsequently enlarged to join the tower, with two sub-dividing walls radiating north to form three cells, tentatively identified as the nave, chantry chapel and chancel; the tower may have opened into the nave. Following reorganisation, the wall between the chancel and chantry chapel was removed, possibly being replaced by a screen. The cemetery is known to have extended for some distance, probably beyond Rosemary Lane to the north, and as far as the town hall to the south. The dog-leg on Rosemary Lane probably represents encroachment of properties onto the western edge of the cemetery.

7.16.14 Following the Suppression of the Chantries in 1549, the land passed to Thomas Dalton and William Denton (Gaimster et al 1989). The west tower was probably retained while the rest was demolished, and the area was cobbled. Infilling of the area behind the street frontage began in the mid 18th century with the building of cellared stores. The land was shared out with properties on Scotch Street and Saint Albans Row.

8 RESULTS

8.1 During excavation the site was divided into 9 distinct areas (see figure 8). For the purpose of this report areas 1, 2, 3, 4 and 6 have been grouped together as they were stratigraphically connected. As areas 5, 7, 8 and 9 were all stratigraphically isolated they will be discussed individually. The finished formation level was set at 19.45m AOD and all excavated areas were taken down to this level. From bore hole evidence and the traces of natural subsoil observed during the excavation of several medieval pits, an approximate depth of 0.60m of stratified archaeology was left in situ, which would broadly include any prehistoric and 1st /2nd century deposits.

Plate 1: Areas 1, 2 and 4 during initial site clearance

8.2 AREAS 1, 2 and 4

8.2.1 Areas 1, 2 and 4, on the western side of the site were grouped together as they all had unbroken stratigraphic continuity, dictating that they should be discussed as a group rather than in isolation. The dimensions of this area, which formed an L shape, were 13m by 14m with a maximum width of 7m (see figure 8). This part of the site was least affected by pitting and 19th century cellaring and therefore contained the areas of best archaeological preservation.

8.2.2 The earliest recorded deposits recorded at the limit of the excavation level of 19.43m AOD were a series of soil build ups in Areas 1 and 2 (**501** and **633**) and a substantial rectangular clay foundation base (**460**) which could possibly have been stratigraphically earlier than context 501 and 633, but as it was left unexcavated it was impossible to confirm this.

Plate 2: Clay foundation 460

8.2.3 The clay foundation (460) measured 1.4m by 2.4m and survived to a height of 0.25m appearing to have once been clad in stone blocks to create a rectangular stone platform, none of the stone work survived as the feature had been robbed of all stone by mid 2nd century. The foundation trench (plate 2) was found to extend for approximately 4m by 3m and had a depth in excess of 1m, suggesting that this footing was designed to carry something of a considerable weight. The exact purpose of this feature is unclear but it appears to be associated with a metalled surface (**524**) running along its eastern limit and sandy silt deposit (613) running along its western limit and continuing into Area 4.

8.2.4 To the east of foundation 460 and running on a north-south alignment were the remains of a stone wall (**510**) (**Building 1**), measuring 0.60m in width and extending for 4.6m until it was truncated was later medieval pitting. This northern point of truncation is situated on what appears to be the north western corner of this structure, nothing survived of this northern return as it had been totally removed by further medieval pitting. Running parallel and 2.4m to the east of wall 510 a short length of clay filled foundation trench (**509**) survived, measuring 0.30m in width and 0.14m in depth.

Plate 3: Area 1 at limit of excavation with view of 460 foreground and 510 background

8.2.5 This eastern wall was totally different in nature to wall 510 and is more likely to have supported a timber wall rather the western wall of structure **(510)** which would have been of stone. One possible floor surface survived **(529)** with its extent defined by the two surviving walls. This silty clay layer produced a small quantity of 2nd century pottery, there were no discernable internal features and the function of this curious structure is uncertain. The area to the east of this structure was defined by a series of cobble surfaces (**268** and **503**) extending into area 3.

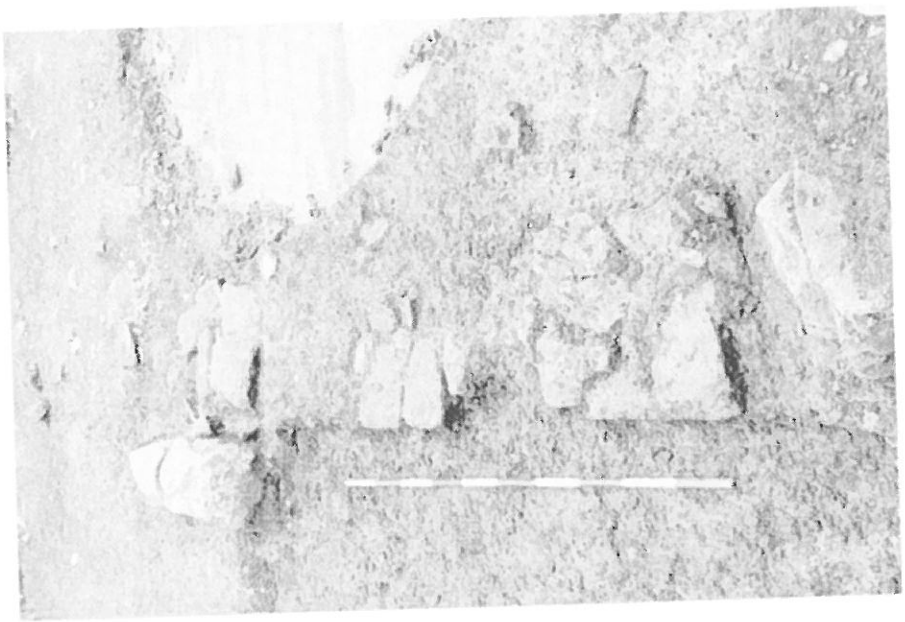


Plate 4: Wall 510 in Area 1

8.2.6 The clay foundation (**460**) was cut by a small pit (**521**) and sealed beneath two small dumps of a sandy silt material (**523** and **525**), and a larger spread of silty sand (**520**) which produced pottery of a mid 2nd century date. A similar deposit was recorded in Area 3 (**613**) and is likely to be a northern continuation of 520. This whole phase of activity would appear to come to an end in the mid to late 2nd century, and was sealed by an extensive soil build up (**459**) comprising a grey silt which extended over both Areas 1 and 2 and produced 273 sherds of pottery of a late 2nd/early 3rd century date, the largest concentration of Roman pottery recorded on site, and large quantities of butchered animal bone.

8.2.7 The next major development was the construction of a timber building (**Building 2**) aligned north/south along its long axis (plate 5). The building cut into context 459 and measured 7.5m in length and 4.4m in width. The width possibly being significant as it was 1/8th of an actus, the actus being a Roman unit of land measurement which corresponds to approximately 35m.

8.2.8 The type of building method used involved the cutting of a construction trench (**439**, **530** and **556**), into which a series of posts were inserted normally at regular intervals, wattle work would then be woven between these posts which would then be covered with daub. The best recorded examples of such building techniques in Carlisle come from the waterlogged remains excavated at Castle Street in 1981/2 (McCarthy 1991).

8.2.9 As there was no organic preservation and the building appears to have been demolished, all that remains of this building is the construction trench and floor surfaces. The construction trench had an average depth of 0.25m and measured 0.40m in width, with near vertical sides and a flat base.

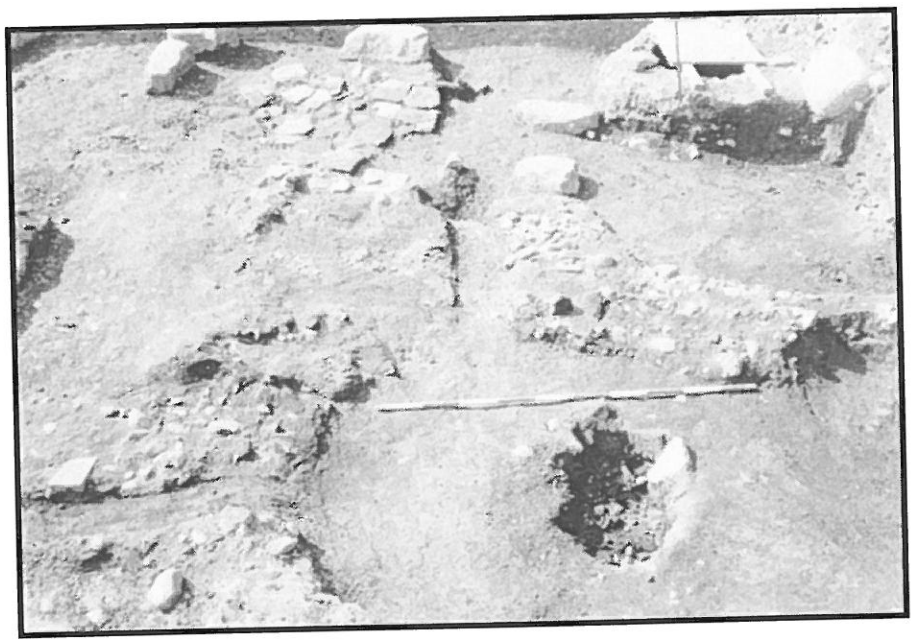


Plate 5: Building 2
From the north with beam slots visible and remnant of flagged floor 484 surviving in south west corner

8.2.10 Within this building the primary floor surface was a yellow sandstone flagged floor (**484**), which survived around the southwestern corner of the building. This flagged surface (**484**) was sealed by a succession of six floor surfaces (**433**, **581**, **582**, **441**, **542** and **377**). These remnants of floor surfaces consisted of silty clays, with the final surface (**377**) made up of compact cobbling. The surfaces had a combined depth of approximately 0.50m. During the life of this building the eastern wall was extended southwards (**462**) by 2.6m and is likely to have formed some form of lean to structure, no other beam slots or post holes were present.

Plate 6: Detail of flagged floor within Building 2 looking east with post pads of Building 5 still in situ

8.2.11 This building was entered through a single doorway measuring 1.2m in width, which was characterised by two post settings (**495** and **496**) each measuring approximately 0.35m in diameter. The function of this small building is unclear with evidence of only one hearth (**443**) surviving in association with floor surface 441. With no evidence of any industrial activity the most plausible interpretation of this building would be as a small domestic dwelling, which was occupied in the late 3rd century.

8.2.12 Externally a series of sandy silt soil layers measuring up to 0.20m in depth were built up against the timber walls of this structure (**430**). To the north of the building two successive layers of cobbling (**561** and **562**), which could represent the remains of a yard surface were recorded. As these surfaces were building up when the structure was still standing the ghost of the timber wall could be seen running between the external deposits. Sections excavated across the beam slot of this building hinted that the building had been rebuilt on exactly the same alignment at least twice.

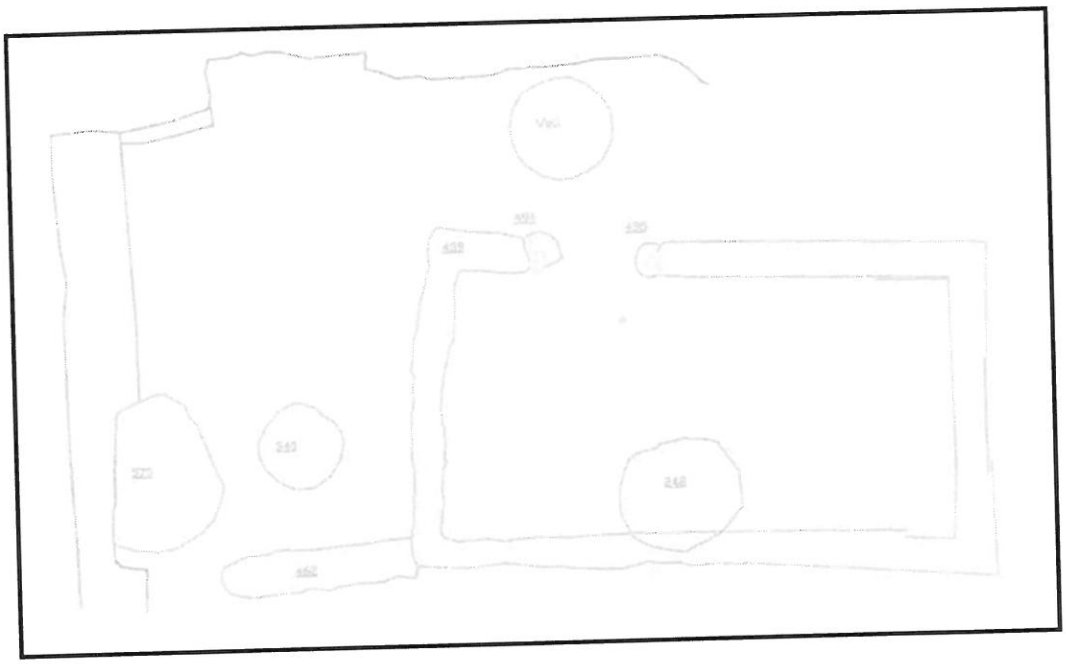


Figure 10: Plan of Building 2
Blue line equates to projected beam slot
Scale 1:100

8.2.13 To the west of **Building 2** a cobble track way (plate 8) was constructed running north-south along the western edge of the site, although heavily truncated in places it was clear that this track way extended across the whole site. The track way was resurfaced at least five times with distinct layers of compacted cobbling (**605=372**, **584=424**, **583=411**, **560=369**), and appears to have been laid at the same time as the structure as they are both stratigraphically above context 459.

8.2.14 Building 2 appears to have been deliberately levelled and a new narrow timber structure (**Building 3**) was constructed overlying the western end of Building 2. This structure was characterised by a series of compact clay spreads (**431**, **432**, **434-438**), which defined a roughly rectangular area measuring over 5m by 3.2m, with the southern side possible extending beyond the limit of excavation (figure 11). There was no evidence of any beam slots or post holes associated with this structure which appears to have used a sleeper beam laid directly on top of context 430, which produced a finds assemblage of late 3rd century date.

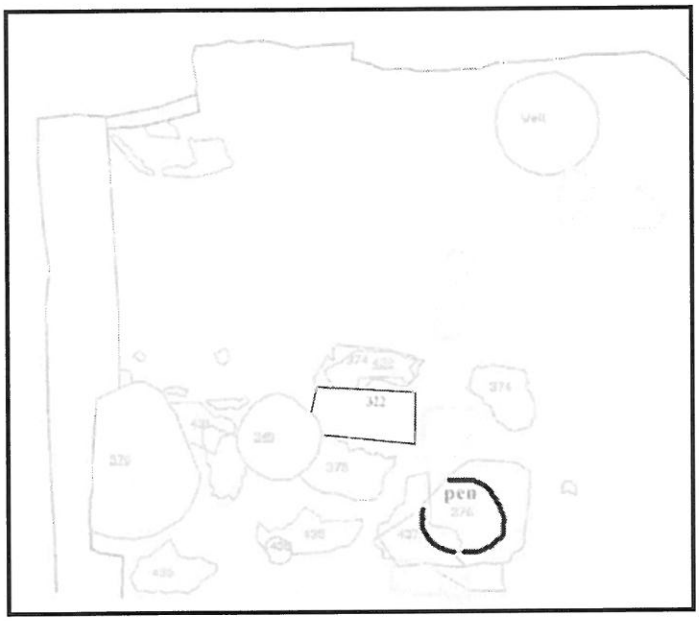


Figure 11: Plan of Buildings 3 and 4
Scale 1:100, Building 3 shown in blue, Building 4 shown in red

8.2.15 The western road continued to be used and received a gully (**577=400**) measuring between 0.70m and 0.40m along its eastern side cutting into the final major roman road surface (**369=560**). To the north and east of this building the final cobbled floor surface of Building 2 (377) appears to have been kept clean and used as an external surface with a shallow soil build up occurring to the north of this building (**532**) which produced a substantial quantity (12) of 4th century coins.

8.2.16 Activity to the east of this structure was hard to interpret due to the intensive medieval pitting throughout much of Areas 2 and 3, but it is likely that little activity took place. In areas that had less intensive pitting context 459 was recorded and was sealed by the next soil accumulation (**371**), with no obvious activity between these two layers.

8.2.17 Building 3 appears to have been deliberately taken down and the area cleared of debris, as there was no obvious demolition layer associated with the abandonment of this structure. This building was replaced by a similar sized building (**Building 4**) measuring over 5.4m in length and 3.4m in width (figure 11). The construction method for this building appears to be identical to the previous structure with a sleeper beam sitting directly on top of the ground surface being the likely method, as no beam slots or post holes were associated with the structure.

8.2.18 The clay floor surfaces of building 3 (**434-438**) were sealed by a fine grey sandy silt (**414**) measuring 0.05m in depth, possibly representing a levelling layer within the new structure. Context 414 was then sealed beneath a well-laid compact clay floor (**374**, **375**, **376**), the remains of which produced ten stake holes, which may have formed a wattle pen in the north-eastern corner of this building. There was also a rectangular pit (**322**) just to the north-west of the

wattle pen, which appears to have once contained a soft fill as the medieval foundations of overlying Building 5 (338) had been deepened over this feature.

Plate 7: Remains of Building 4, looking east

Plate 8: Road surfaces 369 and 370 and road side gully 400

8.2.19 Building 4 (plate 7) was associated with a build up of dark earth (**371**), which appears to have butted up against this structure. The homogeneous nature of context 371 made the relationship between the building and context 371 difficult to interpret, and in places this layer appeared to seal the building. It is therefore possible that the soil build up recorded as 371 could represent two separate gradual accumulations of soil, the first in the late 3rd/4th century associated with

the use of the building, and the later deposit representing a late/post Roman soil build up relating to a period of little activity in this part of the site. It is clear however, that this building had gone out of use by the mid 4th century and was not replaced, with the dark earth deposit (371) extending throughout Areas 1, 2, 3 and 4, with this deposit representing the latest deposit that could be confidently given a firm Roman date.

8.2.20 Significant quantities of animal bone were recovered from context 371 which could indicate that these final two Roman structures were used to house and butcher livestock notably cattle and sheep, which made up approximately 80% of the recovered bone assemblage.

8.2.21 Context 371 was then cut by a series of very shallow cobble filled trenches (**372** and **373**). Each had an average width of 0.50m and depth of 0.06m, and were aligned SW-NE (**Building 5**). Only the northeast corner of this structure was recorded as the rest of the structure extended beyond the limits of excavation, and no internal surfaces or associated features survived.

8.2.22 Stratigraphically the building was at a very interesting phase sealing deposits that date well into the late 4th century and encroaching onto the north-south roadway, such changes must signify a major shift in land use in the area during this period. Unfortunately the foundations that did survive were too fragmentary to allow any meaningful discussion on the form or function of this structure other than it had been a timber structure, which could date from any time between the 4th and 12th/13th centuries.

8.2.23 This structure was then replaced by a building (**Building 6**) that seems to have respected the same alignment and wall lines but extended the structure eastwards by 8m and utilised a totally different method of construction (plates 9 and 10). This building was constructed using large post pads (**690-699**) set in shallow cuts which in places appeared to be no more than shallow depressions in the cobble filled foundations of building 5, a building method seen elsewhere in Carlisle in an early medieval context.

Plate 9: Detail of post pads associated with Building 6

8.2.24 Scattered patches of clean compacted silty clay were recorded (**458**), measuring approximately 0.05m in depth and sitting directly on top of context 371. These patchy spreads could be all that remains of the floor surface associated with this structure; no hearth or other associated internal features, which could be indicative of the function of this building survived.

8.2.25 This building was then demolished and the north-south road reinstated (**370** and **506**), with several sherds of 12th century pottery coming from this final road surface.

8.2.26 In Area 4 context 371 was cut by three small pits (**538**, **540** and **527**) with a further pit (**452**) cutting into this deposit in Area 2. The north-south road was also resurfaced in this period (**370** and **506**).The presence of these features indicates continued use throughout the late Roman period and beyond, with finds from the final road surfaces indicating continued use up to the 12th century. At this point the roadway is sealed by context 129, suggesting that it finally went out of use. This soil build up (**129**) which produced large quantities of 12th and 13th century pottery, was then cut by a large pit (**468**) situated in the north west corner of Area 4, measuring over 2.4m in diameter and 1.2m in depth.

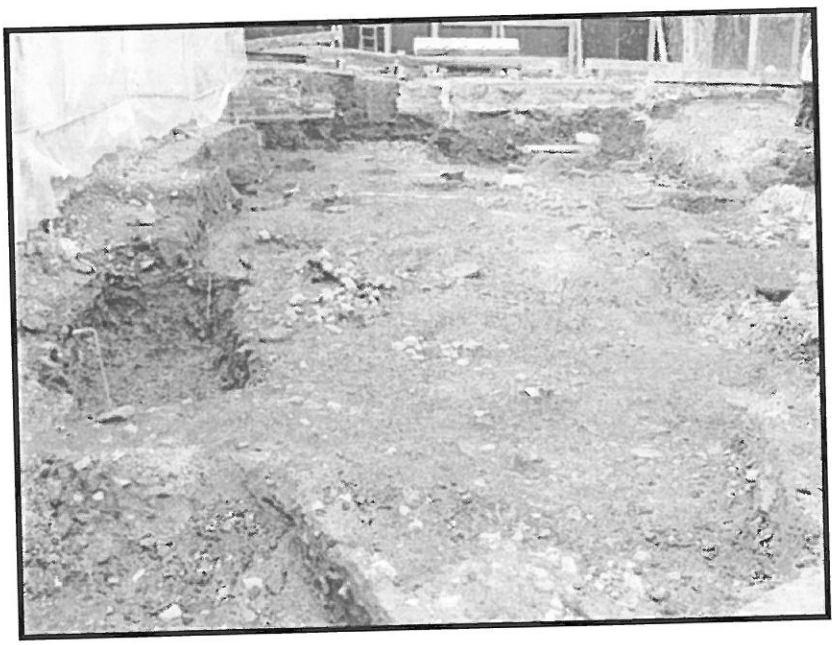


Plate 10: Soil build up 371 in Areas 1 and 2 looking west.

8.2.27 In Area 2 an intense period of 12th/13th century pitting removed any traces of late Roman activity. This sequence of pits commenced with the cutting of two pits (**475** and **480**), both heavily truncated by later pitting and measuring 2m and 1.5m in diameter respectively. Context 476, the uppermost fill of pit 475, was then truncated by pit (**473**) again measuring approximately 2m in diameter. The uppermost fill of pit 480 was cut by a small sub-rounded pit measuring 1.2m in diameter. The fills of these four pits all produced pottery dating from the 12th to the early 13th century.

8.2.28 A large rubbish/cess pit (**445**) measuring 3.8m in diameter was then cut in the centre of Area 2 and filled by a sequence of 9 fills (**660<69>**, **444**, **380**, **381**, **387**, **382**, **378** and **379**); producing a 13th century pottery sequence. A similar sized pit (**485**) was cut just to the south of pit 445 measuring 3.4m in diameter and filled by an organic rich cess deposit (**486**). Pit 485 was then re-cut (**350**), with the addition of four further distinct layers of cess filling the pit (**662**, **661<70>**, **353** and **352**).

8.2.29 The upper most fills of pit 485 were sealed beneath a widespread layer (**125**), which formed an extensive medieval soil build up. The final deposit within pit 445 was cut by pit (**328**), a large sub rounded pit measuring 4m in diameter by 2m in depth, which was filled by a series of four deposits (**330**, **115**, **246** and **245**). Timbers recovered from within pits 445 and 485 were dated by dendrochronology and produced felling dates of 1142-49 and 1135 respectively.

8.2.30 Due to the extremely heavy pitting in Area 2 the next major soil build up (**129**) was not really observed as it was in Areas 1, 3 and 4. Context 129 was a dark brown silty loam, building up in the 12th and 13th centuries and varied in depth from between 0.15m and 0.25m. The deposit is typical of what would be referred to as a *medieval garden soil*, accumulating in a period of little activity over the site.

8.2.31 In Areas 1 and 4 context 129 was sealed beneath the cobble foundations of a rectangular building (**Building 8**) measuring 3m in width and over 10m in width (figure 12), with neither the south of north gable present within the area of excavation. The structure was aligned roughly north-south and extended over the line of the former north/south road. The cobble foundations (**254**, **333**, **335** and **338**) were placed in very shallow slots and were obviously associated with a large timber building. A westward turn to foundation 333 (**335**) could either indicate that the building was significantly wider than the 3m or that there was some form of west facing porch in this area.

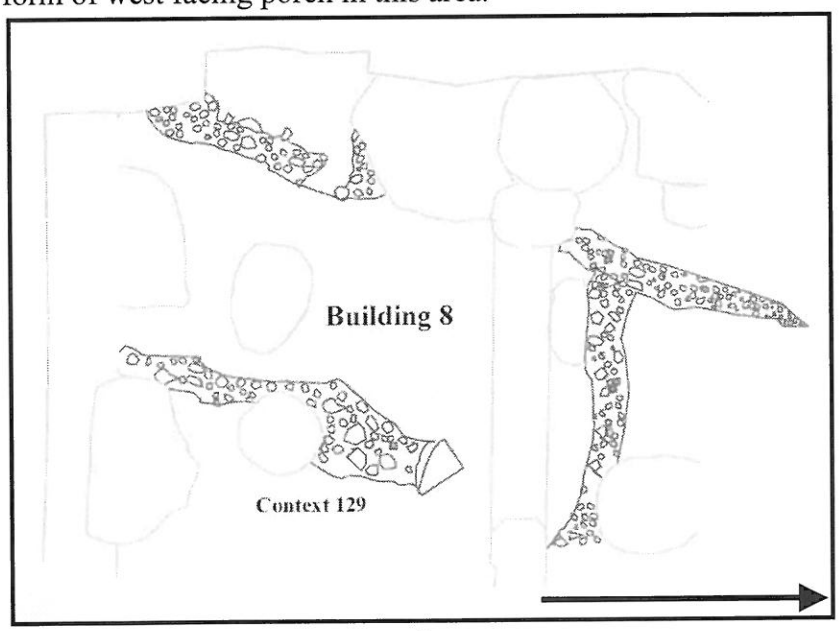


Figure 12: Building 8, the 12th century building in Areas 1 and 4
Scale 1:100

8.2.32 Unfortunately no recognisable floor surfaces or internal features survived within the building and the southern half of the structure was cut by a group of five pits (**336**, **346**, **288**, **349** and **570**). These pits were all sub rounded in shape and measured between 0.8m and 2.4m in diameter. The pits produced very little datable evidence apart from one sherd of 12th century pottery from the fill (**287**) of pit 288.

8.2.33 This group of pits was sealed beneath context 125. Context 125 was made up of a dark brown sandy silt and measured between 0.15m and 0.25m in depth and extended throughout the study area. This deposit contained large amounts of residual Roman pottery, animal bone and medieval pottery dating from the 13th to the late 14th century, and appears to be a similar *dark earth* build up as context 129.

8.2.34 Context 125 was cut by 13 large pits (**189**, **211**, **239**, **248**, **251**, **173**, **300**, **301**, **316**, **331**, **360**, **427** and **601**) distributed throughout the area (figure 13). These rubbish pits measured between 0.50m and 2.5m in diameter and produced pottery assemblages dating from the 13th to the 14th century. These pits also produced large quantities of animal bone but unlike the earlier sequence of pits were not waterlogged and therefore did not contain the high level of organic preservation seen elsewhere on the site. It is likely that this area was a rear garden/yard and related to buildings fronting Scotch Street that had been totally removed by 19th century cellaring.

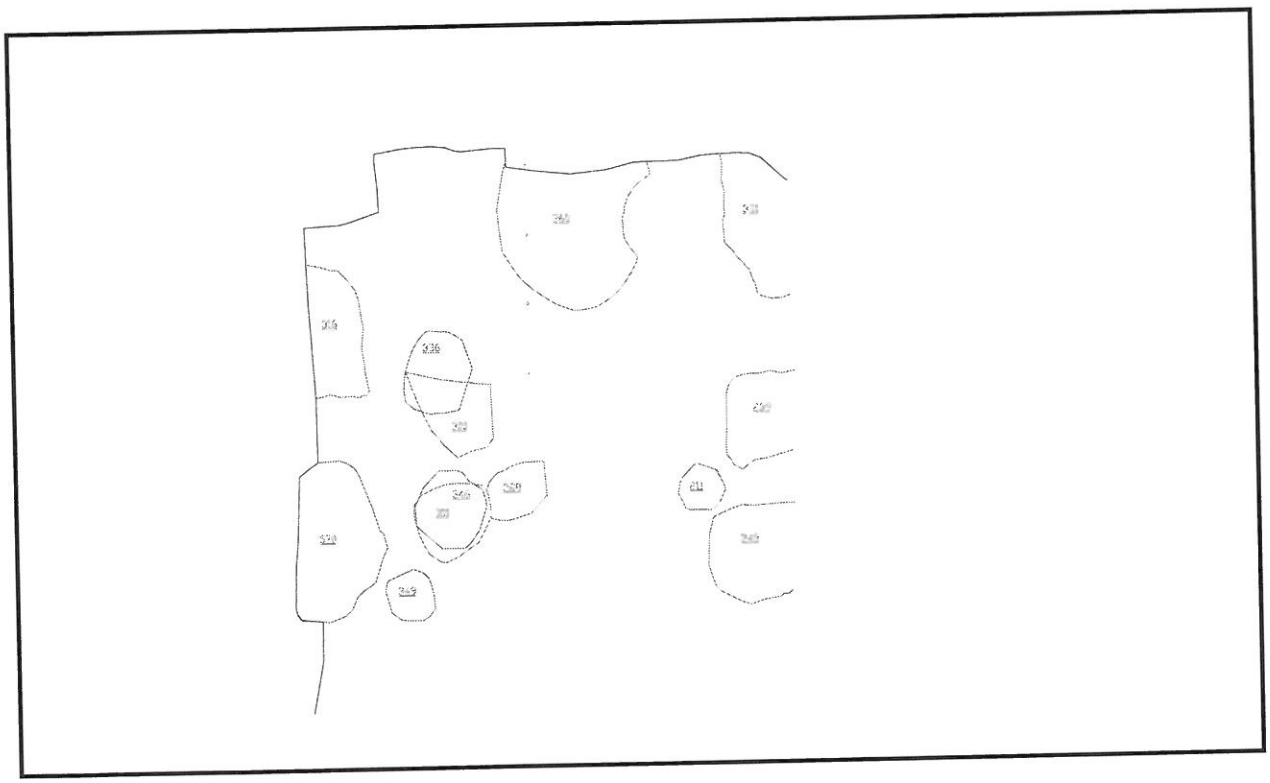


Figure 13: Plan of pits in Area 1.
Pits in red cut 129 while pits in purple cut 125

8.2.35 The most significant feature sealing context 125 was a probable pottery kiln (**305**) measuring 2.4m by approximately 2.2m, that was constructed in a pit measuring 0.76m in depth. The earliest deposit within this feature was a deposit of silty clay (**309**), which appears to be the initial levelling deposit with the pit onto which a sandstone-flagged base (**215**) was laid. One stone remained in situ and may have formed part of a splayed opening which would have formed part of the flue and stoke hole, the vast majority of this part of the kiln had been totally destroyed by later pitting. The kiln walls were constructed out of clay (306) which showed signs of intense heat and at least on episode of relining (**196**).

Plate 11: Section across kiln (**305**) revealing two phases of use.

8.2.36 The flagged base (**215**) was sealed beneath a charcoal rich clay silt (**308**) that is likely to have been associated with the final firing of this kiln. No in situ evidence survived of the kiln roof, it may have collapsed into the kiln and formed layer 193, a 0.20m deep layer of compact clay that did not exhibit the same signs of intense heat as contexts 191 and 196. Context 193 was then sealed beneath a thin layer of grey sandy silt 192 measuring 0.04m in depth, which was in turn sealed by a compact heat affected layer of baked clay (**194**) and a remnant of a compact clay surface (191). It is likely that context 194 could relate to a later heavily truncated kiln/oven measuring 1.8m by 0.8m which was constructed on the site of the earlier kiln, with context 191 representing the remains of an associated floor surface.

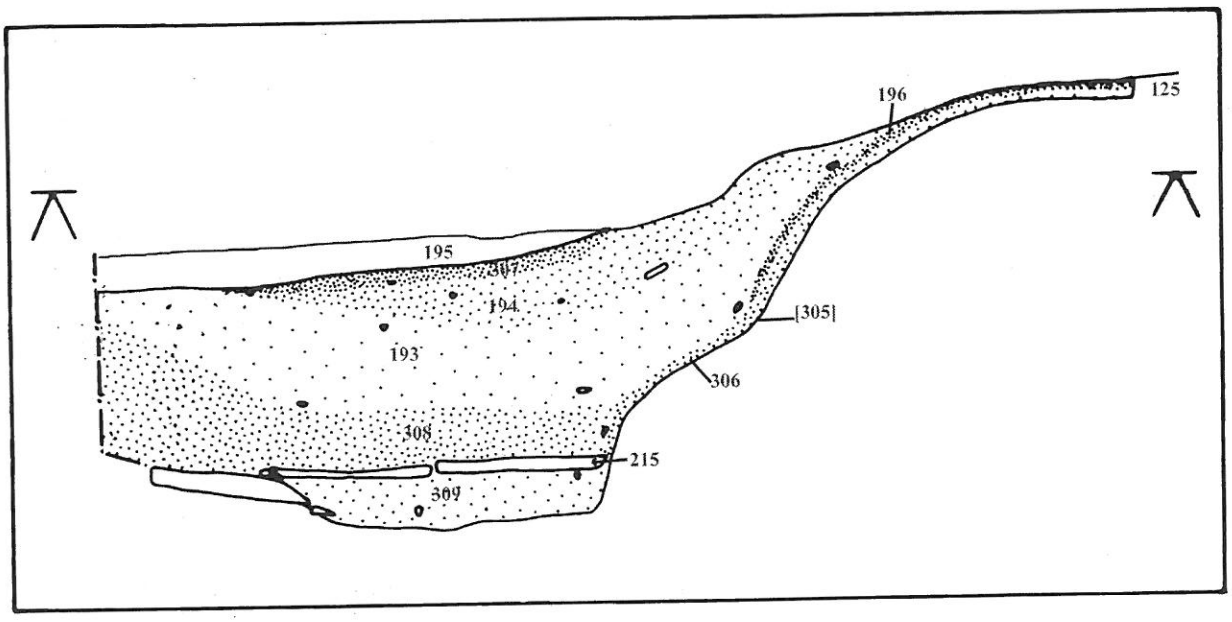


Figure 14: East facing section across probable kiln features
Scale 1:20

Plate 12: Kiln during excavation revealing context 194

8.2.37 The final period of intense heating associated with this deposit of baked clay was dated archaeomagnetically to 1370-1400. This layer was covered in a thin band of charcoal (**307**) that obviously related to the final use of this feature. The area of the hearth/kiln was then infilled with a dark brown sandy loam (194), which concluded this period of intense activity in Area 2.

8.2.38 If this area was a small pottery production site as suggested by the presence of pottery wasters, at least some parts the area must have been under cover to keep the elements from the potting area. No obvious structural remains of any substantial building survived, with the only evidence of any form of shelter

coming from a arc of five stake holes (**701-705**) cutting into context 191. These may represent all that remains of a wattle wall which could have been part of a temporary structure associated with the kiln.

8.2.39 One feature that is likely to be related to the earliest kiln is a charcoal filled (**112**) square pit (**241**). The pit measured 1.8m by 2m and had a depth of 0.60m with near vertical sides and a flat base (figure 15). The pit was filled by a series of charcoal rich deposits (**112=218** and **384**). Context 384 was then cut by a large squared pit (**221**) measuring 2.4m by 2.4m and 0.50m in depth, and filled by a series of dark grey silty clay deposits (**329, 113, 218, 242, 243, 244, 200 and 204**) which contained large quantities of burnt sandstone and significant amounts of charcoal.

8.2.40 Context 218, a band of burnt cobbles lined the limits of this feature, which did not appear to have had any in situ burning, with the charcoal rich deposits (**242, 244** and **200**) having been dumped into the feature from elsewhere. The interpretation of this feature is problematic as the burnt stones do not appear to form any distinct structure, or have any obvious use, nor did the finds assemblage from the feature contain any materials that could have hinted at its function.

8.2.41 A large pit (**350**) adjacent to this ash pit is also likely to be associated with this kiln and points to its use as a pottery kiln as large quantities of pottery wasters were found within its fills (**662, 661, 368** and **352**). This pit was re-cut at a later stage by a smaller pit (**166**), which contained the remains of a large hearth the fills of which (**167, 170, 168** and **169**) produced more wasters and large quantities of charcoal.

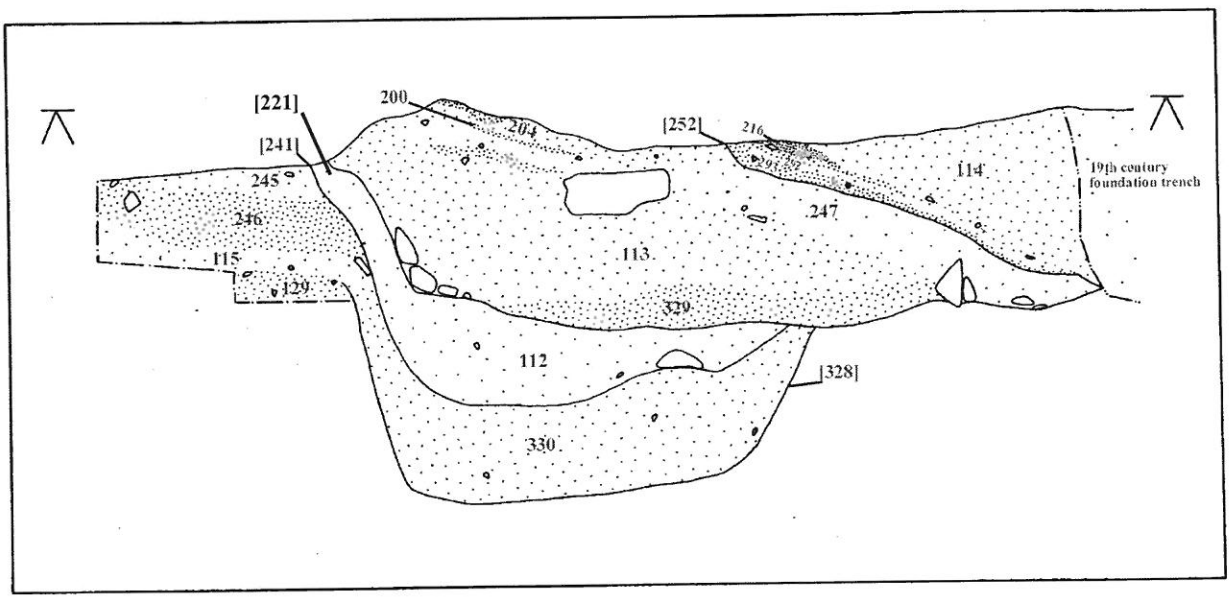


Figure 15: East facing section across probable ash pit 241.

Scale 1:20

8.2.42 The uppermost fill of feature 221 (**204**) was cut by another pit (**252**), this shallow pit measured approximately 1.5m by 1.2m and 0.40m in depth, and was filled with six distinct layers of charcoal (**293, 292, 291, 298, 277** and **217**) which had

built up against a wooden trough (**276**) (plate 13), the carbonised remains of which survived in situ. It is possible that this feature could relate to the final oven/kiln (**194**), and could be a small water trough associated with the preparation of the clay in the potting process. The trough (**276**) was sealed beneath three successive dumps of charcoal (**216**, **114** and **204**).

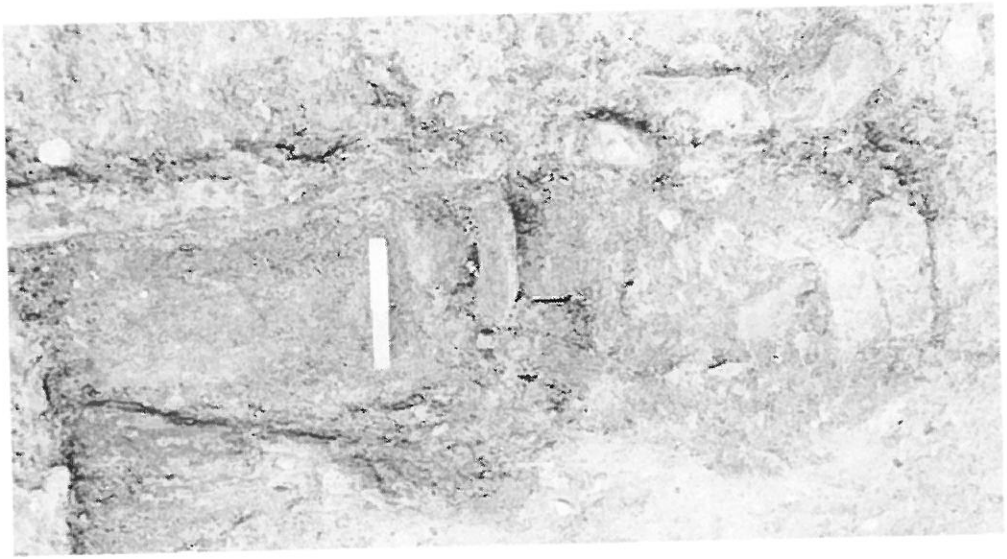


Plate 13: Wooden trough (**276**) during excavation

8.2.43 This period of intense industrial activity was concluded by the build up of another dark brown *garden soil* (**110=124**) that extended over Areas 1, 2 and 4, measuring between 0.10m and 0.18m in depth. This layer appeared to represent a gradual soil build up over the area. The layer was fairly undisturbed, the cobble foundations of a probable north/south boundary wall (**206=140**) (plate 14) represented the most significant feature cutting into 124. Although highly truncated the boundary did appear to turn eastwards on the line of Rosemary Lane and could mark the establishment of this property boundary. Two small postholes were recorded either side of this feature (**155** and **455**) and could relate to some form of timber fence associated with this property boundary.

Plate 14: Cobble foundations 206

8.2.44 Area 4 was dominated by a large well (**466**) (plate 15) cut into context 124, the well head measured 2.6m in diameter and the well itself measured 0.90m. It was excavated to a depth of 1.2m. There was some evidence that the well had once been timber lined (**483**) with the edges of the well showing extensive light brown staining which appears to be all that remained of the timber lining. The finds recovered from the construction backfill in the well head (**482** and **485**) gave a date no earlier than the mid 14th century for the construction of this well, which given its position in the stratigraphic sequence, could well be considerably later than this date.

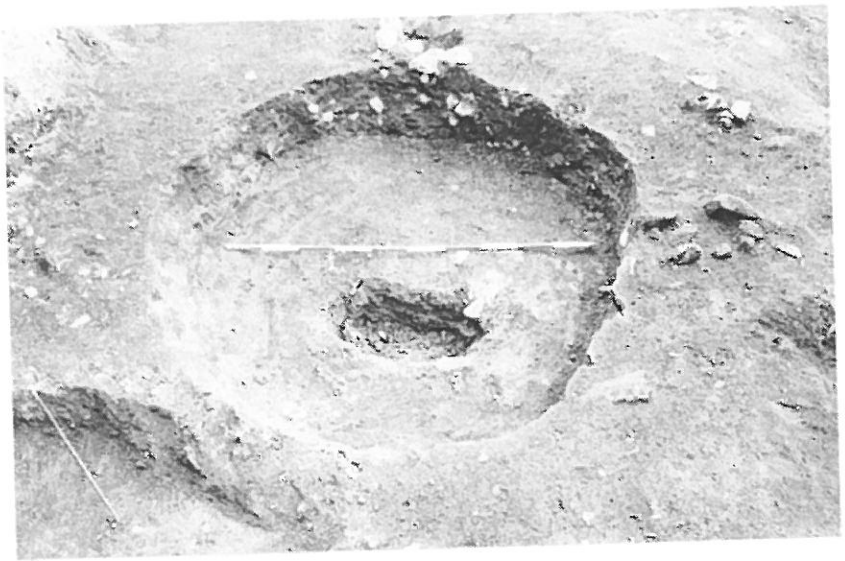


Plate 15: Well 466

8.2.45 Remnants of a clay surface survived along the western side of the well (**345**) and the well was later deliberately infilled with what appears to be household waste (**478** and **479**) including large amounts of animal bone and domestic pottery dating from the 14th to the 15th century. A single pit (**418**) was excavated just to the east of the well measuring approximately 1.6m in diameter and filled by a sequence of five deposits (**423**, **457**, **429**, **425**, **422**) which produced a finds assemblage which dated to the 15th /16th centuries.

8.2.46 The uppermost fill of the well (**479**), associated pit (**422**), the boundary (**206**) and post holes in Area 1 were then sealed beneath the final build up of garden soil (**116**). This context comprised an extensive sandy loam which appears to be have built up from the late medieval period to the 18th century. It is during this period that cartographic evidence (figures 3 and 4) first aids the interpretation of land use on the site with all the study area appearing to be the gardens of properties fronting Scotch Street.

8.2.47 Only isolated areas of context 116 survived due to 19th century truncation, but it was apparent that this deposit once extended over much of the site. The most notable feature to cut into context 116 was a fine sandstone well (**201**) and associated trough (plate 16). The well measured 0.90m in diameter and was still

open to a depth of 9m with part of a timber pump still in situ just below the water line. The pump shaft that survived measured 0.45m in diameter with an internal diameter of 0.18m and appeared to be made of oak. No detailed work on the pump was possible due to health and safety issues and the well was left in situ.

8.2.48 The remains of a stone lined drain (211) were recorded in the northwest corner of Area 1. The drain, which post dated the stone trough associated with the well, **(201)** appeared to be the precursor to the salt glazed Victorian sewer pipe, which ran east/west across the site.

Plate 16: 18th century well and later sandstone drain.

8.2.49 The only other feature of any consequence that cut into context 116 was a large late 18th century rubbish pit **(102)** measuring 1.3m in diameter and 1.25m in depth. The well and rubbish pit were then sealed beneath a 19th century makeup layer (101) that extended throughout the site and was associated with cellaring and service trenches which covered large portions of the development site.

8.2.50 Context 101 was then sealed beneath approximately 0.40m of recent demolition material.

Figure 16: Features cutting 116 in Area 1
Scale 1:100

8.3 AREA 3

8.3.1 Area 3 measured 4.6m by 3.6m and was situated to the east of Area 2 and south of Area 7. The whole area was heavily truncated by 19th century cellaring and medieval pitting.

8.3.2 The earliest recorded deposit was the natural un-weathered silty boulder clay (**700**) observed in section at the bottom of a medieval pit (**141**) at a depth of 18.8m AOD. The earliest deposit recorded in plan was a silty clay deposit (501) dating to the 2nd century which extended west into Area 2, this could possibly be related to context 621, which has been interpreted as a levelling deposit prior to a sequence of cobble surfaces in Area 9.

8.3.3 Context 501 was sealed by a sequence of two compact cobble surfaces (**268** and **503**). The primary surface (**268**) measured 0.12m in depth, and the final surface (**503**) measured 0.16m in depth. The western limit of these surfaces was extremely well defined but towards the east and northeast into Area 7 the surfaces were totally obliterated by later medieval pitting. Although lost to later truncation it is possible that contexts 268 and 503 represent the western edge of the extensive cobbled surfaces recorded in Areas 6, 8 and 9, and are likely to be associated with the earliest recorded structures in Areas 1 and 2.

8.3.4 The final cobble surface was sealed by a slight soil build up (**459**) measuring approximately 0.06m in depth and extending westwards into Areas 1 and 2, producing a finds assemblage dating to the late 2nd century. This deposit was overlain by a similar soil accumulation (**477**) a silty loam measuring approximately 0.15m in depth which contained a similar late 2nd century finds assemblage.

8.3.5 Context 477 was overlain by a localised grey brown silty clay deposit (**261**) and cut by two pits (**530** and **526**) which were stratigraphically likely to date to the early 12th century, at the beginning a sequence of 9 medieval refuse pits which dominated the archaeological sequence in Area 3. Pit 526 measured 1.4m in diameter and measured over 0.60m in depth containing two organic rich fills (**637** and **528**). The second of these pits to cut context 477 (**530**) contained three fills (**314**, **313** and **531**), which unfortunately contained no dating evidence.

Plate 17: General shot of medieval pitting in Area 3

8.3.6 The localised spread of silty clay (**261**) was cut by a small heavily truncated pit (**264**), measuring over 1.2m in diameter and approximately 0.35m in depth. The organic rich fills (**304** and **303**) of this pit produced more pottery of a 12th/early 13th century date. Context 303 was truncated by another pit (**258**), again heavily truncated but measuring in excess of 3.4m in diameter and having a maximum depth of over 1m. The pit was filled by a sequence of 8 fills (**259**, **289**, **260**, **296**, **311**, **297**, **312** and **618**).

8.3.7 To the northwest of pit 264 another pit (**175**) was recorded cutting into the final fill (**528**) of pit 175; the pottery assemblage from the two surviving fills (**147** and **148**) was exclusively 12th/early 13th century in date.

8.3.8 A large pit in the centre of Area 3 (**145**) truncated three earlier pits (**530**, **528** and **175**) and cut into deposits 531, 259 and 148 (figure 17). Pit 145 had a diameter of 3m and measured over 1m in depth containing 12 organic rich fills (**144**, **146**, **178**, **179**, **180**, **181**, **182**, **183**,**184**, **185**, **188**, **186**) all of which appeared to date from the 13th /14th centuries.

8.3.9 The uppermost fill of this refuse pit (**144**) was cut by a later pit (**141**), which was cut into the centre of pit 145. This feature measured 1.7m in diameter, and had a maximum depth of 1.3m. It was filled by a sequence of 7 deposits (**652**, **651**, **359**, **171**, **154**, **176**, and **142**). The pottery contained within this pit produced a

13th/14th century date range but given its position in the stratigraphic sequence a 14th century date appears more likely.

8.3.10 A small pit (**156**) measuring 0.60m in diameter and 0.12m in depth was then cut into context 142 the final fill to be placed in pit 145. This small pit contained two fills (**157** and **117**) which produced material dateable to the 14th/15th centuries. Any later medieval deposits were truncated by the 19th century construction levels (**101**).

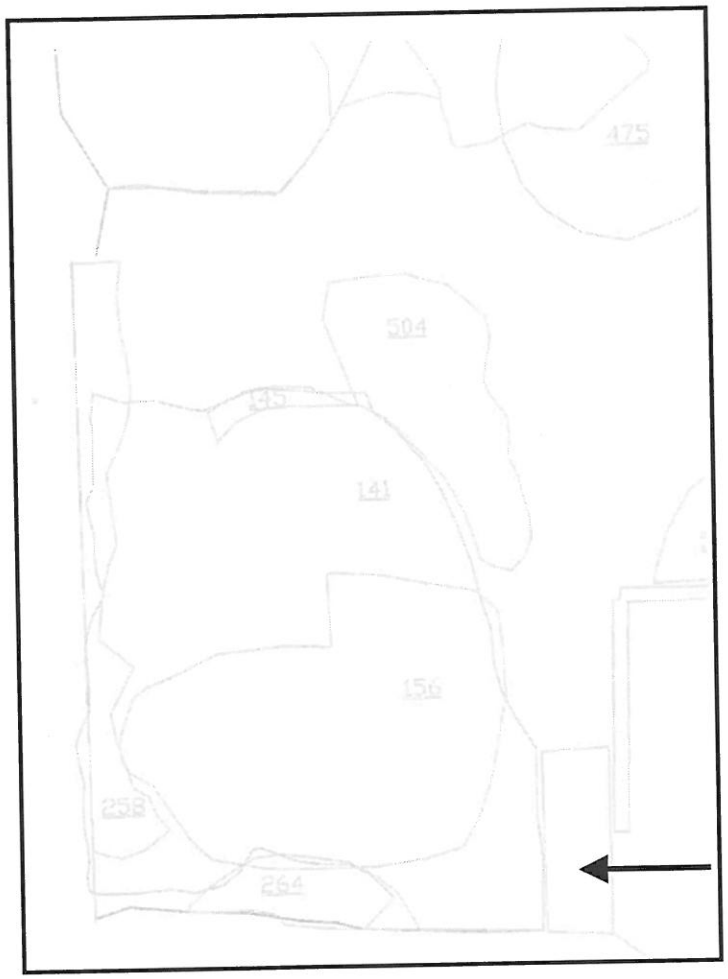


Figure 17: Plan of pitting in Area 3
Scale 1:50

8.4 AREA 5

8.4.1 Area five measured approximately 15m by 4m and was contained in the interior of a Victorian cellar (figure18). The area had been truncated down to the approximate level of the required formation level of the development site. Therefore apart from an initial clean, the area was left unexcavated.

8.4.2 The earliest deposit recorded in Area 5 was an extensive spread of dark brown sandy silt (**403**), which produced several sherds of 2nd century samian pottery. Context 403 was overlain by a clean yellowish brown sandy silt deposit (**407**), which in turn was sealed by an extensive cobble spread (**404**). Although truncated over much of the trench it is highly likely that this cobble surface once extended throughout Area 5 and is a continuation of the cobble surfaces recorded in Areas 6, 8 and 9.

8.4.3 The cobble layer (**404**) was then cut by a probable gully (**405**) running on a northeast-southwest alignment. The feature measured 0.90m in width and extended for 4m, butt ending to the southwest and being truncated by a later pit (**406**) on the northern edge of Area 5. Although this pit produced no dating evidence a medieval date is highly likely. The pit (**406**) was truncated by the construction of the Victorian cellar, the base of which had a height of 19.58m AOD.

Figure 18: Plan of Area 5 after initial cleaning.
Scale 1:50

8.5 AREA 6

8.5.1 Area 6 measured approximately 4.5m by 2m and corresponded to the interior of a Victorian cellar (figure 19). The area had been truncated down to the approximate level of the required formation level of the development site. Therefore apart from an initial clean, the area was left unexcavated.

8.5.2 The earliest recorded deposit was a linear spread of sandstone (**515**) running on a roughly east-west alignment and measuring 0.30m in width. Context 515 is likely to be a continuation of context 639 recorded in Area 8, forming a curb of sorts with exterior cobbled surfaces to either side (context **516** to the north and **519** to the south) that appeared to partially overlay the curb. Both contexts 517 and 519 consisted of highly compacted small to medium sized river cobbles set in a silty sand matrix.

8.5.3 A small area of modern truncation revealed that context 517 had a depth of 0.15m and was sealing an earlier cobble spread (**519**). Context 517 consisted of a compacted pea gravel in a light brown sandy silt matrix. A grey brown silty loam (**518**) measuring 0.06m in depth partially sealed context 517.

8.5.4 Both contexts 518 and 516 were then cut by context 512 (filled by **513**) a foundation trench for a mid 19th century wall. The whole trench was then sealed beneath approximately 0.50m of modern demolition material context 511.

Figure 19: Plan of Area 6 after initial clean
Scale 1:50

8.6 AREA 7

8.6.1 Area 7, although physically connected to Area 4, was stratigraphically cut by the large sewer pipe that ran east-west across the development site (plate 18) and was excavated after Area 4 was completed. It was therefore decided to treat this small area of the site in isolation. The area measured 10m by 1.4m tapering slightly to the west (figure 20).

Figure 20: Plan of Area 7 after initial clean
Scale 1:50

8.6.2 The earliest recorded deposit was a dark brown sandy silt that was part of the extensive soil build up (**520**) also recorded in Areas 2 and 3. Dating evidence for the deposit indicates a late 2nd century date for this soil accumulation.

8.6.3 This deposit was then sealed by a small covering of an orange brown silty clay deposit (**477**) that had survived the extensive medieval pitting. The finds assemblage points to a late 2nd century date for this clay spread. Context 477 was in turn sealed by a friable grey brown sandy silt (**129**) forming part of an

extensive soil build up extending over the whole site, which in Area 7 had an average depth of 0.15m. This layer was then sealed by a thin spread of a grey brown sandy silt (**128**), a similar but less widespread soil accumulation measuring approximately 0.20m in depth. Both layers contained some variation in makeup indicating that both contexts 128 and 129 are likely to have built up gradually over a considerable period of time.

8.6.4 As these two deposits were extremely difficult to differentiate once the soil had dried some cross contamination of finds is likely to have taken place. The dating evidence for these two soil deposits, taken as a whole, range from the 12th to the late 14th century. The logical dating for these two deposits would give 129 a 12th century date and put 128 into the 13th century and beyond.

8.6.5 A substantial dark earth deposit (**125**) sealed context 128. Context 125 was a homogenous dark grey clay silt that measured between 0.25m and 0.38m in depth. This deposit was a typical medieval dark earth build up, and was recorded throughout the site. The layer produced a finds assemblage containing large amounts of residual Roman material, together with large amounts of medieval pottery dating from the 13th to the 14th centuries and animal bone.

8.6.6 Context 128 was then cut by a shallow slot aligned east-west, measuring approximately 0.20m in depth and over 0.30m in width. The slot was filled by a grey brown sandy silt (**174**), its original width lost as the northern side of the slot was truncated by Victorian cellaring. Little more can be said about this slot as the feature only survived for a length of 3.2m before being lost to subsequent medieval pitting. This slot was sealed by context 116, an extensive dark earth build up which appears to represent a late medieval/early modern garden soil.

8.6.7 Context 124 was a further intermittent soil build up sealing context 125 and extending over much of Area 7. This layer measured between 0.20m and 0.30m in depth, producing large quantities of residual Roman material and large quantities of medieval material dating from the 13th /14th centuries. This deposit was found to seal an oven in Area 2 which produced an archaeomagnetic date of *c.*1400 (**194**) for the last use of the oven. The earliest possible date for this soil build up to begin accumulating would be no earlier than the early 15th century, a date slightly later than indicated by the finds assemblage.

8.6.8 A sequence of medieval pits (figure 20) were then recorded cutting into context 128. The earliest of these pits were features 544 and 548, pit 544 had a diameter of over 1.4m and survived to a depth of 0.15m, containing one fill (**545**), a dark grey organic rich silt of 14th century date. Pit 548 had a diameter of over 3m and was located 2m to the east of pit 544 and was truncated by the Victorian sewer pipe and cellar wall to the north and east. The pit survived to a depth of 0.50m and was filled by an organic silty clay (549) of a similar 14th century date to context 545.

8.6.8 Pit 544 was then truncated by pit 565 measuring 1.4m in diameter and having a maximum depth of 0.58m. The pit contained two fills, the primary fill (**585**) was a dark grey organic silt and the secondary fill (**566**) consisted of a silty clay deposit containing pottery of a 14th/15th century date.

8.6.9 The final pit in this sequence was pit 546, which cut context 566 and measured 1.8m in diameter and 0.20m in depth. The pit was filled by a cobble rich sandy silt (**547**) that was sealed below the Victorian make up level 101, which also sealed context 549.

Plate 18: Area 7 after initial cleaning

8.7 AREA 8

8.7.1 Area 8 was situated in the north-eastern most corner of the development site situated approximately 7m from the Scotch Street frontage, measuring 4m by 4m (figure 21 and plate 19). It was hoped that some structural remains associated with the medieval street frontage would survive in the trench, but unfortunately any traces of medieval buildings if they had existed had been removed by Victorian cellaring.

8.7.2 The earliest recorded deposit was a compact cobble layer (**650**) that extended throughout Area 8, proving to be the earliest of 14 distinct cobble surfaces to cover the Area. This cobble surface was sealed by a rough linear spread of cobbles (**639**) that were aligned east-west and centrally placed within the trench. This cobble feature appears to establish a north-south division which is respected throughout the Roman period, with context 639 defining the edge between defined cobble spreads.

8.7.3 A series of 4 distinct cobble surfaces were laid along the southern half of the trench (**641**, **638**, **533**, **534**), with two associated cobble surfaces laid along the northern half of the trench (**620** and **617**). Both sequences of surface appear totally external in nature and are likely to represent a yard surface. It is unlikely to be a road surface as it did not continue into Areas 4 and 5 although it did extend into Area 6.

8.7.4 Cobble surfaces 534 and 617 were then sealed by an extremely clean, light brown sandy silty soil build up (**555**), measuring 0.8m in depth which extended throughout the trench. This layer was then sealed by another linear spread of larger cobbles (**587**) redefining the north-south boundary originally defined by context 639. Context 587 measured approximately 0.40m in width and approximately 0.20m in height, forming a crude curb, which would again define two distinct areas of cobbling.

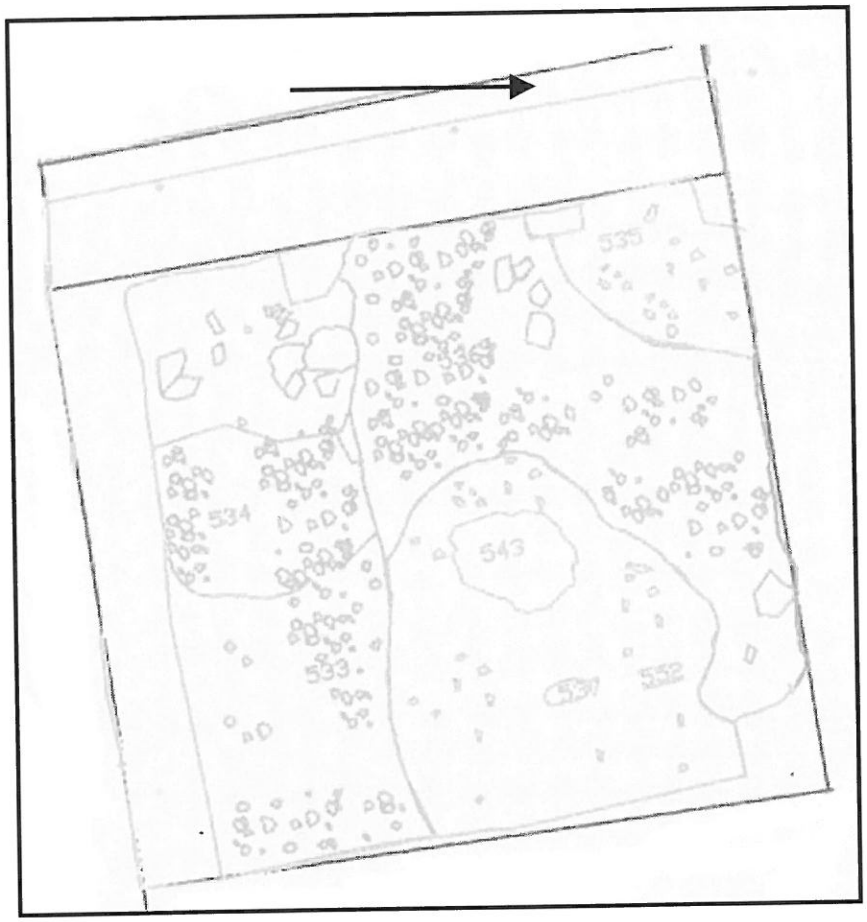


Figure 21: Plan of Area 8 after initial clean
Scale 1:50

8.7.5 Context 587 was then sealed by a another sequence of compact cobble surfaces, again defined by two distinct sequences of cobbling, with the southern most surface comprising a sequence of deposits (**685**, **580** and **536**) and the northern spread made up of a further series of deposits (**589**, **586**, **576** and **569**). Context 536 was cut by two small post holes (**573** and **575**) measuring 0.30m and 0.35m in diameter respectively with both having an average depth of 0.10m.

8.7.6 The final phase of cobbling (**536**) and posthole 575 were then cut by a large medieval rubbish pit measuring approximately 2m in diameter and filled by a sequence of five fills (**590**, **553**, **554**, **537** and **543**). The finds assemblage from this feature suggests a likely late 12th/early 13th century date for this feature.

8.7.7 The uppermost fill of the pit (543) contained pottery of a 13th century date and was sealed beneath a 14th century cobble spread (508). Context 508 was sealed

beneath a mixed silty gravel of 14th/15th century date. This deposit was then sealed beneath modern demolition deposits (100 and 101).

Plate 19: Area 8 after initial cleaning

8.8 AREA 9

8.8.1 Area 9 was separated from Areas 7 and 8 by cellaring and the main east-west sewer (see figure 8). The trench consisted of two 1m strips running for approximately 8m and separated by the main east/west sewer pipe (see figure 22). The area as a whole was heavily truncated with little medieval stratigraphy surviving and no evidence of any medieval buildings fronting Scotch Street.

8.8.2 The earliest recorded deposit was an area of clean grey sandy silt **(683)** recorded in section in the eastern corner of Area 9 (figure 8). This layer measured 0.20m in depth and is likely to represent the pre-Roman original ground surface (OGS) and was sealing the natural boulder clay **(101)**. The importance of discovering the natural subsoil in Area 9 was heightened as this was one of the few areas where the natural subsoil was observed.

8.8.3 The original ground surface was sealed by a 0.20m deposit of redeposited natural clay (134) which extended throughout the trench and is likely to represent the initial Roman levelling and development of the area, which if concurrent with the initial development on the opposite side of Scotch Street recorded during the northern Lanes excavations (figure 9), would date to the late 1st century (late 70s/ early 80s).

8.8.4 This levelling deposit was cut by a post hole **(686)** measuring 0.50m in diameter and 0.15m in depth. This feature was sealed by a later silty clay levelling deposit

(**621**) which again extended throughout Area 9 and had an average depth of 0.10m. Traces of a post pipe survived within feature 686 which continued though context 621, implying that the post within this feature was still in situ when this levelling deposit was built up.

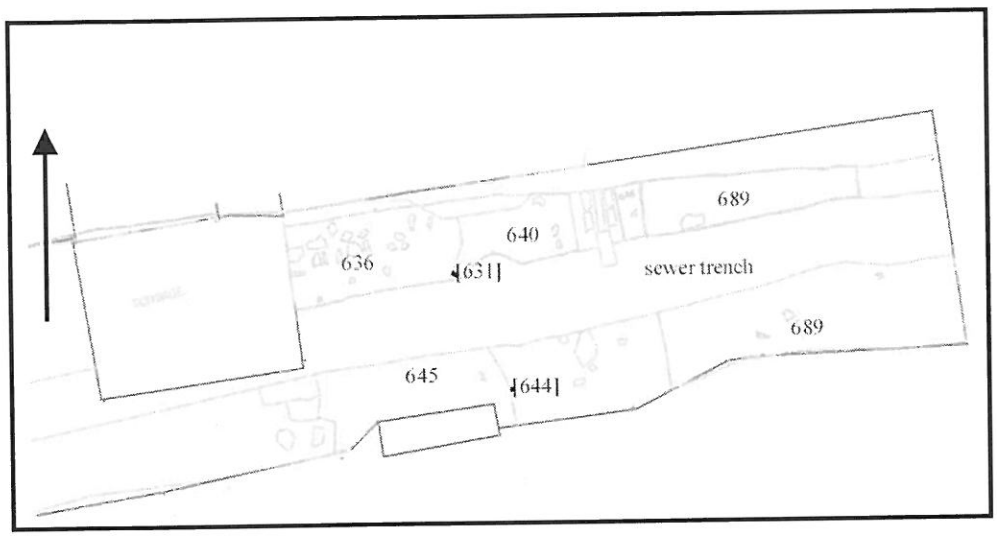


Figure 22: Pre-excavation plan of Area 9
Scale 1:100

8.8.5 Context 621 was then sealed by a succession of 11 compact metalled surfaces (**622-629**, **680-681**), which had a combined depth of 0.70m and extended throughout Area 9. It is highly probable that this area of cobbling is a continuation of the similar cobble surfaces recorded in Areas 6 and 8, and was likely to have formed a cobbled yard or courtyard for a structure not seen during this excavation.

8.8.6 The final cobble surface (**629**) in this sequence produced a finds assemblage of early 3rd century date and was cut by the foundation trench (**685**) of a probable stone building (**Building 7**) (figure 23). The construction trench measured 1.1m in width and 0.30m in depth and only survived in the north facing section of the trench (plate 20), with the wall foundations surviving to three courses of red sandstone (**647**). The deposits that made up the backfill to this construction cut (**647**, **655-657**, **663**, **667**) produced finds dateable to the mid 3rd century.

8.8.7 The excessive width of this foundation in relation to the north–south section of walling added to the fact that the feature was totally absent in the northern side of Area 9 suggests that the wall was in fact the truncated north eastern corner of a stone building, with the northern wall totally destroyed by the Victorian sewer trench.

Plate 20: Section of wall 647, Building 7

8.8.8 Very little survived of Building 7, with no internal surfaces surviving due to the cellaring on the southern side of Area 9. An area of cobbling (**629**) extended from the eastern wall of the building and appears to represent a late cobbled surface associated with the building, the finds from this deposit give a likely early 3rd century date for the laying of this cobbling. A hollow depression in 629 at approximately 0.20m from the wall could represent the drip line from the eaves of the building.

8.8.9 The wall was sealed by two distinct layers of probable demolition material consisting of smashed angular sandstone and frequent charcoal (**653** and **649**) having a combined depth of 0.10m and being localised to the vicinity of the wall remains, with no evidence of these layers extending to the northern end of Area 9. The uppermost demolition layer (**649**) was sealed by a slight soil build up (**643**) which appears to have once extended throughout the area though unfortunately contained no useful dating evidence as the pottery recovered appears to have been exclusively 2nd century in date, and was therefore residual.

8.8.10 Much of Area 9 was then sealed beneath a substantial medieval soil build up measuring up to 0.20m in depth. This layer was probably a continuation of context 129, the ubiquitous *dark earth* build up recorded over much of the development site that produced pottery of a 12th/ early 13th century date. This soil build up was truncated by two large pits (**631** and **644**) dating to the 12th/early 13th century. Any later medieval deposits had been totally truncated, and both contexts 636 and 645 (the uppermost fills of pits **631** and **644** respectively) were sealed by context 101 (the Victorian make up level).

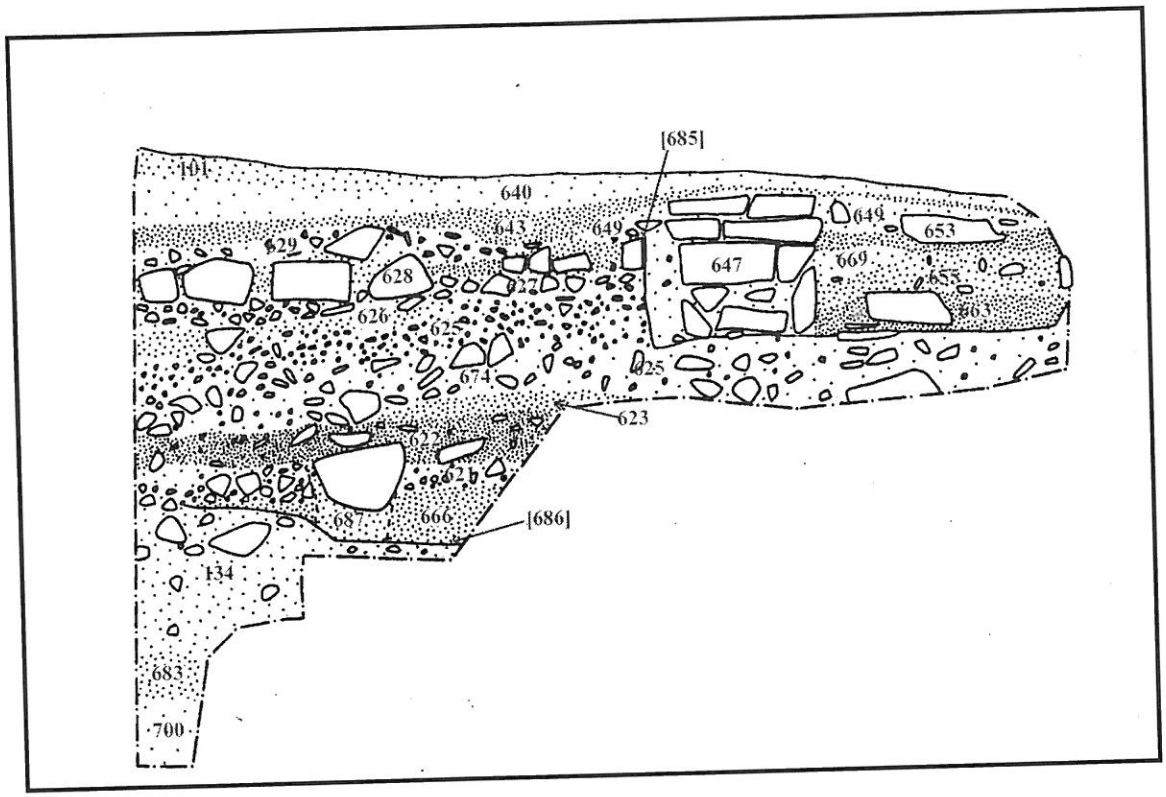


Figure 23: North facing section across Area 9.
Scale 1:20

9 THE SITE SEQUENCE

9.1 PHASE 0

9.1.1 The natural subsoil was recorded in two sondages and consisted of a non-weathered boulder clay at a depth of between 18.70m and 18.80m AOD.

9.2 PHASE 1

Prehistoric activity

9.2.1 A probable old ground surface was recorded in the deep sondage in Area 9 and comprised a light grey loamy silt measuring 0.20m in depth. Due to the limited area over which this deposit was observed no evidence of ard or plough marks, which have been identified during previous excavations in Carlisle, were recorded.

9.3 PHASE 2

1st century (Flavian).

9.31 Evidence of this early phase was only recorded in later pit sections. It was not possible to gather enough useful information to state any meaningful comment on the activity and make up of the site during this period. The only significant

recorded deposit was the redeposited natural layer (**134**), a probable levelling deposit in Area 9. Datable material of any form from this period was almost totally absent from the finds assemblage, suggesting limited activity throughout the site.

9.4 PHASE 3a

Major 2nd century activity (clay foundation and Building 1)

9.4.1 Only the uppermost layers associated with phase 3a were encountered during the excavation, and the majority of these features were left unexcavated as they were below the formation level. The best evidence for phase 3 activity came from Areas 1, 2 and 3, where the remains of a stone building (**Building 1**) aligned north-south with an associated cobble spread on its eastern side and a large rectangular foundation base (**460**) were recorded (figure 24).

9.4.2 Although all these features were highly truncated the sheer size of foundation 460 would indicate that it was constructed to support a significant structure, the foundation is highly unlikely to relate to a conventional building and its rectangular shape would appear to indicate a free standing structure, the nature of which is unknown. The small stone building to the east of foundation 460 appears to have been open ended on the eastern side or certainly only had a non-load bearing timber wall. From the eastern side of this building to the eastern limit of the excavation an extensive cobble yard surface was laid and was re-laid on several occasions.

9.4.3 Building 1 and the structure associated with 460, were systematically demolished with no obvious demolition deposits remaining on site. It is possible that these features may lay within a putative *praetorium.* This area complex was bounded by a bank and ditch recorded to the east of the site during the Lanes excavation at (KLA D-G, LAL C and GLL A) and to the south at SCO A (see figure 9 for site locations). As there was no evidence of a western return running across the site, it must be concluded that the Phase 3 features are all likely to relate to this possible *praetorium.* Dating these features has proved extremely difficult as only excavated deposits were associated with the demolition and subsequent levelling and produced early to mid 2nd century material.

9.4.4 If these features are related to the *praetorium* recorded in the north Lanes, which appears to have been demolished in the late 90s AD, there is a slight conflict in dating, which could either suggest that some structures associated with the *praetorium* remained in use longer than previously thought, or that the phase 3 features are unrelated to the tentative *praetorium* and may relate to some other previously undiscovered and unidentified high status structure.

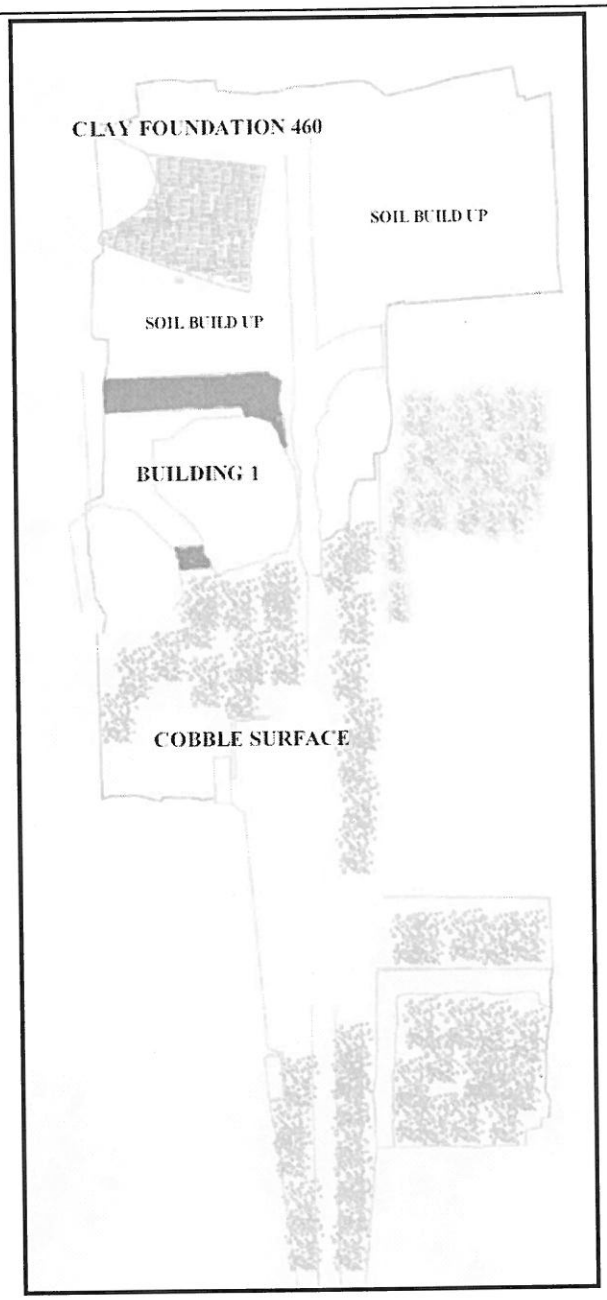


Figure 24: Plan of phase 3a features
1:200

9.5 PHASE 3b

Mid to late 2nd century

9.5.1 The whole of the site was then subject to an extensive soil build up (**459=615**) which produced material dating from the early to late 2nd century, the only area which appears to have continued in use throughout this period was the cobbled areas in the eastern quarter of the site. Here the cobbled surfaces were renewed and kept clear of the soil build up recorded elsewhere on the site. The general feeling that comes across in this period is of general abandonment with limited activity on the eastern edge of the site. It is tempting to view this period of less intensive use in the Antonine period in the context of the advance into Scotland and possible downsizing of the civilian settlement.

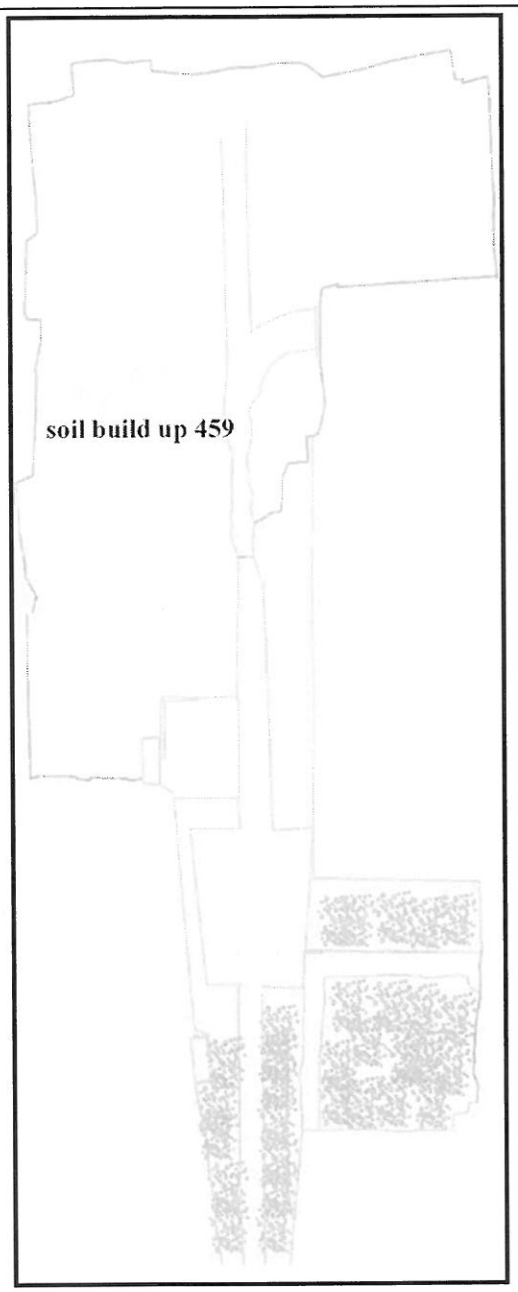


Figure 25: Plan of phase 3b features
1:200

9.6 PHASE 4a

Early 3rd to end of 3rd/early 4th century

9.6.1 Phase 4 marks a period of renewed activity on the site which corresponds to a highly significant period in the development of Roman Carlisle with the granting of *civitas* status, which presumably involved a major rebuilding and reorganisation of the civilian settlement. This period was characterised by the construction of a small rectangular timber building (Building 2) measuring 7.4m by 4.4m. The building was accessed via a single doorway on its western side that opened onto a minor north-south roadway running alongside the western limit of the site. The highly truncated remains of a probable yard surface was recorded to

the north of this building. As with all the later Roman phases there was little survival of any associated features in Areas 2 and 3.

9.6.2 The building appears to be of low status and was furnished with only one small hearth on its final floor surface. The structure contained no obvious drainage system and was likely to have served as some form of store or shelter rather than a domestic dwelling although this cannot be ruled out. Environmental samples and finds from the vicinity gave no clues to the use of this structure, although the lack of any military finds suggest a likely civilian rather than military use.

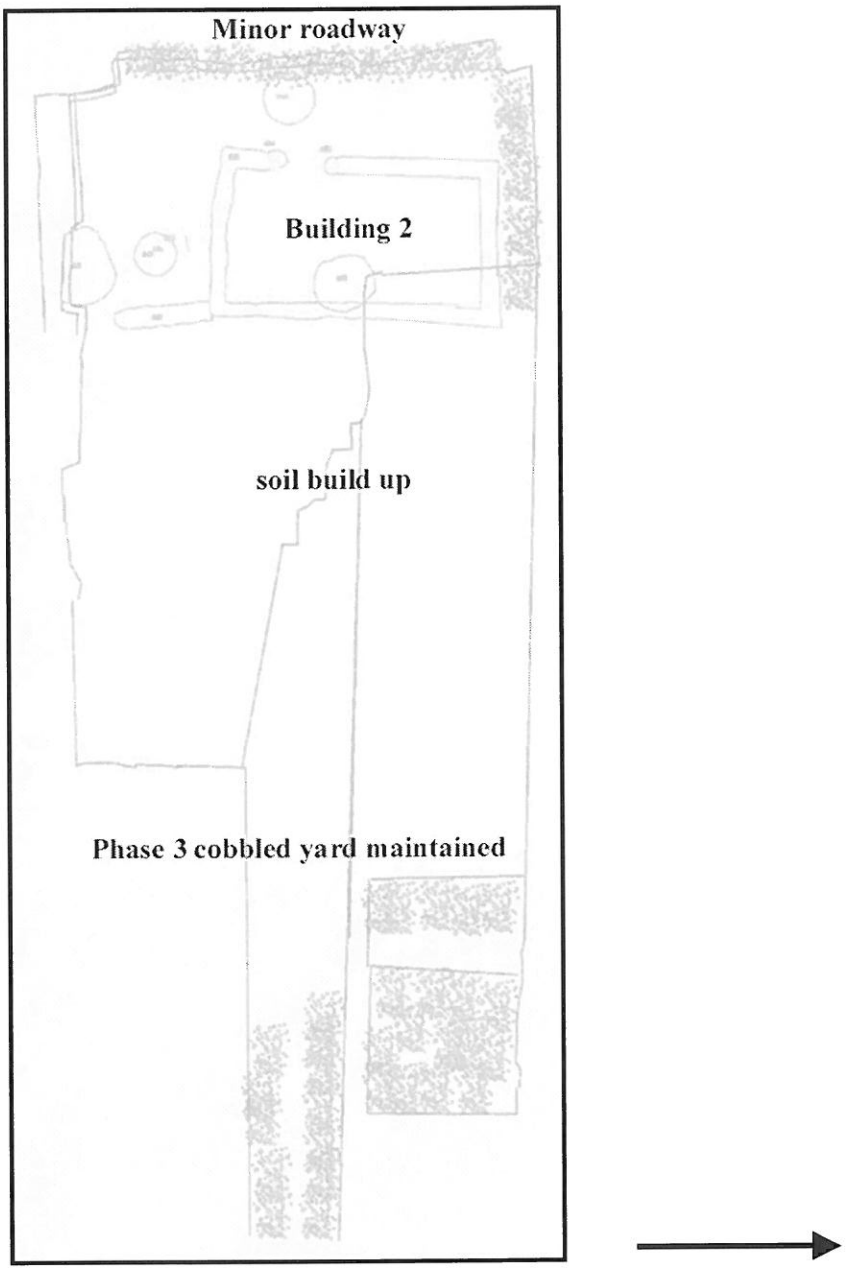


Figure 26: Plan of major Phase 4a feature
1:200

9.6.3 It is highly likely that this area was situated off a back alley and either served as an ancillary structure to a higher status dwelling which presumably fronted Scotch Street or related to a low status insula set between the main Roman streets of

Scotch Street and Fisher street. The cobbled area along the eastern limits of the site, which is likely to have formed a yard area off Scotch Street recognised in phase 3, continued through into phase 4. The dating evidence from this phase includes large amounts of 2nd century pottery and a central Gaulish Antonine samian assemblage.

9.6.4 The structure was rebuilt at least once and appears to have remained in use well into the 4th century. The final soil build up (430) around this building butted up against the walls of the building, and contained pottery dating from the 2nd to early 4th centuries and one coin of probable early 4th century date.

9.7 PHASE 4b

Early to mid 4th century (figure 27)

9.7.1 Building 2 was then levelled and the area was sealed beneath a new timber building (**Building 3**) which appeared to have been constructed using a sleeper beam which was laid directly on the existing ground surface leaving no beam slots to define the footprint of the building, which in this instance was defined by the internal clay floor surfaces, which gave this structure the overall dimensions of over 5m in length and 3.5m in width.

9.7.2 Again the building was of low status and had the feel of an agricultural rather than domestic structure although analysis of the environmental and finds assemblage did little to confirm or discount this hypothesis. The building does not appear to have been in use for any great length of time as it had only one phase of clay floor and very little associated soil build up. The final internal cobbling of Building 2 (**377**) appears to have been kept clean and continued to be used as a hard surface.

9.7.3 The minor roadway continues to be maintained as does the probable yard surface to the east of the site, with the roadway having a road side gully cut along its eastern side.

9.7.4 One unusual aspect of this phase was the relatively high percentage of coins (12 in total) recovered from context 532, a cobble rich soil build up to the north of Building 3 that is likely to be associated with this building and partially overlies context 377. There were no indications to suggest why there would be such a high level of coin loss in this area.

9.8 PHASE 4c

4th century inactivity

9.8.1 Building 3 was then levelled and sealed beneath a major soil build up (371) which extended over much of Areas 1, 2 and 4 but respected the roadway and did not extend into the eastern third of the site. The cobbled areas in Areas 6, 8 and 9 continued to be kept clean and maintained.

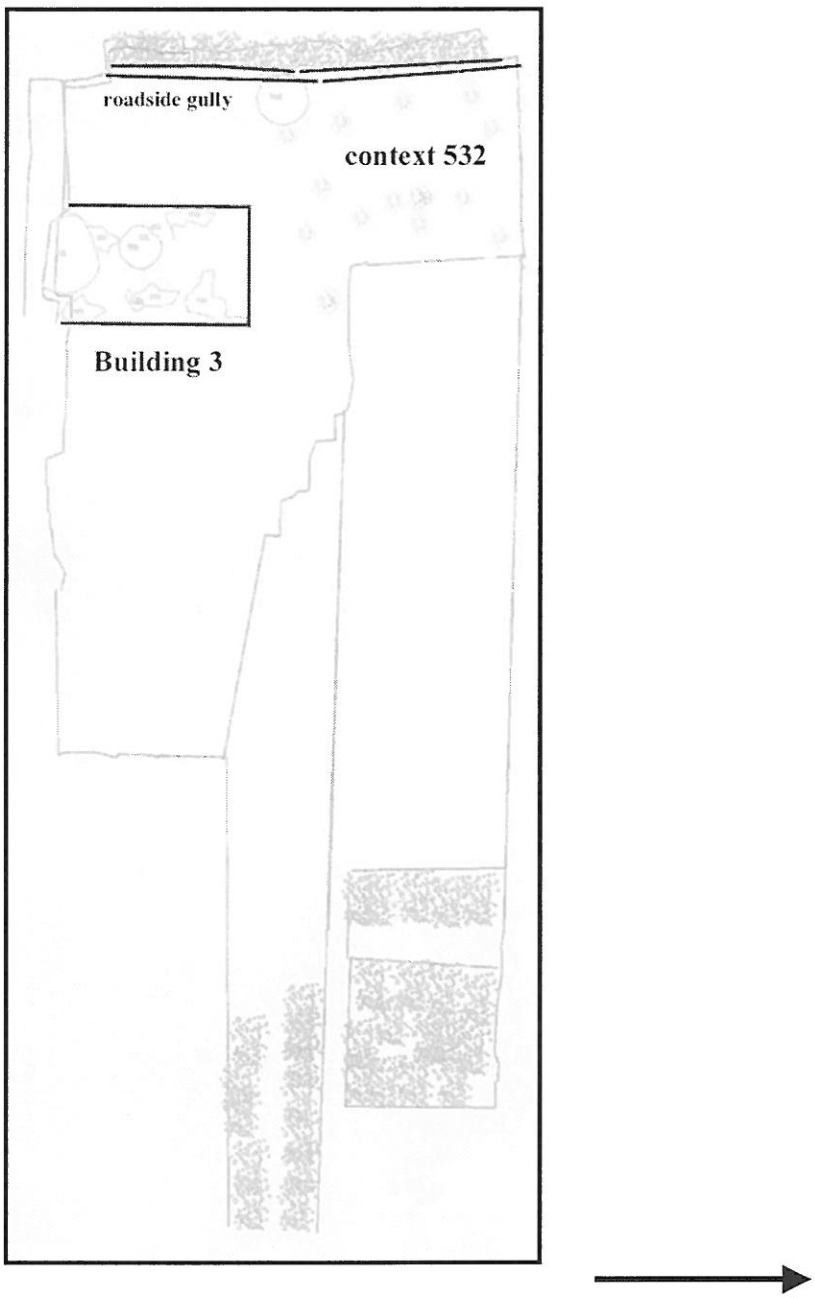


Figure 27: Plan of main features of phase 4b
1:200

9.9 PHASE 5

The construction of Buildings 4 and 7 in the mid to late 4th century

9.9.1 A new building (**Building 4**) was constructed over the footprint of the now demolished Building 3. The structure was of approximately the same width (3.5m) as its predecessor but extended slightly further to the north. The construction method used was exactly the same as Building 3 with no obvious construction trench or post holes and is likely to have used a sleeper beam laid directly on to the levelled ground surface which would explain the highly truncated remains of Building 3.

9.9.2 As in the previous structure no internal partitions were recorded but unlike Building 3, Building 4 did have a number of surviving features at its northern end figure 28). The most interesting feature was made up of a series of 11 stake holes forming a sub-rounded feature measuring approximately 0.80m in diameter, possibly the remains of a wattle pen, a rectangular pit of unknown function was situated just to the side of this pen and may have once contained a wooden trough.

9.9.3 Externally context 371 built up around this building with very little other structural activity recorded relating to this phase. Context 371 produced large quantities of butchered animal bone, which points to this area having an agricultural rather than domestic function, possibly representing an area where animals were kept prior to butchering. It is highly likely that the earlier building may have served a similar role.

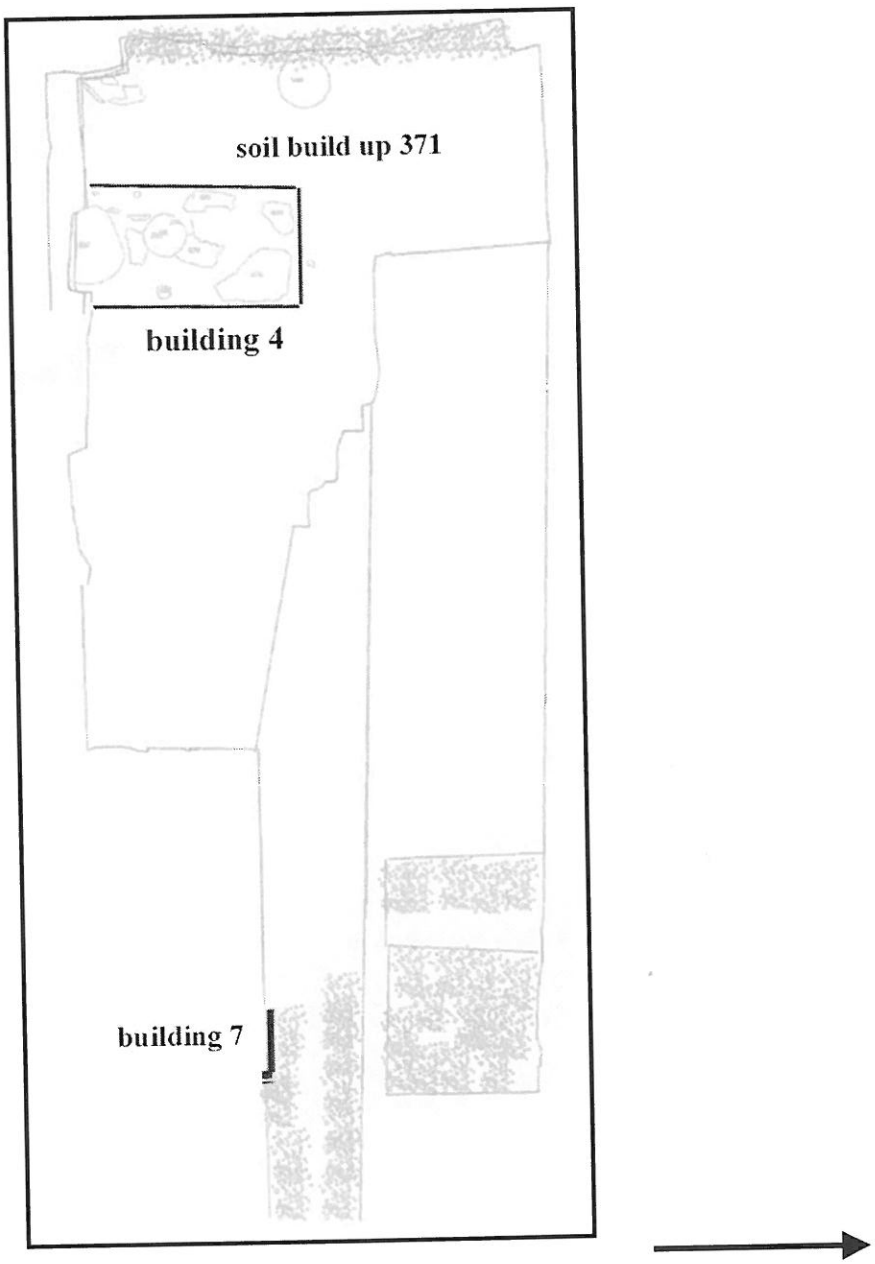


Figure 28: Plan of main phase five features 1:200

9.10 PHASE 6a

Late 4th to 11th century

9.10.1 Building 4 was eventually demolished with the homogenous 371 (dark earth) appearing to overlie it in places. As with all the previous buildings the structure appears to have been dismantled with no obvious demolition layer left on site. A new structure (**Building 5**) was constructed, of which only the northeast corner was observed, evidence suggests that this would have been a timber building set on shallow cobble foundations. This building was set out on a different alignment to the previous building and encroached onto the north-south roadway which must have gone temporarily out of use. Again little can be said of its function as the area was unfortunately heavily truncated by later medieval features, the total absence of any deposits relating to industrial activity strongly suggest low level domestic/agricultural activity during this period.

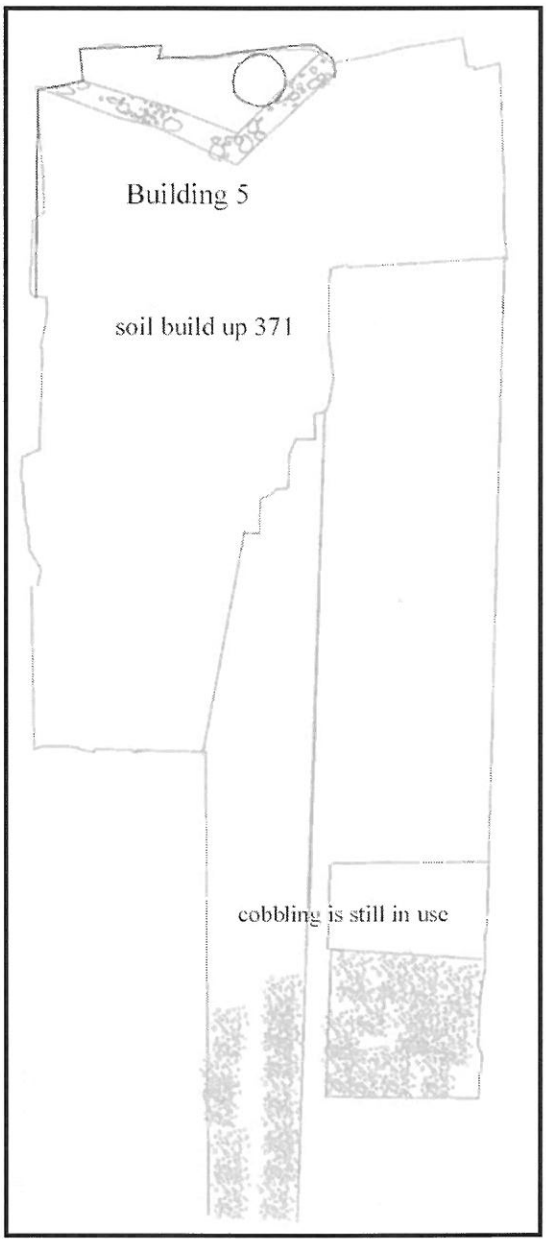


Figure 29: Plan of phase 6a features
1:200

9.11 PHASE 6b

Late 4th to 11th century (figure 30)

9.11.1 The remains of Building 5 were cut by a series of small pits containing large post pads (figure 30), which was constructed on the same alignment as Building 5 but extended approximately 8m further to the east. In using the large post pads to support the structural uprights the building utilised a totally different method of construction to all the previous buildings recorded, this method of construction is not only typical of the sub-Roman/early medieval period but is also common in the 12th to 14th century period in Carlisle.

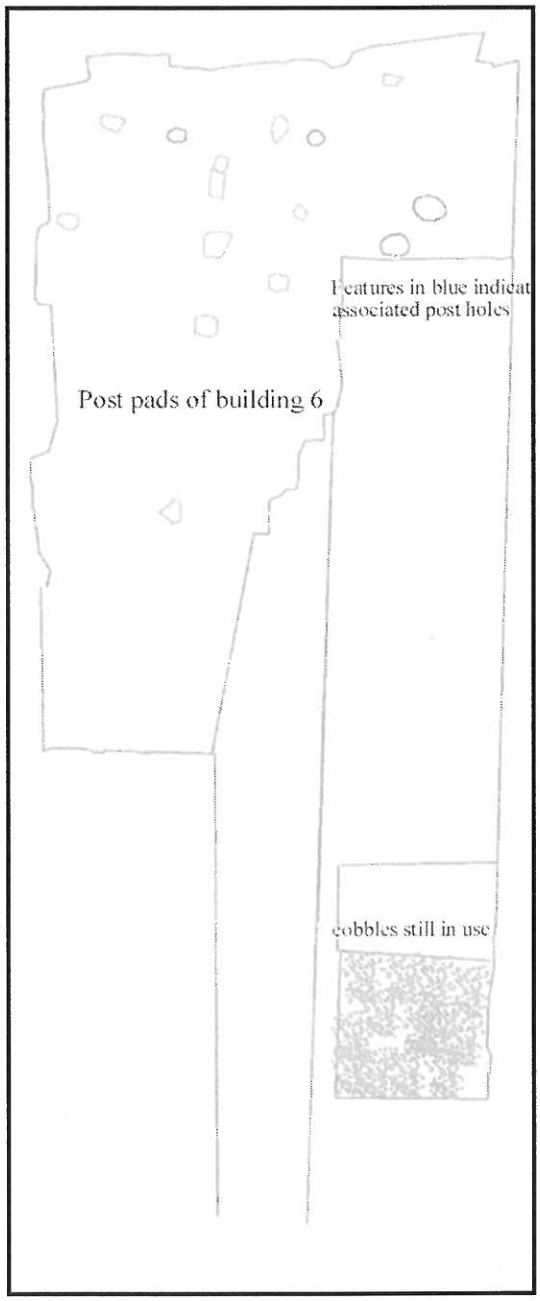


Figure 30: Plan of phase 6b features
1:200

9.11.2 The fragmentary survival of this structure makes any structural discussion difficult but it is clear from what remains that this structure measured over 14m by 10m, making it by far the largest building recorded during the excavation. Scattered patches of clay recorded above context 371 could be the remains of a floor surface associated with this building.

9.12 PHASE 6c

11th –12th century

9.12.1 Building 6 was then demolished and the area cleaned as there was no significant deposits which could be interpreted as a demolition layer. The north/south road was reinstated for a short while with its final cobbled surface (**370**), several sherds of 12th century red gritty ware were recovered from this final road surface.

9.12.2 The whole of phase 6 has proved to be extremely hard to date but is one of the most intriguing phases on the site, dating at any point from the late 4th century to the 12th century in the period conveniently referred to as the Dark Age or Early Medieval period. The pottery from phases 6a and 6c is exclusively Roman in date, though it may be residual and includes small quantities of late 4th/ early 5th century Huntcliff and Crambeck wares.

9.12.3 One Northumbria Styca of Aethelred II (854-858) which was recovered from a 14th century deposit, could possibly relate to this period. However the most telling evidence for sub-Roman or Anglian occupation will come from the copper alloy assemblage, although conservation is required prior to any detailed analysis.

9.13 PHASE 7

12th century

9.13.1 The north-south road and cobbled surfaces to the eastern limits of the site were sealed beneath an extensive dark brown soil build up (**129**) and the final recognised building was constructed in Area 1. This narrow building (**Building 8**) (figure 31) measuring over 10m in length and 4m in width, was divided into at least two rooms by an internal partition. The crude cobble wall foundations set in shallow trenches measured between 0.30m and 0.45m in width, and represented the only evidence for this building as no recognisable floor surfaces or occupation layers survived.

9.13.2 The lifespan of this building must have been relatively short as it sealed 12th century deposits but was cut by pits still firmly dated to the 12th century. This group of 10 pits, which extended throughout the site, all contained cess rich domestic waste.

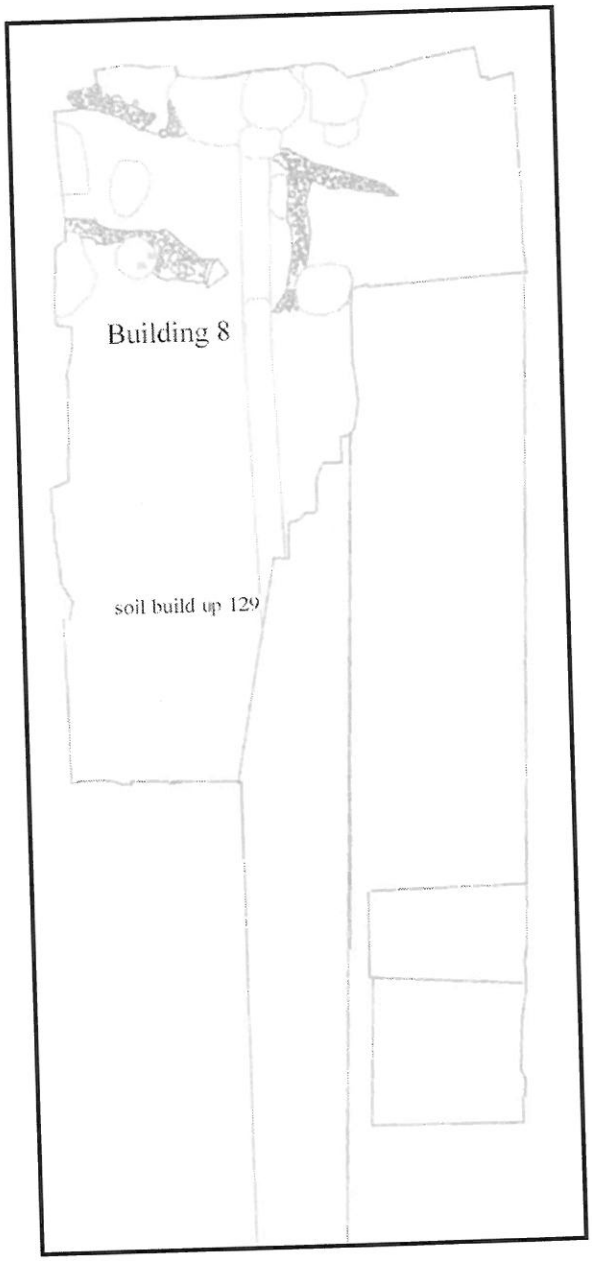


Figure 31: Plan of building 8a
1:200

9.14 PHASE 8a

late 12th–14th century soil build up

9.14.1 The sequence of 12th century pitting was sealed by a build up of medieval garden soil (**125**), the formation of these soils are still the subject of debate with two major theories on their formation. The first suggests the gradual build up in areas of wasteland, and the second theory favours the deliberate importing of soil for agricultural purposes. Contexts 125 and 129 produced the largest animal bone assemblages recovered from the site (11.3% and 7.5% of total bone assemblage), with context 125 producing 14.3% of the total medieval pottery assemblage.

9.15 PHASE 8b

Late 12th-14th century rubbish pits

9.15.1 Phase 8b was characterised by the heaviest sequence of pitting, with over 30 pits excavated throughout the site, particularly in Areas 2 and 3. The pitting took place between the late 12th and 14th centuries, with a dendrochronological date of 1150 obtained from timbers within one of these pits. It is clear from the intensity and distribution of pitting that they relate to a property/properties that fronted Scotch Street, there was no archaeological evidence of any property boundaries running off Scotch Street during this period suggesting that the area of excavation was within one property boundary during this period.

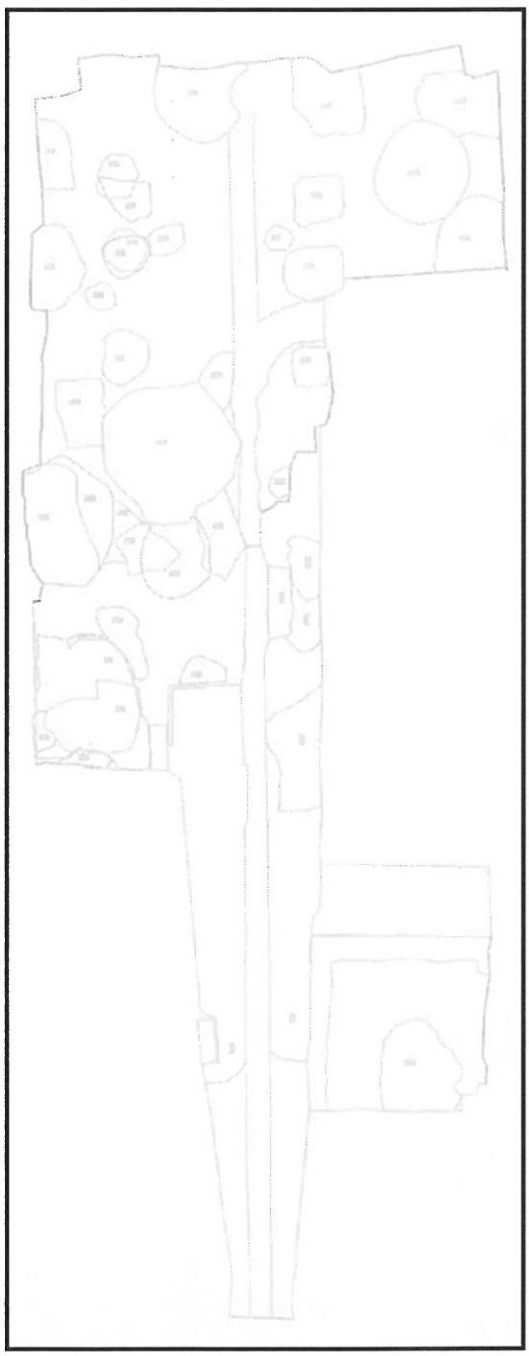


Figure 32: Phase 7 and 8 pitting
Phase 7 pits in blue, phase 8 pits in red.

9.15.2 The contents of these rubbish pits produced a finds assemblage typical of domestic activity in this period including large quantities of pottery, butchered animal bone, stable sweepings and night soil.

9.15.3 The absence of any property boundaries indicative of burgage plots could indicate little pressure on land space within this part of Carlisle in the 12th and 13th centuries.

9.16 PHASE 8c

14th century kilns

9.16.1 During this period a sequence of at least 3 kilns were constructed on the site, the best preserved (**305**) had an overall diameter of approximately 2.5m. Only the earliest kiln (**305**) will be discussed in detail because the remains of the two later kilns were too fragmentary to allow meaningful discussion other than confirming their likely presence.

9.16.2 The kiln was constructed in a pit measuring 0.90m in depth, with evidence of a single flue and small fire pit. The flue itself was almost totally truncated by later pitting with only one possible stone remaining in situ that may have formed part of the south side of the flue tunnel. The kiln is highly likely to have been a simple open topped single flued updraught kiln, which would have been wood fired.

9.16.3 The kiln superstructure, although nothing survived above ground level, was formed out of clay with a stone flagged base. Large amounts of charcoal including large chunks of carbonised wood were recovered from the fire pit. This type of kiln can most probably be identified as a Ware Chamber Type I, which had the flue opening directly onto the floor of the kiln chamber (Musty 1974).

9.16.4 There was no evidence of a pedestal in the kiln and it appears the pots would be stacked directly onto the kiln floor, possibly on top of kiln props or firebars which were designed to protect pots by lifting them off the kiln floor. Without these pieces of kiln furniture the bottom stack of pottery would have to be sacrificed in the firing process.

9.16.5 There was also no evidence of multiple flues with no second flue opposite the recorded flue. It is possible that a second flue and fire pit may have been located on the southern side, which fell outside the study area. Pottery wasters from this or the later kilns dating to the 14th century were recovered from a large pit (**350**) situated adjacent to the firing pit (figure 33).

9.16.6 Fragments of the clay superstructure of the second probable kiln (**194**) produced an archaeomagnetic date of 1370-1400 for the final firing. If this was a small scale pottery production site it is highly probable that there would have been a group of small buildings around the kiln as the pottery making process requires some cover from the elements.

9.16.7 No such structures were recorded during the excavation, and the only feature that could relate to the production of pottery was the probable wooden trough (**276**) (plate 13), which may also have been associated with the final kiln. It is possible

that any remains of associated timber buildings were either totally truncated by later activity or situated off site to the south of the kiln.

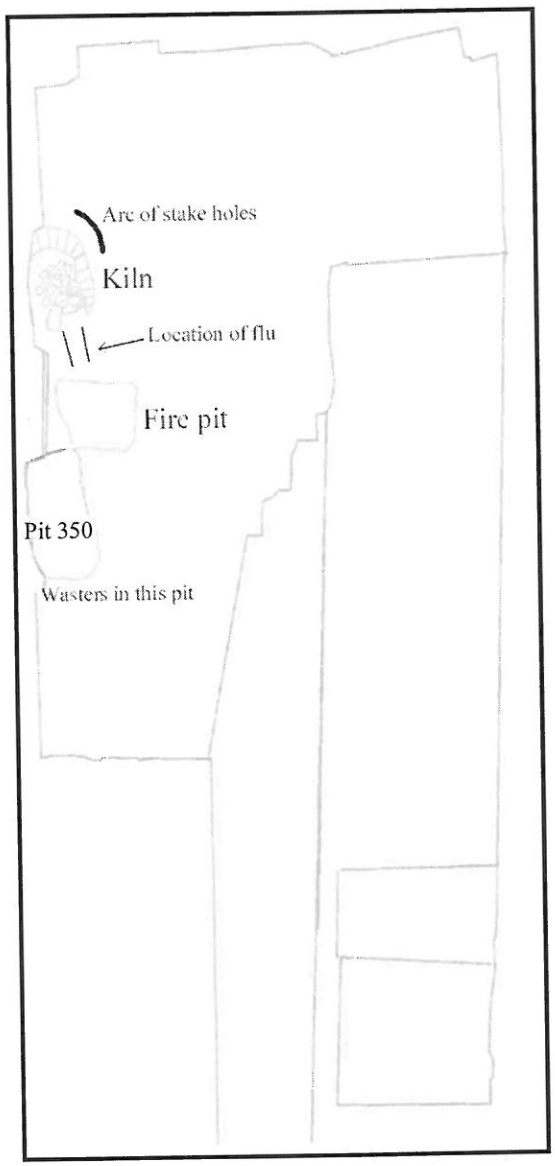


Figure 33: Plan of primary kiln and associated features

9.17 PHASE 9a

15th century inactivity

9.17.1 A gradual soil build up (**124**) covers over much of site with no obvious activity in the area of excavation.

9.18 PHASE 9b

15th/16th century activity

9.18.1 A boundary wall was constructed which appears to be the predecessor to Tower Lane, the surviving remains included a north west corner and a short length of the western boundary recorded in Area 1 (figure 34). Later buildings that respected the same alignment obliterated the northern line of this boundary.

9.18.2 A large well was constructed in Area 4 with an associated clay surface, this feature must have been short lived as the deliberate infilling of the well contained significant amounts of 15th century pottery as well as large amounts of animal bone. A single pit just to east of the well also dated to this phase of activity and produced a pottery assemblage dating from the 15th and 16th centuries. No other features of a late medieval date were recorded over the site.

9.18.3 No structural remains survived of any of the buildings that must once have fronted Scotch Street as they are likely to have been removed by cellaring and associated construction work in the late 18th and 19th centuries when large areas of Scotch Street were redeveloped.

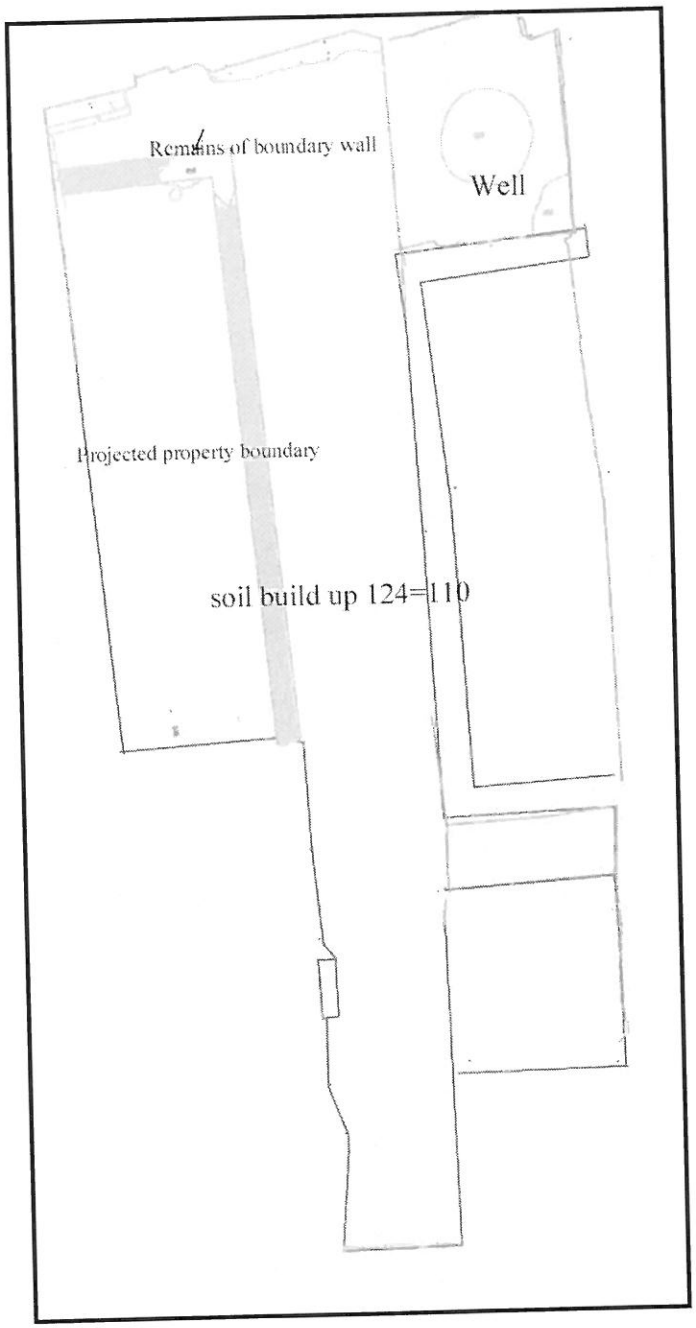


Figure 34: Plan of phase 9b features

9.19 PHASE 10a

17th/18th century garden soil

9.19.1 The whole area was covered by a build up of humic garden soil (116), which appears to be post medieval in date. The presence of this garden soil fits in well with the earliest map evidence for Scotch Street (figures 3 and 4), which show the area as open garden space with no major infilling until the late 18th century.

9.20 PHASE 10b

Sandstone well and trough

9.20.1 The only features of note to date from this period were the sandstone well (**201**) and water trough in Area 1 and a single pit in Area 2 (**102**) (figure 35). The well was constructed out of fine dressed sandstone blocks and still housed a timber tree pump of oak which was left in situ and likely to be similar to a tree pump recorded in a well at 62 Scotch Street in the 1920s (Redfearn 1921).

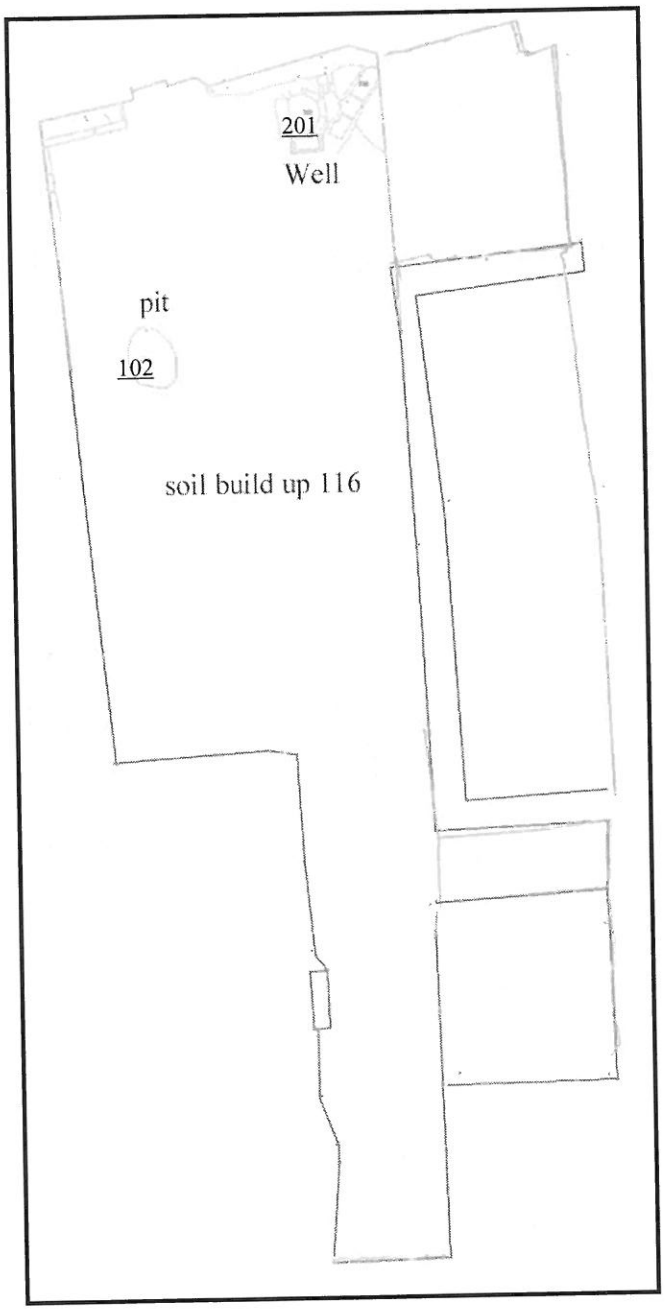


Figure 35: Plan of phase 10 features

9.21 PHASE 11

Late 18th and 19th century development

9.21.1 The area was extensively built over on either side of Tower Lane. All of the buildings belonging to this phase including the majority of cellar walls were demolished and removed off site prior to the excavation commencing (figures 5, 6 and 7).

10 THE FINDS

10.1 The pottery and other artefactual material was cleaned and packaged according to standard guidelines, and recorded under the supervision of F Giecco. The metalwork has been placed in a stable environment and will be monitored for rusting and bronze disease. The pottery and finds are quantified in appendix 1.

10.2 THE SMALL FINDS

Jennifer Jones, Dept of Archaeology, University of Durham

10.2.1 QUANTIFICATION AND CONDITION

10.2.2 A total of 2333 objects from the site were visually assessed. These consisted of 470 Copper alloy objects, 436 lead objects, 7 objects of glass, 3 silver objects, 1 of shale and 1411 iron objects and slag. Identifications, present condition, and any observed technological detail were noted on the database produced during the visual examination of the material. 1548 iron nails were removed from this study group as further assessment work was considered unnecessary.

10.2.3 Almost all the material was found to be stable. The stability of the material is very likely due to the fact that many of the pieces are very highly corroded, both iron and copper alloy with little/no metal core remaining. The objects are often light in weight for their size, and have quite voluminous corrosion products, obscuring both the surface detail and the form of the objects.

10.2.4 Some pieces are moderately corroded (surface detail, but not form obscured), particularly the Copper alloy coins. A few pieces are exhibiting signs of continuing active corrosion (cracking, spalling), but these are the exception.

10.2.5 The highly corroded state of the material could limit the effectiveness of further conservation work on many of the objects, very little remains of many objects (CuA and Fe) beyond a corrosion shell. Objects selected for conservation will all answer selected academic questions regarding the land use, chronology and local and regional context of the site.

10.2.6 X-RADIOGRAPHY

10.2.7 The metalwork, excluding the lead, was sorted into groups of a similar density, which were X-radiographed together. 113 XR plates were used. After the plates were processed, they were reviewed, and identification amendments made to the database, which also includes the XR plate numbers. The vast majority of iron

objects are nails, their shape often obscured by corrosion products. However, there are also knives, horseshoe fragments, possible tools and other unidentified objects present.

10.2.8 As well as the coins, there are several brooch fragments amongst the Copper alloy material, though most of these are fragmentary and in poor condition.

10.2.9 RECCOMENDATIONS AND METHODOLOGY

10.2.10 To conserve 171 objects in total, selected due to their research value comprising:

109 Coins	
7 lead objects	(Pb)
20 iron objects	(Fe)
1 silver object	(Ag)
31 Copper alloy objects	(CuA)

10.2.11 Obscuring surface corrosion products would be mechanically removed as necessary from the coins, Pb, Ag and CuA, using hand tools, under X16 magnification and with reference to the X-radiographs. Revealed surfaces would be coated/consolidated to protect against handling and to add strength to fragile artefacts.

10.2.12 Selected areas of obscuring corrosion products would be removed from the iron objects using air abrasion, to reveal form and surface detail, for elucidation of the object. All objects would be digitally photographed before and after conservation. Illustrated conservation records would be produced for each conserved object. Conservation records and all photographs would be transferred to CD to accompany the returned objects and form part of the site archive.

10.2.13 COSTS

10.2.14 The cost of the work outlined above would be **£12,100**

10.3 THE ROMAN COARSE WARE POTTERY

Louise Hird

10.3.1 The Roman pottery from the excavation on Scotch Street consists of 2116 sherds of coarse/fine wares weighing approximately 34.37 kilos. There are 131 sherds of mortarium weighing approximately 10.44 kilos. The pottery has been recorded in detail on pro-forma sheets devised by the Carlisle Archaeological Unit. They record the pottery by fabric, weight, sherd count, rim type and diameter etc. The fabric series used by the now defunct Carlisle Archaeological Unit was employed during the analysis of the Scotch Street material.

10.3.2 Evaluation

10.3.3 Initial analysis suggests that the fabric series consists of 26 coarse and fine ware fabrics and 14 mortarium fabrics. The pottery dates predominantly from the 3rd and 4th centuries with a small amount of 2nd century material.

10.3.4 Research Objectives

10.3.5 A fabric series will be produced. The number of illustrations will not exceed 70 of coarse/fine ware vessels and will not exceed 20 mortaria. There are three mortarium stamps to be drawn. Discussion will include the evaluation of the importance of both local products to the site and also traded wares, and the changing nature of supply through the Roman period. A detailed discussion of the Roman pottery will include comparison with material from other sites, particularly in Roman Carlisle, and in the North of England.

10.3.6 The pottery will be analysed by period/phase. Interesting wares of particular note will be discussed in detail. These include Raetian-type mortaria of local production and African-type wares, which appear to be a significant feature of Carlisle's supply at particular times during the Roman period.

Proposals for Analysis and Report

6 days - coarse/fine wares
4 days - mortaria
1 day - 3 mortarium stamps

Illustrations

68 sherds of pottery of significant academic value have been selected for illustration.

10.3.7 THE FABRIC SERIES FOR SCOTCH STREET

Fabric 1 Black burnished Ware 1 (BB1) (Williams 1977).

Fabric 2 Black Burnished Ware 2 (BB2) (Williams 1977).

Fabric 3 Rustic Ware. Hard, mid-grey fabric with darker grey outer surface and rusticated decoration.

Fabric 4 Oxidised, orange ware with white/cream slip. Usually a fairly sandy fabric. Local ware; could well be the product of more than one source.

Fabric 6 Hard, white fabric with no visible inclusions and smooth outer surface. Source unknown. Could well be the product of more than one source.

Fabric 7 Hard, fine-textured, pinkish-buff fabric with mica-dusted surface.

Fabric 9 Terra Nigra. Hard, pale pinkish-grey fabric with shiny black outer surface (Rigby 1973).

Fabric 11 Unidentified grey ware. The products of several sources, many or all of which, are likely to be local.

Fabric 12 Unidentified oxidised wares. The products of several sources, many or all of which, are likely to be local.

Fabric 13 Hard, oxidised orange fabric which contains a fair amount of white grit (and some larger inclusions), making the surface pimply. Possibly the product of more than one source, at least some of which are likely to be local.

Fabric 14 Rough-cast ware. Fine-textured, pink fabric with rough-cast decoration. Sometimes has a darker pinkish-brown slip. Local ware? Possibly a local imitation of imported rough-cast beakers, such as those in fabric 15.

Fabric 15 Rough-cast ware. Fine, hard, orange fabric with grey core and purplish-grey slip and rough-cast decoration. Anderson's North Gaulish Fabric 1 (Anderson 1980).

Fabric 17 Severn Valley Ware. Hard, orange fabric with pale grey core and mica visible in surfaces. May have burnished line or lattice decoration (Webster 1976).

Fabric 20 Hard, sandy orange fabric with small amount of mica inclusions and bright orange/red slipped surfaces. Probably local.

Fabric 21 Nene Valley Colour-coated Ware. Fairly hard, white or pink fabric with colour-coat of various colours from dark grey to orange-brown (Howe et al 1980).

Fabric 22 Huntcliff Ware. Soapy-textured, calcite-gritted, grey or black fabric, heavily charged with white calcite grit or having voids left by dissolved-grit. Hand made.

Fabric 27 Grey Crambeck Ware. Very pale grey fabric with lead-grey surfaces (Corder and Birley 1937: Evans 1989).

Fabric 28 Parchment Crambeck Ware. Hard, yellowish-white fabric usually with red/brown painted decoration (Corder and Birley 1937; Evans 1989).

Fabric 30 Rhineland? Very fine, white fabric with orange/red slip and barbotine decoration.

Fabric 34 'Rhenish' ware. Very hard, orange/grey/orange fabric with glossy black slip. Trier (Greene 1978, Symonds 1992).

Fabric 35 Central Gaulish colour-coated ware ('Rhenish'). Very fine-textured, hard, pink fabric with glossy, black slip (Greene 1978).

Fabric 43 Pompeian Red Ware. Hard, pale grey fabric with dark greycore and thick maroon-red slip on inner surface. Possibly Peacock Fabric 4 (Peacock 1977).

Fabric 44 Hard, fine-textured pale grey fabric with very smooth, darker grey, shiny metallic surfaces. Rouletted decoration. Local ware?

Fabric 46 Hard, granular-textured, pinkish-buff fabric with quartz sand inclusions. Mica-dusted surfaces. Regional import?

Fabric 59 Derbyshire Ware. Very hard, grey fabric with red core and copious large quartz grit inclusions, giving the surface the appearance of 'goose-flesh petrified' (Gillam 1939, Kay 1962, Jones and Webster 1969).

Fabric 70 Dales Ware. Distinctive shell-gritted ware (Loughlin 1977) Mortarium Fabrics.

Fabric 301 Carlisle area. Often very hard, dense, dark red-brown to pink-brown fabric with some fine, mainly quartz inclusions. Inclusions vary in size and quantity. Usually a cream or buff slip but occasionally a raetian, red-brown slip on flange and bead. Trituration grit consists of white quartz, red-brown and occasionally blackish material. The commonest of the locally produced fabrics.

Fabric 303 Carlisle/Old Penrith area. Fairly fine-textured, orange-brown fabric with some evenly distributed, ill-sorted quartz inclusions. Trituration grit consists of quartz, sandstone and blackish and grey material. Both hardness and texture vary in this group and it certainly contains the products of more than one workshop. Surface treatment varies; cream/buff or self coloured slip. Less common than fabric 301.

Fabric 305 Carlisle/Old Penrith area. Identical to fabric noted in mortaria from excavations at Old Penrith. Probably made in Cumbria within about a 15 miles

radius of Carlisle. Hard, orange-brown fabric with fairly frequent transparent and whitish quartz inclusions and a few blackish inclusions. Trituration grit consists of abundant white quartz with some gold mica and occasional brown and blackish material, possibly ironstone or iron slag. The tempering sometimes makes the surface slightly pimply.

Fabric 306 Carlisle/Scalesceugh area. Hard, fine-textured, orange-brown fabric, sometimes with grey core. Few inclusions. Seems to have only white quartz trituration grit.

Fabric 313 Gallia Belgica. More than one pottery, probably all in Gallia Belgica and including one the Pas de Calais. Fine-textured, usually softish, white to brownish-cream fabric sometimes with a pink core; tiny quartz and flint inclusions. Trituration grit consists mainly of flint with occasional quartz and rare red-brown material. The considerable variation in colour and in the IL rim types associated with this fabric suggests that more than one pottery is involved.

Fabric 316 South Carlton, Lincoln. Probably other sites in the vicinity also. Usually micaceous, fairly fine-textured, greyish-cream fabric with some fine quartz and red-brown inclusions. Trituration grit may include transparent and pinkish quartz, sandstone, and haematite, red-brown and blackish, probably iron-rich, material. Often has a brownish slip.

Fabric 317 The Rhineland. Slightly greyish-white fabric with fairly frequent, fine, transparent and pink quartz inclusions. Trituration grit consists of closely packed, well-sorted, tiny fragments of quartz.

Fabric 318 Soller, Kreis Duren, Lower Germany. Fine-textured, light brown fabric, fired to brownish-cream at the surface. Smallish, but ill-sorted transparent quartz, red-brown and blackish inclusions with some larger quartz, red-brown and softish cream-coloured inclusions. Trituration grit is all quartz.

Fabric 322 Crambeck. Fairly close-textured and slightly sandy off-white fabric, sometimes pink, or with pink, grey or occasionally a black core, abundant quartz, mica and red-brown inclusions, usually visible at xl0 magnification. Trituration grit consists of abundant black slag fragments. There are many gradations in the texture but it is always sandier than fabric 323 (Corder and Birley 1937, Evans 1989).

Fabric 323 Crambeck. Very fine-textured, cream fabric. Trituration grit consists entirely of fairly finely fragmented black iron slag, usually packed close together in the lower half of the mortarium. May have a buff-brown slip; often decorated with motifs in red-brown slip (Corder and Birley 1937,Evans 1989).

Fabric 324 Mancetter-Hartshill. Usually fine-textured, creamy-white fabric, varying from a softish texture to very hard; sometimes with pink core. Usually self-coloured, it may occasionally appear to have a pale buff slip. The range of fabric is quite wide, from that with scarcely any inclusions to fabric with moderate fairly smallish quartz, sparse red-brown and occasionally opaque white inclusions, and a fabric with a fair amount of ill-sorted black slag-like inclusions. Trituration grit consists of hard red-brown or black, re-fired pottery fragments,

with only very rare quartz fragments in mortaria later than AD 140. Mortaria earlier that AD130 usually have mixed trituration grit in which quartz and sandstone are normal components.

Fabric 328 Castor-Stibbington area of the Lower Nene Valley. Hard, fairly fine textured, off-white fabric with a pink or pale grey core. The quartz inclusions are often too small to be seen at x10 magnification; rare red-brown and/or black inclusions. Trituration grit consists entirely of ironstone. May be self-coloured or may have a brownish slip. This is the most common mortarium fabric produced in the lower Nene Valley.

Fabric 339 Technical College Kiln, Lincoln. Cream fabric, often fired to brownish-orange on parts of surface near spout. Frequent quartz and rare and larger red-brown inclusions. Trituration grit includes red-brown sandstone.

Fabric 352 Northern England, probably Carlisle area. Hard cream or creamy-pink fabric with quartz sand and some red inclusions. Mixed quartz, red and grey trituration grit.

10.4 THE SAMIAN WARE

Felicity Wilde

10.4.1 The main importance of the samian ware is to provide dating evidence for the contexts and phasing of the site. The stamps and decorated ware, which can be tied down to the work of a particular potter or workshop, are of particular importance for this. In addition, the origin of the wares can shed interesting light on the sources of supply and trading patterns, for which, again, the stamps and decorated ware are of prime importance.

10.4.2 Preliminary inspection of the material from the site suggests that it is mainly of Antonine date, with later 2nd century material heavily represented and surprisingly little earlier (residual) material. The proportion of decorated ware appears to be fairly low. While the bulk of the material is of Central Gaulish origin, the products of the various East Gaulish factories are also present. Initial work on the material will involve the identification, dating and listing of all sherds by context (as specified in the accompanying estimate). Once information has been supplied on the phasing, a report can be prepared for publication, including a detailed report on the decorated ware from significant contexts and/or of intrinsic interest.

10.4.3 It will be necessary for the decorated ware selected for the report to be drawn for publication. It is impossible to estimate the precise number of pieces until the whole assemblage has been studied and information supplied on significant contexts, but my view of the low proportion of decorated pieces from the site as a whole, the quantity should not be great.

10.4.4 The most precise evidence for dating and origin is likely to be from the potters' stamps, of which there are about seventeen, including two rosette stamps. These need to be sent to Brenda Dickinson, who has access to the material to appear in the forthcoming index of Potters' Stamps on samian ware.

10.4.5 She estimates that to provide stamp identifications and dates would cost **£150**, to provide a full report with published parallels, **£250**. One of the stamped bases has an elaborate graffito beneath the foot ring. It would be desirable for this to be seen by an expert; Dr Roger Tomlin has recently published a number of graffiti on pottery from Carlisle in the annual list of newly discovered inscriptions in Britannia (Britannia XXXIII (2002), 360-363), and will be approached to comment on this one, both for Britannia and for inclusion in the publication report.

10.5 BRICK AND TILE

10.5.1 545 fragments of Roman brick and tile were recovered during the excavation throughout the whole site with the vast majority appearing to be residual. The majority of the assemblage was made up of undiagnostic brick fragments in a hard fired bright red fabric, which are likely to have been locally produced at an as yet unidentified production site.

10.5.2 Some diagnostic pieces included both *tegulae* and *imbrices,* with one piece of tegulae having a stamp of LEG II AVG (Legion 2 Augusta). Similar stamped tiles were found during the Annetwell Street and Millennium excavations. The brick and tile were all of a bright red hard fired fabric and are likely to have been locally produced in an as yet undiscovered tilery around Carlisle. Of the two known Roman tile production sites in the vicinity of Carlisle at Brampton and Scalesceugh in the Eden valley, Brampton ceased production by the Hadrianic period and Scalesceugh appears to be to a small and distant to have had a significant role in the supply of brick and tile to 2nd and 3rd century Carlisle.

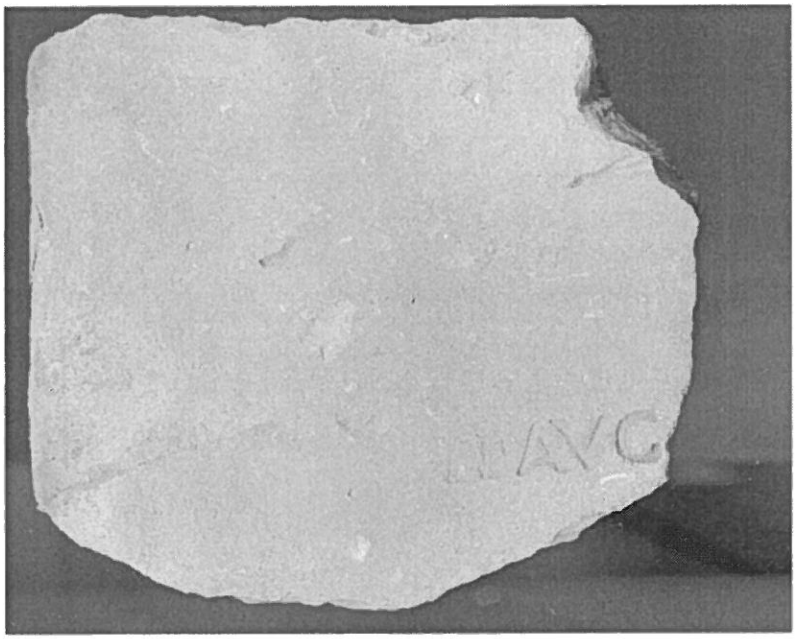


Plate 21: Detail of Legionary tile stamp

10.6 THE GLASS

Gill Kirkley-Allsop

10.6.1 The glass assemblage excavated from Scotch Street consists of 283 sherds and fragments of which 189 were recovered from stratified contexts, with the remaining 94 coming out of 19th/20th demolition deposits. The post-medieval assemblage was dominated by wine bottle fragments dating to the 18th and early 19th century, the vast majority (30 fragments) coming out of one pit (102) dating to the early 19th century. These fragments represent a minimum vessels count of 14, as well as a glass stopper and fragments of window glass. The glass ranges from 18th century to 20th century in date and is listed by context in table 1 and appendix 1.The glass can be broadly divided into two groups, **Vessels** and **Windows**.

16.6.2 The vast majority of the vessel glass comes from wine bottles. The wine bottle first appeared during the 1650s and developed rapidly in both size and shape. There are no fragments of the earliest type in the assemblage. The most common form of wine bottle found at Scotch Street is the slightly later onion or bladder bottle. These have a larger more spherical body and shorter neck. Onion or bladder bottles can be approximately dated to 1680-1730, and examples were found in the later pits cutting context 116.

10.6.3 No glass that could be dated to the medieval period was recovered during the excavation.

10.6.4 The quality of the Roman glass assemblage was very poor and the vast majority of the 146 fragments of glass were small body sherds coming from blue green household containers such as mould blown jars and jugs typical of the 2nd and 3rd centuries.

10.6.5 Ten fragments of window glass dating to the Roman period were recorded, all from cast matt panes. The examples from the edges of windowpanes all had tubular sides. This style of window pane was common throughout the Roman Empire from the 1st to the 3rd centuries. No further work is recommended on the glass assemblage.

Scotch Street glass

Context No	BULK FIND No	Colour	Roman	Medieval	Post-Med	Comments	Type
U/S	1223	dark green			X	dia =128mm	Base of bottle onion or bladder
U/S	1223	dark green			X	dia =134mm	Base of bottle onion or bladder
U/S	1223	dark green			X	11 frag	Onion or bladder base
U/S	1223	dark green			X	Frag	Frag of rim and neck
U/S	1223	dark green			X	Frag	Frag of rim and neck
U/S	1223	dark green			X		Frag of bottle neck
U/S	1223	dark green			X	12 frag	Poss onion or bladder

U/S	1223				X	frag of slag	Poss glass ?
U/S	1223	clear			X		Rimmed glass
U/S	1223	blue /green	X?			residual	Small fragments
U/S	1223	dark green			X	dia=131mm	Complete base onion bottle
U/S	1223	dark green			X	dia=134mm	Complete base onion bottle
U/S	1223	dark green			X	16 frag	Poss base of onion or bladder
U/S	1223	dark green			X	9 frag	Body sherds
U/S	1223	dark green			X	2 frag	Body or neck sherds
U/S	1223	dark green			X		Boby or neck sherds
U/S	1223	blue /green	X				Base from square bottle
U/S	1223	blue /green	X				Body sherds
U/S	134	clear			X		
U/S	2054	blue /green	X				
101	299	dark green			X	3 frag	
101	299	clear			X	2 frag	Window glass
101	390	clear			X	1 frag	Window glass
101	1757	brown			X		Body or neck sherd
101	205	dark green			X	1 frag	Neck rim
101	205	dark green			X	8 frag	Bottle glass
101	205	clear			X	2 frag	Bottle glass
101	195	dark green			X		Body or part base
101	195	dark green			X	small frag	
101	195	brown			X?		
101	195	dark green			X	9 frag	Body sherds
101	195	dark green			X	4 frag	Base shaft or globular bottle
101	195	dark green			X	dia=136mm	Base of onion or bladder
101	195	dark green			X	2 sherds	Rim and neck
101	195	blue /green			X		Bottle stopper
101	195	blue /green	X			1 sherd	Poss part of body
101	195	clear			X	opaque	Patinated
101	195	clear	X			4 frags	3 body and 1 rim (all opaque)
103	14	dark green			X	part of base	Onion/bladder
103	14	dark green			X	13 frags	Body sherds (patinated)
103	14	dark green			X	2 frag	Little patination
103	14	opaque	X?				Rim sherd
103	14	clear			X	3 sherds	Body sherd (patinated)
103	13	dark green			X	diam=128 mm	Base of one bottle
103	13	dark green			X	diam=130 mm	Frag of onion/bladder bottle
103	13	dark green			X	7 frags	Base onion/bladder bottles
103	13	dark green			X	heavy patinated	Rim and neck sherd onion/globular base
108	115	clear			X		Miscellaneous
112	290	clear			X		Very patinated
115	94	clear			X	1 frag	Miscellaneous
116	1287	dark green			X	1 frag	Body sherd
116	1287	blue /green	X			1 frag	Patinated
116	395	clear	X?			1 frag (opaque)	
116	395	dark green			X	2 frag	Patinated body sherds
116	395	clear			X	1 frag	Window glass (patinated)
116	24	dark green			X		Rim of neck bottle
116	24				X	1 frag	Part of stopper
116	24	dark green			X	1 frag	
116	24	clear			X	1 frag	Window glass
116	24	clear			X	1 frag	Small patinated miscellaneous glass

117	104	clear			X	1 frag	Poss body sherd
125	1705	blue /green	X			1 frag	Shoulder from small bottle
125	232	brown			X	1 frag	Slag (glass)?
125	232	blue/green	X?			3 frag	Patinated
125	232	clear			X	3 frag	
125	360	dark green			X	2 frags	Body sherds
128	1283	blue/green	X			2 frags	Rim and body of small glass bowl patinated
128	418	clear			X	1 frag	Body or neck sherd
129	282	clear	X				Part of handle (patinated)
129	282	clear	X				Rim sherd
129	282	blue/green	X			3 frags	Poss part of rim
142	34	clear	X			1 frags	Heavily patinated
142	240	porcelain			X	1 frag	
147	320	blue/green	X			4 frags	Possibly part of rim
147	320	clear			X	1 frag	Sherd
148	329	dark green			X	1 frag	Body sherd
163	270	blue/green	X			1 frag	Base with patination
171	150	dark green			X	1 frag	Heavily patinated
172	384	dark green			X		Body sherd (heavily patinated)
174	370	dark green			X	1 frag	
193	1932	blue/green	X			1 frag	Some patination
213	77	clear			X		Glass shred miscelleneous
224	482	clear			X	12 frags	
224	482	dark green			X		Body sherd (patinated)
227	456	dark green			X		Body sherd
227	456	clear			X	5 frags	Possibly window glass
227	456	clear			X	1 frag	
227	456	blue/green	X			2 frags	Body sherds
232	472	blue/green	X			1 frag	
232	472	clear	X			1 frag	
242	516	clear	X			7 frags	
261	565	blue/green	X			2 frags	Body sherds
312	660	dark green			X	1 frag	Wine bottle base (heavily patinated)
315	673	Clear			X	1 frag	Body sherd (patinated)
320	1689	Clear			X	1 frag	Possible window
329	682	Opaque			X?	Colour marble	Glass sherd (patinated)
330	812	Dark grey			X?	Colour marble	Glass sherd with remains of handle
330	812	Ivory			X?	4 frags	Body sherds
331	692	Blue/green	X			1 frag	Some patination
332	747	Clear			X	1 frag	Possible window glass
366	803	Blue/green	X			1large frag	Remains of handle
366	803	Blue/green	X			2 frag	Some patination
368	734	Blue/green	X			1 frag	Body sherd
371	831	Blue/green	X			4 frag	Some patination body sherd
371	831	Clear	X			2 frag	Window glass
383	1227	Blue/green	X			2 frag	Body sherds (patinated
383	722	Blue/green	X			1 frag	Base/ rim patinated
383	494	Blue/green	X			4 frag	Body sherd
383	494	Blue/green	X			4 frag	Ribbon handle patinated
387	507	Clear	X?			1 frag	
387	507	Blue/green	X			1 frag	Sherd
402	897	Dark green			X	1 frag	Possible body sherd

402	852	Clear			X	1 frag	
402	852	Brown			X	1 frag	
422	844	Clear			X?	1 frag	
422	844	Blue/green	X			1 frag	
423	109	Clear			X	1 frag	Possible window glass patinated
429	855	Clear			X	1 frag	
443	937	Blue/green	X			3 frag	1 part of base 2 are shards
444	985	Blue/green	X			1 frag	
444	986	Blue/green	X			1 frag	
444	2084	Blue /green	X			1 frag	
444	2084	Clear	X			1 small frag	
447	1079	Blue/green	X			1 frag	Body sherd
451	988	Blue/green	X			1 frag	
451	1003	Blue/green	X			1 frag	Body sherd
457	1048	Dark green	X			1 frag	Bowl part
459	1130	Blue/green	X			2 frag	
459	981	Blue/green	X			3 frags	Body
459	1095	Blue/green	X			1 frag	Rim
459	1095	Blue/green	X			9 frags	Body
459	1213	Blue/green	X				Body sherd
460	1524	Blue/green	X				Body sherd
461	984	Blue/green	X				Body sherd
461	1931	Blue/green	X				Body sherd
470	1251	Blue/green	X				Body sherd
470	1559	Blue /green	X				Body sherd
477	1510	Blue/green	X				Body sherd
478	1005	Blue/green	X				Body sherd from square beaker
487	1408	Blue/green	X				Body sherd
487	639	Blue/green	X			4 frags	Body
490	1479	Blue/green	X			4 frags	Body
501	1184	Blue/green	X				Body sherd
501	1702	Blue/green	X				Body sherd
505	1911	Blue/green	X				Body sherd (patinated)
508	1868	Clear			X		Sherd
511	1568	Dark green			X		Part of bottle (patinated)
520	1155	Blue/green	X				Sherd
520	1249	Blue/green	X			1 frag	Handle
520	1249	Cloudy	X				Body sherd
520	1337	Clear	X			1 frag	
523	1908	Clear			X	Glass frag	Slight patination
524	1908	Blue/green	X			1 frag	
524	1106	Clear			X	2 frags	
525	1345	Blue/green	X			1 frag	Rim
525	1145	Blue/green	X			2 frags	
525	1345	Blue/green	X			1 frag	Sherd
528	2099	Clear	X			1 frag	Vessel
529	1771	Clear	X			1 frag	Sherd
532	1552	Clear	X?			1 frag	
535	1459	Clear			X	2 frags	
543	1341	Clear		X			Possibly window glass
549	1801	Blue/green	X			4 frags	
549	1801	Clear	X			1 frag	Vessel
549	1875	Blue/green	X			4 frags	Sherds

561	1379	Clear	X				Window glass
566	1465	Blue/green	X				Part of handle
568	1188	Clear	X				Rim
568	1188	Blue/green	X			1 frag	
580	1859	Blue/green	X			1 frag	
583	1238	Clear			X	1 frag	
613	1182	Blue/green	X			3 sherds	Rim and body glass
613	1299	Blue/green	X			Square bottle	Rim and body glass
615	1534	Blue/green	X				Rim and body glass
617	1845	Blue/green	X				Rim and body glass
620	1308	Blue/green	X				Body glass
629	1133	Blue/green	X			Body glass with raised detail	Rim
637	1788	Blue/green	X			Body glass	Rim
660	2085	Blue/green	X			1 frag	Rim
660	2085	Clear				1 frag	
661	2093	Clear	X			Linear design	1 sherd
672	2117	Blue/green	X			4 sherds	1 rim and 3 body
672	1160	Blue/green	X				Body glass, rim
679	2152	Blue/green	X				Body glass, rim

Table 1: Glass recovered from Scotch Street.

10.7 THE COINS

David Shotter

10.7.1 106 coins were recovered during the Scotch Street excavation and were assessed by David Shotter. Prior to cleaning and conservation each coin was given a provisional identification. The provisional breakdown of the coins is as follows.

Period	Number of coins	Percentage
Post-med	0	0
Medieval	0	0
Early medieval	1	0.95%
Roman	105	99.05%

Table 2: Coins – Provisional numbers.

10.7.2 Presumably the near absence of coins of the 1st and 2nd centuries is accounted for by the fact that these levels were generally left unexcavated.

10.7.3 At first sight, Radiates and copies of the 3rd century are less frequent than on most Carlisle sites, though this may alter once the coins are cleaned.

10.7.4 Issues of the 4th century are strong recalling the upper layers on Castle Green (Carlisle Millennium Excavation) and mirroring the distribution found on the Scotch Street excavations by CAU in 1988.

10.7.5 There appears to be a detectable presence of late 4th century issues.

10.7.6 The general distribution suggests the possibility of a 4th century 'empovium' nearby.

10.7.7 On first examination a high population of coins appear to have been fresh when lost (military service).

10.7.8 The quartered coin (SF 159) is an interesting reflection of the current economic conditions.

10.7.9 This sample like most of the others from Carlisle shows strong activity through out the 4th century and presumably beyond.

10.7.10 RECOMMENDATIONS

10.7.10.1 The implications of this substantial sample make it a high priority for archaeological and numismatic reasons that the coins are cleaned to facilitate a full and proper study.

10.7 THE LITHICS

Ken Denham

10.8.1 All of the flint recovered during the excavation were residual finds from Roman and medieval deposits.

10.8.2 Four flints were recovered during the excavation, three of which demonstrated evidence of modification.

10.8.3 **Flint 1**: 29mm x 13mm (av). Longitudinal flaking on right hand side of dorsal face, lateral flaking on left hand side. The ventral face displays the removal of a single flake and is thermally damaged on its left hand margin and at its distal end. The whole piece is heavily patinated and appears to be a core rejuvenation flake.

10.8.4 **Flint 2**: black, cortical. 46mm x 17mm (av). Cortex visible on right hand margin of proximal end. Longitudinal flaking on right hand side of dorsal face, lateral flaking on left hand side. The ventral face is distinctly conchoidal and its left hand distal margin displays retouch. Probably a core rejuvenation flake that was utilised as an end scraper.

10.8.5 **Flint 3**: white, cortical. 25mm x 14mm (av). Remains of heavily abraded cortex on proximal end of dorsal face. No evidence of modification, probably a glacial erratic.

10.8.6 **Flint 4:** white. 18mm x 15mm (av). Lateral flaking and retouch at distal end of dorsal face. Longitudinal flaking on ventral face. Probable example of a 'thumbnail scraper', a typology normally associated with the Late Neolithic Beaker culture.

10.9 THE MEDIEVAL POTTERY

Catherine M Brooks

10.9.1 INTRODUCTION

10.9.1.1 A total of 4,356 sherds were examined; most were medieval, with a few post-medieval and modern sherds. A number of residual Roman sherds that had been inadvertently bagged with the later material were removed for separate study.

10.9.1.2 The sherds were identified to fabric and type, and recorded by context; any vessels thought likely to be worth illustrating were noted. At this time, little detailed phasing information had been received, so a listing in numerical order of context was produced, giving the approximate latest dating for each context group (table 3).

10.9.1.3 The pottery ranges in date from the 12th century to post-medieval and modern, but with the bulk of the assemblage dating to the 12th to 14th centuries. The relative scarcity of late medieval and post-medieval material might suggest that any deposits of this date were truncated by later developments on the site.

10.9.2 SUMMARY OF POTTERY TYPES PRESENT

10.9.2.1 The most common pottery type in the assemblage as a whole (44.5%) was Red Gritty ware (Fabrics 1 and 2), a coarse, hard red fabric, probably locally made, that is typical of Carlisle deposits dating to the 12th to early 13th centuries. The cooking pot or jar is the most common form in this ware, but flared-neck jugs, bowls, pitchers and other forms are also known. The next most common type was Partially Reduced Grey ware (38.8%), Fabrics 15/17/19. This lightly gritted ware, in which the jug is the most usual form, is very common in Carlisle from the mid-13th to the 14th centuries; again, it is thought to be locally made.

10.9.2.2 Late Medieval Reduced Grey ware was the third most common type, at 7.2% of the total. This ware, which is usually represented by jugs and bung-hole cisterns, dates from the mid-14th to the 15th or 16th centuries. The remaining wares, both medieval and post-medieval, were only represented in small quantities. These included late 12th/early 13th century gritty wares Fabrics 3-6 and 13th/14th century lightly gritted Fabrics 11, 13 and 21.

10.9.2.3 A few non-local imported wares were present; there were single sherds of Developed Stamford ware, Scarborough ware and a green-glazed French ware, dating to the medieval period, and a sherd of 16th-century Cistercian ware. All of these types are uncommon in Carlisle, occurring only rarely in The Lanes assemblages, the largest groups of medieval pottery hitherto excavated in the city.

10.9.3 NOTEWORTHY POTTERY GROUPS

10.9.3.1 A number of contexts produced burnt examples of Partially Reduced Grey ware (mid-13th to 14th century) that strongly resemble kiln waster material. Two particular contexts are 168 (a fill of a hearth pit 166) and 352 (fill of a large pit 350 that was cut by hearth pit 166), which seem to share sherds from several of the same vessels. The burnt sherds include a number with anthropomorphic decoration from bearded face-mask jugs.

10.9.3.2 The sherds are burnt and blistered, often with small specks of clay adhering to the glaze; some fragments are cracked and bloated in such a way as to suggest definite wasters rather than 'seconds'. There is one example of a 'parting sherd', a broken sherd used to prop up and steady the vessels in the kiln and which itself becomes covered with runs of glaze during the firing. Material such as this does not usually travel very far from the site of origin.

10.9.3.3 Pit 350 is thought to be associated with probable pottery kiln 305. This kiln was superseded by another kiln, 194, which was very fragmentary; the final use of kiln 194 is dated archaeomagnetically to 1370-1400. The pottery wasters described above include highly decorated ware that is usually dated to the later 13th/early 14th century, and this would seem to fit well with the succession of one pottery kiln, 305, by another in the second half of the 14th century. It is perhaps also possible that remains of other kilns in the sequence lay just beyond the limits of the excavation, for kilns 305 and 194 were located at the edge of the trench.

10.9.3.4 The discovery of a pottery production site within the walls of the medieval town is one of regional, if not national, importance. For obvious reasons of safety, pottery kilns were often sited just outside medieval towns rather than within, or else were located in villages in the rural hinterland, so this would make the Scotch Street kiln unusual. Furthermore, this is the first reasonable evidence for the production of what have been assumed to be Carlisle's local wares; no other kiln sites have been discovered to date.

10.9.3.5 Another medieval feature which appears to have absolute dating is pit 445 in Area 2; a timber recovered from this pit has been dated by dendrochronology to 1142-49 (felling date). The pottery assemblage from this pit, some 77 sherds, seems to indicate a 13th century date, however (perhaps early to mid-13th century), indicating that the timber may have already been quite old and perhaps re-used when it was finally deposited in the pit. The same is likely to be true of the other pit with a dendrochronological date, pit 485. This produced a timber with a felling date of 1135; and although there were only 20 sherds from the pit fills, a 13th century date, again perhaps early to mid-13th century, seems more appropriate for the pottery.

10.9.4 RECOMMENDATIONS

10.9.4.1 The importance of the wasters that were probably produced on the site has already been highlighted. Some further analysis of this material is needed, not only from the two contexts referred to above, but also from other contexts that are presumably located in the same part of the site; the relevant sherds need to be

laid out together for examination, and further examples may need to be selected for illustration.

10.9.4.2 The pottery from all contexts needs to be considered in the light of the detailed phasing, which was not available hitherto. When it is clear which contexts belong together or are related, e.g. as fills within particular features or groups of features, it may be possible to clarify the chronological sequence of the site, and perhaps enhance the interpretation of the features. Dating by medieval pottery is an imprecise art, due to factors such as residual and intrusive material, but the larger the groups that can be amalgamated on stratigraphic grounds, the more reliable the suggested dating is likely to be. A detailed list of contexts and their relationships will be required for this; the draft assessment report does not account for all contexts producing medieval pottery.

10.9.4.3 A number of vessels and sherds will need to be illustrated and catalogued. Around 20 have already been selected for their intrinsic interest, from the first examination of the assemblage, but as has been suggested in 4.1 above, this number may have to be increased (perhaps by another 10-20?) in order to do justice to the importance of the waster material.

10.9.4.4 A final report will then be written, which will include the following elements:

- a description of the pottery types present (based on the type series prepared for The Lanes and other sites in Carlisle);
- a discussion section, analysing the contribution of the pottery to the interpretation and dating of the site;
- an assessment of the importance of the waster material in its regional context;
- pottery drawings and catalogue entries.

THE MEDIEVAL POTTERY FABRIC TYPE SERIES BY CONTEXT

Context	Total sherds	Latest date	Red Gritty Ware	Fabrics 3&4	Fabrics 5&6	Fabric 11	Fabric 13	Partially Reduced Grey ware	Fabric 21	Late Medieval Reduced Grey ware	Dev Stam-ford	Scar-borough	French	Other lightly gritted	Cist-ercian-type	Post-med wares	Mod drain
101	203	Postmed-modern, 18/19th C, with 7 mod drainpipe frags.	62	5	3			52		57				11		6	7
103	3	13th/14th C (but context has clay pipe frag)	1					2									
107	5	12th-early 13th C	5														
108	2	Late 14th-16th C (context has clay pipe frag)								2							
110	62	Late 14th-16th C	46	2	3		2	5		4							
112	16	13th- mid 14th C					1	15									
113	6	13th C	3	2				1									
114	73	15th/16th C								73							
115	5	13th/14th C	2					3									
116	138	Latest 1 18th C sherd, + 2 mod drainpipe frags (also clay pipe frags)	33	4	3		1	76		18						1	2
117	20	14th/early 15th C	8		2			8		2							
118	64	mid 13th/14th C	3	1	5			54		1							
122	5	13th/14th C	2		1	1		1									
124	18	13th/14th C	4		1		1	12									
125	584	2 postmed sherds, 17th C & 18th/19th C; rest 12th-14th/15th C	368	1	14	2	8	164	2	23						2	
126	9	12th/early 13th C	9														
128	39	Late 13th/14th C	22	1	2		1	12		1							
129	90	13th/14th C	50	3	11	4	3	19									

THE MEDIEVAL POTTERY FABRIC TYPE SERIES BY CONTEXT

Context	Total sherds	Latest date	Red Gritty Ware	Fabrics 3&4	Fabrics 5&6	Fabric 11	Fabric 13	Partially Reduced Grey ware	Fabric 21	Late Medieval Reduced Grey ware	Dev Stam-ford	Scar-borough	French	Other lightly gritted	Cist-ercian-type	Post-med wares	Mod drain
140	26	13th C	22		2			2									
142	48	mid 13th/14th C	15	1	1			31									
144	14	13th/14th C	10		2			2									
146	6	12th/early 13th C	6														
147	2	12/early 13th C (but context has clay pipe frag)	2														
148	1	12th/early 13th C	1														
151	20	18th/19th C	14					2		2						2	
154	2	13/th14th C						2									
163	39	mid 13th/14th C	6	1	2			24	2	4							
165	1	13th/14th C						1									
168	284	mid 13th/14th C	5	1			4	273				1					
171	21	13th/14th C	16				1	4									
172	17	14th/15th C	5		1			7		4							
174	19	One 18th C sherd, otherwise 14th C (also clay pipe frag)	2		1		2	11	1	1						1	
175	20	13th/14th C	10					10									
176	5	13th/14th C						5									
177	2	13th/14th C						2									
184	3	13th/14th C					2	1									
185	1	13th/14th C					1										
186	5	13th/14th C	3	1				1									

THE MEDIEVAL POTTERY FABRIC TYPE SERIES BY CONTEXT

Context	Total sherds	Latest date	Red Gritty Ware	Fabrics 3&4	Fabrics 5&6	Fabric 11	Fabric 13	Partially Reduced Grey ware	Fabric 21	Late Medieval Reduced Grey ware	Dev Stam-ford	Scar-borough	French	Other lightly gritted	Cist-ercian-type	Post-med wares	Mod drain
188	2	13th/14th C						2									
191	2	12th/early 13th C	2														
192	1	12th/early 13th C	1														
193	1	12th/early 13th C	1														
194	3	12th/early 13th C	3														
195	36	13th C	26		3			7									
198	8	13th/14th C					5	3									
201	2	13th/14th C			1			1									
206	48	13th/14th C	22		3			23									
212	7	13th/14th C	3		1		1	2									
213	36	mid 13th/14th C	7		5	2		21	1								
215	23	12th/early 13th C	22		1												
217	21	12th/early 13th C	21														
218	5	12th/early 13th C	4		1												
220	7	13th/14th C				1		6									
225	5	13th/14th C	1	1	2			1									
227	7	19th C & 4 mod drainpipe frags			1			1								1	4
231	1	12th/early 13th C	1														
232	3	13th C	1		1				1								
233	10	late 12/early 13th C	9			1											
237	1	13th/14th C						1									

THE MEDIEVAL POTTERY FABRIC TYPE SERIES BY CONTEXT

Context	Total sherds	Latest date	Red Gritty Ware	Fabrics 3&4	Fabrics 5&6	Fabric 11	Fabric 13	Partially Reduced Grey ware	Fabric 21	Late Medieval Reduced Grey ware	Dev Stam-ford	Scar-borough	French	Other lightly gritted	Cist-ercian-type	Post-med wares	Mod drain
238	15	late 12th/early 13th C	11	2	2												
239	8	13th/14th C			3			5									
240	17	13th/14th C	6	3	1	2		5									
242	6	13th/14th C	4					2									
243	4	12th/early 13th C	4														
247	13	13th/14th C	4					9									
249	19	13th/14th C	5		2	2		10									
250	28	14th C	14		3	1		8		2							
252	5	13th/14th C	1					4									
255	9	13th/14th C	1		3	1		4									
257	62	Mid 13th/14th C	16		2			41		3							
259	4	12th/early 13th C	4														
260	12	1 postmed sherd, ?18th/19th C	9					1	1							1	
261	6	12th/early 13th C	6														
270	47	13th C	41		1			5									
272	47	13th C	41		4		1	1									
284	2	13th/14th C						2									
286	51	late 12th/early 13th C	45		6												
288	1	12th/early 13th C	1														
290	2	12th/early 13th C	2														
291	2	13th/14th C						2									

THE MEDIEVAL POTTERY FABRIC TYPE SERIES BY CONTEXT

Context	Total sherds	Latest date	Red Gritty Ware	Fabrics 3&4	Fabrics 5&6	Fabric 11	Fabric 13	Partially Reduced Grey ware	Fabric 21	Late Medieval Reduced Grey ware	Dev Stam-ford	Scar-borough	French	Other lightly gritted	Cist-ercian-type	Post-med wares	Mod drain
293	2	13th/14th C	1					1									
295	2	13th/14th C						2									
297	5	late 12th/early 13th C	4				1										
299	22	12th/early 13th C	21		1												
303	5	12th/early 13th C	5														
312	8	12th/early 13th C	8														
315	11	12th/early 13th C	10	1													
324	3	13th C	2						1								
326	4	12th/early 13th C	4														
329	6	13th C	4				1	1									
330	15	1st half of 13th C	12		1			1			1						
331	136	14th/early 15th C	16	2	7		3	92	4	11			1				
332	15	14th/15th C			1	1		9		4							
333	48	14th/early 15th C	5	1	1		1	39		1							
335	12	13th/14th C	9					3									
352	106	Mid 13th/mid 14th C	7	1	4			94									
354	16	14th C			1			15									
355	2	13th/14th C						2									
358	14	13th/14th C	6					8									
361	62	13th/14th C	41		2		7	8	4								
365	26	13th/early 14th C	23					3									

THE MEDIEVAL POTTERY FABRIC TYPE SERIES BY CONTEXT

Context	Total sherds	Latest date	Red Gritty Ware	Fabrics 3&4	Fabrics 5&6	Fabric 11	Fabric 13	Partially Reduced Grey ware	Fabric 21	Late Medieval Reduced Grey ware	Dev Stam-ford	Scar-borough	French	Other lightly gritted	Cist-ercian-type	Post-med wares	Mod drain
367	7	13th/14th C	3				1	3									
370	1	12th/early 13th C	1														
371	22	13th/14th C	8	1	1	1		11									
379	26	13th/early 14th C	12		1		2	10	1								
387	46	Early 13th C	39	3	3			1									
402	6	19th C sherds				1		3								2	
409	6	13th/14th C					1	5									
413	2	13th/14th C						2									
419	8	14/th15th C		1				3		4							
421	4	14th/15th C						3		1							
422	38	15th/16th C	5					5		28							
423	27	15th/16th C			2			4		21							
425	6	15th/16th C	1					2		3							
426	47	14th/15th C	3		3			32		9							
429	24	1 16th/17th C sherd, 1 mod drainpipe frag	2	4	2			10		4					1		1
430	14	Mid 12th/early 13th C	11		3												
444	5	13th/14th C	4					1									
448	4	13th/14th C						4									
449	5	13th/14th C	1					2						2			
450	17	13th C	12	1	2			1	1								
451	41	13th/14th C	10	2	6	1		21	1								

THE MEDIEVAL POTTERY FABRIC TYPE SERIES BY CONTEXT

Context	Total sherds	Latest date	Red Gritty Ware	Fabrics 3&4	Fabrics 5&6	Fabric 11	Fabric 13	Partially Reduced Grey ware	Fabric 21	Late Medieval Reduced Grey ware	Dev Stam-ford	Scar-borough	French	Other lightly gritted	Cist-ercian-type	Post-med wares	Mod drain
454	12	13th/14th C	5	1				5						1			
457	64	Mid 13th/14th C	5		1	1	1	54		2							
459	1	12th/early 13th C	1														
464	4	12th/early 13th C	4														
465	28	Mid 13th/14th C	7					17		4							
469	84	13th/14th C	19	5	14		4	42									
474	21	13th C	16		4			1									
476	6	12th/early 13th C	6														
477	2	13th/14th C	1					1									
478	104	Mid 13th/14th C	2			5	1	89		7							
479	3	14th/15th C						2		1							
481	6	12th/early 13th C	6														
482	1	13th/14th C						1									
487	3	13th14th C	1					2									
489	1	12th/early 13th C	1														
490	32	13th/early 14th C	18	1	5		1	7									
493	1	12th/early 13th C	1														
498	14	13th/early 14th C	4		2			7	1								
501	2	13th C	1				1										
502	1	12th/early 13th C	1														
505	4	14th/15th C						2		2							

THE MEDIEVAL POTTERY FABRIC TYPE SERIES BY CONTEXT

Context	Total sherds	Latest date	Red Gritty Ware	Fabrics 3&4	Fabrics 5&6	Fabric 11	Fabric 13	Partially Reduced Grey ware	Fabric 21	Late Medieval Reduced Grey ware	Dev Stam-ford	Scar-borough	French	Other lightly gritted	Cist-ercian-type	Post-med wares	Mod drain
506	1	12th/early 13th C	1														
508	13	13th/early 14th C	10				1	2									
511	9	13th/early 14th C	6		2				1								
520	21	13th C	17		1		3										
528	11	12th/early 13th C	11														
529	19	14th C	9		4			5		1							
535	1	13th/14th C						1									
537	20	13th C	18				1		1								
543	12	late 12th/early 13th C	11		1												
545	6	13th C	5					1									
549	67	13th C	63					4									
553	15	13th C	13		1				1								
561	2	12th/early 13th C	2														
562	2	13th/14th C	1					1									
566	5	14th/15th C	3		1					1							
569	3	12th/early 13th C	3														
576	5	13th C	3				2										
579	1	12th/early 13th C	1														
590	102	late 12th/early 13th C	98		4												
613	12	13th C	9				1	2									
616	1	13th C		1													

THE MEDIEVAL POTTERY FABRIC TYPE SERIES BY CONTEXT

Context	Total sherds	Latest date	Red Gritty Ware	Fabrics 3&4	Fabrics 5&6	Fabric 11	Fabric 13	Partially Reduced Grey ware	Fabric 21	Late Medieval Reduced Grey ware	Dev Stam-ford	Scar-borough	French	Other lightly gritted	Cist-ercian-type	Post-med wares	Mod drain
617	2	13th/14th C						2									
637	1	12th/early 13th C	1														
638	4	14th/15th C	2					1		1							
640	86	12th/early 13th C	86														
642	2	12th/early 13th C	2														
645	3	12th/early 13th C	3														
646	10	12th/early 13th C	10														
656	1	13th/14th C						1									
662	40	13th C	6	3				31									
678	8	12th/early 13th C	8														
695	1	13th/14th C						1									
TOTAL	4227		1866	57	181	27	67	1654	24	303	1	1	1	14	1	16	14
U/S	129		71	6	7			34		11							
TOTAL INCL U/S	4356		1937	63	188	27	67	1688	24	314	1	1	1	14	1	16	14
Percentage of total			44.5	1.4	4.3	0.6	1.5	38.8	0.6	7.2	0.0	0.0	0.0	0.3	0.0	0.4	0.3

Table 3. The Medieval pottery fabric type series by context.
Context numbers shown in red have been contaminated by material from later contexts

11 THE ENVIRONMENTAL, MOLLUSC AND BONE REMAINS

Patricia Crompton

11.1 Introduction

11.1.1 The site at Scotch Street, Carlisle, provides good anoxic conditions in that most of the contexts are very moist, the lower levels being waterlogged, so there is little or no oxygen present to aid degradation of the organic material. Preservation of the organic remains was then expected to be quite good.

11.1.2 Analysis of all the recovered material is skewed due to factors such as non recovery of pertinent material, degradation of originally deposited material, degradation of material during processing, and differences between the preservation of the phases of occupation.

11.2 The insect and parasite remains

11.2.1 Fragments of invertebrate exoskeletons and larva/pupa cases were noted in the organic flot. A representative sample of these was removed on examination of the samples. A small sub-sample of the whole earth was retained from some of the contexts for further examination in this case. These may be used to extract insect remains by the method of paraffin flotation by specialists. This will be used should such further work be deemed necessary. The soil sub-samples can also be used for the determination of the presence of phytoliths, diatoms, pollen and faecal parasites.

11.2.2 Insect remains were recovered from some contexts, which can help to determine elements of the past environment, living conditions, and human activity related to the site. Insects and larvae are excellent environmental indicators as to the conditions and ecology of the area in which their remains are found. They can pinpoint the type of habitat within the immediate vicinity; different phases and types of context can then be compared, not only throughout the site but also within this and other cities. Ultimately this will help determine the distribution of settlement and activity in the city of Carlisle.

11.2.3 Many of the larval stages recovered from the site appear to be those of decomposer species. Some of these species are known to lay their eggs on rotting meat or faecal remains on which the larvae, when hatched, can feed. Amounts of bone recovered from the contexts containing substantial amounts of these larvae were quite low. As meat waste would almost certainly have still been adhered to the bone after consumption or processing by other means (tanning waste etc.) it suggests that discarded, rotting meat was not the source of food for the larvae.

11.2.4 Faecal remains, both human and animal, could have served as a source of food for the larvae. Many of the contexts containing substantial amounts of larval remains also contained species of moss. Moss was often used for wiping after defecation. These then could be indicators of human faecal remains, the others possibly being from animal dung or other areas of decomposing matter. To determine whether or not this material was faecal in origin samples were sent for parasitological investigation as discussed in the report below.

11.2.5 Determination of species of larval and adult stages in insects requires specialised knowledge. Those contexts selected for further analysis will be sent off to the relevant specialist for identification and interpretation. It is important to study insect remains from Scotch Street so that the knowledge of the sites of inner city Carlisle can be broadened from that already gained from such sites as The Lanes and Annetwell Street.

11.3 ASSESSMENT OF SOIL SAMPLES FOR THEIR POLLEN, INTESTINAL PARASITE EGGS AND OTHER MICROFOSSIL CONTENT

John Carrott

11.3.1 Four small sub samples were submitted to Palaeoecology Research Services Limited (PRS), County Durham (table 4). Investigation of their content of pollen, the eggs of intestinal parasitic nematodes and other microfossils were examined. All of the samples were from pit fills, one of Roman date and the remainder from medieval and late medieval cesspits.

Sample number	Context number	Context description
47	474	Fill of late Medieval cesspit. Wet, silty clay with organic inclusions.
51	662	Fill of Medieval cesspit. Black silty soil, rich in organics.
52	672	Fill of Roman pit, dark brown gravelly soil, with charred wood and bone inclusions.
55	678	Fill of late Medieval cesspit. Grey/black clayey silt, rich in organics.

Table 4. Details of samples sent for parasitological analysis.

11.3.2 Pollen grains and/or spores were present in all but one (context 672) of the deposits examined. The remains from contexts 474 and 662 were quite well preserved, whereas those from context 678 were rather fewer in number and often fragmented or crumpled.

11.3.3 Two of the samples (from contexts 474 and 662) contained appreciable numbers of eggs of intestinal parasitic worms indicating a significant faecal component to these deposits. The eggs were almost all of *Trichuris* and were mostly very well preserved, often retaining both polar plugs. Comparison of these eggs (via a few spot measurements) with data for modern trichurids indicated that they were almost certainly of the whipworms of either humans or pigs (or perhaps of both). The low ratio of *Ascaris* to *Trichuris* observed may suggest the faecal content to be of primarily human origin.

11.3.4 A small amount of additional study of the pollen from these deposits is perhaps warranted to investigate the wider landscape. Measurements of those trichurid eggs retaining both polar plugs should allow a determination of the likely source (or sources) of the faecal content of these deposits to be attempted via statistical means.

11.4 Methodology

11.4.1 The samples were examined for the eggs of intestinal parasitic nematodes using the 'squash' technique of Dainton (1992). Assessment slides were scanned at 150x magnification with 600x used where necessary.

11.4.2 Although primarily for the detection of intestinal parasitic nematode eggs, the 'squash' technique routinely reveals other microfossil remains, and where present these have also been noted.

11.5 Results

11.5.1 The results of the investigations to determine the presence/absence and state of preservation of microfossils (in particular pollen and parasite eggs) are presented below in context number order. Archaeological information provided by the excavator is presented in square brackets.

11.5.2 **Context 474** [fill of late medieval cess pit] **Sample 47**

11.5.2.1 The 'squash' was mostly organic detritus, including 'large' fragments of plant tissue with a trace of inorganic material. Sixteen *Trichuris* eggs were noted and one of ?*Ascaris*. The *Trichuris* eggs were very well preserved, with almost half (7) of those seen retaining both polar plugs; all of these eggs were measurable. Other microfossils were also present including many diatoms (at least 4 forms) and pollen grains/spores and some unidentified fragments of micro-invertebrates. Two live soil nematodes were also seen.

11.5.3 **Context 662** [fill of medieval cess pit] **Sample 71**

11.5.3.1 The 'squash' was mostly organic detritus with some inorganic material. Many pollen grains/spores (including fungal spores), fragments of plant tissue and phytoliths were present, and there were a few diatoms (one type recorded). Twenty-three extremely well preserved *Trichuris* eggs were seen. Thirteen of these eggs retained both polar plugs and were measurable.

11.5.4 **Context 672** [fill of Roman pit] **Sample 72**

11.5.4.1 The 'squash' was mostly inorganic, with a little organic detritus, and a few phytolith fragments and diatoms (one type seen). No eggs of intestinal parasites were noted.

11.5.5 **Context 678** [fill of late medieval cess pit] **Sample 75**

11.5.5.1 The 'squash' was mostly inorganic but with much organic detritus. Some diatoms (of at least two types), fragments of ?phytolith, and a few pollen grains/spores were all present. Preservation of the remains was rather poor, with most of the microfossils being broken or crumpled. No eggs of intestinal parasites were noted.

11.6 Discussion and statement of potential

11.6.1 Pollen grains and/or spores were present in all but one (**672**) of the deposits examined. The remains from contexts 474 and 662 were quite well preserved, whereas those from context 678 were rather fewer in number and often fragmented or crumpled. Further investigation of the pollen content of these samples may give some indication of the general vegetative landscape, but narrow interval sampling from column samples would be required to investigate any evidence for changes through time.

11.6.2 Two of the samples (**47** and **71** from contexts **474** and **662**, respectively) contained appreciable numbers of eggs of intestinal parasitic worms indicating a significant faecal component to these deposits. The eggs were almost all of *Trichuris* and were mostly very well preserved, often retaining both polar plugs. Comparison of these eggs, via a few spot measurements, with data for modern trichurids (Ash and Orihel 1984; Kassai 1998) indicated that the eggs seen were almost certainly of either *Trichuris trichiura* (Linnaeus) or *T. suis* (Schrank), the whipworms of humans and pigs respectively, or perhaps of both. It is particularly difficult to distinguish these two species purely by visual examination of their eggs, as the normal size range for the eggs of *T. trichiura* is a wholly contained subset of that for *T. suis*.

11.6.3 When, as here, large numbers of measurable trichurid eggs are present, a statistical approach to their identification, or the determination of the presence of more than one population, may be attempted, but this is beyond the constraints of an assessment. Similarly, the eggs of the ascarids *Ascaris lumbricoides* (Linnaeus) and *A. suum* (Goeze), the roundworms of humans and pigs, respectively, (though some parasitologists believe that there is just one species of *Ascaris* that infests both humans and pigs) are morphologically almost identical. Taylor (1955) has remarked (also in relation to medieval remains) that a high ratio of *Ascaris* to *Trichuris* eggs may indicate pig rather than human faeces. Conversely, the low ratio observed here (only a single *Ascaris* egg being identified, and that tentatively, from context 474) may suggest the faecal content to be of primarily human origin.

11.6.4 Small quantities of microfossil remains had survived in the other two sub samples examined (**672** and **678**), albeit in rather poor condition, but neither gave any additional intestinal parasite eggs.

11.7 ENVIRONMENTAL REMAINS
Patricia Crompton

11.7.1 The waterlogged plant remains

11.7.2 Methodology

11.7.3 Some 80 samples were taken during the course of the excavation. Most were considered worth sampling because of their organically rich content (see Appendix 2) but this number also includes a wicker or heather basket and samples of timbers removed from certain contexts as spot samples (a total of 21).

Of the 80 samples taken, all the whole earth samples (a total of 59) were selected for processing in order to assess their environmental potential. This will help provide further information as to the depositional processes involved in their formation. The methodology employed required that the whole earth samples be broken down and split into their various different components. This was achieved by a combination of water washing and flotation..

11.7.4 The process of flotation, by passing the sample through a flotation tank, serves to separate the matrix of the whole earth sample into the organic fraction and the heavier mineral content of mainly sands, silts, clays and stones. The two resultant sub-samples are the flot and the retent or residue. The flot consists of the material that floats on water as the light or floating fraction. This produces mainly organic and charred remains.

11.7.5 The heavy, retent fraction, consists of the denser material that usually sinks, including the waterlogged material. The method relies purely on the variation in density of the recovered material to separate it from the soil matrix, allowing for the recovery of ecofacts and artefacts from the whole earth sample. The recovered remains can then be assessed for content.

11.7.6 The more of the sample that can be processed the better the interpretation of the results from it. All the material was processed, a small sub-sample being retained from most contexts for parasite analysis. Both the retent and the flot residues were examined. The results of these appear in (Appendix 3). The results of the seed identification were expressed as diversity of taxa of seeds, where the total numbers of taxa were plotted against the context number (Table 5).

11.7.7 The retent, like the residue from wet sieving, will contain any larger items of bone or artefacts. The flot or floating fraction will generally contain organic material such as plant matter, fine bones, cloth, leather and insect remains. A rapid scan at this stage will allow further recommendations to be made as to the potential for further study by entomologists or palaeobotanists with a view to retrieving vital economic information from the samples. Favourable preservation conditions can lead to the retrieval of organic remains that may produce a valuable suite of information in respect of the depositional environment of the material, which may include anthropogenic activity, seasonality and climate and elements of the economy.

11.7.8 The diversity of seeds and other plants represented in the samples are an indicator of the location of the original plant. An internal location, such as a building, will

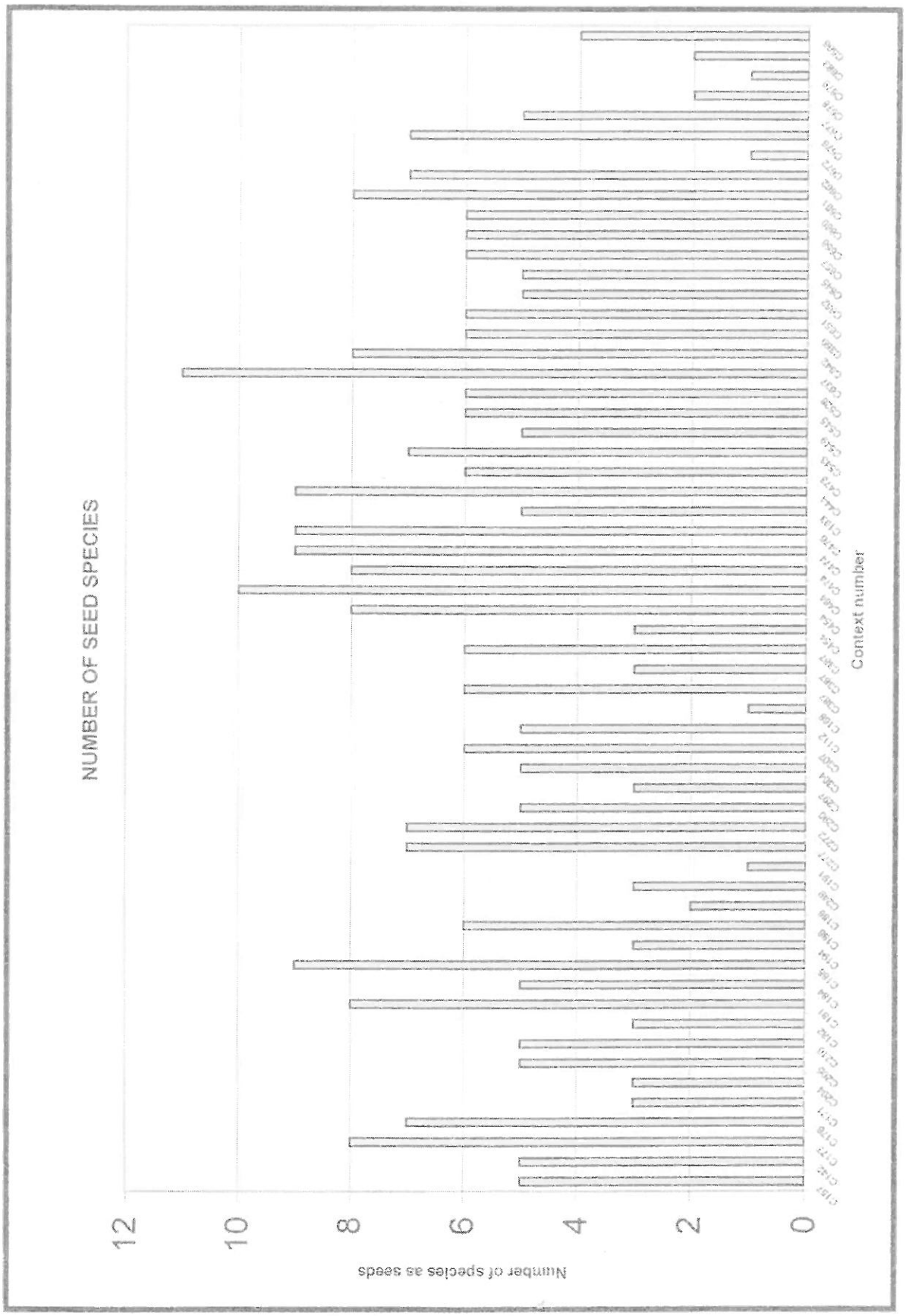


TABLE 5: Number of seed species

bear fewer species than an external location. The remains will also be influenced by factors of preservation and cleanliness of the original area. There may be interesting comparisons to be made between the Roman and Medieval period contexts as the Romans were thought to be meticulously clean, whereas the later period was a dirty, smelly, untidy environment.

11.7.9 From Table 5 it can be seen that there were several contexts containing a relatively low diversity of seed species. These may be those which were originally internal. Generally the contexts containing the most diversity of seeds also had the greatest variety in the retent content (Table 6). This may then suggest that they were associated with areas of refuse deposit or cesspits, the areas of least variety coming from internal surfaces or well-trodden areas. The diversity of seed species associated fell into two main categories. The first consists of charred grain and weed seeds of arable land, usually associated with a quantity of charcoal, as in samples 1 (**157**), 3 (**177**), 4 (**176**), 6 (**204**), 10 (**181**), 18 (**249**), 22 (**191**), 27 (**290**), 33 (**307**), 37 (**168**), 47 48 (**474**), 59 (**528**), 60 (**637**), 70 (**661**), 73 (**676**), 75 (**678**), and 80 (**566**).

11.7.10 The charcoal associated with these contexts suggests they probably originated from hearths or fires, the small amounts of grain and seeds becoming preserved by charring around the edge of the fire. None of these contexts were associated with their original hearths or ovens; they were all recovered from rubbish pits through various levels of the site.

11.7.11 Other contexts containing charcoal and sometimes grain were associated with hearths or ovens. Sample 14 (**194**) showed the effects of extreme heating. As part of an oven or hearth feature this sample was predominated by charcoal. It also contained an amount of charred grain, notable by the fact that there were no weed seeds associated with it. This may be due to the high temperatures reached by the material, the smaller weed seeds not then surviving, which may also reflect the limited amount of grain recovered from it. A small amount of bone was also hand recovered from this context.

11.7.12 Sample 23 was taken from an area of charcoal (**277**) below the charred wooden trough (**276**). The trough was associated with a small hearth (**279**). The suite of seeds found in sample 23 were mixed. As well as limited amounts of charred grain there were weed seeds of arable land present in this context (**277**). It also contained *Rubus* species, probably raspberry, sedges (*Carex* spp.) and dock (*Rumex* spp.). The heather could have been associated with the hearth or part of the surrounding floor surface. The sample also contained moss, wood, wool and a considerable amount of insect stages, probably from decomposer species. This suite of seeds is unusual and requires further investigation to analyse its presence in association with the hearth.

11.7.13 Sample 8 was taken from context 216, and comprised a layer deposited above the wooden trough (**276**). Charcoal predominated with charred grain and some charred plant fragments also present. Again the weeds of arable land, moss, heather and insect stages all occur but wool and fibres are absent. This sample was very similar to sample 23 (**277**).

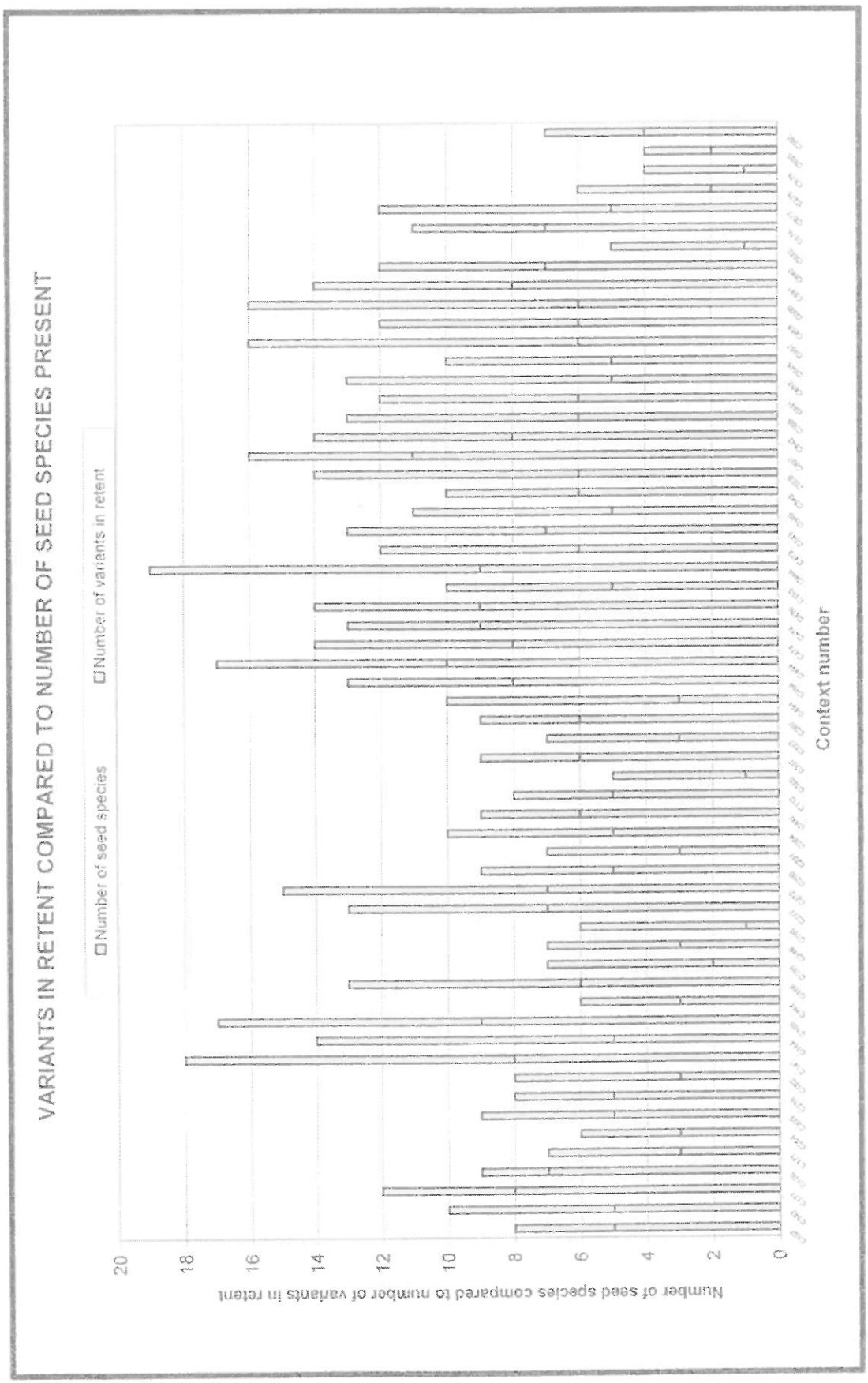

VARIANTS IN RETENT COMPARED TO NUMBER OF SEED SPECIES PRESENT
Number of seed species
Number of variants in retent
Number of seed species compared to number of variants in retent
20
18
16
14
12
10
8
6
4
2
0
Context number

TABLE 6:

11.7.14 Context 205 (sample 7), was an area of compacted burnt clay which lay above 216, appearing to be the clay lining of another hearth or oven feature. This occurred above other similar features forming a sequence of hearths or ovens. An amount of charred grain was associated with this context as well as the seeds of arable land. Interestingly a fragment of seaweed was recovered and burnt bone was present, displaying a slightly different format from the others associated with the sequence.

11.7.15 The sequence of contexts associated with the hearth/oven features (**205, 216, 277**) all exhibit an amount of grain and weed seeds of arable land. This suggests that they were associated with the processing of grain at some stage. Whether as a stage of grain drying or as part of the cooking process is unclear without further investigation of the samples. The sequence of hearths/ovens seems to be of domestic origin.

11.7.16 The hearth/oven feature, context 543 (sample 54), lies below context 508, a general cleaning layer in this area. Sample 54 was taken from above a road surface of gravel and coarse sand (context 536). Charcoal predominates in this sample and is accompanied by substantial amount of charred grain and weed seeds of arable species. As well as a significant amount of wood, both bone and fish bone were also present. There was also a small amount of bone hand recovered from this context as sheep and cattle. These finds suggest a domestic oven or hearth with grain that was not very well processed to remove the weed seeds.

11.7.17 The second category is made up of weed seeds, some in association with fruit specie, as seen in samples 2 (**142**), 5 (**171**), 9 (**182**), 11 (**184**), 13 (**185**), 16 (**188**), 25 (**272**), 28 (**297**), 29 (**304**), 34 (**112**), 40, 41, 42 (**387**), 43, 44 (**454**), 46 (**464**), 47, 48 (**474**), 49 (**476**), 51 (**193**), 52 (**444**), 53 (**474**), 55 (**549**), 57 (**545**), 61 (**642**), 62 (**359**), 63 (**651**), 64 (**652**), 65 (**645**), 66 (**657**), 67 (**658**), 69 (**660**), 71 (**662**), 72 (**672**) and 76 (**679**). These also come from pit fills but were most probably cesspits as there was very little charcoal associated with them. Flax seeds were found in several of these contexts (**359, 444, 642** and **657**).

11.7.18 Flax (*Linum usitatissimum*) is the plant from which linen is extracted. At this time the plant was not grown commercially in England for the manufacture of linen but the seeds were widely used for the control of diarrhoaea and other stomach upsets. The seeds were mainly imported via the links with the Scandinavian countries, probably via Scotland.

11.7.19 Samples17 (**186**), 74 (**677**), and 77 (**683**) were unusual in that they only produced weed seeds. Sample 17 (**186**) only produced *Chenopodium* and *Rubus* (probably raspberry) seeds. This sample came from the bottom of one of the pits (cut 145). It also contained a small amount of hand-recovered bone. Unusually wool and hair were present, along with an amount of wood and some burnt bone. This context was the primary fill of pit 145. This may prove to be an area where animals were originally kept, explaining the wool and hair present.

11.7.20 Context 677 (sample 74) contained a large amount of moss and several species of weed seeds. Wood and bark were also present and a number of insects at various stages. Context 677 was the primary fill of pit 473. Moss served several purposes; it was easily freed from what little soil matrix adhered to it and it could be used for flooring, packing for things such as mattresses and wiping. The large amount present in this context suggests the moss was used for either one or all of these purposes.

11.7.21 Context 683 (sample 77) was a pre-Roman soil with inclusions of stone and wood. Heather was also present and weed seed species of arable land or waste places. There is also an amount of fibrous plant matter. The reconstruction of the area before its occupation by the Romans would be a useful exercise as little is known about this area previous to their settlement of it.

11.7.22 Sample 78 was from the remains of the burnt wooden trough (**276**). All the material recovered from this sample was charred wood with a minimal amount of soil and small gravel. Only one seed of pale persicaria was recovered from this sample. The trough may be associated with the phase 8c kiln feature in Area 2.

11.8 FURTHER WORK

11.8.1 Of the 59 samples 33 produced adequate flots containing organic material of sufficient quantity, quality and diversity for further assessment. A further 5 had limited potential and 22 had no further potential. After initial assessment the 33 all exhibited various quantities of botanical, small mammal or invertebrate material to warrant further specialist analysis and interpretation.

11.8.2 The material recovered from this study will aid the reconstruction of the conditions and habitats of the site. It will, in association with the dateable finds, lead to the determination of the various phases and periods of the site.

11.9 THE MOLLUSC REMAINS

11.9.1 Mollusc remains were very limited on the site and consisted of oyster shells. Two small, almost complete left valves and one complete larger right valve were hand recovered from context 116, which also produced bone from cattle, caprovids, and pig. One fragment was recovered from context 125, a dark soil layer, which contained bone from all represented species apart from bird. Context 549 contained a complete right and left valve of roughly contemporary size. The context also yielded cattle, caprovid and small mammal bone. The mollusc remains can only serve to tell us that this resource was exploited in the phases in which it was found.

11.10 THE BONE REMAINS

11.10.1 Introduction

11.10.2 A number of deposits produced bone, but only 5 produced it in substantial quantities (125, 129, 303, 371, 459). In general only very small amounts of bone were recovered by hand during excavation (Table 7). Small amounts were also recovered from the flotation samples. Most fragments represented the main domestic species of mammals; wild species were also represented in the form of

deer and rabbit. None of the bones were charred. Small mammal remains were found in a few contexts.

11.10.3 The deposits ranged in date from the 2nd to the 14th century and represented a selection of context types from pit fills to oven or hearth features (Tables 8-11). Most of the bone is in a poor state of preservation. There was some evidence of butchery but little sign of gnawing in the bone.

11.10.4 The data was recorded electronically to a database (appendix 4) with subjective records made as to the state of preservation, abrasion, and colour of the fragments. Semi-quantitative details were also recorded for each context in relation to fresh breaks, gnawing, butchery and burning. Discernable fragments were identified to species group or species wherever possible using reference material. No measurements were recorded due to the limited size of the recovered assemblage and there being very few whole, measurable bones.

11.10.5 Predominately, the bone found consisted of fragments of kitchen waste and comprised very small assemblages. Virtually all the long bones, as well as having some butchery marks evident, had probably been split for marrow extraction. Analysis of the elements was sometimes limited though by the poor preservation of the material. Gnawing was not evident on many of the fragments, indicating they had not been exposed to scavengers after deposition. As preservation was poor, however, evidence of gnawing may have been destroyed.

11.11 SPECIES REPRESENTATION

11.11.1 Bone was hand recovered from a total of 213 contexts. Domestic mammals throughout the represented phases dominated the hand-collected assemblage; these included cattle, caprovids (goat/sheep) and bird, amongst the most commonly occurring species. Pig remains were limited on the site, horse even more so. Wild large mammals were present as deer species.

11.11.2 Dog remains were undetected on the site but there are several contexts from which small mammal bones have been recovered.

11.11.3 Some of the bone recovered was unidentifiable to species, or in such small quantities, as to render them unworthy of analysis. Also, the unstratified contexts produced varying amounts of bone, but as these cannot be assigned to a period or phase, they remain irrelevant to the analysis. They have been added to the database for information only.

11.11.4 There was very limited evidence of fish bone; which was only present in 22 of the contexts. The bone was from small fish which would probably have been processed whole, either in cooking or preservation. All of the fish bone was recovered from the flotation process in both the light and the heavy fraction. As a resource fish would have been exploited in all periods. The lack of recovery of material indicates poor preservation conditions, processing of the fish so that fragile bone parts were destroyed, off site processing of fish, or removal from the area of the waste material. As a free commodity fish would have formed a

welcome part of the economy suggesting that either one or a combination of the above factors led to the none recovery of material.

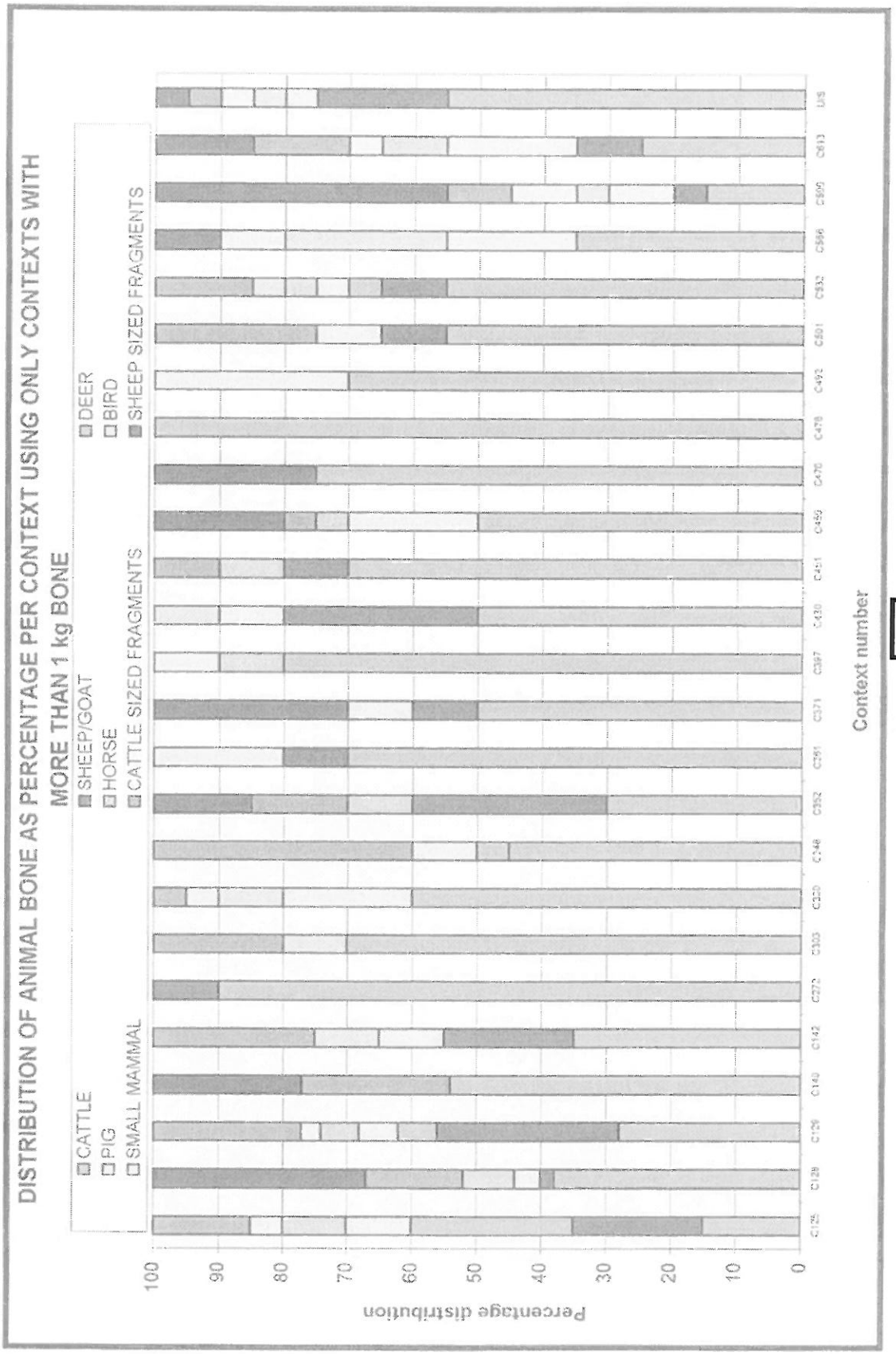
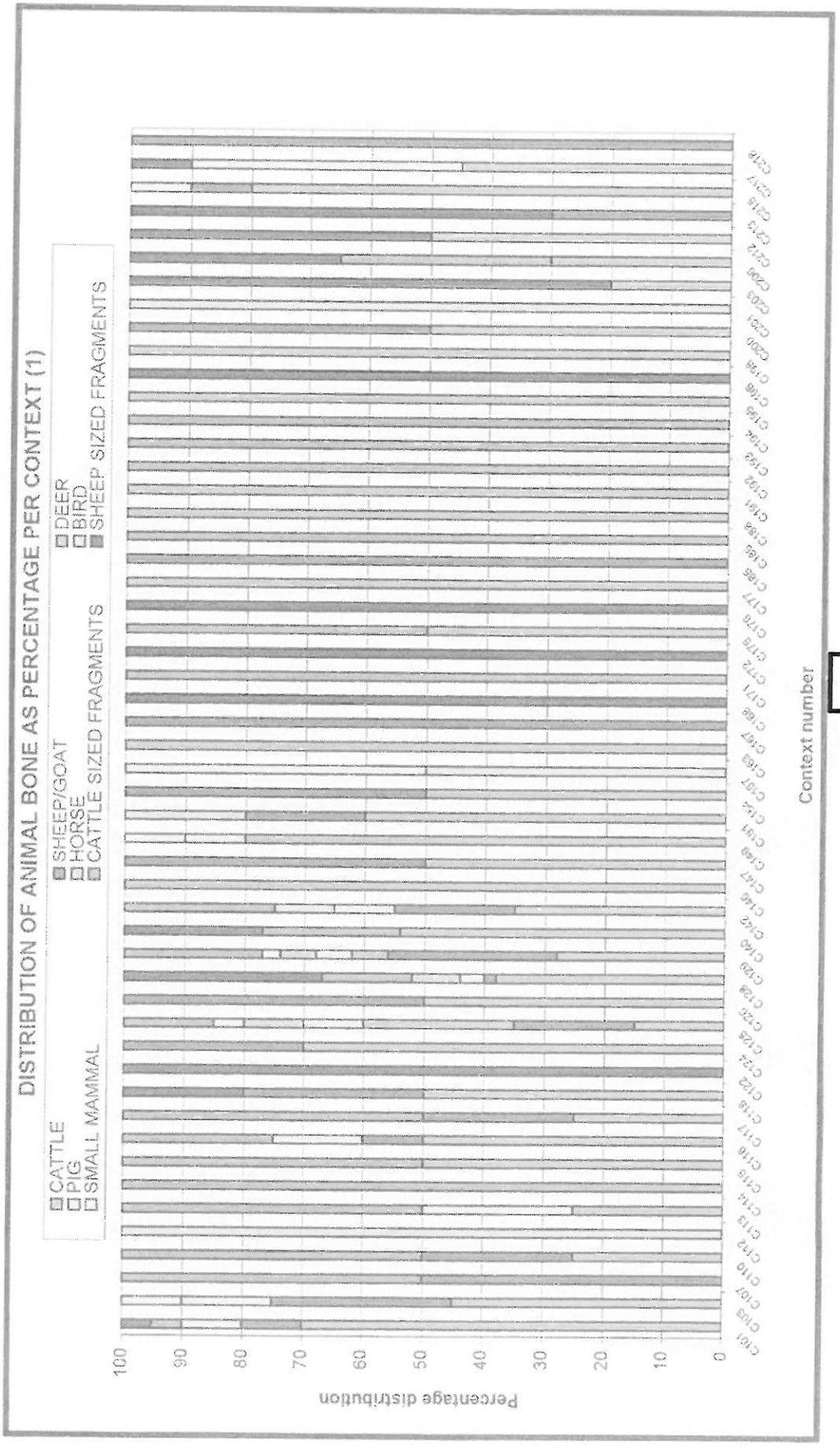


TABLE 7:


DISTRIBUTION OF ANIMAL BONE AS PERCENTAGE PER CONTEXT (1)
CATTLE
PIG
SMALL MAMMAL
SHEEP/GOAT
HORSE
CATTLE SIZED FRAGMENTS
DEER
BIRD
SHEEP SIZED FRAGMENTS
Percentage distribution
100
90
80
70
60
50
40
30
20
10
0
Context number

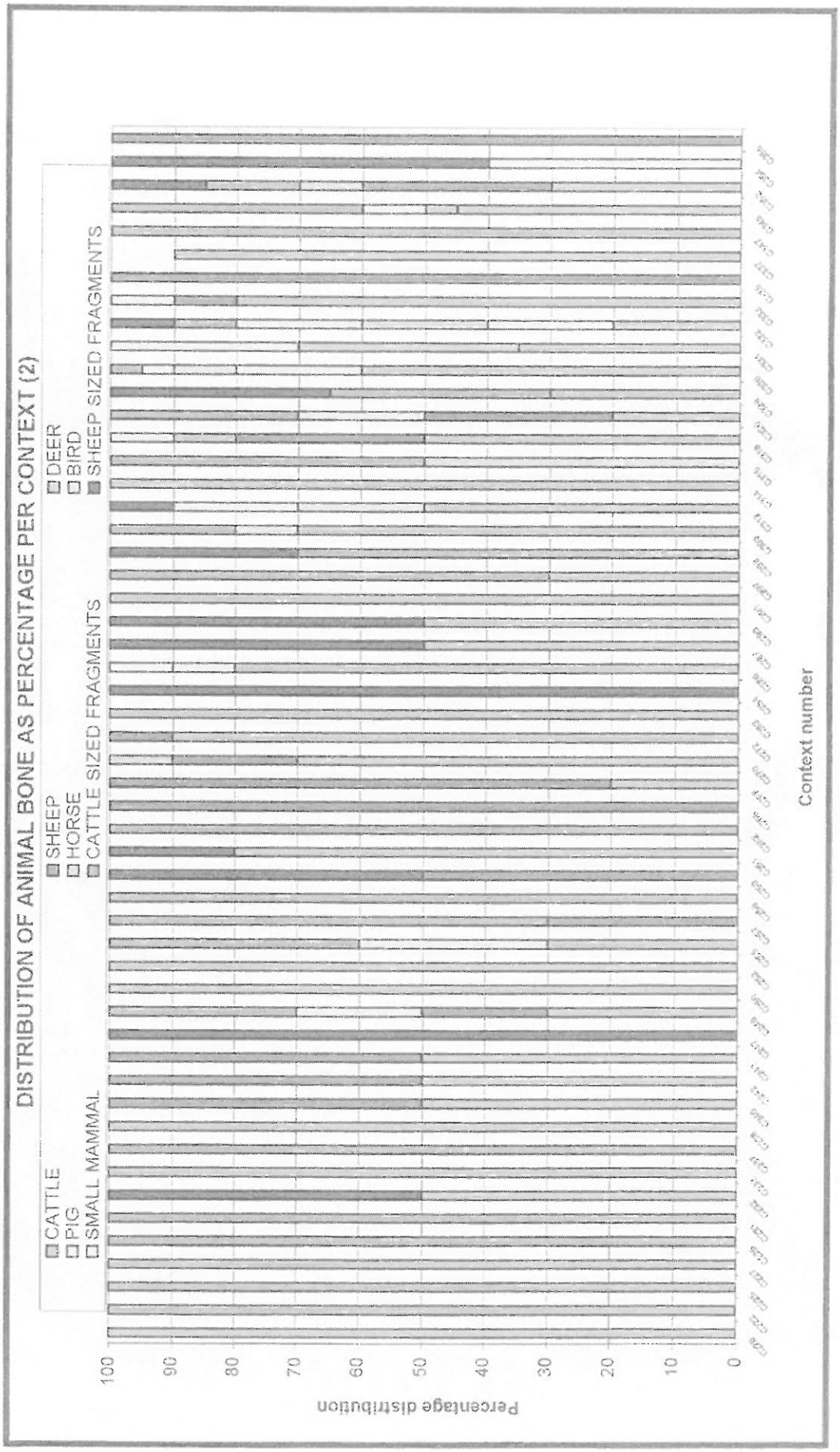

DISTRIBUTION OF ANIMAL BONE AS PERCENTAGE PER CONTEXT (2)
CATTLE
PIG
SMALL MAMMAL
SHEEP
HORSE
CATTLE SIZED FRAGMENTS
DEER
BIRD
SHEEP SIZED FRAGMENTS
Percentage distribution
100
90
80
70
60
50
40
30
20
10
0
Context number

TABLE 9:

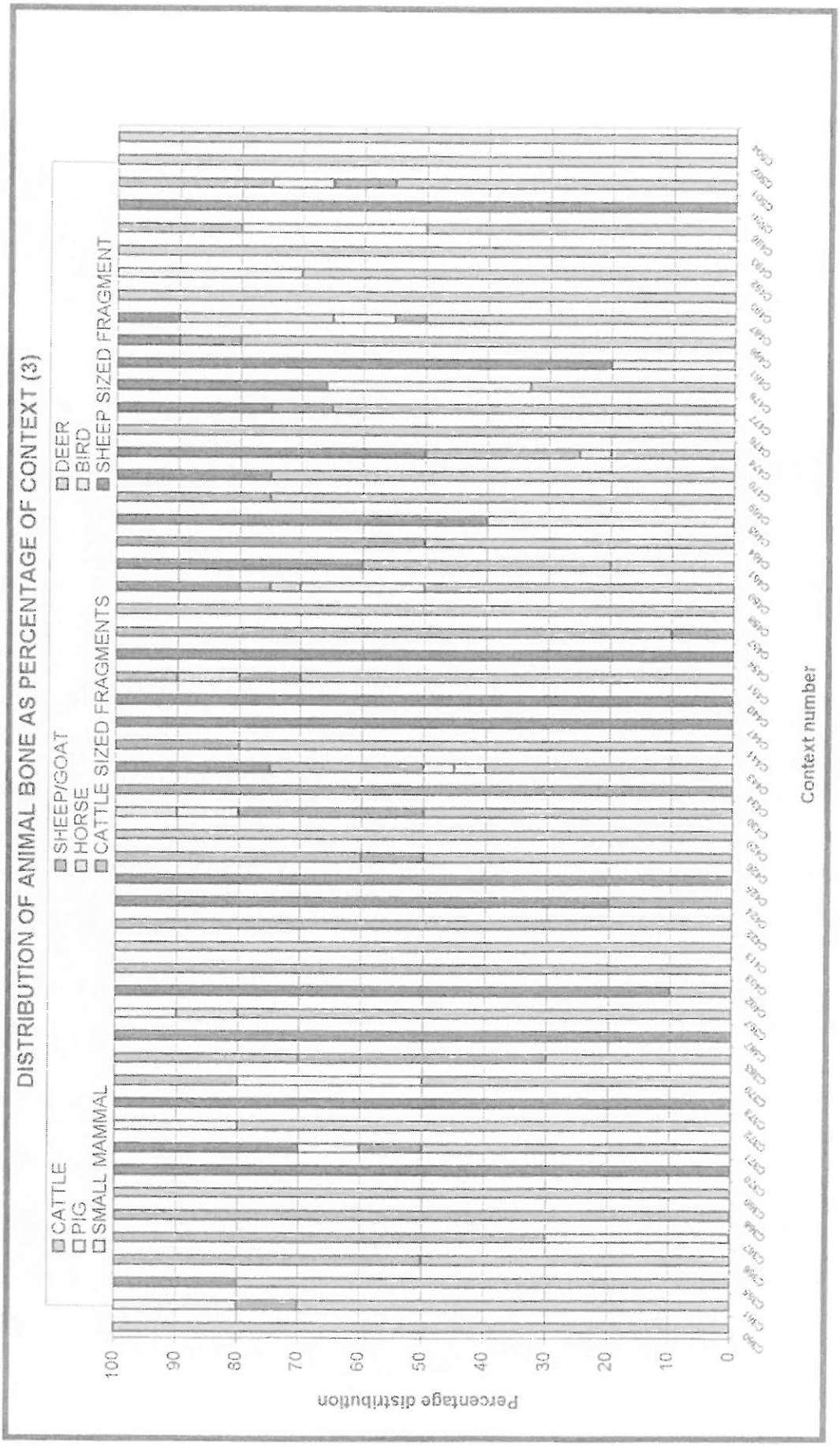

DISTRIBUTION OF ANIMAL BONE AS PERCENTAGE OF CONTEXT (3)
CATTLE
PIG
SMALL MAMMAL
SHEEP/GOAT
HORSE
CATTLE SIZED FRAGMENTS
DEER
BIRD
SHEEP SIZED FRAGMENT
Percentage distribution
100
90
80
70
60
50
40
30
20
10
0
Context number

TABLE 10:

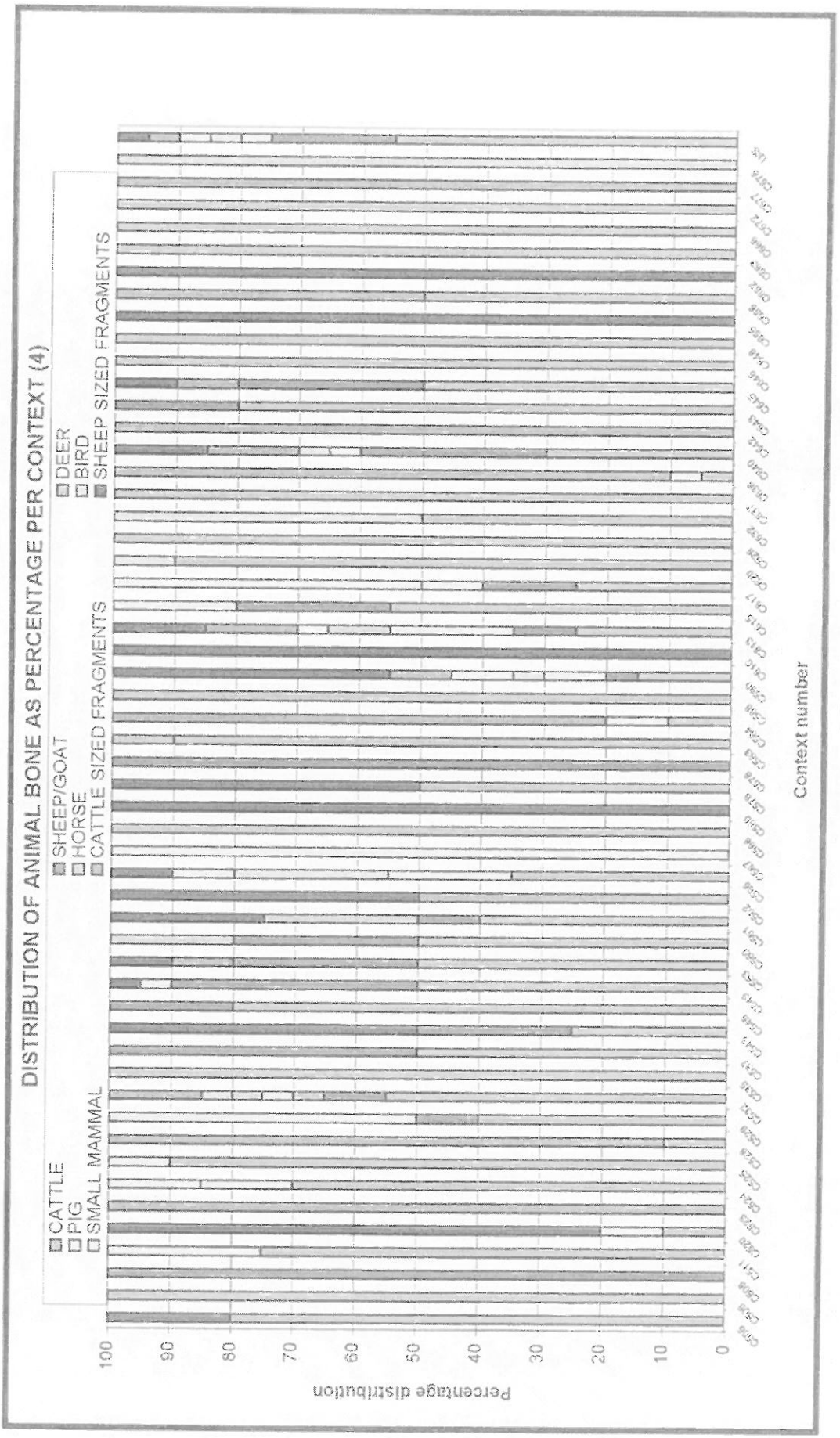

DISTRIBUTION OF ANIMAL BONE AS PERCENTAGE PER CONTEXT (4)
CATTLE
PIG
SMALL MAMMAL
SHEEP/GOAT
HORSE
CATTLE SIZED FRAGMENTS
DEER
BIRD
SHEEP SIZED FRAGMENTS
Percentage distribution
100
90
80
70
60
50
40
30
20
10
0
Context number

TABLE 11:

11.12 DISCUSSION

11.12.1 Of the contexts from which bone was recovered only three were modern (**101, 213, 505**). Context 101, a cleaning layer, will not be part of the further analysis. The other phases were Post-Medieval, Medieval and Roman (see Table 7). The contexts that produced more than 1kg of bone only fell into the main categories of Roman (**371, 397, 430, 459, 492, 501, 532, 613**) and Medieval (**125, 128, 140, 142, 272, 33, 330, 348, 352, 361, 451, 470, 476, 566, 590**).

11.12.2 Of the domestic species represented on the site cattle (appeared to dominate as the main domesticate through all phases. Cattle bones were present in at least 144 of the contexts from which bone was recovered, usually associated with sheep remains. It was present in all the contexts bearing more than 1kg of bone, and of these only one from the Roman period (**613**) produced less than 50% cattle bone. It was absent though in some of the less bone rich contexts, this may be due to preservation conditions in these areas or other factors.

11.12.3 In general, although present, the Roman contexts showed less evidence of sheep bone. This may prove the increase of the wool trade in the Medieval period. There were some contexts of Medieval date though, which produced no sheep bone at all. This may indicate localised distribution of the remains. Further analysis may conclude kill patterns for the animals and so lead to a better understanding of their niche within the economy, whether as meat production or wool and craft production.

11.12.4 Pig bone (Table 15) was present in 43 contexts. Of the larger assemblages it was generally in association with sheep and cow (**101, 128, 142, 330, 371, 430, 459, 492, 501, 532, 566, 590, 613**). Other species were present in some of the contexts (**348, 430, 459, 532, 566, 590, 613**). Representation of pig bone occurred through all phases.

11.12.5 Pig remains, as a domestic species producing considerable amounts of meat were limited on the site, with assemblages dominated by cattle and sheep/goat. This may be due to the fact that the meat was brought into the site cured as hams and bacon rather than because pork was not fully exploited (Dobney *et al*, no date: 58-59). This is contrary to the typical idea of the Medieval small holding with the pig housed at the rear.

11.12.6 Deer (Table 16) occurred in only 8 of the contexts from which bone was recovered. In the Medieval period it was an offence to take the King's deer, but deer bone was recovered from four contexts of this phase (**125, 129, 318, 348**). Usually associated with high status sites its presence here is probably a result of acquisition from the local forests. From the Roman period it also occurred in four contexts (**331, 413, 532, 583**). The deer could have been hunted for commercial gain or, more probably for sport.

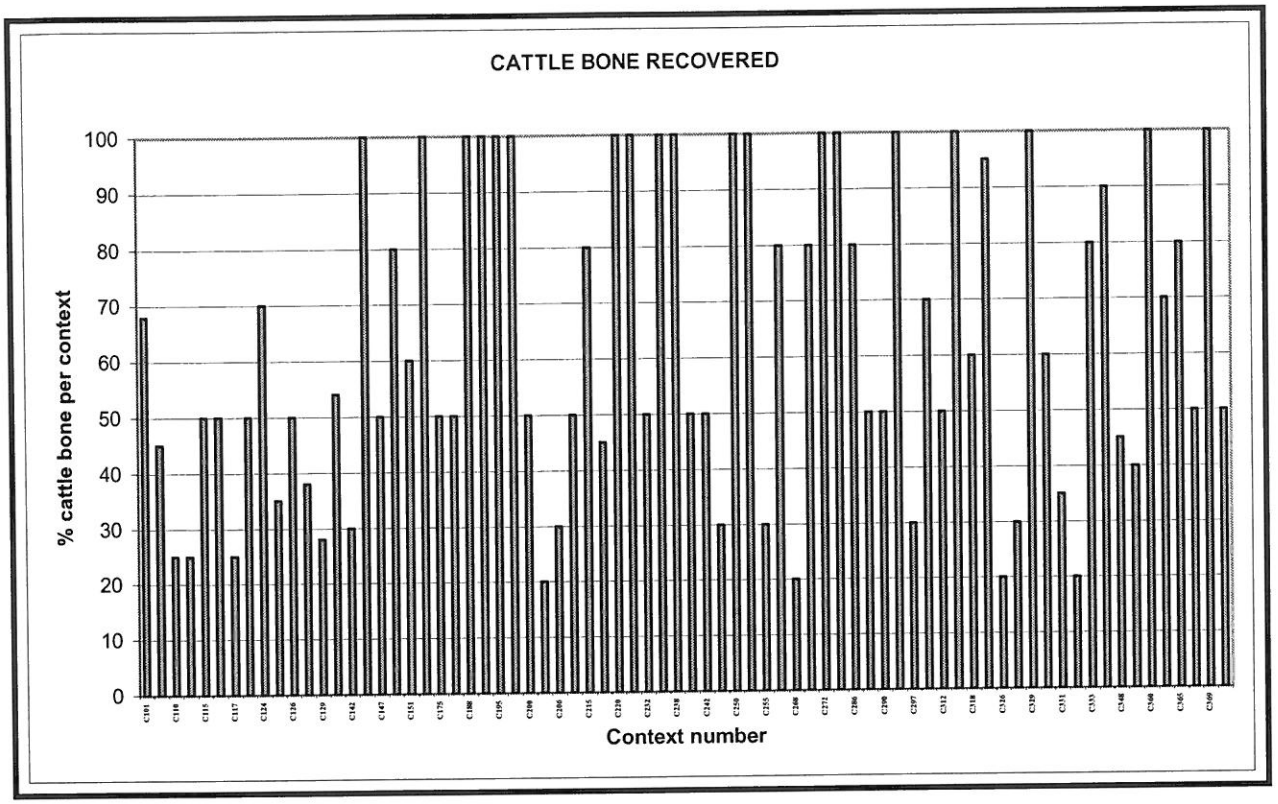


Table 12: Distribution of cattle bone 1

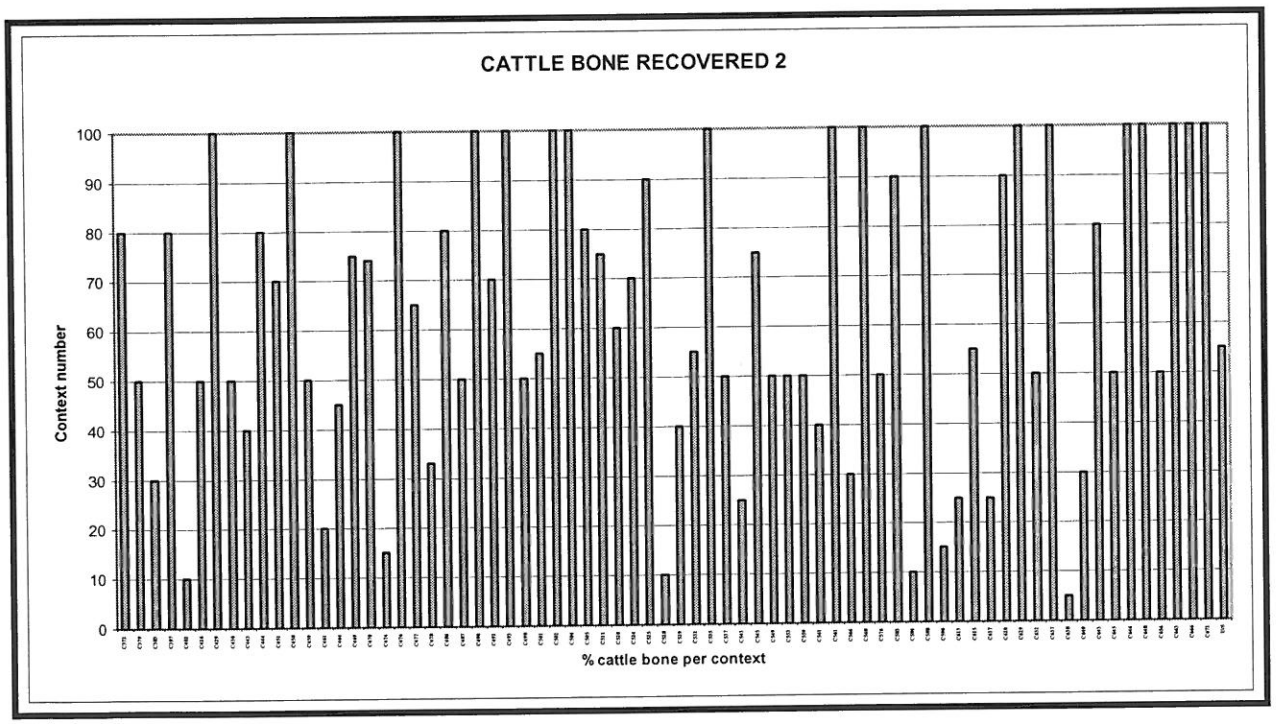


Table 13: Distribution of cattle bone 2

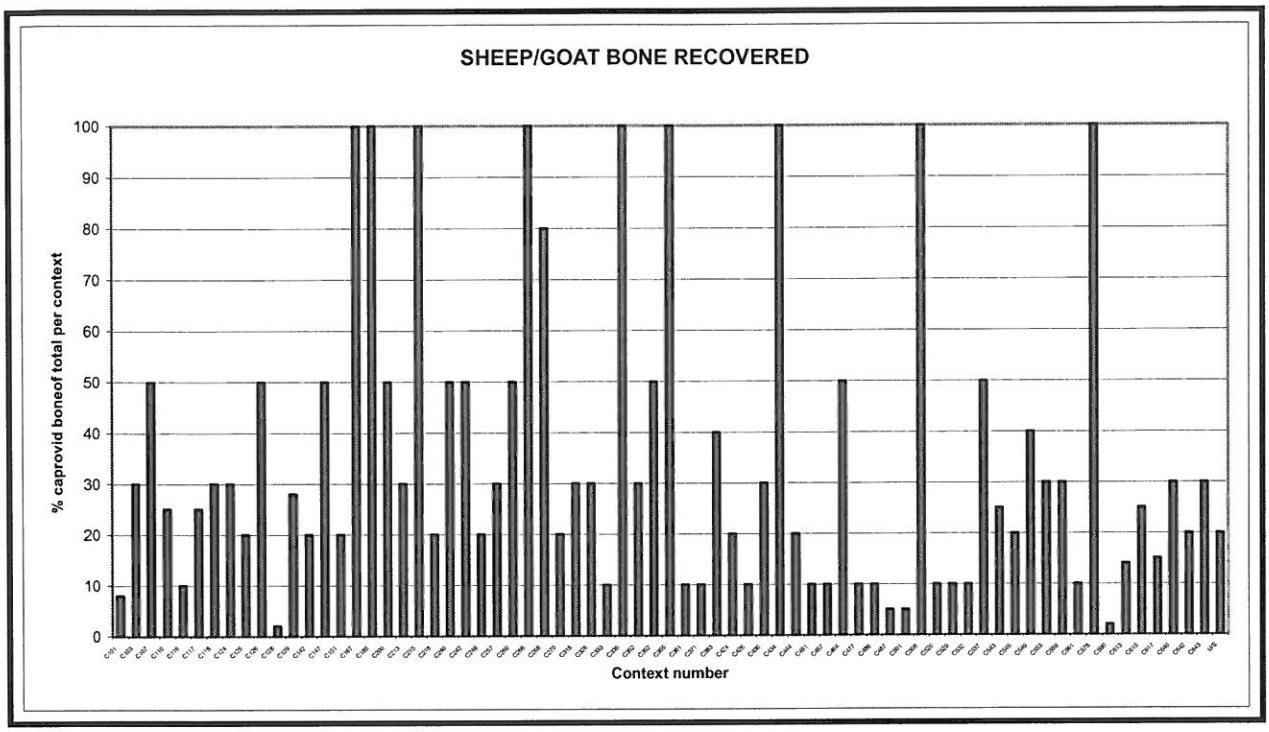


Table 14: Distribution of sheep bone

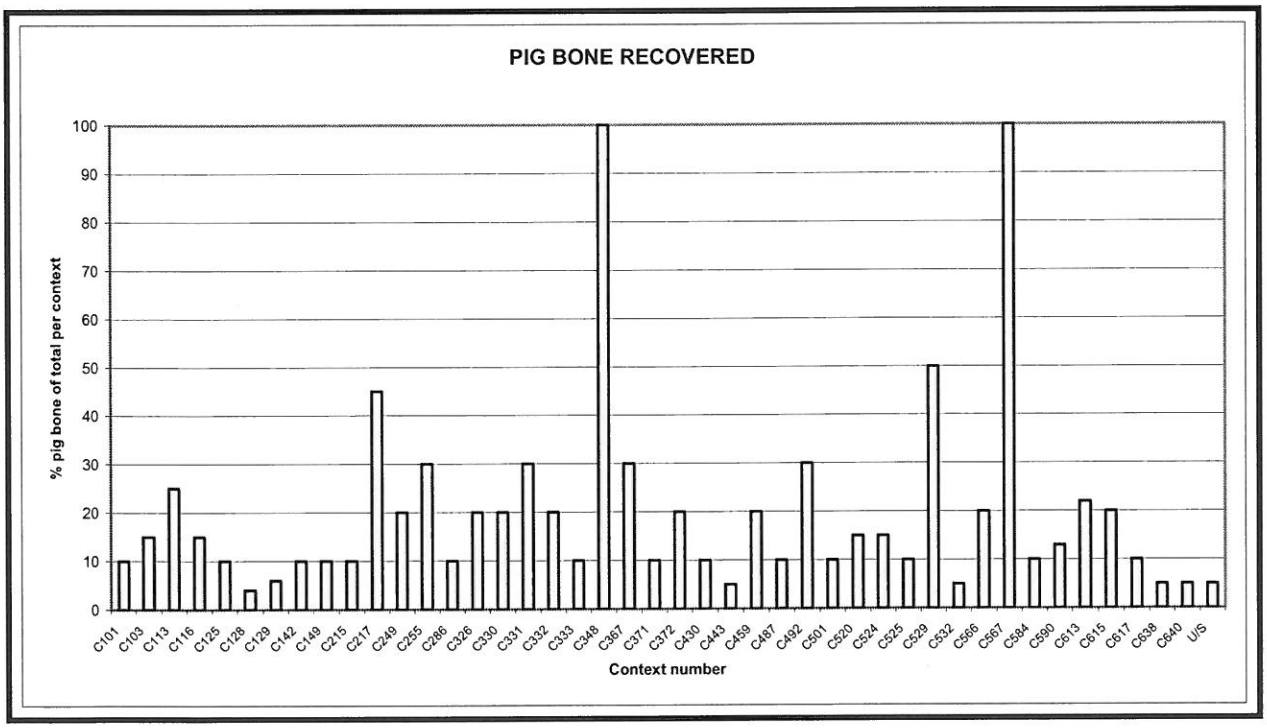


Table 15: Distribution of pig bone

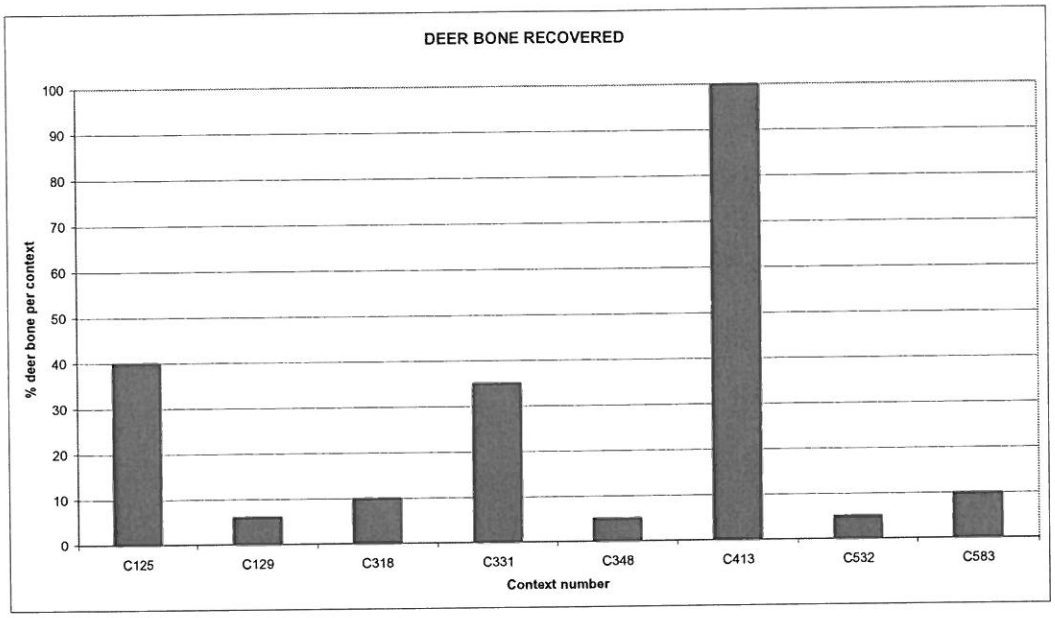


Table 16: Distribution of deer bone

11.12.6 The horse was not known as a draught animal in Britain until the 12th century when it began to replace cattle. Some of the horse bone showed signs of butchery (**125, 397, 451**). This may not mean the horse was consumed as food but could be the result of trades involving horse carcasses or the feeding of dogs (Dobney *et a,l* no date). Preservation was again poor with some evidence of heating. Of the 9 contexts having a large amount of bone present (Table 17), horse formed a relatively low percentage of the total animals represented at about 10%, sometimes in association with deer (**125, 129, 532**).

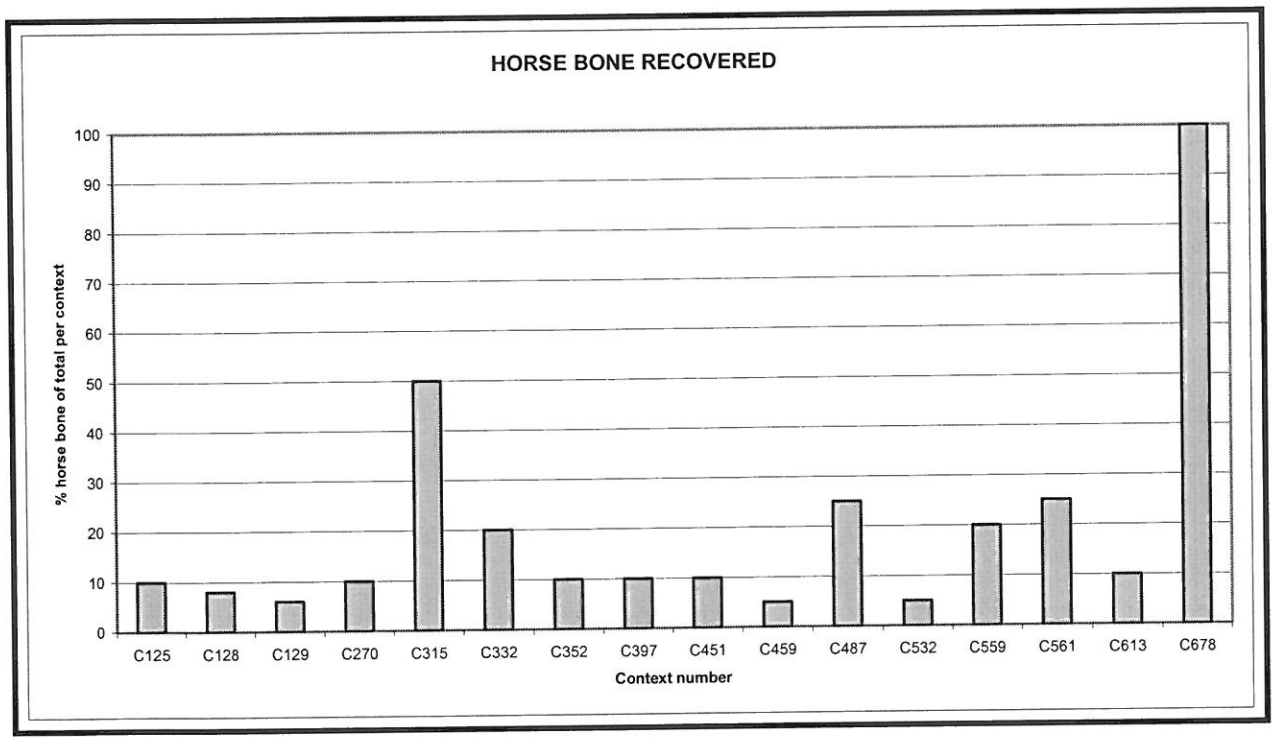


Table 17: Distribution of horse bone

11.12.8 Small mammal bones (Table 18) were found in 35 contexts. As they were of no commercial value and of negative social value we can assume they only occurred commensally to man. The rats and mice would be attracted to grain in stores or small caches of waste material; the rats also feeding on refuse of all types. Some small mammals were associated with environmental samples, which contained grain and weed seeds (**112, 142, 157, 184, 464, 474, 528, 549, 676**) and sometimes fruit seeds (**142, 184, 359, 454, 473, 545, 660**). Other contexts associated with small mammal bone generally had other species present, possibly indicating scavenging from refuse areas.

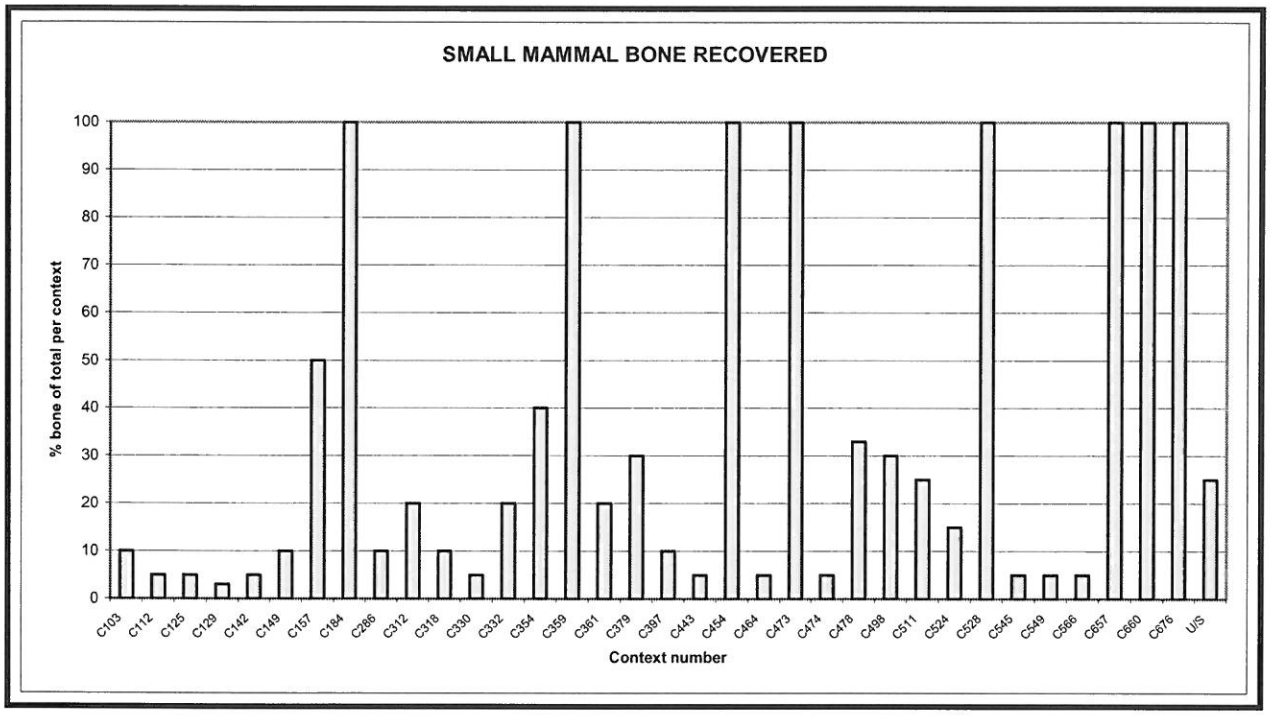


Table 18: Distribution of small mammal bone

11.12.9 Context 157 contained only bird and small mammal bones. This may indicate that small mammals were associated with the area where birds were reared or kept. Most other contexts associated with small mammal contained several other animal species. This may denote the presence of refuse, attractive to small mammal species as food.

11.12.10 Bird bone (Table 19) was present in only 18 contexts. It predominately occurred in the Medieval period contexts, with only four in the Roman period (**430, 532, 620, 632**). Of the contexts bearing more than 1 kg bone, bird bone occurred in 7 of them, 2 being of the Roman period. As bird bone is more fragile than that of mammals it could be said that the assemblage recovered represented only a fraction of that originally deposited and so it is more difficult to interpret. Contexts 112 and 201 produced only bird bone though, possibly indicating the rearing of fowl in these areas.

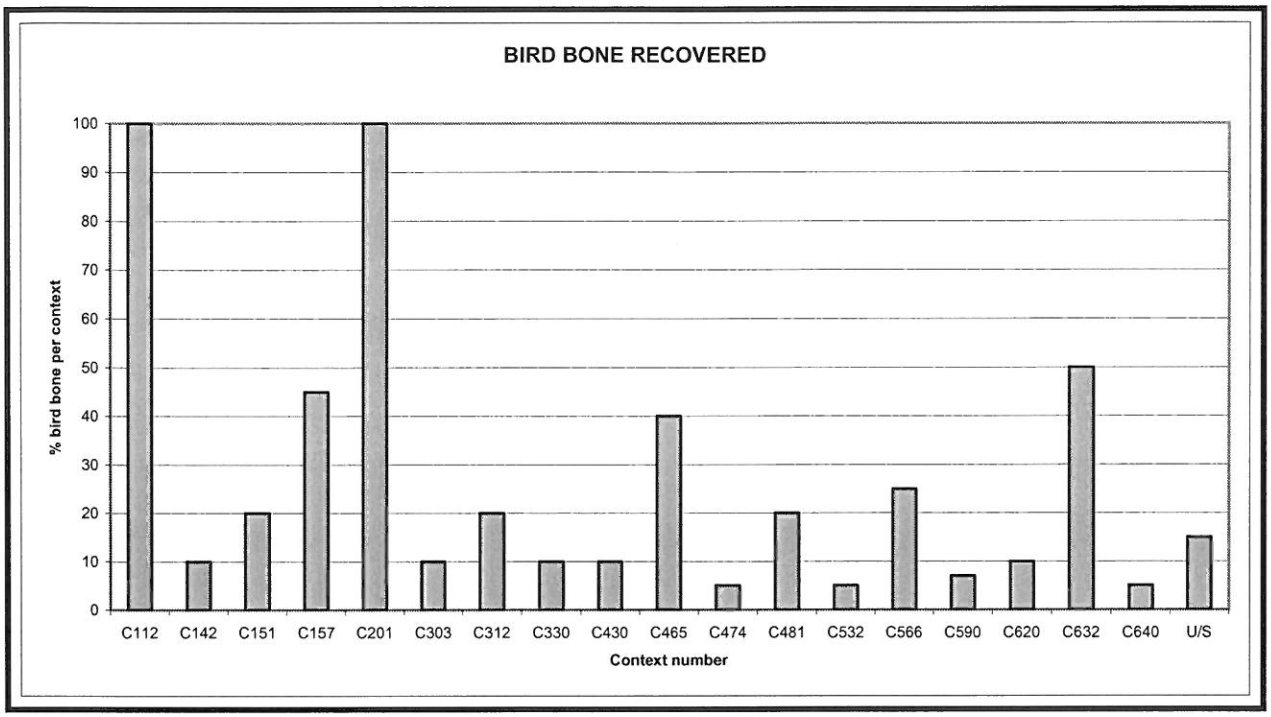
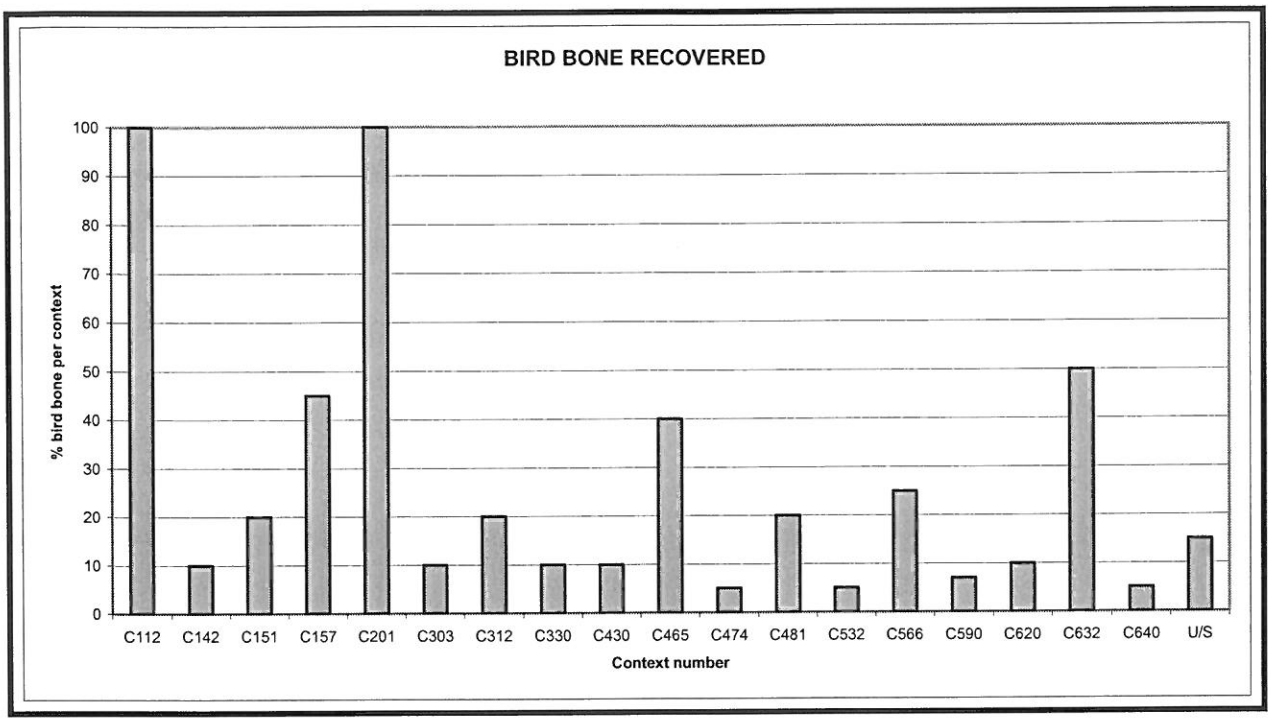


Table 19: Distribution of bird bone

11.12.11 The limited recovery of fish bone is surprising (table 19) on a site that had access to three rivers and was in very close proximity to the sea, both as the estuary and the open sea. Poor preservation may account for some of the material but is unlikely to be responsible for all of it.

11.12.12 The remains recovered were probably from waste kitchen or faecal material, the fish having been cooked with the bones *in situ*. Fish bones of this size are known to pass through the human gut relatively intact if they have been previously cooked. It is assumed that this would also be the case through animal gut. The bone from these contexts does appear be linked to cesspits.

11.12.13 Evidence for the consumption of larger fish may be lacking for the simple reason that they were processed off site, their bones being removed and discarded at the point where the fish were caught. Remains of larger fish would then not be present in the first instance at deposition to be recovered.



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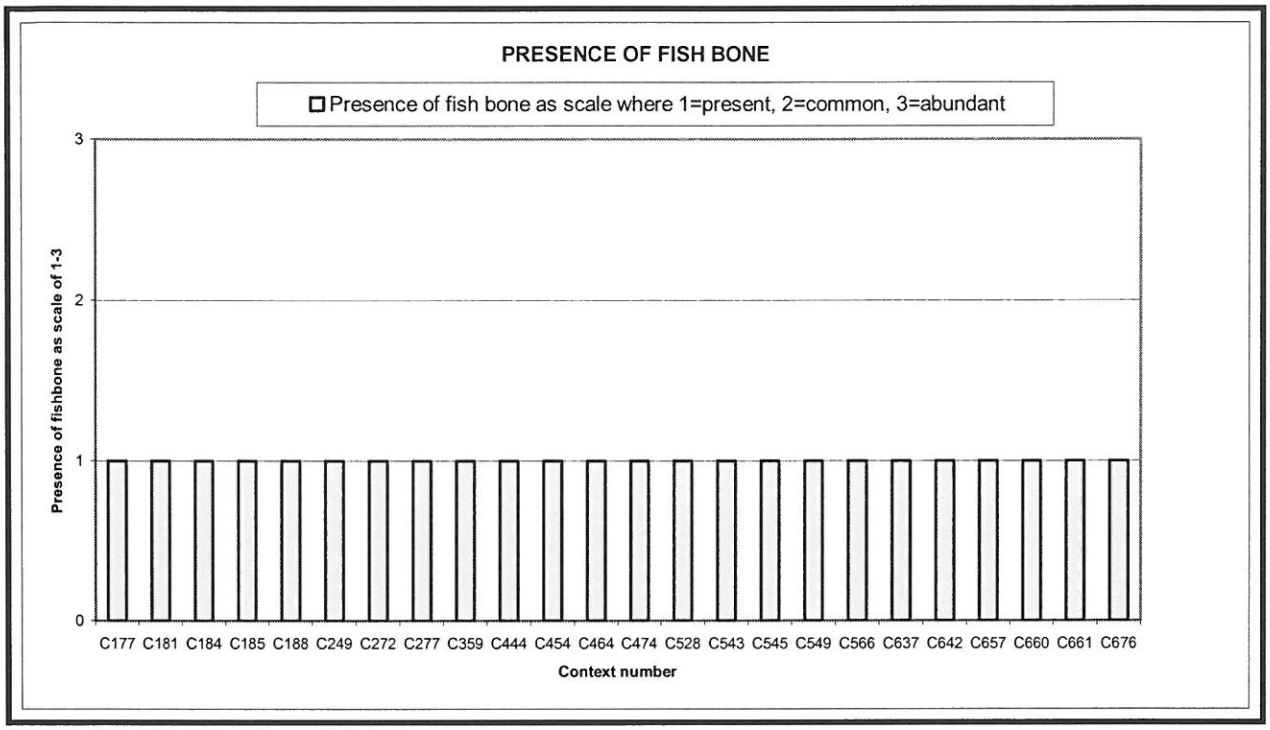


Table 19: Distribution of fish bone

11.12.14 Fragments of bone were found which, due to their poor preservation or the portion of the bone recovered, were unidentifiable to species. These were treated on a sized basis as sheep sized or cattle sized. It may be possible, when these fragments are sent for further specialist analysis, to identify more of them to species and so further increase the knowledge gained from this site.

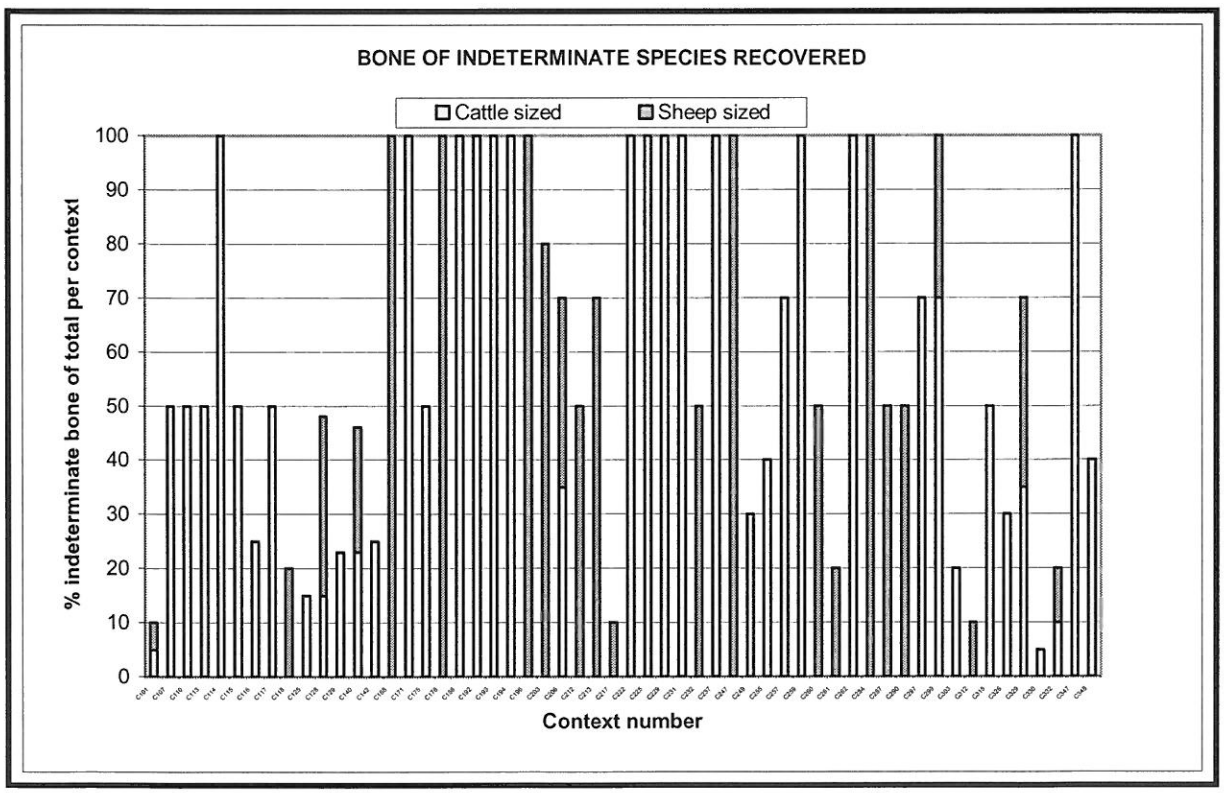


Table 21: Distribution of indeterminate bone 1

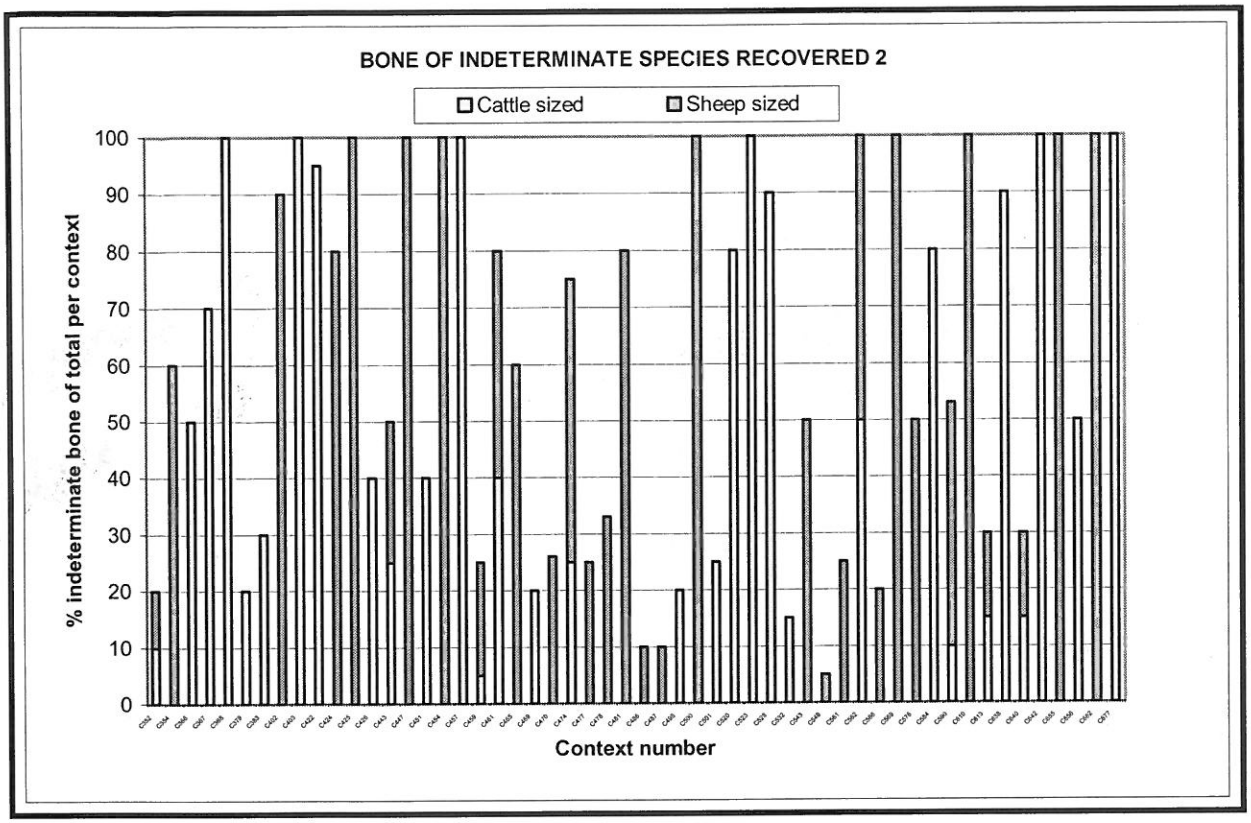


Table 22: Distribution indeterminate bone 2

11.13 FURTHER WORK

11.13.1 The full analysis of the animal bone, in conjunction with the artefactual evidence, will provide a fuller picture of what was occurring throughout these phases at Scotch Street. Those contexts that show amounts of tightly dated residual material can be used cautiously to interpret phases and periods from which the residual material came. This will result in a broad band of material for comparison with other areas. This can then be compared to other similar sites in Carlisle and other cities to provide a broader view of these periods throughout Britain.

11.13.2 Caution should be used in the analysis of the material, as the smaller, more fragile sheep/goat and bird bone may have been more susceptible to degeneration than the more robust cattle and horse bone.

11.14 RECOMMENDATIONS

11.14.1 It is recommended that a full and complete analysis of the environmental and bone data for most of the assemblages recovered should be carried out to enable a reconstruction of the past environments of the different phases of occupation in this area of Carlisle. These should be selected by sample type, with additional reference to phasing and period, so that as wide a range of assemblage types in relation to phases as possible is represented in the material for further analysis.

11.14.2 Possible patterning in the distribution of skeletal elements of the mammal bones recovered from Scotch Street could be used to analyse the fragmentation patterns. The recorded fragment data can then be used to analyse the relative frequency data of carcasses of the major domestic species. Fragment counts and Minimum Number of Individual (MNI) counts may prove useful as tools for the analysis of this material.

11.14.3 Age analysis with this limited assemblage may determine age at death of the animals if enough suitable fragments are available which will enable a model to be drawn from the conclusions, determining the factors upon which the economy was based. It is probable that there is no material suitable from the assemblage to determine sex patterns of the animals, thus further indicating aspects of the economy such as dairying or meat production.

11.14.4 The waterlogged conditions at the bottom of the strata have served to preserve the recovered assemblages well. Even those higher up in the sequence appear quite well preserved, although there is no indicator as to how much material has been degraded since deposition of the contexts. The environmental remains need further analysis to determine the nature and range of the species present. This can then be used to determine whether ground was freshly disturbed, arable, floor surface or other.

11.14.5 The plants of economic importance need to be analysed to determine their role on the site. This may lead to an understanding of specific uses for deposits, buildings and phases of occupation. It may be possible to trace exotic species of plant, brought in by the Romans or traded from other areas of the country.

11.14.6 It would be useful to analyse the charcoal material to species to assess the potential of the area for producing it as a resource and as an indicator of coppicing practices in the local environs. Charcoal would be required as a resource for high temperature ovens, kilns or furnaces so the presence of this material on the site could help determine areas of semi or industrial activity.

11.14.7 From the insect and parasitological evidence an interpretation of the health and welfare of the population can be carried out, showing whether human or animal faecal material present, indicating area use patterns as human occupation or housing of animals. Insects are very specific in their habitat, thus particular species of insect and their stage of growth will positively determine the type of environment from which they were retrieved.

11.14.8 A small amount of additional study of the pollen from these deposits is perhaps warranted to investigate the wider landscape (particularly if the dating can be refined). Study of the plant macrofossil remains is likely to be rather more informative with regard to human activity at the site. Any investigation of changes in the general vegetation of the surrounding area through time would require the sub sampling of column (rather than bulk sediment) samples for pollen.

11.14.9 Two of the samples (from Contexts 474 and 662) gave sufficient well-preserved *Trichuris* eggs to warrant further attention. Measurements of those eggs retaining

both polar plugs should allow a determination of the likely source (or sources) of the faecal content of these deposits to be attempted via statistical means.

11.14.10 These assemblages can be compared with other sites in Carlisle such as Castle Street and the Southern Lanes to enable environmental data for different periods and areas of occupation and settlement to be used to reconstruct conditions of the eras involved, thus maximising the information for the ancient City of Carlisle. The evidence gathered may also be used to compare different areas of the country with Carlisle, as the city has always been deemed a marginal region, out on a limb from other cities with a similar history of occupation.

11.14.11 The material from this site can then be used as a model for interpretation on other similar sites in Carlisle by fully analysing the botanical and faunal remains. Reconstruction of periods throughout the city may then be possible if interpretation is maximised from this site.

11.15 BREAKDOWN OF COSTINGS FOR FURTHER ASSESSMENT ON ENVIRONMENTAL MATERIAL

	Cost	Notes
Project administration	£132.50	
Sample processing		
Processing of remaining samples (x15)	£995.00	
Recording of remains		
Record bone	£1,656.25	
Record plant remains from dried residues/'flots'	£1,300.00	30 samples, 15 without corresponding sub-samples
Record plant remains from additional samples	£2,250.00	
Record insect and other macro-invertebrate remains	£1,700.00	
Record parasite eggs	£600.00	
Data analysis		
Bone	£980.50	
Plant	£600.00	
Insect and other macro-invertebrates	£600.00	
Parasite eggs	£477.00	
Produce technical report text		
Bone	£636.00	
Plant	£275.00	
Insect and other macro-invertebrates	£275.00	
Parasite eggs	£195.00	
Prepare material for archive	£53.00	
Consumables	£50.00	
Material movement costs	£40.00	
TOTAL:	**£12,815.25 (plus VAT)**	

Produce publication text	
Bone	£198.75
Plant	£225.00
Insect and other macro-invertebrates	£225.00
Parasite eggs	£198.75
Publication test consumables	£20.00
TOTAL:	**£867.50 (plus VAT)**
GRAND TOTAL:	**£13,682.75 (plus VAT)**

12 THE ARCHAEOMAGNETIC DATING

Zoe Outram

12.1 This report describes the archaeomagnetic investigation of the hearth surface from the site of Scotch Street, Carlisle. Samples were collected by the insertion of sampling tubes into the hearth surface. The sampled feature recorded a consistent, stable magnetisation, which may be indicative of the geomagnetic field in which the structure was last cooled. This produced the possible age ranges of 1370-1400AD or 255-245BC.

12.1.2 Orientated archaeomagnetic samples were taken from a feature described as a kiln. The objectives were to investigate the stability of burnt material of this nature and from this period for archaeomagnetic dating. Zoe Outram carried out the sampling and measurement programme, the aims of which were:

- to provide a date of last use of each hearth;
- to investigate the duration of use of the hearth sequence.

12.2 ARCHAEOLOGICAL CONTEXT

12.2.1 The grid reference for the site of Scotch Street is NY 404 553. It is located within the centre of Carlisle. The feature (**305**) consists of a large halo of red material (**194**) surrounding a black carbon-rich deposit. The feature was described as a kiln, and therefore it was thought that the red material would have been sufficiently fired to record the geomagnetic field.

12.3 SAMPLING

12.3.1 Samples were taken from cleaned horizontal surfaces within the hearth deposit, using the tube method, as the material was soft. There were no visible signs of slumping. The area of burning was substantial enough to allow 13 tubes to be inserted to the feature. Samples were orientated using a magnetic compass, as there appeared to be no local disturbances to the geomagnetic field caused by the feature itself or other factors. In the laboratory, the exposed surface of the samples was cleaned and the Munsell reference code recorded (see below). They were then sealed and stored in a damp, refrigerated environment.

12.3.2

Sample	Munsell	Reference Description
1	5YR 4/4	Reddish brown
2	5YR 4/2	Dark reddish grey
3	5YR 4/4	Reddish brown
4	5YR 4/3	Reddish brown (with black flecks, 5YR 2.5/1)
5	5YR 4/3	Reddish brown
6	5YR 4/3	Reddish brown
7	5YR 4/3	Reddish brown
8	5YR 4/3	Reddish brown
9	5YR 4/2	Dark reddish grey
10	5YR 4/4	Reddish brown
11	5YR 4/3	Reddish brown

12	5YR 4/3	Reddish brown
13	5YR 5/3	Brown

12.4 MEASUREMENT

12.4.1 The direction of the remanent magnetisation was measured using a Molspin fluxgate spinner magnetometer. The stability of the magnetisation was investigated by the stepwise demagnetisation of three pilot samples in fields of 2.5, 5, 7.5, 10, 12.5, 15, 20, 30, 40, 50, 60, 80 and 100mT (peak applied field), with the remanence being measured after each step. From a study of the pilot sample behaviour, an alternating field of 5mT was chosen to provide the optimum removal of the less stable component, leaving the magnetisation of archaeological interest. After partial demagnetisation in this field, sample remanences were re-measured .

12.5 RESULTS

12.5.1 The intensity of natural remanent magnetisation was variable, ranging from 16-149 x 10-6 Am2kg, possibly reflecting inhomogeneous firing or varying concentrations of remanence-carrying minerals. All samples had a strong enough magnetisation to be measurable and the strength of magnetisation of all samples was consistent with having been heated. All of the samples subjected to stepwise demagnetisation demonstrated that the magnetisation comprised a single component, which was stable. This indicated that the material retained a magnetic field from the last time of heating. Further magnetic analyses would be required to identify the origin of the magnetisation.

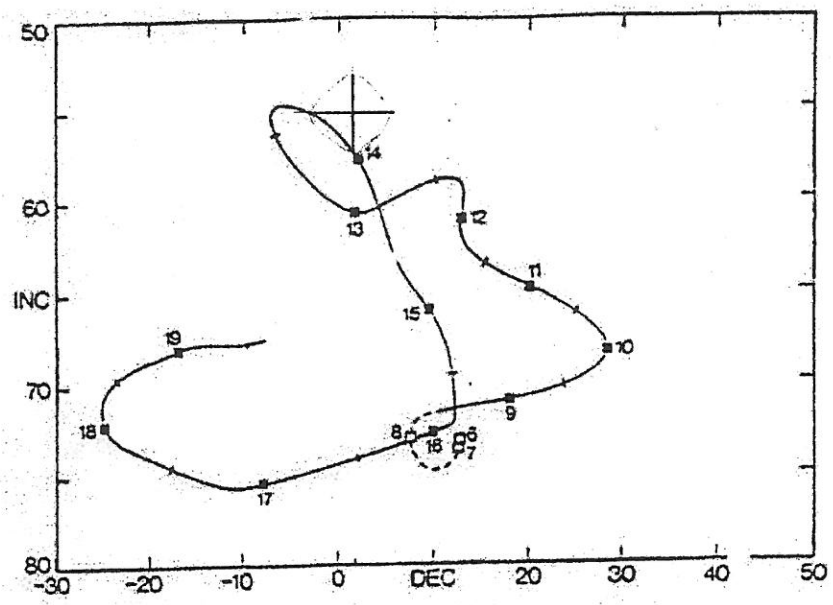
12.5.2 After partial demagnetisation, the archaeomagnetic vectors were well grouped with the exception of three samples that were significantly different from the modal range. On their removal, the small U95 value suggests that the remaining samples all record the same magnetic field. The size of the U95 is within the recommended range for fired structures (Tarling & Dobson 1995).

12.6 DATING OF MAGNETIC DIRECTION

12.6.1 The mean declination and inclination after demagnetisation for the hearth was corrected to Meriden, the reference locality for the British calibration curve, using the standard method (Noel & Batt 1990). Due to the large change in the directional information on correction to Meriden, the alternative correction was utilised for this site, producing the data recorded in table 21. The corrected mean site direction was then dated by comparison with the Clark calibration curve in the conventional manner, shown in table 20, and the date is given in the table.

12.6.2 On calibration it is clear that the position of this sample on the Clark curve covers a region that is fast moving in both the declination and inclination. This has resulted in a very small age range proposed for the feature. In Archaeomagnetic dating it is often necessary to give multiple possible date ranges as the earth's magnetic field has had the same direction at different times in the past. Where this has occurred it is necessary to rely on archaeological

information from the site to discount or accept the possible date ranges. For this site the late 14th-early 15th century AD date is more appropriate.



Archaeomagnetic calibration curve for Britain

Figures are 100's of years, BC (-) and AD, ticks indicate half-century points. The declination and inclination scales are in degrees and the data has been normalised to Meriden. The curve above covers AD600-AD1975 and below covers 1000BC-AD600 (after Clark et al, 1988).

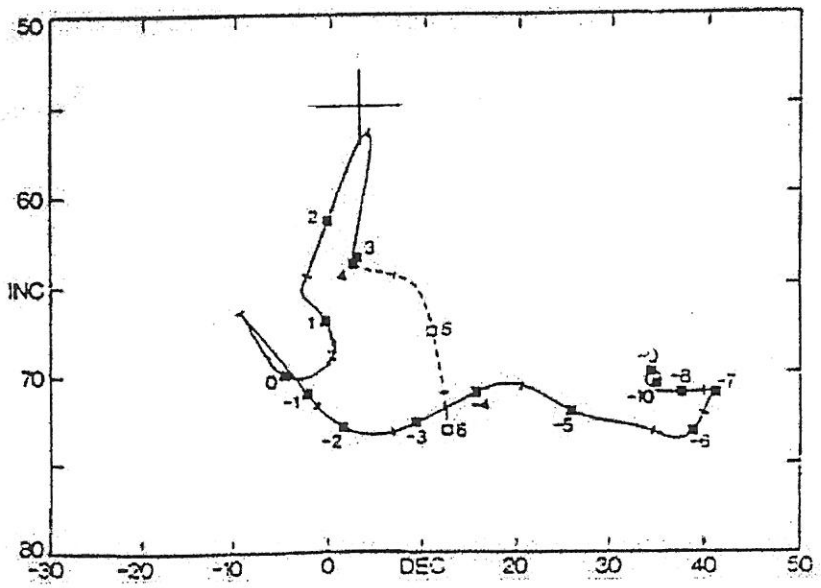


Figure 1: Calibration of Archaeomagnetic sample NHPT03 Car-A

12.7 SUMMARY AND CONCLUSIONS

12.7.1 In conclusion, the samples were readily measurable and appeared to record a stable magnetisation, consistent with previous heating to above the Curie temperature. The magnetic directions obtained were very closely grouped, suggesting the hearth did indeed provide a record of the geomagnetic field at the time of last cooling and not been subject to significant disturbance.

13 THE WORKED STONE

Fiona Wooler

13.1 **Stone A**: U/S: Maximum measurements = 38.5cm x 27cm x 14.5cm (fig 35)

13.1.1 Rectangular piece of stonework in granite. There are tool marks visible on the long edges (the ends are worn so few tool marks are visible), these marks are approx. 30mm long and approx. 4-5mm deep. There are a couple of obvious tool marks on the large sides, measuring approx. 40mm in length, these are slightly shallower than those on the edges, at approx. 2–3mm in depth. Along one long axis there is a slight chamfer, which has chisel marks along its entire length, these are approx. 20mm long and approx. 1–2mm deep.

13.2 **Stone B**: Context 482, BF 532. Maximum measurements = 31cm x 29cm x 17cm (fig 36)

13.2.1 Worked piece of red sandstone, roughly square piece of stone that has been worked to create a concave surface on one side culminating in a missing corner. Tool marks are visible on the concave surface, measuring approx. 20–30mm in length. Along one edge are the obvious remains of diamond brooching, with at least 7 deep groves cutting through shallower ones running in the opposite direction, thus creating the decorative effect. The object was recovered from the fill of a medieval pit, the exact function is unknown (presumably architectural), but the purpose of it, or where it may have been displayed is unknown.

13.3 **Stone C**: U/S. Measures 51cm long x 17cm diameter (fig 37)

13.3.1 A worked piece of red sandstone. Plain piece of stonework, cylindrical in profile tapering to a 'point' at one end. Along the long axis is a slightly flattened edge, which allows the stone to rest steadily when placed on the ground. There are a few marks visible on the surface, but they appear quite fresh and therefore may be the result of excavation.

13.4 **Stone D**: U/S. Maximum measurements = 45cm x 29cm x 15cm (fig 38)

13.4.1 Piece of architectural sandstone stonework in good condition. One end has moulding along one edge, in what may be the top there is a groove that may have at one time housed a metal fixture; there is evidence for the use of a chisel measuring approx. 1cm across within this groove. The opposite end of the stonework has tool marks, this may have been the part of the stone that was built into the wall, or incorporated within other pieces of stonework, and therefore the tool marks would have been hidden from view.

13.4.2 This stone may have been part of a fireplace surround, possibly to support a mantel shelf, or it may have been part of a door surround. If it can be interpreted as a mantel support, then it may date to either the 17th or 18th century, when mantle pieces were beginning to become fashionable.

13.5 **Stone E**: U/S. Measuring 47cm x 47cm x 25cm (fig 39)

13.5.1 Large red sandstone block Tool marks visible on all sides, as well as the top and bottom, suggesting all sides were meant to be viewed. Possibly part of pillar or gate post? Of unknown date.

13.6 **Stone F**: U/S. Measuring 34.5cm x 29cm x 10cm (fig 40)

13.6.1 A roughly square piece of sandstone that has a flange along one long edge 1cm deep. Small tool marks are visible on the top of the chamfer, measuring approx. 4mm, along the edges are tool marks measuring approx. 20mm.

13.7 **Stone G**: U/S. Roughly square piece of stonework measuring 37cm x 26cm x 13cm

13.7.1 Like Stone F, this piece had a flange along one long edge, but this one is more eroded that that on Stone F, consequently there are few tool marks visible. Any that are visible measure approx. 40mm in length. Along the edges there are tool marks measuring between 25 to 30mm in length.

13.8 **Stone H**: Context 496. Measures 31.5cm x 19cm x 19cm (fig 41)

13.8.1 Sandstone quern fragment. There are a series of shallow tool marks visible around the edge, approx. 25mm in length. Flat base with conical top, in the centre is a notch where the wooden or metal shaft would have been.

13.9 **Stone I**: context 477. Measures 14cm in diameter and 2cm in thickness (fig 42)

13.9.1 Pot lid slightly irregular in shape and with traces of soot on both sides. The lid has been manufactured from a fragment of a Niedermendig lava quern.

13.10 **Stone J**: context 383. Measures 10cm in diameter by 1cm in thickness (fig 43)

13.10.1 Small pot lid made out of St Bees sandstone.

13.11 **Stone K**: context 371. Measures 6cm by 4cm and 1cm in thickness (fig 44)

13.11.1 Fragment of small pot lid with traces of soot on both sides. As stone I the lid has been manufactured from an igneous Dolerite.

13.12 **Stone L**: context 125. Measures 11cm in length and has an average diameter of 2cm (fig 45)

13.12.1 Polishing stone likely to have been used in textile production. Highly polished on all sides. Made out of a medium grained biotite schist.

13.13 **Stone M**: context 125. Measures 16cm x 3cm x 2cm (fig 46)

13.13.1 A whetstone, sub-rounded in section with slight wear, made out of a medium grained biotite schist.

13.14 **Stone N**: u/s. Measures 17cm x 13cm x 6cm (fig 47)

13.14.1 A fragment of an architectural fragment the function of which is unclear. The top has very rough tooling with slightly finer work on the one dressed side. Made out of Old Penrith coarse red sandstone.

13.15 **Stone 0**: context 110. Measures 30cm x 32cm x 11cm (maximum measurements) (fig 48) with comments by Dr Roger Tomlin.

13.15.1 This is a tombstone-fragment, imported presumably as building material. In line 1, RM would be part of the name of the deceased in the dative case, the likeliest is [GE]RMIANO, but there are other possibilities, e.g. [FI]RMI[INO]. In line 2, [I]VLIA, the name of his wife. In line 3, [CONI]VX ET ('his wife and ...'). In line 4, the name of a daughter, [...]A ET, 'and' another in line 5 (now lost). There are signs of later re-use as a sharpening stone with numerous linear groves cut into the front and back of the stone. The material used is a St Bees red sandstone.

13.16 **Stone P**: context 371 Measures 25cm by 22cm by 16cm (maximum measurements) (fig 49)

13.16.1 A piece of worked stone, which has been worked on every face except the base. The design is unclear but appears to be highly abstract in nature, heavy weathering is likely to have removed much of the fine detail. Does not appear to be of Roman date and was retrieved from a late Roman/ Early medieval level. The closest parallels for this piece of worked stone are with Anglo/Scandinavian grave markers; although this stone still has certain peculiarities that don't appear to fit in with conventional Anglo/Scandinavian stonework. Further research is required on this piece. Made out of Old Penrith coarse red sandstone.

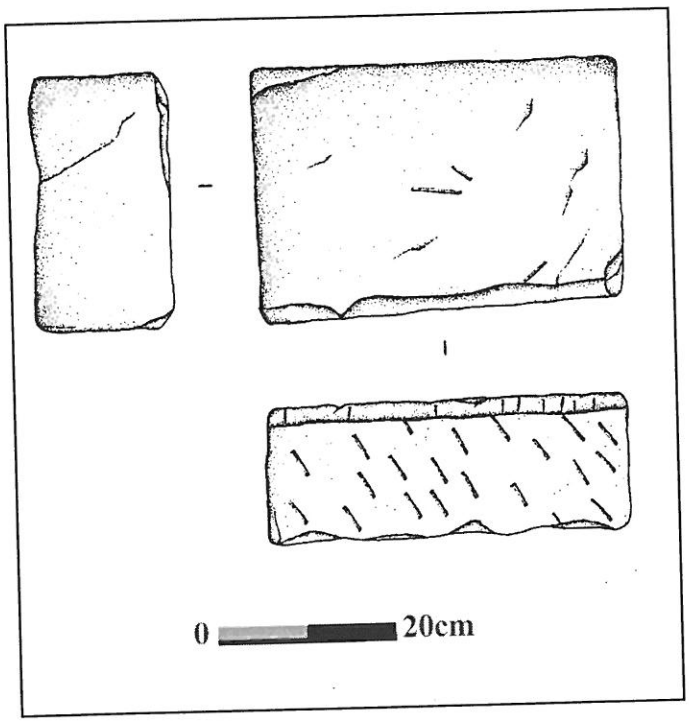


Figure 35: Stone A

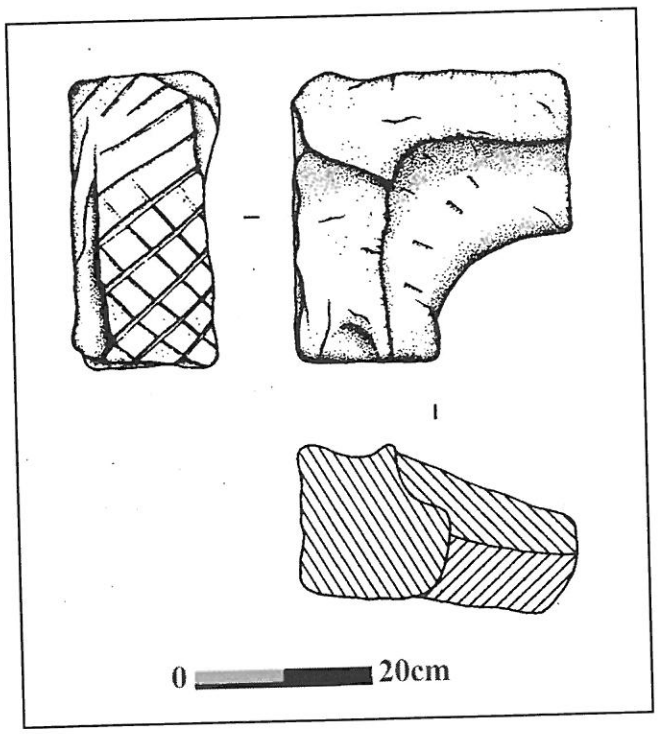


Figure 36: Stone B

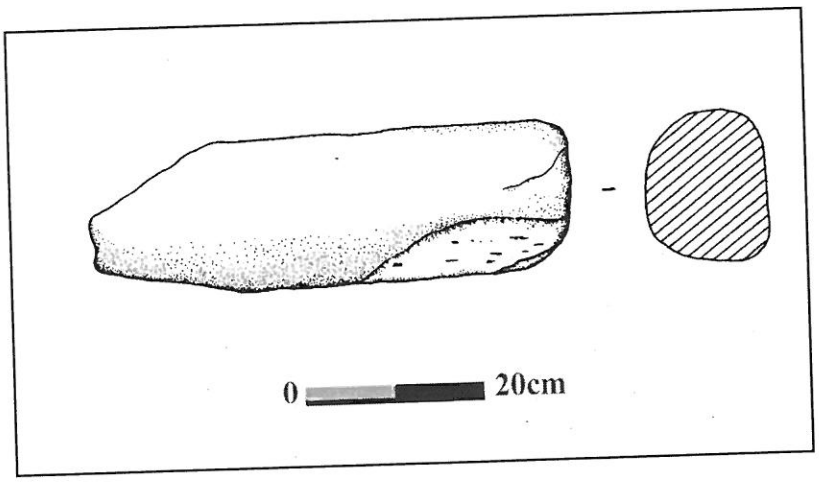


Figure 37: Stone C

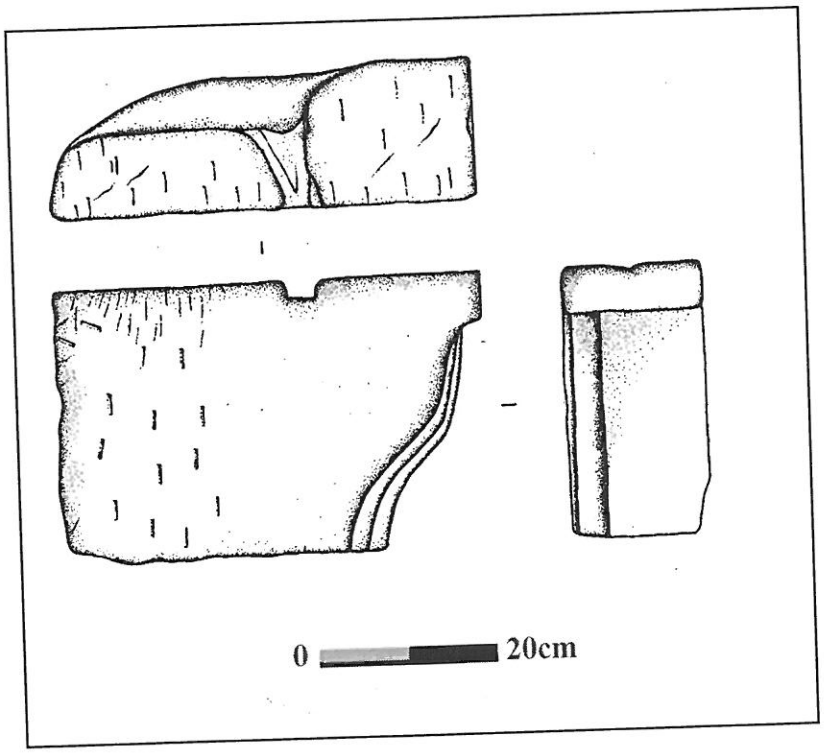


Figure 38: Stone D

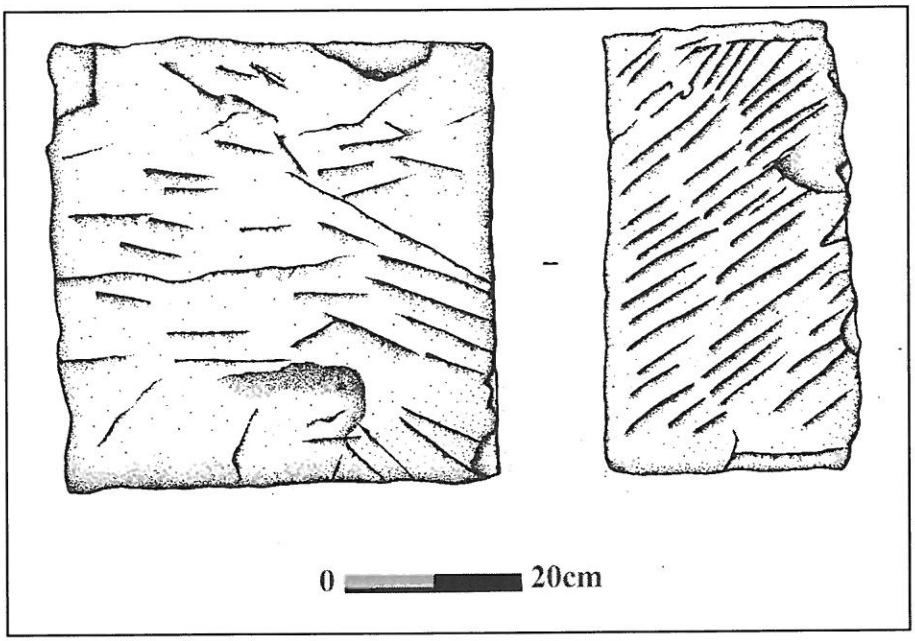


Figure 39: Stone E

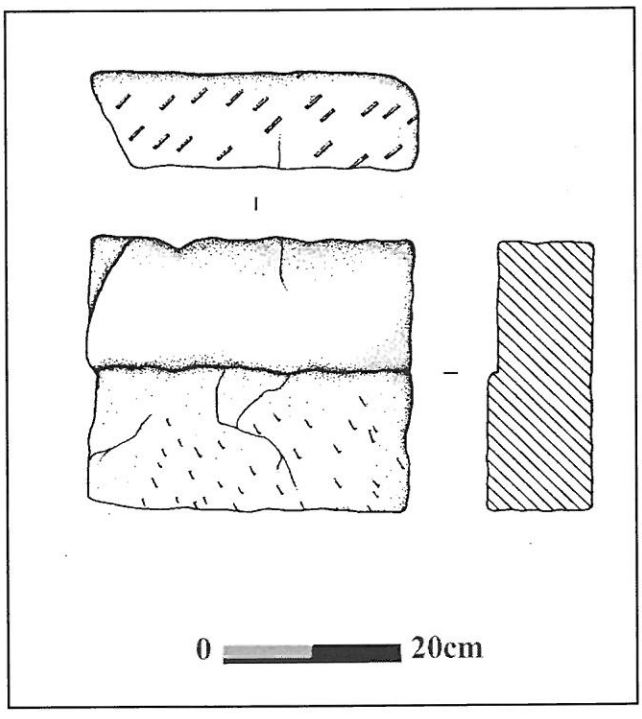


Figure 40: Stone F

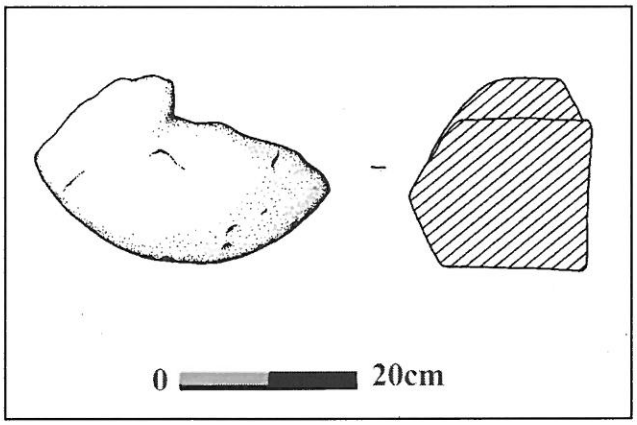


Figure 41: Stone H

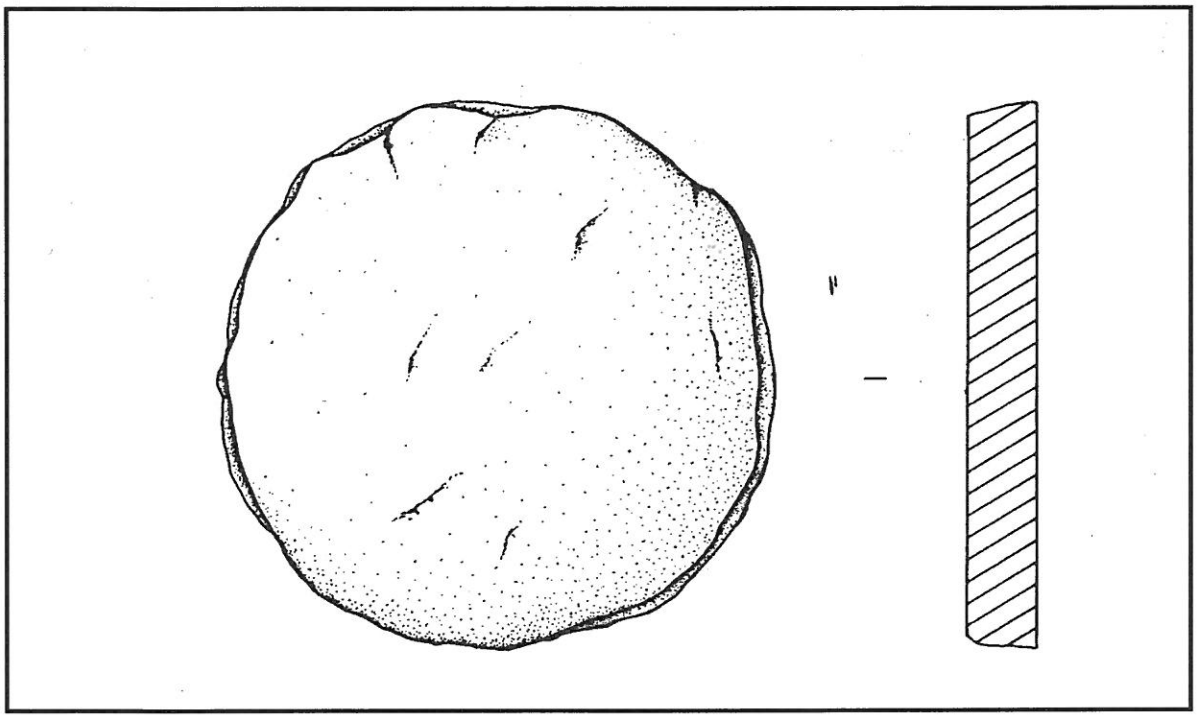


Figure 42: Stone I, stone lid
Scale 1:2

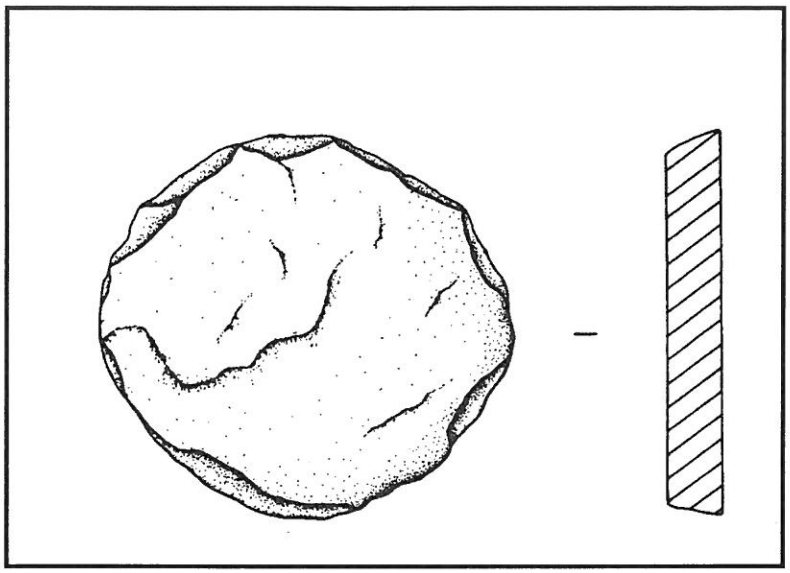


Figure 43: Stone J, stone lid
Scale 1:2

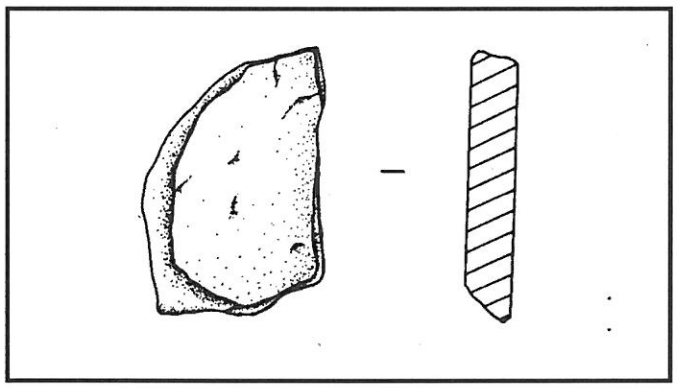


Figure 44: Stone K, stone lid fragment
Scale 1:2

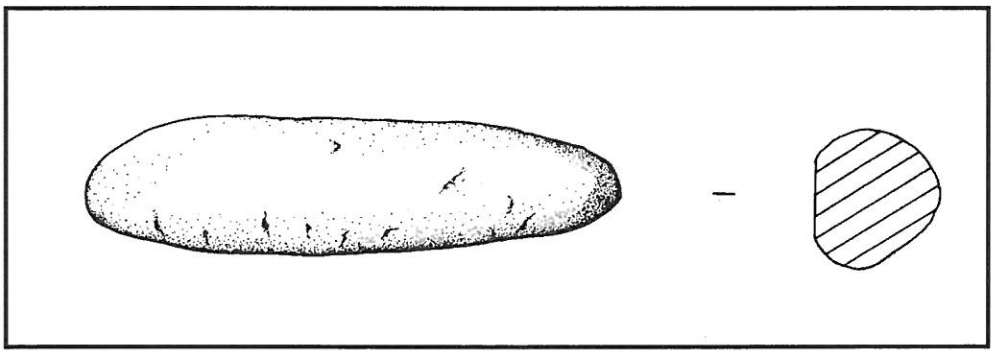


Figure 45: Stone L, polishing stone
Scale 1:2

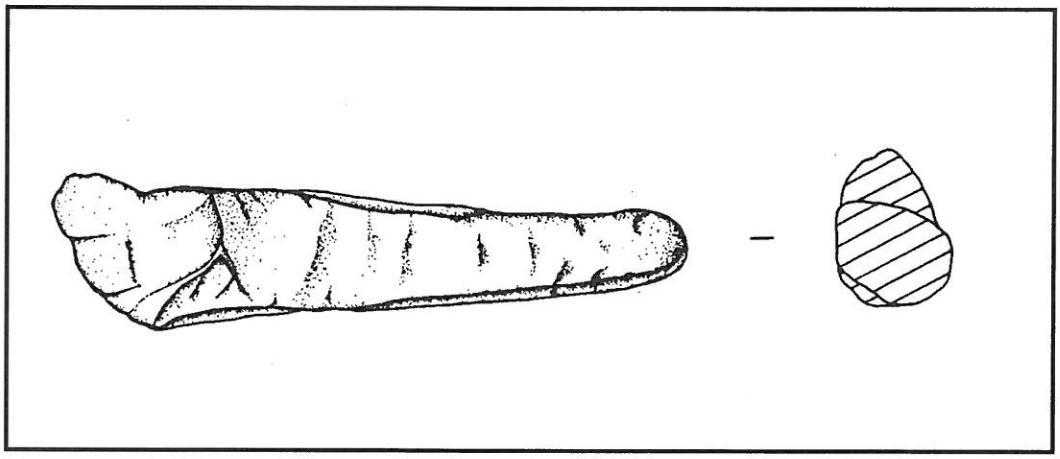


Figure 46: Stone M, whetstone
Scale 1:2

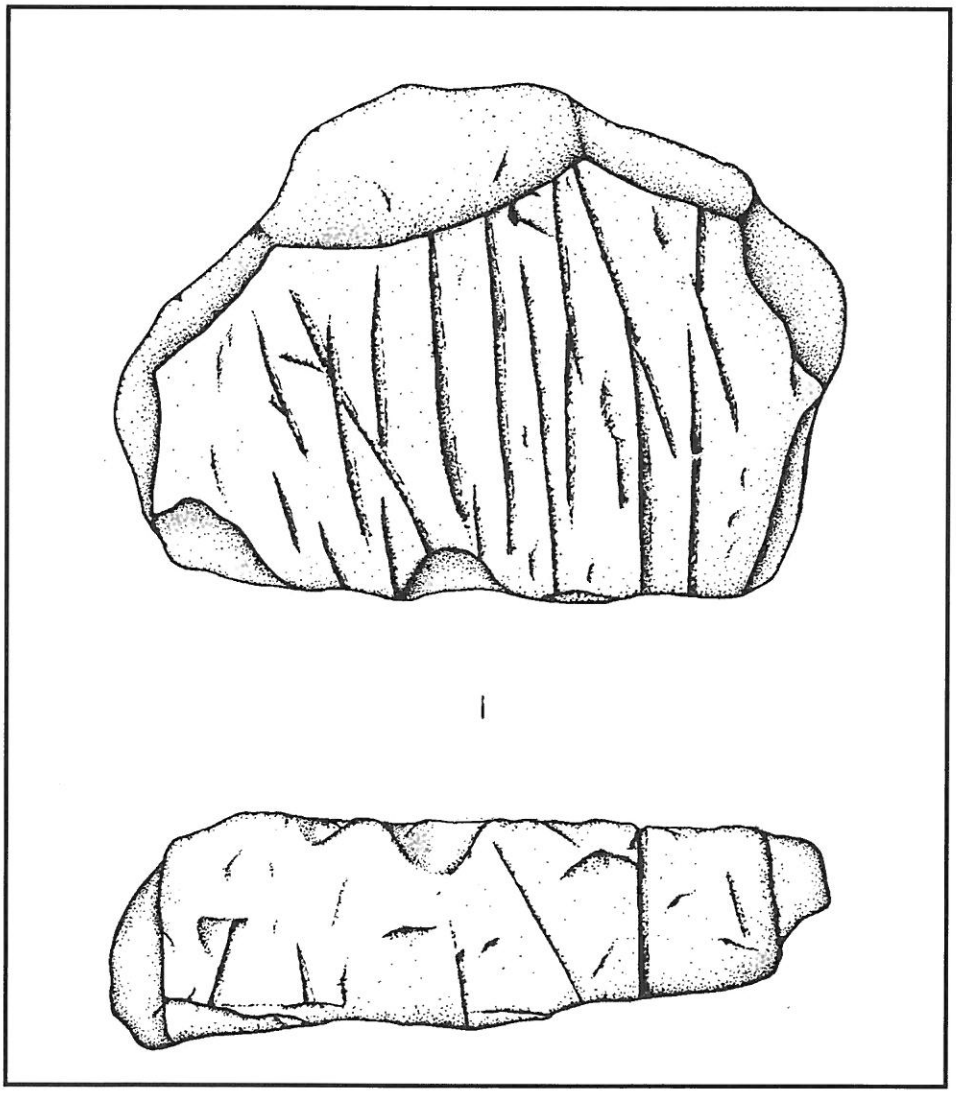


Figure 47: Stone N, architectural fragment
Scale 1:2

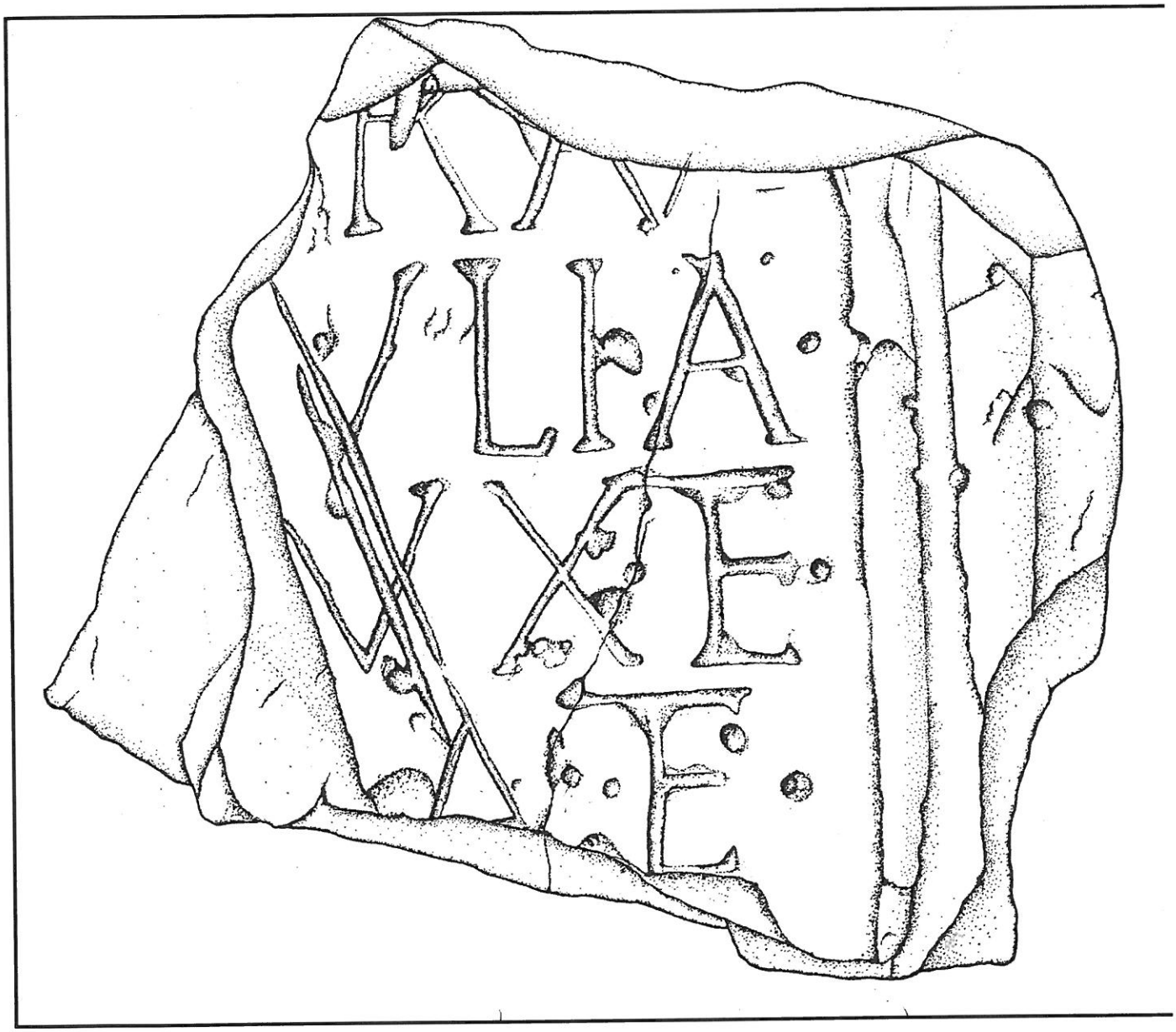


Figure 48: Stone 0 , Inscription
Scale 1:2

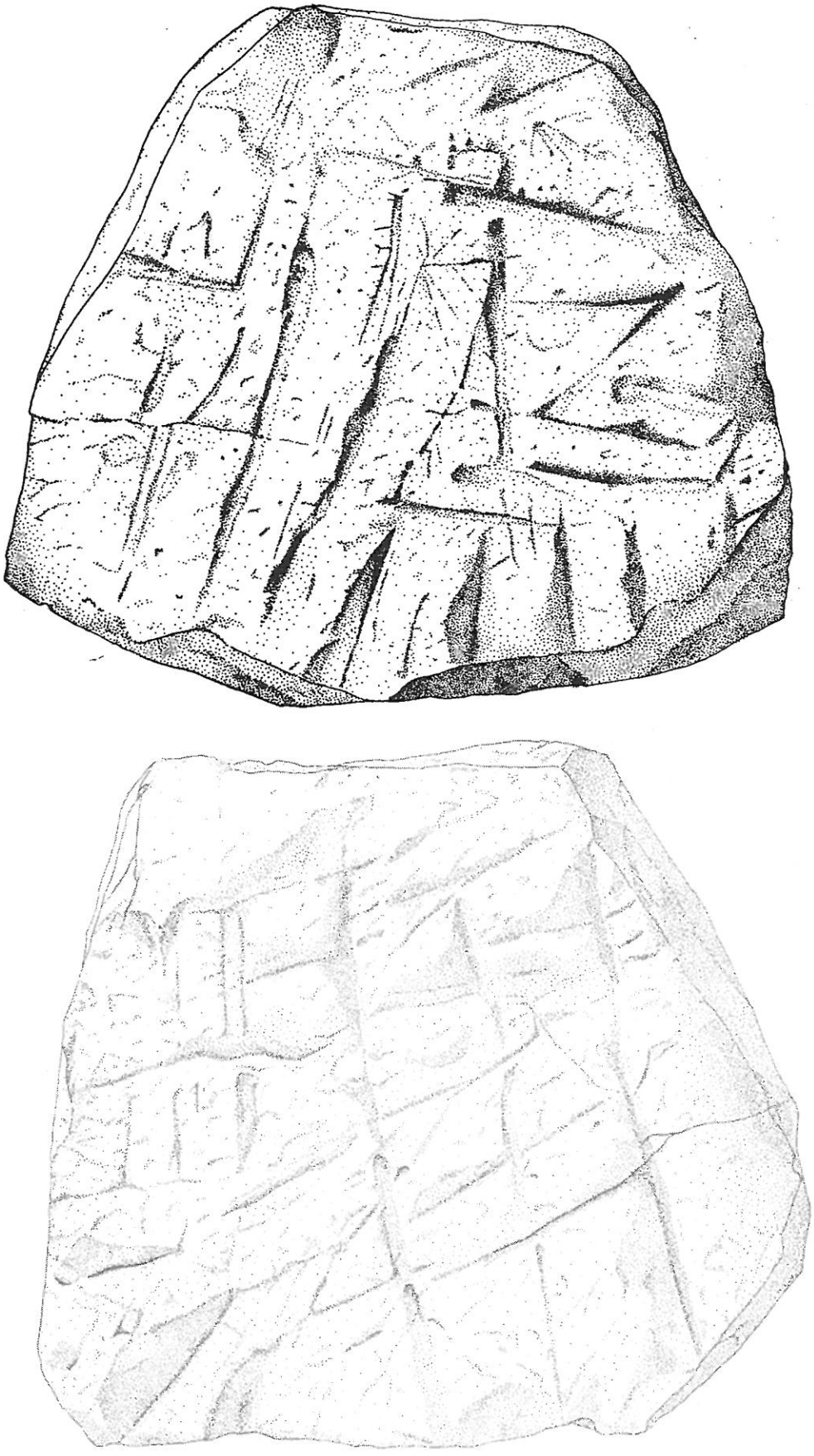


Figure 49: Stone P. Worked stone
Scale 1:2

15 THE LEATHER

Frank Giecco

15.1 22 fragments of leather were recovered from a group of medieval pits dated by the ceramic assemblage to the 13th and 14th centuries. From this small group of leather dominated by small off cuts, the only complete object was the sole of a shoe likely to date from the 14th century. All the leather is currently being stored under refrigerated conditions at Durham University, under the supervision of Jenny Jones. All the fragments have been photographed and the sole fragments will be drawn, Tim Padley of Tullie House Museum, Carlisle, will carry out further research on 4 shoe fragments, with no further work recommended on the remaining leather.

15.2 Context 142, small find number 414: 5 fragments of irregular shaped off cuts and two short lengths of thong.

15.3 Context 144, small find number 405: 6 small triangular off cuts measuring between 1cm and 7 cm in length.

15.4 Context 168, small find number 400: 1 small triangular off cut measuring 9cm by 5cm.

15.5 Context 171, small find number 401: 2 sole fragments, from the lower part of the shoe, both fragments join and are obviously from the same sole. Maximum measurements 11cm by 7cm.

15.6 Context 430, small find number 397: small fragment of stitched leather, likely to have been part of a shoe upper. Measures 8cm by 3cm.

15.7 Context 312, small find number 49: 1 triangular off cut measuring 1cm by 12cm.

15.8 Context 474, small find number 413: 2 small pieces of shoe leather with traces of stitching on one side, are likely to have formed part of a shoe upper from a shoe dating to the 13th/14th century.

15.9 Context 474, small find number 412: 1 8cm length of thong.

15.10 Context 662, small find number 294: 1 complete sole with two associated pieces of thong, heavily mineralised and in a very poor condition. The sole has a maximum length of 27.5cm and width of 10.5cm, with the two pieces of thong measuring 3.5cm and 6cm respectively.

16.0 THE DENDROCHRONOLOGY

Ian Tyers

16.1 Ian Tyers of ARCUS Dendrochronology Laboratory, University of Sheffield was commissioned to carry out a dendrochronological assessment of a total of four samples from timbers excavated from a site at 42-48 Scotch Street, Carlisle.

16.2 A preliminary assessment of the samples concluded that all of the samples had some dendrochronological potential. Standard dendrochronological methods (see e.g. English Heritage 1998) were applied to samples (table 21). The tree-ring sequences from three of these were found too cross-match with each other (table 22) and with reference chronologies (table 23, figure 49).

16.3 It is important to appreciate that although the dendrochronological dates will not change in the future, any of these results are of necessary interim and liable to change, particularly as aspects of re-use and repair are revealed by post-excavation analyses. The other measured sample was not found to cross-match reference chronologies and is undated by the analysis reported here.

16.4 Three types of dating result are usually obtained by dendrochronological analysis. Firstly where a sample is complete to bark-edge a precise year of felling is obtained directly from the date of the last ring on the sample, where there is a good survival of this outer ring it is some times possible to assign seasons to the felling period, the principal distinctions are between early spring, early summer and winter.

16.5 Where the sample has some sapwood, but is not complete to the bark-edge a felling date is obtained by applying the maximum and minimum numbers of rings of sapwood normally seen in oaks for the relevant areas, to the relevant samples. The range 10-46 has been used in this report. Finally, where no sapwood survives a *terminus post quem (tpq)* date is obtained by adding the minimum number of sapwood rings likely to have been lost to the date of the latest surviving ring. This type of date is very much less useful then the two other types since a great number of rings could have been lost either through ancient carpentry practice, or poor site preservation and thus the felling of such material may be considerably later than the tree-ring date.

16.6 Results and discussion

16.6.1 Four large timbers were delivered, these were sub-sampled and analysed. The timbers wee subsequently discarded. Three separate timbers with the same context or sample number 662 were assigned arbitrary sub-sample numbers 662/1, 662/2 and 662/3. A summary of the findings is presented in table 21, all the material was identified as oak (*Quercus ssp).*

16.6.2 The timbers were all recovered from medieval pits believed to date from 13th/14th century. The relatively tight clustering of the end-dates obtained from the tree-ring analysis may indicate that these timbers derive from only a single

period. However it is also possible that several nearly co-eval phases are present that cannot be distinguished due to the absence of sapwood and bark. The most likely interpretation is that the samples are from the second half of the 12th century (the latest sample is 662/3 and this was felled no earlier than AD 1149).

16.6.3 The dated timbers match each other fairly well (table 24) and the sequences correlate well with contemporaneous reference sequences from across northern and central England and Southern Scotland (table 25). However the best correlations are with other material excavated in Carlisle, hence in all probability these trees were originally growing in, or near to, Carlisle.

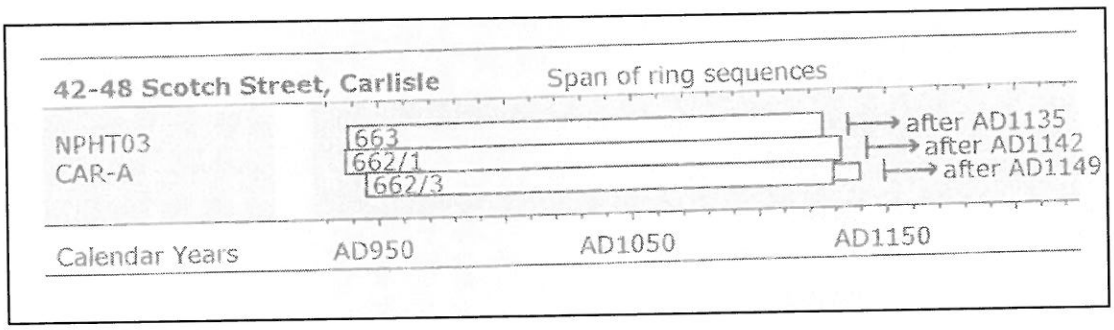


Figure 49. Bar diagram showing the relative and absolute positions of the dated samples from the earliest possible felling date based on the date of the ring sequence and absence of sapwood.

Sample/ sub-sample	Species	Rings	Sapwood	Growth (Mm/year)	Sequence date	Interpreted Date
662/1	Oak	196	-	1.47	AD937-AD1132	After AD1142
662/2	Oak	82	-	2.27	UNDATED	-
662/3	Oak	185+10	-	0.99	AD945-AD1129	After AD1149
663	Oak	188	-	1.05	AD938-AD1125	After AD1135

Table 24: Sample details from the 42-48 Scotch Street excavations

KEY: +10 includes additional unmeasurable rings at the outer edge

	662/3	663
662/1	*4.83*	*4.71*
662/3		*9.89*

Table 25: Correlation *t*-values (Baillie and Pilcher 1973) between the dated sequences

	Scotch St
Cumbria Wasdale Beck log boat (Groves and Tyers unpublished)	**7.21**
Cumbria, Carlisle Annetwell Street (Groves 1990)	**8.65**
Cumbria, Carlisle, Millennium project (author in prep)	**8.61**
Cumbria, Carlisle, 'The Lanes" northern area (Groves 1996)	**13.78**
Cumbria, Carlisle, 'The Lanes' southern area (Groves 1993)	**12.78**
East Midlands regional chronology (Laxton and Litton 1988)	**6.61**
Scotland, South Central regional chronology (Baillie 1977)	**5.67**
Tyne and Wear, Gateshead Bridge (auther unpubl)	**5.70**

Table 26: Correlation *t*-values (Baillie and Pilcher 1973) for the composite sequence '**Scotch St**' constructed from the three datable sequences at their synchronised position and a series of independently dated chronologies from England.

17.0 CONCLUSION

17.1 The excavation and watching brief at 42-48 Scotch Street has successfully addressed most of the academic aims of the project, and has provided important additional information about the depth and condition of archaeological deposits on the west side of Scotch Street, on which minimal archaeological work has been published.

17.2 The level of survival of archaeological remains at 42-48 Scotch Street far exceeded initial expectations with some areas of the site having a complete stratigraphic sequence from the 1st to the 19th century, measuring over 2m in depth. Although a proportion of the site could not be linked stratigraphically due to the extensive cellaring, the results taken as a whole have shed an enormous amount of light on the development of this small area of Carlisle from the Roman period through to the 19th century redevelopment of Scotch Street.

17.3 This sequence of activity provides important information on the development of Roman Carlisle and hints at significant structures in the vicinity in the late 1st and early 2nd century, followed by a sequence of 7 low status timber structures that extended into the late Roman period, associated with a minor road running parallel with Scotch Street. The excavation also revealed traces of possible early medieval activity, of which more will hopefully be revealed following the conservation programme and further detailed analysis.

17.4 Although the medieval structural remains were disappointing with all evidence of the buildings that would have fronted Scotch Street removed by cellaring, a likely 14th century pottery kiln was discovered; the first of its kind to be discovered in Carlisle.

17.5 Additional work on the environmental remains recovered from the medieval pits should give valuable insight into the daily life of the people utilising this part of Scotch Street between the 12th and 15th centuries.

17.6 Further work on any post medieval material will be minimal as the vast majority of the post medieval evidence was removed during the demolition process prior to the commencement of the archaeological recording process.

18.0 POTENTIAL FOR FURTHER WORK

18.1 This report, in addition to being an assessment, also serves as a level 3 archive report for the site. The primary records have been checked, ordered and appropriately stored, and stratigraphic matrices have been produced.

18.2 The final publication report has yet to be written, although a significant quantity of the publication drawings have been completed. To take the report to publication level would require significant editorial work and further research on regional and local comparisons. The material recovered from the site also requires additional work, as outlined in the relevant sections of this report, before the report can be successfully published.

19.0 UPDATED PROJECT DESIGN

19.1 Additional research will take place on a number of potential sources with the potential to clarify unresolved functional and dating problems. The major problem with this potential information is that much of it is contained within unpublished reports the most important of these reports being the Lanes 2 report and the 58-62 Scotch Street report.

19.2 Structural and stratigraphic study

19.2.1 The structural and stratigraphic data from the various phases will form the basis a synthesised report which will include any additional data gathered from further documentary, environmental and artefact studies.

19.3 Artefactual study

19.3.1 **Iron Objects**: further work will be undertaken to elucidate the functional use of selected items from the ironwork. Selected items will be recorded by line drawing.

19.3.2 **Lead objects**: specialist examination to specify specific usage. Selected items to be recorded by photography and line drawing.

19.3.3 **Copper alloy objects**: specialist examination to specify specific usage. Selected items to be recorded by photography and line drawing.

19.3.4 **General non-ferrous metal objects**: specialist examination to determine function. Discard of items of no significance.

19.3.5 **Bone objects**: specialist examination to specify specific usage. Selected items to be recorded by photography and line drawing.

19.3.6 **Leather objects**: recording by photography and line drawing of selected items.

19.3.7 **Wooden objects**: recording by photography and line drawing of selected items.

19.3.8 **Glass and ceramic objects**: specialist examination. Selected items to be recorded photographically and by line drawing.

19.3.9 **Brick and tile**: further analysis of tile stamp, look for published parallels.

19.4 Deposition of the archive

19.4.1 On completion of the analysis and publication the archive will be prepared for deposition in Tullie House Museum, Carlisle.

19.5 Publication report

19.5.1 The final report will be submitted for publication in the Cumberland and Westmorland Antiquarian Journal in two separate sections. The breakdown will separate the Roman and sub-Roman results from the medieval results. The detailed environmental results will be submitted to Environmental Archaeology, the journal of the Association for Environmental Archaeology.

19.5.2 The detailed medieval pottery results will be submitted to Medieval Ceramics, the journal of the medieval pottery research group. An estimated breakdown of the likely structure and content of that publication report is outlined below.

Report Summary	500 words
Acknowledgements	250 words
Introduction	
Project Location	400 words
Project Background	500 words
Geology and Topography	250 words
Archaeological Background	1200 words
Research Aims	600 words
Location of the Archive	100 words
The Results	
Roman	5000 words
Medieval	3500 words
The Finds	1500 words
The environmental evidence	2500 words
Discussion	4000 words
Bibliography	1000 words
Total	**21,300 words**

19.6 Resources

Named project team

Team Member	Project role
Frank Giecco (NPA)	Project management, structural/stratigraphic analysis, documentary research, manipulation of digital graphic data, report synthesis
David Flush (NPHT)	NPHT administrative project management
Chris Jones (NPA)	Documentary research, research, archive update manipulation of digital graphic data
Patricia Compton (NPA)	Environmental Archaeologist
Fiona Wooler	Illustrator
Juliet Reeves	Illustrator
Julia Cussans	External consultant
Hugh Wilmott	External consultant
Dr Roger Tomlin	External consultant
Ian Caruana	External consultant
Jennifer Jones	External consultant
Louise Hird	External consultant
Cathy Brooks	External consultant
Felicity Wilde	External consultant
Brenda Dickinson	External consultant
Gerry McDonnall	External consultant

19.6.1 Management structure

19.6.1.1 The team will be managed by Frank Giecco BA, Arch Dip, AIFA, NPA archaeologist. The Project Manager has the ultimate responsibility for the implementation and execution of this Project design. The project manager may delegate specific aspects of the project to other key team members, who may supervise others and have a direct input into the final report. They may also undertake direct liaison with external consultants and specialists who will contribute to the project, and the museum named as the recipient of the project archive. The Project Manager will compile the final reports.

19.6.1.2 Internal NPA administrative management will be undertaken by David Flush (NPHT Manager).

19.7 Timetable

19.7.1 It assumes a notional start date in February 2005 and that all persons will be able to start on the defined dates.

19.7.2 The majority of tasks run sequentially over an eight month period, the shortest possible period for the project. However, given other project priorities within NPA Ltd and the need to build in a degree of flexibility it is envisaged that the eight months of work outlined may need to be carried out over a one year period.

20 FINANCIAL BREAKDOWN

NPA Staff costs	£7550
Specialist fees	£25,608.25
Non-staff costs	£1750
TOTAL	**£34,908.25**

Detailed breakdown

Write up	£2,650	
Environmental analysis	£12,608.25	
Finds conservation	£13,000	
Illustration	£4,500	
Materials	£500	
Publication costs	£1250	
Archive deposition	£400	
GRAND TOTAL	**£34,908.25**	plus VAT at 17.5%

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APPENDIX 1
THE BULK FINDS DATABASE

BULK FINDS REGISTER

CONTEXT NUMBER	MISCALLANEOUS POT SHERDS	POST-MEDIEVAL POTTERY	MEDIEVAL POT SHERDS	ROMAN COARSE WARE SHERDS	SAMIAN SHERDS	AMPHORA SHERDS	COARSE BUILDING	MORTAR	Fe FRAGMENTS	Pb FRAGMENTS	SLAG	GLASS FRAGMENTS	CLAY PIPE FRAGMENTS	FLINT	WORKED STONE	PLASTER	SLATE
101	190	47	195	48	25	1	11	0	40	37	5	40	7	1	1	0	0
103	0	41	3	0	1	0	0	0	1	3	0	30	1	0	0	0	0
107	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108	0	1	5	0	0	0	0	0	0	0	0	1	1	0	0	0	0
110	55	1	66	2	5	0	1	0	3	5	0	0	0	0	0	0	0
112	0	0	14	0	0	0	0	0	4	0	0	1	0	0	0	0	0
113	0	0	6	0	1	0	0	0	3	1	0	0	0	0	0	0	0
114	11	0	74	0	0	0	2	0	1	0	0	0	0	0	0	0	0
115	0	0	5	4	0	0	0	0	0	0	0	1	0	0	0	0	0
116	35	11	143	13	7	0	1	0	82	32	1	10	4	0	1	0	0
117	0	0	24	6	4	1	0	0	10	2	0	1	0	0	0	0	0
118	15	0	58	0	0	0	4	0	0	0	4	0	0	0	0	0	0
122	0	0	5	0	0	0	0	0	0	0	0	0	0	1	0	0	0
124	0	0	15	9	2	0	0	0	0	0	0	0	0	0	0	0	0
125	22	1	637	152	55	2	53	9	48	151	26	10	0	0	3	0	0
126	0	0	9	2	1	0	0	0	0	0	0	0	0	0	0	0	0
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129	17	0	115	141	27	0	27	2	37	36	1	5	0	0	0	0	0
140	0	0	27	4	2	0	1	0	0	0	0	0	0	0	0	0	0
142	4	0	52	17	7	0	1	0	39	4	42	2	0	0	0	0	0
144	0	1	14	1	3	0	2	0	0	0	0	0	0	0	0	0	0
146	4	0	2	9	2	0	1	0	0	0	0	0	0	0	0	0	0
147	0	0	2	3	2	0	0	0	0	0	0	5	1	0	0	0	0
148	0	0	1	3	0	0	0	0	0	0	0	1	0	0	0	0	0
149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
151	0	1	24	8	3	0	0	0	0	1	1	0	0	1	0	0	0
154	0	0	3	1	0	0	0	0	4	0	0	0	0	0	0	0	0
157	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0
158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
163	5	0	40	4	1	0	0	0	6	0	0	1	0	0	0	0	0
165	0	0	1	0	0	0	0	0	10	0	0	0	0	0	0	0	0
167	0	0	8	0	0	0	0	0	0	0	1	0	0	0	0	0	0
168	0	0	287	0	0	0	0	0	0	0	0	0	0	0	0	0	0
171	0	0	28	8	4	1	1	0	11	1	12	1	0	0	0	0	0
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174	0	0	23	4	2	0	0	0	6	0	0	1	1	0	0	0	0
175	0	0	21	6	0	0	2	0	0	0	0	0	0	0	0	0	0
176	0	0	5	0	0	0	0	0	2	0	3	0	0	0	0	0	0
177	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
181	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
184	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
185	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
186	0	0	6	3	3	0	2	0	0	0	0	0	0	0	0	0	0
188	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
191	0	0	2	0	0	0	1	0	1	0	0	0	0	0	0	0	0
192	0	0	2	3	0	0	0	0	0	0	0	2	0	0	0	0	0
193	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
194	0	0	12	5	0	0	2	0	4	0	0	0	0	0	0	0	0
195	0	0	83	7	2	1	7	0	0	1	0	0	0	0	0	0	0
196	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
198	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
201	0	0	1	1	0	0	3	0	0	0	0	0	0	0	0	0	0
203	0	0	4	0	1	0	0	0	1	0	0	0	0	0	0	0	0
204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
206	19	0	46	14	1	0	4	4	0	0	0	0	0	0	0	0	0
212	0	0	7	3	0	0	0	0	3	1	0	3	0	0	0	0	0
213	0	15	36	6	0	0	4	0	2	0	3	0	0	0	0	0	0
215	0	0	24	26	3	0	2	0	0	0	0	0	0	0	0	0	0
217	0	0	19	10	1	0	2	0									

APPENDIX 1
THE BULK FINDS DATABASE

218	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
220	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
222	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
224	0	12	0	0	0	0	0	0	6	0	0	13	0	0	0	0	0
225	0	0	5	0	0	0	0	0	11	0	0	0	0	0	0	0	0
227	0	8	7	0	0	0	1	0	0	0	1	8	0	0	0	0	0
229	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
231	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
232	0	0	5	3	1	0	1	0	0	0	0	2	0	0	0	0	0
233	9	0	11	1	3	0	4	0	0	0	1	0	0	0	0	0	0
237	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
238	0	0	14	5	3	0	0	0	0	0	0	0	0	0	0	0	0
239	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
240	0	0	19	0	0	0	0	0	7	0	0	0	0	0	0	0	0
242	0	0	6	1	1	0	3	0	2	0	0	5	0	0	0	0	0
243	0	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0
247	0	0	13	3	0	0	0	0	0	0	0	0	0	0	0	0	0
249	0	0	20	3	2	0	2	0	0	0	0	0	0	0	0	0	0
250	0	0	30	1	3	0	2	0	2	0	0	0	0	0	0	0	0
252	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
255	0	0	9	1	0	0	0	0	0	3	0	0	0	0	0	0	0
257	10	0	61	6	4	0	0	0	4	1	1	0	0	0	0	0	0
259	0	0	4	5	0	0	0	0	0	1	0	0	0	0	0	0	0
260	0	0	11	6	5	0	2	0	0	0	1	0	0	0	0	0	0
261	0	0	6	9	1	0	0	0	1	0	0	2	0	0	0	0	0
262	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
266	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
268	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0
270	9	1	48	15	2	0	3	0	5	0	0	0	0	0	0	0	0
272	0	0	48	9	0	0	3	0	3	0	0	0	0	0	0	0	0
277	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
284	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
287	0	0	4	1	0	0	0	0	2	0	0	0	0	0	0	0	0
286	0	0	56	17	3	0	0	0	2	0	0	0	0	0	0	0	0
288	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
290	0	0	3	0	0	0	0	0	0	0	2	0	0	0	0	0	0
291	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
293	0	0	2	1	0	0	0	0	2	0	0	0	0	0	0	0	0
295	0	0	2	0	0	0	0	0	5	0	0	0	0	0	0	0	0
297	0	0	8	1	1	0	3	0	0	0	1	0	0	0	0	0	0
299	0	0	22	16	6	0	16	0	0	1	0	0	0	0	0	0	0
303	0	0	5	8	1	0	0	0	1	0	0	0	0	0	0	0	0
304	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
309	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
312	0	0	8	4	0	0	2	0	1	1	0	1	0	0	0	0	0
314	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
315	0	0	11	19	5	0	7	0	0	0	0	1	0	0	0	0	0
317	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
318	0	0	0	11	1	0	0	0	1	0	0	0	0	0	0	0	0
324	0	0	2	13	0	0	2	0	0	0	0	0	0	0	0	0	0
326	0	0	4	4	0	0	0	0	1	0	0	0	0	0	0	0	0
329	0	0	6	9	3	0	1	0	0	0	2	1	0	0	0	0	0
330	0	1	14	0	2	0	0	0	8	0	0	6	0	0	0	0	0
331	0	0	138	23	7	1	8	0	0	0	0	1	0	0	0	0	0
332	0	0	15	11	7	0	1	0	0	0	0	1	0	0	0	0	0
333	0	0	48	11	1	0	1	0	0	0	2	0	0	0	0	1	0
335	0	0	12	2	0	0	0	0	0	0	0	0	0	0	0	0	0
337	0	0	0	13	3	0	0	0	0	0	0	0	0	0	0	0	0
347	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
348	0	0	0	27	5	0	2	0	0	0	0	0	0	0	0	0	0
352	0	0	101	13	4	0	0	0	1	0	1	0	0	0	0	0	0
354	0	0	16	5	5	0	1	0	0	0	0	0	0	0	0	0	0
355	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0
358	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
359	0	0	3	4	0	0	0	0	1	0	0	0	0	0	0	0	0
361	0	0	62	21	0	0	7	0	0	0	1	0	0	0	0	0	0
363	0	0	0	1	0	0	0	0	1	11	0	0	0	0	0	0	0
365	0	0	26	2	1	0	0	0	0	0	1	0	0	0	0	0	0
366	0	0	0	3	1	0	4	0	1	0	2	2	0	0	0	0	0
367	0	0	7	2	3	0	0	0	0	0	0	0	0	0	0	0	0
368	0	0	0	9	5	0	1	0	0	0	0	0	0	0	0	0	0