



RICKERGATE, CARLISLE

Post-Excavation Assessment Report



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SUMMARY

Prior to the commencement of building works associated with the extension and remodelling of the Lanes shopping centre in the centre of the historic city of Carlisle, Cumbria, a phased programme of controlled archaeological fieldwork, known as the Rickergate (Lanes extension) excavation, was undertaken by Carlisle Archaeological Unit on behalf of the client, General Accident Life Assurance Ltd. Following the mechanical excavation of a test-pit in March 1997, controlled excavation was carried out in a total of nine trenches between January 1998 and June 1999.

Carlisle City Council commissioned Oxford Archaeology North to undertake the post-excavation assessment from August 2002. The assessment has established the following occupation sequence for the site:

PREHISTORIC: on the southern part of the site, prehistoric occupation was represented by a number of shallow gullies and other features, which may represent traces of ancient field boundaries associated with prehistoric farming. These remains are of considerable interest, since prehistoric features of this type have not previously been recorded in the centre of Carlisle. A possible break in occupation during the later prehistoric period was represented by a buried soil that sealed the gullies and lay directly beneath Roman levels. On the northern part of the site, a probable ancient channel of the River Eden lay beneath the earliest Roman remains. The alluvial fills of this feature contained abundant well-preserved plant and insect remains not previously recorded in deposits of this type and period in Carlisle. These remains have the potential to provide important information about land use and environment in the late Iron Age, a period that is currently poorly understood in north-west England.

ROMAN: during the Roman period the Rickergate site probably lay on the northern periphery of the town, with occupation taking the form of ribbon development along a road leading north to the river and Stanwix fort. This road probably lay on or close to the line of modern Rickergate. The Roman fort at Carlisle lay several hundred metres west of Rickergate, in the area of the medieval castle. On the northern part of the site, the ancient river channel may have been deliberately infilled during the 2nd and early 3rd centuries AD in order to make the area habitable. Subsequently, plots of land appear to have been laid out at right angles to the road, and timber buildings were constructed on the street frontage. Roman activity to the rear of the street frontage appears to have been sparse. Occupation continued into the second half of the 4th century AD at least, after which the site was probably wholly or largely abandoned for several centuries.

MEDIEVAL: the excavation of two phases of defensive ditch fronting Carlisle's medieval city wall can be regarded as the most significant aspect of the Rickergate project, since this was the first time that any part of the historically documented city defences had been excavated and recorded under controlled conditions. The first ditch may have been dug during the 12th century, but was replaced, perhaps during the late 13th or 14th centuries, by a second ditch that remained partially open into the post-medieval period. The waterlogged lower fills of both features contained exceptional assemblages of pottery, artefacts of

wood, leather, and metal, and abundant plant and insect remains, including items of regional and national importance. North of the ditches a thick build-up of dark soil may point to the existence of fields extending right up to the city defences in the medieval period. The presence of large quantities of well-preserved cereal and hemp pollen in the lower fills of the later phase of defensive ditch would support the idea that cultivation was occurring close to this feature. This is the first time that pollen has been recorded in medieval deposits in Carlisle, and only the second time that it has been found in archaeological deposits of any date within the city.

POST-MEDIEVAL: over the greater part of the site, evidence for earlier post-medieval activity had been destroyed by extensive modern truncation. Nevertheless, it seems clear that the latest phase of the medieval defensive ditch remained partially open well into the post-medieval period, and was perhaps not completely infilled until the 18th century. By the end of the 18th century a brick-built cellared building had been constructed over the ditch on the south-western part of the site. Slight traces of other buildings were noted elsewhere, and several brick-lined wells of probable late 18th-early 19th century date were recorded on various parts of the site. Cartographic evidence indicates that the Rickergate area became increasingly densely built-up during the late 18th and 19th centuries, but virtually all archaeological evidence for this period was removed when the greater part of the site was cleared for the construction of the Civic Centre and Drovers Lane car parks during the early 1960s.

ARTEFACTS AND ENVIRONMENTAL EVIDENCE: assessments have been carried out upon all artefactual and environmental evidence from the excavation. Preservation and recording of archaeological remains over the site was variable, due to changes in the extent of modern disturbance and variations in fieldwork methodology. The survival of up to 1.3m of waterlogged organic strata in the ditches on the southern part of the site presents a rare opportunity for investigation of well-preserved medieval environmental deposits, including plant remains and insects, and associated organic artefacts of wood and leather. A large set of wooden and leather bellows from one of these deposits is a unique find from a British site. The discovery of large quantities of well-preserved pollen in some of the ditch fills represents a first for Carlisle, as does the opportunity to undertake detailed analysis of organic remains from the ancient river channel underlying Roman levels on the northern part of the site.

RESEARCH AIMS: the key themes that have emerged as a result of the fieldwork and the post-excavation assessment indicate that there is excellent potential to address most of the areas of interest identified in the research aims and objectives. The principal contribution of the site will be to the medieval period, and in particular to enhancing understanding of the origins and development of the city defences, although important data relevant to the Roman and prehistoric periods are also present. A more limited, although potentially useful, amount of information for the post-medieval period is also available.

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1 INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1 In 1997 an application for outline planning permission was submitted by Building Design Partnership on behalf of General Accident Life Assurance Ltd for the remodelling and extension of the Lanes shopping centre in the centre of the historic city of Carlisle, Cumbria (NY 340 556). The application was accompanied by a detailed archaeological impact study prepared by the former Carlisle Archaeological Unit (CAU), which was at that time the in-house field unit of Carlisle City Council (McCarthy 1997). This document built upon a rapid impact study compiled by CAU in October 1996 (McCarthy 1996).
- 1.1.2 The desk-based studies were followed in January 1997 by a Ground Penetrating Radar (GPR) survey of an area of surface car parking north of Drovers Lane (McCann and Mackie 1997) and in March of the same year by two geotechnical surveys (boreholes and test-pits) conducted over a wider area (Fairhurst and Partners 1997; Building Design Partnership 1997). The results of the GPR survey were inconclusive, but the geotechnical work produced useful results, since it located what was probably an ancient channel of the River Eden beneath the northern part of the site (McCarthy 1997, 23-30), and enabled the position of the southern edge of this feature to be estimated. A sample of peat recovered from a test-pit excavated into this channel was submitted for radiocarbon dating (see 2.2.2, below).
- 1.1.3 A phased programme of archaeological evaluation and excavation was subsequently undertaken by CAU between January 1998 and June 1999 in advance of construction works associated with the development. The location of the excavation is shown on Figure 1, where the sites of other major excavations in the city are also indicated. Limited post-excavation work was carried out following completion of the fieldwork, but a post-excavation assessment of the data was not undertaken before the current report.

1.2 GEOLOGY AND TOPOGRAPHY

- 1.2.1 The solid geology of the Carlisle area comprises soft, reddish Permo-Triassic sandstones of the St Bees formation, together with the less extensive Kirklington sandstones, St Bees shales and Stanwix shales. At Carlisle itself the St Bees sandstone is overlain by reddish till or boulder clay (Keeley in preparation).
- 1.2.2 In terms of modern topography, the greater part of the development site was situated between Lowther Street on the east and Scotch Street/Rickergate on the west (Fig 2). To the north the existing shopping centre was extended across East Tower Street and Drovers Lane, which were both completely destroyed. In order to provide access between Lowther Street and Rickergate a new east-west street, also called Drovers Lane, was created further north. This street encroached onto the southern edge of a surface car park located on the

south side of the Civic Centre. Areas of surface car-parking north and south of the former Drovers Lane also lay within the development site. Several 19th and 20th century buildings fronting the north side of East Tower Street, the south side of Drovers Lane and the east side of RickerGate were demolished to make way for the new development.

- 1.2.3 The position of the site in terms of both natural and ancient (man-made) topography was discussed at length in the impact study (McCarthy 1997, 5; 13-21). In summary, the site was located on a terrace of the River Eden at the north-east corner of the historic walled city. The presence of an ancient, probably prehistoric, river channel beneath the northern part of the site was suggested by topographical considerations and the results of borehole surveys. Roman settlement had not been confirmed in the RickerGate area, but the likelihood of ribbon development extending northwards from the centre of the Roman town towards a presumed crossing point of the River Eden was highlighted.
- 1.2.4 In medieval times the junction of Lowther Street and East Tower Street represented the north-east corner of the city defences, which are often referred to in contemporaneous written sources (Summerson 1993). The defences, which were initiated by Henry I in 1122 and refurbished many times between the 12th and 18th centuries, consisted of a curtain wall with towers and three gates, fronted by at least one outer ditch.
- 1.2.5 The northern part of the RickerGate site straddled the line of the northern defences, whilst to the south the development was located between the line of the city wall on the east, now represented by Lowther Street, and the principal north-south thoroughfare seen in Scotch Street. The medieval north gate, known as Ricard's Gate or Scotch Gate, was located immediately west of the development site. Documentary evidence points to the existence of a medieval suburb at RickerGate, immediately outside the Scotch Gate (McCarthy 1997, 16). During the 13th century the area was relatively wealthy compared to the other city suburbs, but became impoverished during the 14th century as a consequence of the Anglo-Scottish wars.
- 1.2.6 In the post-medieval period documentary and cartographic sources attest to ribbon development along the RickerGate frontage from at least the early 17th century, by which time the fortunes of the suburb appear to have revived. By the late 18th century there was also extensive development of areas well back from the street frontage. From the early 19th century the city walls were gradually demolished due to their ruinous and dangerous state. The Scotch Gate itself was demolished in February 1815 (*ibid*, 16).
- 1.2.7 Today the ground falls away gradually from south to north within the area of archaeological investigation, from a high point of *c* 19m OD on the line of the former East Tower Street, to *c* 14m OD within the Civic Centre car park. The medieval defences occupied the higher ground on the southern edge of the site, whilst the ancient river channel lies beneath the comparatively low-lying area to the north (Fig 3).

1.3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

- 1.3.1 South of the RickerGate development site, extensive excavations were undertaken during the late 1970s and early 1980s prior to the construction of the original Lanes shopping centre (McCarthy 2000; Zant in preparation). Over 2m of archaeological stratigraphy of Roman, medieval and post-medieval date was recorded. A considerable amount of archaeological excavation was also undertaken elsewhere within the historic core from the late 1970s onwards, although much of this work remains unpublished. The most notable sites, located in Figure 1, include Blackfriars Street (McCarthy 1990), Castle Street (McCarthy 1991), Annetwell Street (Caruana in preparation a-b) and the recent Millennium project immediately south of the medieval castle (Oxford Archaeology North 2002c). Extensive excavations have also been undertaken in recent years in the southern suburb at Botchergate/Collier Lane (Zant 2000; Giocco *et al* 2001; Oxford Archaeology North 2002a).
- 1.3.2 With the exception of the Lanes excavations to the south, virtually no archaeological work had been undertaken in the RickerGate/East Tower Street area prior to the commencement of the RickerGate project. Observations during the construction of the Civic Centre in 1961, approximately 100m to the north, revealed the southern abutment of what was probably a medieval bridge spanning a former channel of the River Eden (McCarthy 1997, 5-6), whilst excavations in 1994 east of Lowther Street at Spring Gardens Lane revealed an early Roman ditch, possibly military in character, and the remains of later Roman cremation burials (*ibid*, 7).
- 1.3.3 **Pre-Roman:** with the exception of a few residual Mesolithic flints recovered from a number of excavations in the city centre, the earliest archaeological evidence for human activity in Carlisle is represented by plough marks found during excavations at Blackfriars Street (McCarthy 1990, 13-4), Annetwell Street (Caruana in preparation a), the northern Lanes (Zant in preparation) and the Millennium site (Oxford Archaeology North 2002c, 15-16). At the northern Lanes, which lay immediately to the south of the RickerGate development, a metalled track way probably contemporaneous with the ploughing was recorded. A considerable number of largely residual prehistoric flints have also been recovered from these and other excavations within the city centre. The ploughing is interpreted as the remains of a system of arable fields associated with an as yet unlocated prehistoric settlement. Although this activity is not closely dated, the residual flint assemblage suggests a late Neolithic or early Bronze Age date. A roundhouse of possible late Iron Age date was found in the Old Grapes Lane trench of the southern Lanes (McCarthy 2000, 17).
- 1.3.4 **Roman:** from Roman times Carlisle (*Luguvalium*) has been a site of strategic importance (McCarthy 2002, 21), since it controls the north-south land route between England and Scotland on the west side of the Pennine range. The city lies in close proximity to the western end of the Tyne-Solway gap, which forms one of the principal trans-Pennine routes, and close to the head of the Solway Firth, on a river that may once have been navigable for light craft.

- 1.3.5 Despite a long tradition of antiquarian interest in Roman Carlisle it has only been in recent years that additional information has become available regarding the origins, nature and extent of the Roman settlement. The presence of a fort had long been suspected but its existence and location remained unproven until a major series of excavations was undertaken at Annetwell Street between 1973 and 1990 (Caruana in preparation a-b). This work, together with the Millennium excavations of 1998-2001, which were located immediately to the north (Oxford Archaeology North 2002c), recorded deeply stratified deposits relating to at least three, perhaps four, phases of fort construction. It seems clear that an almost continuous military presence was maintained on the site from the establishment of the primary fort in AD 72/3 to the end of the Roman period in the late 4th or early 5th centuries.
- 1.3.6 Immediately south of the fort, excavations at Castle Street in the early 1980s (McCarthy 1991) and at Tullie House Museum and Art Gallery in 1990 (Caruana 1992) located evidence for an annexe on the south side of the fort in the late 1st and earlier 2nd centuries. During the later Roman period this area appears to have been absorbed into the associated civilian settlement.
- 1.3.7 Approximately 350m south of the Castle Street site, archaeological work at Blackfriars Street during 1977-9 demonstrated that timber buildings adjacent to the road leading south from the fort were in use within a few years of the arrival of the Roman army (McCarthy 1990). The narrow building plots established at this early date, running back from the street frontage, remained in use to the end of the Roman period, although the buildings themselves were frequently rebuilt. During the course of the Roman period this extramural settlement expanded to become a sizeable Romano-British town covering much of the area later occupied by the medieval walled city. By the middle of the 3rd century AD the settlement may have been raised to the status of a *civitas* capital (McCarthy 2002, 81-3), although the identification of Carlisle as the *civitas Carvetiorum*, whilst highly probable, is not actually proven.
- 1.3.8 At the northern Lanes, immediately south of the RickerGate site and over 300m east of the fort, the defensive ditch of a possible early marching camp was overlain during the 2nd century by an extremely large timber building, possibly a *mansio* (Black 1995, 23-4 & fig 16a). Later, a second large timber building, perhaps also a *mansio* (*ibid*), was built further to the east. During the second half of the 2nd century narrow plots aligned perpendicular to a major Roman road beneath Scotch Street, and containing timber buildings, pits and cobbled yards, were laid out over this area, suggesting that it had become incorporated into the expanding civilian settlement. In one of these plots a rectangular stone-footed building erected during the 3rd century developed into a winged-corridor house with a heated room. Intensive occupation continued in this part of the Roman town into the second half of the 4th century at least (Zant in preparation).
- 1.3.9 On the southern part of the Lanes the sequence of Roman activity was quite different to that recorded further north. Here, from as early as the late 1st century AD, comparatively small timber buildings of apparently agricultural and domestic function were erected. Some of these structures were associated

with metalled yards and were situated within quite large plots defined by hedges or fences (McCarthy 2000). This occupation seems to have continued into the second half of the 2nd century, after which activity may have declined.

- 1.3.10 At certain times during the Roman period quite extensive suburbs appear to have spread along the main roads leading from the town. The principal cemeteries appear to have been located on the south, adjacent to the main north-south road represented by modern Botchergate. Recent excavations by the side of this road, approximately 700m south of the fort, revealed a number of cremation burials of late 1st century date (Giecco *et al* 2001, 17-18; Oxford Archaeology North 2002a, 11). The burials were overlain during the first half of the 2nd century by regularly-sized building plots running back from the Botchergate frontage. Some of the timber buildings within these plots were clearly used for industrial purposes, whilst others appear to have had a domestic function. Later, probably during the 3rd century, occupation appears to have declined and the area was once more used for burial.
- 1.3.11 **Post-Roman:** the nature of settlement at Carlisle in the earlier post-Roman period is difficult to determine, although the site is unlikely to have been completely abandoned. There are occasional historical references from the late 7th century AD onwards and a sparse but fairly widespread distribution of 9th-11th century coins, artefacts and (to a lesser extent) archaeological features (McCarthy 2002, 134-9). A principal focus of occupation during the 7th-11th centuries lay in the vicinity of the medieval cathedral, where excavations in 1988 revealed evidence for a pre-Norman cemetery (Gaimster *et al* 1989, 174). The cemetery was doubtless associated with an unlocated church, which probably lies beneath the cathedral. The Roman fort may also have been a focus for activity at this time, but there has been little opportunity to investigate this. A small number of pre-Norman finds were recovered from the Annetwell Street and Millennium excavations but no contemporaneous stratigraphic remains were recorded.
- 1.3.12 **Medieval:** it was during the Norman period that the modern city of Carlisle first began to develop. As it survives today the stone castle at the northern end of the walled city is 12th century in origin, as are the cathedral to the south and the remains of the medieval city walls, although all were extensively altered during the medieval and post-medieval periods (McCarthy *et al* 1990, 118-264; McCarthy 1993, 46). Historical sources indicate that an earlier (presumably timber) castle was built by William Rufus in 1092 (McCarthy *et al* 1990, 118), although no trace of this castle has yet been identified. The cathedral was founded as a priory church by Henry I in 1122, almost certainly on the site of a pre-Norman church (1.3.11).
- 1.3.13 During the 12th and 13th centuries Carlisle seems to have prospered. A mint was established in the city by 1135 and a town charter was granted by Henry II in 1158. Settlement expanded to fill the walled area and three suburbs developed beyond the walls, including one outside Ricard's Gate, later to be known as Scotch Gate, on the north side of the city. Within the city walls, groups of Franciscan and Dominican friars established friaries during the

- 1230s (McCarthy 1993, 47). Elements of the Dominican friary, including part of the cemetery, were excavated at Blackfriars Street in the late 1970s (McCarthy 1990).
- 1.3.14 At the Lanes narrow tenements extending back from the Scotch Street frontage and containing timber buildings, pits, wells and yard areas, were established by the late 12th or early 13th centuries. The lanes themselves, which originated as narrow cobbled alleyways running between the tenements, were probably laid out during the early 14th century (Zant in preparation).
- 1.3.15 Documentary sources suggest that from the end of the 13th century the fortunes of the city declined following a series of devastating fires, the onset of the Anglo-Scottish wars and, during the mid-14th century, the arrival of the Black Death. By the 15th century a continued decline in population is indicated by records of vacant tenements in several parts of the city and the suburbs (McCarthy 1993, 64). Little archaeological evidence for this decline has been noted, although this may be due to relatively poor preservation of medieval levels on some of the larger sites excavated within the city centre. At the northern Lanes, however, where preservation was generally good, intensive activity in the tenements adjacent to Scotch Street continued throughout the medieval period (Zant in preparation).
- 1.3.16 **Post-medieval:** little work has been carried out on the archaeology of post-medieval Carlisle. Documentary and cartographic sources suggest a recovery in the fortunes of the city, and a gradual rise in population, from the 16th to 18th centuries. For most of this period Carlisle was a small county town whose inhabitants included a significant proportion of merchants, lawyers and gentry. By the end of the 18th century the population of the city may have grown to around 4000-5000 (McCarthy 1993, 84).
- 1.3.17 In common with many other English towns and cities, Carlisle expanded rapidly during the 19th century with the onset of the Industrial Revolution. Textile manufacture had been growing in importance since the mid-18th century, and Carlisle continued to be a major centre of textile production to the middle of the 19th century. By this time other industries such as brickworks, ironworks, and engineering works were well established, following the arrival of the railways in the 1830s.
- 1.3.18 By the middle of the century census records indicate the population of the city had increased seven or eightfold in little more than 50 years, and the size of the built-up area increased accordingly. During the early 19th century most of the city walls, together with the gates, were demolished. Within the former walled area much of the land to the rear of the street frontages, which had been occupied by gardens or other open spaces for centuries, was infilled with new housing, workshops, and light industrial buildings by the mid-19th century. This also happened in the suburban tenements, including those in the Rickergate area, whilst the suburbs themselves were greatly enlarged. The condition of the Rickergate Ward at this time can be gauged from a report of the Carlisle Sanitary Association in 1850, in which 'the committee can hardly find words to express the amount of filth' (McCarthy 1993, 90). It was also

reported that 'fever [cholera] has found numerous victims in East Tower Street and Drovers Lane'.

2 ORIGINAL PRIORITIES, AIMS AND METHODOLOGIES

2.1 FIELDWORK AIMS

2.1.1 As some time has elapsed since the planning of the archaeological work and no project design is present in the site archive, the original aims of the project are not available. However, the objectives of the proposed excavation were encompassed in the impact study (McCarthy 1997), and can be broadly summarised as follows:

- to locate and record any prehistoric remains in the area of excavation and to sample as required in order to investigate land use and environmental conditions in prehistory (*ibid*, sections 1.4.1 and 2.3.5.2);
- to clarify the extent, character and date of Roman remains. Excavations at the nearby Lanes project between 1978 and 1982 uncovered a wide range of structures dated from the late 1st to early 5th centuries AD (*ibid*, 2.3.5.3 and 2.3.5.4);
- to locate and date the medieval town ditch (*ibid*, 2.4.3) and any remains of structures of the medieval period. The question of use and status of structures and remains should be addressed (2.5.3 and 2.5.4).

2.2 FIELDWORK METHODOLOGY

2.2.1 The fieldwork undertaken by CAU as part of the RickerGate project comprised six distinct phases of work (termed RIC A-F; Figs 2 and 3), which were carried out between March 1997 and June 1999. These interventions varied considerably both in terms of size and in the methodologies employed. All were situated on the northern part of the development site, either on or north of East Tower Street, since archaeological deposits over the area to the south had either been excavated or otherwise destroyed when the original Lanes shopping centre was constructed.

2.2.2 Controlled archaeological excavation did not commence until January 1998. However, some fieldwork began in March of the previous year when a sample of peat was recovered by archaeological personnel from a mechanically excavated test-pit. The pit was dug at the south-west corner of the Civic Centre car park during the programme of geotechnical investigation described above (1.1.2). A sample of this material, which was believed to derive from a palaeochannel of the River Eden, was submitted for radiocarbon dating and produced a date of 2015 ± 40BP (OxA-7155), recalibrated to 120 BC-AD 80 (95% level of confidence). This intervention, for which no records exist other than the report on the radiocarbon determination, was given the site code RIC A (no Trench number) (Fig 3).

2.2.3 The second fieldwork event comprised a series of four evaluation trenches (RIC B Trenches 1-4) opened in January 1998 in the Civic Centre and Drovers Lane car parks. Excavation was deliberately kept to a minimum, but the work

demonstrated that archaeological deposits were present over the entire area, although the most complex and significant remains were located adjacent to the Rickergate frontage. During May and June 1998 a further intervention (RIC C Trench 5) was made adjacent to RIC B Trenches 3 and 4. The principal aims of this controlled excavation were to locate the ancient river channel and obtain samples for palaeoenvironmental analysis and radiocarbon dating, and to date and characterise the sequence of Roman activity in the area.

- 2.2.4 In August 1998 a narrow trench 6m in length (RIC D Trench 6) was mechanically excavated to a depth of approximately 2m across the former line of Drovers Lane, some 18.5m east of the junction of that street with Rickergate, in the hope of gathering further information about the ancient topography of this area. Subsequently a much larger area (RIC D Trench 7) was opened in a surface car park immediately north of East Tower Street, and an almost complete section through two large defensive ditches situated in front of the north wall of the medieval city was obtained. The work in this area continued into September 1998 and was followed by the excavation of a second trench (RIC E Trench 8) across the ditches, approximately 55m west of the first, in November-December 1998.
- 2.2.5 The final phase of excavation (RIC F Trench 9) occurred in May-June 1999 on the former line of East Tower Street, straddling the former line of the medieval city wall.
- 2.2.6 The excavation methodologies employed during the course of the fieldwork varied from area to area. Excavation within RIC B Trenches 1-4 was deliberately kept to a minimum, since the aim of this work was to evaluate the archaeological deposits on the northern part of the site. Modern overburden and post-medieval topsoil, where present, were removed mechanically to the top of archaeological levels, which were cleaned by hand and recorded. A free section through the deeply stratified deposits in Trench 1 was obtained by manual re-excavation of the RIC A test-pit, which was situated within the trench. Following recording in Trench 2, part of a general spread of probable medieval cultivation soil was removed mechanically to almost a metre below modern ground level, but no further archaeological remains were encountered and excavation was halted.
- 2.2.7 In Trench 3, where almost all archaeological levels had been removed by modern truncation, a small test-pit was also dug mechanically through deposits that can probably be interpreted as infilling along the southern edge of the ancient river channel (1.1.2 and 1.2.3 above). Mechanical removal of deep medieval and post-medieval soils in a limited area at the eastern end of Trench 4 revealed a few Roman features dug into soils overlying the natural clay. The western end of this trench probably lay within the ancient river channel.
- 2.2.8 In RIC C Trench 5, modern make-up and post-medieval soils were removed mechanically to the top of the extensive spread of medieval soil seen in RIC B Trenches 2 and 4. Following cleaning and recording this deposit was removed mechanically to the top of what was interpreted as a late Roman soil horizon. All deposits below this level were excavated by hand down to probable

alluvial silts within the ancient river channel, which lay at a depth of 3.7m below the modern surface. The need to step the sides of the trench to ensure safe working practices at this depth meant that, whilst Trench 5 measured 7.8m by 3.6m, the earliest archaeological levels could be excavated only within a much more restricted area measuring approximately 1.7m by 1.3m.

- 2.2.9 RIC D Trench 6 was excavated mechanically to a depth of 2m and all deposits were recorded in section only. Time constraints on the excavation of RIC D Trench 7 resulted in the mechanical removal of many of the upper fills of the medieval defensive ditches in this trench, although the lower fills were excavated by hand. All archaeological deposits within RIC E Trench 8 and RIC F Trench 9 were excavated by hand following mechanical removal of modern and late post-medieval overburden.

2.3 ASSESSMENT; BACKGROUND AND METHODOLOGY

- 2.3.1 Upon completion of the excavations a certain amount of post-excavation work, mostly limited to checking, ordering and storing the primary site records and processing, quantifying and storing the bulk artefactual material was carried out. Additionally three medieval artefacts, a large pair of wooden and leather bellows, a wooden bowl and a small oak barrel or tub, were sent to AOC, Edinburgh for emergency conservation. A post-excavation assessment of the potential of the data was, however, never undertaken. In August 1999 CAU became Carlisle Archaeology Ltd, University of Bradford. This company ceased trading in August 2001.
- 2.3.2 In March 2002, the County Archaeology Service, acting on behalf of Carlisle City Council, produced a brief for the preparation of a post-excavation assessment report (Cumbria County Council 2002). Oxford Archaeology North (OAN) submitted a tender and project design in March 2002 (Oxford Archaeology North 2002b) and was commissioned by Carlisle City Council to undertake the post-excavation assessment in May 2002. The project design contained a Method Statement that has formed the basis for the methodology employed during the course of the assessment project.
- 2.3.3 The project design included a number of research aims, with a series of more specific subsidiary objectives, compiled with reference both to the original fieldwork aims of the project and to current research priorities. These aims and objectives can be summarised as follows:

1: The pre-Roman landscape

Objective 1.1: Can the RickerGate project aid our understanding of the nature of the landscape in the vicinity of the site in the immediate pre-Roman period?

2: Site development

Objective 2.1: What light do the excavations shed on the origins and development of Roman occupation in this area?

Objective 2.2: What light do the excavations shed on the origins and development of Carlisle's town defences during the medieval period?

3: The medieval economy

Objective 3.1: Can the artefactual and environmental material associated with the defensive ditches elucidate aspects of craft and industry within the medieval town?

Objective 3.2: What light can the Rickergate site shed upon patterns of consumption in the medieval and post-medieval town?

4: Processes of change

Objective 4.1: Can the Rickergate project further our understanding of changes in the condition of urban society during the late medieval and early post-medieval periods?

3 FACTUAL DATA AND QUANTIFICATION

3.1 THE STRATIGRAPHIC RECORD

3.1.1 The RickerGate stratigraphic archive is quantified in Table 1 below. An understanding of the stratigraphy recorded on the site, and the establishment of a comprehensive and securely dated sequence of activity is crucial in order to understand the archaeological development of the area and to address the research aims of the project. Whilst the quality of the stratigraphic data from the RickerGate site is variable, due largely to the limited size of some of the trenches and the restricted level of excavation, it is clear that certain groups of data have considerable potential to advance our understanding of Roman and medieval activity in this part of the city. These can be summarised as follows:

- stratigraphic data relating to possible prehistoric activity in RIC F Trench 9;
- the combined data from RIC B Trench 1 and RIC C Trench 5, especially that relating to the Roman occupational sequence;
- the sequences of infilling and recutting of the medieval defensive ditches in RIC D Trench 7 and RIC E Trench 8.

Table 1: Quantification of the stratigraphic archive

Site	RIC B	RIC C	RIC D	RIC E	RIC F	Total
Contexts	129	67	129	98	207	630
Drawings:						
Plans	10	9	2	15	38	74
Sections	11	10	11	21	45	98
Total						172
Photographs:						
Slides	36	88	48	193	264	629
Colour print	32	-	40	154	312	538
Monochrome	69	78	48	161	255	611
Total						1778

3.1.2 *Stratigraphy; truncation, intrusion and contamination*: preservation of archaeological deposits varied considerably between the nine areas of investigation. This was due both to variations in the extent of late post-medieval disturbance and to differences in the character of ancient activity across the site. The differing levels of preservation are summarised in Table 2 below.

Table 2: Summary of preservation of archaeological deposits by site period and excavated area

Period	Description	RIC A	RIC B			RIC C	RIC D		RIC E	RIC F
			1	2	3-4	5	6	7	8	9
0	Natural clay									
1	Pre-Roman (inc. river channel)									
2	Roman land reclamation									
3	Roman occupation									
4	Soil accumulation									
5	Latest Roman occupation									
6	Post-Roman dark soils									
7	Earliest medieval activity									
8	Ditch fronting medieval city wall									
9	Second phase ditch									
10	Early post-med fills of ph 9 ditch									
11	18th-19th century activity									
12	20th century activity									

Key:

Well-stratified	Poorly stratified
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3.1.3 On the northern part of the site archaeological deposits within RIC B Trenches 1-4 and RIC C Trench 5 were mostly well-preserved, although in Trench 1 almost all post-Roman levels had been removed and extensive modern truncation had also removed most deposits in Trench 3. The truncation in these areas may have occurred when the site was cleared in 1961 prior to the construction of the Civic Centre and Drovers Lane car parks (McCarthy 1997, 21). The car park surfaces and underlying layers of gravel make-up were approximately 0.2-0.4m thick, and overlay a demolition horizon of dark earth and rubble 0.1-0.6m thick, which related to the 1960s site clearance. Generally speaking, the uppermost archaeological levels in the RIC B and RIC C trenches were sealed by this deposit and were, for the most part, unaffected by deep modern features. The likelihood of contamination is therefore considered to be low, and this is reflected in the almost complete absence of intrusive material within the archaeological strata recorded in these areas.

3.1.4 Beneath the modern build-up, deeply-stratified archaeological deposits were encountered on the northern part of the site. In RIC B Trench 1 manual re-excitation of the RIC A test-pit to a depth of 2.15m below the modern surface

exposed at least 1.6m of archaeological strata in the sides of the pit, although the base of the sequence was not observed. Virtually all of this material appears to have been of Roman date, and probably relates to a sequence of timber buildings and associated deposits fronting a north-south Roman road beneath modern Rickergate.

- 3.1.5 In RIC C Trench 5, hand excavation was undertaken to the top of the alluvial silts within the ancient channel of the River Eden. In this area up to 3m of archaeological deposits were recorded beneath 0.7m of modern material. The lower 2.4-2.6m of strata appear to have been of Roman date, and were sealed by a possible medieval/early post-medieval cultivated soil 0.4-0.6m thick, which lay directly beneath late post-medieval and modern levels.
- 3.1.6 In RIC B Trenches 2 and 4 little excavation was undertaken and comparatively few archaeological deposits were recorded. In both trenches a thick build-up of medieval and earlier post-medieval soils lay beneath modern deposits. When removed in small exploratory slots or test-pits, this material was seen to overlie a few probable Roman features. Occupation on this part of the site does not appear to have been very intensive during any period, which is perhaps unsurprising given its location well to the east of the Rickergate frontage and north of the city defences. In Trench 3 all archaeological remains had been destroyed by modern site clearance, with the exception of a build-up of silty soils at the northern end of the trench, which may have filled the southern edge of the ancient river channel.
- 3.1.7 A similar sequence to that recorded in RIC B Trenches 2 and 4 was also observed in section in RIC D Trench 6, which was excavated mechanically to the natural subsoil, although the earlier deposits had suffered disturbance from modern pipe trenches. Few artefacts were recovered from this trench.
- 3.1.8 Archaeological deposits within the area of RIC D Trench 7 and RIC E Trench 8, which were located on the line of the defensive ditches fronting the medieval city wall, had suffered considerable truncation and fragmentation. Most of this disturbance resulted from the construction, probably from the late 18th to early 20th centuries, of buildings with basements, cellars and deep foundations on the north side of East Tower Street. In both areas, it seems probable that the site was levelled in preparation for the construction of these buildings, which resulted in truncation of the medieval ditches and the probable loss of some of the uppermost fills. Nevertheless, good stratigraphic sequences up to 2.5m in depth were recorded within the ditches in both trenches. The sequences included well-stratified accumulations of waterlogged organic deposits up to 1.3m thick, preserved due to the fact that the ditches were cut into a sticky and impervious natural clay. The preservation of medieval and (possibly) early post-medieval waterlogged material is especially fortunate, for post-Roman organic remains in Carlisle generally are confined, on the whole, to small individual features such as pits and wells.
- 3.1.9 Inevitably, the degree of late post-medieval and modern disturbance in these areas, particularly to the upper fills of the ditches, increases the potential for contamination of the archaeological strata. However, assessment of the pottery

and other datable artefactual material indicates that very little intrusive material is in fact present within the stratigraphic sequence.

- 3.1.10 By far the most severe damage to archaeological levels had occurred within the area of RIC F Trench 9, which lay directly beneath East Tower Street. All archaeological stratigraphy of later Roman and post-Roman date had been completely removed by extensive truncation. Excluding individual deep features, the intact stratigraphy was not more than 0.15-0.2m thick, and had been severely fragmented by a large number of modern foundations and service trenches. The handful of heavily truncated Roman and medieval features that survived included a fragmentary stone foundation, which may represent the base of the medieval city wall (see 3.1.74, below). If this interpretation is correct, it suggests that the truncation must have occurred during the 19th century or later, since the city wall was upstanding into the earlier part of that century (1.2.6 above).
- 3.1.11 In stratigraphic terms the truncated, and therefore stratigraphically isolated, Roman and post-Roman features within RIC F Trench 9 have limited potential, although some may be interesting in their own right due to their character, date, or contents. However, the numerous undated features that had also suffered truncation within this trench offer very little potential, and indeed in most cases it has proved impossible to assign them to a phase group (see 3.1.14, below).
- 3.1.12 ***Provisional phase summary and stratigraphic groups:*** for assessment purposes the stratigraphic sequence for the site as a whole has been divided into 13 broad phases or periods (periods 0-12; Table 3), based upon preliminary analysis of the primary site records and draft stratigraphic matrices. Of the latter, those for RIC C Trench 5, RIC D Trench 6 and RIC F Trench 9 were available in the site archive; those relating to the stratigraphic sequences in RIC B Trenches 1-4, RIC D Trench 7 and RIC E Trench 8 were compiled during the course of the assessment.
- 3.1.13 The Rickergate excavations comprised nine separate and widely scattered trenches, in addition to the RIC A test-pit. Consequently, few, if any, direct stratigraphic links existed between the archaeological sequences recorded in each area, although spatial evidence and careful consideration of the character and date of deposits in certain trenches has allowed some cross-trench concordances to be established with a high degree of confidence. Most notable in this respect are the similarities in the Roman stratigraphic sequences within RIC B Trench 1 and RIC C Trench 5 on the northern part of the site and, to the south, the highly probable concordance between the large medieval ditches in RIC D Trench 7 and those recorded approximately 55m to the west in RIC E Trench 8.
- 3.1.14 During assessment it has proved possible to identify, on stratigraphic grounds, two potentially pre-Roman phase groups, including the natural subsoil (periods 0 and 1). The well-stratified Roman and early post-Roman levels in RIC B Trench 1 and RIC C Trench 5 have been grouped into five provisional phases (periods 2, 3, 4, 5 and 6) and the medieval deposits in RIC D Trench 7 and RIC E Trench 8 into three phases (periods 7, 8, and 9). Stratigraphic

considerations and datable artefactual material also permit the identification of three post-medieval phases (periods 10, 11 and 12). Problems remain, however, with the many poorly preserved or minimally excavated features and deposits, particularly those in RIC B Trenches 2-4, RIC D Trench 6 and RIC F Trench 9, that cannot be integrated into this sequence. As a partial solution, such poorly stratified deposits have, where possible, been assigned to two broad phases. Those which, on stratigraphic and/or dating evidence, appear to have been of Roman date, are assigned to period 2-5. This signifies that the deposits are broadly contemporaneous with the well-stratified sequence represented by periods 2, 3, 4 and 5, but cannot be more precisely phased. Similarly, poorly stratified medieval deposits are assigned to period 7-9, demonstrating that they are broadly contemporary with the well-stratified medieval deposits within periods 7, 8 and 9. This information is summarised in Table 3, below. Poorly stratified deposits that cannot be dated remain unphased, and are recorded as such on the site database. In all, some 544 contexts, representing 86.4% of the site total, have been assigned to a site period. The remaining 86 contexts, representing 13.6% of the site total, are unphased. Of these, the great majority (66, or 10.5% of the total) are stratigraphically isolated, undatable features located within the heavily truncated area of RIC F Trench 9.

- 3.1.15 *Period 0: natural subsoil (not illustrated)*: the natural subsoil over the greater part of the Rickergate site comprises reddish till or boulder clay overlying red St Bees sandstone. Over the site as a whole, the surface of the natural clay sloped gradually from south to north, and more gently from south-east to north-west, from *c* 16.7m OD in RIC F Trench 9 and *c* 16.4m OD in RIC D Trench 7 (the top of the subsoil in RIC E Trench 8 was truncated) to *c* 15m OD in the southern part of RIC B Trench 3. At the northern end of this trench the clay dipped beneath an increasingly thick accumulation of silts thought to represent the edge of an ancient channel of the River Eden. The most northerly point at which the natural clay was observed was in a test-pit at the eastern end of RIC B Trench 4, where it was recorded at *c* 13.6m OD.

Table 3: Summary of stratigraphic periods

Period	Description	Approximate Date
0	natural subsoil	
1	pre-Roman activity & river channel	<i>c</i> late Neolithic-late Iron Age?
2	Roman: possible reclamation of river channel	late 2nd-early 3rd centuries AD
3	Roman occupation	<i>c</i> early-mid 3rd century
4	soil accumulation	<i>c</i> mid-late 3rd century
5	later Roman occupation	4th century
2-5	poorly stratified Roman deposits	Roman
6	post-Roman dark soils	<i>c</i> early 5th-early 12th centuries
7	earliest medieval activity	<i>c</i> 12th century
8	1st ditch in front of city wall	<i>c</i> 12th-late 13th centuries
9	2nd ditch in front of city wall	<i>c</i> late 13th/14th-16th centuries
7-9	poorly stratified medieval deposits	medieval
10	early post-medieval fills of period 9 ditch	<i>c</i> 16th-18th centuries
11	later post-medieval activity	<i>c</i> late 18th-19th centuries
12	modern activity	20th century

- 3.1.16 Further north no trace of the clay was recorded, probably because in this area the site overlay an ancient river channel (3.1.17-3.1.18, below).
- 3.1.17 *Period 1: pre-Roman (Figs 3 and 5):* on the northern part of the site, hand excavation within RIC C Trench 5 was taken to a depth of 3.7m below the modern surface (*c* 10.4m OD) without encountering the natural clay. The earliest Roman levels were seen to overlie a succession of fine, greyish silts in excess of 0.8m thick (these deposits were not bottomed), the top of which lay at *c* 11.2m OD. This material was generally devoid of inclusions, except for a few rounded pebbles, although the earliest recorded deposit (RIC C 265) exhibited a sparse organic content in the form of small twigs and other preserved plant remains. Some 30m to the west, a similar deposit of fine grey silt (RIC B 77) was observed at a depth of *c* 11.7m OD in the side of the RIC A test-pit, which was situated within the area of RIC B Trench 1. This deposit also lay directly beneath the earliest Roman levels. Prior to the commencement of the excavation, a sample of peat or peat-like material was recovered during the mechanical excavation of the RIC A test-pit (2.2.2, above). A sub-sample of this material submitted for radiocarbon dating produced a date of $2015 \pm 40\text{BP}$ (OxA-7155), recalibrated to 120 BC-AD 80 (95% level of confidence). The depth from which this deposit was recovered is not known, but it must have been beneath layer [77], since similar material was not present in the later strata.
- 3.1.18 Given the character of the silts recorded in RIC B and RIC C, the presence of peat in RIC A, the absence of natural clay in these areas, and what is known of the ancient topography of the RickerGate area from earlier observations, it seems highly likely that the silts and the peat can be interpreted as the fills of an ancient channel of the River Eden. Today, the river lies over 300m north of the RickerGate site, but its course has changed considerably over the years as a result of natural processes and human interference. G Smith's map of 1746, for example, suggests that 250 years ago the river lay approximately 200m north of the Scotch Gate, significantly further south than today. The date of the material recovered from RIC A (3.1.17) suggests that the palaeochannel beneath the northern part of the RickerGate site was probably undergoing natural infilling during the later pre-Roman Iron Age and perhaps into the early Roman period. The presence of peaty material suggests that by this date the channel may have become a backwater, perhaps largely infilled with alluvium and choked with vegetation. It is particularly unfortunate that none of this material appears to have been retained for palaeoenvironmental analysis.
- 3.1.19 To the south, on the ancient river terrace represented by the natural clay described above (3.1.15), the only trace of pre-Roman activity was recorded in RIC F Trench 9. A few shallow linear features and a number of depressions, hollows and possible stake or post holes cut the natural clay and were sealed by a buried soil horizon. These linear features were badly fragmented by later activity, but it seems clear that they shared a common north-west/south-east alignment (Fig 3). This orientation is contrary to that of the Roman and post-Roman features on the site, but is consistent with the alignment of pre-Roman features recorded elsewhere in the city (1.3.3, above). These include the plough marks noted at Annetwell Street, Blackfriars Street, the Millennium

site and the north Lanes, and the metalled track way found at the latter site, which was situated approximately 60m south of RIC F.

- 3.1.20 The function of the Rickergate features is not clear, but they are perhaps unlikely to represent the remains of timber structures. A few of the narrower linear features, such as RIC F [84], may be plough marks, whilst some of the hollows and the broader linear features, for example RIC F [94] and [174], could conceivably represent the remains of field boundaries. With the exception of linear feature RIC F [94], which produced a worked flint, none of the features contained any artefactual material.
- 3.1.21 Most of the period 1 features in RIC F Trench 9 were sealed by a homogeneous layer of pale grey clay-silt 0.1-0.15m thick. Stratigraphically contemporaneous deposits of similar character have been recorded on a number of city centre sites, including Annetwell Street, the Millennium site and the Lanes, where they sealed pre-Roman plough marks and were thought to indicate a cessation of arable cultivation during the later prehistoric period. At each site, the top of this buried soil horizon invariably represented the old ground surface at the beginning of the Roman period.
- 3.1.22 The idea that prehistoric activity was occurring within the area of RIC F is supported by the spatial distribution of the worked flints recovered from the Rickergate site (appendix 6.1). Of the total assemblage of 25 items, all but one came from RIC F, the exception being recovered from a Roman deposit in RIC C Trench 5. Within RIC F, the period 1 buried soil produced 11 flints (44% of the total assemblage) and a single piece came from a period 1 feature, as noted above (3.1.20). The remainder (12 items) occurred residually in Roman and post-Roman deposits, or as unstratified material.
- 3.1.23 *Period 2: possible Roman land reclamation (not illustrated):* in RIC B Trench 1 and RIC C Trench 5 the silts filling the probable river channel were overlain by layers of earth and clay, mixed in some instances with varying concentrations of cobbles and gravel, that attained a combined thickness of up to 0.8m. In Trench 1 these deposits were recorded only in section in the side of the RIC A test-pit, where they were seen to overlie the alluvial silts, but in Trench 5 the complete sequence was excavated by hand. The deposits sealed a cut feature *c* 1.4m wide, up to 0.73m deep and in excess of 1.8m in length, east-west (RIC C 262), that had been dug into the silt. Due to safety considerations the feature could only be excavated within a very restricted area measuring approximately 1.7m by 1.3m and its true extent and character therefore remain unclear, although it appears to have had an open, U-shaped profile with a slightly rounded base. It seems probable that the feature was either a pit or the western end of a ditch or other linear feature aligned west to east. It was filled by layers of dark, waterlogged material with a high organic content.
- 3.1.24 The pottery recovered from feature [262] included sherds of Black Burnished ware fabric 1 (BB1) and Hadrianic/Antonine samian and mortaria, all datable to the period *c* AD 125-50. A single sherd possibly dating to after *c* AD 150 was also present. The ceramic assemblage from the layers above this feature includes several sherds of samian datable to the mid-late 2nd century AD,

- Ebor ware of Severan (early 3rd century) date and a sherd of imitation BB1, which can probably be dated to the 3rd century.
- 3.1.25 As noted above (3.1.23), the function of feature [262] remains unclear. However, the character of the deposits sealing the feature, and also of the identical and stratigraphically contemporary levels in RIC B Trench 1, strongly suggests that they represent material that had been deliberately dumped into what remained of the ancient river channel. Furthermore, in both trenches there is clear evidence for intensive Roman occupation immediately post-dating the deposition of this material (see period 3, below). It seems likely, therefore, that the period 2 layers were deposited during a programme of land reclamation that was initiated prior to the settlement of this area. In view of this, it is tempting to interpret feature [262] as part of a drainage ditch or channel that had gone out of use before the layers of landfill were deposited.
- 3.1.26 *Period 3: Roman occupation (not illustrated)*: in RIC B Trench 1 the period 2 layers were directly overlain by a build-up of deposits up to 0.55m thick that were, like the earlier levels, recorded only in section in the side of the RIC A test-pit. Interpretation of these deposits is inevitably constrained as a consequence of their very limited exposure, but there can be little doubt that they represent the remains of quite intensive Roman occupation. The earliest recorded features were a post hole (RIC B 70) and a probable pit in excess of 0.5m deep (RIC B 78), both of which had been dug into the period 2 deposits. The post hole was associated with thin spreads of compacted clay and dark silt suggestive of floor and occupation deposits within a timber structure, although this interpretation is impossible to confirm. Overlying these remains were a number of patchy layers of earth and cobbles that were in turn overlain by up to 0.3m of very mixed dark soils and paler clay (RIC B 63-5). It is not known whether these deposits were situated within a timber building or had accumulated over an external area. They were, however, sealed by up to 0.25m of stiff yellow clay (RIC B 62) that had the appearance of an internal floor surface.
- 3.1.27 In RIC C Trench 5 the period 2 layers were overlain by two patchy metalled surfaces set approximately 3.4m apart (RIC C 247 and 239/252). The significance of these surfaces is not clear, but the southernmost [239/252] was c 1.5-2m in width and linear in plan, and had the appearance of a path or lane aligned roughly east-west. Surface [247] may originally have been similar, but was relatively poorly preserved. The only other features attributable to this phase were a small gully or slot located south of [239/252] and sharing its alignment, and a small pit or post hole.
- 3.1.28 Within the very small assemblage of pottery and other artefactual material recovered from the period 3 deposits, there is nothing that need post-date the late 2nd century AD. However, the presence of early 3rd century Ebor ware in an underlying deposit attributed to period 2 (3.1.24 above) places period 3 firmly in the 3rd century. The comparatively complex sequence of deposits in RIC B Trench 1 seems likely to relate to intensive Roman occupation adjacent to the Rickergate street frontage. This lends support to the view that the modern road follows the line of a Roman road leading north from the centre of

the Roman settlement, presumably to a crossing of the River Eden. The precise character of this occupation is impossible to determine from the available evidence, but it seems likely to have included timber buildings, perhaps of more than one phase. The few contemporaneous features and deposits recorded in RIC C Trench 5, which was located approximately 13m east of Trench 1 (*c* 25m east of the modern street frontage), may represent the remains of activity to the rear of buildings fronting the road.

- 3.1.29 *Period 4: Roman soil accumulation (not illustrated)*: in both RIC B Trench 1 and RIC C Trench 5 the uppermost deposits of period 3 were overlain by layers of earth. In Trench 1 this deposit (RIC B 48=61) was a very mixed mid-brown sandy clay loam 0.15m thick, containing many pink and yellow clay mottles, whilst to the east layers of cleaner, pale and mid-brown silty clay loam with a combined thickness of up to 0.4m were recorded in Trench 5 (principal contexts RIC C 219, overlain by 251). In both areas these deposits were extensive; in Trench 5 layers [219/251] certainly covered the entire area of excavation, and it is possible that layer [48/61] extended across the whole of Trench 1.
- 3.1.30 The ceramic assemblage from RIC C Trench 5 includes a fairly large group of 2nd century samian, including sherds datable to *c* AD 170-200. However, the presence of pottery dating to *c* AD 240-60 in layer 219 indicates that the period 4 deposits in this area were accumulating during the second half of the 3rd century or later. No useful dating evidence was recovered from the soils in RIC B Trench 1.
- 3.1.31 The significance of period 4 remains unclear. The accumulation of a fairly thick deposit of soil over what appears to have been a quite intensively occupied area may indicate a decline in activity on the site, perhaps during the second half of the 3rd century.
- 3.1.32 *Period 5: later Roman occupation (Figs 3 and 4, Plate 1)*: the soils of period 4 were overlain by deposits representing the latest phase of Roman activity recorded on the site. In RIC B Trench 1, soil [48/61] (3.1.29 above) was cut and overlain by the remains of what was almost certainly a rectilinear timber building with clay-and-cobble foundations. The north wall of this structure was represented by an east-west aligned clay-and-cobble foundation up to 0.9m wide (RIC B 46), which extended back from the modern street frontage for at least 9m (Plate 1). To the south was a patchy layer of stiff orange-brown clay (RIC B 45), perhaps the remains of a floor surface, and a pair of large, cobble-packed post holes (RIC B 51 and 53). The precise significance of these features is unclear, but their alignment suggests they may have formed part of a longitudinal row of large posts within the building.
- 3.1.33 To the rear of the street frontage, the period 4 soils in RIC C Trench 5 were cut by a pair of parallel, east-west aligned gullies or slots situated 3.8m apart (RIC C 230 and 232). These features were 0.7-0.8m wide and 0.7-1m deep, with steep-sided, U-shaped profiles, and were infilled with dark grey-brown soils. Both appear to have been dug roughly on the line of the earlier (period 3) metalled surfaces (3.1.27 above), although these deposits were completely buried beneath the period 4 soils by the time the gullies were cut. The precise

significance of features [230] and [232] is not entirely clear, although they may have marked the boundaries of properties or plots of land running back from Roman Rickergate, as feature [230] aligned precisely with the clay-and-cobble building foundation [46] in RIC B Trench 1 some 13m to the west.

- 3.1.34 Between the gullies, and aligned roughly at right angles to them, was a linear alignment of large, unbonded cobbles *c* 0.6m in width (RIC C 231). The purpose of this feature is unknown, but it may represent the remains of a crude foundation for a light timber wall. The only other feature attributable to this phase was an earth-filled pit approximately 1.6m in diameter and in excess of 1m deep (RIC C 220), located a little under 2m south of gully [230].
- 3.1.35 The date at which period 5 commenced is not clear, although it is unlikely to have been before the late 3rd century AD and may have been considerably later, judging by the presence of Huntcliffe-type and Crambeck wares dating to after *c* AD 360 in the fills of gully [230] and pit [220]. No dating evidence was recovered from the period 5 deposits in RIC B Trench 1, since none was subjected to excavation.
- 3.1.36 *Period 2-5: poorly stratified Roman deposits (Fig 5):* this phase group includes all Roman and probable Roman deposits that cannot be attributed with confidence to one of the phases of occupation represented by periods 2, 3, 4, and 5 (see 3.1.14, above). Included in this group are deposits recorded in RIC B Trenches 3 and 4, RIC D Trench 6, RIC E Trench 8 and RIC F Trench 9. All Roman levels in RIC B Trench 1 and RIC C Trench 5 were sufficiently well-stratified to be assigned to a specific site period. No remains attributable to the Roman period were recorded within RIC B Trench 2 or RIC D Trench 7.
- 3.1.37 RIC B Trench 3: as noted above (2.2.7), what was probably the extreme southern edge of an ancient channel of the River Eden was recorded at the northern end of this trench. This feature was represented by an accumulation of clean silts (RIC B 7-14) that increased in depth to the north, to a maximum recorded thickness of 0.5m. These deposits were exposed in an area too limited to determine whether they represented natural silting of the channel or deliberate infilling during the Roman period, as seems to have occurred further north (period 2). The latter seems more likely, however, given the location of these deposits along the upper edge of the channel, together with the fact that the uppermost level [7] produced a few sherds of Roman pottery, including BB1 dating to after *c* AD 125. These deposits were directly overlain by modern material as a result of an extensive episode of truncation associated with the construction of the Drovers Lane car park during the 1960s.
- 3.1.38 RIC B Trench 4: the natural clay was seen in a limited area of deeper excavation at the eastern end of the trench. This was overlain by a layer of redeposited clay (RIC B 19), above which was an accumulation of clean, grey-brown clay-silts (principal contexts RIC B 16-18) up to 0.7m thick, increasing in depth from east to west. Very similar soils were also recorded over the western part of the trench (principal contexts RIC B 111-2), although they appeared to be deeper and the natural clay was not observed, probably because this part of the trench extended into the ancient river channel. As in Trench 3,

exposure of these deposits was not sufficiently extensive to allow their precise character and significance to be determined, although it seems likely that they represent infilling of the channel in the earlier Roman period. Small quantities of Roman pottery recovered from deposits [16-19] and from context [111] included several sherds of BB1, datable to after *c* AD 125, and at least eight sherds of samian attributable to the period *c* AD 120-60. In all likelihood, therefore, these deposits represent further evidence for the deliberate infilling of the river channel in period 2.

- 3.1.39 At the eastern end of Trench 4, the silts were cut by a group of five intercutting pits (RIC B 96, 104, 108, 110, 118) that produced very small quantities of 2nd century pottery. These features were directly overlain by a thick build-up of dark soil of post-Roman and medieval date (3.1.72, below).
- 3.1.40 RIC D Trench 6: deposits recorded in section in the side of Trench 6 included an accumulation of grey-brown and reddish soils 0.2-0.6m thick that may represent either infill along the southern edge of the river channel or the accumulation of soils on the hillslope immediately south of the channel. These deposits produced no artefactual material, but their stratigraphic position would be consistent with a Roman date.
- 3.1.41 RIC E Trench 8: a single, truncated post hole within this trench (RIC E 40) has been tentatively assigned to this phase on ceramic evidence. The fills of this feature produced a few sherds of samian dating to the period *c* AD 120-50.
- 3.1.42 RIC F Trench 9: on the southern edge of the site, the pre-Roman buried soil in RIC F Trench 9 (3.1.21, above) was cut and overlain by a number of features and deposits that appear, from ceramic evidence, to have been Roman in date (Fig 5). For the most part, however, these remains had been heavily truncated in the later post-medieval period (3.1.10, above) and were therefore poorly stratified. This, together with the spatial separation of Trench 9 from the areas of well-stratified Roman deposits within RIC B Trench 1 and RIC C Trench 5 on the northern part of the site (a distance of approximately 70m), meant that none of the Roman remains in this area could be attributed to a specific site period.
- 3.1.43 In the northern part of the trench, where the period 1 buried soil was not present, several randomly-distributed, shallow hollows and possible post holes cut the natural subsoil. These features are undated and their significance remains unclear. They were sealed by a well-laid surface of cobbles set in yellowish clay (RIC F 61-2) that extended east-west across the full width of the trench. To the north this deposit had been disturbed by later features, whilst its southern edge had been completely removed by a modern service trench. The layer was not recorded south of this modern feature, however, which suggests that this surface was linear in plan, measuring in excess of 15m long by *c* 0.8-1.2m wide. The obvious interpretation of this deposit is that it represents the remains of a minor street or lane running east from the major north-south Roman road that is presumed to lie beneath modern Scotch Street/Rickergate. The existence of other roads and lanes sharing the same alignment was demonstrated during excavations at the Lanes, immediately to

the south of the Rickergate site (McCarthy 2000, 21 & figs 17, 18, 45-7; Zant in preparation).

- 3.1.44 In the areas of surviving stratigraphy south of the cobbled surface, the presence of a number of truncated features of possible or probable Roman date attests to quite intensive activity in this area during the Roman period. On the western part of the trench two fragmentary gullies or slots of uncertain significance (RIC F 131 and 140) cut the period 1 soil. Neither were certainly of Roman date, although both were cut by a medieval pit or well. Feature [131] produced a single sherd of late 1st-early 2nd century samian.
- 3.1.45 Further east, the buried pre-Roman soil was cut by a large, rectangular feature (RIC F 161) measuring 3.3m north-south by 2.8m east-west. The function of this heavily truncated feature, which survived to a depth of only 0.4m, is unknown, but its size, regular plan and vertical-sided, flat-bottomed profile, suggest it may represent the base of an extremely large tank, or even a small basement or cellar for an otherwise completely destroyed timber structure. The lower half of the feature was filled with dark organic silt (RIC F 160), which was sealed by an upper fill of mixed earth and redeposited natural clay (RIC F 159). BB1 of *c* AD 125+ and samian of *c* AD 120-60 came from the basal fill, whilst context [159] produced sherds that may be of 3rd century date.
- 3.1.46 Immediately beyond the south-east corner of feature [161], and apparently respecting its position (or *vice versa*), was the foundation trench for a curvilinear timber wall (RIC F 35), measuring 0.7-0.8m wide and 0.45m deep. This feature formed a regular arc from south to east, but was cut to the east by a later Roman ditch and to the south by modern service trenches, and therefore survived to little more than 2m in length. Three square post holes or post pipes were found at its base. The interpretation of this feature as the remains of an apsidal room, perhaps *c* 3m in width, east-west, would point to the existence of a timber building of some pretension in the area immediately south of RIC F. However, the precise character and date of this structure cannot be deduced from the surviving remains.
- 3.1.47 No pottery or other datable artefactual material was recovered from feature [35], but a Roman rather than a pre-Roman date appears likely given its apparent spatial relationship with feature [161], and the fact that it was cut by a Roman ditch. The ditch (RIC F 129), which ran north-south along the extreme eastern edge of Trench 9, was approximately 1.5m wide and 0.4m deep, with a U-shaped profile, and was filled with grey silt. A later recut along the same line (RIC F 126) was in excess of 0.6m wide and 0.5m deep. The upper fill of the primary ditch produced BB1 and two samian sherds dating to *c* AD 130-60; the fills of the later re-cut produced pottery of a similar date, together with a small quantity of possibly 3rd century material.
- 3.1.48 *Period 6: post-Roman dark soils (not illustrated)*: in RIC B Trench 1 and RIC C Trench 5 the latest well-stratified Roman remains were sealed by a thick accumulation of dark soils that appear to have blanketed the entire area. In RIC C Trench 5 these deposits (principal contexts RIC C 216 and 218) attained a depth of up to 0.7m, but the corresponding material in RIC B Trench 1 (RIC B 42=37) was only 0.3m thick, although it seems likely that the

upper part of this deposit had been removed by late post-medieval truncation on the Rickergate street frontage. The only datable material recovered from these layers was of Roman date, and included large fragments of Crambeck pottery dating to after *c* AD 360.

- 3.1.49 Similar accumulations of dark earth have been recorded in stratigraphically equivalent positions at a number of other sites in the centre of Carlisle, including the northern Lanes (Zant in preparation) and the Millennium site (Oxford Archaeology North 2002c, 26-7), and are a feature of the early post-Roman stratigraphic sequences in a number of Romano-British towns. In Carlisle, these deposits occasionally produce a small number of pre-Norman artefacts, including 9th century Northumbrian stycas, and other objects of this period turn up as residual material in later contexts. No artefactual material of this date is, however, present within the Rickergate finds assemblage. The significance of these dark earth deposits, and the depositional processes that resulted in their formation, are currently unclear. A favoured hypothesis is that they represent a lengthy phase of near-abandonment or, more probably, contraction in the area and density of occupation, from the end of the Roman period (*c* early 5th century AD) to (in the case of Carlisle) the early Norman period (*c* late 11th/early 12th centuries).
- 3.1.50 *Period 7: earliest medieval activity (not illustrated)*: within RIC D Trench 7 and RIC E Trench 8, almost all the surviving archaeological deposits were associated with two large defensive ditches situated in front of the medieval city wall (see periods 8 and 9, below). However, in both areas a few features were recorded that certainly or probably pre-dated the earliest of these ditches (period 8), although these features were, for the most part, seen in very limited areas and their significance is consequently difficult to determine. Period 7 comprises those features which are thought to be of post-Roman date; the few definite or probable Roman features recorded in these areas have been assigned to period 2-5 (see 3.1.36, above).
- 3.1.51 On the extreme northern edge of Trench 7, the lip of the period 8 ditch was seen to cut the southern edge of an earlier, undated, feature (RIC D 403) filled with redeposited natural clay. The steeply sloping cut measured in excess of 1.2m wide, north-south, and at least 0.8m deep, but it was clear that the greater part of this feature lay north of the site. The possibility that feature [403] represented the southern lip of an earlier medieval ditch situated slightly north of the later ditches cannot be discounted, although the limited evidence makes it impossible to determine the true significance of this feature.
- 3.1.52 In RIC E Trench 8, the period 8 ditch appears to have post-dated two earlier medieval features, a possible irregularly-shaped post hole (RIC E 77) and a small east-west aligned ditch (RIC E 88). Feature [77] produced a single sherd of 13th century pottery but had been damaged and truncated by later activity, so its precise relationship to the period 8 ditch is uncertain. Ditch [88] was recorded in section only but appears to have lain on the south side of the period 8 ditch, which had removed its northern edge. It was 1.3m wide and 0.9m deep, and was filled with several interleaving layers of redeposited clay and grey silty soils that produced three sherds of 12th-13th century pottery in addition to an assemblage of residual Roman material.

- 3.1.53 *Period 8: first ditch fronting medieval city wall (Figs 3 and 6):* the earliest of the two large medieval ditches recorded in RIC D Trench 7 and RIC E Trench 8 was situated some 10-12m north of the northern edge of East Tower Street. The discovery of what was probably the foundation of the medieval city wall in RIC F Trench 9 (see 3.1.74, below), indicates that the period 8 ditch was located approximately 15m in front of the wall. There would probably, therefore, have been sufficient room between the ditch and the wall to accommodate an inner ditch, and there was clearly scope for the provision of outer defensive works north of the excavated areas. There was no indication, however, either from the archaeological evidence or from documentary sources, that the city wall was fronted by more than a single ditch at any time during the medieval period.
- 3.1.54 Only the southern edge of the period 8 ditch lay within the area of RIC E Trench 8, where an 8m length was excavated (RIC E 55). In RIC D Trench 7, the full width of the feature (RIC D 359) was exposed and a section 2m in width was fully excavated (Plate 2). Preservation of the full sequence of infilling within the ditch was generally good, but in Trench 8 the uppermost fills had been largely removed during the construction of basemented buildings on the north side of East Tower Street during the later post-medieval period (period 11).
- 3.1.55 As RIC D Trench 7 and RIC E Trench 8 were situated some 55m apart, no direct stratigraphic links exist between ditch [359] in the former and ditch [55] in the latter. That the two formed part of a single, east-west aligned feature is, however, beyond reasonable doubt, given their shared characteristics, alignment, position (both spatial and stratigraphic) and date. The same can be said of the later (period 9) ditch, which was also recorded in both trenches (3.1.61, below).
- 3.1.56 As it survived, the period 8 ditch was up to 5.6m wide and 2.4m deep, with an open, roughly V-shaped profile (Fig 6). As might be expected in a feature of this size, the sequence of infilling was complex and many different fills were recorded, although most appear to have accumulated through a combination of the usual depositional processes. Initial weathering of the ditch edges resulted in the deposition of several layers composed primarily of redeposited natural clay, which filled the base of the feature and extended up the sides. Generally speaking, however, the ditch appears to have retained much of its original profile, which suggests that it may have remained open for a comparatively short period of time. The erosion deposits were overlain by gradual silting and, probably, piecemeal dumping of debris, represented by deposits that included thick layers of dark, organic material. Waterlogged conditions resulted in excellent preservation of organic materials in the lower 1.3m of the stratigraphic sequence.
- 3.1.57 In RIC E Trench 8 the ditch appears to have been associated with a relatively insubstantial, curving linear feature (RIC E 97) that extended from the southern edge of the ditch in a roughly north-west/south-east direction. This feature was up to 2.7m wide and 0.8m deep, with a U-shaped profile, and was filled with several layers of dark, organic material (principal contexts RIC E 69-72). Fill [71] contained what was probably the complete skeleton of a horse

(Plate 3), although as it extended into the site section the whole skeleton could not be retrieved. The function of feature [97] is unclear, although it was interpreted by the excavators as a possible drainage channel emptying into the ditch from the south. Its southern end was cut by the northern edge of the later (period 9) ditch.

- 3.1.58 On the Millennium site, excavation within a large defensive ditch separating the castle from the medieval city (the so-called City Ditch), revealed the remains of a post-and-wattle revetment within the northern edge of this feature (Oxford Archaeology North 2002c, 35). At Rickergate, there was no evidence that the period 8 ditch, or indeed the later ditch of period 9, had been revetted or otherwise maintained, and there was nothing to suggest that these ditches were regularly cleaned-out or had ever been re-cut on the same line.
- 3.1.59 In RIC D Trench 7, part of a second, much smaller ditch or gully 1.7m wide and 0.45m deep (RIC D 392) was recorded on the southern edge of the trench, some 6-7m south of the period 8 ditch and aligned roughly parallel with it. This shallow, U-profiled feature, which was filled with interleaving layers of dark, organic silts and redeposited natural clay, is unlikely to have had a defensive purpose and its function remains unclear, as does its precise stratigraphic position. In the absence of any direct stratigraphic links it is not possible to prove that feature [392] was contemporary with the large ditch to the north. This remains a possibility, however, since both features were directly cut by the period 9 ditch and the upper fill of [392] contained pottery of a similar date to that recovered from the fills of the larger feature. For these reasons, RIC D [392] has been tentatively assigned to period 8, although on stratigraphic grounds it could equally well be attributed to period 7.
- 3.1.60 The period 8 ditch in RIC D produced very little pottery or other datable artefactual material, although the assemblage contained nothing post-dating the 12th-13th centuries. Some late 13th-early 14th century pottery was, however, present in the fills of the period 8 ditch in RIC E.
- 3.1.61 *Period 9: second ditch fronting medieval city wall (Figs 3 and 6):* following the infilling of the period 8 ditch a new ditch was dug immediately to the south. The northern edge of this feature cut the southern lip of the earlier ditch, although this may have been caused by weathering of the sides of the period 9 ditch, which seems to have remained at least partially open for a very long time. It is possible, therefore, that the two features did not originally have a direct stratigraphic relationship.
- 3.1.62 A near-complete section 4.6m in width was excavated across the ditch in RIC D Trench 7 (RIC D 358; Fig 6 & Plate 2) and another almost 9m wide was obtained in RIC E Trench 8 (RIC E 58). In Trench 7 the full sequence of infilling was preserved largely intact, although the extreme southern edge of the ditch extended outside the excavated area, but in Trench 8 the upper fills had been largely removed by post-medieval building works (3.1.54, above). A near-complete stratigraphic sequence was, however, recorded in a limited area within this trench.

- 3.1.63 The width of the ditch when newly-dug is difficult to gauge, due to the truncation of the upper levels in Trench 8 and the fact that the ditch edges, as recorded in Trench 7, had clearly been subjected to very considerable weathering and erosion. As it survived, the ditch in Trench 7 was at least 10.5m wide at the lip and *c* 2m deep, with very gradually sloping edges tapering to a flat base approximately 1.5-2m in width. What little evidence there is suggests that the top of the feature may have been *c* 6-7m wide when fresh, based on the angle of the sides as they survived towards the base of the cut. In Trench 8, the ditch survived to a width of 5.9m and was *c* 2m deep in those areas where the full depth of deposits had not been truncated. Here too, the ditch had gradually sloping sides and a fairly broad, flat base.
- 3.1.64 When first constructed, the period 9 ditch may have been situated some 9-10m in front of the medieval city wall. However, the heavily weathered southern edge of the feature is likely to have been little more than 5m from the base of the wall.
- 3.1.65 As was the case in the earlier (period 8) ditch, this extremely large feature contained a complex sequence of fills consisting of a large number of contexts. In RIC D Trench 7 the lower 0.6-0.7m of the cut appears to have been only slightly eroded compared to the upper edges, and was filled with several horizontal layers of dark, waterlogged, organic material (principal contexts RIC D 353-7). Some of these layers extended up the southern edge of the feature. Most of these deposits contained small quantities of later 13th-14th century pottery, whilst the uppermost [353] produced 14th-15th century material. A few preserved leather and wooden artefacts were also recovered. Above this level the edges of the ditch sloped gently upwards and outwards and appeared to have suffered considerable erosion, presumably because the upper part of the ditch remained open for a long period. Dating evidence suggests that this part of the ditch may not have been completely infilled until well into the post-medieval period (see period 10, below).
- 3.1.66 A similar sequence of infilling was recorded further west in RIC E Trench 8, although in this area the ditch contained a far greater quantity of medieval artefactual material and may have been more completely infilled by the end of the medieval period than was the case in Trench 7. The lower 1.5-1.6m of the cut was filled with dark, waterlogged, organic deposits (principal contexts RIC E 31-2, 35, 41-4, 47, 51, 59, 60, 73-4) containing large amounts of medieval pottery, animal bone, wood and leather items and other decayed organic matter. The secondary fill of the ditch [51], which was particularly rich in finds, produced a large and almost intact set of medieval bellows (Plate 4) (see appendix 7.2). This deposit also produced a small barrel or tub (Plate 5), dendrochronological analysis of which produced a felling date of *c* 1358 (Crone 2001).
- 3.1.67 The very marked contrast in the amount of artefactual material recovered from the ditch fills in Trenches 7 and 8 suggests that the comparatively rapid infilling in Trench 8 was due to the deposition of far greater amounts of rubbish here than in Trench 7. This was almost certainly due to the position of the ditch section recorded in Trench 8, which was located immediately outside the Scotch Gate and adjacent to Rickergate, and would therefore have been a

convenient dumping ground for rubbish generated in tenements occupying the street frontage. It is also possible that rubbish from properties located just inside the walls was disposed of here. In contrast, the section of ditch excavated in Trench 7 was almost 70m east of the Scotch Gate, and would probably be less likely to be used as a dump.

- 3.1.68 As in Trench 7, the upper fills of the ditch in RIC E Trench 8 are considered to be potentially of early post-medieval date, and have therefore been assigned to a later phase (see period 10, below).
- 3.1.69 In RIC D Trench 7, the upper fills of the period 8 ditch were cut by another, smaller feature (RIC D 382) that was recorded only in section in the western edge of the site. This feature, which was 3.3m wide at the lip and 0.9m deep, with a stepped, roughly V-shaped profile, was located only 0.3m north of ditch [358]. Any direct stratigraphic relationship that may once have existed between the two features had, however, been removed by extensive late post-medieval truncation. The precise character and function of feature [382] remain unclear, for although it looked like a small ditch in section, it was not recorded in the eastern edge of the excavation and therefore clearly did not run east-west across the full width of the site. The date of the feature is also unknown, since the layers of mixed pink clay and grey silt with which it had been infilled (RIC D 383-6) produced only a single sherd of residual 12th century pottery.
- 3.1.70 *Period 7-9: poorly stratified medieval deposits (Fig 5):* this phase group includes all medieval and probable medieval deposits that cannot be attributed with any confidence to one of the phases of occupation represented by periods 7, 8 and 9 (see 3.1.14, above). Included in this group are all the appropriate deposits recorded in RIC B Trenches 1, 2 and 4, RIC C Trench 5, RIC D Trench 6, and RIC F Trench 9. All the medieval levels in RIC D Trench 7 and RIC E Trench 8 were sufficiently well-stratified to be assigned to a specific site period. No remains attributable to the medieval period were recorded within RIC B Trench 3.
- 3.1.71 RIC B Trench 1: post-Roman levels in this trench had been largely removed as a result of post-medieval building and clearance works (3.1.3 above), leaving only a few truncated features cutting the Roman deposits. Adjacent to the Rickergate frontage was an L-shaped arrangement of two slots or foundation trenches (RIC B 27) and two associated post holes (RIC B 29 and 31). These features produced 14th century pottery and presumably represented the last surviving remains of a medieval timber building that had once fronted Rickergate. Immediately north of these features was an undated clay-lined hearth (RIC B 26), and a few truncated pits of possible medieval date (RIC B 49, 55, 81) were located elsewhere in the trench.
- 3.1.72 RIC B Trenches 2 and 4, RIC C Trench 5 and RIC D Trench 6: to the rear of the Rickergate frontage, the whole of the excavated area within these trenches was blanketed by a thick accumulation of dark soils that were directly cut and overlain by post-medieval features and deposits. What was probably a stratigraphically contemporary deposit was also observed in section in RIC D Trench 6. Contemporaneous levels within RIC B Trench 3 had been

completely removed by modern truncation. These soils, which attained depths of 0.7-1m or more in places, remained largely unexcavated, except where removed mechanically in selected areas in order to reach earlier levels. Where some hand-excavation was undertaken, as in RIC B Trench 4 (RIC B 93) and RIC C Trench 5 (RIC C 203), these deposits produced pottery of predominantly 12th-14th century date, although a small amount of 15th century material was present in RIC B [93] and in a stratigraphically contemporary deposit in RIC B Trench 2 (RIC B 2). Small quantities of residual Roman pottery were also present, including late 3rd and 4th century material.

- 3.1.73 The excavators interpreted this build-up of homogeneous soils as evidence for the existence of fields north of the city defences, located to the rear of the tenements that comprised the Rickergate suburb. This interpretation receives support from the assessment of pollen in the lower fills of the ditch fronting the medieval city wall, which points to the cultivation of cereal crops, and perhaps also hemp, in close proximity to the city defences (see appendix 10.2).
- 3.1.74 RIC F Trench 9: in the areas of surviving stratigraphy within this trench, the presence of a few truncated features of possible or probable medieval date was recorded (Fig 5). By far the most significant feature was a linear alignment of large, mortared sandstone slabs and blocks, set in a shallow cut (RIC F 141-2), that ran roughly east-west across the northern edge of the trench and extended north of the excavated area (Plate 6). This feature had been badly disturbed and heavily truncated by later post-medieval activity, but survived to a maximum width of 1m and was in excess of 10m in length. The very substantial nature of the stonework (some of the blocks measured *c* 1-1.5m by 0.75m) and its location directly beneath East Tower Street, on what is known to have been the line of the city defences, leave little doubt that this feature formed part of the foundation for the medieval curtain wall, although it produced no dating evidence and was poorly stratified.
- 3.1.75 The only other medieval feature of note recorded within RIC F was a timber-lined pit or well [136] more than 1.2m deep, situated some 7m south of the wall foundation. Much of this feature had been destroyed by modern foundations and service trenches, but enough survived to demonstrate that a timber lining approximately 1.2m square had been set within a large construction pit some 2.3m in diameter, which was then backfilled with earth and redeposited clay. The lining comprised a jointed framework of timber posts and cross-struts (RIC F 41) around which horizontal layers of wattle work (RIC F 108) had been woven. The date at which this feature was constructed is not clear, although pottery suggests it was probably infilled during the 13th century.
- 3.1.76 *Period 10: early post-medieval (Fig 6):* as noted above (3.1.63-64) the extremely eroded nature of the upper edges of the period 9 ditch in RIC D Trench 7 suggests that this feature may have remained open long after it was originally cut. The ditch in Trench 8, whilst probably filled to a greater depth during the medieval period than was the case in Trench 7 (3.1.66, above), also appears to have remained partially open into the post-medieval period. Ultimately, the entire ditch was infilled with fairly homogeneous dark soils

(principal contexts RIC D 340, 343-8, 365; RIC E 26, 30) that attained a maximum combined depth of *c* 1.3-1.4m in Trench 7 and *c* 0.6m in Trench 8. Several of the earlier deposits appear to have been at least partly waterlogged and retained some organic content.

- 3.1.77 The period 10 deposits in both RIC D Trench 7 and RIC E Trench 8 produced little useful dating material. A single sherd of 16th-17th century pottery came from context [340] in the middle of the depositional sequence in Trench 7, and a sherd of late 17th-18th century date was recovered from context [365], one of the uppermost surviving fills in the same area. In RIC E Trench 8 the uppermost fill [26] contained a small assemblage of late 15th-17th century pottery, whilst a broadly contemporaneous layer within the same feature [30] produced a fairly large sherd of late 18th century lead-glazed cream ware.
- 3.1.78 Almost all the earliest deposits overlying the infilled ditch had been removed by later post-medieval truncation. However, in one very small area of surviving stratigraphy in RIC E Trench 8 some evidence did survive, albeit in section only. In this area one of the upper fills [26] was overlain by a build-up some 0.25m thick composed of thin, alternating layers of redeposited clay and dark soil (RIC E 21-25). From their appearance, it seems likely that these deposits represented the remains of at least three phases of flooring and occupation soils associated with a (presumably) timber building constructed after the ditch went out of use. No further trace of this structure had survived, however, and no datable artefactual material was recovered from these levels.
- 3.1.79 *Period 11: late post-medieval (not illustrated)*: Hutchinson's map of the 1790s (McCarthy 1997, fig 9) indicates that by the late 18th century the RickerGate frontage immediately north of the Scotch Gate was densely built-up. Much of the area to the east of the street, on either side of Drovers Lane and extending east to what became Lowther Street, was also built upon by this date, although the density of buildings north of East Tower Street had increased markedly by the time the Board of Health map and the first edition Ordnance Survey map were produced in the mid-1850s (*ibid*, figs 10 and 11).
- 3.1.80 In spite of the cartographic evidence, however, few remains of 18th and 19th century date were recorded during the course of the excavations, since over the greater part of the site almost all deposits of this period had been removed as a result of 20th century site clearance.
- 3.1.81 In RIC B Trench 1, a wall foundation composed of sandstone blocks bonded with a cream-coloured mortar (RIC B 35) ran north-south along the western edge of the trench, adjacent to, and parallel with, RickerGate. This feature measured in excess of 5.1m by at least 0.9m in width (it extended north and east of the trench edges), and presumably formed part of a building fronting the street. Some 4m east of the foundation was a brick-lined well (RIC B 23) measuring 0.9m in diameter, internally. The bricks were hand-made and had average dimensions of approximately 210-220mm x 100mm x 50mm. Neither the well nor the foundation can be closely dated, since they remained unexcavated, but in appearance both seemed most likely to be of late 18th or earlier 19th century date.

- 3.1.82 No features or deposits attributable to period 11 were recorded in RIC B Trenches 2 and 3. In Trench 4, the thick build-up of soil attributed to period 7-9 (3.1.72, above), was overlain by a layer of compact, black soil up to 0.12m thick (RIC B 113) that lay directly beneath debris associated with modern site clearance. This layer is undated, but a late 18th-19th century date would not be inconsistent with its stratigraphic position. Three pits, recorded in section only in RIC C Trench 5 (RIC C 202, 218, 213), and a few layers of soil observed in section in RIC D Trench 6, are also tentatively assigned to this period on stratigraphic grounds, although none can be dated. In RIC D Trench 7 the only feature attributable to period 11 was a heavily truncated fragment of sandstone walling 0.6m wide and 0.35m high (RIC D 350) that cut one of the later (period 10) fills of the large period 9 ditch. This feature, which was composed of sandstone blocks bonded in a cream-coloured mortar, ran north-south adjacent to the north side of East Tower Street, and presumably formed part of a late 18th or 19th century building that once fronted the street.
- 3.1.83 In RIC E Trench 8 the upper fills of the period 9 ditch and the few deposits attributed to period 10 were truncated and fragmented by two basemented, brick-built structures at the junction of Rickergate and East Tower Street. The northernmost (RIC E 5) fronted Rickergate and had external dimensions of c 11m east-west and at least 7.5m north-south. This building was clearly later than its neighbour, which it abutted, and may have been of late 19th or even early 20th century date. The remains of the southernmost building (RIC E 8), on the East Tower Street frontage, comprised walls of mortared, hand-made bricks 0.5-0.6m wide, which survived up to 1.2m in height. This structure measured c 10m north-south and in excess of 13m east-west, externally. No dating evidence was recovered from the remains of the building, but its ground plan closely resembled that of a building shown on Hutchinson's map of the 1790s (McCarthy 1997, fig 9). Slight traces of structures pre-dating this building, including a few heavily disturbed fragments of sandstone walling and an unexcavated brick-lined well (RIC E 91), were recorded in the southern part of the trench.
- 3.1.84 Further south, in RIC F Trench 9, modern truncation had removed almost all the later post-medieval remains. The only features of note were a few fragments of mortared sandstone walling (RIC F 2, 4, 5, 7, 9) located immediately north of the probable foundation for the medieval city wall (see period 7-9, above). These features appeared, for the most part, to respect the position of the foundation, so it is possible they represent the remains of buildings erected hard up against the outer face of the curtain wall, prior to its demolition in the early 19th century. Hutchinson's map does not show any buildings directly adjacent to the wall at this particular spot, but elsewhere it is clear that buildings abutted the wall by the end of the 18th century. An unexcavated brick-lined well (RIC F 20) was also recorded in this area.
- 3.1.85 *Period 12: modern (not illustrated)*: period 12 comprises all features and deposits of certain or probable 20th century date, including service trenches, car park surfaces and layers of earth and rubble associated with site clearance.

3.2 THE ARTEFACTUAL RECORD

- 3.2.1 **Samian (Appendix 1.1):** a total of 321 sherds was hand recovered from 58 stratified contexts and eight unstratified or unphased deposits. This may represent the remains of a maximum of 302 individual vessels. The total weight of the material is 2.741kg, giving an average sherd weight of 8.5g. The great bulk of the assemblage (90% of the total) comprises 2nd century Central Gaulish wares. The remaining 10% is represented by roughly equal amounts of South Gaulish and East Gaulish material.
- 3.2.2 Approximately 60% of the assemblage was recovered from Roman contexts, although only just over 13% came from deposits which are thought to date to the period when samian was actually in production (periods 2 and 3). Over a quarter (27%) came from period 4 deposits, which are believed to date to the second half of the 3rd century, when samian production ceased but use of existing vessels doubtless continued. Almost 16% of the assemblage was residual within the early post-Roman dark soils of period 6, whilst a little over 18% occurred residually within medieval and post-medieval contexts. Just under 6% of the material came from unstratified or unphased contexts.
- 3.2.3 **Roman coarse pottery (Appendix 1.2):** an assemblage of 838 sherds of Roman coarse pottery weighing 26.678kg was recovered from 87 separate contexts during the course of the excavations. The material includes 40 sherds of mortaria and 61 amphora fragments but no mortarium or amphora stamps. A single graffito was recorded on two adjoining sherds of pottery. The assemblage mainly comprises fabrics and forms regularly found in northern Britain. A significant quantity of material from the kilns at Crambeck and its environs in East Yorkshire is represented, indicating an established trade link with Carlisle from the late 3rd century AD.
- 3.2.4 Approximately 40% of the assemblage came from well-stratified Roman levels of periods 2, 3, 4 and 5, with a further 20% from poorly stratified Roman deposits of period 2-5. Just over 13% of the material was recovered from the early post-Roman dark soils of period 6 and approximately 21% occurred as residual material in medieval and post-medieval contexts. Slightly less than 6% of the pottery came from unstratified or unphased deposits.
- 3.2.5 **Post-Roman pottery (Appendix 1.3):** a total of 1437 fragments of post-Roman pottery weighing 33.545kg was recovered during the excavations. The assemblage comprises 1401 fragments of medieval pottery, with a date range of the 12th-16th centuries, and 36 sherds of post-medieval material, which includes fragments of 17th-19th century date. Some 1141 medieval sherds, representing 81% of the medieval assemblage, came from the area of RIC E, mostly from the fills of the large defensive ditches of periods 8 and 9. The scarcity of intrusive and residual material and the large and unabraded condition of many of the sherds suggests that the contexts in this area had sustained little post-depositional disturbance.
- 3.2.6 The medieval pottery is predominantly of 12th-14th century date and includes a number of fabric types, ranging from locally produced Red Gritty wares and Partially Reduced Grey wares, to imports from producers outside the region.

- Only small quantities of Late Medieval Reduced Grey wares, which are thought to have been the dominant fabrics in Carlisle during the 15th and 16th centuries, are present. The scarcity of decorated sherds suggests that the assemblage is dominated by functional utilitarian wares.
- 3.2.7 The very small assemblage of post-medieval pottery, totalling only 36 fragments, comprises kitchen and table wares of 17th, 18th and 19th century date.
- 3.2.8 **Clay tobacco pipe (Appendix 1.4):** the single fragment of clay tobacco pipe recovered from the site comprises a virtually complete bowl of early 20th century date.
- 3.2.9 **Building materials (Appendix 2):** the small assemblage of 135 fragments of building materials comprises 106 pieces of ceramic brick and tile, 24 fragments of daub/fired clay, two pieces of stone, one fragment of plaster and two unidentified items. Almost the entire assemblage is of Roman date, although a small amount of post-medieval material is also present.
- 3.2.10 **Waterlogged wood and charcoal (Appendix 3):** an assemblage of 132 items was recovered from 34 contexts and comprises nine fragments of charcoal, 102 pieces of worked waterlogged timber and 21 dendrochronological samples sawn from larger timbers during the course of the excavation. The latter all came from the timber lining of a medieval well or pit in RIC F [41]. The bulk of the assemblage comprises fragments of roundwood and woodworking debris, although five wooden artefacts were also recovered, including a small oak barrel or tub (Plate 4) and part of a large, turned ash bowl (front cover illustration). Most of the material, including all the artefacts, came from the medieval defensive ditches of periods 8 and 9. The state of preservation of this material is generally poor.
- 3.2.11 **Roman coins (Appendix 4.1):** the six Roman coins recovered during the course of the excavations span the period from the later 1st century AD to the first half of the 4th century AD. Two were recovered from stratified Roman levels, two occurred residually within post-Roman deposits and two were unstratified.
- 3.2.12 **Metalwork (Appendix 4.2):** the total assemblage of 105 metal objects (excluding the coins; see 3.2.11 above) comprises five objects of lead, 38 of copper alloy and 62 of iron. The lead derived from a total of five contexts, the copper alloy from 11 contexts and the ironwork from 21 contexts. There were no significant spatial concentrations of metalwork but chronologically, periods 4, 8 and 9 produced appreciably larger assemblages than the other phases of activity. The material from the medieval defensive ditches of periods 8 and 9 in RIC E includes a number of large, complete or near-complete objects such as two copper alloy bowls and an iron sickle.
- 3.2.13 The copper alloy assemblage comprises a limited range of recognisable Roman and medieval objects, including two Roman brooches and a fragmentary *lorica* fastening hook. The principal interest amongst the medieval artefacts lies with the large copper alloy bowls from the medieval

ditches in RIC E. A small rumbler bell and a plain dagger chape were recovered from other period 9 contexts.

- 3.2.14 Exactly half the assemblage of ironwork (31 items) is made up of hand-forged nails or unidentifiable fragments. The few diagnostic Roman artefacts include a blade fragment and an inlaid stylus, and a second Roman-type stylus that occurred residually. Medieval artefact types are confined to occasional blade fragments and knife handles from several contexts, and a large single-bladed axe head and a complete sickle/reaping hook blade from the defensive ditches in RIC E.
- 3.2.15 None of the lead objects is datable, or of obvious interest.
- 3.2.16 **Slag and metalworking debris (Appendix 5):** in total, just under 66kg of slag was recovered from the site, of which the overwhelming majority (over 77%) came from the medieval defensive ditches of periods 8 and 9 in RIC E. The assemblage from the period 8 ditch includes 32 smithing hearth bottoms. With the exception of very small quantities of undiagnostic slag and vitrified hearth lining, no metalworking slags were recovered from Roman deposits, suggesting that no ironworking activity was taking place in the vicinity during the Roman period.
- 3.2.17 **Flint (Appendix 6.1):** a small assemblage of 24 worked flints was recovered from a total of 12 contexts. With the exception of a single retouched flake from area RIC C, all the material derived from RIC F Trench 9. The only noticeable concentration is in the period 1 pre-Roman buried soil in RIC F, which produced nine items. Most of the material is of probable late Neolithic or Bronze Age date, although a small amount of Mesolithic or early Neolithic flint is also present.
- 3.2.18 **Stone objects (Appendix 6.2):** a total of eight fragments of stone was recovered from six contexts, two from RIC C and six from RIC E. One of the contexts has been assigned to the late Roman/post-Roman dark soils of period 6, the remainder are medieval in date. Only one of the objects, a peg or toggle from RIC E, is recognisable as a man-made object. The remainder of the assemblage comprises coal, burnt shale, unidentified stone fragments, and a small fragment of Lakeland slate.
- 3.2.19 **Worked bone and antler (Appendix 7.1):** only three artefacts of worked bone or antler, two toggles or pegs and a piece of probable bone-working debris, were recovered from the site. All came from medieval deposits in RIC E and RIC F.
- 3.2.20 **Leather (Appendix 7.2):** a large assemblage of 856 pieces of leather was recovered from 33 contexts and as unstratified material during the course of the excavations. The material is principally of medieval date and comprises shoes and other dress accessories, saddlery, leatherworking waste and a large set of bellows. In addition, a small amount of Roman leather was recognised and early post-medieval shoe components dating to the earlier 16th century were noted. For assessment purposes smaller, formless fragments with no

diagnostic features were omitted from the quantifications, resulting in a total count of 600 items.

- 3.2.21 The bulk of the material, some 520 items representing 92% of the RIC E assemblage, was recovered from the second large medieval defensive ditch of period 9. A further 25 items came from the earlier (period 8) ditch in this area and small groups were also recovered from RIC D Trench 7 (18 items) and RIC F Trench 9 (five items).
- 3.2.22 No less than 13 styles of shoe dating from the 13th century to the earlier part of the 16th century came from the period 9 ditch in RIC E. These include toggle-fastening ankleshoes, front lacing ankleshoes, ankleshoes fastening with a buckle and strap, side-lacing boots, 'kidney' boots and wide, slip-on shoes. Two examples of toe-stuffing were noted. Other dress accessories include lengths of girdle and a complete purse in a style not previously recorded. A knife sheath and four sword scabbards were also recovered. Evidence for saddlery includes a large quantity of panel fragments, including twelve with distinctive decorative stitching.
- 3.2.23 The bellows (Plate 5) comprise a large sewn leather bag reinforced and shaped by an integral sewn and riveted wooden framework constructed from relatively flexible wooden laths. This item, which probably dates to the second half of the 14th century, is of considerable interest and must represent one of the earliest and best preserved examples known in the archaeological record.
- 3.2.24 **Glass (Appendix 8):** the total assemblage of 45 fragments of glass was recovered from 27 individual contexts, and comprises 38 pieces of vessel glass, five fragments of window glass and two objects. There are no particular concentrations of material, with only two individual contexts producing four fragments. Most of the glass from medieval contexts is residual Roman material.
- 3.2.25 The vessel glass falls into two groups, Roman and post-medieval/modern, neither of which is in any way remarkable. The Roman material comprises mainly mould-blown prismatic storage jars, whilst the post-medieval assemblage consists largely of dark olive-green wine bottle fragments. Three of the five fragments of window glass are of typical Roman matt-glossy type. One of the two later fragments is modern and the other is possibly of 17th-18th century date. The two objects are an opaque white glass gaming counter, a typically Roman artefact, and a possibly early post-medieval linen smoother.

3.3 THE ENVIRONMENTAL RECORD

- 3.3.1 **Animal Bone (Appendix 9):** a total of 1426 fragments of animal bone weighing 67kg and representing 1340 individual bones was recovered during the course of the excavations. The condition of the bone was mostly poor, with much of the small pre-medieval assemblage being in a very poor condition. The medieval material, which forms the bulk of the assemblage, comprises a greater range of species than the earlier material and includes a number of birds. Over two-thirds (c 69%) of the medieval assemblage came from the

later phase of medieval defensive ditch in RIC D Trench 7 and RIC E Trench 8 (period 9).

- 3.3.2 In all periods the assemblage is dominated by the bones of cattle, with smaller quantities of sheep/goat, pig and horse. Unlike the remains of cats and domestic fowl, which are confined to the medieval period, bones of dogs are present in both Roman and medieval deposits, and deer appear to have formed part of both the Roman and medieval diet.
- 3.3.3 **Charred and waterlogged plant remains (Appendix 10.1):** a total of 30 bulk environmental samples was taken from waterlogged and dry contexts during the course of the Rickerate excavations.
- 3.3.4 Three samples of probable pre-Roman date were assessed for botanical potential. One sample came from the alluvial fill (RIC C 265) of the probable palaeochannel in area RIC C, one was taken from a pre-Roman linear feature in RIC F (RIC F 172), and the third came from a buried pre-Roman soil horizon overlying the linear feature (RIC F 183). The assemblage from the alluvial silt contains abundant, well-preserved waterlogged seeds from species associated with damp ground and grassland, and from arable weeds. There are also high values of both common and small nettles (*Urtica dioica* and *Urtica urens*), suggesting that the soil was nutrient enriched. The abundance of weed seeds in this sample has potential for radiocarbon dating by AMS techniques. The two samples from area RIC F contain only sparse plant remains. No remains other than charcoal were recorded in the linear feature, although the charcoal has good potential for radiocarbon dating. The plant assemblage from the buried soil is restricted to seeds of rush (*Juncus*) and occasional fat hen (*Chenopodium album*) and sheep's sorrel (*Rumex acetosella*).
- 3.3.5 Of the seven assessed samples from the period 2 Roman deposits in RIC C, four samples from the three fills (contexts 241, 243, 260) of a pit or ditch (context 262) dug into the period 1 alluvium contain abundant waterlogged seeds from many different plant communities, including grassland, heath, ruderals, wetlands and arable environments. However, only occasional seeds of food taxa such as cereals, blackberries and bilberries were identified. In addition to seeds, abundant amorphous plant material, including fragments of rushes, sedges, grasses and moss, were recorded in these deposits. The other three samples contain far fewer plant remains.
- 3.3.6 Only two samples were taken from Roman deposits attributed to period 3 (contexts RIC B 65 and 86), and neither were found to contain any significant quantities of seeds or other plant remains. Two samples from period 2-5 contexts in RIC E (33 and 36) contain both charred and waterlogged plant remains but are of low potential because of the poorly stratified nature of these deposits.
- 3.3.7 For the post-Roman period, a single sample from the period 6 dark soils in RIC C (context 216) was found to contain only a few charred plant remains. A sample from a period 7 deposit in RIC E (context 87) was found to be rich in waterlogged remains, although the range of taxa is more restricted than the material in some of the contexts from the period 9 medieval defensive ditch in RIC D Trench 7 and RIC E Trench 8. The nine samples from the period 9

ditch (contexts RIC D 353-7, RIC E 51) contained abundant well-preserved waterlogged remains and are of considerable importance and interest. Plant remains from economic taxa were recorded in all samples and included charred grain, flax (*Linum usitatissimum*) and hemp (*Cannabis sativa*). Native taxa possibly used as food include apple/pear (*Malus/Pyrus*), blackberry (*Rubus fruticosus*), elderberry (*Sambucus nigra*), sloe (*Prunus spinosa*) and hazelnut (*Corylus avellana*). Numerous other taxa from a variety of plant communities were also recorded, including arable weeds from damp, nutrient-enriched soils and plants favouring drier, more acidic soils. Ruderal communities were well represented, with wild radish (*Raphanus raphanistrum*), nettles (*Urtica* spp), docks and sorrels (*Rumex* spp), henbane (*Hyocyamus nigra*) and hemlock (*Conium maculatum*) all present. The last two species may have been used medicinally. Mire and heathland communities were represented by sedges (*Carex*), rushes (*Juncus*) and ling heather (*Calluna vulgaris*). The identification of seeds from taxa which grow in shallow water, for example crowfoots (*Ranunculus Batrachium*-type), bulrushes (*Typha*) and pondweeds (*Potamogeton/Groenlandia*) indicate that the ditch contained water when these deposits were accumulating.

- 3.3.8 **Pollen (Appendix 10.2):** four samples were assessed from two monolith profiles taken through the three primary fills of the period 9 defensive ditch in area RIC D. The assessment demonstrated the presence of abundant well-preserved pollen in all the samples. The data suggest a treeless environment with evidence for grassland and the cultivation of cereals and hemp/hop (*Cannabis/Humulus*) in the vicinity of the medieval ditch. As seeds of *Cannabis* were identified in the bulk samples it is likely that the *Cannabis/Humulus* pollen relates to *Cannabis* rather than *Humulus*. Significant differences in the relative values of cereal-type and *Cannabis/Humulus* pollen were noted in the soil profile, with concentrations of cereal-type pollen appearing to decrease as *Cannabis/Humulus*-type pollen increases. This suggests the possibility that varying cultivation regimes were practised in the vicinity of the ditch.
- 3.3.9 **Insects (Appendix 10.3):** a total of ten environmental samples was assessed for insect remains and most were found to contain appreciable numbers of insects, mostly beetles, and in some cases other invertebrates.
- 3.3.10 The material from the probable alluvial fill of the pre-Roman palaeochannel in RIC C contained a relative abundance of dung beetles, in addition to aquatic species. The presence of the former suggests the proximity of grazing land in the pre-Roman period. Grain pests were present, sometimes in some quantity, in a number of Roman deposits, and the three main pests were also recorded in a single sample from a medieval pit or ditch fill. Two Roman deposits also yielded insects which subjectively indicate material resembling stable manure, a very common component of Roman deposits elsewhere in Carlisle.
- 3.3.11 The fills of the large medieval defensive ditch of period 9 produced invertebrate assemblages remarkable for their large numbers of aquatic crustaceans and water beetles. Even more remarkable, however, was the rarity of insects suggesting any form of dumping, which appears to conflict directly with the artefactual evidence from the same deposits. Lack of interference

with the ditch sides is also suggested by the rather abundant insect fauna characteristic of semi-natural herbaceous vegetation.

- 3.3.12 **Marine molluscs (Appendix 10.4):** a total of 59 fragments of shell was recovered from 22 contexts. The assemblage represents a considerably smaller number of living molluscs, however, since the material consists mainly of fragmentary individual valves. Only native oyster, common mussel, and a small, unidentified gastropod were recorded. With the exception of a single mussel shell the assemblage derives exclusively from medieval and later phases, the majority being from period 9.

3.4 DATING

- 3.4.1 **Dendrochronology:** prior to the commencement of the Rickergate post-excavation assessment a small, stave-built oak barrel or tub recovered from the period 9 defensive ditch in RIC E (Plate 4) was dendrochronologically dated by AOC, Edinburgh (appendix 3). During the course of the excavation 21 dendrochronology samples were taken from the timber lining of a medieval pit or well in RIC F Trench 9. However, by the time the assessment was undertaken these samples had deteriorated to the point where they were no longer suitable for dating. Assessment also indicates that none of the other wood recovered from the site is suitable for dendrochronology.
- 3.4.2 **Radiocarbon dating (Appendix 11):** environmental material from three pre-Roman deposits of period 1 were examined as part of the assessment (appendix 10.1). Abundant waterlogged seeds and other plant remains were present in a sample taken from an alluvial silt filling the probable pre-Roman palaeochannel on the northern part of the site (context RIC C 265), and plentiful charcoal was found in a sample from a pre-Roman linear feature in area RIC F (RIC F 172). In both cases, this material may be suitable for radiocarbon dating by AMS techniques. The third sample, from a pre-Roman buried soil in RIC F, did not contain suitable material.

3.5 ARCHIVE STORAGE AND CURATION

- 3.5.1 All items and records from the fieldwork events that form the subject of this assessment report are listed in Table 4 below.

Table 4: Summary of the RickerGate project archive

Item	Number of items, fragments or other	Condition (I = Indexed, W = Washed, UW = Unwashed, P = Processed, M = Marked)
Contexts	630	I
Site Plans	74	I
Site Sections	98	I
Total Site Drawings	172	
Colour Slides	629	I
Colour Prints	538	I
B&W Prints	611	I
Total Photos	1778	
Brick/Tile	107	W, M
Daub & fired clay	24	W, M
Building Stone	2	W, M
Mortar/Plaster	1	W
Clay Pipe	1	W, M
Slag	65.68 kg	UW
Animal Bone	1426	W, M
Mollusc Shell	59	W
Charcoal	8	
Coal	3	W
Tobacco Pipes	1	W, M
Samian	321	W, M
Mortaria	40	W, M
Amphorae	61	W, M
Roman Coarseware	737	W, M
Medieval/Post Medieval Pot	1437	W, M
Coins	6	
Copper-alloy	38	
Iron	62	
Lead	5	
Lithics	24	
Stone	8	
Glass	45	
Bone/Antler	3	
Wood	132	
Leather	856	W
Soil Samples	30	P
Soil Monoliths	4?	2 assessed

4 STATEMENT OF POTENTIAL

4.1 STRATIGRAPHIC POTENTIAL

- 4.1.1 The archaeological fieldwork was undertaken in accordance with the strategy set out in the impact study prepared by CAU (McCarthy 1997, 33-6), in order to address the broad aims encompassed by that document (see section 2.1, above). The assessment is, however, concerned primarily with the potential of the data to address the research aims and objectives set out in the tender and project design submitted by OAN and accepted by Carlisle City Council (Oxford Archaeology North 2002b, 5-7). These aims and objectives are summarised in section 2.3.3 of this report.
- 4.1.2 Assessment has established a long and complex sequence of activity on the site from the pre-Roman to post-medieval periods, including evidence for periods of abandonment. The sequence is set out in detail in section 3.1, above. The present section reviews the success of the fieldwork and post-excavation assessment in providing stratigraphic data to address the research aims.
- 4.1.3 **Pre-Roman:** Research Aim 1 seeks to establish what light the excavations shed on the nature of the landscape in the vicinity of the site in the pre-Roman period (Objective 1.1). Assessment has established that the stratigraphic data recovered from RIC C Trench 5 and RIC F Trench 9 have some potential to address this objective. In Trench 5, alluvial silts believed to derive from a palaeochannel of the River Eden lay directly beneath the earliest Roman levels, whilst in Trench 9, which was located on the hillslope immediately south of the channel, there is clear stratigraphic evidence for prehistoric activity.
- 4.1.4 In stratigraphic terms the alluvial silts do not provide much scope for further work, other than the provision of descriptive material for an analytical report, since they were seen only in a very restricted area. However, analysis of the preserved environmental remains recovered from these deposits offers considerable potential to shed light on the nature of the river channel, and perhaps of wider environmental conditions, in the immediate pre-Roman period (see appendices 10.1, 10.2 and 10.3).
- 4.1.5 In RIC F Trench 9, detailed stratigraphic analysis of the pre-Roman remains offers greater potential to enhance understanding of the nature of pre-Roman activity in Carlisle, since the discovery of prehistoric features other than plough marks is extremely rare on sites in the city centre (1.3.3, above). That the RIC F features are broadly contemporary with the ploughing recorded elsewhere is clear from their alignment and stratigraphic position, although the precise character and purpose of these potentially significant remains is currently far from certain.
- 4.1.6 **Roman:** stratigraphic remains of Roman date were recorded on most parts of the Rickergate site, although the quality of the data varied considerably from area to area. For the most part, it has proved possible to reconstruct a plausible

occupational sequence based on the available evidence, although interpretation is hampered by the limited exposure and minimal excavation of Roman levels in most of the excavation trenches. Extensive post-Roman disturbance proved to be a significant factor in some areas, especially RIC F Trench 9, where most of the Roman archaeology had been destroyed by modern levelling, and in RIC D Trench 7 and RIC E Trench 8, where the large medieval defensive ditches removed almost all trace of earlier levels.

- 4.1.7 Research Aim 2 is concerned with site development during the Roman and post-Roman periods (for the latter, see 4.1.13, below). The stratigraphic evidence for the origins and development of Roman occupation on the Rickergate site (Objective 2.1) can best be described as patchy, for reasons that have been described in 4.1.6, above. Nevertheless, in view of the fact that virtually nothing is known of Roman settlement in the Rickergate area, further work on certain elements of the stratigraphic sequence has the potential to make an important contribution to current knowledge.
- 4.1.8 In particular, detailed study of the well-stratified deposits within RIC B Trench 1 and RIC C Trench 5, in conjunction with analysis of the associated artefactual and ecofactual assemblages, will provide a unique opportunity to learn more about the origins and development of this hitherto uninvestigated part of the Roman settlement. In both trenches, full and detailed written, drawn and (for the most significant features) photographic records of all features and deposits are available in archive, and will permit detailed analysis of their function, appearance and interrelationships to be undertaken. Further study of the stratigraphic data will provide a securely dated and well understood sequence of occupation to which the artefactual and environmental assemblages can be related. This will ensure that the provenance and dating of these assemblages is well understood, thus enhancing their value for analysis and interpretation.
- 4.1.9 Assessment of the stratigraphic sequences and the associated pottery assemblages in RIC B Trench 1 and RIC C Trench 5 indicates that the northern part of the Rickergate area may have been settled at a relatively late date, probably during the 3rd century AD. The evidence also suggests that a programme of deliberate landfill or land reclamation was undertaken over the ancient river channel in order to make this area habitable. The need for this phase of preparatory work provides a possible explanation for the late commencement of Roman occupation here; what it does not explain is why, in view of the presumably difficult nature of the terrain and the (presumed) location of the site on the periphery of the Roman town, the area was settled at all. Further stratigraphic work to define the precise character of Roman activity in this area and to aid the establishment of a refined chronology for the occupational sequence, may go some way to providing an answer to this question. Given recent concerns regarding current understanding of the origins, development and character of Roman urban centres in the frontier zone (Millett 2001, 66; Burnham *et al* 2001, 69), work of this kind is of primary importance. In this context it should be noted that the value of the Rickergate data is potentially enhanced by the existence of a large body of comparative material from sites in more centrally located areas of the Roman

settlement, such as Blackfriars Street (McCarthy 1990) and the southern Lanes (McCarthy 2000).

- 4.1.10 Elsewhere on the site, the truncated Roman levels within RIC F Trench 9 require a limited amount of further stratigraphic analysis in view of the unusual character of some of the features recorded in this area, for example the curving wall foundation [35] and the associated rectangular feature [161], and the association of these remains with datable ceramic assemblages. The limited Roman stratigraphic data recovered from the other areas of excavation (RIC B Trenches 2-4, RIC D Trenches 6-7 and RIC E Trench 8) offer little potential for further work, except for the compilation of brief descriptive sections for inclusion in an analytical report.
- 4.1.11 **Post-Roman:** the stratigraphic data from Rickergate have low potential to advance understanding of the character of the site from the end of the Roman period in the late 4th-early 5th centuries AD to the re-emergence of the town from the early 12th century. The only deposits possibly relating to this period were accumulations of dark soil recorded in RIC B Trench 1 and RIC C Trench 5 on the northern part of the site. Other than the provision of brief descriptive sections for the analytical report, there is little scope for further stratigraphic work on these levels.
- 4.1.12 **Medieval:** most of the research aims and objectives set out in the project design for the Rickergate post-excavation assessment relate to the medieval period, since it has always been clear that the project had high potential to illuminate aspects of the archaeology of medieval Carlisle, particularly with reference to the city defences and the development of the Rickergate suburb.
- 4.1.13 **Objective 2.2** relates to the potential of the data to shed light upon the origins and development of Carlisle's defences during the medieval period. As has been noted above (1.2.4), the city defences are referred to on numerous occasions in medieval and early post-medieval documents. Very little archaeological excavation has, however, been carried out on any part of the defensive works, and the Rickergate project represents the first occasion when controlled excavation was undertaken of the ditches fronting the medieval curtain wall. There can be little doubt, therefore, that detailed analysis of the data recovered from these features in RIC D Trench 7 and RIC E Trench 8 has the potential to make a very significant contribution to our understanding of the character and development of the town's defensive system.
- 4.1.14 Stratigraphic assessment has established a long and complex sequence of activity relating to the construction and infilling of the ditches fronting the city wall, probably dating from the 12th-early 13th centuries to as late as the 17th-18th centuries. The extremely good stratigraphic remains recorded in both areas offer excellent potential to refine the provisional sequence further, and should provide important data concerning the chronology of construction, infilling and refurbishment of the defensive system throughout the medieval and early post-medieval periods. In both trenches, good evidence is available within the finds assemblages, and in particular the ceramics, to provide close dating of the stratigraphic sequence. Waterlogging of the lower levels within the ditches also ensured the preservation of exceptionally fine assemblages of

other artefactual and ecofactual material. The excavation of deep and extensive accumulations of medieval waterlogged strata is extremely unusual in Carlisle, where preserved organic deposits of post-Roman date are usually encountered only in relatively small, deeply-cut features such as pits and wells.

- 4.1.15 The significance of the Rickergate data is potentially enhanced by the existence of a large body of comparative data from a similar (but unrelated) ditch on the Millennium site (Oxford Archaeology North 2002c, 28), which lies a short distance to the west. Furthermore, given the paucity of similar work on medieval town defences in the rest of north-west England, and the exceptional preservation of waterlogged organic remains within the ditches, the Rickergate data can be regarded as being of regional as well as local importance.
- 4.1.16 Research Aim 3 is concerned with the potential of the Rickergate data to illuminate aspects of the economy of the medieval city. Prior to the commencement of the project, it was hoped that the well-preserved remains of buildings, yards and other features relating to medieval tenements fronting Rickergate would be encountered, and that evidence of industrial activities within the suburb might be found. At an early stage, however, it became clear that post-Roman levels adjacent to the street frontage had been removed by extensive post-medieval truncation, and that little evidence for medieval occupation had survived in this area. Further east, the stratigraphic evidence suggested that extensive areas to the rear of the street frontage and north of the city defences were occupied by fields for the whole of the medieval period.
- 4.1.17 In stratigraphic terms, therefore, the Rickergate site appears to offer little potential to address Objective 3.1, which seeks to elucidate aspects of craft and industry in medieval Carlisle (but see 4.1.19 below). The few truncated medieval remains recorded on the Rickergate frontage in RIC B Trench 1 are of some interest, since they attest to the existence of at least one medieval timber building and associated features in this area, but the data provide no indication of industrial activity on the site, or of the possible function of the medieval structure.
- 4.1.18 Clearly the greatest potential in respect of this objective must lie with the artefactual and ecofactual material recovered from the defensive ditches in RIC D Trench 7 and RIC E Trench 8. Assessment of the artefactual assemblages from the fills of these features indicates the presence of metalworking slags (see appendix 5) and evidence for probable horn-working, in the form of discarded horn-cores (see appendix 9), in a number of the deposits filling the ditches. Additionally, the discovery of a large pair of wooden and leather bellows in one of the lower fills of the period 9 ditch in RIC E Trench 8 may also be of relevance, since they seem to be too large to have had anything other than an industrial function (see appendix 7.2).
- 4.1.19 However, meaningful analysis and interpretation of the artefactual and ecofactual data cannot be undertaken without a thorough understanding of the character and date of the contexts from which they were recovered. Further detailed study of the stratigraphic data from the ditches is therefore vital in

order to provide a securely dated and well understood sequence to which the artefactual and environmental assemblages can be related.

4.1.20 Likewise, further study of the finds and environmental assemblages from the ditches also holds the greatest potential to provide evidence for patterns of food consumption (**Objective 3.2**), since it is likely that the rubbish deposited within these features will have contained a proportion of food waste. That this was indeed the case is indicated by assessment of the animal bone (appendix 9) and the macrobotanical remains (appendix 10.1). These assemblages also have potential to provide important information on the production and supply of foodstuffs, as does further analysis of the pollen from the ditch fills, assessment of which has already provided evidence for the probable cultivation of cereal crops and hemp close to the medieval city defences (appendix 10.2). The principal contribution of the stratigraphic data in respect of this objective must be to provide a detailed and well understood sequence of infilling within the ditches in support of further analysis of the extremely well-preserved environmental deposits together with the faunal remains and artefactual assemblages.

4.1.21 **Post-medieval:** Research Aim 4 relates to processes of change, and seeks to establish what the Rickergate site can tell us about the transition from medieval to post-medieval society in Carlisle (**Objective 4.1**), a period that is currently seriously under-represented in the archaeological record for the city. Given the scarcity of post-medieval remains on the Rickergate site due to modern truncation and other disturbances, the main focus in respect of this objective must be the sequences of infilling within the upper levels of the period 9 defensive ditch. Assessment of the stratigraphic data (3.1.76-78, above) and the associated ceramic assemblages (appendix 1.3) suggests that this feature remained partially open well into the post-medieval period. Further work on the artefactual and environmental evidence recovered from the relevant deposits in RIC D Trench 7 and RIC E Trench 8, and in particular a comparative analysis of these assemblages with those recovered from the medieval levels at the base of the ditch, could produce important results. Again, the potential of these data will only be fully realised if they can be related to a securely dated and well understood sequence of activity, which will be established through further analysis of the stratigraphic evidence recovered from the ditches.

4.2 ARTEFACTUAL POTENTIAL

4.2.1 Artefacts were recovered during the course of the excavation in accordance with the fieldwork aims for the site, which are set out in section 2 of this report, above. A summary of the size, composition or condition of each assemblage can be found in section 3.2 above, and the full assessment reports are presented as appendices to this report. The present section summarises the potential of each assemblage to contribute to further research in pursuit of both the original fieldwork aims and the revised research aims for the project, which are also set out in section 2, above.

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- 4.2.2 **Samian (Appendix 1.1):** the precision with which samian can be dated and its ubiquity on most Romano-British sites makes it one of the primary sources of dating evidence for the Roman period. Further work on the identification of individual forms, fabrics and potter's stamps in the Rickergate assemblage would refine the dating of this material. By aiding the establishment of a closely dated sequence of Roman occupation, this work has the potential to further our understanding of site development during the Roman period (Objective 2.1).
- 4.2.3 From the point of view of samian studies, the low proportion of East Gaulish vessels in the Rickergate assemblage will require further analysis in order to assess whether it reflects reduced activity on the site during the 3rd century AD or, as seems more probable, points to a reduced availability of these wares in Carlisle during this period. Further consideration of the residuality of samian in later Roman contexts would also be of value, in order to gauge the extent to which samian continued in use into this period.
- 4.2.4 **Roman coarse pottery (Appendix 1.2):** like the samian, the assemblage of other Roman pottery types recovered from the excavations represents a key source of dating evidence for the Roman stratigraphic sequence. Further work on this material therefore has the potential to contribute to an understanding of site development through the establishment of a well-dated sequence of Roman activity (Objective 2.1).
- 4.2.5 Further work on the Rickergate material also has the potential to make a significant contribution to Romano-British pottery studies, since the assessment has highlighted the possibility that some of the Black Burnished ware Fabric 1 (BB1) vessels in the assemblage may come from South Yorkshire kilns rather than the more usual Dorset sources.
- 4.2.6 **Post-Roman pottery (Appendix 1.3):** assessment of the medieval pottery has indicated that there is considerable potential for further work. Whilst it is accepted that, as yet, medieval ceramics in the north-west of England are not understood sufficiently to provide close dating of archaeological deposits, there is a clear potential for the material to refine the phasing of the medieval stratigraphic sequence on the site and to shed light on the chronological development of the medieval city defences (Objective 2.2).
- 4.2.7 All the forms and fabrics are known in Carlisle from earlier archaeological work. However, in the north-west of England generally relatively few large medieval pottery assemblages have been recovered from controlled excavations and the medieval ceramic traditions are still imperfectly understood. The Rickergate assemblage, which is both large and well-stratified, is therefore likely to provide new and important information. The association of the pottery with other closely datable finds, in particular the large assemblage of leather, is particularly important in this respect.
- 4.2.8 Further detailed study of the Rickergate material also has the potential to enhance the form and type series compiled as a result of earlier work in Carlisle, in order to provide a more comprehensive understanding of medieval pottery supply to the city. It also presents a rare opportunity to compare a

major assemblage with material retrieved from other medieval urban centres in the region.

- 4.2.9 Further consideration of abrasion patterns, average sherd size and cross-context joins within the assemblages recovered from the large medieval defensive ditches has the potential to shed light on the processes by which these features were infilled. The presence of many large, unabraded fragments of pottery in some of the fills, together with large quantities of other artefactual material, suggests that rubbish dumping may have been a significant factor, although some of the environmental data appear to contradict this hypothesis (see appendix 10.3).
- 4.2.10 The small assemblage of post-medieval pottery has some potential to assist in refining the dating and characterisation of the small number of post-medieval features and deposits on the site, particularly the upper fills of the period 9 medieval defensive ditch, which appears to have remained partly open into the post-medieval period (Objective 4.1). However, the material has no further potential in terms of any of the other research aims for the project.
- 4.2.11 **Clay tobacco pipe (Appendix 1.4):** the single fragment of clay tobacco pipe recovered from the site has no potential for further work.
- 4.2.12 **Building materials (Appendix 2.1):** for the most part the small and abraded assemblage of building materials has little potential for further work, other than to integrate the results of the assessment into the final report. Local parallels for a fragment of a Roman rib-vaulting voussoir should, however, be sought.
- 4.2.13 **Waterlogged wood and charcoal (Appendix 3.1):** poor preservation of the waterlogged wood means that the assemblage has limited potential for further work. Further study of the few medieval artefacts recovered from the medieval defensive ditches may potentially contribute to our understanding of medieval activity in and around the site and species identification, where possible, will add to present knowledge of the selection and use of different woods in medieval Carlisle (Objective 3.1). However, the Rickergate material has little potential to contribute to wider studies of medieval woodworking techniques or woodland management, whilst the samples taken for dendrochronological dating have deteriorated to the point where they are probably unusable. Dating of these samples is unlikely to have been desirable in any case, since they came from the lining of a heavily truncated, and therefore stratigraphically isolated, pit or well.
- 4.2.14 **Roman coins (Appendix 4.1):** the small assemblage of Roman coins has some potential for contributing to the establishment of a closely dated sequence of Roman occupation, thereby aiding understanding of site development during this period (Objective 2.1). The coins should therefore be re-examined following cleaning and conservation in order to check the provisional identifications. Otherwise, the assemblage has little potential for further work.
- 4.2.15 **Metalwork (Appendix 4.2):** further analysis of the metalwork has some potential to contribute to the research aims for the site. As a supplement to the

dating evidence available from other sources, the metalwork will contribute to knowledge of the development of the site through both the Roman and medieval periods (Objectives 2.1 and 2.2). In addition, some of the medieval artefacts are relatively unusual and will contribute to an understanding of the precise character of activity and occupation on and in the vicinity of the site, especially when considered in association with other classes of artefactual material.

- 4.2.16 **Slag and metalworking debris (Appendix 5):** further study of the assemblage of slag and metalworking debris has the potential to contribute to Objective 3.1 of the research aims, which seeks to shed light on aspects of craft and industry within medieval Carlisle. The presence of large numbers of smithing hearth bottoms and other slags from the period 8 and 9 ditches in RIC E Trench 8 clearly suggests that smithing was taking place in the vicinity of the site during the medieval period.
- 4.2.17 **Flint (Appendix 6.1):** the small assemblage of worked flint has no potential for further work other than that required to integrate the results of the assessment into the final report.
- 4.2.18 **Stone objects (Appendix 6.2):** the small assemblage of worked stone objects requires little further work, other than that required to integrate the material into the final report.
- 4.2.19 **Worked bone and antler (Appendix 7.1):** no further work is required on the small assemblage of worked bone and antler artefacts other than the preparation of a brief text for inclusion in the final report.
- 4.2.20 **Leather (Appendix 7.2):** the large assemblage of medieval leather recovered from the medieval defensive ditches of periods 8 and 9 has high potential to address a number of the research aims for the site, and is of considerable importance for the study of ancient leather and leatherworking. Much of the material can be quite closely dated, and can therefore provide additional dating evidence to complement that deriving from the pottery. The leather therefore has the potential to enhance understanding of the origins and development of the medieval city defences (Objective 2.2). The recovery of large quantities of waste associated with shoemaking and cobbling demonstrates that the assemblage also has high potential to illuminate aspects of medieval craft and industry (Objective 3.1). Also of relevance to this objective are the large set of bellows from the period 9 defensive ditch, which seem too large to have had anything other than an industrial function. This is supported by the identification of hammerscale in deposits associated with the bellows (Clydesdale 2001, 4), which suggests that this item may have derived from a nearby smithy. The presence of shoes of late medieval and early post-medieval date (c late 15th-early 16th centuries) within the period 9 ditch may also provide information on the period of medieval to post-medieval transition (Objective 4.1), a period which is poorly represented in the archaeological record at Carlisle.
- 4.2.21 In terms of ancient leather and leatherworking studies, certain rare or unique items in the assemblage, including a purse, elements from a saddle or padded

horsecloth, and the large set of bellows, are of particular significance. Further work on these items represents new research, and as such can be regarded as being of national importance. In particular, the bellows are undoubtedly of considerable interest and must represent one of the earliest and best-preserved examples known in the archaeological record. They will be of interest to archaeometallurgists and industrial archaeologists as well as archaeological leather specialists.

- 4.2.22 **Glass (Appendix 8):** further analysis of the glass assemblage has some potential to contribute to the research aims for the site. As a supplement to the dating evidence available from other sources, the glass will contribute to knowledge of the development of the site through time, particularly during the Roman period and the transition from the late medieval to post-medieval periods (Objectives 2.1 and 4.1).

4.3 ENVIRONMENTAL POTENTIAL

- 4.3.1 Environmental remains were recovered during the course of the excavation in accordance with the fieldwork aims for the site. These are set out in section 2 of this report, above. The present section summarises the potential of each assemblage to further research in pursuit of both the original fieldwork aims and the revised research aims for the project, which are also set out in section 2 of this report.
- 4.3.2 **Animal bone (Appendix 9):** further study of the animal bone assemblage is unlikely to answer any of the wider academic questions which rely on larger sample sizes. However, the medieval material does have potential to address some of the research aims for the project, in particular Objective 3.2, which seeks to shed light upon patterns of consumption in medieval Carlisle. The presence of cattle horn cores with cranial fragments displaying skinning marks, pieces of sawn antler, and pathological specimens possibly resulting from the use of cattle for traction, also suggests that the assemblage can go some way to addressing Objective 3.1, which is concerned with aspects of craft and industry in the medieval town. The small amount of Roman material recovered from the site has low potential for further analytical work.
- 4.3.3 **Charred and waterlogged plant remains (Appendix 10.1):** the data recovered from the excavations have considerable potential to contribute to a number of the research aims for the site. Given the urgent need for research into the pre-Roman Iron Age west of the Pennines (Huntley and Stallibrass 1995, 41), further study of the botanical remains from the period 1 palaeochannel on the northern part of the site can be regarded as potentially of regional significance, particularly if it proves possible to radiocarbon date this material. The work also has the potential to shed light on the nature of the landscape in the vicinity of the site in the immediate pre-Roman period (Objective 1.1).
- 4.3.4 The plant remains from Roman and early post-Roman levels have generally low potential, although further work on the relatively abundant material from the period 2 pit/ditch in RIC C (context 262) may be worthwhile. For the medieval period, the rich plant remains from the waterlogged fills of the large

- dating evidence available from other sources, the metalwork will contribute to knowledge of the development of the site through both the Roman and medieval periods (Objectives 2.1 and 2.2). In addition, some of the medieval artefacts are relatively unusual and will contribute to an understanding of the precise character of activity and occupation on and in the vicinity of the site, especially when considered in association with other classes of artefactual material.
- 4.2.16 **Slag and metalworking debris (Appendix 5):** further study of the assemblage of slag and metalworking debris has the potential to contribute to Objective 3.1 of the research aims, which seeks to shed light on aspects of craft and industry within medieval Carlisle. The presence of large numbers of smithing hearth bottoms and other slags from the period 8 and 9 ditches in RIC E Trench 8 clearly suggests that smithing was taking place in the vicinity of the site during the medieval period.
- 4.2.17 **Flint (Appendix 6.1):** the small assemblage of worked flint has no potential for further work other than that required to integrate the results of the assessment into the final report.
- 4.2.18 **Stone objects (Appendix 6.2):** the small assemblage of worked stone objects requires little further work, other than that required to integrate the material into the final report.
- 4.2.19 **Worked bone and antler (Appendix 7.1):** no further work is required on the small assemblage of worked bone and antler artefacts other than the preparation of a brief text for inclusion in the final report.
- 4.2.20 **Leather (Appendix 7.2):** the large assemblage of medieval leather recovered from the medieval defensive ditches of periods 8 and 9 has high potential to address a number of the research aims for the site, and is of considerable importance for the study of ancient leather and leatherworking. Much of the material can be quite closely dated, and can therefore provide additional dating evidence to complement that deriving from the pottery. The leather therefore has the potential to enhance understanding of the origins and development of the medieval city defences (Objective 2.2). The recovery of large quantities of waste associated with shoemaking and cobbling demonstrates that the assemblage also has high potential to illuminate aspects of medieval craft and industry (Objective 3.1). Also of relevance to this objective are the large set of bellows from the period 9 defensive ditch, which seem too large to have had anything other than an industrial function. This is supported by the identification of hammerscale in deposits associated with the bellows (Clydesdale 2001, 4), which suggests that this item may have derived from a nearby smithy. The presence of shoes of late medieval and early post-medieval date (c late 15th-early 16th centuries) within the period 9 ditch may also provide information on the period of medieval to post-medieval transition (Objective 4.1), a period which is poorly represented in the archaeological record at Carlisle.
- 4.2.21 In terms of ancient leather and leatherworking studies, certain rare or unique items in the assemblage, including a purse, elements from a saddle or padded

horsecloth, and the large set of bellows, are of particular significance. Further work on these items represents new research, and as such can be regarded as being of national importance. In particular, the bellows are undoubtedly of considerable interest and must represent one of the earliest and best-preserved examples known in the archaeological record. They will be of interest to archaeometallurgists and industrial archaeologists as well as archaeological leather specialists.

- 4.2.22 **Glass (Appendix 8):** further analysis of the glass assemblage has some potential to contribute to the research aims for the site. As a supplement to the dating evidence available from other sources, the glass will contribute to knowledge of the development of the site through time, particularly during the Roman period and the transition from the late medieval to post-medieval periods (Objectives 2.1 and 4.1).

4.3 ENVIRONMENTAL POTENTIAL

- 4.3.1 Environmental remains were recovered during the course of the excavation in accordance with the fieldwork aims for the site. These are set out in section 2 of this report, above. The present section summarises the potential of each assemblage to further research in pursuit of both the original fieldwork aims and the revised research aims for the project, which are also set out in section 2 of this report.
- 4.3.2 **Animal bone (Appendix 9):** further study of the animal bone assemblage is unlikely to answer any of the wider academic questions which rely on larger sample sizes. However, the medieval material does have potential to address some of the research aims for the project, in particular Objective 3.2, which seeks to shed light upon patterns of consumption in medieval Carlisle. The presence of cattle horn cores with cranial fragments displaying skinning marks, pieces of sawn antler, and pathological specimens possibly resulting from the use of cattle for traction, also suggests that the assemblage can go some way to addressing Objective 3.1, which is concerned with aspects of craft and industry in the medieval town. The small amount of Roman material recovered from the site has low potential for further analytical work.
- 4.3.3 **Charred and waterlogged plant remains (Appendix 10.1):** the data recovered from the excavations have considerable potential to contribute to a number of the research aims for the site. Given the urgent need for research into the pre-Roman Iron Age west of the Pennines (Huntley and Stallibrass 1995, 41), further study of the botanical remains from the period 1 palaeochannel on the northern part of the site can be regarded as potentially of regional significance, particularly if it proves possible to radiocarbon date this material. The work also has the potential to shed light on the nature of the landscape in the vicinity of the site in the immediate pre-Roman period (Objective 1.1).
- 4.3.4 The plant remains from Roman and early post-Roman levels have generally low potential, although further work on the relatively abundant material from the period 2 pit/ditch in RIC C (context 262) may be worthwhile. For the medieval period, the rich plant remains from the waterlogged fills of the large

- medieval defensive ditch of period 9 are clearly of great importance. The paucity of archaeobotanical work on medieval waterlogged deposits both in Carlisle and west of the Pennines means that this material can be regarded as being of regional significance. Further detailed analysis has considerable potential to advance knowledge of the ecology and economy of this part of the medieval town, and to shed light on patterns of consumption (Objectives 3.1 and 3.2).
- 4.3.5 **Pollen (Appendix 10.2):** the identification of pollen in the lower fills of the period 9 medieval defensive ditch has considerable potential for further analysis, particularly in conjunction with the abundant and well-preserved plant macrofossils from the same deposits. This is only the second site in Carlisle where the preservation of pollen has been demonstrated and the data are therefore of considerable research interest. Potentially it may be possible to construct a picture of the ecology and environment of the site during the medieval period. Significant differences noted in the relative values of cereal-type and *Cannabis/Humulus* pollen in the base of the ditch suggests the possibility that varying cultivation regimes were practised in the vicinity during the medieval period. Further detailed sampling and analysis will therefore be required in order to test this potentially important hypothesis.
- 4.3.6 **Insects (Appendix 10.3):** most of the assessed samples contained appreciable numbers of insects and other invertebrates and clearly have considerable potential, both for understanding conditions and activity at the site and in the context of a wider synthesis of land use zonation in Carlisle. Further study of the material from the probable pre-Roman palaeochannel of period 1 has the potential to determine depositional conditions, for example the difference between an active river channel and a cut-off channel, as well as providing clues to local land use adjacent to the channel (Objective 1.1). In the case of the Rickergate material the relative abundance of dung beetles suggests the proximity of grazing land in the pre-Roman period.
- 4.3.7 For the Roman period, grain pests and insects suggesting possible stable manure were recognised in several contexts. Further work therefore has the potential to shed some light on the character of occupation in this area of the Roman settlement (Objective 2.1).
- 4.3.8 The data recovered from the period 9 defensive ditch have clear potential to contribute to understanding the character and development of the medieval city defences (Objective 2.2). The samples from this feature produced invertebrate assemblages remarkable for their large numbers of aquatic crustaceans and appreciable numbers of water beetles. In view of the presence of large quantities of artefactual material in many of the ditch fills, the rarity of insects suggesting dumping requires further investigation.
- 4.3.9 **Marine molluscs (Appendix 10.4):** a brief discussion of the small assemblage of marine molluscs has the potential to contribute to an understanding of the patterns of food consumption on and in the vicinity of the site through time (Objective 3.2). The group will, however, sustain little further analysis.

4.4 CONSERVATION (APPENDIX 12)

- 4.4.1 A large assemblage of predominantly medieval leather was recovered during the course of the excavations, mostly from the fills of the large medieval defensive ditches of periods 8 and 9 (appendix 7.2). This rare and important collection of material is currently stored wet, but much of the assemblage requires conservation in order that it can be adequately studied. The leather is well packaged but cannot be stored wet indefinitely, since it will deteriorate and may pose a potential health hazard, being liable to fungal and bacterial infection. Mould growth was noted on 11 bags during assessment. Information obtained from the leather has the potential to contribute to knowledge of craft, industry and costume in medieval Carlisle, whilst determining the species of leather will potentially advance understanding of sources of supply. The large assemblage of footwear can be closely dated and can therefore provide important dating evidence for the stratigraphic sequence within the defensive ditches.
- 4.4.2 One composite item of wood and leather, namely the large set of bellows from the period 9 ditch in RIC E, was conserved by AOC Edinburgh before the commencement of the post-excavation assessment.
- 4.4.3 In addition to the bellows, two wooden items, a large ash bowl and a small, stave-built barrel or tub, were also conserved by AOC Edinburgh prior to assessment (appendix 3). Both objects came from the same context as the bellows. With the exception of three small artefacts, which will require freeze-drying, the rest of the Rickergate wood assemblage is poorly preserved and conservation is not regarded as either practicable or worthwhile.
- 4.4.4 The small number of Roman coins recovered from the excavations will require x-radiography and cleaning in order to check the provisional identifications provided by the assessment. Close dating of the coins will aid the establishment of a closely dated sequence of Roman activity on the site.
- 4.4.5 The small assemblage of metalwork recovered from the site is, for the most part, in poor condition and unsuitable for conservation. A number of items will, however, require cleaning and investigative conservation in order to confirm identifications and facilitate further analysis. Initial estimates suggest that approximately six iron objects and 17 items of copper alloy may require this work.

4.5 DATING POTENTIAL

- 4.5.1 **Dendrochronology:** prior to the commencement of the assessment a small oak barrel or tub from the period 9 ditch in RIC E was dendrochronologically dated by AOC Edinburgh, to *c* AD 1358 (appendix 3). During the course of the excavation 21 dendrochronology samples were taken from the timber lining of a medieval pit or well in RIC F Trench 9, but the assessment has shown that these have deteriorated to the point where they are no longer suitable for dating. Assessment also indicates that none of the other wood recovered from the site has any potential for dendrochronological dating.

4.5.2 **Radiocarbon dating (Appendix 11):** three pre-Roman deposits of period 1 were assessed for charred and waterlogged plant remains (appendix 10.1). Abundant waterlogged seeds were present in a sample taken from an alluvial silt filling the probable pre-Roman palaeochannel in area RIC C (RIC C 265), and a good quantity of charcoal was found in a sample from a pre-Roman linear feature in area RIC F (RIC F 172). In both cases, this material has potential for radiocarbon dating by AMS techniques. Dating of these deposits would be of considerable local and regional importance, since prehistoric activity in Carlisle has not previously been dated, and it is therefore proposed that two dates should be obtained from each of these samples. The third sample, from a pre-Roman buried soil in RIC F, did not contain material suitable for dating

4.6 OVERALL POTENTIAL

4.6.1 The potential of the stratigraphic and artefactual evidence from this site has been carefully assessed. The emphasis of the full analysis will be upon those areas which have potential for new information in Carlisle, and no work will be undertaken which duplicates information known to be available from other sites in the city. All unstratified and residual material will be recorded but will not be reported in many instances, and emphasis will be given to that material which will provide important new results for Carlisle.

4.6.2 The nine areas of excavation that form the subject of this assessment represent a coherent group, whose potential is greatest when they are considered together rather than separately. The key themes and ideas that have emerged as a result of the fieldwork and the post-excavation assessment indicate that there is good potential to address most of the areas of research interest that were identified in the original fieldwork aims and the revised research aims for the project (see section 2, above and 4.7, below). The principal contribution of the site will be to the medieval period, *c* AD 1100-1500, although important data relevant to the prehistoric (*c* 2500 BC-AD 72) and Roman (*c* AD 72-400) periods are also present. A limited amount of information for the early medieval (*c* AD 400-1100) and earlier post-medieval (*c* 1500-1800) periods is also available.

4.6.3 **Pre-Roman:** assessment has established that the stratigraphic, artefactual and environmental data from RIC C Trench 5 and RIC F Trench 9 have good potential to address Research Aim 1 (Objective 1.1), which seeks to shed light on the nature of the landscape in the vicinity of the site in the prehistoric period. In Trench 5, alluvial silts believed to derive from a palaeochannel of the River Eden lay directly beneath the earliest Roman levels, whilst on the river terrace to the south there is clear stratigraphic and artefactual evidence for prehistoric activity in Trench 9.

4.6.4 The alluvial silts were excavated in a very restricted area, but assessment has demonstrated that detailed analysis of the well-preserved plant and insect remains recovered from these deposits offers considerable potential to shed light on the state of the river channel in the immediate pre-Roman period. Perhaps more importantly, the data also have good potential to provide

information about the nature of land use in the vicinity of the channel at this time. Assessment of the charred and waterlogged plant remains has demonstrated the presence of seeds from grassland species and arable weeds in addition to taxa associated with wet or damp environments, whilst the insect assemblage includes a relative abundance of dung beetles, a species characteristic of grazing land.

- 4.6.5 In RIC F Trench 9, further detailed analysis of the pre-Roman stratigraphy has good potential to enhance understanding of the nature of prehistoric activity in Carlisle, since prehistoric features other than plough marks are rare on sites in the city centre (1.3.3, above). It seems likely that the linear features in RIC F are broadly contemporary with the ploughing from their alignment and stratigraphic position, although their precise significance is currently far from certain. The concentration of worked flint in this area is of interest, although the material itself has little potential for further analysis. Small quantities of possible Mesolithic or early Neolithic flint are also known from other sites in Carlisle, including the northern Lanes (Tolan-Smith in preparation), although the significance of this material remains unclear.
- 4.6.6 The few poorly preserved environmental remains from pre-Roman deposits in RIC F Trench 9 offer little potential for further work. However, well-preserved charcoal from a linear feature sealed beneath the pre-Roman buried soil in this area (RIC F 172) is likely to be suitable for radiocarbon dating. The abundance of waterlogged seeds in the fills of the palaeochannel in RIC C Trench 5 also have good potential for dating by AMS techniques. The importance of this cannot be overstated, since radiocarbon dates have never previously been obtained from prehistoric deposits excavated under controlled conditions in Carlisle.
- 4.6.7 **Roman:** data pertaining to the origins and development of Roman occupation on the Rickergate site ([Objective 2.1](#)) are patchy, but in view of the fact that virtually nothing is known of Roman settlement in this part of Carlisle, further work has the potential to make an important contribution to current knowledge. Detailed study of the well-stratified deposits within RIC B Trench 1 and RIC C Trench 5, in conjunction with analysis of the associated artefactual and ecofactual assemblages, will provide a unique opportunity to learn more about the origins and development of this hitherto uninvestigated part of the Roman settlement.
- 4.6.8 Assessment of the stratigraphy and associated ceramic assemblages indicates that the northern part of the Rickergate area may not have been settled until the 3rd century AD, perhaps due to the need to drain and infill the old river channel in order to make the area habitable. During the 3rd and 4th centuries occupation appears to have been quite intensive, at least on the Rickergate frontage, although further detailed work on the stratigraphy and the associated pottery assemblages will be required to refine the dating and interpretation of this sequence of occupation. A limited amount of work will also be required on some of the better preserved elements of the artefactual and ecofactual material from selected contexts within the Roman sequence. For the most part, however, these assemblages are small and poorly preserved, and therefore offer limited potential.

- 4.6.9 Elsewhere on the site, the truncated Roman levels and associated artefactual assemblages within RIC F Trench 9 require a limited amount of further analysis in view of the unusual character of some of the features in this area, and their association with datable ceramic assemblages. The limited Roman data recovered from the other areas of excavation (RIC B Trenches 2-4, RIC D Trenches 6-7 and RIC E Trench 8) offer little potential for further work, other than the preparation of brief descriptive sections for inclusion in a final report.
- 4.6.10 **Post-Roman:** the Rickergate data have low potential to advance understanding of the character of the site from the end of the Roman period in the late 4th-early 5th centuries AD to the re-emergence of the town from the early 12th century. The only deposits relating to this period were accumulations of dark soil containing moderate quantities of residual Roman pottery and other Roman artefactual material that were recorded in RIC B Trench 1 and RIC C Trench 5. The single palaeoenvironmental sample subjected to assessment contained only a few charred plant remains. Other than the provision of brief descriptive sections for the analytical report, there is little scope for further work on these levels.
- 4.6.11 **Medieval:** the excellent preservation of stratigraphy relating to the medieval defensive ditches in RIC D Trench 7 and RIC E Trench 8 and the recovery of outstanding artefactual and ecofactual assemblages from these levels means that the Rickergate data have the potential to address all of the research aims and objectives for this period. For the most part, the poorly stratified medieval remains recorded elsewhere on the site (period 7-9; RIC B Trenches 1-4, RIC C Trench 5, RIC D Trench 6 and RIC F Trench 9) have little or no potential for further work.
- 4.6.12 The Rickergate project included the first controlled excavation of the defensive ditches fronting Carlisle's medieval city wall. An evaluation of the potential of the project data to shed light upon the origins and development of the medieval city defences therefore represented one of the key aims of the post-excavation assessment (Research Aim 2, Objective 2.2). Assessment of the stratigraphic, artefactual and ecofactual records from the period 8 and period 9 ditches in RIC D Trench 7 and RIC E Trench 8 has demonstrated that further detailed analysis of these datasets has the potential to make a very significant contribution to understanding the character and development of the medieval defensive system.
- 4.6.13 Assessment of the stratigraphic records in conjunction with the associated ceramic and artefactual assemblages has established a long and complex sequence relating to the construction and infilling of the ditches during the medieval and earlier post-medieval periods. The extremely good stratigraphic remains within both features included extensive and well-stratified accumulations of organic, waterlogged deposits, of a kind only rarely encountered previously, both in Carlisle and in the north-west of England as a whole.
- 4.6.14 In RIC E Trench 8 the waterlogged strata were associated with large and well-stratified groups of datable artefactual material, principally pottery and leather, together with at least one wooden artefact that has been closely dated by

dendrochronology. Smaller artefactual assemblages were also recovered from these deposits in RIC D Trench 7. These data offer excellent potential to refine the provisional stratigraphic sequence further, and should provide important information concerning the chronology of construction, infilling and refurbishment of the defensive system.

- 4.6.15 Assessment has demonstrated that further detailed analysis of the artefacts and ecofacts has high potential to shed light on depositional processes within the ditches. The evidence requires further analysis however, since the presence of large quantities of pottery and other artefactual material in many of the ditch fills suggests that rubbish dumping was a major factor, whilst assessment of the insect remains from the period 9 ditch found an almost complete absence of species indicative of refuse disposal. Lack of interference with the sides of the ditch is also suggested by the relative abundance of fauna associated with semi-natural herbaceous vegetation (appendix 10.3). The presence of large quantities of aquatic crustaceans, waterbeetles, and the remains of plants such as crowfoots and pondweeds confirm that the period 9 ditch was partially water-filled in the medieval period.
- 4.6.16 The recovery of exceptionally fine assemblages of artefactual and ecofactual material from the large defensive ditches means that the archaeological data from areas RIC D and RIC E offer excellent potential, not only to provide important information about the origins and development of the ditches themselves, but also to advance understanding of the character of occupation in this part of the medieval city and the types of activities that were occurring on and in the vicinity of the site. Further detailed analysis of the artefactual and ecofactual groups will also potentially shed new light on the environment and economy of the site during this period, including evidence for craft and industry, and advance understanding of patterns of trade, supply and consumption, both for Carlisle and in the wider region.
- 4.6.17 The potential of the data to address Objective 3.1, which seeks to elucidate aspects of craft and industry in medieval Carlisle, can therefore be regarded as good. Assessment of the artefactual assemblages from the fills of the ditches indicates the presence of metalworking slags, including a large number of smithing hearth bottoms, from both the period 8 and period 9 features (appendix 5). The latter suggest that smithing was taking place in the vicinity of the site, since this heavy waste material is normally disposed of close to the smithy. The discovery of a large pair of bellows in one of the lower fills of the period 9 ditch may also be significant. This item appears too large to have had anything other than an industrial function, and the presence of hammerscale in the surrounding soil (Clydesdale 1999, 2) would support a possible association with smithing (appendix 7.2).
- 4.6.18 Evidence for other crafts and industries comes from the assemblage of animal bones recovered from the ditches (appendix 9). Discarded horn-cores from several deposits, together with small amounts of sawn antler and animal bone, suggest probable small-scale bone and horn-working, whilst evidence for skinning on cattle cranial fragments may point to the existence of a tannery in the vicinity of the site. Plentiful evidence for shoemaking and cobbling was present in the assemblage of leather from RIC E, where 15% of the material

- comprised shoemaking waste (appendix 7.2). Assessment of the charred and waterlogged plant remains from the period 9 ditch identified economic taxa such as grain, flax and hemp, and recorded the presence of henbane and hemlock, both highly poisonous species that were used medicinally during the medieval period (appendix 10.1).
- 4.6.19 Further study of the finds and environmental assemblages from the ditches also holds great potential to provide evidence for patterns of trade, supply and consumption within the medieval city (Objective 3.2). Detailed analysis of the large ceramic assemblage has potential to shed important new light on the nature and development of pottery supply and use in Carlisle, and more widely in the region, during the medieval period. This subject is currently imperfectly understood, whilst the scarcity of good ceramic assemblages from medieval sites in north-west England, as highlighted in the assessment (appendix 1.3), means that the Rickergate material can be regarded as being of regional significance.
- 4.6.20 Identification of timber species present in the assemblage of preserved waterlogged wood may provide some useful information on the selection of timber for woodworking in the medieval period. However, the poor preservation of most of the timber means that it will not be possible to address issues such as woodland management.
- 4.6.21 Assessment of the animal bone (appendix 9) and the plant remains (appendix 10.1) has indicated that both have good potential to provide information on medieval food consumption. Both domestic and wild species are represented within the animal bone assemblage, whilst the plant remains include seeds of wild food species such as blackberry, bilberry, and hazelnut, together with grain and apple or pear. However, in terms of production and supply, perhaps the most significant results came from the assessment of pollen in the lower fills of the period 9 ditch in area RIC D, which has provided clear evidence for the cultivation of cereal crops and hemp close to the medieval city defences (appendix 10.2). This finding is supported by limited stratigraphic data, which suggests that much of the area north of the city defences and east of the Rickergate frontage may have been occupied by fields throughout the medieval period (see 3.1.73, above).
- 4.6.22 The small assemblage of marine molluscs recovered from medieval deposits on the site has very limited potential to contribute to an understanding of patterns of food consumption, although they do provide additional evidence for the exploitation of local resources.
- 4.6.23 **Post-medieval:** for the most part, post-medieval deposits pre-dating the 20th century were scarce on the Rickergate site, due principally to truncation caused by extensive site clearance during the early 1960s, when many 19th century buildings were swept away to create the Civic Centre and Drovers Lane car parks. The data therefore have limited potential to address Objective 4.1, which relates to the transition from medieval to post-medieval society in Carlisle.

- 4.6.24 Assessment of the stratigraphic data from the upper levels of the period 9 defensive ditch in RIC D Trench 7 and RIC E Trench 8, in conjunction with the small associated ceramic assemblages (appendix 1.3), suggests that this feature remained partially open well into the post-medieval period. Further work on the pottery, and on the stratigraphic position of the early post-medieval shoe components identified during the leather assessment (appendix 7.2), has the potential to refine the dating of these deposits, which are currently only broadly dated to the 16th-18th centuries. This work will potentially be of value in determining to what extent the ditch retained a defensive significance at certain periods in Carlisle's history, such as the civil war siege of the mid-17th century or the Jacobite rebellion a century later.
- 4.6.25 Further work on the small amount of pottery and other material associated with the brick-built structures overlying the infilled ditch in area RIC E (period 11) may be worthwhile, in order to determine the date at which the ditch was finally completely infilled and built over. Otherwise, the paucity of artefactual material and the lack of environmental samples from post-medieval deposits both within the ditch and elsewhere, means that the Rickergate data have low potential to shed light on the development of the site during this period.

4.7 UPDATED RESEARCH AIMS AND OBJECTIVES

- 4.7.1 This section follows the guidance of English Heritage regarding the formulation of updated project aims (English Heritage nd, 2-3). This recommends that it is helpful to treat *aims* as major themes or goals to which specific *objectives* contribute, and to think of these aims and objectives as questions.
- 4.7.2 The original aims of the fieldwork are still valid, but these have now been updated and the aims and objectives put forward in this section are derived from the overall statement of potential set out in section 4.6 above. At the present stage of assessment, this statement necessarily emphasises the presence, absence, or sufficiency of data to support further analysis of components of the archaeological record. This analysis would have two primary objectives in view: to add to archaeological knowledge in the areas prioritised by the original fieldwork aims, and to understand how people lived in Carlisle in the past.
- 4.7.3 The updated research aims will consider the following:
- the nature of the pre-Roman landscape, environment and economy, and the use of dating techniques to establish the date of pre-Roman activity on the site;
 - processes of change, including the impact of the establishment of the Roman civil settlement on the landscape;
 - the development of the site during the Roman period, including evidence for timber buildings and activity areas;

- similarities and differences in the character and date of Roman activity compared with occupation in other parts of the Roman town;
- the origins, character and development of the defensive ditches fronting the medieval city wall;
- evidence for the environment and economy of the site during the medieval period, with particular reference to crafts and industries and the nature of agricultural activities in the vicinity of the site;
- the development of patterns of trade, supply and consumption in the medieval city and more widely in the region, and the use, management and origin of resources;
- daily life in Carlisle in the medieval period, including evidence for diet, standard of living, pastimes, costume and personal adornment.

4.7.4 **Updated Research Aim 1:** What are the occupation sequences on the RickerGate site?

Objective 1: What are the principal periods of occupation on the site as shown by detailed stratigraphic analysis of the primary records?

Objective 2: Is it possible to develop the site phasing through the identification of sub-phases, and to attribute all contexts to these periods?

Objective 3: What is the dating evidence for each of the refined periods and sub-phases of activity on the site?

4.7.5 **Updated Research Aim 2:** How did the landscape change through time at the RickerGate site, and can these changes be determined and dated?

Objective 1: What is the evidence for the nature of the prehistoric landscape and land use? Can the pre-Roman activity on the site be characterised and dated?

Objective 2: To what extent did the pre-Roman landscape influence the development of Roman settlement on the site, and what was the impact of Roman settlement?

Objective 3: Can the resources of the landscape during the Roman period be assessed? Is there evidence for arable or pastoral farming, for fodder, fuel, building materials, or the exploitation of other local resources?

Objective 4: What was the character of the landscape on and in the vicinity of the site during the medieval period?

Objective 5: What resources were available in the medieval period in the areas around Carlisle?

Updated Research Aim 3: How did the site develop through the Roman period?

Objective 1: What was the character and date of the earliest Roman activity on the site? What measures were taken to make the area habitable?

Objective 2: How did the layout of buildings, external areas and other features change and develop over time, and does this reflect changes in the character of settlement on the site during the Roman period?

Objective 3: To what extent does the spatial and chronological distribution of artefacts and ecofacts elucidate the function and appearance of Roman buildings, features and activity areas? Can the distribution patterns of these materials enhance our understanding of site development during the Roman period?

Objective 4: What was the place of the Rickergate area in Roman Carlisle?

Updated Research Aim 4: What evidence is there for the origins, character and development of Carlisle's medieval city defences?

Objective 1: At what date were the two phases of defensive ditch fronting the medieval city wall constructed? Is there evidence for medieval activity pre-dating the earliest ditch?

Objective 2: What is the character and date of the sequences of infilling within the two defensive ditches, and what depositional processes were involved in the filling of these features?

Objective 3: Can the environmental evidence shed light on the character and condition of the defensive ditches during the periods when these features were in use?

Objective 4: What evidence is there for the continued use or existence of the second defensive ditch into the post-medieval period? Can the date at which this feature was completely infilled be determined?

Updated Research Aim 5: What evidence is there for trades, crafts and industry in the artefactual and ecofactual assemblages recovered from the medieval defensive ditches?

Objective 1: What information can be found for metalworking on or in the vicinity of the site?

Objective 2: What do the large quantities of leather found tell us about the crafts and skills involved in shoemaking and other forms of medieval leatherworking?

Objective 3: What evidence for other trades and crafts is present in the material recovered from the defensive ditches?

Objective 4: Can the spatial and chronological distribution of artefacts and ecofacts shed light on changes in the nature of crafts and industry during the medieval period?

Updated Research Aim 6: What can be learnt of patterns of trade, supply and consumption within medieval Carlisle, and more widely in the region?

Objective 1: Can the well-stratified ceramic assemblages from the defensive ditches provide information on the character and development of pottery supply and use in medieval Carlisle?

Objective 2: What evidence for trade, supply and communication routes is reflected in the sourcing and distribution of other traded commodities at the site?

Objective 3: What is the evidence for the exploitation of local wild resources, and the local production of commodities and foodstuffs?

Updated Research Aim 7: What can be learnt about daily life in medieval Carlisle?

Objective 1: What light do the artefacts, animal bones and environmental data shed upon the diet of the people of medieval Carlisle, and did this change through time?

Objective 2: What equipment was used for food preparation and for the consumption of food and drink?

Objective 3: Can the large assemblage of leather from the defensive ditches provide information on medieval costume and personal adornment, and the way in which these changed and developed in Carlisle during the medieval period.

Objective 4: Do the artefactual and ecofactual assemblages shed any light on issues of social status and personal identity in medieval Carlisle?

Objective 5: What was the place of the Rickergate area in the medieval city of Carlisle?

5 METHOD STATEMENT

5.1 INTRODUCTION

- 5.1.1 The following methods are required to fulfil the revised research aims and objectives outlined in section 4.7 above. The link between Methods, Objectives and Tasks is provided in Tables 5 and 6 in section 7 of this report, below.

5.2 PHASING, STRATIGRAPHY AND SITE DESCRIPTIONS

- 5.2.1 The generation of the phasing summary for the assessment involved some preliminary stratigraphic analysis. Further analytical work on the primary stratigraphic records will, however, be required in order to provide a refined phasing sequence in the light of the finds analysis and the potential to obtain absolute dates for certain features.
- 5.2.2 All contexts will be attributed to the refined phases once established, and the site database will then require updating and amending. This will result in the contextual data being collated into a readily accessible digital form that will be made available to specialists undertaking further analysis. All specialist reports will need to accommodate any new stratigraphic information, phasing, or sub-phasing. As required, all necessary material will be transported to the specialists. Detailed finds information will also need to be incorporated into the site matrices in order to check/create phasing and site interpretation. The matrices themselves are currently in draft form and will require redrafting.
- 5.2.3 Phase plans, and selected plans and sections from the site will be digitised and drafts prepared for use by the specialists. The information will be integrated into the database. The detailed analytical text of the stratigraphic information will then be written and relevant plans and sections prepared for integration into the final report.

5.3 CERAMICS

5.3.1 *Samian:*

1 In order to fulfil its potential, the samian assemblage requires comprehensive cataloguing and additional research and analysis. Careful identification of individual forms, fabrics and details will be necessary for the refinement of dating. The complete assemblage will therefore be fully recorded to produce an archive catalogue in which every sherd is recorded. This information will then be integrated into the new phasing evidence and incorporated into the revised database by period and context.

2 The forms will be assessed using the well-established system of classification of Webster (1996, 17-18). Fabrics will be classified as South Gaulish, Central Gaulish and East Gaulish (SG, CG and EG) by close inspection, and subdivisions will be made between different potteries within

these areas of production, such as La Graufesenque, Montans and Banassac in South Gaul, Lezoux and Les Martres-de-Veyre in Central Gaul, and Rheinzabern and Trier in East Gaul (Webster 1996, 13-16; Bulmer 1980).

3 Detailed analysis of approximately 15 vessels will be required, together with further work on another 15 moulded vessels. The basal stamps recorded on six vessels will require precise identification (to be completed by Brenda Dickinson at Leeds University). Two repaired fragments and two sherds reworked into probable gaming counters will need to be recorded in full.

4 Comparative material will be studied and a full bibliography will be compiled. Material for illustration will be selected and catalogued.

5.3.2 *Roman coarse pottery:*

1 The well-stratified pottery groups from periods 1 to 5 will require full quantification, recording and cataloguing to Ceramic Site Archive Phase 2, following the guidelines of the Study Group for Roman Pottery (SGRP) (Darling 1994). The assemblage will be quantified by fabric, form, sherd count, weight and Estimated Vessel Equivalents (EVE), and the data will be entered onto the project database. The data should include such general information as vessel class, sherd joins, sherd condition and evidence for burning and repair in antiquity. Residual Roman pottery from periods 6 to 12 should be recorded by sherd count and sherd weight only, in line with the SGRP's Phase 1 archiving standard.

2 The assessment has raised questions concerning the origin of some of the Black Burnished ware fabric 1 (BB1) vessels in the assemblage. Further analysis and research is required to determine whether some of the BB1 vessels come from kilns in South Yorkshire as well as the more typical Dorset sources.

3 Material for illustration will be selected and catalogued. It is estimated that a total of approximately 30 vessels will require drawing for publication. Comparative material will be studied and a full bibliography will be compiled.

5.3.3 *Post-Roman pottery:*

1 The pottery will be recorded and analysed in detail by fabric and form using the guidelines of the Medieval Pottery Research Group (2001). Correlations will be made with local fabric groups using the collections of medieval and post-medieval pottery from previous excavations in Carlisle (McCarthy 1990; Brooks 1999; McCarthy 2000), and a full bibliography will be prepared.

2 The assemblage will be described and discussed in terms of potential sources and the level of production, the local and regional ceramic context, the implications for site chronology and for site function and status. Material will be selected for illustration and catalogue entries will be produced.

5.3.4 *Clay tobacco pipe:*

1 The results of the assessment will be integrated into the final report and comparanda will be sought for the pipe bowl.

5.4 BUILDING MATERIALS

5.4.1 *Building materials:*

1 A report for publication will be compiled from the assessment data. This will involve the full integration of the building materials with the stratigraphic data, updating of the project database, and the preparation of a publication text.

2 Comparanda will be sought in the assemblages from Carlisle and Stanwix for the rib-vaulting voussoir, and this item should be photographed.

5.5 WATERLOGGED WOOD AND CHARCOAL

5.5.1 *Waterlogged wood and charcoal:*

1 Three small wooden artefacts require conservation by freeze-drying prior to analysis.

2 The poor condition of the wood assemblage as a whole precludes dendrochronological analysis or analysis for woodland management studies. The material will, however, be sampled for species identification, providing the deterioration has not also precluded this study. The information will be entered onto the database.

3 Comparanda will be sought for the small assemblage of wooden artefacts, in order to contribute to the understanding of medieval activity on and in the vicinity of the site. These objects will also be repackaged.

4 A summary report will be produced, which will involve the full integration of the wood and charcoal with the stratigraphic data and the preparation of a publication text. Material will be selected for illustration and catalogues will be produced, together with a full bibliography.

5.6 METALWORK

5.6.1 *Roman coins:*

1 The six Roman coins will be x-rayed and cleaned, after which they will be re-examined to check the provisional identifications established during the assessment. The results will be entered onto the project database and integrated into the final report, and a catalogue will be produced.

5.6.2 *Metalwork:*

1 Approximately six iron objects and 17 items of copper alloy will require cleaning and investigative conservation in order to confirm identifications and facilitate further analysis. Following this work, the database record of the assemblage will be checked and updated. All the metalwork was x-rayed as part of the assessment.

2 Analysis and reporting of the assemblage will consider the spatial and chronological distribution of the material, and its contribution to dating and understanding the occupational sequence on the site. Comparative material will be sought, the function of the artefacts will be discussed and the significance of the total assemblage in local and regional terms will be considered. Items will be selected for illustration and a catalogue and bibliography produced.

5.7 SLAG AND METALWORKING DEBRIS

5.7.1 *Slag and metalworking debris:*

1 A publication report will be produced from the assessment data. This will involve integration of the metalworking slag with the stratigraphic data, updating of the project database, and the preparation of a report text. Comparative material will be sought from Carlisle and the region and a full catalogue and bibliography will be produced.

2 Hammerscale recovered, during the process of conservation, from soil in and around the large set of bellows from the period 9 medieval defensive ditch in RIC E will be subjected to detailed analysis by an appropriate specialist.

5.8 WORKED STONE

5.8.1 *Flint:*

1 The results of the assessment of the worked flint will be integrated into the publication report and the database will be updated.

5.8.2 *Stone objects:*

1 A brief discussion of the assemblage will be prepared for inclusion in the final report and the project database will be updated. Comparanda will be sought and a full catalogue and bibliography will be produced.

5.9 WORKED ORGANIC MATERIALS

5.9.1 *Worked Bone and Antler:*

1 A brief report on the assemblage will be prepared for publication and the information will be added to the database. Comparanda will be sought and a full catalogue and bibliography produced. One item will require illustration for publication.

5.9.2 *Leather:*

1 In the period between assessment and analysis, the condition of the leather will be monitored whilst in storage at Shaddon Mill, Carlisle. This will involve checking of the individual bags of leather. Mould growth has been noted in 11 bags scattered throughout the assemblage and the unconserved material cannot be stored wet indefinitely. The advice of a conservator will be sought to help prevent further deterioration in storage.

2 The leather will be re-grouped by context and selected material will then be conserved by pre-treatment and freeze-drying as described in appendix 12, before recording work can commence. The leather selected for full conservation comprises approximately 450 major components, which are currently stored in 173 bags. Most of this material derives from large and important groups of leather that were recovered from five contexts within the period 9 medieval defensive ditch in RIC E (contexts 47, 51, 59, 60 and 74).

3 The material selected for full conservation will be lightly washed, rebagged and labelled prior to pre-treatment with polyethylene glycol 400. The leather will be placed within flat card and frozen, and will then be freeze-dried and repackaged. Approximately 10% of the assemblage, which is currently either unwashed or would benefit from further washing, will require more thorough washing prior to conservation. The remainder of the assemblage will be allowed to dry out under controlled conditions.

4 Where several individual items are currently contained within a single bag, these will be separated into individual objects (and associated components) and allocated a unique identifying number.

5 A basic record of the assemblage, as defined in the guidelines of the Roman Finds Group and Finds Research Group (1993) will be made, and the information will be entered onto the database. The information will be correlated with the updated contextual evidence and site phasing, and the assemblage quantified by functional category within each period or phase.

6 No further work is required on the small assemblages from RIC D and RIC F, other than that required to integrate the assessment data into the final report. The large assemblage from RIC E will be analysed and a report prepared for publication. Much of the material will be subjected to basic analysis, but certain items of particular importance, such as the bellows and the possible saddle components, will be targeted for detailed study. Specialist

advice will be sought where required, for example from personnel at the Royal Armouries in Leeds for the sword scabbards.

7 Analysis and reporting of the assemblage will consider the spatial and chronological distribution of the leather and its contribution to dating and understanding the stratigraphic sequence within the medieval defensive ditches. The technological and socio-economic aspects of the material will also be considered. Comparative material will be sought, the function of the artefacts will be discussed and the significance of the total assemblage in local and regional terms will be considered. Items will be selected for illustration and a full catalogue and bibliography produced.

8 XRF analysis will be undertaken during the conservation of a metal-studded panel of cattlehide from the period 9 ditch in RIC E (context 47) in order to determine the composition of the metal. Analysis of the leaf found in the folds of the bellows, and of the organic material used as toe-stuffing in two medieval shoes, will be carried out by a palaeobotanist.

5.10 GLASS

5.10.1 *Glass:*

1 A report on the small assemblage of glass will be prepared for publication. The information will be correlated with the updated contextual and phasing data and added to the database. Comparanda will be sought from published assemblages within Carlisle and the wider region. Material will be selected for illustration and a full catalogue and bibliography will be produced.

5.11 ANIMAL BONE

5.11.1 *Animal bone:*

1 The small assemblages of animal bone from Roman, early medieval and post-medieval contexts have no potential for further work, other than that required to integrate the results of the assessment into the final report. The medieval assemblage should be fully recorded, analysed and reported using the methods described in appendix 9.

2 Information on species, part of the skeleton, eruption/wear of teeth and state of epiphysial fusion, burning, butchery and other taphonomic evidence will be fully recorded. The data will be correlated with the updated contextual and phasing information and input into the database. Attention will be given to how the assemblage will best inform discussion of diet and farming strategies in medieval Carlisle.

5.12 ENVIRONMENTAL

5.12.1 *Charred and waterlogged plant remains:*

1 A total of eight palaeoenvironmental samples assessed as having good potential will be analysed more fully for charred and waterlogged plant remains, using the methods detailed in appendix 10.1. Comparative material will be sought from other sites in Carlisle and the north of England and a full report, catalogue and bibliography will be produced.

2 For those samples with low potential, the results of the assessment will be integrated into the final report.

3 All the data will be correlated with the revised contextual and phasing information, and the project database will be updated.

5.12.2 *Pollen:*

1 The identification of abundant, well-preserved pollen from medieval levels is unique in Carlisle. It is proposed that a total of 15 pollen samples from two soil monoliths taken from the basal fills of the period 9 defensive ditch in area RIC D will be taken, prepared and analysed for pollen.

2 The preparation of the samples will be carried out using the standard techniques of KOH, acetolysis and hot HF acid treatment as necessary, and the pollen will be identified using reference collections. An analytical report incorporating suitable diagrams and a full bibliography will be prepared. The data will be correlated with the revised stratigraphic information and the database will be updated.

5.12.3 *Insects:*

1 It is proposed that full analysis of eight selected samples should be undertaken. The samples will be processed using paraffin floatation at the Environmental Archaeology Unit, University of York, using methods approximating to those of Kenward *et al* (1980). To maximise the potential of the material from the period 9 medieval defensive ditch, two samples from this feature which were not examined as part of the current assessment will be assessed at the beginning of the analytical programme.

2 Insect remains recovered from the samples will be scanned under a binocular microscope and identifications will be made by comparison with reference specimens. Comparative material from other sites in Carlisle and northern England will be sought, and an analytical report with suitable diagrams and tables will be prepared. The data will be correlated with the revised contextual and phasing information and input into the project database.

5.12.4 *Marine molluscs:*

1 The presence of marine molluscs will be recorded in correlation with the updated contextual and phasing information, and the data will be input into the database. A brief discussion of the assemblage will consider the molluscs

as a food source, and this will be incorporated into the appropriate section of the main report.

5.13 DATING

5.13.1 *Radiocarbon dating:*

1 Charcoal recovered from a bulk sample taken from the fill of a period 1 linear feature in area RIC F [172] is considered to have good potential for radiocarbon dating by AMS techniques. Likewise, a large assemblage of waterlogged seeds from a probable alluvial silt within the pre-Roman palaeochannel in area RIC C [265] also has excellent potential for radiocarbon dating.

2 Dating of these deposits would be of considerable local and regional importance, since prehistoric occupation in the centre of Carlisle has not previously been dated. Two samples from each of these deposits will therefore be sent for radiocarbon dating by AMS techniques, to be carried out at the Scottish Universities Research and Reactor Centre at East Kilbride.

5.14 CONSERVATION

5.14.1 **General:** many of the artefacts to be retained will require long-term storage. The long-term storage requirements for archaeological materials and archives are set out in Walker (1990) and the Museums and Galleries Commission (1992). The metalwork and coins require desiccated micro-environments for long-term storage. The assemblages of waterlogged wood and wet leather may become a health hazard if they are not recorded and either conserved or discarded in the near future. All these materials will require conservation before they are accepted by a museum.

5.14.2 **Wood:** the methodology for wood is given above in section 5.5.1.

5.14.3 **Metalwork:** the methodology for conservation of the metalwork is given above in section 5.6.2.

5.14.4 **Leather:** the methodology for conservation of the leather is given above in section 5.9.2.

5.14.5 **Discard policy:** on completion of the full post-excavation analysis a discard policy will be undertaken. This will be formulated and implemented in full consultation with staff at Tullie House Museum and Art Gallery, and may cover the assemblages of wood, metalwork, glass, ceramic building materials, animal bone and palaeoenvironmental evidence. Wherever possible all reasonable efforts will be made to donate material to an appropriate research project or archive. Discard policies will follow the guidelines of the Society of Museum Archaeologists (1993).

5.15 ILLUSTRATION

5.15.1 During each part of the analytical programme, a selection will be made of appropriate material for illustration. This will cover general plans, phase plans, and artefacts. An experienced illustrator, using standard conventions, will compile these illustrations, either digitally, in the case of the plans, or manually, as appropriate. A number of artefacts will be photographed for the publication.

5.16 PUBLICATION TEXT

5.16.1 Following completion of the full analysis of all the stratigraphic and artefactual evidence, a text suitable for publication as a single volume will be prepared. This will be in the format described in section 6 of this report, and will incorporate as necessary any information from comparable excavations. This will be subject to internal revision, and will be submitted to all specialists after editing for their comments. The edited text will be submitted to a referee for formal review.

5.16.2 Following incorporation of the referee's and other comments the report will be copy edited, typeset, indexed and proof-read suitable for publication. A suitable cover will be designed incorporating the client and sponsor's logos, and the report will be published.

5.17 ARCHIVE DEPOSITION

5.17.1 On submission of the completed text for publication, the project archive will be updated as necessary, particularly the database information. The complete archive will be checked and submitted to Tullie House Museum for deposition. Material in boxes will be checked and box lists compiled and appended. The entire paper and material archive will be indexed, ordered and checked, and all parts returned to the receiving museum in good order.

5.17.2 It is recommended that digital components of the archive should be deposited with the Archaeology Data Service (ADS) in accordance with current best practice guidance from English Heritage. The scope of the digital archive will be agreed with the ADS during the course of the project, and selection and presentation of the material will be carried out in accordance with the ADS's evolving *Digital archives from excavation and fieldwork: Guide to good practice* (<http://ads.ahds.ac.uk>). This is an additional, optional task.

6 PUBLICATION SYNOPSIS

6.1 INTRODUCTION

6.1.1 It is anticipated that the results of the analysis of the Rickergate project will be published as a single volume. The report is expected to comprise about 50,000 words of text, including bibliography, the preliminaries and similar. There will also be approximately 80 line drawings and 30 plates. Word and figure counts are intended as an approximate guide only, and allow for assessment of the various parts of the report.

6.2 THE STRUCTURE OF THE REPORT

6.2.1 The volume will address the revised research objectives for the project. Detailed catalogued information relevant to the project objectives but not suitable for publication in the proposed volume will be retained in the archive.

6.2.2 A high level of communication will be maintained between all members of the project team. It is anticipated that the specialists, especially those with inter-related study areas, will work closely in order to facilitate integration between material categories, as required by the research objectives. The finished publication will present a high degree of integration between the artefactual, ecofactual, structural and stratigraphic evidence from the site.

6.2.3 **Single volume publication:** this will take the form of a softback book of popular size, measuring 240 x 170 mm. This will present the information covered in the synopsis, and present the results of the excavation and analysis of the site and artefacts from the prehistoric, Roman, medieval and post-medieval periods. The volume will aim to present a readable and accessible form suitable for both the academic and general reader. Many of the detailed stratigraphic and artefactual records will be preserved in the archive only, and the volume will present a fully illustrated synthesis of this material.

6.3 OUTLINE SYNOPSIS

RICKERGATE, CARLISLE: FROM EARLY TIMES TO MEDIEVAL CITY

Preface

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Summary

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5,000 words: 6 plans: 2 plates

Site location and project methods
Background to the project
Layout of the publication
Previous work on this site and in the locality
Chronology and phasing of the site

CHAPTER 2 THE LANDSCAPE OF RICKERGATE THROUGH TIME

5,000 words: 6 plans: 6 plates

Stratigraphic, environmental and dating evidence
Prehistoric landscape and use of the land
Roman occupation of the area
Medieval settlement
Post-medieval occupation

CHAPTER 3 ROMAN RICKERGATE

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Reclamation of the land
Development of the site
Buildings and daily life
RickerGate within Roman Carlisle

CHAPTER 4 THE MEDIEVAL DEFENCES OF CARLISLE

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Construction of the defensive ditches and wall
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Use and decline of the defences

CHAPTER 5 MEDIEVAL CRAFTS AND INDUSTRIES

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Metalworking
Leather working
Other trades and crafts
Pottery and its functions
Trade, supply and communication

CHAPTER 6 DAILY LIFE IN MEDIEVAL RICKERGATE

8,000 words: 18 figures: 5 plates

Diet of the people
Food preparation
Leather used for costume
Personal status and identity through artefacts
Place of Rickergate in medieval Carlisle

CHAPTER 7 RICKERGATE IN THE HISTORY OF CARLISLE

4,000 words: 6 figures: 6 plates

Summary of the site
Conclusions on its place in the history of Carlisle
Importance of the evidence from prehistoric times, Roman
occupation of the area, and the medieval city

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APPENDICES

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7 RESOURCES AND PROGRAMMING

7.1 PROJECT TEAM

7.1.1 The project team will consist of internal OAN staff, with some input from external specialists. The project will be under the guidance of OAN Director Rachel Newman and management of the project will be undertaken by Senior Project Manager Carol Allen assisted by Project Officer John Zant of OAN.

7.1.2 The following OAN staff will work on the project:

Andrew Bates	Animal bone
Emma Carter	Illustrator
Joanne Cook	Research Assistant
Elizabeth Huckerby	Environmentalist
Christine Howard-Davis	Finds Manager and specialist
Ian Miller	Medieval pottery specialist
Adam Parsons	Illustrator
John Zant	Project Officer

7.1.3 The following external specialists will work on the project:

Karen Barker	Investigative conservation metalwork & coins
Brenda Dickenson	Roman pottery stamps
Jennifer Jones	Conservation specialist
Harry Kenward	Insects
Lynne Keys	Slag and hammerscale
Quita Mould	Leather
Susan Pringle	Building materials
David Shotter	Roman coins
Wendy Sherlock	Copy editor and proof reader
Vivien Swan	Roman coarsewares
Margaret Ward	Samian
Susan Winterbottom	Leather and leather illustrations

7.2 MANAGEMENT

- 7.2.1 Oxford Archaeology North places importance on the tight and effective management of the post-excavation stages of a project in order to deliver best value to our clients. An element of the time provided for the Senior Project Manager and Director of OAN will be dedicated to on-going quality assurance systems and ensures the prompt delivery of the agreed report on time and on budget. An interim meeting will be held with the representatives of the client and/or Carlisle City Council in order that they are kept fully informed of the progress of the report.
- 7.2.2 Communication between all concerned in the post-excavation programme is of great importance and it is essential that the specialists involved liaise closely in order that comparable data are obtained.
- 7.2.3 In addition to the internal team structure, quality standards will be maintained by an external referee, to be appointed by OAN.

7.3 HEALTH AND SAFETY

- 7.3.1 All Oxford Archaeology North post-excavation work will be carried out under relevant Health and Safety legislation, including the Health and Safety at Work Act (1974). A copy of the Oxford Archaeology Health and Safety Policy can be supplied. The nature of the work means that the requirements of the following legislation are particularly relevant:

Workplace (Health, Safety and Welfare) Regulations (1992) – offices and finds processing areas.

Manual Handling Operations Regulations (1992) – transport of bulk finds and samples.

Health and Safety (Display Screen Equipment) Regulations (1992) – use of computers for word-processing and database work.

COSSH (1988) – finds conservation and environmental processing/analysis.

7.4 TASK LIST

- 7.4.1 The project has been broken down into a series of summary tasks set out in the Task List, which is presented in Table 6.
- 7.4.2 Table 5 indicates the methods and objectives that are addressed by each task on the Task List.

Table 5: Task numbers and methods to be employed to achieve the revised research objectives

(for Task numbers see Table 6, for Methods see section 5, and for revised research Objectives see section 4.7)

Task	Method	Description	Objectives
		Management	
1	All	Management	All
2	All	Management	All
3	All	Monitoring	All
4	All	Administration	All
5	All	Meetings	All
6	All	Meetings	All
		Structural Analysis	
7	5.2.1	Stratigraphic analysis	1.1, 1.2, 2.1-2.4, 3.1, 3.2, 3.4, 4.1, 4.2, 4.4, 7.5
8	5.2.2	Redraw matrices	1.1, 1.2
9	5.2.2	Phase plans and sections	1.1, 1.2, 2.1, 2.2, 2.4, 3.1, 3.2, 3.4, 4.1, 4.4
10	5.2.2	Input contexts to database	All
11	5.2.2	Compile info for specialists	All
12	5.2.3	Transport finds to spec	All
13	5.2.2	Transport environmental	All
14	5.2.3	Stratigraphic text	1.1, 1.2, 2.1-2.4, 3.1, 3.2, 3.4, 4.1, 4.2, 4.4
15	5.2.3	Digitise plans & sections	1.1-1.2
		Finds analysis & reports	
16	5.3.1	Samian	1.3, 3.1-3.4
17	5.3.1	Stamps	1.3, 3.1-3.4
18	5.3.2	Coarsewares Roman	1.3, 2.3, 3.1-3.4
19	5.3.3	Medieval & post-med pot	1.3, 2.5, 4.1, 4.2, 4.4, 5.4, 6.1, 7.1, 7.2, 7.4, 7.5
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21	5.4	Building materials	2.3, 3.3, 3.4
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25	5.7	Slag	4.2, 5.1, 5.4, 7.5
26	5.7	Hammerscale from bellows	4.2, 5.1, 5.4, 7.5
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33	5.12.1	Charred plant remains	1.3, 2.1-2.5, 3.3, 4.2, 4.3, 5.3, 5.4, 6.2, 6.3, 7.1, 7.4, 7.5
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50	5.9.2; 5.15	Leather illust materials	2.5, 4.2, 4.4, 5.2, 5.4, 6.2, 6.3, 7.3-7.5
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51	5.9.2; 5.15	Leather	2.5, 4.2, 4.4, 5.2, 5.4, 6.2, 6.3, 7.3-7.5
52	5.15	Photos other artefacts	All
		Report	
53	5.16.1	Integrate spec info into text	All
54	5.16.1	Library res & comp sites	All
55	5.16.1	Preparation of report	All
56	5.16.1	Illustrations for report	All
57	5.16.1	Assemble final report	All
58	5.16.1	Edit final report	All
59	5.16.2	Copy edit	All
60	5.16.2	Publication cost	All
61	5.16.2	Proof reading	All
		Archiving	
62	5.17	Archive preparation & deposition	All

Table 6: Task List

(for the Objectives to be addressed by each Task and Method please see Table 5).

Task	Description	Performed By	Days
	Management		
1	Management	CA	10
2	Management	JZ	4
3	Monitoring	RN	1
4	Administration	CA	4
5	Meetings	CA	3
6	Meetings	JZ	3
	Structural Analysis		
7	Stratigraphic analysis	JZ	10
8	Redraw matrices	JZ	2
9	Phase plans and sections	JZ	6
10	Input contexts to database	JC	3
11	Compile info for specialists	JC	3
12	Transport finds to spec	JC	1
13	Transport environmental	JC	1
14	Stratigraphic text	JZ	5
15	Digitise plans & sections	IL	3
	Finds analysis & reports		
16	Samian	MW	8.5
17	Stamps	BD	1
18	Coarsewares Roman	VS	14
19	Medieval & post-med pot	IM	20
20	Burnt clay	CHD	0.5
21	Building materials	SP	3
22	Waterlogged wood & charcoal	CHD	4
23	Roman coins	DS	2
24	Metalwork	CHD	3
25	Slag	LK	4
26	Hammerscale from bellows	LK	2
27	Glass	CHD	1.5
28	Stone	CHD	1.5
29	Bone artefacts	CHD	0.5
30	Leather analysis & report	QM	42.5
31	Leather, studs XRF	SP	1
	Environmental		
32	Animal bone	AB	16
33	Charred plant remains	EH	8
34	Pollen	EH	11
35	Insects	HK	9
36	Shell	CHD	0.5
37	Materials	EH	1
38	Toe stuffing & leaf	EH	1
	Conservation		
39	Wood and artefacts	JJ	3
40	Metalwork investigation	KB	10
41	Leather	SP	50
	Dating		
42	Radiocarbon dates	SP	4

Task	Method	Description	Objectives
35	5.12.3	Insects	2.1-2.5, 3.3, 4.2, 4.3, 7.5
36	5.12.4	Shell	2.3, 2.5, 6.3, 7.1
37	5.12.1	Materials	2.5, 5.2, 6.3, 7.3-7.5
38	5.9.2	Toe stuffing & leaf	2.5, 5.2, 6.3, 7.3-7.5
		Conservation	
39	5.5.1	Wood and artefacts	1.3, 2.1-2.5, 4.1-4.3, 5.3, 5.4, 6.3, 7.2
40	5.6.2	Metalwork investigation	1.3, 3.1-3.4, 4.1, 4.2, 5.1, 5.3, 5.4, 6.2, 7.2, 7.4, 7.5
41	5.9.2	Leather	2.5, 4.2, 4.4, 5.2, 5.4, 6.2, 6.3, 7.3-7.5
		Dating	
42	5.13	Radiocarbon dates	1.3, 2.1
		Illustrations	
43	5.3.1; 5.15	Samian	1.3, 3.1-3.4
44	5.3.1; 5.15	Stamps	1.3, 3.1-3.4
45	5.3.2; 5.15	Coarsewares	1.3, 2.3, 3.1-3.4
46	5.3.3; 5.15	Post-Roman pottery	1.3, 2.5, 4.1, 4.2, 4.4, 5.4, 6.1, 7.1, 7.2, 7.4, 7.5
47	5.6.2; 5.15	Metalwork	1.3, 3.1-3.4, 4.1, 4.2, 5.1, 5.3, 5.4, 6.2, 7.2, 7.4, 7.5
48	5.15	Other artefacts	1.3, 3.1, 3.3, 4.4, 5.3, 5.4, 6.3, 7.4
49	5.9.2; 5.15	Leather	2.5, 4.2, 4.4, 5.2, 5.4, 6.2, 6.3, 7.3-7.5
50	5.9.2; 5.15	Leather illust materials	2.5, 4.2, 4.4, 5.2, 5.4, 6.2, 6.3, 7.3-7.5
		Photographs	
51	5.9.2; 5.15	Leather	2.5, 4.2, 4.4, 5.2, 5.4, 6.2, 6.3, 7.3-7.5
52	5.15	Photos other artefacts	All
		Report	
53	5.16.1	Integrate spec info into text	All
54	5.16.1	Library res & comp sites	All
55	5.16.1	Preparation of report	All
56	5.16.1	Illustrations for report	All
57	5.16.1	Assemble final report	All
58	5.16.1	Edit final report	All
59	5.16.2	Copy edit	All
60	5.16.2	Publication cost	All
61	5.16.2	Proof reading	All
		Archiving	
62	5.17	Archive preparation & deposition	All

Table 6: Task List

(for the Objectives to be addressed by each Task and Method please see Table 5).

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	Management		
1	Management	CA	10
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3	Monitoring	RN	1
4	Administration	CA	4
5	Meetings	CA	3
6	Meetings	JZ	3
	Structural Analysis		
7	Stratigraphic analysis	JZ	10
8	Redraw matrices	JZ	2
9	Phase plans and sections	JZ	6
10	Input contexts to database	JC	3
11	Compile info for specialists	JC	3
12	Transport finds to spec	JC	1
13	Transport environmental	JC	1
14	Stratigraphic text	JZ	5
15	Digitise plans & sections	IL	3
	Finds analysis & reports		
16	Samian	MW	8.5
17	Stamps	BD	1
18	Coarsewares Roman	VS	14
19	Medieval & post-med pot	IM	20
20	Burnt clay	CHD	0.5
21	Building materials	SP	3
22	Waterlogged wood & charcoal	CHD	4
23	Roman coins	DS	2
24	Metalwork	CHD	3
25	Slag	LK	4
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29	Bone artefacts	CHD	0.5
30	Leather analysis & report	QM	42.5
31	Leather, studs XRF	SP	1
	Environmental		
32	Animal bone	AB	16
33	Charred plant remains	EH	8
34	Pollen	EH	11
35	Insects	HK	9
36	Shell	CHD	0.5
37	Materials	EH	1
38	Toe stuffing & leaf	EH	1
	Conservation		
39	Wood and artefacts	JJ	3
40	Metalwork investigation	KB	10
41	Leather	SP	50
	Dating		
42	Radiocarbon dates	SP	4

Task	Description	Performed By	Days
	Illustrations		
43	Samian	IL	3
44	Stamps	IL	1
45	Coarsewares	IL	3
46	Post-Roman pottery	IL	6
47	Metalwork	IL	5
48	Other artefacts	IL	11
49	Leather	SW	18
50	Leather illust materials	SW	0
	Photographs		
51	Leather	PH	0
52	Photos other artefacts	PH	0
	Report		
53	Integrate spec info into text	JZ	15
54	Library res & comp sites	JZ	5
55	Preparation of report	JZ	10
56	Illustrations for report	IL	8
57	Assemble final report	JZ	10
58	Edit final report	CA	10
59	Copy edit	WS	0
60	Publication cost	SP	0
61	Proof reading	WS	3
	Archiving		
62	Archive preparation & deposition	JC	3

Abbreviations:

OAN Staff

AB	Andrew Bates
CA	Carol Allen
CHD	Christine Howard-Davis
EC	Emma Carter
EH	Elizabeth Huckerby
IL	Illustrator
IM	Ian Miller
JC	Joanne Cook
JZ	John Zant
RN	Rachel Newman

External Specialists

BD	Brenda Dickenson
DS	David Shotter
HK	Harry Kenward
KB	Karen Barker
LK	Lynne Keys
MW	Margaret Ward
PH	Photographer
QM	Quita Mould
SP	Specialist
SW	Susan Winterbottom
VS	Vivien Swan
WS	Wendy Sherlock

7.5 PROGRAMMING

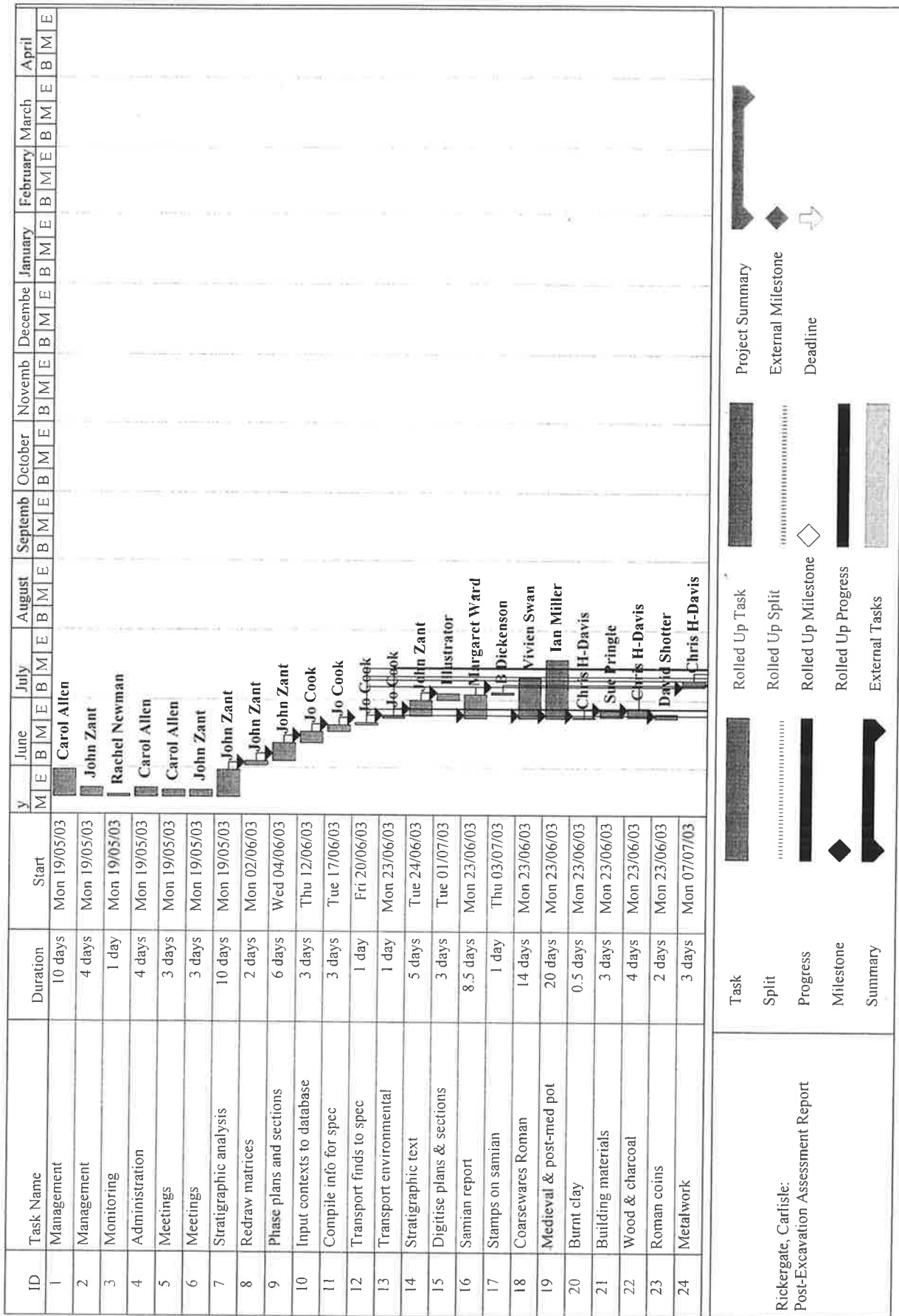
- 7.5.1 A Gantt chart providing information on the programming of the full analysis is attached at the end of this section. The management tasks will be on-going throughout the life of the project and are therefore shown in general terms and are not allocated to specific days.
- 7.5.2 The chart assumes that the analysis for the project would commence in May 2003 and would continue until April 2004. Allowing for academic referee's comments and production of the final text, it is envisaged that the final report could be published in 2005.

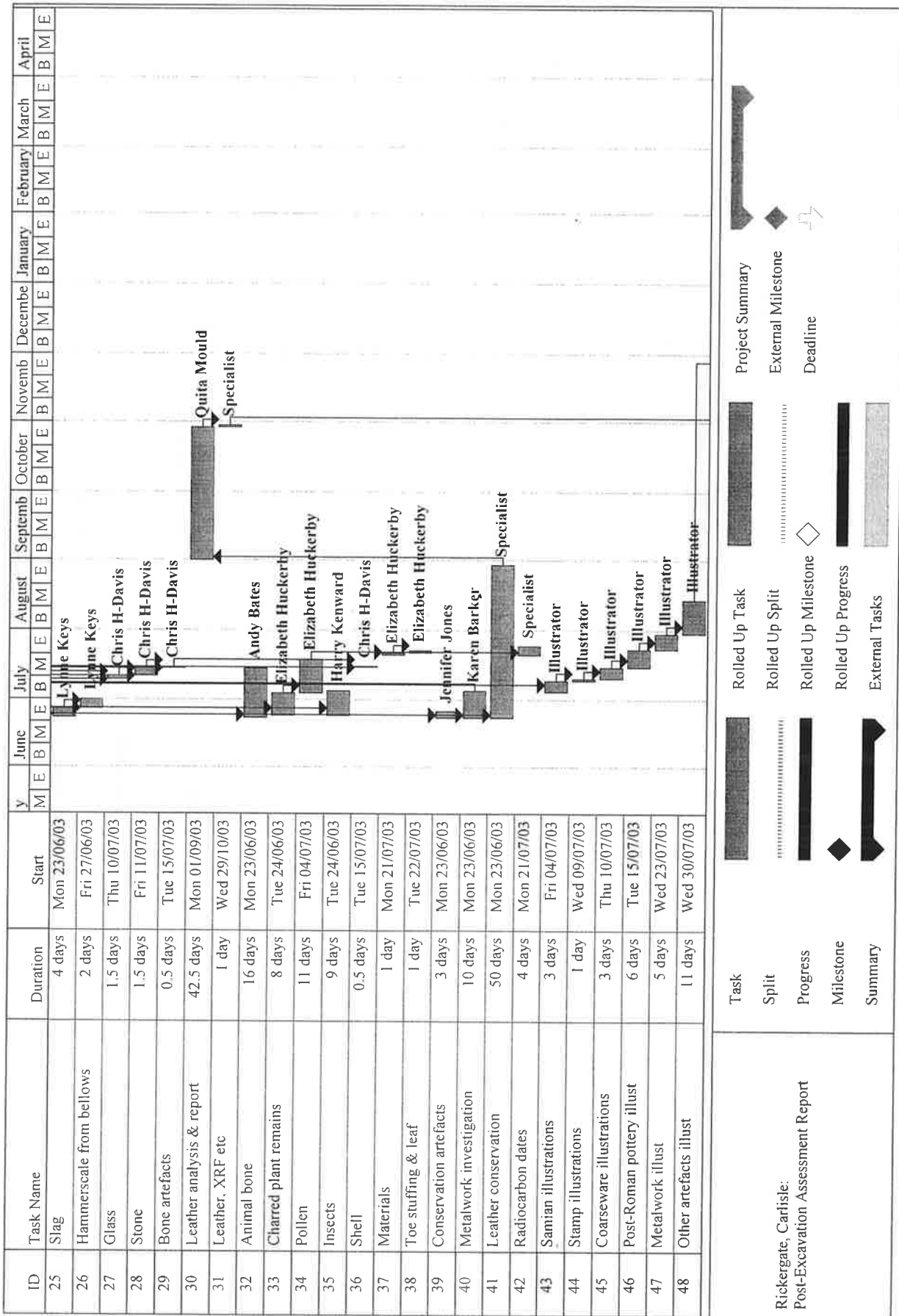
7.6 TOTAL COSTS

- 7.6.1 The report will present the information on the full analysis of the evidence from this site. This information has been carefully assessed (4.6.1) to ensure that the published report will include new information for the history of Carlisle and will not duplicate evidence known to be available from other sites in the city. This will be achieved by careful selection of the material to be included in the published volume, and ensures therefore that no unnecessary analysis will be undertaken in connection with this report, as described in detail in section 5 above.
- 7.6.2 **The total cost of the analysis and publication will be £78,253.00.** The price is fixed for the duration of the project providing the work described in this report is commissioned by April 1 2003; otherwise the price may be subject to revision.
- 7.6.3 Table 7 overleaf indicates the breakdown of these costs.

Table 7: Breakdown of the costs of the full analysis and publication

Description	Cost £	% of total cost
Staff	19,511	24.9
Transporting finds	1304	1.7
Illustrations & photographs	8,576	11.0
Specialist costs	25,533	32.7
Conservation: leather, metalwork & other artefacts	14,049	17.9
Radiocarbon dating	1,280	1.6
Publication cost	8,000	10.2
Total	£78,253	100.0%





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APPENDIX 1 - CERAMICS

1.1 ASSESSMENT OF THE SAMIAN

by Margaret Ward

Introduction

- 1.1.1 A small assemblage of samian ware was recovered by hand during the course of the Rickergate excavations.
- 1.1.2 The recovery and study of the samian ware was undertaken in accordance with the fieldwork aims and revised research aims for the site, which are set out in section 2 of the main report, above. The recovery of this material was undertaken in order to assist with the establishment of a closely dated sequence of Roman occupation on the site, to aid detailed understanding of the precise nature of Roman activity, and to determine the status, economic orientation, and patterns of trade and contact of the site during the Roman period.

Methodology

- 1.1.3 Samian ware is published in a standardised form across the whole of western Europe and standardised terminology is employed throughout this report. The following abbreviations are used in the text and tables below (for further details, see Bulmer 1980 and Webster 1996):

SG: South Gaulish

CG: Central Gaulish

EG: East Gaulish

- 1.1.4 Vessel types are generally Dragendorff's form numbers unless otherwise stated.
- 1.1.5 Dates given are the beginning and ending of the date-range for each vessel, for example AD 70-110.
- 1.1.6 Prior to assessment the entire assemblage was subjected to spot-dating in order to inform the stratigraphic assessment. The information provided by rapid survey of the assemblage was sufficient to make sub-sampling superfluous. The range of fabrics, forms and condition of the vessels, together with features such as potters' stamps and decoration, were noted in the course of spot-dating.
- 1.1.7 Close scrutiny equivalent to inspection by hand-lens was required even amongst those groups considered suitable for rapid scanning. Although time-consuming, this was necessary in order to identify fabrics and sources of origin, particularly in the case of small and otherwise indeterminate fragments. Samian ware is frequently attributable only on close inspection of the fabric to an area of production in South, Central or East Gaul, or in some cases to a kiln-site, such as Les Martres-de-Veyre or Lezoux in Central Gaul.

Quantification

- 1.1.8 The total assemblage of 321 sherds was recovered from 58 stratified contexts and eight unstratified or unphased deposits. The total weight of the material was 2.741kg, giving an average sherd weight of 8.5 g.
- 1.1.9 The assemblage is quantified by area of excavation in Table 1.1 and by site period in Table 1.3. A summary catalogue of the material is presented in Table 1.4. The size of the assemblage from RIC C is a reflection of the fact that the well-preserved Roman stratigraphy was fully excavated by hand. Elsewhere, Roman deposits either remained largely unexcavated, as in RIC B, or had been almost completely destroyed by post-Roman activity, as in RIC D and RIC E.

Table 1.1: Distribution of samian by excavated area

Area	Count	% of total
RIC B	23	7.2
RIC C	221	68.8
RIC D	8	2.5
RIC E	37	11.5
RIC F	32	10.0
Total	321	100

- 1.1.10 The 321 sherds represent a maximum of 302 individual vessels, of which only 35 displayed moulded decoration. Some 5% of the assemblage was represented by SG wares and a further 5% by EG material. The remaining 90% of the assemblage comprised CG wares, which dominated the 2nd century. The low proportion of SG ware, which was manufactured predominantly before *c* AD 110, is consistent with the pattern to be expected from a site with no 1st century occupation. In the CG assemblage, Hadrianic and Antonine material from Lezoux is overwhelmingly predominant, with few Trajanic products from Les Martres-de-Veyre present. The low proportion of EG samian, which was produced well into the 3rd century, was not unexpected, since the availability of samian in the western part of the province seems to have been considerably reduced during the 3rd century. Several of the 14 EG vessels represented on the site may have been early products from the earlier 2nd century production centres of East Gaul. Only one or two vessels were possibly produced after *c* AD 200 and none of the latest EG products of the mid-3rd century appear to be present.
- 1.1.11 The bulk of the assemblage consists of small fragments. Of the 302 vessels represented, only one has survived in complete profile and only five contexts, all from RIC C, contained more than 15 sherds (RIC C 216, 219, 221, 229 and 236). Of these, only RIC C [219] of period 4 contained more than 50 sherds.
- 1.1.12 The assemblage is summarised in Table 1.2 below. No graffiti was recorded.

Table 1.2: Summary of the samian assemblage

Fabric	SG	CG	EG	Totals
Count	16	287	18	321
Weight (g)	125.1	2335.9	280.4	2741.4
Max. no. vessels	15	273	14	302
Decoration	1	31	3	35
Stamp	-	5	1	6
Wear	-	12	3	15
Repair	-	2	-	2
Reuse	-	2	-	2
Burnt	-	22	-	22

Note: the same sherd may be worn, repaired, re-used and/or burnt

Provenance

1.1.13 The samian was recovered from a total of 58 stratified contexts and eight unphased deposits. The unphased material comprised 17 unstratified sherds from areas RIC B, C, D and E and one sherd from an unphased context in area RIC F. The quantification of the assemblage by site period is shown in Table 1.3 below.

Table 1.3: Quantification of samian by site period

Period	Count	% of total
2	34	10.59
3	9	2.80
4	87	27.10
5	34	10.59
2-5	29	9.04
6	51	15.89
7	8	2.49
8	7	2.18
9	21	6.54
7-9	16	4.98
11	3	0.94
12	4	1.25
unphased	18	5.61
Total	321	100

1.1.14 Approximately 60% of the samian assemblage came from Roman contexts, although only just over 13% came from deposits of periods 2 and 3, which are thought to date to the period when samian was actually in production. Over a quarter (27%) of the assemblage came from period 4 deposits, which are believed to date to the second half of the 3rd century, the period during which samian production ceased but use of existing vessels doubtless continued. Almost 16% of the assemblage was residual within the early post-Roman dark soils of period 6, whilst a little over 18% occurred residually within medieval and post-medieval contexts.

Conservation

- 1.1.15 Samian ware was fired at high temperatures and thus survives frequently in better condition than other Roman pottery. This collection has survived in very good condition and warrants no special conservation measures. Further analysis of the samian wares will be required. Close examination of fabrics will be necessary in order to complete the final samian report. It will be necessary to make graphite rubbings of sherds with moulded decoration and for those with potters' stamps. None of these activities is likely to affect the pottery adversely.
- 1.1.16 A qualified conservator should advise on long-term packaging and storage. However, the current packaging should be adequate if packing material is added to the boxes.
- 1.1.17 The entire assemblage should be retained and nothing disposed of. This is in line with national recommendations (Young 1980, 7, section 2.8.2).

Comparative Material

- 1.1.18 The products of the samian industry were highly standardised, and their study has developed along standardised lines. It will unnecessary, therefore, to detail here those general reference books in which comparative material may be found (but see Bulmer 1980 and Webster 1996). Hartley's survey of samian ware from sites in northern England and Scotland should be used for statistical comparisons of decorated and stamped vessels (Hartley 1972).
- 1.1.19 Within Carlisle, assemblages of samian are published from within the Roman civilian settlement at Blackfriars Street (Dickinson 1990) and the southern Lanes (Dickinson 2000b) and from the fort annexe site at Castle Street (Dickinson 1991a). Important assemblages from within the Roman fort at Annetwell Street and the recent Millennium project are currently unpublished (Dickinson and Pengelly in preparation; Ward 2002).
- 1.1.20 Regionally, published assemblages of samian are available from numerous Roman sites, including Watercrock (Wild 1979), Ribchester (Wild 1988, Dickinson 2000a) and Old Penrith (Dickinson 1991b). The later occupation at the fort of Birdoswald on Hadrian's Wall may also be of interest (Dickinson 1997).

Potential for Further Work

- 1.1.21 Samian ware was a mass-produced product, exported from Gaul across the whole of western Europe. Publication of the Rickergate assemblage would therefore make a valuable contribution to samian studies regionally, nationally and internationally (see Willis 1997, sections 5.3.1 and 8.1). In terms of the Rickergate site itself, the precision with which samian can be dated makes further study of the assemblage crucial to our understanding of site development during the Roman period (Objective 2.1).

- 1.1.22 In order to fully realise the potential of the samian assemblage; further detailed work on the identification of individual forms and fabrics will be required in order to refine the dating of the assemblage. Further work will be needed on a total of 15 vessels with moulded decoration, and on the potter's stamps, which will need expert examination to enable precise identification and dating.
- 1.1.23 From the point of view of samian studies, the low proportion of EG vessels will require consideration in order to assess whether it signifies reduced activity on the site during the 3rd century or, as seems more likely, points to reduced availability of EG products in Carlisle during this period. Further consideration of issues of residuality of samian in later Roman deposits would also be of value; in order to gauge the extent to which samian continued in use into this period. In this context, it is particularly important that all evidence for wear, repair, re-use and secondary use should be recorded and published in detail.

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Table 1.4: Outline catalogue of the Samian assemblage

Area	Context	Period	Count	Spotdates	Comments
RIC B	7	2-5	1	70-110	rimsherd
RIC B	16	2-5	1	120-160	fragment
RIC B	18	2-5	8	70-110 (2?), 120-160 (6?)	1 sherd (120-160?) has a rivet hole
RIC B	48	4	1	150/160-200	160-200 if it is east gaulish ware from rheinzabern
RIC B	62	3	1	160-200	footring worn from use
RIC B	93	7-9	1	160-200	
RIC B	97	2-5	1	120-200	probably antonine
RIC B	102	2-5	1	70-110	flake
RIC B	111	2-5	1	120-160	rimsherd
RIC B	128	12	4	120-150, 120-160, 135-160	3 vessels: 2 sherds are of 1 east gaulish cup
RIC B	unstrat	unphased	1	120-200	fragment
RIC B	unstrat	unphased	2	140-200	1 vessel
RIC C	203	7-9	6	140/150-200 (6)	1 footring was worn possibly in use
RIC C	215	6	11	120-160, 120/140-200 (6), 150/160-200 (4)	fragments
RIC C	216	6	35	120-160, 120-200, 150-180, 150-200 (most), 160-200 (2), 170-200	fragments including the footring of a bowl of 160-200 which was worn in use
RIC C	217	5	10	70-110 (2), 100-130 (2), 120-200, 150-200 (most), 160-200	1 east gaulish dish, c120-200 (or later?), has a worn footring
RIC C	218	6	5	150-200	1 bowl may be 160-200
RIC C	219	4	62	100-130, 120-160 (several), 120/140-200 (many), 150-180 (several), 150-200, 160-200, 170-200 (2)	stamped dish c160-200 has a worn foot, stamp to be examined; 1 gaming piece cut from a vessel of 150-200
RIC C	221	5	23	120-180, 120-200 (several), 140/150-200 (several), 170-200	fragments
RIC C	223	4	5	120-150, 120-200 (several)	fragments
RIC C	229	4	19	120-150, 120-160 (several), 120-200 (several)	fragments
RIC C	231	5	1	120-200	fragment, probably antonine
RIC C	234	2	8	120-160 (several), 140-200 (2?)	1 decorated sherd of 140-200 has a rivet hole; another antonine vessel had a worn foot
RIC C	236	2	23	70-110 (2), 120-150, 120-160 (several), 120-200 or later? (several), 150-180	1 sherd 150-180 is from a bowl found in (219); 1 stamped dish with a very worn foot from chemery? needs close dating
RIC C	238	3	2	100-125, 120-150?	fragments
RIC C	239	3	1	140-200	decorated fragment
RIC C	240	2	2	120-200	fragments, probably antonine
RIC C	243	2	1	120-150	fragment
RIC C	255	3	5	70-110 or 120-160, 150-200	2 bowls (4 flakes are of 1 vessel - the date needs checking)
RIC C	unstrat	unphased	2	150-200 (2)	fragments
RIC D	313	7-9	1	120-200+	probably 160-200 or later if it is

Area	Context	Period	Count	Spotdates	Comments
					east gaulish ware from rheinzabern
RIC D	354	9	2	120-200 (2)	
RIC D	356	9	1	120-200	east gaulish fragment
RIC D	373	8	1	160-200	possibly 170-200, footring extremely worn from use
RIC D	393	8	1	120-200	probably antonine
RIC D	unstrat	unphased	2	150-200 (2)	1 fragment of decoration 160-200?
RIC E	32	9	2	120/140-160, 160-240?	1 decorated fragment is from east gaul - trier? (the date 160-240 needs refining)
RIC E	36	2-5	4	120-150	decorated sherd
RIC E	42	9	1	100-140	tiny flake
RIC E	43	9	1	120-160	fragment
RIC E	45	8	1	120-200	east gaulish dish with a worn footring
RIC E	46	8	1	140/150-200	this sherd may just possibly have been re-used as a rough disc; needs checking
RIC E	49	8	2	100-125,160-200	fragments
RIC E	50	8	1	100-130	a large piece
RIC E	51	9	6	120-160 (several), 120-200, 140-170	fragments, 1 probably from an early east gaulish centre
RIC E	59	9	2	120-200, 140-200	1 antonine footring may have seen little wear
RIC E	60	9	1	150-200	possibly 160-200
RIC E	74	9	5	120-160, 160-200 (4)	1 footring of 160-200 was worn in use
RIC E	82	7	1	120-160	the date may need checking
RIC E	83	7	1	100-125	fragment
RIC E	87	7	6	100-140?	a large part of a single dish whose footring was little worn; the date needs checking
RIC E	unstrat	unphased	2	120-160 (2)	1 fragment is of a worn footring
RIC F	1	unphased	9	70/80-110 (2), 120-150/160 (several), 120-200, 140-160/170	2 footrings of 120-150 and 120-200 are extremely worn; 1 decorated sherd needs checking (140-160 or 150-170)
RIC F	19	11	1	150-200	fragment
RIC F	29	11	2	100-125, 120-160?	fragments of 2 stamps need examination
RIC F	46	7-9	1	100-140	fragment
RIC F	51	7-9	1	120-200	tiny flake
RIC F	66	7-9	2	120-200	flakes
RIC F	69	7-9	4	120/140-160, 140-200 (2), 150-190	fragments include decoration and stamp needing examination
RIC F	110	2-5	1	70/80-110	fragment adjoining another in ric f (1)
RIC F	111	2-5	1	120/140-200+	east gaulish fragment whose date needs checking
RIC F	127	2-5	2	130-160	a complete profile of the vessel with a v worn footring, whose stamp needs accurate dating

Area	Context	Period	Count	Spotdates	Comments
RIC F	130	2-5	1	70-110	fragment
RIC F	159	2-5	1	75-100	decorated sherd
RIC F	160	2-5	6	70-110 (2), 120-160 (2)	4 vessels represented by small sherds: 1 footring of 70-110 showed little wear; 3 frags of 1 vessel of 120-160 join

1.2 ASSESSMENT OF THE ROMAN COARSE POTTERY

by Vivien Swan and Ray McBride

Introduction

- 1.2.1 A relatively small assemblage of Roman coarse pottery was recovered during the course of the RickerGate excavations.
- 1.2.2 All the material was hand retrieved on site.
- 1.2.3 The recovery and study of the Roman coarse pottery was undertaken in accordance with the fieldwork aims and revised research aims for the site, which are set out in section 2 of the main report, above. The recovery of this material was undertaken in order to contribute to the establishment of a closely dated sequence of Roman occupation on the site, and to determine the status, economic orientation and patterns of trade and contact of the site during the Roman period.

Methodology

- 1.2.4 The assemblage consisted of amphorae, mortaria and other coarse wares from all parts of the RickerGate site. All the material from each context was rapidly scanned, and a list of spot-dates was compiled and sent to OAN in advance of the full assessment report. In addition to the contextual information provided by the excavator, the following new information was recorded onto proforma sheets and subsequently entered onto an Access database:
- a *terminus post quem* for each context, where the evidence allowed;
 - the identity of the sherd(s) on which each spot-date was based and any vessels of particular interest;
 - the total number of sherds in each context;
 - the total weight of the sherds in each context;
 - the approximate number of sherds in each context appropriate for drawing;
 - other general comments, as appropriate.

Quantification

- 1.2.5 The total assemblage comprises 838 sherds weighing 26.678kg, and was recovered from 87 separate contexts, including unstratified and unphased deposits. There are 40 sherds of mortaria, but no mortarium or amphora stamps. A single graffito was recorded on two adjoining sherds of pottery. The

assemblage is quantified by excavated area and by site period in Tables 1.5 and 1.6 below.

Table 1.5: Distribution of Roman coarse pottery by excavated area

Area	Count	% of total
RIC B	141	16.83
RIC C	458	54.65
RIC D	13	1.55
RIC E	67	7.99
RIC F	159	18.98
Total	838	100

Table 1.6: Quantification of Roman coarse pottery by site period

Period	Count	% of total
1	1	0.12
2	103	12.29
3	26	3.10
4	158	18.85
5	50	5.97
2-5	165	19.69
6	110	13.13
7	29	3.46
8	18	2.15
9	23	2.74
7-9	72	8.59
11	4	0.48
12	31	3.70
unphased	48	5.73
Total	838	100

Provenance

- 1.2.6 The distribution of the assemblage by excavated area and site period is given in Tables 1.5 and 1.6 above. Quantification by individual context is given in Table 1.7 below.
- 1.2.7 The assemblage comprises mainly fabrics and forms regularly found in northern Britain. Sources range from southern Spain (Dressel 20 amphora) to Gaul (Gauloise 4 amphora) with a possible Rhodian amphora also present. There is also a significant quantity of material from East and North Yorkshire, with many vessels from the kilns at Crambeck and its environs, indicating an established trade link with Carlisle from the late 3rd century onwards.

Conservation

- 1.2.8 All the pottery is stable and packed to an acceptable standard, and does not require further conservation. It is recommended that all the material is

retained, since it represents an important addition to the ceramic assemblage of Roman Carlisle.

Comparative Material

- 1.2.9 To date the only sizeable assemblage of Roman pottery to be fully published from Carlisle is that recovered from the excavations at Blackfriars Street (Taylor 1990), although the pottery from the southern Lanes has been published in summary form (Hird 2000). Like the Rickergate site, both these excavations lay within the area of the Roman civil settlement. Comparisons and contrasts, albeit less apposite, may also be made with the material from the Castle Street site (Taylor 1991) and the lift-shaft excavation at Tullie House Museum (Caruana 1992), which are believed to lie within an annexe on the south side of the Roman fort. The location of the Rickergate site near the river, and the possibility that the pottery from the earliest Roman levels may represent material deliberately selected for dumping as part of an episode of land reclamation (there is an unusually high percentage of amphorae and mortaria present in the assemblage), make this deposit unusual in its character and therefore worthy of full publication.

Potential for Further Work

- 1.2.10 Further analysis of the Roman coarse pottery has some potential to address Objective 2.1 of the research aims, which seeks to further understanding of the origins and development of Roman occupation in the Rickergate area. In particular, the pottery groups from areas RIC B and RIC C should be looked at in some detail, with consideration given to the likely function of the timber buildings and associated deposits recorded in these areas. Dressel 20 amphorae from southern Spain, which principally contained olive oil, are present in sufficient quantities and in sufficiently good condition to suggest that there is little residuality within these groups. The presence of these vessels may also potentially shed some light on the function of these structures.
- 1.2.11 From the point of view of Roman pottery studies, the assessment has raised questions regarding the source of some of the Black Burnished ware Fabric 1 (BB1) vessels in the Rickergate assemblage. Further work is required to establish whether some of these vessels come from the South Yorkshire kilns at Rossington Bridge as well as from the more typical Dorset sources.

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Table 1.7: Outline catalogue of the Roman coarse pottery

Area	Trench	Context	Period	count	Weight (g)	type	TPQ	comments
RIC B	1	30	7-9	1	5	scrap oxidised ware	Undatable	
RIC B	1	48	4	7	248	grey imitation BB1, bowl and jar	C3	
RIC B	1	50	7-9	13	84	including medieval glazed	Medieval	
RIC B	1	65	3	1	148	Dr 20	pre-mid C3	
RIC B	1	65	3	9	111	imitation BB1 (? Cramb or E. Yorkshire)	possibly late C3 onwards	
RIC B	1	79	3	1	1278	Dr 20	pre-mid C3	
RIC B	1	79	3	4	203	imitation BB1 (?E. Yorkshire)	late C2-C3 onwards	
RIC B	1	128	12	27	874	Dr 20: + imitation BB1, jars incl prob e yorks	C3 onwards	mortarium? Local or NW
RIC B	4	0	-	2	38	possibly Medieval sherds	Medieval onwards	
RIC B	4	0	-	6	93	BB1 jar + other BB1 scraps	Hadrianic-Antonine onwards	
RIC B	4	0	-	1	83	Dr 20	pre-mid C3	
RIC B	4	0	-	1	19	Raetian mortarium	Hadrianic-Antonine onwards	
RIC B	4	0	-	1	34	possibly Dr 20 amph (thin walled)	C2-mid C3	
RIC B	4	2	12	1	4	scrap oxidised ware	Undatable	
RIC B	4	7	12	1	63	Dr 20	pre-mid C3	
RIC B	4	7	12	2	16	BB1 (acute lattice)	Hadrianic onwards	
RIC B	4	16	2-5	4	25	imitation BB1	Hadrianic onwards	
RIC B	4	18	2-5	22	318	lid grey: BB1 Base: + imitation	Hadrianic onwards	
RIC B	4	18	2-5	3	73	amphorae Dr 20 + ? Rhodian	pre-mid C3	
RIC B	4	19	2-5	1	20	Dr 20	pre-mid C3	
RIC B	4	19	2-5	2	52	hard fired grey imitation BB	Hadrianic-Antonine onwards	
RIC B	4	93	7-9	2	35	Oxfordshire mortarium	mid C3 onwards	
RIC B	4	93	7-9	23	236	Jar with bifid rim (?Wilderspool) BB1	Hadrianic-Antonine onwards	
RIC B	4	95	2-5	1	18	grey abraded (unidentifiable)	Undatable	
RIC B	4	97	2-5	1	49	Dr 20	pre-mid C3	
RIC B	4	97	2-5	3	35	scraps oxidised ware	Undatable	
RIC B	4	102	2-5	1	1	scrap oxidised unidentifiable	Undatable	
RIC C	5	0	-	1	7	scrap Crambeck	290 onwards	
RIC C	5	0	-	1	88	Dr 20	pre-mid C3	
RIC C	5	0	-	8	33	scraps including possible post R	possibly Post Roman	
RIC C	5	203	7-9	1	13	mortarium, yellow slip cramb	290 onwards	
RIC C	5	203	7-9	18	88	possibly post Roman + N.V	possibly Post Roman	all small scraps (probably residual)
RIC C	5	203	7-9	4	292	Dr 20	pre-mid C3	
RIC C	5	215	6	1	33	mortarium: probably NV	C3 onwards	

Area	Trench	Context	Period	count	Weight (g)	type	TPQ	comments
RIC C	5	215	6	26	560	Burnt crambeck beaker with hooked dec	290 onwards	Crambeck grey flanged bowl BB1 flanged bowl
RIC C	5	215	6	3	65	Dr 20	pre-mid C3	
RIC C	5	216	6	14	796	mortarium NV (mid/late) Crambeck body	290 onwards	all mortarium sherds
RIC C	5	216	6	2	50	Dr 20 + unidentified scrap amph	pre-mid C3	
RIC C	5	216	6	54	749	Crambeck flanged bowl with wavy line	360 onwards	caster box stamped eye boss (?York)
RIC C	5	217	5	3	175	mortarium 2 sh. Crambeck	290 onwards	
RIC C	5	217	5	11	254	Crambeck grey bowl with int. wavy line: cal grit	350 onwards	NV base of dish
RIC C	5	218	6	1	80	Mancetter-Hartshill mortarium	early/mid C2 onwards	
RIC C	5	218	6	2	166	Dr 20	pre-mid C3	
RIC C	5	218	6	7	70	tiny fine lid : BB1	Hadrianic onwards	
RIC C	5	219	4	1	15	scrap corner of tile	Undatable	
RIC C	5	219	4	9	740	Dr 20: ?Rhodian amph	pre-mid C3	white slip? Amph/jar
RIC C	5	219	4	5	180	mortarium Mancetter-Hartshill + Wilderspool	C2	
RIC C	5	219	4	106	1308	Drag 38 red cc (prob Oxon): lid, rough cast beaker	240/260 onwards	BB1 dish grooved bead(acute lattice)
RIC C	5	221	5	26	290	Huntcliff type cp	360 onwards	
RIC C	5	221	5	3	96	mortarium Mancetter-Hartshill + ? NV	C3	
RIC C	5	221	5	1	72	Gauloise 4 amph	late C1 onwards	
RIC C	5	223	4	4	48	beaker (mica dusted) hunt cup	late C2-early C3	
RIC C	5	229	4	25	395	BB1 deep bowl, groove flange + 90 degree lattice	early C3	campanulate bowl with groove, imit. BB jar
RIC C	5	229	4	1	35	mortarium ? NW	possibly C2 onwards	
RIC C	5	231	5	6	32	all oxidised	possibly late C-early C2	
RIC C	5	234	2	2	486	Dr 20	pre-mid C3	
RIC C	5	234	2	15	362	BB1 acute angled lattice; Ebor platter	Severan	1 possible ebor sherd
RIC C	5	236	2	1	40	mortarium: orange/brown body (? NW)	possibly C2 onwards	
RIC C	5	236	2	50	1137	BB1: probably grey E. Yorkshire: lid	C3 onwards	
RIC C	5	236	2	1	15	grey face jar fragment	C3	
RIC C	5	236	2	13	2128	Dr 20: white slip plus thinnish orange	pre-mid C3	
RIC C	5	238	3	1	4	scrap oxidised ware	Undatable	
RIC C	5	239	3	2	8	2 scraps roman incl white slip	Undatable	
RIC C	5	239	3	3	767	Dr 20	pre-mid C3	
RIC C	5	240	2	3	28	imitation BB acute (finish)	possibly C3	
RIC C	5	240	2	1	137	Dr 20	pre-mid C3	
RIC C	5	242	2	1	876	mortarium (substantial profile)	Hadrianic-Antonine	
RIC C	5	243	2	14	248	beaker (?Co]chester: antonine) BB1:lid	mid C2 onwards	
RIC C	5	243	2	1	16	scrap grey ware	Undatable	

Area	Trench	Context	Period	count	Weight (g)	type	TPQ	comments
RIC C	5	255	3	5	56	BB1: and other scraps	Hadrianic onwards	
RIC C	5	260	2	1	53	BB1 dish (flat-rimmed, ?non dorset: very fine)	Hadrianic-Antonine	
RIC D	7	0	-	4	10	mosel keramik beaker	early-mid C3	3 scraps
RIC D	7	353	9	5	60	Med/PM	post Roman-Medieval	all sherds post R med
RIC D	7	354	9	2	110	amph (Dr.20)M-H mortarium	C3-early C4	
RIC D	7	356	9	2	9	colour coated ware with cut glass dec	possibly C2 onwards	grey scrap (undated)
RIC E	8	0	-	2	9	2 scraps	Undatable	
RIC E	8	0	-	2	13	scraps white	post Roman	
RIC E	8	0	-	1	17	possibly Roman plain rim jar	Undatable	
RIC E	8	32	9	1	109	mortarium (Mancetter)	C2-C3	
RIC E	8	33	2-5	1	455	Dr 20	pre-early C3	
RIC E	8	38	9	1	9	grey ware (?local)	Undatable	
RIC E	8	43	9	1	31	Beaker base (cologne)	early/late C2	
RIC E	8	45	8	2	59	grey ware	Undatable	
RIC E	8	46	8	3	86	rusticated grey jar	pre-early Hadrianic	narrow mouthed jar + grey scrap
RIC E	8	50	8	3	26	BB1 + probable? Post Roman	possibly Post Roman	
RIC E	8	51	9	5	82	post-Roman sherd cut glass-style dec	post-Roman	also mortarium (? Late samian) + grey scrap
RIC E	8	52	8	3	21	BB1 acute lattice + BB imitation	Hadrianic-Antonine	
RIC E	8	57	8	1	1	scrap grey ware	Undatable	
RIC E	8	59	9	4	103	grey ware dish (Humberside) G.B dented	late C1-early C2	1 scrap oxidised 2 scraps grey (undated)
RIC E	8	64	8	1	112	amphora (? Spain)	C1-C2	
RIC E	8	71	8	1	24	M-H mortarium body sherd	mid C2 early C4	
RIC E	8	72	8	4	51	imitation early terra nigra ? Jar/flag	late C1-early C2	3 orange sherds (undated)
RIC E	8	73	9	1	35	glazed post Roman/?postmed	post Medieval	
RIC E	8	74	9	1	6	glazed	post Roman	
RIC E	8	76	7	1	20	Mancetter-Hartshill mortarium	mid C2 early C4	
RIC E	8	78	7	5	89	BB1 bowl/dish + grey imitation BB1 jar	Hadrianic-Antonine	grey and orange scraps(undated)
RIC E	8	79	7	8	51	BB1 + BB imitation	Hadrianic onwards	
RIC E	8	79	7	1	39	Dr 20	pre-early C3	
RIC E	8	80	7	1	15	BB1	Hadrianic onwards	
RIC E	8	82	7	7	141	BB acute lattice jar BB1 flat-rim bowl/dish	Hadrianic-Antonine	imitation BB + pale amph lid
RIC E	8	83	7	5	92	BB1	Hadrianic onwards	
RIC E	8	87	7	1	15	BB1 (obtuse lattice)	225 onwards	
RIC F	1	29	11	2	20	grey scraps with looped dec	mid-late C3 onwards	? Crambeck/E. Yorkshire jar with shoulder
RIC F	4	19	11	1	4	scrap grey ware	Undatable	
RIC F	4	19	11	1	25	Mancetter-Hartshill mortarium	Hadrianic onwards	

Area	Trench	Context	Period	count	Weight (g)	type	TPQ	comments
RIC F	9	0	-	16	357	BB1 + East Yorkshire	C3 onwards	
RIC F	9	62	2-5	2	28	2 scraps (undated)	Undatable	
RIC F	9	65	7-9	4	53	imitation BB	Hadrianic onwards	
RIC F	9	69	7-9	1	169	mortarium (incl sprout) ? NW type	C2 onwards	
RIC F	9	69	7-9	2	111	Crambeck imitation Drag 38	290 onwards	
RIC F	9	70	7-9	1	16	BB1 bowl	Hadrianic onwards	
RIC F	9	70	7-9	1	42	mortarium? NV	C3 onwards	
RIC F	9	70	7-9	1	183	Dr 20	pre-mid C3	
RIC F	9	110	2-5	12	278	grey jar	Undatable	
RIC F	9	110	2-5	11	605	jar with graffiti joining graffiti from F110	C3 onwards	graffiti separated
RIC F	9	110	2-5	1	31	Dr 20	pre-mid C3	
RIC F	9	111	2-5	53	1438	flagon: BB1; ? E. Yorkshire imitation	C3 onwards	
RIC F	9	111	2-5	1	46	grey jar with graffiti "PX"	Undatable	graffiti on jar? Joins onto jar from F110
RIC F	9	112	2-5	1	15	mortarium flange (undated)	possibly C2 onwards	
RIC F	9	123	2-5	1	68	BB1 dish	Hadrianic-Antonine	
RIC F	9	123	2-5	1	239	Dr 20 burnt	pre-mid C3	
RIC F	9	127	2-5	4	97	BB1 Dish flagon + scraps	Hadrianic onwards	
RIC F	9	127	2-5	1	195	Dr 20	pre-mid C3	
RIC F	9	159	2-5	14	106	scrap samian: lid: latticed ? E.Yorks	possibly C3	
RIC F	9	160	2-5	23	196	BB1 dish + bowl	Hadrianic onwards	
RIC F	9	160	2-5	1	157	Dr 20	pre-mid C3	
RIC F	9	163	-	2	26	BB1 possibly ? Obtuse lattice	225 onwards	
RIC F	9	175	1	1	19	grey sherd burnished	possibly C2 onwards	

Key to table

BB1: Black Burnished 1.

Dr 20: Dressel 20

Spanish: Amphora of Spanish origin but not Dr 20.

Crambeck Type 1b: Crambeck type series as defined by Philip Corder.

1.3 ASSESSMENT OF THE POST-ROMAN POTTERY

by Ian Miller

Introduction

- 1.3.1 The RickerGate excavations produced a large assemblage of post-Roman pottery, the vast majority of which dates from the 12th to 16th centuries. This assessment provides a summary of the post-Roman pottery assemblage and the potential for further detailed study.
- 1.3.2 All the material was hand retrieved on site.
- 1.3.3 The recovery and study of the post-Roman pottery was undertaken in accordance with the research aims for the site, which are set out in section 2 of the main report. The bulk of the assemblage was retrieved from stratified medieval contexts and has the potential to inform further stratigraphic analysis of these deposits. The assemblage also has the potential to provide a greater understanding of the development of medieval ceramic traditions in north-west England and can, in this respect, be considered to be of regional significance.

Methodology

- 1.3.4 The assessment of the post-Roman pottery was undertaken in accordance with guidance provided by English Heritage in *Management of Archaeological Projects* (1991) and the guidelines produced by the Medieval Pottery Research Group (2001). All material was examined and recorded by sherd count, weight, and minimum numbers of rims, handles and bases, in order to determine the relative proportions of vessel form and type.
- 1.3.5 Totals of intrusive and residual material have been quantified, and comments on the condition of the pottery have been incorporated into a database. No attempt was made to subdivide the assemblage by fabric, although the potential, practicality, and validity of this exercise was assessed. Any such broad grouping of fabrics would be undertaken with reference to the collections of medieval pottery from previous excavations in Carlisle (McCarthy 1990; Brooks 1999; McCarthy 2000; Miller 2002; Miller and McPhillips in preparation).

Quantification

- 1.3.6 A total of 1437 fragments of post-Roman pottery weighing 33.545kg were recovered during the excavations, all of which were examined for assessment purposes. The assemblage comprised 1401 fragments of medieval pottery, with a date range from the 12th-16th centuries, and 36 sherds of post-medieval material, which included fragments of 17th-19th century date.
- 1.3.7 The bulk of the medieval pottery, some 1141 sherds representing 81% of the medieval assemblage, came from the area of RIC E. The complete medieval assemblage is quantified by excavated area in Table 1.8 below.

- 1.3.8 A very small assemblage of post-medieval pottery, totalling only 36 fragments, was recovered from the site. The group comprised kitchen and table wares of 17th, 18th and 19th century date. The spatial distribution of the assemblage is presented in Table 1.9 below.
- 1.3.9 As might be expected, the bulk of the medieval assemblage comprises vessel body sherds, although a variety of diagnostic rims, handles, and bases were also retrieved. Only a few sherds are decorated, suggesting the assemblage is dominated by functional utilitarian wares. A notable exception was a body sherd retrieved from context RIC E [74], which depicted a human face.
- 1.3.10 The assemblage includes numerous adjoining sherds and many of the fragments are large, a fact that is reflected in the weight of the assemblage. With a total weight of 33.545kg, the 1437 Rickerate sherds have an average sherd weight of 23g, compared with only 15g for the assemblage of 3291 sherds recovered from the nearby Millennium excavations, which had a total weight of 50.421kg (Miller 2002).

Table 1.8: Distribution of medieval pottery by excavated area

Area	Count	% of total
RIC B	119	8.49
RIC C	38	2.72
RIC D	32	2.29
RIC E	1141	81.44
RIC F	71	5.06
Total	1401	100

Table 1.9: Distribution of post-medieval pottery by excavated area

Area	Count	% of total
RIC B	1	2.77
RIC C	-	-
RIC D	7	19.43
RIC E	18	50.00
RIC F	10	27.80
Total	36	100

Provenance

- 1.3.11 The bulk of the medieval pottery from each of the excavated areas was retrieved from medieval contexts, as depicted in Table 1.10. Indeed, the scarcity of intrusive and residual material is quite remarkable, and suggests that the medieval contexts had sustained little post-depositional disturbance. This may be corroborated by the unabraded condition and large size of many sherds, which is indicative of contemporaneous dumping.

Table 1.10: Stratigraphic integrity of the medieval pottery assemblage

Area	Sherds in medieval contexts	Intrusive	Residual	Unstratified	Totals
RIC B	111	1	2	5	119
RIC C	6	0	0	32	38
RIC D	23	0	0	9	32
RIC E	1005	0	35	101	1141
RIC F	33	0	30	8	71
Totals	1178	1	67	155	1401

1.3.12 The chronological distribution of the assemblage of medieval pottery recovered from medieval contexts is presented by excavated area and site period in Table 1.11 below. A summary catalogue of the entire assemblage is presented in Table 1.12 below. The bulk of the assemblage came from two large ditches in RIC E (RIC E 55 of period 8 and RIC E 58 of period 9), which represent two phases of defensive ditch fronting the medieval city wall. The lack of pottery and other artefactual material from these same ditches in RIC D is probably due both to excavation methodology and trench location. RIC E was located close to RickerGate and the site of the Scotch Gate, so the ditches here are likely to have been used as convenient rubbish dumps, whereas RIC D was situated well to the east of the street frontage. The pottery from areas RIC B, C and F came from poorly stratified medieval deposits that could only be broadly phased (period 7-9).

Table 1.11: Quantification of medieval pottery from medieval contexts by period

Area	Period 7	Period 8	Period 9	Period 7-9	Count	% of total
RIC B	-	-	-	111	111	9.42
RIC C	-	-	-	6	6	0.51
RIC D	-	11	12	-	23	1.95
RIC E	4	761	240	-	1005	85.32
RIC F	-	-	-	33	33	2.80
Count	4	772	252	150	1178	100
% of total	0.34	65.53	21.40	12.73	100	

1.3.13 The medieval pottery is predominantly of 12th-14th century date and includes a number of different fabric types, ranging from locally produced Red Gritty wares and Partially Reduced Grey wares, to imports from producers outside the region. As may be expected, Red Gritty wares were most prevalent within period 8 contexts. These wares form part of a widespread 'Northern Gritty' tradition, and were the dominant pottery type in Carlisle during the 12th century (McCarthy and Brooks 1992, 22). Within the assemblage as a whole, however, Partially Reduced Grey wares of later 13th-14th century date are numerically the most significant type, and are present within most of the contexts of periods 8 and 9 that produced pottery.

1.3.14 The assemblage contained only a small amount of Late Medieval Reduced Grey wares, which are thought to have been the dominant fabrics in Carlisle during the 15th and 16th centuries (*ibid*, 29). The relative scarcity of these

wares may suggest that most late medieval and early post-medieval deposits on the site were truncated, a hypothesis that is largely confirmed by the stratigraphic evidence. An interesting group of this period was, however, recovered from the uppermost recorded fill of period 9 ditch RIC E [58], although this layer has been provisionally assigned to an early post-medieval period on stratigraphic grounds (period 10). Some material of this type was also noted in a few period 9 deposits.

- 1.3.15 Certain contexts produced large groups of pottery, particularly those within the large period 8 and 9 ditches in RIC E (RIC E 55 and 58). In the earlier feature (RIC E 55), fill RIC E [46] produced 415 sherds, whilst contexts RIC E [48], [49] and [65] produced 72, 55 and 69 sherds respectively. Other notable groups came from fills RIC E [44], [51] and [74] in ditch RIC E [58]. Elsewhere on the site, the fill of a truncated foundation slot in area RIC B [28] produced 75 sherds.

Conservation

- 1.3.16 The assemblage of post-Roman pottery is appropriately packed for long-term storage and requires no special conservation measures other than stable storage conditions. For the most part, the medieval pottery is in very good condition, comprising large and unabraded fragments which, in many cases, represent substantial parts of individual vessels. Most of the post-medieval sherds are, however, small and abraded.
- 1.3.17 All the stratified material of medieval date should be retained. Discard of the unstratified material is not recommended, but if it is to be undertaken, vessels that are good examples of their fabric or type should be retained and a record should be kept of all discarded material. The post-medieval material is poorly preserved and is of little archaeological significance. A record should, however, be kept of any material discarded.

Comparative Material

- 1.3.18 The scarcity of good medieval pottery assemblages from excavations in north-west England has been highlighted by McCarthy and Brooks (1992) and by English Heritage (Mellor 1994). In recent years, however, several urban excavations in Cumbria, and especially in Carlisle, have begun to redress this situation and are generating a growing body of published material. Sizeable groups of comparative material have been recovered from excavations in Carlisle at Blackfriars Street (McCarthy 1990), St Nicholas Yard (Brooks 1999), the southern Lanes (McCarthy 2000), Botchergate (Miller and McPhillips forthcoming), and the Millennium project adjacent to the castle (Miller 2002).
- 1.3.19 Elsewhere in the region, comparison with material from sites in medieval urban centres such as Penrith (Brooks 2000), Kendal (Miller in preparation b), Cockermouth (Miller in preparation a) and Lancaster (White and Miller in preparation) may provide useful information on the regional distribution patterns of medieval pottery.

Potential for Further Work

- 1.3.20 Assessment of the medieval pottery from the RickerGate site has indicated that there is considerable potential for further work. Whilst it is accepted that, as yet, medieval ceramics in the north-west of England are not understood sufficiently to provide close dating of archaeological deposits, there is a clear potential for the material to refine the phasing of the medieval stratigraphic sequence on the site and to shed light on the chronological development of the medieval city defences (Objective 2.2). Red Gritty wares, for example, are most prevalent within period 8 contexts, whilst their occurrence within some period 7-9 deposits, particularly in Trenches RIC B and RIC F, suggests that there may be some potential for closer dating of deposits from this broad medieval phase.
- 1.3.21 Many of the pottery fragments are large and unabraded, and represent substantial parts of individual vessels. This may potentially allow the partial reconstruction of numerous vessels, thereby providing detailed information of vessel forms and allowing comparisons with material from other excavations in Carlisle. Forms noted during the assessment comprise a range of jars, including cooking pots and jugs.
- 1.3.22 The assessment indicates that the RickerGate pottery is closely related to assemblages from other excavations in Carlisle, notably Blackfriars Street (McCarthy 1990) and the southern Lanes (McCarthy 2000). Further detailed study of the RickerGate assemblage has the potential to enhance the form and type series compiled as a result of this earlier work, in order to provide a more comprehensive understanding of medieval pottery supply in Carlisle. It also presents a rare opportunity to compare a major assemblage with material from other medieval urban centres in the region, notably Penrith, Kendal and Cockermouth, in order to further our understanding of trading patterns within the county. The study may also have the potential to advance knowledge of trading patterns on a wider scale, particularly across the Pennines and via the Irish Sea.

Potential for New Research

- 1.3.23 The paucity of assemblages of medieval pottery in north-west England has already been noted above (1.3.18). The RickerGate assemblage, which is both large and well stratified, therefore has considerable potential to provide new information. Although there have been a number of archaeological excavations within Cumbrian town in recent years, the medieval ceramic traditions of the region are still poorly understood. In some cases this is due to the absence of a secure stratigraphic sequence, or the fact that the pottery does not occur in close association with dated buildings or events. The RickerGate excavations, however, have produced a secure stratigraphic sequence associated with many other classes of finds. Some of these finds, particularly the leather shoes, may allow close dating of specific contexts, which may in turn inform the dating of the pottery. This could then potentially act as a benchmark for pottery recovered from other sites in the region. In particular, it may provide an invaluable comparator to the pottery assemblage from the

Millennium excavations in Carlisle (Miller 2002), which have yet to be fully analysed.

- 1.3.24 A further problem with ceramic studies in the region is that in terms of excavation, there has been a marked bias towards castle and abbey sites (Davey 1977, 7). Much of the material recovered from these sites cannot be therefore be regarded as representative of the pottery that was in everyday use during the medieval period. The Rickergate excavations, however, examined areas within the ditches fronting the city defences, which appear to have been used as a dumping ground for waste from various parts of the city. As has already been noted (1.3.9) the utilitarian nature of the material appears to be reflected in the scarcity of decorated sherds within the assemblage.

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Table 1.12: Outline catalogue of the medieval and post-medieval pottery

Area	Context	Period	Count	Date	Weight (g)	Fabric	Bases	Handle	% rim	Comment
RIC B	2	7-9	1	C14th	15	0	0			Partially-reduced body sherd
RIC B	28	7-9	75	C13th-C14th	1770	0	0			Predominantly partially-reduced wares
RIC B	32	7-9	5	C13th-C14th	95	0	0			Partially-reduced wares
RIC B	82	7-9	1	C12th-C13th	10	1	0			Red Gritty ware
RIC B	93	7-9	28	C13th-C14th	405	0	0			Predominantly partially-reduced wares. One very nice spout
RIC B	93	7-9	2		25	0	0			Strange medieval sherd and post-med sherd
RIC B	102	2-5	1	C12th-C13th	15	2	0		5%	Red Gritty ware
RIC B	128	12	2	C13th-C14th	10	0	0			Partially-reduced wares
RIC B	unstrat	unphased	4	C13-C14th	30	0	0			Partially reduced wares
RIC B	unstrat	unphased	1	C14th-C15th	10	0	0			Partially-reduced
RIC C	203	7-9	6	C12th-C13th	45	0	0			Red Gritty and partially-reduced wares
RIC C	unstrat	unphased	32	C12th-C14th	305	0	0			Predominantly Gritty Wares
RIC D	340	10	1	C18th	10	0	0			Post-med table ware
RIC D	354	9	1	C14th	5	0	0			Partially-reduced fabric
RIC D	354	9	7	C12th-C13th	75	0	0			Gritty and partially-reduced wares
RIC D	355	9	2	C14th	15	0	0		5%;5%	Partially-reduced ware
RIC D	356	9	5	C13th-C14th	20	0	0		2%;2%	partially-reduced wares
RIC D	357	9	1	C12th-C13th	15	1	0		10%	Red Gritty ware rim
RIC D	360	8	2	C12th-C14th	140	0	0	1		Gritty and partially-reduced wares
RIC D	363	8	1	C12th-C13th	10	2	0			Red Gritty ware
RIC D	365	10	1	C18th-C19th	35	0	0			Post-medieval, probably from ash midden
RIC D	369	8	1	C12th-C13th	5	1	0			Red Gritty ware
RIC D	373	8	2	C12th-C13th	20	0	0			Red Gritty and oxidised wares
RIC D	376	8	1	C12th-C13th	10	2	0			Red Gritty ware
RIC D	385	9	1	C12th-C13th	5	2	0			Red Gritty ware
RIC D	397	8	1	C12th-C13th	30	1	0			Red Gritty ware glazed body sherd
RIC D	399	8	1	C12th-C13th	5	0	0			Gritty ware
RIC D	412	8	1	12th-C13th	5	1	0			Glazed Red Gritty ware body sherd
RIC D	423	8	1	C12th-C13th	10	1	0			Red Gritty ware
RIC D	unstrat	unphased	5	Late C17th-C19	190	0	0			Variety of post-med fabrics, including blackwares
RIC D	unstrat	unphased	4		55	0	0			Various fabrics
RIC E	1	unphased	7		385	0	0			Unstratified oxidised and partially reduced wares
RIC E	1	unphased	0	Late C13th-C14th	15	0	0			Unstratified partially-reduced sherd
RIC E	1	unphased	3	C12th-C14th	80	0	0			One partially-reduced spouted pitcher sherd, and two Gritty Ware sherds
RIC E	1	unphased	4	C13th-C14th	230	0	0			Partially-reduced wares
RIC E	1	unphased	18	C12th-C14th	520	0	0			
RIC E	1	unphased	3	C19th-C20th	20	0	0			

Area	Context	Period	Count	Date	Weight (g)	Fabric	Bases	Handle	% rim	Comment
RIC E	1	unphased	34	C12th-C13th	410	0	0			Predominantly oxidised wares
RIC E	1	unphased	14	C12th-C14th	390	0	0			Oxidised and partially-reduced wares
RIC E	1	unphased	18	C12th-C15th	870	0	0			
RIC E	4	12	13	C12th-C14th	760	0	0			Predominantly Red Gritty and oxidised ware, with one sherd post-med and modern drainpipe
RIC E	7	11	2	C18th-C19th	20	0	0			Post-med fabrics
RIC E	9	11	6	C18th-C19th	115	0	0			
RIC E	11	11	1	C19th	5	0	0			Single fragment
RIC E	12	11	8		230	0	0			Mixed material
RIC E	26	10	17	C15th-C17th	530	0	1		5%	Predominantly late medieval fully reduced wares, and single fragment of early post-med
RIC E	30	10	1	Late C18th	45	0	0		25%	Single fragment of lead-glazed creamware jar. Introduced during the 1740s, this fabric was dominant during 1760s-1780s, although this example towards end of range. Late C18th
RIC E	30	10	1	Late C13th-	25	0	0			Partially-reduced ware
RIC E	31	9	5	C14th-C15th	295	0	0			One eroded Red Gritty ware sherd with partially and fully reduced wares
RIC E	32	9	15	Late C13th-C15th	920	0	4	2	2%	Predominantly partially-reduced with some fully reduced wares, and single sherd of Red Gritty ware.
RIC E	38	9	4	C12th-C14th	60	0	0			Oxidised and partially-reduced wares
RIC E	42	9	2	C13th-C14th	110	0	0			Partially-reduced ware
RIC E	43	9	9	Mid C13th-	160	0	0			Partially-reduced wares
RIC E	44	9	71	C13th-C14th	1750	0	0			Predominantly glazed, partially-reduced wares
RIC E	45	8	84	C13th-early C14th	1890	0	0			Mixed oxidised and partially-reduced wares. C13th-early C14th
RIC E	46	8	199	Late C13th-C14th	3070	0	0			Partially reduced wares, with no Red Gritty wares. Date range late C13th-C14th, possibly C15th
RIC E	46	8	1	C12th-early C13	20	2	0			Red Gritty ware body sherd with traces of yellow glaze
RIC E	46	8	113	C13th	2590	0	0			Predominantly oxidised wares, with some partially-reduced fabrics. Only a few red Gritty wares
RIC E	46	8	86	C13th-C14th	3230	0	0			Predominantly Gritty Wares with some partially-reduced material. Two very nice spouts. Large sherds.
RIC E	47	9	18	C13th-C14th	585	0	0			Partially-reduced wares
RIC E	48	8	72	Late C13th-earl	1880	0	0			Predominantly partially-reduced wares
RIC E	49	8	55	C12th-C14th	1480	0	0			Red Gritty, oxidised and partially-reduced wares

Area	Context	Period	Count	Date	Weight (g)	Fabric	Bases	Handle	% rim	Comment
RICE	50	8	19	C12th-C13th	430	0	3		20%;	Predominantly Red Gritty wares, with some oxidised fragments and a couple of sherds ?imported ware.
RICE	51	9	61	Late C13th-C14	1520	0	0			Partially reduced wares. Some large fragments from single
RICE	52	8	1	C13th-C14th	5	0	0			partially-reduced body sherd
RICE	56	8	5	C13th-C14th	105	0	0			Oxidised and partially-reduced wares
RICE	57	8	7	C12th-C13th	70	0	0			Oxidised wares
RICE	59	9	21	C13th-C14th	950	0	0			Predominantly partially-reduced wares
RICE	60	9	13	Late C13th-C14	380	0	0			Partially-reduced wares from 3 or 4 vessels. Late C13th-early C14th
RICE	60	9	2	C13th-C14th	120	0	0			Partially-reduced wares
RICE	61	8	17	C14th	185	0	0			partially reduced wares
RICE	64	8	16	C13th-C14th	330	0	0			Oxidised and partially-reduced wares
RICE	65	8	69	Late C13th-C14th	930	0	0			Mixed oxidised and partially-reduced wares, with tendency to latter. Probably late C13th-early C14th
RICE	65	8	1	C14th	40	0	0			partially-reduced ware body sherd
RICE	67	8	1	C12th-C13th	20	2	0	1		Glazed strap handle sherd
RICE	67	8	3	C12th-C13th	60	0	0			Abraded (water-worn?) oxidised ware
RICE	68	8	11	C12th-C13th	240	0	0			Predominantly oxidised wares, with some partially-reduced fabrics
RICE	71	8	1	C12th-C13th	5	1	0			Red Gritty ware
RICE	74	9	23	C13th-C14th	1170	0	0			Oxidised and partially-reduced wares
RICE	76	7	2	C13th	45	0	0			Oxidised ware
RICE	83	7	1	C14th	20	0	0		10%	Partially-reduced rim sherd with iron-rich green-glaze. C14th
RICE	83	7	1	C12th-C13th	25	0	0			Oxidised ware sherd
RIC F	1	unphased	8	C13th-C14th	60	0	0			Predominantly partially-reduced wares
RIC F	17	11	4	C18th-C20th	30	0	0			Glazed earthenwares
RIC F	19	11	14	C13th-C14th	165	0	0			Partially-reduced and some oxidised wares. Possibly some Docker Moor ware
RIC F	21	11	1	C19th	50	0	0			Black-glazed earthenware
RIC F	23	11	3	C18th-C19th	15	0	0			Brown-glazed earthenware and manganese speckled ware
RIC F	23	11	1	C13th-C14th	5	0	0			partially-reduced body sherd
RIC F	29	11	15	C12th-C14th	155	0	0			Oxidised and partially-reduced wares
RIC F	29	11	2	C19th	25	0	0			Black-glazed earthenware
RIC F	40	7-9	2	C12th-C13th	5	2	0			Two Red Gritty ware body sherds
RIC F	46	7-9	16	C13th-early C14	130	0	0			Oxidised and partially reduced wares, including Red Gritty.
RIC F	51	7-9	13	C13th-C14th	150	0	0			partially-reduced with some oxidised wares
RIC F	65	7-9	2	C13th-C14th	20	0	0			

1.4 ASSESSMENT OF THE CLAY TOBACCO PIPE

by Gunnar Hellström

Introduction, Quantification and Provenance

- 1.4.1 A single fragment of clay tobacco pipe was recovered by hand during the course of the Rickergate excavations. The fragment, which came from context RIC E [11] of period 11, comprised a virtually complete bowl and a short section of stem with a heel. The bowl was decorated with a relief design, which depicted an anchor and a crown. The size and form of the bowl indicates that it was manufactured around c1910.
- 1.4.2 The pipe cannot be attributed to a specific maker, but it is perhaps significant that prior to the construction of the Lanes shopping centre in the early 1980s a Crown and Anchor Lane existed only a short distance south of the Rickergate site. As was the case with several of the lanes in this part of the city, Crown and Anchor Lane took its name from a public house, and it is therefore possible that the Rickergate pipe was made specifically for this establishment.

Potential for Further Work

- 1.4.3 The single fragment of pipe offers little potential for further work and is of limited archaeological significance, although it may be of local interest if its association with a specific public house could be demonstrated.

APPENDIX 2 - BUILDING MATERIALS

2.1 ASSESSMENT OF THE BUILDING MATERIALS

by Susan Pringle

Introduction

- 2.1.1 A small assemblage of building materials was recovered from the Rickergate excavations. The assessed material includes fired ceramics, daub and fired clay, stone and mortar/plaster. The majority of the identifiable material is of Roman date.
- 2.1.2 All the material was hand retrieved on site.
- 2.1.3 The recovery and study of the building materials was undertaken in accordance with the fieldwork aims and revised research aims for the site, which are set out in section 2 of the main report, above.

Methodology

- 2.1.4 All the excavated building materials have been examined for assessment. The material has been quantified by form, counted and weighed, and examined under x10 magnification. No ceramic or stone fabric analysis has been carried out. All the material has been retained.

Quantification

- 2.1.5 The assemblage is quantified by count and weight in Table 2.1 below. The total weight of the two boxes of material examined for the assessment is 15.189kg.

Table 2.1: *Quantification of building materials by count and weight*

Material	Count	% of total	Weight (g)	% of total
Brick and tile	106	78.52	11210	73.8
Stone	2	1.48	3748	24.68
Daub	12	8.89	145	0.96
Unidentified	2	1.48	44	0.29
Mortar/plaster	1	0.74	34	0.22
Fired clay	12	8.89	8	0.05
Totals	135	100	15189	100

- 2.1.6 **Ceramic building materials:** The assemblage of ceramic building materials is quantified by type in Table 2.2 below, and an outline catalogue of all the material is given in table 2.3. The majority of the ceramic building material is abraded Roman brick and tile, with examples of brick, tegula, imbrex, box-flue and rib-vaulting voussoir all present in the assemblage. The rib-vaulting tile in RIC C [215] is of particular interest, since it would have been used to construct a hollow vault consisting of two layers of flat bricks supported and separated by arches formed by these notched voussoirs. These items are

relatively uncommon and usually occur on sites with military connections, where they are associated with bath houses or other heated structures. This tile, which is in a local fabric, was residual within the period 6 dark soil deposit from which it was recovered.

- 2.1.7 Other hypocaust-related material includes a complete bessalis brick, residual within a medieval deposit of period 7 (RIC E 80), a fragment of box-flue with a curved, knife-cut vent (RIC C 216) and a second fragment with diagonal combing which could be either box-flue or hollow voussoir. Like the rib-vaulting voussoir described above, both of the latter came from period 6 dark soil deposits in area RIC C (RIC C 216 and 218 respectively).
- 2.1.8 Other features of interest in the Roman ceramic building assemblage include knife-scored lattice keying on the base of a 60mm thick brick from RIC C [229] of period 4. The top surface of this item is also marked with a wavy signature mark, the scored face has been worn smooth and there is secondary wear on the broken edges, probably indicating that the brick had been reused as flooring. Residual within a fill of the period 9 medieval ditch in RIC E (RIC E 51) was a fragmentary tegula with part of a pre-firing nail hole centred 35mm from the end of the tile.
- 2.1.9 The only securely identified post-Roman ceramic building material is a mid-19th or 20th century white brick with a blue-glazed surface, which was intrusive within period 8 deposit RIC E [49]. A fragmentary flat tile without an upper surface in RIC E [50] could be either a Roman tile or a medieval peg tile. A fragment of an interesting moulded brick in a crumbly orange-brown fabric with very coarse dark brown iron-rich inclusions, recovered from a fill within the period 9 ditch in RIC D [353] could be either a Roman mud brick or a poorly fired late medieval/early post-medieval brick.

Table 2.2: Quantification of ceramic building material types by form and weight

Form	Count	% of total	Weight (g)	% of total
Brick (Roman)	27	25.47	6833	63.57
Tegula	14	13.21	1686	15.69
Unidentified tile	56	52.83	1180	10.98
Rib-vault voussoir	1	0.94	567	5.28
Imbrex	6	5.66	310	2.88
Box-flue/voussoir	2	1.89	172	1.6
Totals	106	100	10748	100

- 2.1.10 **Stone:** Only two pieces of building stone were examined, both of sandstone and both from RIC E. One stone from RIC E [19], the remains of a late post-medieval wall (period 11) is a medium-grained sandstone block, tooled at one end. It has mortar on all surfaces and may be a reused pavioir. The second stone is a thin slab, 13mm thick, of dark reddish-brown, fine-grained sandstone, which came from a fill (RIC E 59) of period 9 ditch RIC E [58]. This item had probably been used as flooring material in a good quality structure.

- 2.1.11 **Daub and fired clay:** Twelve fragments of daub were recorded in two fabrics, one very fine, the other with common inclusions of coarse quartz. A fragment of possible daub in the coarse fabric has common organic voids. The only features of interest on the daub are convex and concave surfaces on Roman material from RIC B [18] (period 2-5) and a convex surface with traces of thin mortar from RIC C [236] of period 2. Two fragments of very fine textured fired clay were recovered from RIC B [93] (period 7-9) and RIC C [215] (period 6). A further ten small fragments, two with a striated surface, were recovered from RIC C contexts [219], [234], [236], [238], [243] and [260].
- 2.1.12 **Mortar and plaster:** A single fragment of mortar render with abundant quartz aggregate underlying a coat of smoothed, but unpolished, white plaster comes from RIC E [49], a fill of period 8 ditch RIC E [55]. This item is not closely datable, although its context should date to the 12th-13th centuries.

Provenance

- 2.1.13 The material assessed comes from all parts of the site, and from all periods from period 2 (c 2nd century AD) to 11 (c 18th-19th centuries), with the exception of period 10, which produced no building materials. The chronological spread of the identifiable material is predominantly Roman with a small quantity of post-medieval. The stratigraphic assessment suggests that much of the Roman material is likely to be residual within the contexts from which it was recovered. It should be noted, however, that Roman tile from post-Roman contexts is not necessarily residual as there is evidence from a number of sites for the quarrying of Roman structures for brick and tile in the Saxon period. In London, for example, this continued until at least the mid-12th century.

Conservation

- 2.1.14 There are no particular conservation requirements for the material other than storage in dry conditions. Although all the material has been retained, much of it is too abraded for secure identification and this could be discarded without affecting the research potential of the assemblage.

Comparative Material

- 2.1.15 The Rickergate material can be compared with much larger assemblages of building material recovered from other sites within Carlisle, although many of these remain unpublished. Beyond Carlisle, tiles similar to the rib-vaulting voussoir are known from York with stamps of *Legio IX Hispana*, a legion that is represented on stamped tiles recovered from other sites in Carlisle.

Potential for Further Work

- 2.1.16 For the most part, the small and abraded assemblage of building material from the Rickergate site has little potential for further work, other than to integrate the results of the assessment with the stratigraphic data and summarise the information for inclusion in the final report. Local parallels for the rib-vaulting voussoir should be sought.

Table 2.3: Outline catalogue of the building materials

Area	Context	Period	Count	Material	Form	Form date	Weight (g)	Length (mm)	Breadth (mm)	Thickness (mm)	Comments
RIC B	16	2-5	1	cbm	tile	roman	10	0	0	0	abraded
RIC B	16	2-5	1	cbm	tile	roman	28	0	0	0	
RIC B	16	2-5	1	daub	daub?	?	18	0	0	0	
RIC B	18	2-5	1	cbm	brick	roman	462	0	0	57-60	
RIC B	18	2-5	3	cbm	tile	roman	90	0	0	0	tegulae?
RIC B	18	2-5	1	cbm	tegula	roman	58	0	0	0	
RIC B	18	2-5	2	daub	daub	?	51	0	0	0	1 convex surface (reduced and vitrified); 1 concave
RIC B	28	7-9	1	cbm	tile	roman	12	0	0	0	burnt and abraded, may be daub.
RIC B	82	7	2	?	tile?	?	44	0	0	0	reduced; possibly daub or fired clay.
RIC B	93	7-9	1	daub	daub	?	2	0	0	0	abraded crumb
RIC B	93	7-9	1	f/c	fired clay	?	5	0	0	0	mixed clean and sandy clays with organic imprints/voids
RIC B	unstrat	unphased	1	cbm	imbrex	roman	89	0	0	0	sanding on both faces
RIC C	203	7-9	4	cbm	tile	roman	28	0	0	0	abraded
RIC C	215	6	1	cbm	vousoir	roman	567	0	0	45-52	solid rib-vaulting vousoir, draw?
RIC C	215	6	3	cbm	tegula	roman	1002	0	0	0	1 deflanged
RIC C	215	6	10	cbm	tile	roman	97	0	0	0	abraded
RIC C	215	6	1	cbm	tile	roman	8	0	0	0	
RIC C	215	6	1	daub	daub?	?	2	0	0	0	abraded
RIC C	215	6	1	f/c	fired clay?	?	3	0	0	0	very fine, no surfaces
RIC C	216	6	1	cbm	brick	roman	175	0	0	0	large flake
RIC C	216	6	1	cbm	flue	roman	59	0	0	0	abraded box flue, face with part curved knife-cut vent
RIC C	216	6	5	cbm	tile	roman	68	0	0	0	abraded
RIC C	216	6	6	cbm	tile	roman	46	0	0	0	abraded
RIC C	216	6	2	daub	daub	?	33	0	0	0	1 bit soft and abraded, the other harder - fired clay?
RIC C	217	5	1	cbm	tegula	roman	38	0	0	0	
RIC C	217	5	2	cbm	tile	roman	29	0	0	0	
RIC C	218	6	1	cbm	flue	roman	113	0	0	0	diagonal combed keying, box flue or vousoir
RIC C	219	4	1	cbm	brick	roman	111	0	0	0	or thick tegula?
RIC C	219	4	1	cbm	tegula	roman	58	0	0	0	
RIC C	219	4	1	cbm	brick	roman	56	0	0	0	
RIC C	219	4	4	cbm	tile	roman	27	0	0	0	abraded
RIC C	219	4	2	cbm	tile	roman	124	0	0	0	abraded
RIC C	219	4	1	daub	daub	?	2	0	0	0	coarse with pebble incl 18mm long
RIC C	219	4	1	daub	daub	?	2	0	0	0	fine matrix with some coarse qtz
RIC C	221	5	1	cbm	tile	roman	31	0	0	0	flake
RIC C	229	4	1	cbm	brick	roman	2198	0	0	60	knife-scored lattice keying on base (worn). top has wavy lines sig marks and ?finger marks. draw/photo? reused, has worn on broken edges,
RIC C	229	4	1	cbm	tegula	roman	62	0	0	0	fabric v sandy
RIC C	229	4	1	cbm	tile	roman	25	0	0	0	flake
RIC C	231	5	1	cbm	brick	roman	114	0	0	46	
RIC C	231	5	1	cbm	tile	roman	33	0	0	0	thin, flat tile - tegula or flue?
RIC C	231	5	1	cbm	tile	roman	2	0	0	0	

Area	Context	Period	Count	Material	Form	Form date	Weight (g)	Length (mm)	Breadth (mm)	Thickness (mm)	Comments
RIC C	236		2	3 cbm	tegula	roman	295	0	0	0	incl flange chipping
RIC C	236		2	1 cbm	tile	roman	121	0	0	0	tegula?
RIC C	236		2	1 cbm	brick	roman	44	0	0	39	sandy fabric nr d
RIC C	236		2	1 daub	daub	?	11	0	0	0	convex surface with trace mortar
RIC C	240		2	1 cbm	tile	roman	9	0	0	0	flake from sanded base
RIC D	353		9	1 cbm	mudbrick?	?	462	0	95+	55	moulded; crumbly orange-brown fabric with v coarse dk brown iron-rich incls. not securely roman.
RIC D	354		9	1 cbm	tile	roman	5	0	0	0	
RIC D	355		9	1 daub	daub	?	2	0	0	0	now dust
RIC D	357		9	1 cbm	brick	roman	124	0	0	0	
RIC D	385		9	1 cbm	tegula	roman	19	0	0	0	
RIC D	unstrat	unphased		1 cbm	tile	roman	5	0	0	0	with ?granite incls
RIC E	19		11	1 stone	block	?	3669	227	130	50-55	sample; "1 of 2 bricks from sandstone/mortar structure"; medium grained sst, paviour?. tooling on one end, mortar on all surfaces
RIC E	32		9	1 cbm	imbrex	roman	30	0	0	0	
RIC E	44		9	1 cbm	tile	roman	42	0	0	0	nr fabric a, flake.
RIC E	46		8	2 cbm	tile	roman	184	0	0	0	conjoin, tegula?
RIC E	49		8	1 cbm	brick	modern	20	0	0	0	modern blue glazed white brick (mid 19th c on)
RIC E	49		8	1 mortar	mortar	?	34	0	0	0	smooth white plaster surface on sandy white mortar render
RIC E	50		8	1 cbm	tile	med?	91	0	0	0	peg tile? top surface missing, so id uncertain.
RIC E	50		8	1 daub	daub?	?	22	0	0	0	hard-fired but with organic incls; part reduced.
RIC E	51		9	1 cbm	imbrex	roman	28	0	0	0	overfired
RIC E	51		9	1 cbm	tegula	roman	93	0	0	0	with pre-firing nail-hole (part) centred 35mm from edge.
RIC E	59		9	1 stone	stone	?	79	0	0	13	thin slab dk red-brown fine-grained sst; flooring, roofing?
RIC E	80		7	17 cbm	brick	roman	3506	177	175	57	complete bessalis; sandy fab nr d
RIC F	65		7-9	1 cbm	tegula	roman	43	0	0	0	high-fired
RIC F	65		7-9	1 cbm	brick	roman	23	0	0	0	
RIC F	69		7-9	1 cbm	tegula	roman	18	0	0	0	flake
RIC F	69		7-9	1 cbm	tile	roman	19	0	0	0	flake
RIC F	111		2-5	1 cbm	imbrex	roman	16	0	0	0	
RIC F	111		2-5	2 cbm	imbrex	roman	147	0	0	0	
RIC F	111		2-5	1 cbm	tile	roman	17	0	0	0	
RIC F	111		2-5	1 cbm	tile	roman	19	0	0	0	v abraded
RIC F	160		2-5	1 cbm	tile	roman	10	0	0	0	nr b

APPENDIX 3 - WATERLOGGED WOOD AND CHARCOAL

3.1 ASSESSMENT OF THE WATERLOGGED WOOD AND CHARCOAL

by Christine Howard-Davis

Introduction

- 3.1.1 A total of 132 items of waterlogged wood and charcoal were recovered by hand during the course of the Rickergate excavations. The assemblage consists principally of fragmentary stakes, but a small number of artefacts are also present, including a stave-built barrel (Plate 4) and a large turned bowl (front cover illustration).
- 3.1.2 The recovery and study of the wood and charcoal was undertaken in accordance with the fieldwork aims and revised research aims for the site, which are set out in section 2 of the main report, above. The recovery of this material was designed to assist with the detailed interpretation of the character of occupation on the site through time.

Methodology

- 3.1.3 The assessment was undertaken on the basis of an enhanced rapid scan of the assemblage, although the poor state of the material meant that in some cases examination was cursory. Every fragment was examined and assigned a preliminary identification. The extant computerised record was enhanced or new records added as appropriate. The data recorded, comprising information on quantity, condition, completeness, basic dimensions, outline description, conservation and illustration requirements, serve as a basis for the comments below.

Quantification

- 3.1.4 The assemblage of 132 items comprises nine fragments of charcoal, 102 pieces of worked waterlogged timber and 21 dendrochronological samples sawn from larger timbers during the course of the excavation. The latter all came from the timber lining of a medieval well or pit in RIC F (context RIC F 41). The spatial and chronological distribution of the material is summarised in Tables 3.1 and 3.2 respectively.

Table 3.1: Distribution of wood and charcoal by excavated area

Area	Charcoal	Waterlogged Wood	Dendro. samples	Count	% of total
RIC B	-	-	-	-	-
RIC C	2	21	-	23	17.42
RIC D	-	18	-	18	13.64
RIC E	1	63	-	64	48.49
RIC F	6	-	21	27	20.45
Totals	9	102	21	132	100

Provenance

- 3.1.5 Wood and charcoal was recovered from a total of 34 contexts, the majority of medieval date. On occasion single stakes were allocated context numbers on site, and thus the number of contexts producing wood has been artificially increased. The assemblage is provenanced by excavated area and by site period in Tables 3.1 and 3.2, and is catalogued in Table 3.3.

Table 3.2: Quantification of wood and charcoal by site period

Period	Charcoal	Waterlogged wood	Dendro. samples	Count	% of total
2	1	21	-	22	16.67
4	1	-	-	1	0.76
2-5	-	2	-	2	1.52
8	1	26	-	27	20.45
9	-	53	-	53	40.15
7-9	-	-	21	21	15.91
12	6	-	-	6	4.54
Totals	9	102	21	132	100

- 3.1.6 The small amount of wood recovered from Roman levels of periods 2 to 5 consisted principally of small pieces of roundwood and small fragments of woodworking debris from RIC C, although two stakes were also present. The medieval assemblage derived principally from the fills of the large defensive ditches of periods 8 and 9 in RIC D and, especially, RIC E. All the dendrochronological samples were taken from the timber lining of a truncated medieval well or pit situated in RIC F (RIC F 41).
- 3.1.7 Five wooden artefacts, a small, stave-built oak barrel or tub, part of a large, turned ash bowl, a wooden shoe heel and two pierced laths, were recovered from a single fill within the period 9 ditch in RIC E (context 51). The laths are believed to derive from a large pair of wooden and leather bellows recovered from the same context (see appendix 7.2 below). The barrel has been dendrochronologically dated by AOC, Edinburgh to the mid-14th century (Crone 2001). A small wooden bung also came from context RIC E [59] in the same feature.

Conservation

- 3.1.8 The state of preservation of the waterlogged wood was assessed on a broad four-point system, namely poor, fair, good, and excellent. For the most part, it was found that the assemblage had been inadequately packaged and stored following excavation and had deteriorated badly in the considerable period of time that had elapsed between excavation and assessment. Consequently, almost all the unconserved wood was in poor condition, with the best-preserved being in only fair condition.
- 3.1.9 Almost all the wood had been packed in a manner that was neither air- nor watertight, and as a consequence most of the smaller fragments had dried out, resulting in serious warping and cracking. The larger fragments remained damp, but exhibited extensive insect infestation and/or fungal growth. Some

items had been wrapped in tinfoil, which had subsequently deteriorated, leaving the wood fragments soft and badly fragmented. Many of the larger dendrochronological samples were covered with a thick layer of wood dust, an indication of springtail infestation, and the form of other fragments was found to be obscured by fungal growth. Given the health and safety considerations regarding the handling of such material the affected items were not unpacked, so the assessment of these pieces was somewhat cursory.

- 3.1.10 The barrel and bowl from RIC E [51] were conserved by AOC, Edinburgh soon after excavation and are currently monitored by Tullie House Museum at Shaddon Mill, Carlisle. Three other small items, namely the medieval shoe heel and the two pierced laths from the bellows, will require freeze-drying.

Comparative Material

- 3.1.11 Comparators for the Rickergate assemblage can be found amongst the large body of published and unpublished material from Carlisle, although most of the waterlogged wood from excavations in the city is of Roman date. Post-Roman timber has tended to be preserved only in relatively small, deeply-cut features such as pits and wells, as at Blackfriars Street, Castle Street and the southern Lanes (McCarthy 1990, 72-3; McCarthy 1991, 48-9; McCarthy 2000, 49 & figs 40-1). A large assemblage of timber was, however, recently recovered from a large medieval defensive ditch during the course of the Millennium excavations south of Carlisle Castle (Wigfield 2002), and this will clearly represent an important source of comparative material. There are numerous compendia of medieval wooden objects (for example, Egan 1998), although these are not common finds and some effort will be required to provide corroborative dating evidence for the Rickergate examples. It is, however, acknowledged that wooden vessels change little through time and that there are currently no recognised typologies.

Potential for Further Work

- 3.1.12 The manner in which the charcoal was stored has precluded its use for radiocarbon dating. The samples taken from structure RIC F [41] with a view to dendrochronological dating have all deteriorated. Smaller samples have dried and disintegrated, but some of the larger ones still bear some potential, although it is extremely unlikely that either heart or sapwood will have survived, making the likelihood of a felling date very low. The worked wood is in poor condition and so its potential to contribute information on wood-working techniques or the appearance of structures is much reduced. Similarly, the small amount of roundwood can add little to current knowledge of wattle structures or woodland management in the Carlisle area. Species identification where possible will add to knowledge on the selection and use of different woods, but it is not clear whether deterioration has precluded this study.
- 3.1.13 Further study of the two medieval vessels and the other wooden artefacts will contribute to the understanding of medieval activity in and around the site, especially when considered in association with other classes of artefact from the same and associated contexts.

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Table 3.3: Outline catalogue of the wood and charcoal

Area	Context	IRF	Period	Count	Description
RIC C	219	46	4	1	Charcoal
RIC C	243	55	2	1	Charcoal
RIC C	243	56	2	20	
RIC C	260	-	2	1	
RIC D	353	20	9	1	Worked
RIC D	353	21	9	1	Worked
RIC D	353	22	9	1	Worked
RIC D	353	35	9	1	Worked
RIC D	354	23	9	1	Worked
RIC D	354	24	9	1	Worked
RIC D	354	25	9	1	Worked
RIC D	354	26	9	1	Worked
RIC D	354	27	9	1	Worked
RIC D	354	28	9	1	Worked
RIC D	354	29	9	1	Worked
RIC D	355	30	9	1	Worked
RIC D	355	31	9	1	Worked
RIC D	355	33	9	1	Worked
RIC D	355	34	9	1	Worked
RIC D	357	32	9	1	Worked
RIC D	394	36	8	1	Worked
RIC D	401	37	8	1	Worked
RIC E	32	-	9	1	Fragment
RIC E	32	-	9	1	Worked
RIC E	33	-	2-5	1	Worked
RIC E	35	-	9	1	Worked
RIC E	39	-	2-5	1	Worked
RIC E	44	-	9	2	
RIC E	44	-	9	1	
RIC E	44	-	9	1	Worked
RIC E	45	-	8	2	
RIC E	45	-	8	1	Worked
RIC E	46	-	8	1	Charcoal
RIC E	47	-	9	1	Worked
RIC E	47	-	9	1	Worked
RIC E	47	-	9	1	Worked
RIC E	51	-	9	1	
RIC E	51	8	9	1	Bowl
RIC E	51	59	9	1	Barrel
RIC E	51	-	9	1	Object
RIC E	51	-	9	1	Worked
RIC E	51	-	9	5	Worked
RIC E	51	-	9	1	Worked
RIC E	51	-	9	2	Worked
RIC E	51	-	9	1	Shoe heel
RIC E	56	-	8	1	Worked
RIC E	56	-	8	1	Worked
RIC E	59	-	9	1	Worked
RIC E	59	-	9	1	Bung
RIC E	60	-	9	1	Worked
RIC E	60	-	9	1	Worked
RIC E	60	-	9	1	Worked
RIC E	61	-	8	2	Worked
RIC E	62	-	9	1	Worked

Area	Context	IRF	Period	Count	Description
RIC E	64	-	8	1	Worked
RIC E	65	-	8	1	Worked
RIC E	65	12	8	4	
RIC E	68	-	8	1	Bark
RIC E	68	-	8	1	Worked
RIC E	68	-	8	2	Worked
RIC E	69	-	8	3	Roundwood?
RIC E	71	-	8	1	Worked
RIC E	74	-	9	5	Worked
RIC E	74	-	9	2	Worked
RIC E	92	-	8	2	Worked
RIC E	94	-	8	1	Worked
RIC F	10	-	12	6	Charcoal
RIC F	41	1	7-9	1	Sample
RIC F	41	2	7-9	1	Sample
RIC F	41	2	7-9	1	Sample
RIC F	41	3	7-9	1	Sample
RIC F	41	3	7-9	1	Sample
RIC F	41	6	7-9	1	Sample
RIC F	41	7	7-9	1	Sample
RIC F	41	7	7-9	1	Sample
RIC F	41	8	7-9	1	Sample
RIC F	41	8	7-9	1	Sample
RIC F	41	9	7-9	1	Sample
RIC F	41	9	7-9	1	Sample
RIC F	41	10	7-9	1	Sample
RIC F	41	10	7-9	1	Sample
RIC F	41	11	7-9	1	Sample
RIC F	41	12	7-9	1	Sample
RIC F	41	13	7-9	1	Sample
RIC F	41	15	7-9	1	Sample
RIC F	41	15	7-9	1	Sample
RIC F	41	16	7-9	1	Sample
RIC F	41	19	7-9	1	Sample

APPENDIX 4 - METAL WORK

4.1 ASSESSMENT OF THE ROMAN COINS

by David Shotter

Introduction

4.1.1 A small assemblage of six Roman coins was recovered by hand during the course of the RickerGate excavations.

4.1.2 The recovery and study of the Roman coins was undertaken in accordance with the fieldwork aims and revised research aims for the site, which are set out in section 2 of the main report, above. The recovery of the coins was undertaken to aid the establishment of a closely dated sequence of Roman occupation on the site.

Methodology

4.1.3 The coins were examined prior to x-raying and cleaning and were dated as closely as possible. None were in a particularly good state of preservation.

Quantification and Provenance

4.1.4 The assemblage is quantified and provenanced by context, excavated area and site period in Table 4.1 below.

Table 4.1: Catalogue of Roman coins

Area	Context	IRF	Period	Description and date
RIC B	116	1	2-5	Ae, probably 1st half of 4th century
RIC C	231	4	5	Ae, probably 1st half of 4th century
RIC C	215	5	6	Constantinian?
RIC C	unstrat.	26	-	<i>Sestertius</i> , Commodus; RIC 449, AD 184-5
RIC D	unstrat.	1	-	<i>As</i> , Flavian, AD 69-96
RIC E	49	6	8	Probable radiate copy, c AD 280-90

Conservation

4.1.5 It is recommended that the coins are x-rayed, cleaned and conserved, since it is possible that there is post-Roman material amongst the smaller issues.

Potential for Further Work

4.1.6 The coins should be re-examined following x-raying, cleaning and conservation in order to check the provisional identifications and assist with the dating of the stratigraphic sequence. Otherwise the assemblage has little potential for further work.

4.2 ASSESSMENT OF THE METALWORK

by Christine Howard-Davis

Introduction

- 4.2.1 A small group of metalwork was recovered during the course of the Rickergate excavations. Items of copper alloy, iron, and lead are represented, but as the individual assemblages are small, they have been assessed together. All objects were recovered by hand excavation. With the exception of a few complete objects of considerable size, most of the fragments are small. This suggests that the rate of recovery was high, and therefore that the assemblage, although small, accurately reflects the amount of material deposited on the site.
- 4.2.2 The collection and study of the metalwork was undertaken in accordance with the research aims for the site, which are set out in section 2 of the main report. The recovery and examination of this material was intended to facilitate and enhance the interpretation and understanding of the development of the site during the Roman and medieval periods.

Methodology

- 4.2.3 With the exception of two items, a well-preserved iron sickle and a large copper alloy bowl, all of the copper alloy and ironwork was x-rayed. Lead, being x-ray opaque, was not. The assessment was made on the basis of an enhanced rapid scan of the assemblage before x-ray, and also of the resulting x-ray plates. Every fragment was examined and assigned a preliminary identification. The extant computerised record was enhanced or new records added, as appropriate. The data recorded, comprising information on quantity, condition, completeness, basic dimensions, outline description, conservation and illustration requirements, serve as a basis for this report.

Quantification

- 4.2.4 In comparison with the metalwork assemblages from elsewhere in Carlisle, the Rickergate assemblage is very small. Excluding coins, which are the subject of a separate assessment (appendix 4.1 above), only 105 fragments of metalwork were recovered. The assemblage comprises five objects of lead, 38 of copper alloy and 62 of iron. The spatial distribution of the material is shown in Table 4.2 below. The assemblages are too small for valid statistical comment.
- 4.2.5 The assemblages of copper alloy, iron and lead artefacts are catalogued in Tables 4.4, 4.5 and 4.6, below.

Table 4.2: Distribution of metal artefacts by excavated area

Area	Copper alloy	Iron	Lead	Totals
RIC A	-	-	-	0
RIC B	10	3	-	13
RIC C	3	27	2	32
RIC D	1	2	-	3
RIC E	21	28	3	52
RIC F	3	2	-	5
Totals	38	62	5	105

Provenance

- 4.2.6 The assemblage is quantified by site period in Table 4.3 below. The lead derived from a total of five contexts, the copper alloy from 11 contexts and the ironwork from 21 contexts. There were no significant concentrations of lead or copper alloy objects. Layer RIC C [219] (period 4) produced the only notable concentration of stratified iron objects, with 12 fragments, the majority being nails. None of the other iron-producing contexts produced more than five items.

Table 4.3: Quantification of metal artefacts by period

Period	Copper alloy	Iron	Lead	Totals
2	-	5	-	5
3	-	2	-	2
4	-	15	1	16
5	-	2	1	3
2-5	1	1	-	2
6	2	3	-	5
7	-	1	-	1
8	14	3	1	18
9	7	7	1	15
11	-	1	-	1
12	-	3	-	3
Unphased	1	5	-	6
Unstrat.	13	14	1	28
Totals	38	62	5	105

- 4.2.7 Three site periods, namely Roman period 4 and medieval periods 8 and 9, produced appreciably larger assemblages of metalwork than the others. Period 4 is perhaps skewed by the large number of items for layer RIC C [219], which produced all but two of the items attributed to this period. The material from periods 8 and 9, however, seems to reflect increased deposition, presumably of rubbish into the large defensive ditches fronting the medieval city wall. The inclusion of large complete or near-complete objects such as a fragmentary copper alloy bowl from RIC E [46] (ditch RIC E 55, period 8), a complete copper alloy bowl from RIC E [74] and an iron sickle from RIC E [51], both within ditch RIC E [58] of period 9, indicates deliberate disposal, possibly the result of large scale clearance or dumping.

- 4.2.8 The copper alloy assemblage comprises a limited range of recognisable Roman and medieval objects, together with small and completely undiagnostic fragments. The Roman material includes two brooches and a fragmentary *lorica* fastening hook. Neither of the brooches would be out of place in a 2nd-3rd century context, but it must be noted that all three objects occurred residually in deposits attributed to period 6 or later. The principal interest amongst the medieval artefacts lies with the large and well-preserved hanging bowl from RIC E [74] (period 9). Although not dated, it is most likely to be medieval in date, as is the extremely fragmentary example from RIC E [46] (period 8). A small rumbler bell and a plain dagger chape were recovered from other period 9 contexts, although neither can be closely dated.
- 4.2.9 Exactly half the assemblage of ironwork (31 items) are hand-forged nails or unidentifiable fragments. As a long-lived type, nails are effectively undatable, and were recovered from both Roman and medieval contexts. The few other Roman artefact types recovered include a blade fragment from RIC C [219] of period 4, and an inlaid stylus from RIC C [217] of period 5. A second Roman-type stylus occurred residually in a period 6 deposit (RIC C 218). Medieval artefact types are confined to occasional blade fragments and knife handles from several contexts, a large single-bladed axe head from RIC E [65] (in period 8 ditch RIC E 55), and a complete sickle/reaping hook blade from RIC E [51] (in period 9 ditch 58).
- 4.2.10 None of the lead objects is datable, or of obvious interest.

Table 4.4: Outline catalogue of the copper alloy assemblage

Area	Context	IRF No.	Count	Description
RIC B	116	2	1	Fragment
RIC B	unstrat.	4	3	Fragment
RIC C	215	6	1	Fragment
RIC C	216	3	1	Brooch
RIC C	unstrat.	27	1	Fragment
RIC D	354	4	1	Chape?
RIC E	46	-	3	Fragment
RIC E	46	3	1	Bowl?
RIC E	46	4	1	Bowl?
RIC E	46	20	1	Fragment
RIC E	49	2	2	Lorica hook?
RIC E	50	15	1	Fragment
RIC E	50	21	5	Brooch??
RIC E	59	9	1	Bell, rumbler
RIC E	74	13	5	Bowl
RIC E	unstrat.	16	1	Key
RIC F	1	5	3	Fragment

Table 4.5: Outline catalogue of the ironwork assemblage

Area	Context	IRF No.	Count	Description
RIC B	128	6	1	Nail
RIC B	128	7	1	Nail?
RIC B	128	8	1	Knife Handle?
RIC C	216	22	1	Nail?
RIC C	216	31	1	Blade? Strap?
RIC C	217	16	1	Stylus
RIC C	217	32	1	Nail
RIC C	218	20	1	Stylus?
RIC C	219	17	1	Nail
RIC C	219	18	1	Nail
RIC C	219	19	1	Nail
RIC C	219	23	1	Object
RIC C	219	24	1	Blade
RIC C	219	34	1	Nail
RIC C	219	35	2	Nail
RIC C	219	36	1	Nail
RIC C	219	37	1	Nail
RIC C	219	38	2	Pin
RIC C	225	21	2	Nail
RIC C	229	33	1	Nail
RIC C	234	39	1	Nail
RIC C	236	57	1	Nail
RIC C	236	58	1	Nail
RIC C	236	59	1	Nail
RIC C	239	48	2	Nail
RIC C	253	47	1	Nail
RIC D	353	2	1	Buckle
RIC D	354	3	1	Blade
RIC E	1	29	1	Nail
RIC E	1	33	1	Nail
RIC E	1	34	1	Nail
RIC E	1	35	1	Fragment
RIC E	1	36	1	Object
RIC E	51	7	1	Sickle
RIC E	51	25	1	Nail
RIC E	51	57	1	Nail
RIC E	51	58	1	Fragment
RIC E	62	37	1	Nail
RIC E	65	12	1	Axe
RIC E	65	23	1	Object
RIC E	69	45	1	Object
RIC E	80	44	1	Fragment
RIC E	unstrat.	17	1	Nail
RIC E	unstrat.	19	1	Object
RIC E	unstrat.	26	1	Nail, horseshoe
RIC E	unstrat.	27	1	Nail
RIC E	unstrat.	28	1	Nail, horseshoe
RIC E	unstrat.	31	1	Nail
RIC E	unstrat.	32	1	Fragment
RIC E	unstrat.	38	1	Object
RIC E	unstrat.	39	1	Object
RIC E	unstrat.	40	1	Nail
RIC E	unstrat.	41	1	Nail
RIC E	unstrat.	42	1	Nail

Area	Context	IRF No.	Count	Description
RIC E	unstrat.	43	1	Fragment
RIC E	unstrat.	55	1	Disc
RIC F	17	27	1	Knife handle
RIC F	159	28	1	Fragment

Table 4.6: Outline catalogue of the lead assemblage

Area	Context	IRF No.	Count	Description
RIC C	217	2	1	Melt
RIC C	219	1	2	Gallet?
RIC E	45	22	1	Fragment
RIC E	51	14	1	Disc
RIC E	unstrat.	18	1	Nail

Conservation

- 4.2.11 The state of preservation of the metalwork was assessed on a broad four-point system, namely poor, fair, good, and excellent. The lead was in fair condition. Otherwise, there was little variation in preservation, with most of the copper alloy and ironwork being in poor condition, fragmentary, highly mineralised, and with the original surfaces badly obscured by corrosion products. Only a few objects from apparently waterlogged contexts were in good condition.
- 4.2.12 The material is mostly adequately packed and currently stable. Due to its size and shape the copper alloy bowl from RIC E [74] will require customised packaging in order to prevent damage in the future. Advice has been taken on the potential for conservation of the bowl or bowls from RIC E [46], currently still encased in a soil matrix. X-ray and physical examination suggests that these are shattered, the fragments effectively represented now by corrosion products alone, and thus conservation is not a viable or cost-effective option (Karen Barker, pers. comm.). In order to confirm identifications a small number of objects will require cleaning and investigative conservation.

Comparative Material

- 4.2.13 Comparative material for both the Roman and post-medieval items can be found amongst the large body of published and unpublished material from Carlisle. There are numerous compendia of medieval objects (for example, Egan 1998) and these will be searched for comparanda with regard to the medieval iron tools and copper alloy bowls. The latter are not common finds, especially in good condition, and thus some effort will be taken to provide corroborative dating evidence for them.

Potential for Further Work

- 4.2.14 Further analysis of the metalwork has some potential to contribute to the research aims for the site. As a supplement to the dating evidence available from other sources, the metalwork will contribute to knowledge of the development of the site through both the Roman and medieval periods (Objectives 2.1 and 2.2). In addition, the medieval tools and bowls are relatively unusual and will contribute to an understanding of the precise

character of activity and occupation on and in the vicinity of the site, especially when considered in association with other classes of artefactual material.

- 4.2.15 The assemblage should be integrated within the published catalogues, with academic discussion appended where relevant. An illustrated catalogue will be produced, relating the objects to their stratigraphic context. The catalogue will include description and basic comparanda.

Bibliography

Egan, G, 1998 *The medieval household; daily living c 1150-c 1450*, Medieval finds from excavations in London 6, London

APPENDIX 5 - SLAG AND METALWORKING DEBRIS

5.1 ASSESSMENT OF THE SLAG AND METALWORKING DEBRIS

by Lynne Keys

Introduction

- 5.1.1 A moderate quantity of metalworking slag was recovered by hand during the course of the Rickerate excavations.
- 5.1.2 The recovery and study of the metalworking slag was undertaken in accordance with the fieldwork aims and revised research aims for the site, which are set out in section 2 of the main report, above. The recovery of this material was designed to assist with the detailed interpretation of the character and development of occupation on the site and the economic orientation of the site during the Roman and medieval periods.

Methodology

- 5.1.3 All the slag was examined by eye and categorised on the basis of morphology alone. Each category of slag in each context was weighed; smithing hearth bottoms were weighed and measured individually. In addition a magnet was run through the soil samples and residues from soil samples to detect any micro-slags which might be present.

Quantification

- 5.1.4 In total, just under 66kg of slag was recovered from the site, of which the overwhelming majority came from the medieval defensive ditches of periods 8 and 9 in RIC E Trench 8. The assemblage is quantified by excavated area in Table 5.1 and by site period in Table 5.2. The material is also catalogued by context in Table 5.3.

Table 5.1: Distribution of slag and metalworking debris by excavated area

Area	Weight of material (kg)	% of total
RIC B	0.121	0.18
RIC C	0.036	0.06
RIC D	0.492	0.75
RIC E	64.310	97.92
RIC F	0.717	1.09
Total	65.676	100

Table 5.2: Quantification of slag and metalworking debris by site period

Period	Weight of material (kg)	% of total
2-5	0.702	1.07
4	0.010	0.01
6	0.026	0.04
8	21.935	33.40
9	28.925	44.04
7-9	0.001	0.00
10	0.130	0.20
11	0.116	0.18
unphased	13.831	21.06
Total	65.676	100

- 5.1.5 Activities involving iron can take two forms, namely smelting of iron from ore and fuel, or smithing, which is the hot working of iron by the smith. Both processes create diagnostic and undiagnostic slags. The assessment suggests that no diagnostic smelting slag was present in the assemblage.
- 5.1.6 Slags diagnostic of iron smithing take two main forms, namely bulk slags and micro-slags. Of the bulk slags the smithing hearth bottom with its characteristic plano-convex shape is the most readily identifiable type. When removed from the hearth smithing hearth bottoms were usually taken outside and deposited in the nearest pit or ditch. Their presence in cut features or dumps, as in the medieval ditches at Rickergate, is therefore often a good indication that smithing was occurring in the vicinity.
- 5.1.7 No micro-slags were present in the assemblage but this is to be expected since these tend to remain in the immediate area of smithing activity, around the anvil and hearth. Being so small they escape removal when larger bulk slags are taken away for disposal.

Provenance

- 5.1.8 The provenance of the assemblage is summarised in Tables 5.1 and 5.2 above, and by context in Table 5.3 below. The bulk of the material came from deposits filling the large medieval defensive ditches of periods 8 and 9 in RIC E Trench 8.
- 5.1.9 With the exception of very small quantities of undiagnostic slag and vitrified hearth lining, no metalworking slags were recovered from Roman deposits on the Rickergate site. It seems probable, therefore, that no ironworking activity was taking place in the vicinity during the Roman period.

Conservation

- 5.1.10 All the slag and metalworking debris is stable and appropriately packed for long-term storage, and requires no special conservation measures. Any decision on disposal of the material should be based on the likelihood of

further work, but otherwise there is no reason to retain the material, except perhaps a few of the larger examples for reference.

Comparative Material

- 5.1.11 The closest parallel for the RickerGate material is the assemblage of very large smithing hearth bottoms recovered during the course of the Millennium excavations, which were located immediately south of the medieval castle in Carlisle (Keys and Dennis 2002). This material also came from the fills of a large medieval defensive ditch, the so-called 'City Ditch, which formed an outer defensive work separating the castle from the medieval city.

Potential for Further Work

- 5.1.12 Further study of the assemblage of slag and metalworking debris has the potential to contribute to Objective 3.1 of the research aims, which seeks to shed light on aspects of craft and industry within medieval Carlisle. The presence of large numbers of smithing hearth bottoms and other slags from the period 8 and 9 ditches in RIC E Trench 8 clearly suggests that smithing was taking place in the vicinity of the site during the medieval period.

Bibliography

Keys, L, and Dennis, M, 2002 Assessment of the slag and metalworking debris, in Oxford Archaeology North, *Carlisle Millennium project: Post-excavation assessment report*, unpubl rep

Table 5.3: Outline catalogue of the slag and metalworking debris

Area	Context	Material	Weight (g)	Length (mm)	Width (mm)	Depth (mm)	Comments
RIC B	28	cinder	1				
RIC B	112	coal	120				
RIC C	216	undiagnostic	26				smithing slag?
RIC C	219	cinder	8				
RIC C	219	vitriified hearth lining	2				
RIC D	355	smithing hearth bottom	250	95	70	40	
RIC D	404	smithing hearth bottom	242	100	80	40	
RIC E	1	smithing hearth bottom	396	90	90	30	
RIC E	1	smithing hearth bottom	426	100	90	40	
RIC E	1	smithing hearth bottom	444	90	85	40	
RIC E	1	smithing hearth bottom	524	110	90	45	
RIC E	1	smithing hearth bottom	696	120	150	70	
RIC E	1	smithing hearth bottom	922	130	120	40	
RIC E	1	smithing hearth bottom	1068	130	110	60	
RIC E	1	smithing hearth bottom	2452	150	140	100	large iron object embedded
RIC E	1	smithing hearth bottom	2985	210	130	100	
RIC E	1	undiagnostic	3046				
RIC E	1	undiagnostic	860				broken smithing hearth bottom?
RIC E	26	undiagnostic	36				
RIC E	30	vitriified hearth lining	94				
RIC E	31	smithing hearth bottom	188	90	70	30	
RIC E	31	smithing hearth bottom	304	105	80	20	
RIC E	31	smithing hearth bottom	358	80	85	35	
RIC E	31	smithing hearth bottom	682	100	80	50	
RIC E	31	smithing hearth bottom	924	120	100	60	
RIC E	31	smithing hearth bottom	1858	140	110	100	
RIC E	31	smithing hearth bottom	2672	190	160	70	
RIC E	31	undiagnostic	444				
RIC E	31	undiagnostic	688				broken smithing slag?
RIC E	32	smithing hearth bottom	1098	130	115	45	
RIC E	36	undiagnostic	1				
RIC E	46	ferruginous concretion	92				with copper alloy
RIC E	46	smithing hearth bottom	720	170	110	50	
RIC E	46	vitriified hearth lining	401				
RIC E	47	smithing hearth bottom	438	120	105	50	
RIC E	47	smithing hearth bottom	754	120	65	60	
RIC E	47	undiagnostic	82				smithing slag?
RIC E	47	undiagnostic	306				
RIC E	47	vitriified hearth lining	94				
RIC E	48	smithing hearth bottom	962	150	110	70	
RIC E	48	smithing hearth bottom	1708	160	130	80	
RIC E	48	smithing hearth bottom	2046	160	140	50	
RIC E	49	clinker	30				
RIC E	49	smithing hearth bottom	298	120	80	40	
RIC E	49	smithing hearth bottom	584	130	100	65	
RIC E	49	smithing hearth bottom	774	100	75	65	
RIC E	49	smithing hearth bottom	866	140	110	65	
RIC E	49	smithing hearth bottom	2016	150	135	75	
RIC E	49	smithing hearth bottom	2182	180	150	90	

Area	Context	Material	Weight (g)	Length (mm)	Width (mm)	Depth (mm)	Comments
RIC E	49	smithing hearth bottom	5640	240	190	110	
RIC E	49	undiagnostic	72				smithing slag?
RIC E	51	smithing hearth bottom	202	80	60	45	
RIC E	51	smithing hearth bottom	242	160	90	70	
RIC E	51	smithing hearth bottom	270	90	80	40	
RIC E	51	smithing hearth bottom	284	90	80	30	
RIC E	51	smithing hearth bottom	396	110	75	50	
RIC E	51	smithing hearth bottom	586	100	100	50	
RIC E	51	smithing hearth bottom	644	110	80	50	
RIC E	51	smithing hearth bottom	648	90	90	50	
RIC E	51	smithing hearth bottom	678	110	100	60	
RIC E	51	smithing hearth bottom	722	120	100	60	
RIC E	51	smithing hearth bottom	820	120	95	55	
RIC E	51	smithing hearth bottom	866	120	110	45	
RIC E	51	smithing hearth bottom	1004	140	100	40	
RIC E	51	smithing hearth bottom	1360	175	120	55	
RIC E	51	smithing hearth bottom	1510	160	125	65	
RIC E	51	smithing hearth bottom	2018	170	140	70	
RIC E	51	smithing hearth bottom	2258	160	130	70	
RIC E	51	undiagnostic	1008				
RIC E	51	undiagnostic	150				dense
RIC E	51	undiagnostic	212				iron with nail?
RIC E	51	undiagnostic	1686				smithing slag?
RIC E	56	undiagnostic	122				
RIC E	60	undiagnostic	58				iron rich
RIC E	60	undiagnostic	162				with cinder
RIC E	65	ferruginous concretion	38				
RIC E	65	hammerscale	0				broken flake
RIC E	65	smithing hearth bottom	180	80	80	30	
RIC E	65	smithing hearth bottom	192	95	60	35	
RIC E	65	smithing hearth bottom	292	110	90	50	
RIC E	65	smithing hearth bottom	452	105	80	45	
RIC E	65	smithing hearth bottom	634	120	110	60	
RIC E	65	smithing hearth bottom	644	130	100	70	
RIC E	65	smithing hearth bottom	648	110	90	80	
RIC E	65	undiagnostic	42				
RIC E	68	vitified hearth lining	58				
RIC E	9999	cinder	20				
RIC F	17	iron	12				
RIC F	19	undiagnostic	66				late?
RIC F	29	cinder	38				
RIC F	110	cess	18				
RIC F	111	undiagnostic	504				
RIC F	111	vitified hearth lining	34				
RIC F	137	cinder	6				
RIC F	147	cinder	6				
RIC F	159	undiagnostic	26				
RIC F	160	undiagnostic	7				

APPENDIX 6 - WORKED STONE

6.1 ASSESSMENT OF THE FLINT

by Kate Cramp

Introduction

- 6.1.1 A total of 24 struck flints were recovered by hand during the course of the Rickergate excavations. No burnt unworked material was recovered from the site.
- 6.1.2 The recovery and study of the flint was undertaken in accordance with the fieldwork aims and revised research aims for the site, which are set out in section 2 of the main report, above. The recovery of this material was undertaken to aid interpretation of the date and character of pre-Roman activity on the site.

Quantification and Provenance

- 6.1.3 The number of flints by type is shown in Table 6.1. The total flint assemblage is summarised by context in Table 6.2. With the exception of a single retouched flake from area RIC C, all the material derived from RIC F. The flint was thinly distributed between 12 contexts, most of which contained only one or two pieces. The largest group came from context RIC F [198]; a pre-Roman buried soil horizon of period 1, which contained an assemblage of nine pieces.
- 6.1.4 With a few exceptions, the flints were in reasonably good condition and none was heavily damaged. Most pieces, however, exhibited limited areas of post-depositional wear to their edges, and only a single flake, from context RIC F [132], was recorded as fresh. A total of two flints were corticated, in one case very heavily.
- 6.1.5 The raw material used for the production of the flint work appears to have been a gravel flint, characterised by an abraded and stained cortex. The nodules may have been procured from river gravel sources. In several cases, the flint had accrued a deep orange iron staining. The retouched flake from RIC F [198] was of a fine-grained, light grey coloured flint, and may indicate the exploitation of chalk flint sources.
- 6.1.6 The assemblage is composed mainly of unretouched flakes, which are represented by 12 pieces. The majority of these are technologically undiagnostic, and may be dated broadly to the Neolithic or Bronze Age periods. Blades and blade-like flakes were less numerous; single examples were recovered from contexts RIC F [56], [130], [175] and [198]. The majority of these pieces may be dated to the Mesolithic or early Neolithic, with a date towards the end of this range perhaps more plausible. Several possessed platform edge abrasion and had probably been struck using a soft-

hammer percussor. Linear and punctiform butt types were common within this group.

- 6.1.7 The edge-retouched flake and rejuvenation flake from RIC F [198] may also be attributed to the later Mesolithic or earlier Neolithic period. Both pieces possessed negative scars suggestive of a blade-oriented industry, and both were probably struck using a soft hammer percussor. The rejuvenation flake reflects a concern with platform maintenance and the controlled detachment of flakes, and is thus consistent with an earlier industry. The apparent concentration of these pieces within RIC F [198] suggests a possible focus of activity. It is conceivable that some or all of the undiagnostic flake material from the deposit is also contemporaneous, although this remains speculative.

Table 6.1: Quantification of flints by type

	RIC C	RIC F											Total
	219	1	56	85	130	132	135	138	160	175	177	198	
Flake		1		1		3		1	1		1	4	12
Blade-like flake					1					1		1	3
Blade			1										1
Rejuvenation flake tablet										1			1
Core face/edge rejuvenation flake												1	1
Irregular waste		1											1
Chip							1					1	2
Retouched flake	1											2	3
Total	1	2	1	1	1	3	1	1	1	2	1	9	24

- 6.1.8 In summary, the flint work forms a low-density scatter across site and is probably largely residual. Much of the assemblage is composed of undiagnostic flake material, which may be broadly dated to the Neolithic or Bronze Age. The presence of a small number of possible late Mesolithic or early Neolithic pieces, several of which occurred in RIC F [198], indicates some earlier prehistoric activity at the site.

Potential for Further Work

- 6.1.9 No further work is recommended, other than that required to integrate the results of the assessment into the final report.

Table 6.2: Outline catalogue of the flints

Area	Context	Category	Quant. burnt.	Quant. broken.	Total	Weight (g)	Comments
RIC F	1	Irregular waste	1	1	1	1	Angular piece of irregular waste, slightly glossy in appearance. Probably a broken flake fragment. Undiagnostic.
RIC F	1	Flake	1	1	1	1	Distal-trimming flake with proximal and right distal breaks. Of a light pink coloured gravel flint - perhaps lightly burnt. Undiagnostic, broadly Neolithic or Bronze Age. Relatively fine dorsal flake scars suggest earlier in this range.
RIC F	56	Blade	0	0	1	1	Side-trimming blade terminating in point. Relatively large punctiform platform with abraded edge. Of a grey, cherty flint type. Soft-hammer struck - diffuse, lipped bulb. Probably Mesolithic/Early Neolithic, and perhaps more likely the latter.
RIC F	85	Flake	0	1	1	3	Rather angular tertiary flake fragment with proximal, distal and right-hand breaks. Possible use-wear to left-hand side lateral margin. Lightly iron-stained. Undiagnostic, although perhaps earlier on account of heavy cortication.
RIC F	130	Blade-like	0	1	1	1	Tertiary blade-like flake with slight distal break. Of a golden-coloured, iron-stained flint type. Platform edge abrasion, feather termination. Probably soft-hammer struck. Dorsal scars from opposed platforms, although not especially blade-like in form. Some possible use-wear to both lateral margins. Mesolithic/Neolithic - perhaps more likely the latter.
RIC F	132	Flake	0	1	1	3	Undiagnostic tertiary flake with longitudinal and distal break. Fairly irregular. Of a lightly iron-stained ?gravel flint. Broadly Neolithic/Bronze Age.
RIC F	132	Flake	0	0	1	1	Small preparatory flake. Iron-stained gravel flint. Undiagnostic.
RIC F	132	Flake	1	0	1	1	Small tertiary flake with an intense surface gloss. Relatively fine dorsal flake scars. Perhaps Neolithic/early Bronze Age.
RIC F	135	Chip	0	1	1	1	Iron-stained tertiary chip with platform edge abrasion. Proximal left-hand break.
RIC F	138	Flake	0	1	1	2	Side-trimming flake with slight distal break. Lightly iron-stained gravel flint. Possible use-wear to right-hand side lateral margin. Undiagnostic, perhaps broadly Neolithic/early Bronze Age.
RIC F	160	Flake	0	0	1	2	Squat side- and distal-trimming flake. Lightly iron-stained gravel flint. Undiagnostic.
RIC F	175	Blade-like	0	1	1	1	Short medial fragment of probable tertiary blade. Very small, bladelet-like dorsal flake scars. Of a dark coloured flint, slightly greasy in appearance - possibly heat-treated? Potential use-wear to left-hand side lateral margin. Mesolithic/early Neolithic.
RIC F	175	Rejuvenation flake tablet	0	1	1	1	Very small fragment of probable core tablet, proximal break. Lightly iron-stained flint. Distal end exhibits almost crested, abraded platform edge. (later) Mesolithic/early Neolithic.

Area	Context	Category	Quant. burnt.	Quant. broken.	Total	Weight (g)	Comments
RIC F	177	Flake	1	1	1	1	Proximal end of small tertiary flake. Faceted platform, probably soft-hammer struck. Of a slightly cherty flint that exhibits some evidence of light burning/heating. Use-wear left-hand side? Undiagnostic, probably Neo/earlier BA.
RIC F	198	Retouched flake	0	0	1	8	Broad, plunging tertiary flake with some light edge retouch to distal left-hand corner - perhaps intended as backing for utilisation of opposite margin. Probably soft-hammer struck with a couple of blade-like dorsal flake scars. Slight platform edge abrasion. Of a light grey ?chalk flint. Early Neolithic?
RIC F	198	Blade-like	0	1	1	1	Tertiary blade-like flake/blade with distal break. Linear, abraded platform edge. Probably soft-hammer struck. Parallel-sided with some possible use-wear to both lateral margins. Blade-like dorsal flake scars taken from opposed platforms. Mesolithic/early Neolithic.
RIC F	198	Flake	0	0	1	1	Small tertiary flake. Undiagnostic.
RIC F	198	Flake	0	1	1	1	Side-trimming flake with distal break. Lightly iron-stained gravel flint. Undiagnostic.
RIC F	198	Flake	0	1	1	1	Side-trimming flake with distal break. Lightly iron-stained gravel flint. Possible use-wear to left-hand side lateral margin. Undiagnostic.
RIC F	198	Flake	1	0	1	1	Squat side-trimming flake with hinge termination. Relatively heavily calcined. Gravel flint. Undiagnostic.
RIC F	198	Retouched flake	0	0	1	1	Squat tertiary flake with a plunging termination. Some minimal, abrupt edge retouch to distal end - almost a thumbnail scraper in dimensions, but retouch not sufficiently extensive. Broadly Neolithic/earlier Bronze Age.
RIC F	198	Rejuvenation flake core face/edge	0	1	1	8	In relatively fresh condition. Possible rejuvenation flake that has been struck across platform edge. Proximal break. Removes a cortical platform exhibiting almost blade-like previous removals. Perhaps Mesolithic/earlier Neo?
RIC F	198	Chip	0	1	1	1	With proximal and distal break. Possible fragment of tertiary bladelet.
RIC F	219	Retouched flake	0	0	1	2	Deeply iron-stained secondary flake (gravel flint) with some minimal, discontinuous, edge retouch to distal right-hand corner. Broadly Neolithic?

6.2 ASSESSMENT OF THE STONE OBJECTS

by Christine Howard-Davis

Introduction

- 6.2.1 A small assemblage comprising eight stone objects was recovered by hand during the course of the RickerGate excavations.
- 6.2.2 The recovery and study of the stone objects was undertaken in accordance with the fieldwork aims and revised research aims for the site, which are set out in section 2 of the main report, above. The recovery of this material was designed to assist with the detailed interpretation of the character and development of occupation on the site through time.

Methodology

- 6.2.3 The assessment was undertaken on the basis of an enhanced rapid scan of the assemblage. The objects were examined and assigned a preliminary identification. The extant computerised record was enhanced or new records added as appropriate. The data recorded, comprising information on quantity, condition, completeness, basic dimensions, outline description, conservation and illustration requirements, serve as a basis for the comments below.

Quantification

- 6.2.4 Eight fragments of stone were recovered, of which only one could be regarded as an obvious artefact. Two items were recovered from the area of RIC C, whilst six came from RIC E.

Provenance

- 6.2.5 The stone objects were recovered from six contexts. One of the contexts has been assigned to the late Roman/post-Roman dark soils of period 6. The remainder are medieval in date.
- 6.2.6 Only one of the objects is easily recognisable as a man-made object. This is a complex peg or toggle from RIC E [47]; a deposit attributed to period 9. Its complexity implies a specific function, but this has not as yet been determined. The remainder of the assemblage comprises coal, burnt shale, unidentified stone fragments, and a single small fragment of riven Lakeland slate. This is perhaps of interest as it derives from period 6, suggesting use of Lakeland slate as a building material at an early, probably Roman, date.

- 6.2.7 A complete catalogue of the assemblage is provided in Table 6.3 below.

Conservation

- 6.2.8 The material is currently satisfactorily packed and requires no special conservation measures.

Comparative Material

- 6.2.9 Comparators for medieval stone objects can be found amongst the large body of published and unpublished material from earlier excavations in Carlisle.

Potential for Further Work

- 6.2.10 A brief discussion of the assemblage will be required for inclusion in the final report. The assemblage should be integrated within the published catalogues, with academic discussion appended where relevant.
- 6.2.11 An illustrated catalogue will be produced, relating the man-made objects to their stratigraphic context. The catalogue will include description and basic comparanda.

Table 6.3: Outline catalogue of the stone objects

Area	Context	IRF No	Period	Count	Description
RIC C	216	53	6	1	coal
RIC C	216	-	6	1	roofing slate?
RIC E	44	-	9	1	burnt shale
RIC E	47	1	9	1	peg/toggle
RIC E	60	-	9	1	coal
RIC E	60	-	9	1	coal
RIC E	65	12	8	1	unidentified fragment
RIC E	66	-	8	1	unidentified fragment

APPENDIX 7 - WORKED ORGANIC MATERIALS

7.1 ASSESSMENT OF THE WORKED BONE AND ANTLER

by Christine Howard-Davis

Introduction

- 7.1.1 Three artefacts of worked animal bone or antler were recovered by hand during the course of the RickerGate excavations.
- 7.1.2 The recovery and study of the worked bone objects was undertaken in accordance with the fieldwork aims and revised research aims for the site, which are set out in section 2 of the main report, above. The recovery of this material was undertaken to aid detailed interpretation of the character of occupation on the site during the medieval period.

Methodology

- 7.1.3 The assessment was undertaken on the basis of an enhanced rapid scan of the assemblage. The objects were examined and assigned a preliminary identification. The extant computerised record was enhanced or new records added as appropriate. The data recorded, comprising information on quantity, condition, completeness, basic dimensions, outline description, conservation and illustration requirements, serve as a basis for the comments below.

Quantification and Provenance

- 7.1.4 Three objects were recovered; two from the area of RIC E and one from RIC F. All are of medieval date.
- 7.1.5 A fragment of sawn scapula from context RIC E [47] of period 9 probably represents bone-working waste. Both the other objects are pegs; that from RIC F [46] (period 7-9) is plain, but the example from RIC E [68] (period 8) is a complex peg or toggle carved in antler and is without doubt closely linked in function to a jet or shale example from period 9 context RIC E [47] (see appendix 6.2).
- 7.1.6 A complete catalogue of the assemblage is provided in Table 7.1 below

Conservation

- 7.1.7 The material is currently satisfactorily packed and requires no special conservation measures.

Comparative Material

- 7.1.8 Comparators for medieval bone and antler objects can be found amongst the large body of published and unpublished material from earlier excavations in Carlisle.

Potential for Further Work

- 7.1.9 A brief discussion of the assemblage will be required for inclusion in the final report. The assemblage should be integrated within the published catalogues, with academic discussion appended where relevant.
- 7.1.10 An illustrated catalogue will be produced, relating the objects to their stratigraphic context. The catalogue will include description and basic comparanda.

Table 7.1: Outline catalogue of the worked bone and antler artefacts

Area	Context	IRF	Period	Count	Description
RIC E	47	56	9	1	Bone-working debris
RIC E	68	23	8	1	Peg/toggle
RIC F	46	2	7-9	1	Peg

7.2 ASSESSMENT OF THE LEATHER

by Quita Mould with Christine Howard-Davis

Introduction

- 7.2.1 A large assemblage of leather was recovered by hand during the course of the Rickergate excavations. The assemblage, which is almost entirely of medieval date, represents the largest collection of medieval leatherwork yet recovered from a site in Carlisle.
- 7.2.2 The assemblage came from three areas of excavation, namely RIC D Trench 7, RIC E Trench 8 and RIC F Trench 9, with the majority deriving from RIC E. No leather was recovered from areas RIC A-C.
- 7.2.3 The recovery and study of the leather was undertaken in accordance with the fieldwork aims and revised research aims for the site, which are set out in section 2 of the main report, above. The recovery of this material was undertaken to aid detailed understanding of the character and date of the occupation on the site, principally during the medieval period, and to shed light on the status and economic orientation of the site at this time.

Methodology

- 7.2.4 The assessment was undertaken following a scan of the assemblage in August 2002. The leather was not conserved when examined, and was packed wet in double or triple polythene self-sealing bags. The functional categories of the material and diagnostic features of individual items were noted and quantified and the resulting information correlated with the available contextual information and site phasing.
- 7.2.5 The only leather items not available for observation were a large, composite wood and leather object, identified as the greater part of a set of bellows, and a further 37 small leather items found in association with this object. The latter appear to comprise small fragments derived from the bellows and a number of broken shoe components. These items, which had been sent to Edinburgh for conservation in 1999, were sent to the premises of Oxford Archaeology North in Lancaster in June 2002, from where they were returned to secure storage at the former premises of Carlisle Archaeology Ltd at Shaddon Mill, Carlisle, in July 2002. Assessment of these items has been made on the basis of an image of the principle object and a descriptive text provided by Amanda Clydesdale of AOC, Edinburgh (Clydesdale 2001), which were produced during conservation.

Quantification

- 7.2.6 The leather assemblage and the number of leather-producing contexts are quantified by trench in Table 7.2, below. The material is principally of late medieval date and comprises shoes and other dress accessories, saddlery, leatherworking waste and a set of bellows. In addition, a small amount of

Roman leather was recognised and early post-medieval shoe components dating to the earlier 16th century were also noted. An outline catalogue of the leather indicating the contexts of the bags is given in table 7.4. This will be refined during full analysis (see 7.2.8 below).

Table 7.2: *Quantification of leather and leather-producing contexts*

Area	No. contexts	No. bags	No. individual items
RIC D	6	13	18
RIC E	23	232	577
RIC F	4	4	5
Totals	33	249	600

- 7.2.7 A total count of 856 pieces of leather was recorded during initial processing following excavation. However, for assessment purposes smaller, formless fragments with no diagnostic features that have been torn from larger components are omitted from the quantifications. This has served to reduce the number of pieces by 256, resulting in a total count of 600.
- 7.2.8 Leather was recovered from 33 individual contexts and also as unstratified material. In the initial documentation leather was recorded as coming from 31 contexts, but during scanning it was noted that two bags attributed to RIC E contexts [46] and [51] actually came, according to the original labelling, from RIC F contexts [46] and [51]. Since it is possible that other errors of this kind may have gone unnoticed it is recommended that the original labels and bags be retained during conservation and any subsequent re-packaging so that the numbers may be checked. The original bags also record dates of excavation, which may prove valuable in subsequent matching of components from the larger contexts.
- 7.2.9 The bags vary widely in content. Some contain a single item, others a group of related components from one object, whilst some contain a large number of items from several individual objects.

Provenance

- 7.2.10 All but 2% of the leather assemblage came from stratified contexts. The vast majority, some 577 items representing over 96% of the total assemblage, was recovered from RIC E Trench 8, with much smaller groups coming from RIC D Trench 7 (18 items) and RIC F Trench 9 (five items). This information is summarised in Table 7.2, above.
- 7.2.11 **RIC E Trench 8:** No less than 566 items of leather were recovered from stratified contexts within RIC E Trench 8, and a further 11 items were unstratified within this area of excavation. Almost two-thirds (63%) of the stratified assemblage were shoe components, and a further 14% was scrap leather with torn edges, which is likely to be torn from shoe uppers. Sixteen complete or near-complete shoes were present, and the individual shoe styles could be recognised for no less than 45 shoes or shoe components. 15% of the assemblage was leatherworking waste, of which the majority (66%) comprised pieces of unusable hide discarded during the initial cutting-out of shoe parts.

The remaining one-third of the waste material was secondary waste produced when trimming pattern-pieces during shoemaking. The remaining 8% of the leather assemblage comprises a range of other dress accessories and saddlery, and includes items of national interest.

- 7.2.12 The leather from RIC E was recovered from contexts attributed to four site periods. The number of leather-producing contexts and bags of leather in each period are given below in Table 7.3.

Table 7.3: Provenance of RIC E leather and leather-producing contexts by period

Period	Date	No. contexts	No. bags
7	c 12th century?	1	1
8	c 12th-13th century	7	16
9	c late 13th-early 16th century	14	206
12	20th century	1	1
unstrat	-	-	8
Totals		23	232

- 7.2.13 *Period 7*: A nailed bottom unit from a Roman shoe of nailed construction occurred residually in a fill (RIC E 83) of a small ditch (RIC E 88) attributed to period 7.
- 7.2.14 *Period 8*: A small group of material was recovered from six fills of the earliest recorded defensive ditch fronting the medieval city wall (RIC E 55). The group includes components from a side-lacing shoe and a toggle-fastening boot, both styles worn during the 13th century. A piece of primary waste and a fragment of bottom unit were found in context RIC E [49] within this feature.
- 7.2.15 *Period 9*: The great bulk of the leather from RIC E, some 92% of the RIC E assemblage, came from the fills of the second large defensive ditch located in front of the medieval city wall (RIC E 58). Particularly large groups of leather were found in contexts RIC E [47] (70 bags) and RIC E [51] (59 bags), and other significant groups were present in contexts RIC E [59] (16 bags), RIC E [60] (14 bags) and RIC E [74] (14 bags).
- 7.2.16 No less than 13 styles of shoe can be recognised in the assemblage from the period 9 deposits in feature RIC E [58], dating from the 13th century to the earlier part of the 16th century. The styles include toggle-fastening ankleshoes, front lacing ankleshoes, ankleshoes fastening with a buckle and strap, side-lacing boots, 'kidney' boots and wide, slip-on shoes. One shoe has cut-out decoration, a feature seen on several medieval shoes from London (Grew and de Neergaard 1988, 79-83) but rarely found elsewhere and seldom in such good condition. Two examples of toe-stuffing were noted in context RIC E [51].
- 7.2.17 Other dress accessories include lengths of girdle from contexts RIC E [44] and [59], and a possible button and a complete purse from context RIC E [47]. To the author's knowledge, the purse is of a style not previously recorded. A knife sheath and four sword scabbards were also recovered. Two of the scabbards

(from contexts RIC E 32 and 74) are sufficiently complete for the type of blade originally enclosed to be identified.

7.2.18 Evidence for saddlery includes a large quantity of panel fragments, principally from contexts RIC E [32], [47], [51] and [74], some associated with U-shaped bindings. Twelve examples from RIC E [47], [51] and [74] have distinctive decorative stitching. Such stitching has previously been found on decorative purses in Britain and on components tentatively identified as coming from saddles at Svenborg, Denmark and Lübeck, Germany (Groenman-van Waateringe 1988, 109-11, 123, figs 11.1-2). The Rickerate panel fragments are larger than those usually associated with a decorated purse and must come from either a particularly large bag or a saddle component such as a shabrack, a padded horse cloth that formed an integral part of the saddle during this period. A broken panel of cattle hide with metal studs, from RIC E [47], may also come from a saddle, as may 11 lengths of leather straps that were also recovered.

The bellows – description by Christine Howard-Davis

7.2.19 Perhaps the most spectacular, and certainly one of the most important, leather objects to be recovered from the period 9 ditch is a substantially complete set of bellows from RIC E [51] (Plate 5). This complex object comprises a large sewn leather bag reinforced and shaped by an integral sewn and riveted wooden framework constructed from relatively flexible wooden laths. A separate fragment, not available to the conservators and recently discovered packed elsewhere, awaits x-ray and conservation. This appears to be the mouth of a constricted round opening and is associated with what appears to be a large iron stopper, possibly a nozzle attachment. It is not clear how the fragment relates to the remainder of the object, but it might serve to confirm identification as a bellows. Fragments of iron chain found with the putative bellows might have been part of a raising mechanism by which the bellows bag was inflated.

7.2.20 The recovery of a sycamore leaf (*Acer pseudoplatanus*) in one of the folds of leather during conservation seemed to suggest the object was unlikely to date before the mid-late 15th century (Clydesdale 2001, 9). However, the good group of pottery from this context is exclusively of late 13th-14th century date and dendrochronological dating of a wooden barrel from the same deposit produced a felling date within a few years of 1358 (Crone 2001). It will be important to establish the likely date of the object as soon as possible. This item is undoubtedly of considerable interest and must represent one of the earliest and best preserved examples known in the archaeological record. Those bellows that survive outside the archaeological context are likely to have undergone so much repair and replacement that almost nothing of the original fabric will have survived.

7.2.21 *Period 12*: A single trimming of secondary waste was noted from a modern context.

7.2.22 **RIC D Trench 7**: The small assemblage of 18 items from RIC D Trench 7, representing 3% of the total Rickerate assemblage, included turnshoe

components and a small quantity of waste leather from the period 8 defensive ditch in front of the medieval city wall (RIC D 359). The highly fragmentary remains of a pouch or garment, components of turnshoe construction, and a single piece of primary waste were also recovered from the fills of the second phase of ditch (RIC D 358), attributed to period 9.

- 7.2.23 **RIC F Trench 9:** The five fragments of leather from RIC F Trench 9 represent just under 1% of the total Rickergate assemblage. The items include the bottom unit of a Roman shoe, which was recovered from a Roman ditch (RIC F 126) of period 2-5. A small quantity of secondary waste was found in the fills of a truncated, timber-lined medieval pit (RIC F 136) allocated to period 7-9.

Conservation

- 7.2.24 **Present condition of the material:** Most of the leather is currently stored wet. It has been washed and is well packed in double or triple polythene bags. A small amount of material has not been washed, however. Since the end of the excavation the majority of the leather has been stored under refrigeration, although at present the bulk of the assemblage is stored wet and unrefridgerated in plastic crates. The leather is bagged by context but is not stored by context, with the result that bags of leather from the same context are not grouped together but are scattered throughout the storage boxes. It was considered most cost efficient for this to be remedied after assessment when the material is returned to store. As noted above (7.2.5), an object interpreted as a set of bellows and other associated items were conserved by AOC, Edinburgh and have recently been returned to Shaddon Mill, Carlisle.
- 7.2.25 **Conservation requirements:** The leather has been well packaged and stored but unconserved material cannot be stored wet indefinitely. Wet leather presents particular problems with respect to short-term storage, transportation, study and illustration (English Heritage 1995, 4-6). Without conservation the leather will deteriorate and is potentially hazardous to health, being liable to fungal and bacterial infection. A small amount of mould growth was noted during scanning, suggesting that it is already beginning to deteriorate. One bag was found to have dried out in storage. Mould growth was noted in 11 bags, that is less than 5% of the material recovered, but is apparently scattered throughout the assemblage (contexts RIC E 47, 51, 59, 60, 73, 74 and unstratified). The advice of a conservator should be sought as soon as possible to help prevent further deterioration in storage. It will be necessary for the condition of the material to be regularly monitored when it is returned to storage.
- 7.2.26 The leather from RIC D, comprising 13 bags, was triple-bagged and unwashed when scanned. The leather was rinsed to allow identification but further washing is required prior to analysis. Similarly, approximately 12 bags of material from the RIC E would benefit from further washing. On its return to storage it is suggested that all the leather be grouped by context, the individual bags checked to monitor mould growth, and any necessary additional washing undertaken.

7.2.27 The leather requires conservation. It is recommended that the total assemblage be conserved as mould growth has been detected and at this stage it is not clear when recording and any further analysis of the material may commence. The eventual repository of the leather will be Tullie House Museum and Art Gallery, Carlisle, who have adopted a discard and retention policy in line with that recommended in the Society of Museum Archaeologists Guidelines (1993). Their opinion on the conservation of the material and that of a conservator should be canvassed and a policy for the necessary work adopted as soon as practicable. This might take the form of conserving the material from RIC E or selected contexts from that area, whilst allowing the remainder to dry out under controlled conditions. Financial constraints may dictate that selected contexts only can be fully conserved. Should this be the case it is recommended that the leather from RIC E contexts [47], [51], [59], [60] and [74] is targeted. The assemblage from these contexts comprises approximately 450 major components, which are currently stored in 173 bags.

Comparative Material

7.2.28 This section, though not exhaustive, provides a summary of medieval leather recovered from Carlisle in recent years, followed by a brief outline of comparable groups from northern England.

7.2.29 Several major excavations in Carlisle have produced leather of medieval date but, to date, virtually nothing has been published. A single medieval object, a sling, is included in the summary of leather finds from the southern Lanes (Padley 2000, 121, fig 87). Unpublished assemblages include further material from this site, and a small amount of material from the Annetwell Street excavations, including decorated sheaths and scabbards recovered during the late Dorothy Charlesworth's work from 1973-9 (Padley in preparation). More recently, a good group of mid-late 14th century leather was recovered from the Millennium excavations, which were located immediately south of the castle (Mould 2002). This assemblage came from a large ditch, the so-called City Ditch, which formed an outer defensive work separating the castle from the medieval city.

7.2.30 Outside Carlisle, no other substantial collection of medieval leather has been published from north-west England. Elsewhere in the north, leather of similar date has been found at Selby (Mould 2001), and groups from Hull (Jackson 1979; Armstrong 1980; Watkin 1987, 1993) and Beverley (Atkinson and Foreman 1992, 175-87) have been published. Medieval leather also forms a small component of the assemblage from York that has been the subject of recent study (Mould *et al.* in preparation). Other assemblages have been found in several towns and cities, principally in the south of England, most notably the groups from the well-dated waterfront dumps in the city of London (Grew and de Neergaard 1988).

Potential for Further Work

7.2.31 The following section discusses the potential for further work in the light of the research aims set out in section 2 of the main report.

7.2.32 The Rickergate leather assemblage has high potential to address a number of the research aims for the site. Stylistically much of the material, and in particular the footwear, can be quite closely dated and can therefore provide additional dating evidence to complement that deriving from the pottery. The leather therefore has the potential to enhance understanding of the origins and development of the medieval city defences (Objective 2.2). The recovery of large quantities of waste associated with shoemaking and cobbling demonstrates that the assemblage also has high potential to illuminate aspects of medieval craft and industry (Objective 3.1). Also of relevance to this objective are the large set of bellows from the period 9 defensive ditch, which seem too large to have had anything other than an industrial function. This is supported by the identification of hammerscale in deposits associated with the bellows (Clydesdale 2001, 4), which suggests that this item may have derived from a nearby smithy. The presence of shoes of late medieval and early post-medieval date (c late 15th-early 16th centuries) within the period 9 ditch may also provide information on the period of medieval to post-medieval transition (Objective 4.1), a period which is poorly represented in the archaeological record at Carlisle.

Remedial Work

7.2.33 The leather is at present bagged according to context. Several individual items are often contained within a single bag, whilst components from a single object are scattered through a series of bags deriving from one context. The leather from RIC E needs to be separated into individual objects (and associated components) and allocated a unique identifying number by which they can be identified during recording, illustration and publication.

Recording the Assemblage

7.2.34 A basic record, as defined in the Roman Finds Group and Finds Research Group Guidelines (1993) should be made of the total assemblage and the information entered onto a database. The contextual information can then be correlated and the assemblage quantified by functional category within each period or site phase. This information will inform study of the stratigraphic sequence and can be used to produce the publication report.

Analysis and Publication

7.2.35 No further work will be required on the small assemblages of leather from areas RIC D and RIC F. The assemblage from RIC E should be summarised for publication. Much of this material will be the subject of basic analysis, but certain individual items of particular importance should be targeted for detailed study in order to bring them to the attention of a wider audience. It might be considered desirable to publish selected items as a note or short article in an appropriate national journal. In some instances, specialist advice should be sought. In the case of the two well preserved sword scabbards from RIC E [32] and [47], for example, specialists at the Royal Armouries in Leeds should be consulted in order to identify the type of weapon these items once held. Certain unique items are discussed further below, in the section concerned with new research.

Potential for New Research

- 7.2.36 As noted above, certain items in the Rickergate leather assemblage are of particular significance, and further analysis of these objects can be regarded as representing new research. All derive from the second phase of defensive ditch fronting the medieval city wall (feature RIC E 58, period 9). The purse from RIC E [47] appears to be of a style not previously found in the archaeological record, and will be of interest to costume historians as well as those studying archaeological leatherwork. Further detailed analysis of the group of decoratively stitched panels, possibly from a saddle or padded horsecloth, has the potential to add significantly to knowledge of medieval saddle-types, which is presently poor, and may permit a tentative reconstruction to be made.
- 7.2.37 The set of bellows from RIC E [51] is undoubtedly of considerable interest and must represent one of the earliest and best preserved examples known in the archaeological record. Resources have already been, rightly, spent on the object and the work previously undertaken should be built on to bring the object to a wider audience. The bellows will be of interest to archaeometallurgists and industrial archaeologists as well as archaeological leather specialists. It is suggested that the author examine the object to note its construction, establish whether a panel with a thonged seam, seen during assessment, derives from it, and if other unidentified pieces from the same context might be associated with it. Colleagues in the Science Museum, London and Black County Museum, Dudley will be consulted and the collection of the Museum of Leathercraft visited in order to confirm the identification and dating and set it in a wider context.

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Table 7.4: Outline catalogue of the leather artefacts

Area	Context	IRF No	Period	No of bags	Notes
RIC D	353	7	9	1	
RIC D	353	8	9	1	
RIC D	354	9	9	1	
RIC D	355	14	9	1	
RIC D	373	15	8	1	
RIC D	373	16	8	1	
RIC D	394	17	8	1	
RIC D	394	18	8	1	
RIC D	401	10	8	1	
RIC D	401	11	8	1	
RIC D	401	12	8	1	
RIC D	401	13	8	1	
RIC D	401	19	8	1	
RIC E	4		12	1	frag
RIC E	31		9	1	frag
RIC E	32		9	8	27 frags, 4 shoe sole frags
RIC E	38		9	1	frags
RIC E	41		9	2	frags
RIC E	42		9	1	shoe
RIC E	42		9	1	1.7 frags, 1 sole frag
RIC E	44		9	1	frag
RIC E	44		9	6	5 frags, 3 shoe upper frags, 2 shoe sole frags, 2 belt frags
RIC E	45		8	2	1 shoe sole frag, 1 shoe upper frag, 2 frags
RIC E	45		8	2	11 frags
RIC E	46		8	5	13 frags, 2 shoe sole frags, 2 shoe upper frags 2 sole frags from same sole
RIC E	47		9	3	4 shoe sole frags, 1 shoe upper frag, 1 strap, 13 frags
RIC E	47		9	67	106 frags, 7 shoe soles, 5 shoe sole frags, 5 shoe uppers, 19 shoe upper frags, 1 belt/strap frag
RIC E	48		8	1	1 shoe sole frag, 1 frag
RIC E	49		9	1	
RIC E	50		8	3	3 frags, 3 shoe sole frags-3 sole frags from same sole
RIC E	51	60	9	1	bellows
RIC E	51		9	1	5 frags
RIC E	51		9	1	1 shoe sole, 1 frag
RIC E	51		9	1	frags
RIC E	51		9	1	1 shoe upper, 4 frags
RIC E	51		9	1	frags
RIC E	51		9	1	frags
RIC E	51		9	1	1 shoe, 3 frags
RIC E	51		9	1	1 shoe upper, 10 frags
RIC E	51		9	1	frags
RIC E	51		9	1	2 shoe soles, 7 frags

Area	Context	IRF No	Period	No of bags	Notes
RIC E	51		9	1	1 shoe sole, 1 shoe upper-from same shoe
RIC E	51		9	1	frags
RIC E	51		9	1	frags
RIC E	51		9	1	frags
RIC E	51		9	1	frags
RIC E	51		9	43	inc 6 shoes, 5 shoe soles, 2 shoe sole frags, 6 shoe uppers, 7 shoe upper frags, 90 frags
RIC E	52		8	1	
RIC E	59		9	1	1 shoe sole, 3 frags
RIC E	59		9	1	frags
RIC E	59		9	1	1 shoe, 3 frags
RIC E	59		9	1	belt
RIC E	59		9	1	shoe
RIC E	59		9	1	shoe frags all from same shoe
RIC E	59		9	1	frags
RIC E	59		9	9	36 frags, 1 shoe sole
RIC E	60		9	1	2 shoe sole frags from same shoe, 7 frags
RIC E	60		9	1	frags
RIC E	60		9	1	shoe
RIC E	60		9	1	shoe upper frags
RIC E	60		9	1	3 shoe upper frags, 2 frags
RIC E	60		9	1	1 shoe sole frag, 8 frags
RIC E	60		9	1	frags
RIC E	60		9	1	1 shoe upper, 6 frags
RIC E	60		9	6	frags
RIC E	62		9	2	1 sole frag, 1 upper frag, 4 frags
RIC E	62		9	8	2 frags
RIC E	63		9	1	3 frags
RIC E	63		9	1	4 frags
RIC E	64		8	3	3 frags
RIC E	68		8	1	2 frags
RIC E	73		9	1	13 frags
RIC E	73		9	1	1 shoe sole- near complete
RIC E	73		9	1	1 shoe upper, 1 frag
RIC E	73		9	1	1 half shoe sole
RIC E	73		9	2	2 shoe sole frags, 1 shoe upper, 6 frags
RIC E	74		9	1	2 shoe soles, 4 shoe upper frags, 2 frags
RIC E	74		9	1	2 shoe sole frags, 1 shoe upper, 3 frags
RIC E	74		9	1	2 shoe upper frags
RIC E	74		9	1	1 shoe sole frag, 18 frags
RIC E	74		9	1	1 shoe sole frag, 9 frags
RIC E	74		9	1	1 shoe, 1 shoe upper frag, 1 shoe sole, 6 frags
RIC E	74		9	1	1 shoe upper, 8 frags
RIC E	74		9	1	1 shoe, 1 shoe sole frag, 10 frags
RIC E	74		9	1	1 shoe sole, 1 partial shoe sole, 3 frags
RIC E	74		9	1	3 shoe upper frags, 3 frags
RIC E	74		9	1	2 shoe sole frags, 3 shoe upper frags, 1 frag- 1 upper has laces
RIC E	74		9	1	1 shoe upper/offcut

Area	Context	IRF No	Period	No of bags	Notes
RIC E	74		9	15	1 shoe upper
RIC E	74		9	15	inc 1 scabbard, 3 frags scabbard 810 mm long tapering from 70mm to 15 mm
RIC E	74		9	2	2 shoe sole frags, 2 shoe upper frags, 37 frags
RIC E	unstrat		unphased	7	8 frags, 3 shoe frags
RIC E	1		unphased	1	
RIC E	83		7	1	Shoe- roman?
RIC F	46		7-9	3	
RIC F	51		7-9	1	

APPENDIX 8 - GLASS

8.1 ASSESSMENT OF THE GLASS

by Christine Howard-Davis

Introduction

- 8.1.1 A small assemblage of glass was recovered by hand during the course of the Rickergate excavations. The small size of many of the fragments suggests that the rate of recovery was high, and thus that the small assemblage is an accurate reflection of the amount of material deposited on the site.
- 8.1.2 The recovery and study of the glass was undertaken in accordance with the fieldwork aims and revised research aims for the site, which are set out in section 2 of the main report, above. The recovery of this material was undertaken to contribute towards establishing a dated occupation sequence and to aid detailed interpretation of the character of occupation on the site through time.

Methodology

- 8.1.3 The assessment was undertaken on the basis of an enhanced rapid scan of the assemblage. Every fragment was examined and assigned a preliminary identification. The extant computerised record was enhanced or new records added to as appropriate. The data recorded, comprising information on quantity, condition, completeness, basic dimensions, outline description, conservation and illustration requirements, serve as a basis for the comments below.

Quantification and Provenance

- 8.1.4 The assemblage of 45 fragments comprises 38 pieces of vessel glass, five fragments of window glass, and two glass objects. The spatial distribution of the assemblage is summarised in Table 8.1 below.

Table 8.1: Distribution of glass by excavated area

Area	Count	% of total
RIC B	7	15.55
RIC C	14	31.11
RIC D	4	8.89
RIC E	12	26.67
RIC F	8	17.78
Total	45	100

- 8.1.5 The glass derived from a total of 27 contexts. There are no particular concentrations of material, with only two individual contexts producing four fragments. The assemblage is quantified by site period in Table 8.2 and a catalogue is provided in Table 8.3. Most of the glass from medieval contexts is residual Roman material.

Table 8.2: Quantification of glass by site period

Period	Count
2	4
3	1
4	2
5	2
6	5
8	2
9	9
7-9	2
10	2
11	9
12	2
unphased	5
Total	45

- 8.1.6 Small quantities of Roman glass are distributed fairly evenly through periods 2 to 5, with that from period 2 being typical of the 1st to 3rd centuries AD. The group from period 6 consists entirely of redeposited Roman material, and most of the material from medieval periods 8 and 9 is also of Roman date. The chemical composition of medieval glass is such that it seldom survives well. Certain and probable intrusive post-medieval material was present in contexts RIC C [243] of period 2, RIC E [93] of period 8 and RIC E [32] of period 9.
- 8.1.7 The vessel glass falls into two broad chronological groups, namely Roman (mostly of 1st to 3rd century date) and post-medieval/modern (late 17th century and after). Neither group is in any way remarkable; the Roman material comprises mainly mould-blown prismatic storage jars, whilst the post-medieval assemblage consists largely of dark olive-green wine bottle fragments.
- 8.1.8 Three of the five fragments of window glass are of typical Roman matt-glossy type, again generally dating to the 1st-3rd centuries AD. One of the two later fragments is modern and the other, whilst small, is possibly of 17th-18th century date.
- 8.1.9 The two objects are an opaque white glass gaming counter, a typically Roman artefact, and part of a large flattened roundel, provisionally identified as a linen smoother. This was a relatively common domestic object during the earlier post-medieval period.

Conservation

- 8.1.10 The state of preservation was assessed on a broad four-point system, namely poor, fair, good, and excellent. There was little variation in preservation, most of the material being in good condition, with slight surface iridescence and flaking only in the later material. The material is adequately packed and currently stable, and no special conservation measures are required.

Comparative Material

- 8.1.11 Comparators for both the Roman and later material can be found amongst the large body of published and unpublished material from Carlisle (for example Price 1990; Cool and Price 1991; Price and Cottam 2000). Standard works such as Isings (1957) and Price and Cottam (1998) will be consulted as necessary with regard to the Roman material.

Potential for Further Work

- 8.1.12 Further analysis of the glass assemblage has some potential to contribute to the research aims for the site. As a supplement to the dating evidence available from other sources, the glass will contribute to knowledge of the development of the site through time, particularly during the Roman period and the transition from the late medieval to post-medieval periods (Objectives 2.1 and 4.1).
- 8.1.13 The assemblage should be integrated within the published catalogues, with academic discussion appended where relevant. An illustrated catalogue will be produced, relating the objects to their stratigraphic context. The catalogue will include description and basic comparanda.

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Table 8.3: Outline catalogue of the glass assemblage

Area	Context	IRF	Period	Count	Description
RIC B	72	3	3	1	Vessel
RIC B	93	16	7-9	1	Vessel
RIC B	93	17	7-9	1	Window
RIC B	128	9	12	1	Vessel
RIC B	128	11	12	1	Vessel
RIC B	128	10	12	1	Vessel
RIC B	128	18	12	1	Vessel
RIC C	215	11	6	1	Vessel
RIC C	215	12	6	2	Vessel
RIC C	215	13	6	1	Vessel
RIC C	216	10	6	1	Vessel
RIC C	217	14	5	1	Window
RIC C	217	29	5	1	Vessel
RIC C	219	8	4	1	Vessel
RIC C	219	9	4	1	Window
RIC C	221	30	5	1	Vessel
RIC C	234	28	2	1	Vessel
RIC C	236	25	2	1	Vessel
RIC C	243	52	2	1	Vessel
RIC C	243	53	2	1	Window?
RIC D	340	5	10	1	Vessel?
RIC D	340	6	10	1	Window?
RIC D	unstrat.	-	-	2	Vessel
RIC E	1	49	-	1	Vessel
RIC E	4	50	12	1	Window
RIC E	4	51	12	1	Vessel
RIC E	4	52	12	1	Vessel
RIC E	7	53	11	1	Vessel
RIC E	12	54	11	1	Vessel
RIC E	32	46	9	1	Vessel
RIC E	45	-	8	1	Vessel
RIC E	50	10	8	1	Object
RIC E	51	48	9	1	Object
RIC E	53	47	8	1	Vessel
RIC E	unstrat.	61	-	1	Vessel
RIC F	17	18	11	1	Vessel
RIC F	17	19	11	1	Vessel
RIC F	19	23	11	1	Vessel
RIC F	21	22	11	1	Vessel
RIC F	21	24	11	1	Vessel
RIC F	21	25	11	1	Vessel
RIC F	29	21	11	1	Vessel
RIC F	44	20	-	1	Vessel

APPENDIX 9 - ANIMAL BONE

9.1 ASSESSMENT OF THE ANIMAL BONE

by Andrew Bates

Introduction

- 9.1.1 A relatively small assemblage of animal bone, weighing 67kg, was recovered during the course of the excavations.
- 9.1.2 All of the assessed material was retrieved by hand collection only. No sieving program was employed on the site with the purpose of retrieving animal bone.
- 9.1.3 The recovery and study of the animal bone was undertaken in accordance with the fieldwork aims and revised research aims for the site, which are set out in section 2 of the main report, above. The recovery of animal bone was designed to contribute to a study of patterns of supply and consumption within the Roman and medieval settlements.

Methodology

- 9.1.4 For the purpose of the assessment the animal bone was grouped into four broad stratigraphic phases (Table 9.1, below). The methodology employed included recording the number of fragments per species and within each preservation category, and the number of bones displaying tooth wear, fusion and metrical traits.
- 9.1.5 The identification of species was completed using the reference collection held by the author and with reference to Cohen and Serjeantson (1996), Halstead and Collins (1995) and Schmid (1972). No attempt was made during the assessment to separate sheep from goat, with the exception of horn cores and skull occipital bones. Red deer and fallow deer were separated following Lister (1996).
- 9.1.6 The preservation categories provide a useful indicator to the general condition of the assemblage. The categories used are as follows:
- very poor*: very fragmented bone with a highly eroded surface;
- poor*: bone with an eroded surface and with less than half the anatomical part present;
- moderate*: bone with approximately half the anatomical part present and with some erosion to the surface;
- good*: bone with an uneroded surface and with half or more than half the anatomical part present;
- very good*: a complete, or near complete, bone with little or no erosion.

Quantification

- 9.1.7 A total of 1426 fragments of animal bone representing 1340 individual bones and weighing 67kg was recovered. The assessed assemblage is quantified in

Table 9.1, below. The bulk of the assemblage was recovered from medieval deposits.

- 9.1.8 The condition of the bone was mostly poor, with much of the pre-medieval assemblage being in a very poor condition (see Table 9.2). The material from the dark soil deposits (period 6) is in a highly abraded state. Some 101 of the 113 fragments from this phase (89%) are loose, fragmented teeth, a high percentage of teeth being symptomatic of a poorly preserved assemblage. However, the medieval assemblage is in a better condition, with much of the material exhibiting little surface erosion.

Table 9.1: Number of Individual Specimens (NISP) by broad phase

Phase	NISP	NISP as a % of total phased assemblage	NISP identified to species level
Roman (periods 2-5)	106	7.9	49
Early medieval dark soils (period 6)	101	7.5	20
Medieval (periods 7-9)	1101	82.2	603
Post-Medieval (periods 10-11)	32	2.4	20
Totals	1340	100	692

Table 9.2: Summary of preservation of bone assemblage by broad phase (%)

Phase	Very Poor	Poor	Moderate	Good	Very Good
Roman (periods 2-5)	56.1	17.2	16.7	4.4	5.6
Early medieval dark soils (period 6)	100	-	-	-	-
Medieval (periods 7-9)	9.4	16.8	32.8	19.5	21.4
Post-Medieval (periods 10-11)	12.1	27.3	36.4	24.2	-

- 9.1.9 Poor preservation resulting from taphonomic processes may bias an assemblage in a number of ways. Larger mammals have higher bone density values than medium sized or small mammals and may therefore be better represented in a fragment count (Lyman 1994, 246-7). Recovery of animal bone by hand collection only will also bias an assemblage towards larger mammals (Payne 1972). Conversely, in a highly fragmented assemblage bone fragments from medium sized and smaller mammals may have a greater chance of displaying diagnostic characteristics (Maltby 1996, 19).

- 9.1.10 Table 9.3 shows the number of individual specimens (NISP) for each species in each broad stratigraphic phase. The relatively small number of bones recovered from Roman, early medieval and post-medieval deposits means that the figures cannot be expected to provide an accurate reflection of the exploitation of animal species during these periods.

- 9.1.11 The medieval assemblage comprises a greater range of species, including a number of birds, although the material will also have been effected by taphonomic processes as described above (9.1.9). The bulk of the medieval assemblage (*c* 69%) came from the later medieval deposits of period 9 (*c* late 13th/14th-early 16th centuries).
- 9.1.12 In all periods, most of the specimens in the sheep/goat category are likely to be of sheep rather than goat, although the presence of goat is certainly attested at the site in both Roman and medieval contexts. The occurrence of crow in a medieval context is considered to be a natural fatality of a wild bird.

Provenance

- 9.1.13 The animal bone assemblage is provenanced by broad stratigraphic phase in Table 9.1, above and in Table 9.3, below. No bone came from the few pre-Roman deposits recorded on the site. Small amounts of material were recovered from Roman deposits of the 2nd to 4th centuries AD, from the post-Roman dark earth (*c* early 5th-early 12th centuries), and from post-medieval contexts (*c* 17th-19th centuries). The bulk of the assemblage was, however, recovered from deposits of medieval date (*c* 12th-16th centuries). The medieval material was largely associated with two large defensive ditches situated in front of the medieval city wall.
- 9.1.14 Residual animal bone is inevitably a problem, especially on deeply stratified sites, although levels of residuality are extremely difficult to assess. Bone with markedly different states of preservation does, however, occur within material from the same context, suggesting that some of the less well-preserved bones from these deposits could be residual. This was particularly noticeable in the case of some of the material from the period 9 defensive ditch in front of the medieval city wall. However, pre-depositional taphonomic processes can also affect preservation. In the case of a partial horse skeleton recovered from a feature associated with the period 8 ditch in RIC E (Plate 3), some of the vertebra exhibited noticeably more severe surface erosion than the rest of the skeleton, suggesting that part of the skeleton remained exposed after most of the carcass had been buried.

Conservation

- 9.1.15 The animal bone requires no specialist conservation measures. The material should be stored in a dry condition in acid free paper bags, with the relevant site code and context number marked on the bag, in acid free boxes. These should be placed in a dry storeroom, preferable of a constant temperature and humidity.
- 9.1.16 The unstratified portion of the assemblage, being unprovenanced, has no intrinsic value and as such may be discarded. Of the phased assemblage, the sample size for each period is relatively low and is therefore unlikely to add much to the wider picture of animal husbandry practises using current methodologies. The medieval assemblage should certainly be retained, however. If material is discarded it is essential that a full record of the identifiable portion of the assemblage is completed first, to add to a wider

corpus of information concerning biometric traits, pathologies, age of death of animals and butchery practises.

Table 9.3: Summary of animal bone assemblage by species and broad phase

Species	Roman (periods 2-5)	Early medieval (period 6)	Medieval (periods 7-9)	Post-medieval (periods 10-11)	No. frags
Horse	1	5	118	5	129
Cow	24	15	242	8	289
Pig	3	-	35	1	39
Sheep	-	-	10	-	10
Goat	1	-	6	-	7
Sheep/Goat	11	-	94	5	110
Dog	9	-	41	1	51
Cat	-	-	45	-	45
Cat?	-	-	13	-	13
Fox	-	-	6	-	6
Red Deer	-	-	6	-	6
Fallow Deer	-	-	3	-	3
Red/Fallow Deer	-	-	1	-	1
Roe Deer	-	-	1	-	1
Deer	-	-	6	-	6
Cow/Red Deer	10	8	35	-	53
Sheep/Goat /Roe Deer	-	-	4	-	4
Medium Mammal	19	2	63	2	86
Large Mammal	54	70	226	10	360
Small Mammal	-	-	13	-	13
Mammal unidentified	48	13	58	-	119
Domestic Fowl	-	-	19	-	19
Bantam	-	-	3	-	3
Dom. Fowl/Bantam	-	-	2	-	2
Domestic Goose	-	-	5	-	5
Pheasant	-	-	2	-	2
Crow	-	-	1	-	1
Galliforme	-	-	1	-	1
Bird Unidentified	-	-	38	-	38
Fish	-	-	4	-	4
					0
Totals	180	113	1101	32	1426

Comparative Material

9.1.17 The pre-medieval assemblages from the site are too small to warrant detailed comparison with material from other Carlisle sites. Certainly, far larger and more important Roman assemblages have been recovered from a number of large-scale excavations elsewhere in the Roman town, such as Blackfriars

Street (Rackham 1990) and the southern Lanes (Stallibrass *et al.* 2000), and in the Roman fort at Annetwell Street (Gidney in preparation; Stallibrass in preparation) and the Millennium site (Bates 2002). The latter site also produced a relatively large and potentially significant assemblage of early medieval bone (*ibid*), and smaller assemblages of similar date came from excavations at Carlisle Cathedral (Huntley and Stallibrass 1995) and Blackfriars Street (Rackham 1990).

- 9.1.18 The medieval assemblage, whilst relatively small compared to those from some of the larger excavations in Carlisle, represents the first material to have been recovered from the defensive ditches fronting the medieval city walls. The high frequency of cattle bones is consistent with the pattern obtained from other city centre sites such as the southern Lanes (Stallibrass *et al.* 2000), Blackfriars Street (Rackham 1990), Castle Street (Rackham *et al.* 1991) and the Millennium site (Bates 2002).

Potential for Further Work

- 9.1.19 Table 9.4 gives the total number of toothwear, fusion, metrical and butchery records that could be obtained if the entire assemblage were to be fully recorded. These data clearly demonstrate that the small quantities of material from the Roman levels (periods 2 to 5), the early medieval dark soils (period 6) and the post-medieval deposits (periods 10 and 11) have no potential for further analysis. Should any part of this assemblage be discarded, however, the identifiable portion should first be fully recorded, as described above (9.1.16).
- 9.1.20 Further study of the medieval animal bone is unlikely to answer any of the wider academic questions which rely on larger sample sizes, such as the relative abundance of species through time, age at death of flocks and herds, and so on. However, the assemblage does have potential to address some of the research aims identified in the assessment project design, which are summarised in section 2.3 of the main report, above. In particular, assessment indicates that the animal bone has the potential to address Objective 3.2, which seeks to shed light upon patterns of consumption in medieval Carlisle. The presence of cattle horn cores with cranial fragments displaying skinning marks, pieces of sawn antler, and pathological specimens possibly resulting from the use of cattle for traction, also suggests that the assemblage can go some way to addressing Objective 3.1, which is concerned with aspects of craft and industry in the medieval town. It is therefore recommended that full recording and analysis of the animal bone assemblage from medieval periods 7, 8, and 9 be undertaken.

Table 9.4: Summary of potential toothwear, fusion, metrical and butchery information present in the animal bone assemblage.

(Figures represent the number of individual records.)

	Tooth Wear	Fusion	Biometric	Butchery
<i>Roman</i>				
Cow	1	4	7	7
Horse	-	-	-	-
Sheep/Goat	2	4	8	4
Pig	1	-	1	1
<i>Medieval</i>				
Cow	14	92	110	93
Horse	-	48	63	38
Sheep/Goat	14	51	55	32
Pig	4	15	10	8
<i>Post-medieval</i>				
Cow	2	3	4	4
Horse	-	1	1	1
Sheep/Goat	-	5	4	2
Pig	-	-	-	1
Totals	38	223	263	191

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APPENDIX 10 - ENVIRONMENTAL

10.1 ASSESSMENT OF THE CHARRED AND WATERLOGGED PLANT REMAINS

by Elizabeth Huckerby

Introduction

- 10.1.1 A total of 30 bulk environmental samples were taken from waterlogged and dry contexts during the course of the Rickergate excavations.
- 10.1.2 Macroscopic plant remains, both waterlogged and charred, were found to be very abundant in some deposits, and assessment has demonstrated good potential to extend the Carlisle archaeobotanical record in some chronological periods.
- 10.1.3 The recovery and study of the preserved plant remains was undertaken in accordance with the academic aims and revised research aims of the project, which are set out in section 2 of the main report. The sampling programme aimed to address the general questions concerning the diet, economy and ecology of the site as well as providing more specific information about the function and nature of individual features and areas. It was hoped in particular to gain information about charred remains from the Roman occupation of the site to complement that of the extensive waterlogged data set from other sites in Carlisle (Huntley and Stallibrass 1995; Huntley 2000, 71-80; Huntley and Hall, unpubl). It was also hoped to answer questions about the environment and economy prior to the Roman occupation of the site, and during the post-Roman and medieval periods.

Methodology

- 10.1.4 The sampling strategy adopted on site ensured that deposits from major feature types and phases were taken from discrete and secure contexts with the minimum of intrusive material or contamination. Two monolith samples were also taken through some of the lower fills of the period 9 medieval defensive ditch in RIC D [358] for pollen analysis and sequential sampling for plant macrofossils.
- 10.1.5 All the samples were processed and assessed for both charred and waterlogged remains and a number were found to contain a mixture of both charred and waterlogged remains. Assessment of some of the waterlogged samples proved to be time consuming due to the very large assemblages of plant remains present.
- 10.1.6 The samples were processed at the premises of Oxford Archaeology using a modified Siraf flotation machine, and the flots were collected on a 250 µm mesh. The residues were retained on 1mm mesh and checked for small finds. Most flots were air-dried, although some were stored wet. Flot size was variable depending on the organic content of the original samples. The flots were assessed under a Leitz/Wild stereo binocular microscope for plant

remains, which were recorded on a scale of 1-5, where 1 represents less than five individual items and 5 is abundant. The matrix components were also noted.

Quantification

10.1.7 A total of 30 samples, varying in size from 0.5-30 litres, were assessed for charred and waterlogged plant remains. A representative sample of each flot was assessed under a Leitz/Wild stereo binocular microscope for plant remains. The samples are quantified by excavated area in Table 10.1, and by context type in Table 10.2.

Table 10.1: Distribution of samples by excavated area

Area	Count
RIC B	3
RIC C	9
RIC D	5
RIC E	6
RIC F	7
Total	30

Table 10.2: Quantification of samples by context type

Context type	Count
Ditch fills	8
Pit fills	5
Post-Roman dark soils	8
Palaeochannel fill	1
Layers	4
Oven/kiln	2
Post holes	2
Total	30

Provenance

10.1.8 The samples are provenanced by site period in Table 10.3 below. All samples assessed for plant remains came from contexts described by the excavator as sealed. Modern roots and other modern plant material were not recorded. The charred plant remains recovered from all areas of excavation are catalogued in Table 10.4 below. The waterlogged plant remains from areas RIC B, C, D, E and F are catalogued below in Tables 10.5, 10.6, 10.7, 10.8 and 10.9 respectively.

Table 10.3: Quantification of samples by site period

Period	Count
1	3
2	7
3	2
2-5	3
6	1
7	1
9	8
7-9	5
Total	30

Results

10.1.9 **Period 1: Pre-Roman (Tables 10.4, 10.6, 10.9):** Three samples of probable pre-Roman date were assessed for botanical potential. The material from context RIC C [265], which is interpreted as an alluvial fill within a palaeochannel of the River Eden, is of particular importance, since such material is rare in north-west England. The assemblage included very abundant, well preserved waterlogged seeds from species associated with damp ground, arable and grassland communities. There were high values of both *Urtica dioica* and *Urtica urens* (common and small nettles) suggesting that the soil was nutrient enriched. Some arable weeds were present, including pale persicaria (*Polygonum lapathifolium*), common hemp-nettle (*Galeopsis tetrahit*) and wild radish (*Raphanus*), together with plants of wet ground such as blinks (*Montia*), sedge (*Carex*) and rush (*Juncus*). A similar plant assemblage was identified in pre-Roman deposits at the Millennium site to the south of Carlisle Castle (Huckerby 2002). The abundance of weed seeds in this sample has potential for radiocarbon dating by AMS techniques.

10.1.10 The other two samples assigned to period 1 came from a pre-Roman linear feature and a pre-Roman buried soil in area RIC F (contexts 172 and 183). No plant remains other than charcoal were recorded in [172], although the charcoal, some of which was from oak, was well preserved and included the outer layers of small twigs. This material also has potential for radiocarbon dating. The plant assemblage from the buried soil was restricted to seeds of rush (*Juncus*) and occasional fat hen (*Chenopodium album*) and sheep's sorrel (*Rumex acetosella*).

10.1.11 **Period 2: Possible Roman land reclamation (Tables 10.4, 10.6):** Seven samples from period 2 deposits in area RIC C were assessed for plant remains. Four samples from three organic fills of feature [262] (RIC C 241, 243 and 260) contained abundant waterlogged seeds from many different plant communities, including grassland, heath, ruderals, wetlands and arable environments. However, only occasional seeds of food taxa such as cereals, blackberries and bilberries were identified. In addition to seeds, abundant amorphous plant material, including fragments of rushes, sedges, grasses and moss were recorded in these deposits.

- 10.1.12 The remaining three samples from period 2 deposits contained far fewer plant remains and have little or no potential for further work.
- 10.1.13 **Period 3: Roman occupation (Tables 10.4, 10.5):** Only two samples were taken from deposits attributed to period 3, both from area RIC B (RIC B 65 and 86). Neither contained any significant quantities of seeds or plant remains, although context [65], a layer of possible industrial debris, contained abundant well-preserved charcoal and calcined bone fragments.
- 10.1.14 **Period 2-5: poorly stratified Roman (Tables 10.4, 10.8, 10.9):** Two samples from RIC E contexts [33] and [36] and one from RIC F context [130] were assessed and found to contain both charred and waterlogged plant remains. The data are, however, considered to be of low significance because of the poorly stratified nature of these deposits.
- 10.1.15 **Period 6: late Roman/post-Roman dark soils (Tables 10.4, 10.6):** A single sample from RIC C context [216] contained a few charred plant remains, including oats and unidentified cereal grains, hazelnut fragments and some grass and weed seeds such as spurge (*Euphorbia*).
- 10.1.16 **Period 7: earliest medieval activity (Tables 10.4, 10.8):** A single sample from context RIC E [87], the fill of a small ditch, was rich in waterlogged remains, although the range of taxa was more restricted than the material in some of the later medieval contexts.
- 10.1.17 **Period 9: medieval defensive ditch (Tables 10.4, 10.6, 10.8, 10.9):** The nine samples from this period, which all came from waterlogged deposits filling the second phase of defensive ditch fronting the medieval city wall, are of considerable importance and interest. The five samples from the ditch fills in area RIC D (contexts RIC D 353-7) contained abundant well preserved waterlogged remains. Similar plant assemblages were identified in samples taken from the lower waterlogged fills of the period 9 ditch in area RIC E.
- 10.1.18 Plant remains from economic taxa were recorded in all samples and included charred grain, flax (*Linum usitatissimum*) and hemp (*Cannabis sativa*). Native taxa that may have been used as food include apple/pear (*Malus/Pyrus*), blackberry (*Rubus fruticosus*), elderberry (*Sambucus nigra*), sloe (*Prunus spinosa*) and hazelnut (*Corylus avellana*). Numerous other taxa from a variety of plant communities were also recorded. These included arable weeds from damp, nutrient enriched soils, such as persicarias (*Polygonum* spp) and common chickweed (*Stellaria media*) and plants favouring drier, more acidic soils, including corncockle (*Agrostemma gigatho*), corn marigold (*Chrysanthemum segetum*) and corn spurrey (*Spergula arvensis*). Ruderal communities were well represented, with wild radish (*Raphanus raphanistrum*), nettles (*Urtica* spp), docks and sorrels (*Rumex* spp), henbane (*Hyocyamus nigra*) and hemlock (*Conium maculatum*) all present. The last two species are highly poisonous and may have been used medicinally. Mire and heathland communities were represented by sedges (*Carex*), rushes (*Juncus*) and ling heather (*Calluna vulgaris*). The identification of seeds from

taxa that grow in shallow water, for example crowfoots (*Ranunculus Batrachium*-type), bulrushes (*Typha*) and pondweeds (*Potamogeton/Groenlandia*), indicate that the ditch contained water when these deposits were accumulating.

- 10.1.19 **Period 7-9: poorly stratified medieval:** One sample from area RIC B (context RIC B 28) and four from RIC F (RIC F 46, 51, 69, and 70) were assessed for plant remains. With the exception of the sample from RIC B [28], the samples contained abundant well preserved plant remains, but the data are considered to be of low significance because of the poorly stratified nature of the period 7-9 deposits.

Comparative Material

- 10.1.20 There is a substantial body of data from archaeobotanical work on waterlogged deposits from Roman Carlisle (Huntley 2000, 71-6; Huntley and Stallibrass 1995; Huntley and Hall unpubl). However, much less work has been done on charred plant remains from the Roman period and on both charred and waterlogged remains from pre-Roman and post-Roman contexts in the city. Huntley (2000, 71) suggests that in the Lanes there is no obvious patterning in the plant assemblages from the various types of features, and this was also apparent in the material from the Millennium site south of the castle (Huckerby 2002, 168-79).

- 10.1.21 The waterlogged strata on the Rickergate site were rich in plant remains, as were those excavated within the Roman fort at Annetwell Street (Huntley 1989a-c) and the Millennium site (Huckerby 2002) and in the Roman civil settlement at the southern Lanes (Huntley 2000) However, waterlogged deposits at some other city centre sites, for example Castle Street (Goodwin and Huntley 1991) produced comparatively low numbers of seeds.

- 10.1.22 Unlike elsewhere in England, very few medieval archaeobotanical studies have been undertaken in the north-west region, west of the Pennines. Previous work in Carlisle has concentrated on the Roman period, although limited medieval deposits have been identified at sites such as Annetwell Street (Huntley 1989 a-c), the Lanes (Huntley 1992a; Huntley and Stallibrass 1995, 72) and the Millennium site (Huckerby 2002). Further afield, Kendal in south-east Cumbria has produced medieval waterlogged plant remains from excavations at Stricklandgate (Huntley 1989d) and Elephant's Yard (Huckerby in preparation). In Lancaster, excavations at Damside (Huntley 1992b) and Mitchell's Brewery (Huntley 1999; Huntley and Huckerby in preparation) uncovered medieval levels, including the fill of an oven or kiln that was composed almost entirely of charred, partially germinated oat grains.

Potential for Further Work

- 10.1.23 The restricted palaeoenvironmental sampling strategy undertaken during the course of the Rickergate excavation and the poorly stratified nature of some of the samples inevitably limit the potential of the environmental data from the site. Nevertheless, the data clearly have considerable potential to contribute to a number of the research aims for the site. Huntley and Stallibrass (1995, 41)

highlight the urgent need for research into the pre-Roman Iron Age west of the Pennines. Further study of the botanical remains from the fills of the period 1 palaeochannel in RIC C can therefore be regarded as potentially of regional significance, particularly if, as hoped, it proves possible to radiocarbon date this material (see appendix 11). The work also has the potential to shed light on the nature of the landscape in the vicinity of the site in the immediate pre-Roman period (Objective 1.1).

10.1.24 The plant remains have generally low potential to further understanding of occupation in the Rickergate area during the Roman and early post-Roman periods, although further work on a single sample from the period 2 pit/ditch in RIC C (feature 262) will be worthwhile. It is, however, the rich plant remains from the waterlogged fills of the large medieval defensive ditch of period 9 that are clearly of the greatest importance. The paucity of archaeobotanical work on medieval waterlogged deposits both in Carlisle and west of the Pennines has been noted above (10.1.22). The material from the Rickergate ditch can therefore be regarded as being of regional significance. Further detailed analysis of the material from the fills of this feature has considerable potential to advance knowledge of the ecology and economy of this part of the medieval town, and to shed light on patterns of consumption (Objectives 3.1 and 3.2).

10.1.25 For analysis it is proposed to target the pre-Roman macroscopic plant remains from the period 1 alluvial silt in RIC C and the rich assemblage of material from the period 9 medieval ditch in RIC D and RIC E. A single sample taken from the period 2 Roman pit/ditch in RIC C will also be selected for further work. It is also proposed that samples selected for invertebrate analysis will be analysed for plant remains. It is envisaged that a total of eight samples will be analysed more fully at this stage.

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Table 10.4: Summary of charred plant remains from all excavated areas

Area	Context	Sample	Period	Description	Grain	Weeds	Charcoal*	Comments
RIC B	28	3	7-9	Fill possible beam slot	0	0	4	Small frags charcoal
RIC B	65	2	3	Industrial layer?	2-3	Wl	5	Coal, industrial, Hazel,
RIC B	86	1	3	Primary fill cess pit	2.chaff+	2+wl	5	Oak+other charcoal
RIC C	216	1	6	Dark soil	1	1+wl	5	Hazel, charcoal mix taxa +roundwood, coal
RIC C	240	7	2	Dumping or make-up layer	1	1+wl	5	Hemlock, char mix taxa+twigs
RIC C	241	2	2	Upper fill of pit	0+chaff	Wl	5	Mix weeds, hazel, heather
RIC C	243	5	2	Ditch/pit fill	1	3,abun wl	5	Carb stems, heather, mix weed
RIC C	243	9	2	Ditch/pit fill	0	V abun wl	5	Moss, mix weed, flax
RIC C	253	3	2	kiln/oven?	1	1+wl	5	Clinker, bone
RIC C	253	4	2	kiln/oven?	1		5	Calcined bone, hammerscale
RIC C	260	6	2	Ditch/pit fill	0	Abun wl	2	Org frags, mix weeds, heather
RIC C	265	8	1	Palaeochannel fill	0	Abun wl.	5	Org frags, wood, mix weed
RIC D	353	2	9	Ditch fill	1	Abun wl	2	Mix weeds, aquatics, flax, arable weeds, Cannabis
RIC D	354	3	9	Ditch fill	1	Abun wl	2	Mix weeds, aquatics, org frags, molluscs
RIC D	355	1	9	Ditch fill	2	2+wl abun	2	Mix weeds, molluscs, aquatics, org frags
RIC D	356	4	9	Ditch fill	1+chaff	Abun wl	5	Mix weeds, Cannabis, hemlock, flax
RIC D	357	5	9	Ditch fill	1	1,abun wl	3	Mix weeds, aquatics, hemlock, Cannabis
RIC E	33	1	2-5	Post hole fill	1	2+wl	5	Charcoal mix taxa, org frags
RIC E	36	2	2-5	Lower post hole fill	1	1+wl	5	Charcoal mix taxa,
RIC E	51	8	9	Ditch fill	2	Abun wl	2	Leather, wood, mix weeds, hazel
RIC E	51	59	9	Ditch fill	1	2,abun wl	2-3	Mix weeds, wood, org frags, hazel
RIC E	51	60	9	Ditch fill	2	V abun wl	2	Mix weeds, leather, hazel, Cannabis
RIC E	87	5	7	Ditch fill		1,abun wl	2	Wood, org frags, mix weeds, heather
RIC F	46		7-9	Pit fill	1	1,abun wl	4	Mix weeds, hazel, bracken, crystals
RIC F	51		7-9	Pit fill (primary)	0	Abun wl	4	Mix weeds, hazel, heather, moss, Industrial waste
RIC F	69	2	7-9	Pit fill	2+chaff	2,wl	5	Mix weeds, hazel, clinker
RIC F	70	3	7-9	Pit fill		1,abun wl	5	Abun rush seeds, bone
RIC F	130		2-5	Slot fill	2	1+wl	5	Hazel, green accretion on charcoal

Area	Context	Sample	Period	Description	Grain	Weeds	Charcoal*	Comments
RIC F	172		1	Charcoal rich lens	0		5	Bone, well preserved oak +other charcoal
RIC F	183		1	Pre-Roman soil	Chaff	W1	3-4	Abun rush seeds

Notes: * Charcoal recorded on scale of 1-5, where 1=rare and 5=abundant

Charred cereal grains and weed seeds recorded on scale of 1-5, where 1=rare and 5=abundant

Org frags = amorphous organic fragments

Mix weeds = weed taxa from differing ecological groupings

Abun = abundant

W1 = waterlogged

Table 10.5: Waterlogged plant remains from RIC B

Context number		86	65
Sample number		1	2
Period		3	3
Context type		Pit fill (cess?)	Industrial debris?
Charred cereals			+
<i>Carex trigynous</i>	Sedge	+	
<i>Chenopodium/Atriplex</i>	Goosefoot/Orache	+	
<i>Conium maculatum</i>	Hemlock		+
<i>Eleocharis palustris</i>	Common Spiked-rush		+
<i>Fumaria sp</i>	Fumitory	+	
<i>Juncus spp</i>	Rush	+	+
<i>Urtica dioica</i>	Common nettle	+	

Note: + = present

Table 10.6: Waterlogged plant remains from RIC C

Context number		216	240	241	243	243	260	265
Sample number		1	7	2	9	5	6	8
Period		6	2	2	2	2	2	1
Context type		layer	layer	fill	fill	fill	fill	layer
Charred cereals		+	+			+		
<i>Agrostemma gigatho</i>	Corncockle				+		+	
<i>Calluna vulgaris</i>	Ling heather					+	+	
<i>Carex lenticular</i>	Sedge			+	+	+	+	+
<i>Carex trigynous</i>	Sedge			+	+	+	+	+
<i>Chenopodium album</i>	Fat-hen			+		+		
<i>Chenopodium/Atriplex</i>	Goosefoot/Orache							+
<i>Cirsium sp</i>	Thistle					+	+	
<i>Conium maculatum</i>	Hemlock	+	+					
<i>Corylus avellana</i>	Hazel	+ch			+	+	+	+
<i>Eleocharis palustris</i>	Common Spiked-rush	+ch				+	+	
<i>Ficus carica</i>	Fig				+			
<i>Galeopsis tetrahit</i>	Common Hemp-nettle			+				+
<i>Gramineae <2mm</i>	Grass	+ch			+		+	

<i>Gramineae</i> 2-4mm						+		
<i>Juncus</i> spp	Rush		+	+	+	+	+	+
Legume <4mm	Pea family							
<i>Linum catharticum</i>	Fairy flax						+	
<i>Montia</i>	Blinks							+
<i>Papaver</i> sp	Poppy							+
<i>Polygonum aviculare</i>	Knotgrass						+	+
<i>Polygonum lapathifolium</i>	Pale Persicaria						+	+
<i>Potentilla</i> sp	Cinquefoils		+	+	+	+	+	+
<i>Prunella vulgaris</i>	Selfheal							+
<i>Pteridium aquilinum</i>	bracken						+	
<i>Raphanus</i> seed	Wild Radish							+
<i>Raphanus</i> pod	Wild Radish							+
<i>Ranunculus repens</i> -type	Creeping buttercup		+	+	+	+	+	+
<i>Ranunculus sceleratus</i>	Celery-leaved buttercup		+	+				
<i>Rubus fruticosus</i>	Blackberry							+
<i>Rumex acetosa</i>	Common sorrel		+	+				+
<i>Rumex acetosella</i>	Sheep's sorrel			+		+	+	+
<i>Sonchus</i> sp	Sow thistle							+
<i>Stellaria media</i>	Common chickweed		+					+
<i>Urtica dioica</i>	Common nettle	+	+	+	+			+
<i>Urtica urens</i>	Small nettle		+		+			+
<i>Vaccinium myrtillus</i>	Bilberry		+					
Unknowns								+

Note: + = present
ch = charred

Table 10.7: Waterlogged plant remains from RIC D

Context number		353	354	355	356	357
Sample number		2	3	1	4	5
Period		9	9	9	9	9
Context type		fill	fill	fill	fill	fill
Charred cereals		+	+	+	+	+
<i>Agrostemma gigatho</i>	Corncockle	+	+		+	+
<i>Alnus glutinosa</i>	Alder	+				
<i>Bidens cf cernua</i>	Bur-marigold	+	+		+	
<i>Brassica</i>	Cabbage family	+	+	+	+	+
<i>Calluna vulgaris</i>	Ling heather		+			
<i>Cannabis sativa</i>	Hemp	+			+	
<i>Carex lenticular</i>	Sedge	+	+	+		+
<i>Carex trigynous</i>	Sedge	+	+	+	+	+
<i>Centaurea cyanus</i>	Cornflower			+		+
<i>Chenopodium album</i>	Fat-hen	+	+		+	
<i>Chenopodium/Atriplex</i>	Goosefoot/ Orache			+		+
<i>Chrysanthemum segetum</i>	Corn marigold	+	+		+	+
<i>Cirsium</i> sp	Thistle	+	+	+		+
<i>Conium maculatum</i>	Hemlock	+	+	+	+	+
<i>Corylus avellana</i>	Hazel			+		

<i>Euphorbia</i> sp	Spurge	+			+	+
<i>Fumaria</i> sp	Fumitory					+
<i>Galeopsis tetrahit</i>	Common Hemp-nettle	+		+	+	+
Gramineae <2mm	Grass			+		
Gramineae 4mm		+				
<i>Hyocyamus nigra</i>	Henbane	+		+	+	+
<i>Hypericum</i> sp	St John's wort			+		
<i>Juncus</i> spp	Rush	+			+	+
<i>Lamium</i> sp	Dead-nettles	+				
<i>Lapsana communis</i>	Nipplewort	+		+	+	
Legume <4mm	Pea family			+		
<i>Leontodon</i> sp	Hawkbits			+		+
<i>Linum catharticum</i>	Fairy flax	+				
<i>Linum usitatissimum</i>	Flax	+		+	+	+
<i>Malus/Pyrus</i>	Apple/pear	+		+		
<i>Mentha</i> type	Mint	+		+		
<i>Montia</i>	Blinks	+				+
<i>Petroselinum</i> sp	Parsley	+	+			
<i>Polygonum aviculare</i>	Knotgrass	+	+		+	+
<i>Polygonum lapathifolium</i>	Pale Persicaria	+	+	+	+	+
<i>Polygonum convolvulus</i>	Black-bindweed	+			+	
<i>Potamogeton/Groenlandia</i>	Pondweed	+	+	+	+	+
<i>Potentilla</i> sp	Cinquefoils	+	+		+	+
<i>Prunus spinosa</i>	Sloes			+	+	+
<i>Raphanus</i> seed	Wild Radish		+			
<i>Raphanus</i> pod	Wild Radish		+	+		+
<i>Ranunculus batrachium</i> type	Crowfoot	+	+	+	+	+
<i>Ranunculus repens</i> -type	Creeping buttercup	+	+	+	+	+
<i>Reseda luteola</i>	Weld			+	+	+
<i>Rubus fruticosus</i>	Blackberry	+	+	+	+	+
<i>Rumex acetosa</i>	Common sorrel	+	+	+		+
<i>Rumex acetosella</i>	Sheep's sorrel	+	+		+	+
<i>Rumex</i> sp	Sorrel	+			+	+
<i>Sambucus nigra</i>	Elderberry	+	+	+	+	+
<i>Silene</i> sp	Campion		+	+		
<i>Sonchus</i> sp	Sow thistle	+	+	+	+	+
<i>Spergula arvensis</i>	Corn Spurrey	+	+		+	
<i>Stellaria graminea</i>	Lesser stitchwort	+	+			+
<i>Stellaria media</i>	Common chickweed	+	+	+	+	+
<i>Typha</i> sp	Bulrushes			+		
<i>Urtica dioica</i>	Common nettle		+	+	+	+
<i>Urtica urens</i>	Small nettle		+	+	+	+
<i>Viola</i> sp					+	
Unknowns		+	+	+	+	+

Note: + = present

Table 10.8: Waterlogged plant remains from RIC E

Context number		33	36	51	51	51	87
Sample number		1	2	8	59	60	5
Period		2-5	2-5	9	9	9	7
Context type		fill	fill	fill	fill	fill	fill
Charred cereals		+	+	+	+	+	
<i>Agrostemma gigatho</i>	Corncockle				+		+
<i>Anthemus cotula</i>	Stinking camomile			+			
<i>Brassica</i>	Cabbage family			+	+	+	
<i>Bromus</i> sp	Bromes			+			
<i>Calluna vulgaris</i>	Ling heather				+		+
<i>Cannabis sativa</i>	Hemp			+		+	
<i>Capsella bursa-pastoris</i>	Shepherd's purse			+	+	+	+
<i>Carex lenticular</i>	Sedge			+	+	+	+
<i>Carex trigynous</i>	Sedge			+	+		+
<i>Centaurea cyanus</i>	Cornflower			+		+	
<i>Chenopodium album</i>	Fat-hen			+	+	+	+
<i>Chenopodium/Atriplex</i>	Goosefoot/ Orache		+		+		
<i>Chrysanthemum segetum</i>	Corn marigold		+	+	+	+	
<i>Cirsium</i> sp	Thistle			+			
<i>Conium maculatum</i>	Hemlock			+	+	+	
<i>Corylus avellana</i>	Hazel			+	+	+	
<i>Euphorbia</i> sp	Spurge					+	
<i>Ficus carica</i>	Fig				+		
<i>Galeopsis tetrahit</i>	Common Hemp-nettle			+	+	+	+
Gramineae <2mm	Grass				+	+	+
Gramineae 4mm						+	
<i>Hyocyamus nigra</i>	Henbane				+		
<i>Juncus</i> spp	Rush	+	+	+	+	+	+
<i>Lapsana communis</i>	Nipplewort			+			
<i>Leontodon</i> sp	Hawkbits			+	+		
<i>Linum catharticum</i>	Fairy flax					+	
<i>Linum usitatissimum</i>	Flax			+	+	+	+
<i>Montia</i>	Blinks			+	+	+	
<i>Papaver</i> sp	Poppy					+	
<i>Polygonum aviculare</i>	Knotgrass				+		+
<i>Polygonum lapathifolium</i>	Pale Persicaria			+	+	+	+
<i>Polygonum</i> sp	Persicaria's			+			
<i>Potamogeton/Groenlandia</i>	Pondweed			+			
<i>Potentilla</i> sp	Cinquefoils	+			+	+	
<i>Prunus spinosa</i>	Sloes				+		
<i>Raphanus</i> seed	Wild Radish				+	+	
<i>Raphanus</i> pod	Wild Radish				+	+	
<i>Ranunculus batrachium</i> type	Crowfoot	+					
<i>Ranunculus repens</i> -type	Creeping buttercup			+	+	+	
<i>Ranunculus sceleratus</i>	Celery-leaved buttercup			+	+	+	

<i>Reseda luteola</i>	Weld					+		
<i>Rubus fruticosus</i>	Blackberry				+	+		+
<i>Rumex acetosa</i>	Common sorrel				+	+		
<i>Rumex acetosella</i>	Sheep's sorrel				+	+	+	+
<i>Rumex sp</i>	Sorrel				+	+	+	
<i>Sambucus nigra</i>	Elderberry				+	+		
<i>Sonchus sp</i>	Sow thistle				+	+		
<i>Spergula arvensis</i>	Corn Spurrey				+			
<i>Stellaria graminea</i>	Lesser stitchwort					+	+	
<i>Stellaria media</i>	Common chickweed				+	+	+	+
<i>Typha sp</i>	Bulrushes						+	
<i>Urtica dioica</i>	Common nettle	+	+	+	+	+	+	+
<i>Urtica urens</i>	Small nettle	+	+	+	+	+	+	
<i>Vaccinium myrtillus</i>	Bilberry						+	
<i>Viola sp</i>							+	
Unknowns					+	+	+	

Note: + = present

Table 10.9: Waterlogged plant remains from RIC F

Context number		46	51	69	70	130	183
Sample number				2	3		
Period		7-9	7-9	7-9	7-9	2-5	1
Context type		fill	fill	fill	fill	fill	layer
Charred cereals		+		+		+	+
<i>Agrostemma gigatho</i>	Corncockle	+	+	+			
<i>Anthemus cotula</i>	Bur-marigold	+					
<i>Calluna vulgaris</i>	Ling heather	+	+				
<i>Carex lenticular</i>	Sedge	+		+	+		
<i>Carex trigynous</i>	Sedge	+		+	+	+	
<i>Centaurea cyanus</i>	Cornflower						
<i>Chenopodium album</i>	Fat-hen	+	+				+
<i>Chrysanthemum segetum</i>	Corn marigold	+	+	+			
<i>Corylus avellana</i>	Hazel	+					
<i>Eleocharis palustris</i>	Common spiked rush	+	+				
Gramineae 4mm		+					
<i>Juncus spp</i>	Rush			+	+	+	+
<i>Polygonum aviculare</i>	Knotgrass	+	+	+			
<i>Polygonum lapathifolium</i>	Pale Persicaria	+	+	+	+		
<i>Potentilla sp</i>	Cinquefoils				+		
<i>Prunella vulgaris</i>	Self-heal	+					
<i>Pteridiun aquilinum</i>	Bracken	+	+				
<i>Ranunculus repens-type</i>	Creeping buttercup	+	+	+	+		
<i>Ranunculus sceratus-type</i>	Celery leaved buttercup		+	+	+		
<i>Rumex acetosa</i>	Common sorrel	+	+				
<i>Rumex acetosella</i>	Sheep's sorrel	+	+		+		+
<i>Sambucus nigra</i>	Elderberry			+	+		
<i>Spergula arvensis</i>	Corn Spurrey	+	+				

<i>Stellaria media</i>	Common chickweed	+	+		+		
<i>Urtica dioica</i>	Common nettle					+	
<i>Viola</i> sp		+			+		
Unknowns		+	+				

Note: + = present

10.2 ASSESSMENT OF THE POLLEN

by Elizabeth Huckerby

Introduction

- 10.2.1 A total of four samples from two soil monoliths taken through the three lower fills of the period 9 medieval ditch in area RIC D (feature RIC D 358) were assessed for preserved pollen. All the samples were found to contain abundant well preserved pollen suggestive of a cleared, cultivated landscape in the vicinity of the ditch.
- 10.2.2 The recovery and study of the pollen was undertaken in accordance with the academic aims and revised research aims of the project, which are set out in section 2 of the main report. The principal aim of the pollen assessment was to ascertain whether pollen spores were present in waterlogged deposits at the base of the period 9 medieval defensive ditch and if so, to what extent the data contribute to our understanding of the environment and economy of the site during the medieval period.

Methodology

- 10.2.3 The samples were prepared for pollen analysis using the standard techniques of KOH, acetolysis and hot HF acid treatment if necessary (Faegri and Iversen 1989). The samples were sieved after heating in KOH and fragments >500µm were scanned for plant macrofossils. After the completion of the chemical preparation the residues were mounted in silicone oil and examined with an Olympus BH-2 microscope using x400 magnification routinely and x1000 for critical grains. Counting continued on two complete slides, to reduce the possible effects of differential dispersal under the coverslip (Brooks and Thomas 1967).
- 10.2.4 Pollen identification was carried out using the standard keys of Faegri and Iversen (1989) and Moore *et al* (1991) and a limited reference collection held at OAN. As the samples were only being assessed, pollen grains not identified rapidly were recorded either in larger categories, for example Tubuliflorae and Liguliflorae, or as undifferentiated grains. Cereal-type grains were defined using the criteria of Andersen (1979); indeterminate grains were recorded using groups based on those of Birks (1973). Charcoal particles greater than 5µm were also recorded following the procedures of Peglar (1993).

Quantification and Provenance

- 10.2.5 Four samples were assessed from two monoliths profiles taken through the three primary fills (contexts RIC D 353, 355 and 357) of the period 9 defensive ditch in RIC D (RIC D 358). The assessed pollen is catalogued in Table 10.10 below.

Results

- 10.2.6 The assessment demonstrated the presence of abundant well preserved pollen in all the samples (Table 10.10). The data suggest a treeless environment with evidence for grassland and the cultivation of cereals and hemp/hop (*Cannabis/Humulus*) in the vicinity of the medieval ditch. As seeds of *Cannabis* were identified in the bulk samples it is likely that the

Cannabis/Humulus pollen relates to *Cannabis* and not *Humulus*. Significant differences in the relative values of cereal-type and *Cannabis/Humulus* pollen were noted in the soil profile from the base of the ditch, with concentrations of cereal-type pollen appearing to decrease as *Cannabis/Humulus*-type pollen increases. This suggests the possibility that varying cultivation regimes were practised in the vicinity of the ditch.

Comparative Material

10.2.7 No comparative pollen data exists from Carlisle itself (Jacqui Huntley *pers comm.*). The only other site in Carlisle to have produced evidence for well preserved pollen is the Millennium site south of the castle, where abundant pollen was noted in a buried soil horizon beneath the Roman fort (Huckerby 2002, 178). Sparse and poorly preserved pollen was also present in a post-Roman dark soil deposit at the same site. The Rickergate pollen assessment represents the first occasion in Carlisle where pollen has been identified in deposits of medieval date.

Potential for Further Work

10.2.8 The identification of pollen in the lower fills of the period 9 defensive ditch has considerable potential for further analysis, particularly in conjunction with the abundant and well preserved plant macrofossils from the same deposits. This is only the second site in Carlisle where the preservation of pollen has been demonstrated and the data are therefore of considerable interest. Potentially it may be possible to construct a picture of the ecology and environment of the site during the medieval period.

10.2.9 The significant differences in the relative values of cereal-type and *Cannabis/Humulus* pollen in the base of the ditch suggests the possibility that varying cultivation regimes were practised in the vicinity during the medieval period (10.2.5 above). Further detailed sampling and analysis to calculate the concentrations of cereal-type and *Cannabis/Humulus* pollen will therefore be required in order to test this potentially important hypothesis.

10.2.10 It is envisaged that 15 additional pollen samples will be taken, prepared and analysed for pollen both relatively and absolutely in an attempt to determine whether the apparent differences in levels of *Cannabis/Humulus* and cereal-type pollen are real or just a result of the relative nature of the assessment data. A pollen diagram will be produced and this work will be undertaken in conjunction with further analysis of the plant macrofossils from the same deposits.

Table 10.10: Pollen percentage values of selected taxa from RIC D ditch [358].

Pollen sum based on total land pollen and bracken spores. Charcoal values as percentage of pollen sum plus charcoal.

Context		353	355	355	357
Depth (m) from top of monolith		0.12	0.32	0.52	0.66
Trees + Shrubs		18.3	5.8	10	13.3
Herbs		77.1	89.2	86	76.3
Heathers		3.7	4.3	2	10.4
<i>Pteridium</i>	Bracken	0.9	0.7	2	0
Cereal-type	<i>Cereals</i>	5	17	1	7
<i>Cannabis/Humulus</i> -type	<i>Hemp/Hops</i>	2	1	29	2
<i>Betula</i>	Birch	2	1	1	3
<i>Pinus</i>	Pine	1	0	0	1
<i>Quercus</i>	Oak	0	0	1	2
<i>Alnus</i>	Alder	6	0	5	3
<i>Corylus avellana</i> -type	Hazel	5	4	3	4
<i>Salix</i>	Willow	2	1	0	0
<i>Calluna vulgaris</i>	Ling Heather	3	1	0	3
Ericales	Heathers + Bilberry	1	3	2	4
Gramineae	Grass	35	26	25	34
<i>Plantago lanceolata</i>	Ribwort Plantain	1	1	1	2
<i>Plantago coronopus</i>	Buck's-Horn Plantain	0	0	0	1
<i>Rumex</i> spp	Sorrels/Docks	5	2	1	2
<i>Filipendula</i>	Meadowsweet	2	2	0	1.5
Chenopodiaceae	Goosefoot family	1	2	0	2
Caryophyllaceae	Stitchwort family	0	0	1	2
Umbelliferae	Carrot family	4	4	3	4
Liguliflorae	Dandelion type	1	4	2	1
Tubuliflorae	Daisy type	3	4	4	1
Artemisia	Mugwort	0	1	1	0
<i>Bidens</i> -type	Bur-marigold	0	1	0	2
<i>Urtica</i>	Nettles	7	9	7	5
<i>Centaurea nigra</i>	Cornflower	2	0	0	0
<i>Vicia</i> -type	Vetch	1	0	0	0
<i>Lotus</i> -type	Trefoils	5	1	2	2
<i>Sinapsis</i> -type	Mustard	5	7	5	4
Leguminosae	Pea family	0	4	0	2
Cruciferae	Cabbage family	2	0	0	0
Labiatae	Deadnettle family	1	0	0	2
<i>Ranunculus</i>	buttercups	1	1	1	1
Rosaceae	Rose family	0	1	1	1
<i>Potentilla</i>	Cinquefoils	0	1	1	2
<i>Pteridium aquilinum</i>	Bracken	1	1	2	0
<i>Phragmites communis</i>	Common reed	1	1	0	0
<i>Potamogeton</i>	Pondweeds	0	3	0	0
<i>Sphagnum</i> moss		2	0	0	0
Equisetum	Horsetails	0	2	0	0
Pteropsida	Ferns	0	1	0	0
Indeterminate grains		23	17	16	13
Charcoal		68	75	74	40
Pollen sum		109	139	100	135

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10.3 ASSESSMENT OF THE INSECTS

by Harry Kenward

Introduction

- 10.3.1 A series of pre-processed samples from Roman and medieval deposits excavated at the Rickergate site was submitted for assessment of invertebrate remains. Most contained appreciable numbers of insects, and some were rich in ostracods and cladocerans. Further work is recommended, both to investigate local activity and living conditions, and to provide data for a study of land use zonation in Carlisle.
- 10.3.2 The recovery and study of the insect remains was undertaken in accordance with the fieldwork aims and revised research aims for the site, which are set out in section 2 of the main report, above. The recovery of insects was designed to address the general questions relating to diet, economy and ecology of the site as well as more specific information about the function and nature of individual features and activity areas.

Methodology

- 10.3.3 Samples of 1 kg were processed by Oxford Archaeology and were supplied to the author in two fractions, namely a 'washover' and a residue (Kenward *et al.* 1980). Ten of these samples were assessed for invertebrates. In most cases the washovers contained a substantial proportion of undisaggregated sediment. In order to extract insect and other invertebrate remains, the washover was re-sieved to 300 microns using hot water and submitted to paraffin floatation using methods approximating to those of Kenward *et al.* (1980) as modified by Kenward *et al.* (1986). In most cases the residue was re-amalgamated with the washover before paraffin floatation. In view of project constraints, processing was carried out more rapidly and robustly than is ideal.
- 10.3.4 Recording was at the 'assessment' level of Kenward (1992) and carried out in the flots. Quality of preservation was recorded using the scales of Kenward and Large (1998).

Quantification and Provenance

- 10.3.5 Of the 16 samples submitted for assessment only ten could be examined in the time available. The assessed samples are quantified and provenanced by excavated area and site period in Tables 10.11 and 10.12. The assemblage of insect remains is summarised in Table 10.13.

Table 10.11: Distribution of samples assessed for insect remains by excavated area

Area	No. samples
RIC B	2
RIC C	5
RIC D	1
RIC E	2
Total	10

Table 10.12: Quantification of samples assessed for insect remains by site period

Period	No. samples
1	1
2	3
3	2
6	1
7	1
9	2
Total	10

Potential for Further Work

- 10.3.6 Most of the assessed samples contained appreciable numbers of insects, mostly beetles, and in some cases other invertebrates, notably mites, ostracods and cladocerans. Such material clearly has a great deal of potential, both for understanding conditions and activity at the site and in the context of a wider synthesis of land use zonation in Carlisle (see Kenward 1999). There were similarities with other invertebrate assemblages from Carlisle, but the fills of the large period 9 medieval ditch were quite unlike any other material previously examined from the area.
- 10.3.7 The material from the probable alluvial fill of the pre-Roman river channel in RIC C (period 1) warrants further investigation, as invertebrates have the potential to determine depositional conditions, for example the difference between an active river channel and a cut-off channel, as well as providing clues to local land use adjacent to the channel ([Objective 1.1](#)). In the case of the Rickergate material the relative abundance of dung beetles suggests the proximity of grazing land in the pre-Roman period.
- 10.3.8 Grain pests were present, and sometimes rather numerous, in four Roman deposits, with records of the three principal grain pests, *Oryzaephilus surinamensis* (Linnaeus), *Cryptolestes ferrugineus* (Stephens) and *Sitophilus granarius* (Linnaeus). One sample yielded the fourth common grain pest of the Roman period, *Palorus ratzeburgi* (Wissmann). The three main pests were also present in a single sample from a medieval pit or ditch fill.
- 10.3.9 Two Roman deposits, a layer and a pit or ditch fill, yielded insects which subjectively indicated material resembling stable manure, a very common

component of Roman deposits in Carlisle (Kenward *et al.* 1992a-c; 1998; 2000). Analysis of larger subsamples, and integration with botanical evidence, will be needed to confirm this hypothesis, using the stable manure 'indicator group' proposed by Kenward and Hall (1997). Further work therefore has the potential to shed some light on the character of occupation in this area of the Roman settlement (Objective 2.1).

10.3.10 The fills of the large medieval defensive ditch of period 9 produced invertebrate assemblages remarkable for their large numbers of aquatic crustaceans (both Ostracoda and Cladocera), together with appreciable numbers of water beetles. Even more remarkable was the rarity in these samples of insects suggesting any form of dumping. The data appears to suggest that there must have been rigorously enforced statutes forbidding this, bearing in mind the pressure to find places to dispose of filth in any urban area. However large quantities of pottery, leather and other artefactual material were recovered from the ditch fills in area RIC E, so this requires further investigation. Lack of interference with the ditch sides is also suggested by the rather abundant fauna of semi-natural herbaceous vegetation in these deposits. The data therefore have clear potential to contribute to understanding the character and development of the medieval city defences (Objective 2.2).

10.3.11 In most cases, the processing of a subsample of 3 kg or more would be desirable in order to recover sufficient remains for confident interpretation. The notes provided for this assessment imply that only 1 kg of unprocessed sediment remains. This is rather less than conventionally made available for detailed analysis (cf. Dobney *et al.* 1992), and will limit the value of further work somewhat, especially since the assessment samples have received non-standard treatment and can only be used in analysis with some caution.

10.3.12 It is strongly recommended that, in order to provide a more reliable interpretation of site environment and activity, a detailed record should be made of most of the assessed assemblages, together with invertebrates from further subsamples (see Table 10.13). Assemblages from any other samples of similar nature to those assessed should also be analysed if possible, in order to provide a larger body of data which can meaningfully be compared with records from other sites in the City and included in publication of the study of land use zonation. It is envisaged that a total of eight samples will be analysed more fully. In addition, two samples from the period 9 medieval ditch in RIC E, which could not be examined as part of the current assessment, will be assessed at the beginning of the analytical programme to ensure that the samples with the highest potential are targeted for analysis.

10.3.13 All samples, flots and residues should be retained pending further analysis.

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Table 10.13: Summary of the insects

Area	Context	Period	Sample	Feature type	Observations	Preservation	Potential
RIC B	86	3	1	pit?	no identifiable invertebrate remains	n/a	none
RIC B	65	3	2	layer	few remains, very pale/yellowish; three main grain pests; subjectively a stable manure fauna	E 3.5-4.0, mode 3.5 distinct F 2.5-4.0, mode 2.5 weak yellow/pale 3, mode very distinct	would need a large (>4 kg) subsample to confirm interpretation
RIC C	216	6	1	dark soil	no identifiable invertebrate remains	n/a	none
RIC C	241	2	2	pit/ditch?	small group of insects and a few mites; the three main grain pests; some other synanthropes; possibly foul matter	E 1.5-4.0, mode 3.0 weak F 1.0-3.5, mode 2.5, weak Pale 2-3, mode 2, weak	assessment sample gave too few remains for confident interpretation; 3-4 kg needed; additional 1 kg added to existing group may just provide required evidence
RIC C	243	2	5	pit/ditch?	rather small group of insect remains including fly puparia, the three main grain pests; hints of stable manure	E 2.5-4.0, mode 3.0 weak F 2.0-4.0, mode 2.5 weak pale 1-3, mode 2 weak	as RIC C 241 Sample 2
RIC C	260	2	6		small group of insects, mostly the three main grain pests, also Palorus ratzeburgi; few other remains; a single ostracod	E 2.0-3.5, mode 2.5 weak F 1.5-3.0, mode 2.5 weak Yellow/pale 0-3, mode 2 weak	larger subsample needed to recover remains additional to grain pests; ideally 3-4 kg, but assessment group and further 1 kg may suffice
RIC C	265	1	8	old river channel	small group of insects; remains well-preserved chemically but often fragmented; aquatics (including cladocerans), waterside forms; dung beetles rather common, perhaps suggesting grazing land	E 1.5-2.5, mode 2.0 weak F 2.0-5.0, mode 2.5 weak	larger (3-5 kg or more) subsample would give more information about depositional conditions (running water or a cut off channel?), and land use. This subsample and a further 1 kg may just provide a reasonably useful group
RIC D	355	9	9	medieval defensive ditch	n/e		
RIC D	353	9	2		n/e		

Area	Context	Period	Sample	Feature type	Observations	Preservation	Potential
RIC D	354	9	3		flot consisted mostly of invertebrate remains; order of 1000 ostracods, numerous Daphnia, some aquatic and waterside insects; mites very abundant; range of terrestrial forms dominated by species associated with herbaceous plants; subjective impression of still water, fairly clean, closely surrounded by dense 'weedy' vegetation. No clear synanthropic component	E 1.5-2.5, mode 2.0 weak F 2.0-3.5, mode 2.0 weak	2-3 kg subsample would provide useful assemblage for reconstructing conditions in and around ditch. Assessment sample plus remaining 1 kg should just suffice, however
RIC D	356	9	4		n/e		
RIC D	357	9	5		n/e		
RICE	87	7	5	ditch?	rather small assemblage of invertebrates, with a few aquatics, indicators of foul matter, the three main grain pests, hints of other synanthropes	E 1.5-3.0, mode 2.5 weak F 2.0-3.5, mode 2.5 weak	3-5 kg subsample would give interpretable fauna; adding assessment group to remaining 1 kg may give useful information
RICE	51	9	8	medieval defensive ditch	n/e		
RICE	51	9	59		n/e		
RICE	51	9	60		Estimated order of 10,000 ostracods, 100 chironomids, range of aquatic beetles and bugs. Probably pond-like conditions with weed vegetation at its sides. Little evidence of dumping of waste from human activity.	E 1.5-2.5, mode 2.0 weak F 1.5-3.5, mode 2.5 weak	3 kg subsample would give interpretable fauna; adding assessment group to remaining 1 kg should give useful information

Notes: preservation categories - low numbers imply good preservation or little colour change, high ones advanced degradation
n/e = not examined

10.4 ASSESSMENT OF THE MARINE MOLLUSCS

by Christine Howard-Davis

Introduction

10.4.1 A small assemblage of marine mollusc shell was recovered during the course of the Rickergate excavations. All was hand-retrieved on site, and none came from sieving.

10.4.2 The recovery and study of the marine molluscs was undertaken in accordance with the fieldwork aims and revised research aims for the site, which are set out in section 2 of the main report, above. The recovery of this material was undertaken to assist interpretation of the patterns of food consumption on the site and in order to aid understanding of the exploitation of natural resources in the Roman and medieval periods.

Methodology

10.4.3 The assessment was undertaken on the basis of an enhanced rapid scan of the assemblage. No scientific analysis has been undertaken.

Quantification

10.4.4 A total of 59 fragments of shell were recovered, although this represents a considerably smaller number of living molluscs, since the assemblage consisted mainly of fragmentary individual valves. The assemblage is quantified by excavated area in Table 10.12.

Table 10.12: Quantification of the marine mollusc shell by excavated area

Area	Count
RIC C	1
RIC D	7
RIC E	51
Total	59

10.4.5 Only two common species were noted, the native oyster and the common mussel; a single small gastropod was not identified. Both bivalves are widely consumed food species, having been exploited since well before the Roman period. Some of the large shells showed extensive signs of worm infestation. None of the shells had been used for other purposes, for example in the preparation of pigments.

Provenance

10.4.6 The assemblage was recovered from a total of 22 contexts. With the exception of three fragments the assemblage derives exclusively from medieval and later phases, the majority being from period 9. The material is quantified by site period Table 10.13. A catalogue of the assemblage is provided in Table 10.14.

Table 10.13: Quantification of the marine mollusc shell by site period

Period	Count
2	1
2-5	2
7	1
8	1
9	49
11	5
Total	59

Conservation

10.4.7 The material is currently satisfactorily packed and requires no special conservation measures.

Comparative Material

10.4.8 There is little comparative material available from the north-west of England.

Potential for Further Work

10.4.9 A brief discussion of the assemblage has the potential to contribute to an understanding of the patterns of food consumption on and in the vicinity of the site through time ([Objective 3.2](#)). The group will, however, sustain little further analysis. Note should be made of the presence or absence of marine shell within contexts and brief comments should be appended to, or included in, any discussion of food sources.

Table 10.14: Outline catalogue of the marine mollusc shell

Area	Context	Period	Description	Count
RIC C	243	2	Mussel	1
RIC D	355	9	Oyster	2
RIC D	355	9	Oyster	5
RIC E	1	-	Oyster	1
RIC E	12	11	Oyster	2
RIC E	12	11	Oyster	3
RIC E	31	9	Oyster	1
RIC E	32	9	Oyster	6
RIC E	32	9	Oyster	1
RIC E	32	9	Oyster	2
RIC E	32	9	Oyster	1
RIC E	32	9	Oyster	1
RIC E	41	9	Oyster	1
RIC E	42	9	Mussel	1
RIC E	44	9	Mussel	1
RIC E	47	9	Mussel	1
RIC E	47	9	Oyster	1
RIC E	47	9	Oyster, Mussel	2
RIC E	51	9	Mussel	1
RIC E	51	9	Oyster	1
RIC E	51	9	Oyster	2
RIC E	51	9	Oyster	2
RIC E	51	9	Oyster	1
RIC E	51	9	Oyster	2
RIC E	51	9	Oyster, Mussel	2
RIC E	52	8	Mussel	1
RIC E	59	9	Oyster	2
RIC E	59	9	Oyster	2
RIC E	59	9	Oyster	1
RIC E	60	9	gastropod	1
RIC E	60	9	Oyster	2
RIC E	60	9	Oyster	1
RIC E	62	9	Oyster	2
RIC E	74	9	Oyster	1
RIC E	74	9	Oyster	1
RIC E	83	7	Oyster	1

APPENDIX 11 - DATING

11.1 ASSESSMENT OF DATING POTENTIAL

by John Zant

Introduction

11.1.1 The assemblage of waterlogged wood and hand retrieved charcoal fragments recovered from the site was assessed for its potential for dating by dendrochronology and radiocarbon determination (appendix 3). Additionally, charcoal and waterlogged plant remains from two bulk soil samples were assessed for their potential for radiocarbon dating (appendix 10.1).

11.1.2 The recovery and study of the wood and soil samples was undertaken in accordance with the academic aims and revised research aims for the site, which are set out in section 2 of the main report, above.

Methodology

11.1.3 The methodologies adopted to deal with the waterlogged wood and soil samples are detailed in appendices 3 and 10.1 above.

Quantification and Provenance

11.1.4 A total of 132 pieces of wood and charcoal and 30 bulk soil samples were recovered during the course of the excavations. Some 21 wood samples were taken specifically for dendrochronological dating from the lining of a medieval well or pit (RIC F 41) in area RIC F. The provenance of the rest of the material is detailed in the relevant appendices.

Potential for Further Work

11.1.5 **Dendrochronology:** Following completion of excavations, three artefacts were sent to AOC, Edinburgh for conservation (see appendix 12). During the course of this work dendrochronological analysis was undertaken on one of the objects, a small oak barrel or tub recovered from a fill of the period 9 defensive ditch in RIC E (context RIC E 51 in feature 58). This work produced a felling date of *c* 1358 for one of the timbers used in the manufacture of the barrel (Crone 2001). However, assessment of the rest of the wood assemblage found that the material had been inadequately packed for long-term storage at the time of excavation, and had suffered deterioration to the point where it was no longer suitable for dendrochronological dating. This included the 21 samples taken specifically for this purpose. The assemblage therefore has no further potential for dating by dendrochronology.

11.1.6 **Radiocarbon dating:** The manner in which the hand retrieved charcoal had been stored subsequent to excavation precluded its use for radiocarbon dating. However, charcoal recovered from a bulk sample taken from the fill of a period 1 linear feature in area RIC F (RIC F 172) is considered to have good potential for radiocarbon dating by AMS techniques. Likewise, a large

assemblage of waterlogged seeds from a probable alluvial silt within the pre-Roman (period 1) palaeochannel in area RIC C (RIC C 265) also has excellent potential for radiocarbon dating.

- 11.1.7 Dating of these deposits would be of considerable local and regional importance, since although prehistoric occupation has been recorded at a number of sites in the centre of Carlisle, this activity has not previously been dated. It is therefore proposed that two samples from each of these deposits should be submitted for radiocarbon dating by AMS techniques.

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APPENDIX 12 - CONSERVATION

12.1 ASSESSMENT OF CONSERVATION REQUIREMENTS

by John Zant

Introduction

12.1.1 Finds recovered from the excavations were assessed for their conservation requirements and long-term stability, as well as for their potential for investigative conservation.

12.1.2 All the assessed material was recovered by hand excavation.

12.1.3 The recovery and study of the artefactual assemblages was undertaken in accordance with the research aims for the site, which are set out in section 2 of the main report, above. The recovery of artefacts was undertaken in order to establish a dated sequence of occupation and to enhance understanding of human activity on the site through time. The conservation programme was designed to enhance the potential of the artefactual assemblages to address the research aims for the project.

Methodology

12.1.4 All categories of artefactual material were examined visually during the assessment process, and conservation requirements were evaluated as part of this work. Conservation issues pertaining to each category of material are discussed in the relevant appendices.

Quantification

12.1.5 The items assessed for conservation requirements are listed in Table 12.1 below.

Table 12.1: Artefacts with conservation requirements

Material	No. items known from assessment
Waterlogged Wood	3
Wet leather	450 items in 173 bags
Coins, x-ray and cleaning	6
Investigative conservation	28

Provenance

12.1.6 The provenance of the materials requiring conservation has been noted in the relevant appendices.

Conservation

12.1.7 Further archaeological and investigative conservation will not affect the integrity or long-term survival of the artefacts. Many of the artefacts will require long-term storage. The long-term storage requirements for

archaeological materials and archives are set out in Walker (1990) and the Museums and Galleries Commission (1992).

- 12.1.8 The wet leather is currently stored in cool, dark conditions at Shaddon Mill, Carlisle, and is considered to be reasonably stable, although some mould growth was noted during assessment. Most has been washed, but 25 bags, representing approximately 10% of the assemblage, is either unwashed or would benefit from further washing. All material requiring specialist analysis will need to be conserved prior to analysis, since the specialists cannot handle large amounts of wet leather for both practical and health and safety reasons. The leather could potentially become a health hazard if it is not dealt with within a reasonable timescale, since it is liable to fungal and bacterial infection. Of the total assemblage of 600 individual items stored in 249 bags, it is envisaged that approximately 450 major components, currently stored in 173 bags, will be targeted for full conservation and analysis.
- 12.1.9 One composite item of wood and leather, namely the large set of bellows from the period 9 ditch in RIC E, was conserved by AOC Edinburgh before the commencement of the post-excavation assessment.
- 12.1.10 Most of the wood from the site is extremely poorly preserved and unsuitable for conservation, although three small objects will require freeze-drying. These items are currently stable but will deteriorate if not dealt with within a reasonable timescale. Two wooden items, a large ash bowl and a small, stave-built barrel or tub, were conserved by AOC Edinburgh prior to assessment (appendix 3). Both objects came from the same context as the bellows.
- 12.1.11 The metalwork and coins require desiccated micro-environments for long-term storage. The coins require x-raying and possibly subsequent cleaning.
- 12.1.12 A group of currently unidentifiable items, comprising 18 copper alloy objects and ten of iron, require investigative conservation to establish their function and date.

Comparative Material

- 12.1.13 This information is provided in the detailed specialists' reports.

Potential for Further Work

- 12.1.14 Further x-radiography and archaeological and investigative conservation is required on a number of types of material, including Roman coins and artefacts of wood, leather, iron and copper alloy.
- 12.1.15 A total of 450 pieces of leather will require conservation prior to analysis, since the specialists cannot handle large quantities of wet leather (12.1.8). The material will need to be lightly washed, rebagged and labelled prior to pre-treatment with polyethylene glycol 400. The leather will be placed within flat card and frozen, and will then be freeze-dried and repackaged. Three small wooden objects will also require freeze-drying.

12.1.16 Six Roman coins will require x-radiography and possibly cleaning in order to check identifications. Approximately ten iron objects and 18 items of copper alloy will require investigative conservation in order to confirm identifications and permit full analysis of the material.

Discard Policy

12.1.17 The poor condition of certain elements of the artefactual assemblage means that it may be justifiable to consider ultimately discarding certain items or categories of material once full post-excavation analysis is complete. The accepted policy on discard varies with material and class of finds, as well as with their relevance to local and national research agendas.

12.1.18 Discard policy may cover the assemblages of wood, metalwork, glass, ceramic building materials, animal bone and palaeoenvironmental evidence.

12.1.19 Wherever possible all reasonable efforts will be made to donate material to an appropriate research project or archive.

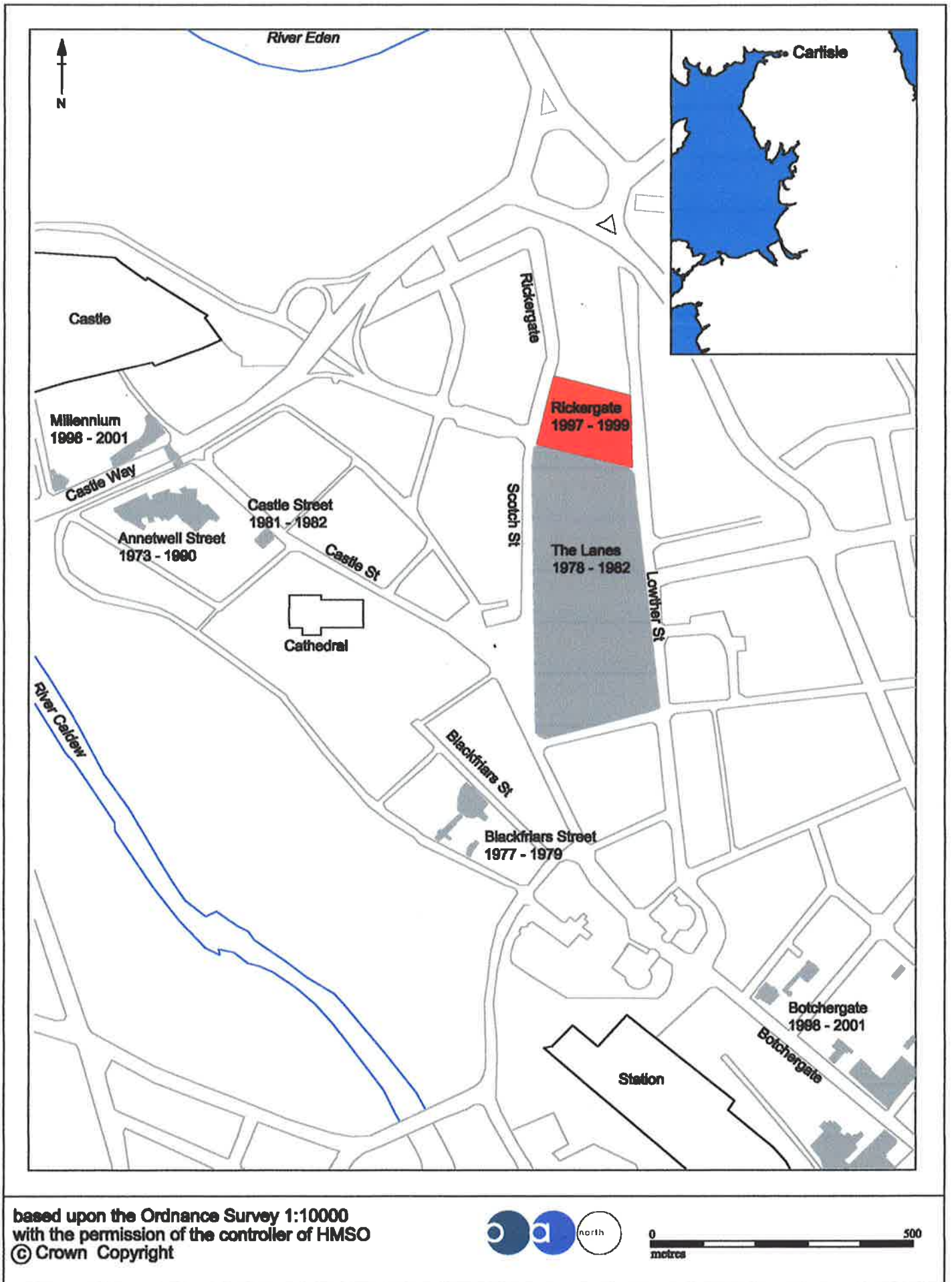
12.1.20 It is envisaged that staff at Tullie House Museum and Art Gallery will be actively involved in the formulation and implementation of discard policies, and will supervise the disposal of any material selected. Discard policies will follow the guidelines of the Society of Museum Archaeologists (1993).

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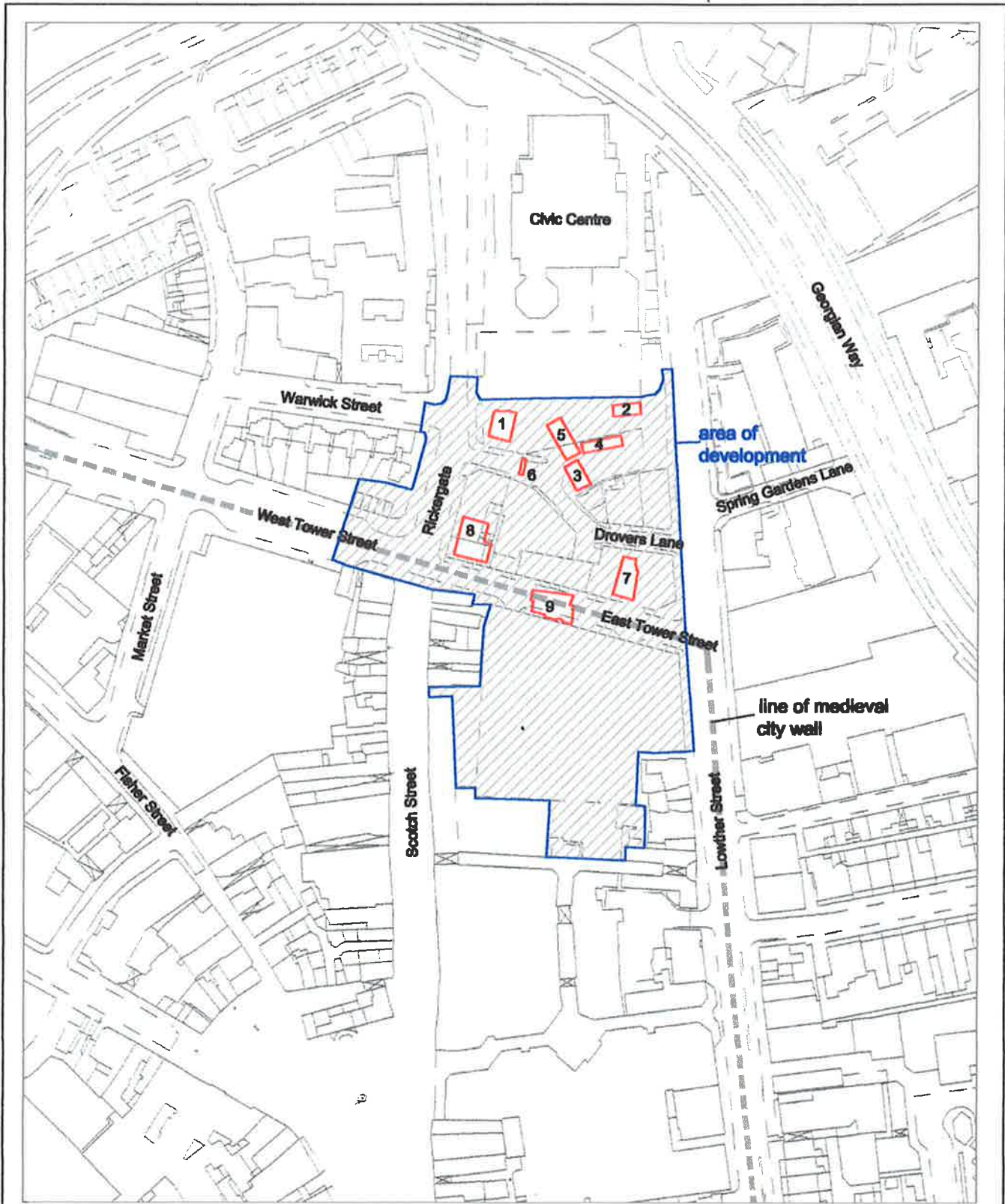
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Figure 1: Location of the Rickergate excavations and other major excavations within Carlisle



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Scale 1:2000

Key to excavated trenches

- | | |
|-------------|-------------|
| 1: RIC B: 1 | 6: RIC D: 6 |
| 2: RIC B: 2 | 7: RIC D: 7 |
| 3: RIC B: 3 | 8: RIC E: 8 |
| 4: RIC B: 4 | 9: RIC F: 9 |
| 5: RIC C: 5 | |



Figure 2 : Trench location plan

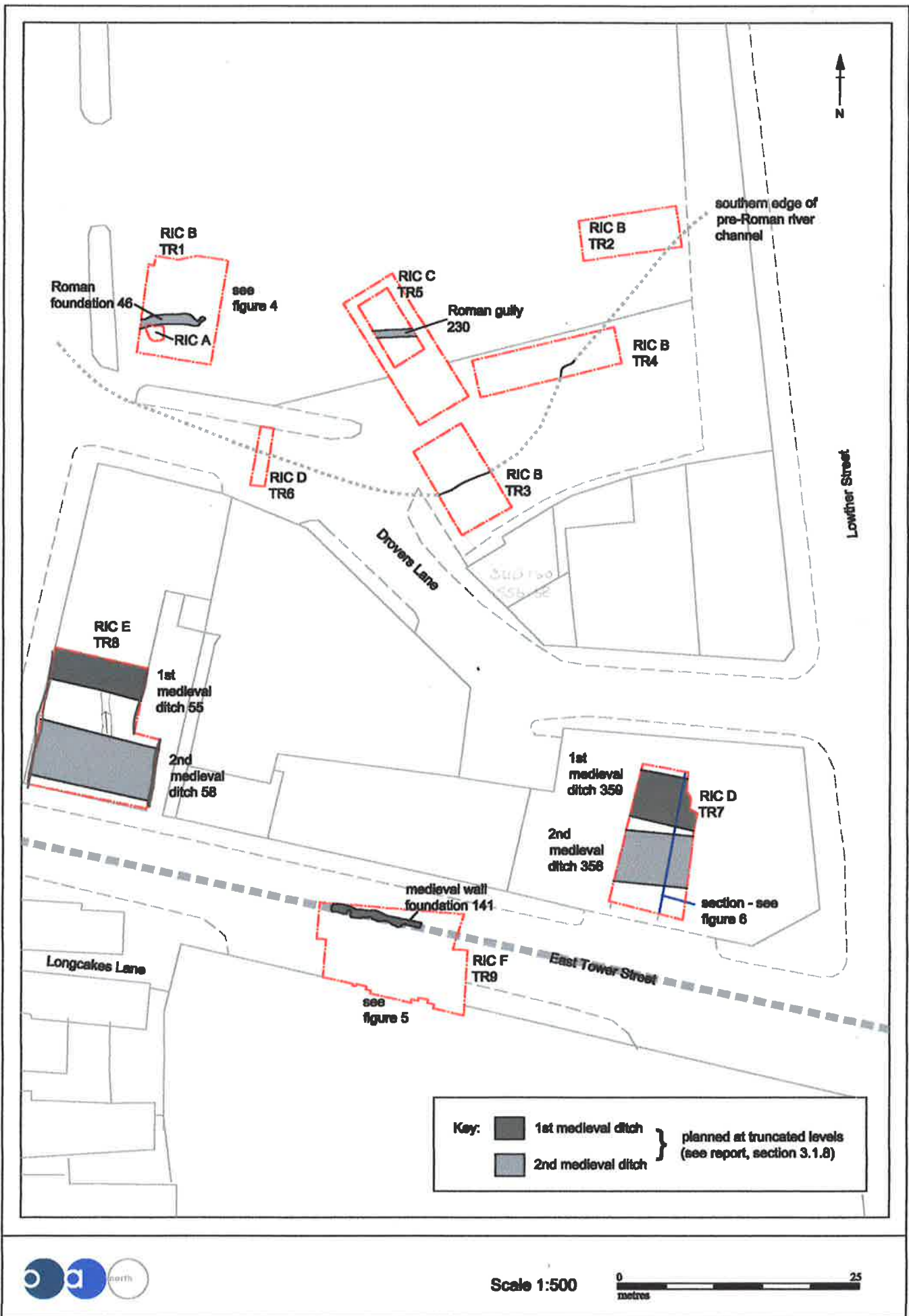
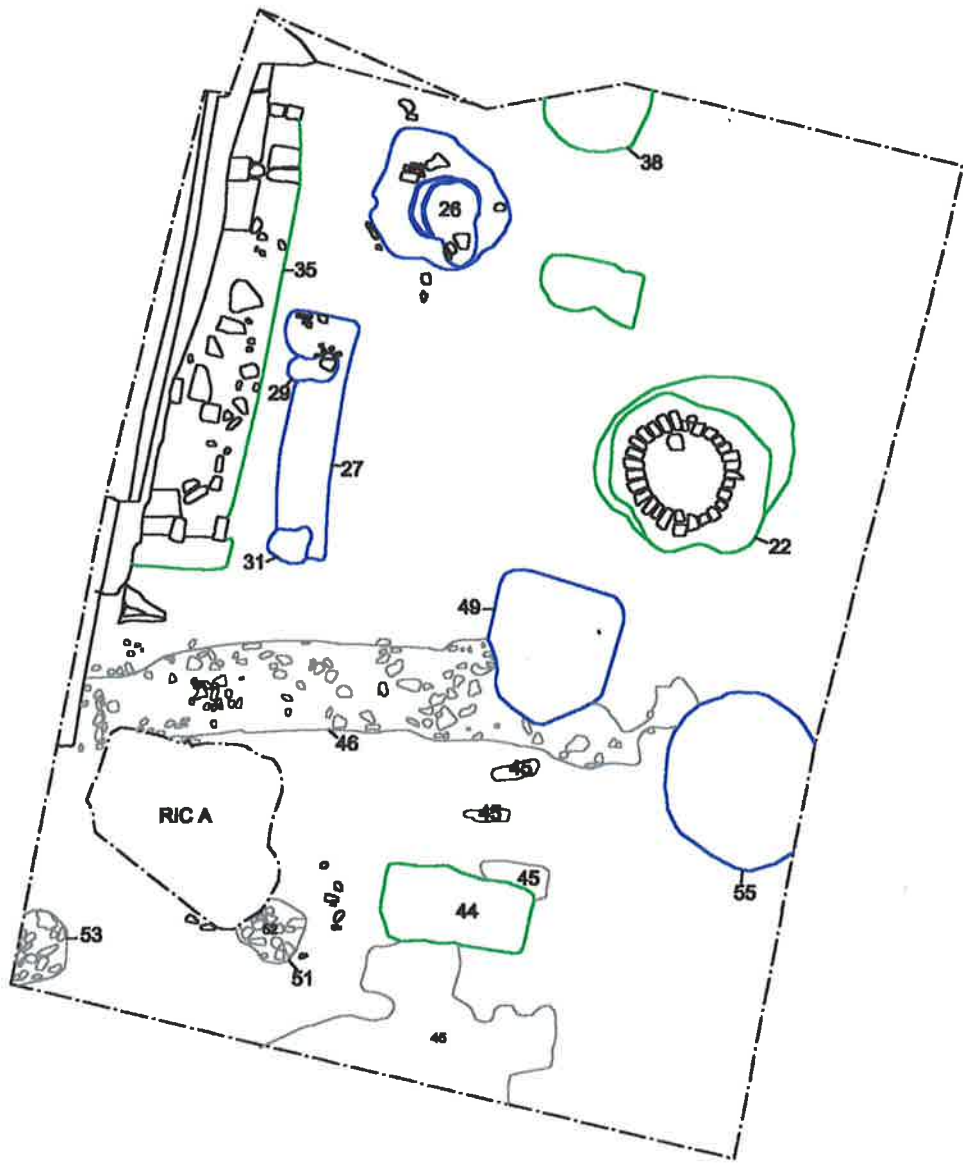





Figure 3 : Location of principal archaeological features

240 -08 239 96 340160.25
 133 -69 165 23 8, 556180 75



Key	
	Period 5: Roman
	Period 7-8: medieval
	Period 11: post-medieval



Scale 1:75



Figure 4 : Principal archaeological remains in RIC B Trench 1

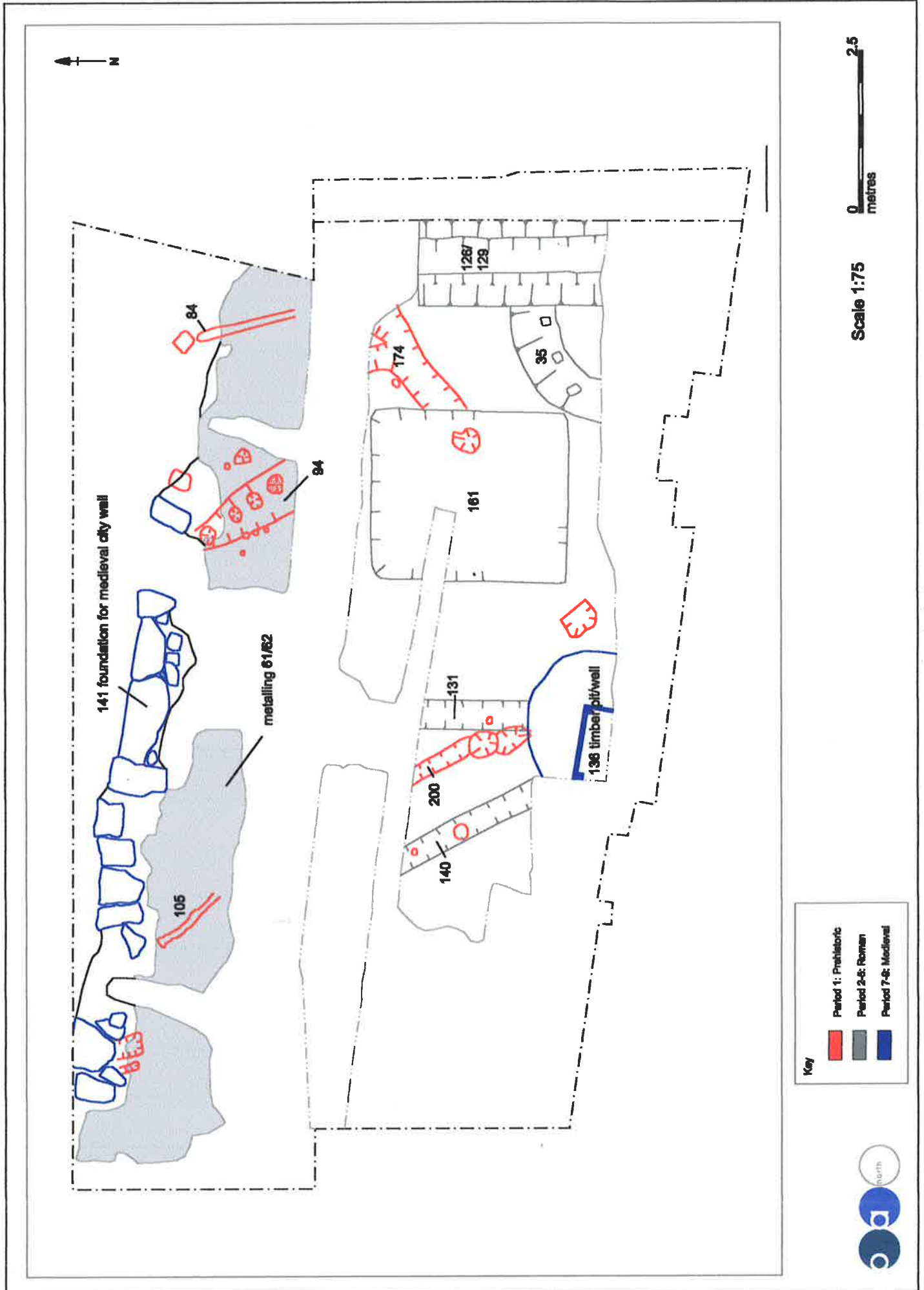
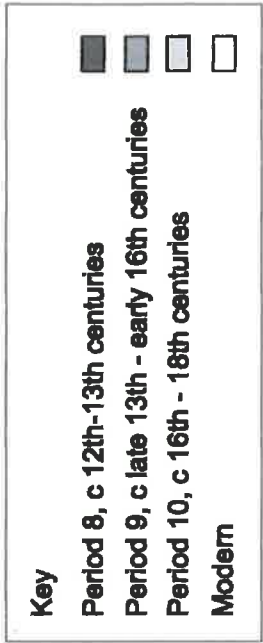
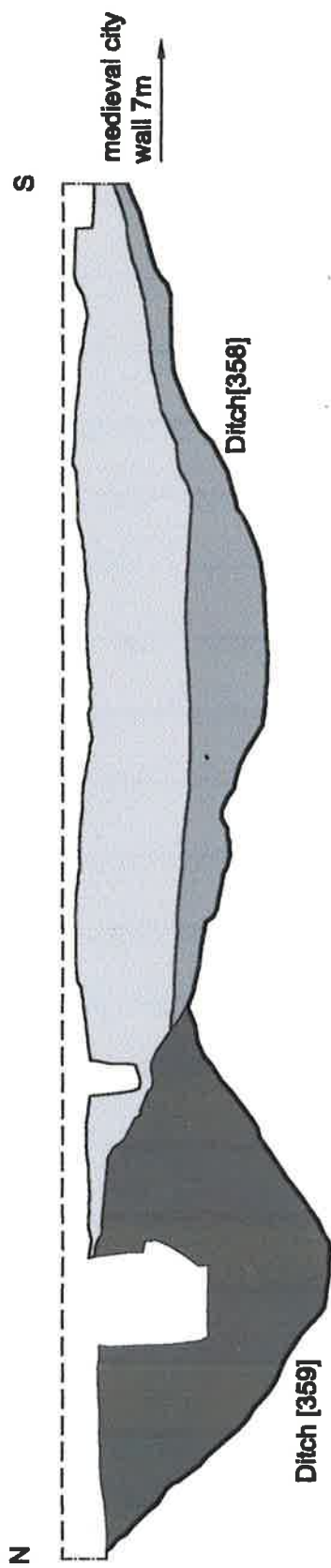


Figure 5 : Principal archaeological remains in RIC F Trench 9



Scale 1:75



Figure 6 : Section through medieval defensive ditches in RIC D Trench 7 (see Figure 3 for location)



Plate 1: RIC B Trench 1 looking east, showing the clay-and-cobble foundation for the wall of a Roman timber building, c 3rd-4th centuries AD. Earlier Roman levels are visible in the side of the test-pit in the foreground.



Plate 2: RIC D Trench 7 looking north-west, showing the two phases of large defensive ditches fronting the medieval city wall. The later ditch, RIC D [358] of period 9, is in the foreground, with RIC D [359] of period 8 to the rear.



Plate 3: Articulated horse skeleton in a possible drain emptying into the period 8 medieval defensive ditch in RIC E.



Plate 4: Wooden stave-built barrel or tub from the period 9 medieval defensive ditch in RIC E. One of the pieces of timber used in the manufacture of this object was dated by dendrochronology to c AD 1358.



Plate 5: Large set of bellows approximately 1.5m in length, constructed of wood and leather, from the period 9 medieval defensive ditch in RIC E, c later 14th century.



Plate 6: RIC F Trench 9 looking east, showing a probable cobbled Roman road, cut by the badly damaged sandstone foundation of the medieval city wall.



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