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A421 WENDLEBURY-BICESTER DUALLING:

POST-EXCAVATION ASSESSMENT AND UPDATED PROJECT DESIGN

11 April 1994

OXFORD ARCHAEOLOGICAL UNIT
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6.5.1996

Dear Paul,

Herewith a copy of the revised A2621 PX research design + the PX assessment report. This contains sections A + C. Section B, omitted, is trivings & workings, which we can supply if you need them but I thought were probably not strictly necessary. In any case, we're paranoid about our competitors getting access to classified information in your files!!!

On a different matter, I've spoken to Paul Harkins about Bowling Green Farm, & it seems that John had somewhat garbled the message & there is effectively nothing to see on the ground, so the panic is off. The evidence for 'high status' relates to a group of finds from a pit, + not to structural remains. I shall look at these in due course, but I don't think a site visit will be necessary.

Best wishes,

Paul

A421 WENDLEBURY-BICESTER DUALLING:

POST-EXCAVATION ASSESSMENT AND UPDATED PROJECT DESIGN

by Paul Booth and D Jennings

with contributions by D Allen, L Allen, A Barclay, J Bayley, A Boyle, P Bradley, B Dickinson, J Evans, V Fell, C King, G Lloyd-Morgan, Q Mould, M Richards, M Robinson, F Roe, D Serjeantson, J Winder

OXFORD ARCHAEOLOGICAL UNIT
11 April 1994

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1 SUMMARY

Major excavations, funded by English Heritage, took place in the northern extramural settlement of the Roman small town of Alchester, Oxfordshire in advance of road construction. These produced evidence for Neolithic activity, a Bronze Age burial, middle Iron Age settlement, extensive activity throughout the Roman period and Anglo-Saxon burials. In the 1st-2nd centuries the Roman settlement was characterised principally by ditches. Above these a variety of later Roman structures were set within ditched plots, the character of the settlement at this time being largely agricultural. A small late Roman cemetery with a post-Roman phase complemented the domestic structures and other features. The excavations produced numerous finds of a wide variety of types and materials.

The importance of the project can be appreciated on a variety of levels. First, the road scheme enabled the investigation of the utilisation of the landscape from the Neolithic through to the Anglo-Saxon period. Secondly, while late Iron Age/Roman rural settlement in the Upper Thames has been an area of intensive research, this project provides a rare opportunity to investigate a type of site, a small town, occupying a higher place in the regional settlement hierarchy, and its relationship with the rural hinterland. Thirdly the evidence of the *de novo* establishment of the Roman features and their intimate relationship to the town, permits the examination of the impact of this settlement form on the landscape.

The post-excavation assessment has been carried out on the stratigraphic and artefactual record. This document contains the report on this assessment and the updated project design generated from this work.

2 PROJECT BACKGROUND

2.1 Location

The Roman town of Alchester (Oxon.) lies approximately 1.5 km to the SSW of the modern town of Bicester in NE Oxfordshire (Fig. 1). The excavations took place in the northern extramural element of the town, *c* 300 m to the N of its defences. The underlying geology consists of gravels and cornbrash limestone which overlie Oxford Clay, while the topography is generally level and low lying.

2.2 Archaeological Background

The area has until relatively recently been regarded (with the exception of Alchester itself) as being lightly settled before the medieval period (Briggs *et al.* 1986). However, aerial photography has now revealed several groups of cropmarks W and SW of Bicester (Fig. 1), despite the relative unsuitability of some of the soils for producing cropmarks. Recorded features include probable Bronze Age ring ditches and a trackway and enclosures of ?Iron Age/Roman date. Two of these groups of cropmarks lay within 100-200 m of the new road line.

Alchester was situated close to the western boundary of the territory of the Catuvellauni, and occupied an important position, adjacent to Akeman Street, midway between the cities of Verulamium and Corinium. It is one of only two defended Roman towns within the county of Oxfordshire (for the most recent summary see Burnham and Wacher 1990, 97-103). The nearest major settlements to N and S, Towcester and Dorchester-on-Thames, have both seen small-medium scale excavation, though neither has been comprehensively synthesised.

Despite being one of the better known small towns of Roman Britain, Alchester remains very poorly understood in detail. The rectilinear defences enclose an area of 10.5 ha, and consist of a contemporary rampart and wall dating from the ?later 2nd century. Inside this walled element of the town a regular street grid has been detected, and excavations in the 1920s uncovered several stone buildings of 2nd-4th-century date (Hawkes 1927; Iliffe 1929, 1932). The total occupied area defined on the basis of aerial photographs and chance finds could be as much as *c* 50 ha, although it is possible that the extramural occupation was not continuous either spatially or chronologically.

The extramural settlement is known to contain burials and stone buildings, including a possible bath house excavated in 1766, although until our excavations there has been no systematic modern excavation of any of these features. It is thought that a major Roman road junction lies at the SE corner of the area under consideration in our project. This crossroad is formed by the N-S Dorchester-Towcester road, which constitutes the principal N-S road through the walled element of the town, and the E-W Akeman Street, thought to be followed closely by the modern Chesterton Lane (Fig. 2). As a consequence it was considered that the area may be a localised focus of settlement within the extramural part of the town. Indeed as a result of these considerations several limited excavations have taken place in the immediate vicinity. In 1937 (Fig. 2), D B Harden excavated several trenches at the junction of the A421 and Chesterton Lane and found features of Iron Age and Roman date, although no structures were identified. In 1983 (Fig. 2), *c* 150 m to the E of our excavations, indications of extensive drainage work in the form of pits and ditches of the late 1st-late 2nd-century date were uncovered. They had been abandoned by the early 3rd

century (Foreman and Rahtz 1984).

The present project, therefore, is of special significance in view of the total lack of detailed evidence available for the northern part of the town, and particularly because its proximity to the major Roman crossroads may have given it above-average importance as a focal point for activity within the extramural area.

The RCHM has recently produced a detailed plot of aerial photographic evidence for the area immediately around the Roman town. This raises interesting questions about land allotment in the vicinity of the town and will almost certainly have some bearing on the results from the recent excavations.

Beyond site specific considerations the importance of Alchester as a regional centre has hardly been considered. It is the focus for an area of Oxfordshire in which the Roman settlement pattern has received little detailed consideration and which may contrast significantly with the settlement patterns which can be observed in the Thames Valley. The current project can be used to begin to remedy these imbalances.

2.3 Background to the excavations

The Department of Transport decided to dual the length of the A421 between Wendlebury and Bicester. There were two main components of the road scheme:

- the construction of a 3.6 km length of carriageway on the NW side of the existing main road (Fig. 1).

- the construction of an overpass junction, involving major earthmoving operations, to carry Chesterton Lane (which follows approximately the line of Roman Akeman Street) across the new road. As a result of evaluation work on the SE half of the proposed A421/Chesterton Lane overpass the Department of Transport agreed to alter the construction of the earthworks for the junction to protect the underlying archaeological deposits as far as possible. This considerably reduced the area which it was necessary to excavate.

Given our knowledge of the extent of the extramural elements of Roman Alchester, it was considered highly likely that the dualling would involve the destruction of parts of this settlement. In 1991, as a result of these implications, English Heritage funded a programme of evaluation and subsequent rescue excavation at a number of sites. The work was carried out by the Oxford Archaeological Unit under the direction of Paul Booth.

The archaeological work took the form (for administrative reasons) of a number of independently costed projects. These are, however, closely interrelated and in the post-excavation assessment they have been treated as a unitary whole.

Evaluation work in the area of the new junction at Chesterton Lane confirmed the existence of complex deposits relating to the Roman town, and elsewhere on the line of the carriageway two concentrations of features were revealed which were considered worthy of more extensive excavation. The subsequent excavations examined a substantial part of the northern extramural settlement of the Roman town, and located several unsuspected elements of the local settlement pattern, a Bronze Age burial, middle and late Iron Age activity and early Anglo-Saxon settlement and burials.

The earlier stages of the project were costed and executed before the publication of MAP2 (English Heritage 1991a). None of the components contained provision for post-excavation assessment, and only part included funding for site archive preparation. The necessary site archive and assessment work was consequently carried out on the basis of a further application for funding, presented in a separate document, *A421 Wendlebury-Bicester Dualling: Proposal for Archiving, Post-Excavation Assessment and Research Design*. The present document is the result of that proposal.

2.4 Original Objectives

After the initial evaluation work a series of original objectives for the excavation were developed on the basis of the following premises:

i) Alchester is one of the least well-understood of the upper echelon of small towns in Roman Britain. The site is therefore significant not solely due to its regional rarity but also in its national context.

ii) Roman extramural urban settlement is significantly understudied in comparison with the walled areas of Roman towns. The deposits revealed by the evaluation work in the area of the proposed overpass, particularly on the SE side, were in places very well-preserved and were considered to be of schedulable quality. They were, however, very close to the modern ground surface and thus particularly susceptible to damage by earth-moving machinery (Hence the necessity to take active steps to preserve those deposits which were not to be recorded in the course of excavation).

iii) The deposits uncovered in the area of the proposed overpass were thought to be located at a major Roman crossroad within the extramural settlement, where a potential focus of settlement within the northern extramural settlement might be expected.

iv) There was very little detailed evidence available for the character of the northern part of the town.

The objectives developed from these premises were as follows:

i) *To confirm the layout of the site and characterise the range of structures and activities within each property unit and establish their chronology.*

ii) *To establish a framework for understanding the role and development of the town, which is fundamental to the understanding of the area in the Roman period.* Data from the excavation will be used to shed light on a whole range of problems relating to the origins, development, economy and environment of the settlement. Specific questions to be addressed would include:

a) *The relationship of Roman to pre-Roman settlement on the site, and the implications of this for the origins and early development of the town.* Did Alchester arise from a settlement related to a military establishment, or was a pre-existing Iron Age component more important than has been realised, or is the association of Iron Age and Roman settlement purely fortuitous, in view of the suggestion that there is little evidence for Late Iron Age occupation in the area (Foster 1989, 143)?

b) *The sequence and nature of the development of the site.* Was there an early phase of drainage and ground-raising activity here as seems to have been the case within the walled area to the S? In what ways did the character of activity on the site change with time? Was the site layout static from the 2nd century onwards, as might be suggested by the possible property defined in the central part of the area in the evaluation work, or were there major changes of layout in some parts in the later Roman period? What was the relationship of the site layout to the line of Akeman Street?

c) *The position of the site in the context of the town as a whole.* Does it appear to be marginally located? How does the character and chronology of activity here compare with that further S? Can the sequence at the present site be used to shed light on the development of the whole Roman town? There has never been a satisfactory explanation of why the town defences were sited so far S of the main Roman road junction. Has the line of Akeman Street in fact been accurately identified?

d) *The economy and environment of the site.* The finds should provide useful evidence for the economic basis of the community. Was the economic base industrial/commercial or was it agricultural? Iron working is already attested, but it needs to be established if this was of more than minor importance. What were the trade connections of the town, as exemplified by (amongst other classes of material) the pottery? If the settlement extends back into the 1st century AD, as seems likely, the developing ceramic assemblage could be very important for shedding light on the early development of the Oxfordshire potteries, much the least well-understood aspect of this industry.

It is hoped that other classes of material could be used to shed light on the economy. Animal bone is well-preserved and occurs in some quantity. Recovery and analysis of relatively widely-spaced groups of such material should allow identification of domestic waste deposits and their differentiation from eg deposits of butchery waste. Nothing is known at present about the nature of animal populations in the area. Samples for the recovery of small mammal, bird and fish bones would be taken. A further range of samples would be needed for carbonized plant remains, important both for an understanding of the environment of the settlement and particularly for its agricultural economy. Other aspects of the local environment should also be examined. Snails, which are well-preserved, can be used to assess the evolution of hydrological conditions, and there remains the likelihood that waterlogged deposits with a range of organic materials will be forthcoming. Overall the Alchester area is considered to have well above-average potential for the recovery of high quality environmental material (M Robinson pers. comm.).

2.5 Summary of 1991 excavation results

Four sites were excavated as a result of the evaluation work. Sites A421A and A421D (Fig. 1), relatively small sites with little surviving stratigraphy, were respectively *c* 300 m SW and 400 m NE of the A421/Chesterton Lane junction which was the focus for the majority of the work.

A421A produced a Bronze Age burial and a field system of Iron Age-early Roman date.

Features in A421D belonged mainly to a ?settlement of late Iron Age date.

A421B and A421C (see Fig. 2) were two halves of the same site, lying respectively in the SE

and NW halves of the proposed new junction. Here, middle Iron Age settlement was succeeded by intensive activity throughout the Roman period, with slight traces of an early Anglo-Saxon phase above.

Summaries of all these sites follow below. These are based on revised interpretations of the stratigraphy arising from the post-excavation assessment. The two smaller sites are dealt with first.

2.5.1 A421A Excavated area *c* 640 sq m.

The site is situated on sands and gravels overlying Oxford Clay and lies adjacent to the Gagle Brook. To the SW, closest to the brook, the site was largely devoid of features except for the Bronze Age burial. This area was on a natural rise *c* 0.20 m higher than the NE portion of the site.

A probable natural deposit was cut by the Bronze Age burial. Only the base of an upright Deverel-Rimbury vessel survived, set in a sub-circular pit. Charcoal and burnt bone fragments occurred in the fill of the pit. The burial does not appear to have been located within a ring ditch or comparable feature.

A minimum of four phases of ditches were located in the NE half of the site. The earliest of these (Phase A) consisted of two parallel ditches, one of which contained waterlogged fills. In Phase B these ditches were cut by a further pair of ditches, and another short length of ditch. Phases C and D consisted of single ditches. One other major ditch and several smaller gullies were unphased. The ditches range in date from the late Iron Age/early Roman period to the 2nd century AD.

There was no evidence for late Roman activity and a probable alluvial layer which overlaid all the ditches could have been deposited within the Roman period or later.

2.5.2 A421D Excavated area *c* 825 sq m

The site was situated on silty or gravelly clay which sloped slightly down from NE to SW. A small stream immediately to the S was presumably the source of a layer (or perhaps two layers) of alluvial clay which was confined to the lower S end of the area. Much of the phasing of the site was dependent on the relationships of the features to these alluvial deposits.

In the first phase in the S and W parts of the area were small irregular enclosures and the E end of a larger irregular enclosure. No finds were recovered. The alluvial layer may have sealed the gullies which formed the enclosures or they may have been cut through it and filled with the same material.

The alluvial layer and the features of the first phase were cut by more small gullies in the S part of the area. Some of these produced a few probable late Iron Age sherds. A little more pottery, of comparable date, came from the upper alluvial layer, which also contained charcoal and fired clay fragments.

In the N and NE parts of the area were more substantial ditched boundaries. The main boundary was of several phases. However, there was no clear relationship between these features and those described above. The earliest use of the ditches could have been

plots to W and E. These boundaries were maintained into the later 4th century. The easternmost ditch was replaced in period 8 by a N-S boundary wall, reconstructed in the later 4th century (period 9).

Roughly N-S aligned boundaries located during the evaluation work to the S of the excavation were part of a different scheme (Fig. 4), defining plots between Akeman Street and the back lane. The ditches divided the roadside zone into plots of variable width (from *c* 30-45 m) and perhaps *c* 30 m in depth.

Periods 7-9: mid 3rd century-AD 400 In the later 3rd-4th centuries buildings were constructed along the line and to the N of the infilled big E-W ditch (Fig. 6). In parts of the site, building construction was preceded by the deposition of several major dumping layers. In the western half of the main plot these were cut by three cremations. The cremations were overlaid by structural elements perhaps belonging to two buildings, one of which (E) was at least partly stone-built, the other (F), to the S, being of timber, based on a rectilinear platform of rubble. The relationship between the two is disturbed by a medieval plough furrow, but it is possible that these were both part of the same structure, and this problem may be resolved in post-excavation work. The ?stone walled structure (E) was associated with a pitched stone yard surface which overlaid some of the earlier pits of Periods 4-6.

In the central part of the site, bounded on the S by some of the latest of the E-W ditches, lay a circular stone-built structure (A) with a slightly later (period 8), rectilinear timber structure (D), based on stone blocks, immediately to its W. N of these a circular structure (B) lay mainly beyond the excavation limits. It was larger but less substantially built than building A and may not have been roofed; a function as an animal pen is possible. The small circular building (A) may have been domestic in its first phase (period 7), when it contained a hearth. In period 8 it may have been used for agricultural purposes; the hearth was sealed by a substantial paved surface which was continuous with an external yard to the E. From period 7, if not earlier, this building complex was entered from close to its SE corner. In period 8 this entrance took the form of a substantial 6-post timber gateway (H) straddling one of the earlier E-W ditches. The gateway was associated with a fence which lay N of the southernmost E-W ditch, which still functioned as a drain.

In period 9 (Fig. 7) the central plot was subdivided by a new series of N-S boundary ditches which cut through Building D. This may indicate a change in ownership or tenancy arrangements, or some functional distinction between the plot's two halves.

From period 8 the easternmost plot was defined on its W side by a N-S boundary wall, while ditches continued in use along the its S side. A small structure (C) was constructed against the S end of the boundary wall. To the E lay a hearth and other features, at the extreme edge of the excavated area. It is likely that a further building (G), probably of timber, lay just N of the excavated area. A small extension of the latter located a stone ?threshold and probable post bases. S of these features, and of the E-W ditches, was an extensive paved area with at least two surfaces, both perhaps of period 9. This was not associated with buildings; it is unclear if it was a yard area or a more public open space.

Period 10: sub-Roman, AD 400+ A small amount of early Anglo-Saxon pottery was found at the E end of the site associated with the late Roman (period 9) boundary wall.

2.5.3.1 Finds and environmental evidence

Artefactual and environmental evidence was of variable quality. Very substantial groups of

contemporary with the earliest features to the SW, but this cannot yet be demonstrated. One gully produced a sherd of 2nd-century AD date, and may have been a field boundary. This feature lined up exactly with one of the N-S boundaries located in Site B some 300 m to the S. This may be coincidental but it is possible that both features belong to the same system of boundaries. The decrease in feature density and the general paucity of finds suggest that the excavated area was located at the margin of a settlement, or that the activity represented was non-domestic.

2.5.3 A421B Excavated area *c* 2580 sq m

The site was located on the SE side of the A421/Chesterton Lane junction, on sandy gravels and clays. The excavation broadly confirmed some elements of the site layout suggested on the basis of the evaluation work. It also revealed hitherto unexpected aspects of the Roman settlement, in particular a complex of E-W ditches and a variety of late Roman structures. As a result of the post-excavation assessment an expanded scheme of periods has been used for this site and A421C (see 2.5.4 below). Some major features are common to both sites, and an important assumption about the line of Akeman Street is also crucial to their understanding.

Period 1 Geological.

Period 2: Iron Age Redeposited flints and fragments of Beaker pottery were found in Roman layers. The earliest *in situ* deposits belonged to a middle Iron Age settlement (Fig. 3), bounded on the SE by a ditch, The settlement was not necessarily enclosed as no corresponding feature was found within the excavated area to the NW. Major components of the settlement included a V-shaped circular ditch enclosing an area *c* 10 m across, possibly the position of a circular house. Further features, principally gullies, were truncated by Roman ditches.

Period 3: c AD 50 Late Iron Age material seems to be absent on the site. A large ditch (Fig. 3), aligned roughly E-W, cut the middle Iron Age features, and established a new alignment across the site followed by all the subsequent Roman features. Dating evidence is scarce and on balance it is most likely that the ditch was cut very early in the Roman period. The most probable context for this is the construction of Akeman Street, which probably lay approximately 65 m S of the large ditch.

Evidence for Akeman Street was not found in the main excavated areas, although a combination of observations from salvage work and Harden's work in 1937 lead one to conclude that it must lie underneath Chesterton Lane. In addition it is now clear that a trackway/back lane parallel to Akeman Street existed just to the S of the large ditch and its successors (Fig. 4).

Periods 4-6: late 1st-mid 3rd century The E-W alignment imposed by the large ditch was perpetuated by a sequence of further E-W ditches (Fig. 5), which gradually migrated southwards through the 2nd and 3rd centuries. N of this alignment were scattered pits, probably mainly of 2nd-century date, and a 'ritual' pit containing a very good group of pottery, dated *c* AD 200. S of the E-W ditches the back lane probably served to provide access for plots defined to the N of the ditches (see below).

In Period 5 a series of N-S ditched boundaries were established to the N of the large E-W ditch and its successors and linked to them. Two of the N-S boundaries defined the W and E sides of a rectilinear plot (Fig. 5), 60 m wide, which lay within the trench, with further

pottery were recovered from contexts dating from the early 2nd century (period 5) onwards, with some earlier material. Ceramic building material was not particularly common but was present. Metal objects were undistinguished in quality, but were quite numerous; the copper alloy objects included a number of military pieces. Some 200 coins were found, and supplemented by a further 200 recovered from the spoil heap by metal detectors should give a useful indication of the character of the late Roman economy. The animal bones indicate a preponderance of primary butchery, particularly of cattle. Horse bones are unusually well represented. The quernstones indicate grain processing (though not necessarily of greater intensity than in a domestic context), and at the extreme W end of the site iron slag concentrations indicate smithing activity in the vicinity. The outstanding small finds are an almost complete stone mortar and a fragment of a high quality monumental inscription on Purbeck marble. This may have derived from a building within the walled town to the S.

Samples were taken for carbonized plant remains and a limited number of waterlogged deposits were also sampled. A number of samples were taken for snails, from which it should be possible to outline the evolution of hydrological conditions from the Iron Age to the Roman period.

2.5.4 A421C Excavated area *c* 2320 sq m

The site was located on the NW side of the A421/Chesterton Lane junction (Fig. 2), mainly on silty clays. The principal alignments observed in A421B were maintained here, but the orientation of the excavated area meant that interest centred on the N-S development of the site extending northwards from the line of Akeman Street. This complemented the evidence from A421B, where the emphasis was on the settlement's E-W extent.

As in A421B, Iron Age features (period 2) were located (Fig. 8). These were chiefly ditches, though a few possible postholes may also have been of this date. The degree of disturbance by Roman features made interpretation of the Iron Age phase difficult, but a possible sub-rectangular ?enclosure, of which there was evidence for the W and S sides, may have existed in the central area of the site.

There were three main parallel alignments of E-W Roman ditches. The group in the central part of the site (Fig. 8) corresponded to the principal E-W ditch complex examined in A421B, but it was not possible to record these features in A421C in the same amount of detail. However confirmation was made of both the primacy and continuation of the major, early Roman (period 3) E-W ditch, detected in A421B. There were fairly close parallels between the development of the ditches here and at A421B, and on both sites the upper fills, except for those of the southernmost ditches, were overlaid by stone spreads (Fig. 9). These were less extensive here, and it is uncertain if they supported structures or were simply yard surfaces. Deposits overlying the stones were of 4th-century date.

To the S of the central E-W ditches was an open area. This probably formed the E-W back lane (Fig. 8) parallel to Akeman Street, discussed in the summary of A421B, which gave access to the area to the N. It was *c* 25 m wide in period 4 when it was defined on its S side by the first of another complicated sequence of E-W ditches. This alignment gradually moved northwards through periods 5 and 6 and in the late Roman period was maintained by a possible drain, reducing the width of the trackway to *c* 14 m. Some of the ditches in this complex can be linked to features excavated by Harden in 1937 (Fig. 2).

In period 5 part of the line of the southerly E-W ditch complex was levelled up and a timber building (J) erected (Fig. 9), evidenced by postholes and a number of floor surfaces. This structure was initially associated with continuations of the E-W ditch sequence to the N. It lasted with modifications into period 8 (Fig. 10), when it was demolished and succeeded by another timber structure mostly lying further E. In period 9 (Fig. 11) this structure was in turn replaced by a partly stone built building (K), best (but not well) preserved and understood in the extreme SE corner of the site. Cobbled surfaces immediately to the N of the N wall of this building were probably associated with it, though the earliest of these surfaces may have been contemporary with its period 8 predecessor.

To the W of these structural elements were traces of a further possible structure (L) (Fig. 11) of late Roman date. This would have been of timber resting on poorly-defined alignments of stone and associated with spreads of rubble which may have been floor surfaces. All these features lay at the top of the sequence of infilled E-W ditches and were probably contemporary with structure K, but could have been constructed as early as period 8.

N of the central block of E-W ditches and at the E edge of the site a major N-S boundary impinged on the E-W ditch complex (Figs 9, 10, 11). This N-S boundary was of several phases and its latest phase cut the E-W ditches, but turned sharply to the E at its S end, to the N of the latest of the E-W ditches. This evidence is consistent with that from A421B suggesting that the N-S ditch formed a boundary between plots whose southern edge was formed by the central block of E-W ditches.

At the N end of the site the latest fills of the northernmost E-W ditch complex (Fig. 11) overlaid the N-S boundary. This E-W ditch seems to have been the northern limit of the settlement, and developed differently to E and W of the N-S boundary. To the W, a large probable quarry pit (Fig. 9) may not have been filled in until period 7. Therefore at this point the settlement limit ditch (Fig. 10), which cut the pit, can be no earlier than *c* mid-3rd century. Within the plot defined by this ditch and the N-S boundary were a stone-lined well and a T-shaped corndrier (Fig. 10). Both features may have been of 2nd-century date (?period 6), though they probably remained in use for a considerable period. For safety reasons the well was not completely excavated, but a good group of animal bone was recovered from its middle fills.

N of the E-W settlement limit was a small cemetery of 30 inhumations (Fig. 10), one associated with a copper alloy bracelet and three with 4th-century coins. The graves were aligned roughly E-W, parallel to and respecting the line of the ditch. Some of the graves had partial stone linings or occasional occurrences of ?coffin packing stones. The limit of the cemetery to E and W was identified; it is uncertain how much further it might have extended to the N, but it is unlikely to have been very far. A small (?family) burial plot is indicated.

The penultimate fill of the E-W settlement limit, which contained a number of early Anglo-Saxon sherds, was post-dated by several of a second group of ten inhumations (Fig.11). These lay above and to the S of the settlement boundary. They were randomly orientated and had no associated grave goods. Stone was occasionally used in the grave fills, perhaps as packing around wooden coffins. Their relationship with the early Saxon (period 10) ditch fill indicates a 5th-6th century *terminus post quem*. The absence of diagnostic grave goods and certain similarities of burial rite suggest the possibility of continuity of burial practice with the late Roman burials, and thus perhaps continuity of population, but this cannot be proved at present. A post-Roman ditch fill in the same area contained carbonized cereal remains, possibly suggesting continued use of the adjacent corndrier at this time.

The quantity of artefacts and other finds was considerably less than from A421B, although the excavated area was comparable. Allowing for the less intensive examination of feature fills at A421C, and the increased amount of disturbance from modern ploughing, it is still clear that activity on this site was less intense than in A421B. This is consistent with the location of the A421B site closer to the presumed major focus of activity around the Akeman Street/N-S road junction. Despite the smaller quantities of finds these nevertheless still included important groups of pottery from a number of features.

2.5.5 Salvage recording

Salvage recording and observations have produced additional data at a number of locations in the area of the new junction. Most of this data can be related to evidence obtained from the main A421B and A421C excavations. Most important are observations S of Chesterton lane, between A421C and A421A, where it was possible to correlate features with the work of Harden in 1937 and confirm the suggested line of Akeman Street.

3 POST-EXCAVATION ASSESSMENT

3.1 Stratigraphic/structural record

The stratigraphic assessment followed on directly from the final phases of archive work, in particular from the computerisation of the context record and preparation of the first drafts of site matrices. The initial objectives of the assessment were "to establish the place of the various settlement elements within a framework of spatial and chronological development of the site and to assess their potential to assist in the understanding of the broad picture". It was envisaged that a number of phases, perhaps about six, would be established.

At an early stage of the assessment two changes were made to the structure of the chronological framework originally envisaged. First, it soon became apparent that it was possible to identify fairly consistently more phases than previously thought. Secondly, the terminology was altered, the term 'period' was introduced for the major chronological divisions and the term 'phase' was relegated to subdivisions of periods (see below). In total, 12 periods have been established, of which seven cover the Roman occupation (for a summary see Table 2 below). These, as stated in the post-excavation assessment proposal, form a framework which can be used in subsequent post-excavation work without need for further modification of the scheme. The period framework was established by analyzing the stratigraphic sequence in site B, with significant developments in the site sequence defining the change from one period to another. It is applicable to site C also, but the smaller (and more distant) sites A and D have their own independent phasing. (This was necessary because relatively close dating of the phases within sites A and D was not possible owing to the shortage of suitable material). Artefactual dating evidence was only added to the sites B and C framework after its construction from the stratigraphic evidence. Nevertheless, the periods derived from this stratigraphically based scheme fell very roughly into 50-year blocks. The main departure from this arrangement was in the 2nd century, when earlier 2nd century periods were generally of a shorter span and the Antonine period (period 6) extended from about the middle of the 2nd century to the middle of the 3rd, a period during which activity on the site may have been at a fairly low level. Provisional combined period plans for sites B and C are presented as Figs 3-11.

In the preliminary assignment of contexts to periods, it was possible to place 72.7 % of all contexts within this cursory period structure. In further post-excavation work it will be possible to assign more contexts to periods on the basis of stratigraphic associations. Moreover, since many of the remaining unassigned contexts contained at least some finds these may suggest a likely place in the period sequence. It is anticipated that as many as 90% of all contexts may eventually be assigned to period. Table 1 shows the breakdown of contexts assigned to period in terms of the major subdivisions within sites B and C.

In Table 2 the percentage of assigned contexts (in sites B and C together) for each period are presented in period order, together with the provisional absolute dating for each period.

The assignment of contexts to the revised scheme of periods was achieved by working through the provisional matrices in conjunction with the plans and sections, and using the written records where necessary to examine relationships between contexts. This work was carried out in a number of blocks which corresponded to the areas singled out (particularly in site B) for detailed examination during the excavation. These areas are not all exactly contiguous, and some were more extensively excavated than others, so the correlation of

features and deposits between these areas was a significant part of the assessment process. Matrices, which were revised as the work progressed, have been drawn for each of these areas and linked together as far as time would allow. The blocks of stratigraphy in each matrix form manageable units for progressing the analysis of the site, but are clearly not units of analysis in their own right. They can be used as interim means of breaking down the overall post-excavation stratigraphic analysis into chunks which are assimilable within the framework of chronology/ elements of analysis discussed further below.

Context Area	*All Contexts*	*Contexts Assigned to Period*	*Percentage Assigned*	*Contexts Unassigned*
Total	*3277*	*2382*	*72.69*	*895*
Site B	*2283*	*1633*	*71.53*	*650*
1-999	*969*	*662*	*68.32*	*307*
1000-1999	*329*	*291*	*88.45*	*38*
2000-2999	*689*	*436*	*63.28*	*253*
3000-3999	*296*	*244*	*82.43*	*52*
Site C	*994*	*749*	*75.35*	*245*
4000-4999	*340*	*261*	*76.76*	*79*
5000-5999	*654*	*488*	*74.62*	*166*

Table 1: A421 sites B and C, contexts assigned to period

Period	*Contexts Assigned*	*Percentage of Assigned Contexts*
1 Geology	*73*	*3.06*
2 Prehistory	*216*	*9.07*
3 Mid-Late C1	*93*	*3.90*
4 Late C1-Early C2	*79*	*3.32*
5 Early-Mid C2	*485*	*20.36*
6 Mid C2-Mid C3	*288*	*12.09*
7 Mid C3-300/320	*318*	*13.35*
8 300/320-350/360	*463*	*19.43*
9 350/360-400	*243*	*10.20*
10 Sub-Roman	*46*	*1.93*
11 Medieval	*42*	*1.76*
12 Post-medieval	*36*	*1.51*

Table 2: A421 sites B and C contexts by period.

The principal elements of sites B and C, provisionally identified before the assessment, proved to be valid units for examination and form a basis (within the chronological framework outlined above and with some refinement) to carry forward the analysis of the site. Additional elements, such as the structures discussed below, can be seen as components within this framework. The principal development from this framework, resulting from the PX assessment, is an increased understanding of how E-W and N-S boundary elements relate to each other and combine to define plots of land with potentially varied functions. A

hypothetical (and provisional) reconstruction of the outline development of these boundaries is shown in Figure 4.

A number of structures were provisionally identified in the course of excavation and distinguished by letters. The definition of these structures was refined in the assessment process and in some cases new structure letters were assigned. A continuous letter sequence was used for both sites B and C to avoid overlaps. Twelve structures (11 'buildings' and a gate) were given letters. Features such as the corndrier in site C were not assigned a structure letter. Basic information about the structures is tabulated below.

Structure	*Site*	*Description*	*Construction*	*Date (Period)*
A	*B centre*	*Small circular*	*Stone*	*7-9*
B	*B centre north*	*Large circular*	*Stone*	*7-8*
C	*B east*	*Small rectilinear*	*?Timber on existing stone walls*	*9*
D	*B centre*	*Rectilinear*	*Timber, sill beams and postholes*	*8*
E	*B north west*	*Rectilinear*	*Stone/timber*	*?8-9*
F	*B south west*	*Rectilinear*	*Stone/timber, perhaps part of E*	*7-9*
G	*B east*	*?Rectilinear*	*?Timber, only fragments in excavated area*	*?8-9*
H	*B centre*	*Rectilinear gate*	*Timber, 6 large posts*	*8*
I	*B centre*	*?Rectilinear*	*Timber, tacked onto S side of A*	*8*
J	*C south*	*Rectilinear*	*Timber, postholes*	*5-7*
K	*C south*	*Rectilinear*	*Timber, later stone*	*8-9*
L	*C south (west)*	*Rectilinear*	*Timber, on dwarf walls*	*8-9*

Table 3: Structures identified on site and in post-excavation assessment.

The definition of structures is crucial to understanding the character of different parts of the site and refinement of understanding of the structures and their development will form an important part of further analysis. Some of the structures are better understood than others. In site B, structures E, F and G are particularly problematical. The position of building G makes it unlikely that much about it will be revealed by further work (although its precise place in the stratigraphic sequence needs to be determined), but it is crucial to resolve at least some of the problems surrounding structures E and F, not least the question of whether or not they are parts of the same building.

Pressures of time at all stages of the field work resulted in prioritisation of the excavation within sites B and C with the result that some areas were examined only cursorily or in selected periods. Another effect of these pressures was to prompt (with the encouragement of English Heritage) a number of departures from standard recording practice, most particularly in the substitution of photography for planning as the principal record of a number of complex surfaces in site B, and of many of the graves in the late Roman cemetery in site C. In both these cases the photographic and drawn records have not yet been rationalised, and it is necessary that this should be done at an early stage in the proposed post-excavation programme. In the case of the cemetery, excavated in appalling conditions at the very end of the project, many of the burials were not planned *in situ*. It will be

necessary to produce grave plans combining elements of the photographic record and the skeleton and context record sheets before the analysis of the cemetery area can proceed. In the case of the stone surfaces in site B, a provisional assessment of the records suggests that detailed matching of photographs and plans may be difficult to achieve, though an impression of the character of the surfaces concerned can be gained from the photographs. In any case 63 photographs of the site C burials and *c* 320 frames from site B will need to be printed at an appropriate size to allow comparison with the plans.

3.2 Artefact assessments (summaries)

Artefacts were divided into groups, often on the basis of traditional groupings by material type, and were then assigned (usually) to specialists for assessment purposes. In most cases it is envisaged that any further analysis proposed below will be undertaken by these same specialists. The only certain exception to this is the coins, where subsequent work will be done by P Booth. Summaries of the assessment reports are presented in this section, the reports are presented in their entirety as appendices in the separately bound Part C of this document. Assessments of potential are presented together in section 3.6 below and synthesised at the end of that section.

3.2.1 Coins

420 coins from sites B and C, including metal-detected finds from the spoil heap, were rapidly scanned. The coins are almost entirely of the later 3rd-4th centuries. Only seven are provisionally assigned to the 1st and 2nd centuries. The pattern of coin loss probably reflects in part a change of function in site B in the later Roman period, with domestic activity taking place from period 7 (*c* mid 3rd century) onwards, resulting in a large increase in the use of coinage in this part of Alchester. While 1st-2nd century coinage is always much less common than later issues it should have been better represented on the site had there been continuous domestic activity from the later 1st century onwards.

114 coins were indicated as requiring some cleaning before identification could proceed, but in general they are in good condition.

3.2.2 Copper alloy, jet/shale, bone and antler objects

All of the items in these materials were rapidly examined.

106 Copper alloy objects were recovered, which fell into two principal categories:

i) Dress accessories: of which the significant finds included eight fibulae and five bracelet fragments.

ii) Items of domestic use and other related material: where the notable objects included four spoons, one large needle, a fragment of a seal box and medical/cosmetic items.

A further important element of the assemblage is a group of seven pieces of military equipment, whose specific contexts and dating may be of considerable significance concerning any military origins/presence at Alchester.

3 items of jet/shale were recovered. They were a jet bead, a bracelet fragment and possible

gaming counter.

Of the 25 bone/antler objects there were fragments of 11 pins or needles, a gaming counter with graffito and the fragmentary handles of two clasp knives (one in the form of a stylised military scabbard).

Although a fair proportion of these items are residual and preservation is variable, the better preserved items are worthy of more complete recording and discussion.

3.2.3 Ironwork and slag

The assessment involved the scanning of 40 radiographs, which showed 792 small finds of which 317 were seen to be objects, the remainder being timber nails. A small quantity of nails were originally allocated small find numbers and radiographed but the majority were treated as bulk finds. The timber nails were not considered in the assessment.

The majority of the ironwork (265, 84%) came from site B, while a small quantity was recovered from site C (23, 7%). Although the excavated areas of sites B and C were of comparable size, it should be noted that excavation was more intensive on Site B. In addition a small number of iron objects were recovered from the spoil heaps of each excavation by metal detector (site B 20, 6% and site C 9, 3%)

Period	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*u/c*	*Total*
Site B	*2*	*0*	*1*	*1*	*9*	*20*	*57*	*37*	*11*	*70*	*3*	*54*	*265*
Site C	*0*	*0*	*0*	*1*	*1*	*5*	*3*	*3*	*0*	*0*	*0*	*10*	*23*

Table 4: Quantity of iron objects found in each period. u/c = unassigned contexts.

The majority of the ironwork from Site B was recovered from later 3rd-(period 7, 8%) and 4th-century contexts (periods 8, 22% and 9, 14%). Over a quarter of the entire assemblage (26%) came from contexts assigned to the medieval period (period 11) but largely consisted of material redeposited from Roman contexts (cleaning layer 8 and its constituent/analogous deposits).

The assemblage consisted of objects which reflected domestic and agricultural activities and craft tools, while the incidence of several pieces of horse gear was also noteworthy.

About 19 kg of slag came from site B, with a further 0.5 kg from site C. The slag included hearth bottoms (with diameters of 50-120 mm), small amorphous pieces of smithing slag, fuel ash slag and fragments of vitrified clay hearth lining, one (from site B, 1142) with part of a tuyere hole surviving.

The slag indicates that a blacksmith worked in this Roman settlement, although its relatively small quantity suggests that the focus of this activity was outside the excavated area. However its distribution, concentrated at the W end of site B, suggests a likely location for the smithy - in the unexcavated area adjacent to the concentration.

3.2.4 Glass

Site B: 142 fragments of Roman vessel glass were recovered, of which 42 fragments come from bottles of the 1st and 2nd centuries AD. There are 22 fragments worthy of discussion

and illustration. They represent forms ranging in date from the late 1st-early 2nd century AD to the end of the Roman period, and include items of tableware and a variety of containers. There is one facet-cut fragment which could be classed as a 'luxury' item, and a substantial bath-flask neck and upper body. In addition there are five fragments of window glass, dating to *c* AD 300, and a further five fragments of late Roman blown window glass. Thirteen beads are of common Roman types.

Site C. Nine vessel fragments and one window glass fragment came from this site. Most of the vessel fragments are from bottles, and there is one jug or flask rim.

3.2.5 Flint

54 pieces of worked flint were recovered, representing Neolithic and Bronze Age activity. The material was quickly scanned, diagnostic artefact types noted and raw material types recorded.

All of the flint was redeposited being found in features assigned to later periods. Significant finds included a leaf-shaped arrowhead, two blade-like flakes, a barbed and tanged arrowhead and another unfinished example from site B. Few small flakes and chips were recovered, perhaps indicating sampling biases.

3.2.6 Stone

All of the 32 items of stonework were briefly examined. Stone type and possible sources were noted and, where possible, the type of object identified. The assemblage included 13 quern and ten whetstone fragments and miscellaneous pieces. Two other significant finds were a fragment of a Purbeck marble inscription, and a stone mortar.

This is a relatively small collection of worked stone, but it shows a wider area of trading contacts than might be expected for a Roman extramural settlement. The preservation level of this worked stone is good.

3.2.7 Bronze Age pottery

The material consists of the base of a plough-damaged cremation urn from site A, and 42 Beaker sherds from Roman contexts in site B. The Beaker material consists of both fine sherds, with impressed comb and incised decoration, and coarse plain sherds. It is consistent with Beaker domestic assemblages of the early Bronze Age. The cremation urn, though very fragmentary, is likely to belong to the Deverel-Rimbury tradition of the middle Bronze Age.

The collection is of limited value for the stratigraphic understanding of the site, though the cremation urn is significant in being from the only identifiable feature predating the Iron Age from any of the sites. However, the beaker sherds, although redeposited, represent in regional terms an important collection of 'domestic' material from N Oxfordshire. In the context of such assemblages, which are relatively scarce, the present collection represents a fairly large group of material.

3.2.8 Iron Age, Roman and Anglo-Saxon pottery

140 boxes of pottery were recovered from the excavations, of which *c* 20 contained poorly stratified material. Approximately 46,475 sherds, 629.2 kg, come from stratified contexts. The

pottery comes from two excavated areas, sites B and C, with some 5,454 sherds (71.9 kg) from site C and the remainder from site B. Sherds are distributed fairly evenly across the two sites, though the overall density of material is considerably lighter on the less deeply stratified site C.

The data was collected from a rapid scan and summary quantification of all the stratified material and a brief scan of the unstratified collection. Appendix 2 contains tables showing basic fabric quantification from the site. Sherds were assigned to a number of major ware groups defined in the OAU's pottery recording system. In a few cases recording was at the level of distinct individual fabrics. Quantification was by sherd count by fabric/ware group per context. The total weight of pottery in each context was also recorded.

There are *c* 700 Iron Age sherds, most of which come from Site B.

There are very few 1st-century features, but activity expands considerably in the 2nd century. Examination of the numbers of contexts by ceramic date (Fig. 12), and the frequency of Oxfordshire mortarium forms (Fig. 13), suggest that the bulk of activity on the site was in the later 3rd century. Table 4 lists the number of sherds by the provisional periodisation. This does not show a peak of activity in the later 3rd century but rather a peak in the early-mid 4th century. However, since the dating in this latter case is based largely on stratigraphic rather than ceramic criteria the pottery assigned to the later periods in particular will contain some residual material.

Period	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*unassigned*
% sherds	*0.9*	*0.5*	*2.9*	*5.6*	*12.8*	*7.1*	*23.8*	*12.4*	*1.7*	*4.0*	*0.7*	*27.4*

Table 4: Percentages of sherds occurring by period in the provisional periodisation.

The groups do not seem to contain considerable quantities of residual material, although assessment of this is difficult given that there is no precise dating scheme for the abundant reduced wares.

The largest single element of the assemblage comprises grey wares, principally of Oxfordshire origin, together with substantial components of Oxfordshire colour-coated and oxidised wares, shell-tempered and grog-tempered wares. Samian ware is not particularly frequent, especially for an urban site, and is subject to a separate assessment report. The condition of the material is variable, many sherds have eroded surfaces and consistent recording of surface decoration will not be very productive. However, a number of the earlier groups contain at least semi-votive material with substantially complete vessels and a number of miniature vessels.

Small groups of early Saxon pottery came from localised areas of both sites B and C, which together produced *c* 60 sherds of this material.

3.2.9 Samian ware

Site B produced 971 sherds from 246 contexts and site C 146 sherds from 40 contexts. The total of 1117 sherds includes 29 potters' stamps and two signatures. All the material was examined in the assessment, and it is summarised in Table 5.

Source	Sherds site B	Sherds site C	Total
South Gaulish	58	8	66
Central Gaulish:			
Les Martres-de-Veyre	58	43	101
Lezoux	750	90	840
East Gaulish	105	5	110

Table 5: Quantity of samian ware by source and site

While the samian provides closer dating than the coarse wares for some of the stratified contexts, the real value of this assemblage lies in the light it casts on the level of prosperity and the settlement pattern of the extramural part of the town, in comparison with the walled area. The samian ranges from the pre-Flavian period (one vessel only) to the first half of the 3rd century, but the proportion of pre-Antonine, particularly of Hadrianic, material is not great and the bulk of the assemblage is later than AD 160. This contrasts sharply with the published material from the excavations of 1926, in which pre-Antonine vessel forms and decorated ware were dominant (Hawkes 1927, 166-173).

The range of plain forms seems restricted, with a marked preference for a relatively small number of vessel types. Although the number of decorated fragments seems no lower than average for a British site, it was clear on examination that they represent a comparatively small number of vessels and a lower proportion than average for a civilian site in the southern part of the province. The number of potters represented by decorated ware is also restricted and the latest (East Gaulish) samian from the site includes no decorated ware at all. Heavily worn footrings and the mending of vessels give further hints of a relatively impoverished community.

The decorated samian includes a few intrinsically interesting pieces, two of which have signatures of potters about whom comparatively little has been published. On both bowls the scheme of decoration is virtually complete.

The samian forms a valuable part of one of the largest collections of finds from a small town in Britain and it is important that the detailed analysis of it should be integrated with the general pottery report.

3.2.10 Tile

26 boxes of tile were recovered from the excavations, 21 from site B and 5 from site C. Eleven boxes (81,243 g, 1,947 individual fragments) were examined in some detail for the assessment. These included 9 boxes from site B, from both cleaning layers and excavated features, and a further two boxes from site C which included near complete examples of imbrices recovered from the lining of a grave (5587). This sample was considered to cover a representative range of all the tile in the assemblage, as well as providing data which would be of use in any subsequent analysis. Where possible the form and fabric of the tile fragments were identified although the sample did include many badly abraded fragments which were not examined in detail at this stage.

Five distinct tile types and twenty fabric types were identified amongst the Roman material, although it is envisaged that the fabric types could be refined to take into account variations

in firing technique. Post-Roman tile and brick was also noted but not recorded in detail.

Only those fragments with a measurable thickness were examined in detail. This gave a sample large enough to establish the likely range of fabrics and types across the sites. The remaining abraded fragments were assigned to a 'miscellaneous' category and only their total weight recorded. Post-Roman fragments (most if not all of post-medieval date) were also recorded by weight.

The following discussion relates solely to the Roman material; figures for post-Roman brick/tile are excluded from the tables and calculations.

Five tile types were identified: tegulae (A), imbrices (B), tubuli or box-flue tiles (C), flat tiles (D) which consisted of fragments that show none of the characteristics of the above classes and may include fragments from other groups that cannot at present be distinguished, and large bricks (E).

Table 6 summarises the results of the assessment, breaking down the tiles into the five types.

Each fragment with a measurable thickness was examined macroscopically with a x20 achromatic hand lens and assigned to one of twenty separate fabric categories. These were rationalized into eight groups on the basis of common major characteristics.

Just over 30% of the sample by weight came from the miscellaneous category. The second largest group is category (D) the plain flat tiles. As has been mentioned above this group could include many fragments from other categories which are not immediately recognizable. Further analysis of the thicknesses of these individual fragments compared with more complete examples may help to assign them to a specific category.

14.4% of the sample consists of tubuli or box-flue tiles (C). Plotting out the distribution of the tile types may give a clearer indication of the structures from which these tiles originated. The roof tiles (A and B) are not as well represented as expected. Analysis of the fragments of imbrices from site C illustrates that they are very straight sided with a sudden and angled curve at the ridge. If this is a general pattern there may be many imbrex fragments amongst the category D fragments which would only be distinguished as imbrices by a closer examination of the individual tile thicknesses and by comparison with these more complete examples. This may help to even out the current under-representation of roofing material.

Type	*A*	*B*	*C*	*D*	*E*	*Misc*	*Total*
Weight in grams	*4535*	*1155+ 16800*	*9270*	*19881*	*5070*	*24532*	*81243*
No. of fragments	*28*	*22+12*	*115*	*262*	*22*	*1486*	*1947*
Percentage of the total weight	*5.6%*	*22.1%*	*11.4%*	*24.5%*	*6.2%*	*30.2%*	*100%*
Percentage of the total weight excluding the near complete examples from A421 C.	*7.0%*	*1.8%*	*14.4%*	*30.9%*	*7.9%*	*38.1%*	*100%*

Table 6: Roman tile types, a summary of results.

3.2.11 Human bone

The assemblage consisted of one prehistoric cremation from site A, three Roman cremations from site B and two cremations and 41 inhumations of both Roman and post-Roman date from site C.

The assessment was based on the rapid scanning and sample examination of the material. All of the cremation deposits, with the exception of one, are lightweight and contain little identifiable bone. The 41 inhumations are in fair condition and it has been possible at this preliminary stage to extract a considerable amount of information.

Within this number there are two separate and well-defined groups: 30 burials from period 8 represent a discrete and well-defined group of late Roman burials; a further eleven from period 10, are clearly post-Roman in date. The Roman cemetery comprises nine females, seven males, three unsexed adults and eleven sub-adults. Within the post-Roman group there are two females, four males, two unsexed adults and three sub-adults. Adults in neither group appear to have lived to a particularly old age.

3.3 Ecofact/environmental evidence

3.3.1 Animal bone

In the assessment securely phased bones were examined from periods 2 to 10. No record was made of bones from features still unphased (period 0), but these form a substantial proportion of the total.

The aim was look at over 10% of the bones from the later periods which had more bone, and at least 25% from the earlier periods from which less bone survives. In the event, nearly 20% of the dated bones from the later periods was looked at and a larger but varying proportion from the earlier periods. No bones from the ploughsoil were scanned.

The existence of residual material in some contexts can be demonstrated from the evidence of certain classes of finds, but the pottery suggests that this is not an overwhelming problem. The proportion of bone likely to be grossly residual is not likely to be sufficient to cause significant distortion of the data.

For the middle Iron Age (period 2) the estimated number of identified bones is *c* 190, from an estimated total of *c* 520. Cattle, sheep, horse, pig and canid are present. The first three species are frequent in some contexts.

For the Roman period the numbers of bones are few up to the mid 2nd century (Periods 3-5), with estimated totals of identified bones fewer than 100 from any period. Periods 6-9 (from the mid 2nd until the end of the 4th century) have larger samples, with *c* 1000 or more bones in each period, and an estimated number from *c* 400-600 in each period identified. It is likely that many of the *c* 1000 bones from the as yet unphased features (period 0) will in due course be assigned to period. Cattle, sheep and pig bones form the majority of the assemblage, while horse and canid were also noted. Domestic fowl bones are very scanty, and very few bones of wild birds were seen. No fish bones were recovered. Amphibian bones were recovered in the sieved samples from the well. At least in site C a substantial quantity of cattle and sheep teeth and jaws were present, and a quantity of cattle foot bones which may be

disproportionately high compared to the other parts of the skeleton. Pathological changes were seen on many of the cattle phalanges.

The later 3rd-century well in site C contained more than one horse skeleton or part skeleton, one or more canid skeletons and a few other bones.

The assemblage from the sub-Roman period (Period 10)is only *c* 160 identified bones, all of which came from Site C. None of the 144 bags from the medieval ploughsoil were examined. By extrapolation from earlier periods, the number of bones is likely to be *c* 630.

The bone from all periods and all context types was in good condition, and much was relatively unfragmented. The percentage of identifiable bones is high, at least 38% overall..

3.3.2 Environmental data

87 flots from 48 numbered samples for charred plant remains, 26 charcoal samples, 4 molluscan samples, 3 waterlogged samples and some waterlogged wood were assessed at the University Museum, Oxford.

Only five samples from A421B contained significant quantities of charred plant remains, all of which are from mid 2nd- to mid 3rd-century features. The assemblages are dominated by spelt wheat glumes and six-row hulled barley grains. Weed seeds are rare.

Significant quantities of charred plant remains from Area C are restricted to the early 4th-century AD corndrier and a post-Roman ditch. The corn drier assemblages contain up to about 500 items of grain, chaff and weed seeds. The post-Roman assemblage has a very Roman character, with numerous spelt glumes, spelt-type wheat grains and grains of six-row hulled barley.

The charcoal samples and wood were examined using low-power microscopy. The majority of the charcoal is oak, but there is a little alder/hazel, ash and "hedgerow" type (hawthorn/sloe type). The charcoal from the cremation is ash. The larger pieces of waterlogged wood are oak but there are also bags of assorted twigs.

Sub-samples of about 200 g were taken from the molluscan and waterlogged samples. A sample from the bottom of a middle Iron Age ditch, contains a few stagnant water snails, although other samples suggested that well oxygenated conditions existed in the ditches and it is possible that the ditches were connected to the local stream system. The molluscs from the old ground surface largely comprise a fauna of wet open ground, but a drier ground element is also present. Fully aquatic species are absent from the old ground surface, suggesting that the site was not experiencing flooding.

An early Roman ditch also contained a flowing water molluscan fauna. Shells were absent from sealed Roman soils on the site but were present in the upper fill, probably alluvial in origin, of a late 4th-century Roman ditch. However, this deposit could have post-dated the Roman and indeed any early Saxon occupation of the site.

A sample from the bottom of the major early Roman ditch, contains abundant well-preserved leaves, buds and capsules of *Salix* sp. (willow), suggesting the ditch had been lined with trees or bushes.

3.4 Conservation

Metal artefacts were X-rayed where appropriate prior to selection for investigative conservation (*c* 30% of the copper alloy; 100% of non-nail ferrous objects - recognisable nails were not X-rayed). Selection of ironwork for conservation was based on X-radiographic screening in conjunction with visual screening. Other materials were screened visually.

In general, the metalwork is in good condition. Copper alloy and lead alloy artifacts are superficially corroded though the surface detail of many items is obscured by soil. Most items appear to be stable. Ironwork is lightly corroded. The potential for long-term storage and survival is reasonable providing that metalwork is desiccated. Worked bone/antler and glass items are stable. The one shale fragment is fissured and has fractured, and requires consolidation if it is to survive. The four small, fragmentary leather items have dried out but are stable. The waterlogged wood objects (or samples) are unlikely to survive in the long-term (if required) unless treated.

There are no immediate conservation requirements. Medium-term needs relate to the publication programme. These would consist of investigative examination to assist identification, description and illustration - to enhance finds catalogues and contribute to the archaeological interpretation of the excavation. There may be long-term requirements for additional cleaning and stabilisation for museum purposes.

Material	Total	Selected for conservation	Time in days to treat
Iron (excluding nails)	336	49	18
Coins	421	114	10
Other Copper Alloy	106	40	5
Lead (alloy)	38	0	0
Glass	188	0	0
Glass frit (analysis only)	2	0	0
Jet/shale	3	1	0.5
Worked bone/antler	21	0	0
Leather	4	0	0
Waterlogged wood	2	0	0

Table 16: Quantities of objects examined for conservation requirements

4 STATEMENT OF POTENTIAL

4.1 General

The excavations have produced a body of data which sheds light on several aspects of the pre-Roman settlement in the area around Alchester and, in particular, illuminates the development and decline of the extramural part of the Roman town. This development can be compared with the sequence known from within the defences and with other types of evidence (particularly aerial photographs) to provide a framework for the growth of the town and its direct and indirect impact on different levels of its hinterland. This framework can be seen against a pattern of agricultural settlement already well studied in the area SW of Alchester (the Upper Thames Valley) which has tended to be regarded in isolation from the higher elements in the regional Romano-British settlement hierarchy. The A421 sites, together with the more recently excavated (developer funded) site of Asthall, will make a significant contribution to redressing this imbalance in our understanding of the regional settlement pattern, particularly through close integration of artefactual and ecofactual evidence with the high quality stratigraphic sequence.

The main sites have long and complex stratigraphic sequences which permit the Roman occupation to be divided into closely dated periods, with slightly less well-defined Iron Age and early Anglo-Saxon periods. These can form the basis of a detailed site narrative, but, perhaps more importantly, provide a well-dated framework against which to view the wide range of artefactual and other data. The artefacts not only provide absolute dating for the stratigraphically determined periods, but together with the ecofacts provide crucial evidence relating to:

i) the foundation of the Roman town: the dating of the latest pre-Roman and earliest Roman periods; continuity or change in material culture and the character of activity between these periods; the extent of Roman military involvement in the foundation of Alchester; the importance of environmental considerations in determining the nature of early Roman settlement (eg as exemplified by changes in hydrological conditions).

ii) the functional development of the site: through spatial and chronological variations in different types of agricultural, craft or commercial activity.

iii) the character of local agriculture (analysis of animal bones and crop remains).

iv) the trading/economic links of the town (as seen through the pottery and a wide range of other traded items)

v) the indications to be derived from the above points with regard to the social and economic status of the settlement.

vi) Changes in the late Roman and post Roman periods can be approached *inter alia* through an examination of the evidence for 4th-century and later burials.

An integrated approach towards the study of the four sites in the project, will allow the study of landscape elements to be undertaken. This is consistent with the stress on landscape approaches to archaeology (where appropriate) advocated in *Exploring Our Past* (English Heritage 1991b, 38), and in this instance the question of the relationship of towns to their

hinterlands, albeit on a fairly small scale, is particularly relevant and is seen as an important part of the project. As a result the spatial and chronological relationships between all the excavated sites will have to be carefully considered. It can be confidently claimed that the value of the whole project is very much greater than the sum of its parts, consequently the sequences of features from the minor sites (A and D), with their much more limited dating evidence, are vital additions to the overall picture suggested only in part by the larger sites (B and C).

The importance of the A421 sites for understanding the Romano-British regional settlement hierarchy has already been mentioned. In addition the site can contribute to our knowledge of developments in two crucial periods of change also identified in *Exploring Our Past* (English Heritage 1991b, 36) as of particular importance. These are the late Iron Age/early Roman and late Roman/early medieval transitions, evidence (both positive and negative) for both of which can be seen on the A421 sites. Provisionally, the evidence suggests some discontinuity in the former and a degree of continuity in the latter, but both need to be examined in more detail.

4.2 Stratigraphic/structural potential

A very high percentage of all contexts have already been assigned to periods and with further work this percentage can be substantially increased (an estimated 90%+). Many of the assigned contexts belong to very long stratigraphic sequences, which provide the opportunity for studying the sequence of many of the artefact types and their evolution through time.

The extensive stratigraphic links mean that most contexts can be tied in to coherent units for analysis, which were identified before the post-excavation assessment and largely confirmed by the assessment. These units can now be defined as follows:

1) The Iron Age features (sites B and C)

2) Akeman Street (salvage recording, negative evidence from sites B and C)

3) The major early Roman E-W ditch (sites B and C)

4) Property units fronting on to Akeman Street, defined by E-W boundaries along the S side of the back lane, and related N-S boundaries to the S of this (Site C, evaluation trenches 2, 3, 4, 8 and 9, also some of Harden's [1937] trenches)

5) The Roman structures and surfaces in the plots defined by 4) above (site C, evaluation trench 4)

6) The E-W back lane (sites B and C, evaluation trenches 1, 3 and 4, see also 7) below)

7) The substantial paved area at the E end of the E-W back lane and its relationship to the late Roman building complexes (site B, evaluation trench 9)

8) The principal E-W boundary complex and related N-S boundary elements, forming property units to the N of the back lane (sites B and C).

9) A group of 2nd-century pits within 8) above (site B)

10) The cremations and ?associated ritual pit within 8) above (site B)

11) The late Roman building complexes within 8), with their associated yards and boundaries (site B, evaluation trench 6)

12) The well and corndrier within 8) above (site C)

13) The northern settlement limit (site C)

14) The late Roman cemetery associated with 13) above (site C)

15) The post-Roman burials and other activity (sites B and C)

The description and discussion of the excavations in terms of these headings (within the chronological framework already discussed) will be the most efficient and effective way to present the site evidence and will provide points of reference to which various aspects of artefactual and ecofactual analysis can be linked. This approach should also provide a means of directing the site data towards answering the questions posed in the original research design. It is emphasised, however, that many of the units listed above can best be seen effectively in terms of their evolution through time. The division of the excavated sites into these units is complementary to the establishment of a well-defined chronological framework and not a substitute for it.

4.3 Artefacts

4.3.1 Coins

The coins are of crucial importance in three areas: firstly, in establishing the chronology of the site, particularly in the late Roman period; secondly, in helping to characterise the economy of the late Roman settlement; thirdly in adding to our general picture of the pattern of coin loss on Romano-British sites. Some 200 coins recovered in the excavation are relevant to the first of these objectives, and the entire assemblage, including the unstratified metal-detected pieces, can be used in the context of the second and third aims. The coins are generally in reasonable condition so a high proportion should be identifiable with some precision.

4.3.2 Copper alloy, jet/shale, bone and antler

These items are mainly domestic in function. The range of object types and their distribution should help to define areas of domestic activity (and/or deposition of domestic rubbish) and to characterise the socio-economic status of the inhabitants of the northern part of Alchester. Some pieces will provide independent dating for the contexts in which they occur. The identification of a number of pieces of military metalwork is very important for the discussion of the origins of the Roman town. Their spatial and chronological distribution will need to be examined carefully.

4.3.3 Iron and slag

The iron can help define the character of the occupation as objects reflecting domestic and agricultural activities and craft tools have been noted. Spatial analysis of the iron may suggest possible uses for individual structures and/or identify functional zones. The study of the tools found may suggest the nature of the craft(s) being undertaken in the vicinity and possibly the types of objects being manufactured and/or repaired. No quantities of scrap metal collected for recycling were apparent, however, despite the location of a concentration of slag suggesting the presence of a blacksmith. The occurrence of the hipposandal, possible horseshoe and harness fragments are probably a reflection of the proximity of the road network. The possible horseshoe fragments will be of wider interest to Romano-British metalwork studies if they are found to come from securely dated Roman deposits.

While the iron slag is of limited intrinsic interest its distribution is of some significance in helping to define areas of specific craft activities. Concentrations of iron slag noted at the extreme W end of site B during excavation imply the presence of a blacksmith in an adjacent area. Further work on the slag can be confined to a brief examination of its distribution, to be compared with that of relevant ironwork.

4.3.4 Glass

The glass has potential for assisting in the understanding of several different aspects of the site. The functional range of vessels can be compared and contrasted with other artefact types, particularly pottery, and their spatial distribution can be used to define particular areas of domestic activity. This comparison can also be treated chronologically. The distribution of window glass in relation to known structures should be examined and can be used as an index of the degree of Romanisation of these structures. The glass is also another potential indicator of socio-economic status, and the quantity and range of material can be compared with that from other sites in the region.

4.3.5 Flint

In terms of the site, the worked flint is of limited importance since it is all redeposited in later contexts. The material seems to reflect intermittent activity spanning the Neolithic and Bronze Age, and warrants only brief recording, though the correlation of flint data with that for the Bronze Age pottery needs to be considered.

4.3.6 Stone

The preservation level of this worked stone is good, and the material includes a number of pieces of intrinsic interest. Unusually there are two complete whetstones, together with a nearly complete mortar which is particularly rare. The objects contribute to the picture of domestic activity on the site by providing evidence *inter alia* for food processing. The distribution of the stone artefacts can be examined in relation to potentially domestic structures and the distribution of other associated domestic items. The sources of many of the stones can be located; they can thus contribute to the general picture of trading contacts of the Roman town. The quality and range of object types and stone sources can be compared with other sites in the region to indicate possible functional or economic status distinctions between settlements.

4.3.7 Bronze Age pottery

The collection is of limited value for the stratigraphic understanding of the site, though the cremation urn is significant in being from the only identifiable feature predating the Iron Age from any of the sites. However, the beaker sherds, although redeposited, represent in regional terms an important collection of 'domestic' material from N Oxfordshire. In the context of such assemblages, which are relatively scarce, the present collection represents a fairly large group of material. A brief description and discussion of both the urn and the beaker sherds is suggested

4.3.8 Iron Age, Roman and Anglo-Saxon pottery

i) Review of the April 1991 project design (A421 Wendlebury-Bicester dualling: assessment report and proposal for further excavation) and the post-excavation assessment proposal produces a number of questions upon which the ceramics might provide valuable evidence. In particular the latter document specifies:

a) "The relationship of Roman to pre-Roman settlement on the site.... was a pre-existing Iron Age component more important than has been realised, or is the association of Iron Age and Roman settlement purely fortuitous?"

b) "The position of the site in the context of the town as a whole. Does it appear to be marginally located? How does the character and chronology of activity here compare with that further south?"

c) "The economy and environment of the site. The finds should provide useful evidence of the economic basis of the community. What were the trade connections of the town, as exemplified by (amongst other classes of material) the pottery? If the settlement extends back into the 1st century, as seems likely, the developing ceramic assemblage could be very important for shedding light on the early development of the Oxfordshire potteries, much the least well-understood aspect of this industry."

ii) The ceramic evidence provides strong indications of a lack of continuity between the Iron Age occupation and subsequent Roman activity on this particular site. This is contrary to the conclusions reached by Harden (1937) in an adjacent area to the present excavations, and a brief re-assessment of this material should be made.

iii) The ceramics can also contribute evidence as to the character of activity on the site and will provide the bulk of the evidence as to the chronology of activity in comparison with the walled town. A full comparison of the nature of activity on this site relative to that within the walled area cannot be carried out until a good sequence of quantitative data is recovered from within the enceinte.

iv) The ceramics will provide the bulk of the evidence for the town's trade connections and changes in the pattern of these through time.

v) The pottery assemblage is from a large enough area and is sufficiently sizeable to allow it to be examined for contemporary variations in functional composition as well as for functional change in time. Coarse ware and fine ware data may be compared with the distribution of glassware.

vi) The assemblage from this site is definitely of regional importance. The data from this site should help to develop a clearer understanding of the Oxfordshire industry and will refine the dating of at least the commoner coarse ware types. This will be of great value for the rural assemblages of the region which depend on such types for their dating. Apart from the significance of this assemblage as the first from the regional urban centre for northern Oxfordshire from which significant quantitative data may be derived, it is also important for its production of quantitative data which may potentially be compared with those from the neighbouring centres of Dorchester, Towcester, Magiovinium and Cirencester and St Albans as these become available, as well as with other sites of varying status within the local settlement hierarchy.

vii) The small Iron Age group is of importance as little is known of middle Iron Age pottery from this part of Oxfordshire, in contrast to the Thames Valley region.

viii) The early Saxon material, though only a small quantity, nevertheless represents the first evidence of activity of this period to be identified from any part of Alchester. As such it is an important group of some significance for understanding the development of the regional settlement pattern in the post-Roman period. As with the Iron Age pottery, there is relatively little comparative material from the area.

ix) There is reasonable potential for using the pottery data in comparison with other elements of the finds assemblage composition in order to attempt to elucidate other aspects of the archaeology of the settlement. In particular, attention will be paid to spatial variations in the functional composition of the assemblage relative to the functional distribution of other finds classes. Data on average sherd size will be examined relative to context type for information on taphonomy and will be compared with data on animal bone distribution and attrition and the occurrence of other bulk finds types. Chronological trends in the relationship between quantities of pottery and other common finds classes (eg glassware, bone, tile and nails) will also be examined for long term trends (*cf.* Evans forthcoming)

4.3.8.1 Samian ware

The samian forms a valuable part of one of the largest collections of finds from a Romano-British small town and it is important that the detailed analysis of it should be integrated with the general pottery report. The samian will be important in providing closer dating than the coarse wares for some of the stratified contexts from the later 1st-early 3rd centuries. The presence/absence of dated types can be used to trace fluctuations in activity on the site.

The decorated samian includes a few intrinsically interesting pieces, including two virtually complete decorative schemes with signatures of potters about whom comparatively little has been published. These pieces, therefore, have a wider application to samian studies as a whole.

The real value of the samian, however, lies in the light it casts on the level of prosperity and the settlement pattern of the peripheral area of the town, in comparison with the more central area. The samian may be used to illustrate potential differences in marketing patterns and site status between the different parts of the town, and their possible implications, in a way that would be impractical using for example the evidence of the coarse pottery. (Some of the ways in which the present material appears to contrast with that from the earlier excavations are summarised briefly above in section 3.2.9).

4.3.9 Tile

The tile assemblage from this site is somewhat unusual in its low representation of roofing material in proportion to other types. The reasons for this need to be examined, though until the miscellaneous fragments are examined in more detail it will not be possible to determine the absolute proportion of the roofing materials. The tile can inform discussion on the character of structures on the site, in particular by examination of the distribution of particular tile types in relation to structures. This can be used to determine which, if any, buildings had tiled roofs and if there are any significant concentrations of box flue and thick floor tiles which might indicate the presence of heated rooms.

The chronological distribution of the tile can also be considered. It is likely to concentrate in the later Roman period, but this needs to be demonstrated. The correlation of tile types and fabrics with the stratigraphic sequence will be important for demonstrating changes in the use of tile on the site through time (eg is it possible that in some periods much of the tile was brought to the site for secondary use?). It should also be possible to use the stratigraphy to determine the date range of individual tile fabrics, which will be of significance in assessing trade related aspects. This can be linked to the identification (where possible) of possible sources of supply for individual fabrics. Provisional identifications include fabric group F1, identical to an important pottery fabric with a likely source in S Northamptonshire/N Buckinghamshire, and shelly tiles (fabric group F8) are also likely to have come from Northamptonshire. Comparison of evidence from the tiles with that for the pottery may shed significant light on supply networks of basic bulk products to the Roman town.

4.3.10 Human bone

With one exception the cremation deposits are lightweight and comprise little in the way of identifiable bone. While the Bronze Age cremation is of some importance the remainder are likely to add little to our understanding of the sites from which they derive, because of the degree of preservation. They therefore only merit a minimum of recording.

The inhumations are of some importance as the first representatives of the Romano-British and later population of Alchester to have been excavated in recent times (burials are recorded as having been found outside the SE corner of the town in the mid 19th century). In addition, both Roman and post-Roman groups of burials are discrete and complete or almost complete, probably comprising a family group or groups, and their relationship to the evolving northern settlement boundary ditch can be clearly demonstrated. The inhumations therefore form a cemetery group of considerable integrity which is tolerably well dated. The close spatial relationship between the Roman and post-Roman groups suggests that there is a link between them. It is hoped that it may be possible to suggest continuity or discontinuity of population between the two groups by a detailed analysis of skeletal characteristics and of the general character of each group, though it is recognised that the sample, particularly of the post-Roman group, is small.

The analysis of the human remains will for the first time allow the characterisation of part of the Romano-British population of Alchester. This can be compared with other 'urban' populations such as those from Dorchester-on-Thames and with groups from rural sites such as Yarnton.

4.4 Ecofactual material

4.4.1 Animal bone

The animal bone assemblage is not particularly large, but it is of sufficient size to produce useful results. The only published collection of bone from Alchester is very small, so the present group will provide the first significant quantified assemblage from the Roman town.

The principal importance of the bone is in its contribution to the characterisation of the economic base of the settlement. Is the activity in the excavated sites primarily agricultural and, if so, what was the nature of the agriculture practised? The extent to which the bones represent the remains of domestic consumption of food, and the character of the diet, can be examined. This aspect can be compared with the possible evidence for more organised industrial or centralised processes (including primary butchery), which can be approached for example by examination of the nature of fragmentation of the bone and less directly by analysis of the age structure of animal populations (particularly cattle). The bones from period 10 features may help to demonstrate potential changes in the character of the economy at the end of the Roman period.

The bones are potentially of importance for aspects of burial rite. Bones from the graves can be compared with the generality of the assemblage to establish if they are grave goods or incidentally incorporated in the grave fills.

Apart from establishing the character of the animal population, specific bone-related questions to be addressed will include the role of the horse in the settlement. The unusually high representation of this species suggested here was also noted in the (unquantified) group from the adjacent excavation at the Faccenda Chicken Farm (Foreman and Rahtz 1985, 38).

4.4.2 Environmental material

The assemblage of charred plant remains are unexceptional for a Roman site. However, the presence of rich assemblages in the Period 6 deposits of Area B is useful in demonstrating the different nature of activity on the site during this period. The apparent evidence of spelt wheat cultivation in the 5th century AD is of more general significance in the understanding of continuity and change in the post-Roman period.

The molluscs proved useful in establishing whether there was flowing water in the ditches and that there was no certain evidence for flooding of the site until after the Roman period, but are unlikely to give much additional information about the site.

The waterlogged remains are unfortunately mostly from plants which grew in the contexts and although useful, the results do not give much information on the terrestrial environment. The site did not produce the exotic waterlogged plant remains that have been identified from other sites at Alchester.

Full-scale analysis of all the material from the site cannot be justified. It is recommended that Sample 70 is fully analyzed and that work on the assessment samples is completed.

4.5 Synthesis of artefact/ecofact potential

As well as being crucial for dating the artefact classes provide significant evidence for

functional areas, the economic base, trade and socio-economic status. In order for the information from these classes to be maximised they need to be closely integrated and areas of common relevance identified. The comparison of Bronze Age pottery and flint is an obvious requirement. For the Iron Age, in contrast, the pottery is the only significant artefact type present, though the stratification of a small number of iron and stone objects will need to be examined. The animal bones do, however, provide an opportunity to characterise part of the agricultural economy.

Within the Roman period the significance of a well-dated sequence has already been emphasised. The coins and pottery are crucial for establishing this, but copper alloy objects and glass can also contribute.

A range of artefact types is relevant to the understanding of the structures on the site. Evidence from the tile will be compared with that for stone building materials. Iron structural fittings and items such as keys and latch lifters and window glass are also of some significance in this context.

The combined evidence of pottery, glass, bone, copper alloy and iron objects can be used to define and characterise distinct areas of activity on the site. Craft tools and industrial debris may indicate some of the non-agriculturally related activities represented

It has nevertheless been assumed that the economic basis of the main sites was largely agricultural. The evidence of animal bones can be compared with carbonized plant remains and other environmental material to examine this proposition, and agricultural iron tools are also present. Domestic consumption of agricultural produce is indicated *inter alia* by quern stones. The animal bone, oyster shell and carbonized plant remain evidence is also of relevance to diet.

Many of the artefact types have a further function in adding to the understanding of the trade networks to which the town was linked, as many arrived at Alchester from considerable distances. This diversity of contacts can be used to draw up a picture of emphases in regional trade - were they, for example, constrained at all by local socio-political geography? The location of Alchester close to a major tribal boundary may shed some light on this question. Additionally, a comparison of the range and frequency of some artefact types with the evidence from other regional settlements can help to place Alchester in a regional socio-economic hierarchy and show if the town in fact conforms to the expected patterns. Some divergent trends have already been noted within the present material. For example, the samian ware reflects a relatively low-status settlement, whereas the range of glassware, though not wide, is still considerably greater than would be encountered on such a site. Such apparent contradictions in the evidence need to be fully explored.

5 UPDATED PROJECT DESIGN

5.1 Summary of potential and proposals for further work

The potential of the individual aspects of the record has been discussed above. Collectively the component sites and their associated material remains allow, for the first time, the characterisation of an important part of the Roman town of Alchester and examination of the effects of the imposition of the town on the pre-existing community and landscape, with implications for settlement discontinuity in the form of new organisation and structural types and for landscape organisation in the form of new and extensive arrangements of field boundaries. The initiation, development and breakdown of this imposed scheme can all be examined, together with a sample of the population involved in the late and post-Roman periods. The economic impact of the settlement can be assessed from the wide range of artefactual and ecofactual material to determine the degree of change that was brought about as a result of new requirements and opportunities.

The data can be used to provide a revised framework for the origins, development and decline of Roman Alchester as a whole and to place the town in its regional socio-economic context. This will enable Alchester to be compared with other sites, particularly the rural settlements of the Upper Thames Valley, in terms of a regional settlement hierarchy. The quality of the stratified sequence will allow an unusually clear picture of the change of trading contacts through time to be established.

Roman small towns are a heterogeneous group of sites, with no fixed criteria amongst scholars for inclusion within this site category, and as a result estimates of their number vary between approximately 50 - 100 (see Burnham and Wacher 1990 for the most recent synthesis). However, if small towns are beset by problems of definition, there is little controversy about the relatively high status of the upper echelon of such sites, even though these may differ widely in character and aspects of function. Alchester is included amongst this upper echelon on the basis of its overall settlement size, the presence of defences, the existence of an orthogonal street grid within the town walls, and its location. Indeed Alchester's location in terms of its integration with the Roman road system (it lies adjacent to Akeman Street); its closeness to the western boundary of the territory of the Catuvellauni; and its position midway between the cities of St Albans and Cirencester, mark it out as the principal Roman settlement of the region. Therefore on a regional level, information regarding the town is uniquely important as it provides us with insights in to the development and decline, economy, function, and role of the apex of the Roman settlement hierarchy. At the national level this location of the site at the upper end of the settlement hierarchy in conjunction with the limited number of these sites makes Alchester a site of particular significance.

Despite our understanding in outline of certain aspects of Roman Alchester (largely as a result of aerial photography) there is little detailed evidence for most aspects of the town (see Section 2.2:. Archaeological Background). Indeed this project has provided the first opportunity to examine the extramural settlement using modern excavation techniques. This lack of knowledge of the extramural settlement reflects the common trend for archaeological work within small towns to have concentrated inside the defences, as these are more easily defined. This is regrettable as extramural areas often form much the largest part of small towns. Within the region only one extramural area of any site, on the south-western side of Towcester (Brown, Woodfield and Mynard 1983) has been studied to any extent. Otherwise

the nearest small town, where significant work has been carried out in the extramural area is at Alcester, Warwickshire, which is approximately 40 miles distant. The focus of archaeological activity on the extramural area there makes this one of the better understood small towns anywhere in Roman Britain, though much of the work is currently unpublished. The work from the current project will provide the only information of any comparability with the research already undertaken at Alcester, Warwickshire. None of the other small towns within the region have been examined on a similar scale, with the partial exception of Towcester, nor can the results from these smaller excavations be placed so securely in the context of the rest of the settlement.

In regional terms, therefore, study of the evidence from these excavations can make a major contribution to our understanding of a site at the upper end of the settlement hierarchy, providing a substantial body of data which will complement the somewhat limited picture available for the walled part of the settlement, and providing valuable comparative information for other small towns within the region. Nationally, Alchester joins a very limited number of small towns, including Alcester, Catterick and Water Newton (all unpublished) and Irchester, in which a significant part of the extramural settlement area has been examined. Further sites where relatively extensive excavation has taken place such as Baldock and Scole, may be added but are not strictly applicable as parallels because they were never defended settlements. In any case the geographical distribution of all these sites gives them great significance as representative (though not necessarily typical of) a number of diverse regions. Regional characteristics may eventually emerge quite widely as more small towns are studied. To date, regional comparative studies have been carried out in Essex (Rodwell 1975) and the West Midlands (Crickmore 1984), though the value of the latter is limited. A review of evidence for some of the nucleated settlements (some of which could be categorised as small towns) in Gloucestershire is currently underway and may provide useful comparanda, though none of these sites has seen systematic large scale excavation.

In order to fulfil the perceived potential of the data a programme of extensive analysis of stratigraphic evidence and of most categories of artefactual and ecofactual material is proposed. This programme would result in the production of a substantial research archive and a monograph publication presenting an account of the site and its finds in the context both of the Roman town as a whole and of the wider region.

5.2 Aims

The project aims as defined in the revised project proposal submitted after the March 1991 evaluation remain valid. The range of detailed questions to be considered has, however, been expanded in the light of the excavated data, for example to take account of the unexpected discovery of late and post-Roman burials.

The principal aims are:

1 To present an account of the evolution of land use in the northern part of Alchester from the Bronze Age onwards, with particular emphasis on the period from the middle Iron Age to the early Saxon. Within this outline, examination of the impact of the Roman town on the pre-existing community, landscape and environment will be particularly important, and the tracing of its development and decline in terms of settlement layout, structures and landscape organisation. The evolution of the urban/suburban/rural interface, and the means by which this was defined, will be considered.

2 To place the site in its regional socio-economic context by examination of evidence for craft activities, the agricultural economic base, the variety of trading contacts and the range and quantities of traded goods and contrasting this with other sites at different points in the regional settlement hierarchy.

3 To discuss the location and role of the excavated sites in relation to the Roman town as a whole, including definition of the extent of extramural settlement in the northern part of Alchester.

4 To provide a revised framework for the origins, development and decline of Roman Alchester.

Additional, more specific aims may be seen as complementary to the main ones

5 To describe and put in context the limited Bronze Age evidence.

6 To establish the extent and character of middle Iron Age activity (particularly in sites B and C).

7 To compare evidence for patterns of land allotment with that from other parts of the town.

8 To determine the function of the Roman structures in sites B and C.

9 To characterise the changing nature of agricultural activity from the Iron Age to early Saxon periods.

10 To examine the evidence for the role of horses in the settlement.

11 To examine the character of the late and post-Roman population (as represented by the burials in site C) and refine their dating.

12 To determine the extent and chronology of post-Roman (early Saxon) activity.

13 To examine changes in environmental conditions in the area and where possible to relate these to changes in the character of human activity.

5.3 Methods

5.3.1 Summary of personnel requirements

Part B of this document contains the task list, cascade, and detailed breakdown of the personnel to be involved in the post-excavation project. In some cases specific people cannot be assigned to the project because overall work programmes are not yet known. This is principally the case for the Centre for Human Ecology. It is currently envisaged that the OAU personnel named in section 7 will be available. The named individuals have mostly been closely involved with the excavation project. The overall timetable is presented in section 8, with the relevant costings in section 9.

5.3.2 Preliminary post-excavation work

Several tasks must be carried out either before or at the beginning of the full post-excavation analysis, which are relevant to all of the academic aims.

5.3.2.1 Refinement and revision of matrices and phasing

Within the time constraints of the post-excavation assessment it was only possible to assign *c* 73% of all of the contexts to a period. It is anticipated, however, that further work will permit the eventual assignment of as many as 90% of the contexts to period. The post-excavation assessment also identified the possibility of understanding the site in greater detail than at the level of the 12 periods developed for the site. As a consequence it is envisaged that the site description will be developed from the generation of a more detailed series of phases produced from sets of closely related contexts.

The use of the term phase will be restricted to groups of contexts which are closely related, such as a ditch cut and its fills, a number of interrelated pits, or the components of a particular building phase. Such blocks of contexts should always be fairly closely contemporary, therefore a ditch recut, or the uppermost fills of a long sequence, might be assigned to a subsequent phase. It is envisaged that such closely defined phases will form the basis for the description and interpretation of the site at a high level of precision. The detailed development of such a phase structure was, however, clearly beyond the scope of the assessment and will take place during a more extended post-excavation analysis programme.

Once the contexts have been assigned to the phases, the database will need to be updated. The OAU uses DBase IV so the database will be fully relational. In addition it is envisaged that phase plans will be generated and put onto CAD to permit the plotting of finds and ecofactual data.

This work will have to be undertaken at the very beginning of the project and will form the fundamental basis for the majority of the post-excavation analysis. For instance the detailed spatial analysis of the site, and consequently the completion of the finds reports will be dependent on the detailed understanding of the chronological interrelationships between the features. This framework will also be essential for understanding the intricate process of the development and demise of the land allotments. This work will be undertaken by P Booth, G Campbell and J Hiller, the Project Director, Supervisor and Assistant Supervisor who directly managed the excavations in the field. **Task Nos: 009-011, 020-024, 028**

5.3.2.2 Pre-analytical work

Pressures of time during the excavations led to a number of departures from standard recording practice (with the encouragement of English Heritage), most particularly in the substitution of photography for planning as the principal record of several complex surfaces in Site B and of many of the graves in Site C. As a result it will be necessary, prior to detailed analysis, to print 63 photographs of the burials from Site C and *c* 320 frames from Site B. Plans of the graves will have to be produced from a combination of information from the skeleton recording sheets, context sheets and the photographic record. In the case of Site B it is hoped that the photographs can be matched to the available plans, if however this does not prove possible then the photographs will at least provide an impression of the character of the surfaces.

Time must be allocated for liaison with and between all of the project team. Initially the project team introductory seminar, will be the most important method by which this is achieved. This should provide all of the project team with the opportunity to familiarise themselves with all aspects of the project, as soon as possible after the approval of this document, prior to the start of the post-excavation analysis. The history of the site and project would be outlined after which the stratigraphic sequence would be described in some detail. Team members would outline the research potential of their element of the project, and this would be followed by general discussion so that all members shared the overall perspective of the project design.

The seminar would also act to define managerial responsibilities, and to outline the requirements for report preparation, and editorial procedures. The OAU Style Guide will form the basis for the report style, and it will be stressed the WordPerfect is the preferred word processing package. It is hoped that outlining these measures will reduce the necessity for tedious and time consuming editing/formatting tasks.

In order to make the meeting as effective as possible a limited amount of time will have to be allocated for the production and distribution of the research design for all of the specialists, and for the arrangement of the seminar. An allowance will have to be made for the cost of travel, refreshments and room hire.

Time will also have to be allocated for the delivery of material to specialists (eg the animal bone to the Centre for Human Ecology in Southampton; pottery to J Evans).

Conservation of artefacts should also begin at this stage, as it is an essential prelude to the cataloguing of certain finds. **Tasks 007, 025-027, 056, 057, 060, 064**

5.3.3 Analytical methods

Full analysis would begin after the introductory seminar (4.3.2.2). Some methods can be achieved independently, but others fall within critical paths in the project cascade (section 8). The following section briefly summarises the methodologies to be employed in studying the stratigraphy, artefacts and ecofacts. The methods to achieve the research aims are outlined in Section 5.3.4.

5.3.3.1 Stratigraphy

Context blocks which form tightly defined phases will be developed. Interpretive problems will be identified and specialists consulted whenever necessary. The physical extent, character and associations will be described. The detailed phasing in conjunction with the constituent elements of the site proposed in Section 4.2 will form the basis for the descriptive text of the published text. Once the text has been generated it will be essential to prepare drawing briefs for the illustrations to support the text. **Tasks 029-041, 043, 045, 047, 054**

5.3.3.2 Pottery

It is proposed to compile a brief catalogue and discussion of the Bronze Age pottery, and to illustrate *c* 6 of the Beaker sherds. The report will be written by A Barclay

The Iron Age and Anglo Saxon pottery will be catalogued and discussions written about the assemblages. The Iron Age pottery will be processed by J Evans but written up jointly with

P Booth. J Evans will report on the Anglo-Saxon material.

The Roman pottery will be recorded using the standard system implemented in the OAU over the last three years, which allows instant comparability of results from different assemblages within the region through the use of unified fabric and vessel type codes, an approach noticeably lacking until recently (Fulford and Huddlestone 1991, 14, section 1.4.2.2). The stratified pottery will be recorded by sherd numbers, weight and rim percentage for form and fabric. Owing to serious surface erosion of much of the material the consistent recording of decoration or deposits on vessels will not be possible. The material will be illustrated most economically by a fabric and form type series, although the early Roman 'ritual' vessels will be illustrated by group. Reduced, grogged and shell-tempered wares will not necessarily be grouped to visually exact fabric groups, but will be subdivided into general classes as they appear to contain a number of chronologically significant fabrics. Fabric division at a more detailed level than that used in the assessment (in which only the most basic ware categories were used) is essential in order to see chronological trends in the assemblage properly.

The pottery coding will be undertaken according to a prioritised list of contexts so that, should problems occur with the programming, material from all periods and all areas of the site will have been examined.

The samian ware will be examined to provide a complete archive, with identifications and dates for each sherd. The vessel types will be quantified and the origins of the samian, by potteries, investigated. The dating evidence for the potters' stamps will be presented and any decorated sherds which date their contexts or are intrinsically interesting will be discussed.

The pottery from Harden's 1937 excavations will need to be briefly reconsidered, given its evidence for late Iron Age-early Roman continuity, which contrasts with that from our excavations. **Tasks 042, 074, 076-079, 088, 089, 091-099**

5.3.3.3 Tile

All of the 26 boxes will be examined, excluding the material already assigned to fabric and form during the assessment but including all the miscellaneous fragments. A more detailed study of the individual fabric types will be undertaken, and the thicknesses of the fragments will be analyzed to make a more accurate assessment of the forms of tile present on the site. The material will be computerized according to the database system for Roman tile which already exists at the OAU. Possible parallels or possible sources for the fabric types will be sought. A report of these analyses will be written. **Task 102**

5.3.3.4 Other finds

The methods for all of the other small finds can be considered together, as the approach will be essentially the same. In each case the finds will be recorded, catalogued and a discussion written to place the assemblages in their context and consider any significant finds. It is thought that the iron slag requires no further work apart from a plot of its distribution.

Investigative conservation must obviously precede analysis where relevant, and finds for illustration will be selected once conservation and the cataloguing is complete. Illustration requirements will be discussed with the senior illustrator to ensure adequate provision of time for the illustration of the individual classes of artefact.

In the case of the stone objects thin sectioning will be carried out on two or three of the

whetstones, which are too fine grained for a macroscopic identification and a limited amount of investigative fieldwork will be undertaken.

The distribution of the majority of the finds will be plotted using the CAD package, as an aid towards the interpretation of the site. **Tasks 057-062, 064-066, 068, 069, 071, 072**

5.3.3.5 Human bone

As the cremations are lightweight it is believed that they will only merit the minimum of recording. In contrast the inhumations will be recorded in detail. For each skeleton the presence and condition of the bone will be recorded. An assessment of age, sex, calculation of stature, presence/absence of discontinuous traits, calculation of metrics and a detailed examination of pathological conditions will be undertaken. **Task 105**

5.3.3.6 Ecofacts

The ecofacts will contribute significantly towards the interpretation of the site. For instance they will have an important contribution towards our understanding of the economic base of the site and distributional data may help us to understand specific activity areas. The analyses will be undertaken by contract staff from the CHE and by Dr M Robinson on a freelance basis. There will have to be a considerable degree of coordination and consultation with the Project Manager.
Tasks 042, 106-108, 110, 112

5.3.3.7 Computing and computer support

The post-excavation work will need extensive use of computer facilities for word processing, database use, CAD, and project management. The existing site database contains context, phase and finds information which will be amended when necessary (eg upgrading period/phase details after the completion of method 4.3.2.1). All specialists will have access to the databases.

As the project aims to assess the function of the areas/structures the spatial patterning of artefacts will form a significant part of the analysis. This will be done using a CAD package. Computer support will be provided by A R Whiteman. **Tasks 006, 049, 050, 051, 086**

5.3.4 Methods for fulfilling the research aims

Aim 1 The evolution of land use will be addressed through a detailed understanding of the development of the stratigraphic sequences on the four sites. This will require close phasing of the site and an understanding of the character of the structures, boundaries and cemetery evidence. The different patterning of the burials with respect to the potential settlement boundary may serve to demonstrate transition between the Roman and Anglo-Saxon periods/populations, given Roman legislative constraints on burial within settlement boundaries. **Tasks 029-048, 054-5, 058-9, 071, 074, 076-9, 088-095, 097-100, 105, 112-3, 115-6**

Aim 2 The placing of the site in its regional socio-economic context, will require a detailed understanding of its economic base, the variety of trading contacts and the range and quantities of trade goods. This will be achieved through a detailed analysis of the finds, and ecofactual material. The pottery, in particular, will form a significant artefact type in relation

to the town's trade connections and changes in the pattern of these through time. The coins and patterns of coin loss will be indicative of the economic activity on the site. The sources of the stone artefacts will provide other indications of trade contacts. Animal bone will indicate the species exploited and evidence of whether primary butchery or domestic consumption is indicated. Iron tools and slag will be indicative of the range of activities which may have taken place on the site, as will the environmental material. These disparate forms of evidence will probably confirm the agricultural basis of the settlement, and will also possibly serve to demonstrate a diversity of craft activities. In addition the range and quality of the material will establish the socio-economic level of the inhabitants of the site. Comparison of this material with that recovered from other sites at different points within the settlement hierarchy will enable models to be developed about the regional trade networks. It may also be possible to compare this evidence with the trade connections of other small towns. **Tasks 049-053, 057-067, 069-070, 072-3, 076-9, 088, 095, 097, 099-100, 102-3, 106-10, 112, 115-6, 118.**

Aim 3 The location and role of the excavated sites in relation to the town as a whole, will largely be understood once aims 1 and 2 have been achieved. Examination of the evidence for a northern settlement boundary in Site C, and the evidence of enclosures in Site D, help to place the site on the urban/rural interface. In addition comparison with sites excavated within the walls will permit assessments of comparative wealth/socio-economic status and role of different parts of the town. This evidence will need to be considered in conjunction with the aerial photographic and other archaeological evidence of the town and its immediate hinterland. **Tasks 034, 046-8, 052-5, 058-067, 069-070, 072-3, 076-9, 088-095, 097, 099-100, 105, 117-8, 124.**

Aim 4 Hypotheses of the origins, development and decline of Alchester, will be developed from a detailed understanding of the chronological developments of the sites. The layout of the system of land allotments, their change through time and eventual decline and abandonment, provide an opportunity to assess this evidence and its implications for models of the origins, growth and decline of the Roman town as a whole, against previous archaeological evidence. The evidence for late Iron Age activity recovered by Harden in 1937, in trenches adjacent to Sites B and C will need to be reviewed as this contrasts with the evidence for discontinuity from the middle Iron Age to the early Roman period recovered from Sites B and C. The recovery of several pieces of Roman military equipment may have some bearing on the question of the origins of the town. The contexts of these items will have to be considered in detail. **Tasks 027, 029-042, 047-8, 076-9, 088-095, 97, 99-100, 118, 124**

Aim 5 The Bronze Age burial from Site A will require description and a brief discussion in the context of regional evidence for Bronze Age activity. The evidence of the Bronze Age pottery and flintwork will also have to be have to be taken into consideration. **Tasks 029, 039, 046, 054-5.**

Aim 6 The middle Iron Age features will require description and brief discussion in the context of the regional evidence for middle Iron Age activity. The pottery report will have to be integrated with the structural report and discussion. **Tasks 029, 034, 043-4, 054-5, 096, 098, 106-10, 114.**

Aim 7 The comparison of the patterns of land allotment with that from other parts of the town, will be undertaken by examining the evidence from the excavations with the recent aerial photographic survey of the town by the RCHM. These have shown an intricate network of land divisions, in particular in the southern half of the town. Analysis of this evidence may reveal distinctions in the areas enclosed, the methods of enclosure and the

interrelationships between the elements of the land division. **Tasks 029-034, 043-4, 046-8, 052-3, 117.**

Aim 8 The function of the Roman structures will be determined principally by analyzing the spatial distribution of the finds, and examining the contexts from which they were derived. The tile distribution may indicate functional aspects of structures, by suggesting forms of flooring, wall structures or roofing. Parallels with structures from other sites will also form a comparative base against which the function of the structures can be interpreted. **Tasks 030-1, 034, 049-051, 060-7, 069-070, 072-3, 77, 102-3, 117.**

Aim 9 The changing character of agricultural activity can be approached by analyzing variations through time in the assemblages of the iron tools, stone artefacts, animal bone, and environmental samples. **Tasks 049-051, 064-7, 072-3, 106-10.**

Aim 10 The role of horses on the site has been identified by the animal bone specialist as being of interest. In addition to the examination of the bones the evidence can be integrated with that for items of horse gear recovered from analysis of the iron finds. **Tasks 106-10.**

Aim 11 The late and post-Roman burials can be investigated by the detailed stratigraphic analysis and examination of the associated finds. The grave structures, burial rites and examination of the age, sex, stature, non-metric analysis and pathological conditions can be recorded. **Tasks 032, 057-9, 105, 114.**

Aim 12 The post-Roman/Anglo-Saxon activity, including the cemetery evidence, will need to be briefly described and discussed, and the Anglo-Saxon pottery will need to be recorded. The relationship of this material to the end of the Roman town and the regional context of the material will need to be briefly considered. **Tasks 027, 076-9, 088-095, 097, 099-100, 105.**

Aim 13 Changes in environmental conditions will be studied by analysis of the environmental evidence. Interpretation of activities on the site will have some bearing on changes noted in the environmental evidence. **Tasks 112, 114-5.**

5.3.5 Drawing office

Drawing office requirements have been calculated in as much detail as possible at this stage, by the Project Manager, Post-Excavation Monitor and Senior Illustrator. The amounts of drawing time have been calculated on the basis of the publication synopsis (section 6.1). Some variations to this may be necessary as the results of the post-excavation analysis are finalised. As the volume of work required is extensive it will be necessary to employ two or more illustrators simultaneously. It is at present envisaged that all of the illustration work will be done 'in house'. Drawings should normally only be commissioned once the text which they support is in at least final draft form, as this will substantially reduce the need for changes or corrections. **Tasks 044, 046, 048, 053, 055, 063, 067, 070, 073, 090, 103, 109, 126.**

5.3.6 Research and liaison

Time must be allowed for library research, collection visits, and fieldwork (in the case of the stone artefacts) . It will be necessary to seek parallels for all aspects of the site. The

extensive library facilities at Oxford (Bodleian and Ashmolean Libraries) provide excellent facilities to undertake the research.

Project meetings will also require a time allowance. It is envisaged that a further two plenary meetings, after the introductory seminar, would be sufficient as an effective aid to the completion of the project.

In addition, it is envisaged that smaller groups of the project team will need to meet at times other than the plenary meetings. The appropriate timings for such meetings will only become apparent as the project progresses, they will however be essential for the smooth running of the project and integration of results. It is envisaged that the project manager will chair the majority of these meetings. Travelling expenses will need to be paid to those attending both types of meetings. **Tasks 019, 087, 096, 118**

5.3.7 Synthesis and discussion

When the description of the site and the finds reports are complete the synthetic/discursive chapters can be generated. A plenary project meeting is also essential before this part of the writing-up can begin. This should ensure that the multi-disciplinary evidence is effectively integrated during the production of the text. **Tasks 113-117, 123, 124**

5.3.8 Project management and monitoring

Post-excavation management - managing overall work programme of post-excavation department, drawing office and individual work programmes, reporting to Inspector and Monitoring Officer, reporting to post-excavation committee, general correspondence with outside bodies and specialists, post-excavation department administration, liaison with internal project monitor, personnel management

Project management - management of project as defined in the research design, instructing Unit staff including drawing office and external specialists, supervision of junior staff, correspondence, filing, record-keeping, maintenance of archive

Internal monitor - meetings with project manager to review progress, discuss problems, monitor time expenditure by all project members, reports to post-excavation manager

Drawing office management - supervising draughtsmen, ordering materials and equipment, advising project manager, liaison with post-excavation manager over drawing programme

Finds and archive administration - liaison with specialists, maintaining finds records, maintaining archive and arranging security copying

The post-excavation programme will be monitored internally by D Jennings. Drawing office monitoring and management will be undertaken by P Hughes. Academic referees for the publication have to be finalised, their comments will however be sought and revisions to the text undertaken before its final submission for publication. **Tasks 002-005, 013-017, 081-085, 120-122, 137**

5.3.9 Archive

The archives for the excavation are currently held by the Oxford Archaeological Unit. It is

anticipated that the project archive will be deposited with the Oxfordshire County Museum's Service. Agreement with the owners has already been received in this regard.

The excavation records have been security copied on microfiche by the National Archaeological Record. The long term curation of the records will be undertaken by the institution receiving the archive.

Selected artefacts and ecofacts will undergo investigative conservation work as an aspect of their identification and cataloguing for the publication. Long term requirements may consist of additional cleaning and stabilisation for museum purposes.

The Oxford Archaeological Unit's archiving standards will be adhered to at all times with regard to project documentation and archivally suitable materials used (see Walker 1990). All post-excavation documentation will be filed, ordered and indexed as part of the research archive. This will be submitted to the National Archaeological Record for microfiching. **Tasks 134**

5.3.10 Report assembly and proof reading

The report will need to be compiled, sub-edited and checked against the drawings. Draft publication texts will then have to be checked by individual contributors. Final editing, checking, assimilation of comments and proof reading will be undertaken by the project monitor and project manager. **Tasks 100, 110, 127-132, 135**

6 PUBLICATION

It is proposed to publish the report as a monograph in the Oxford Archaeological Unit's Thames Valley Landscapes series. Condensed print is the preferred option for the presentation of technical data, as for instance that generated from the pottery analysis, although the use of fiche may be necessary. It is envisaged that the report will be presented in one volume.

6.1 Excavations in the extramural settlement of Roman Alchester, Oxfordshire

by P Booth with G Campbell

contributions by: D Allen, L Allen, A Barclay, J Bayley, A Boyle, P Bradley, B Dickinson, J Evans, Centre for Human Ecology, C King, G Lloyd-Morgan, Q Mould, P Powell, M Robinson, F Roe

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Functional analysis	2000
Fine wares	2000
Taphonomy	2000
Ceramic small finds/graffiti	1000
Anglo-Saxon pottery	1000
Discussion regional context	4000

Chapter 7: The human remains *A Boyle* 3000

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Total 142,000

(c 150 pages of text; c 90 illustrations; 30 tables and 25 pages of preliminaries, index and bibliography)

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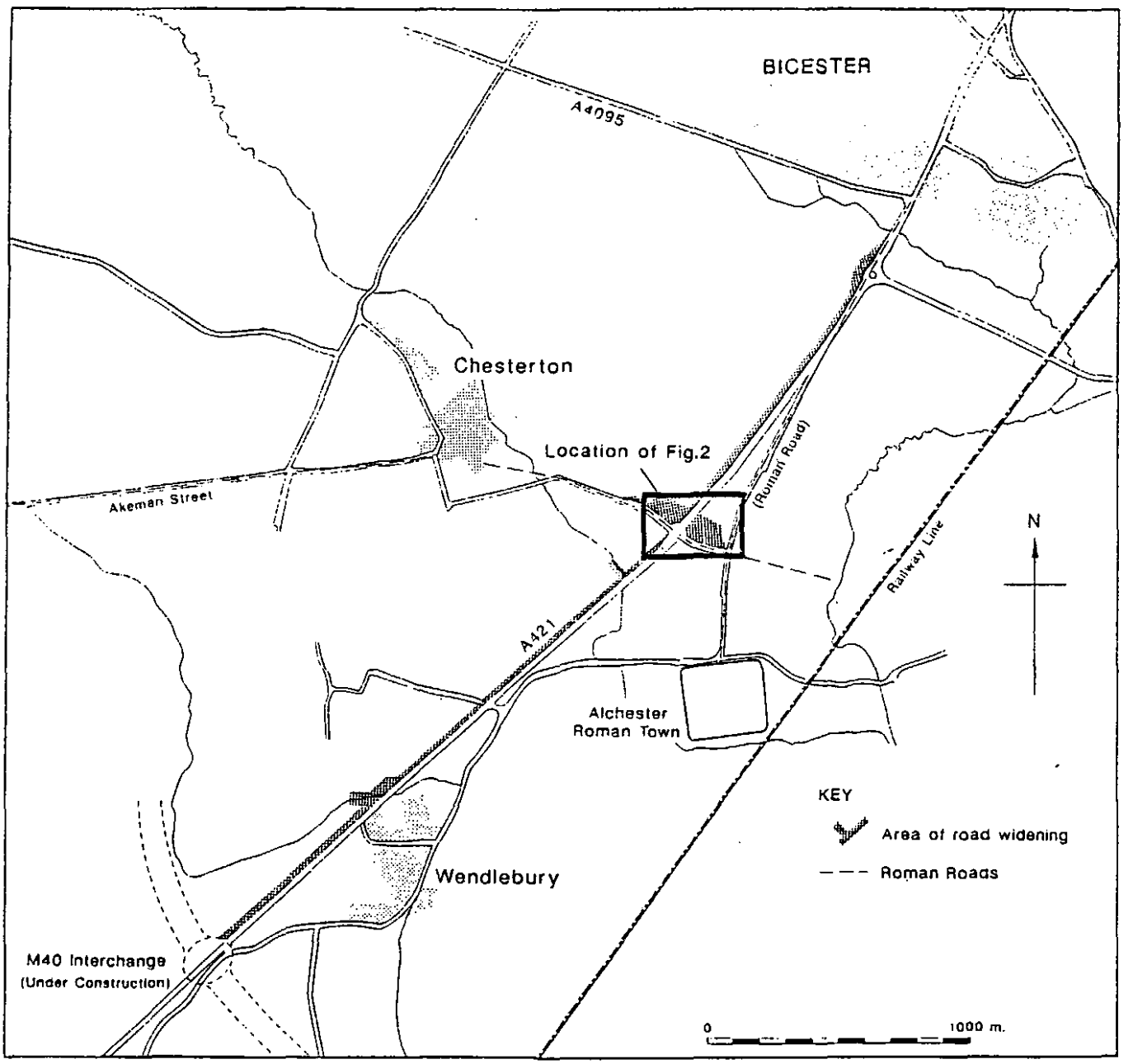
ILLUSTRATIONS



Location of A421 project

Figure 1

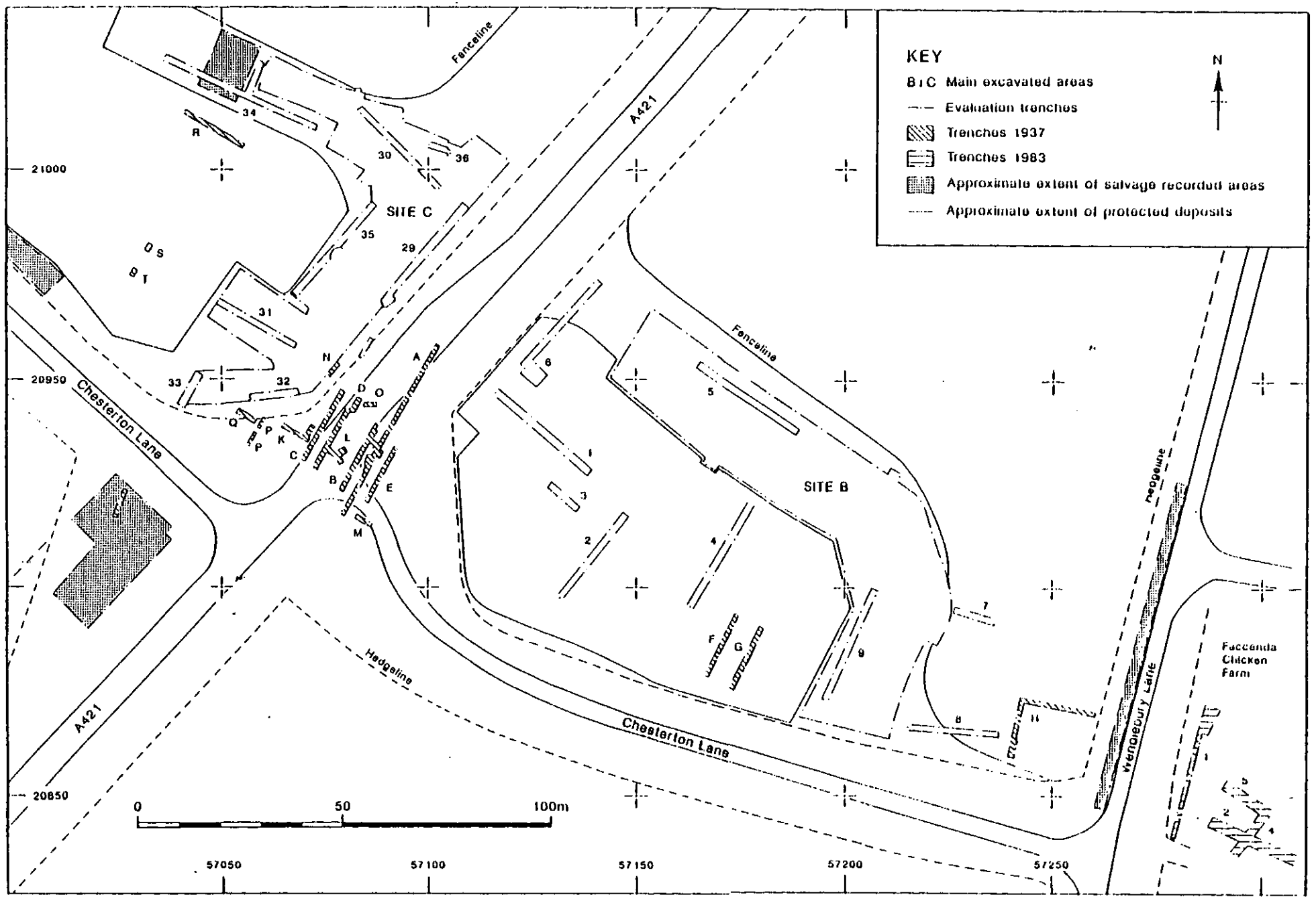
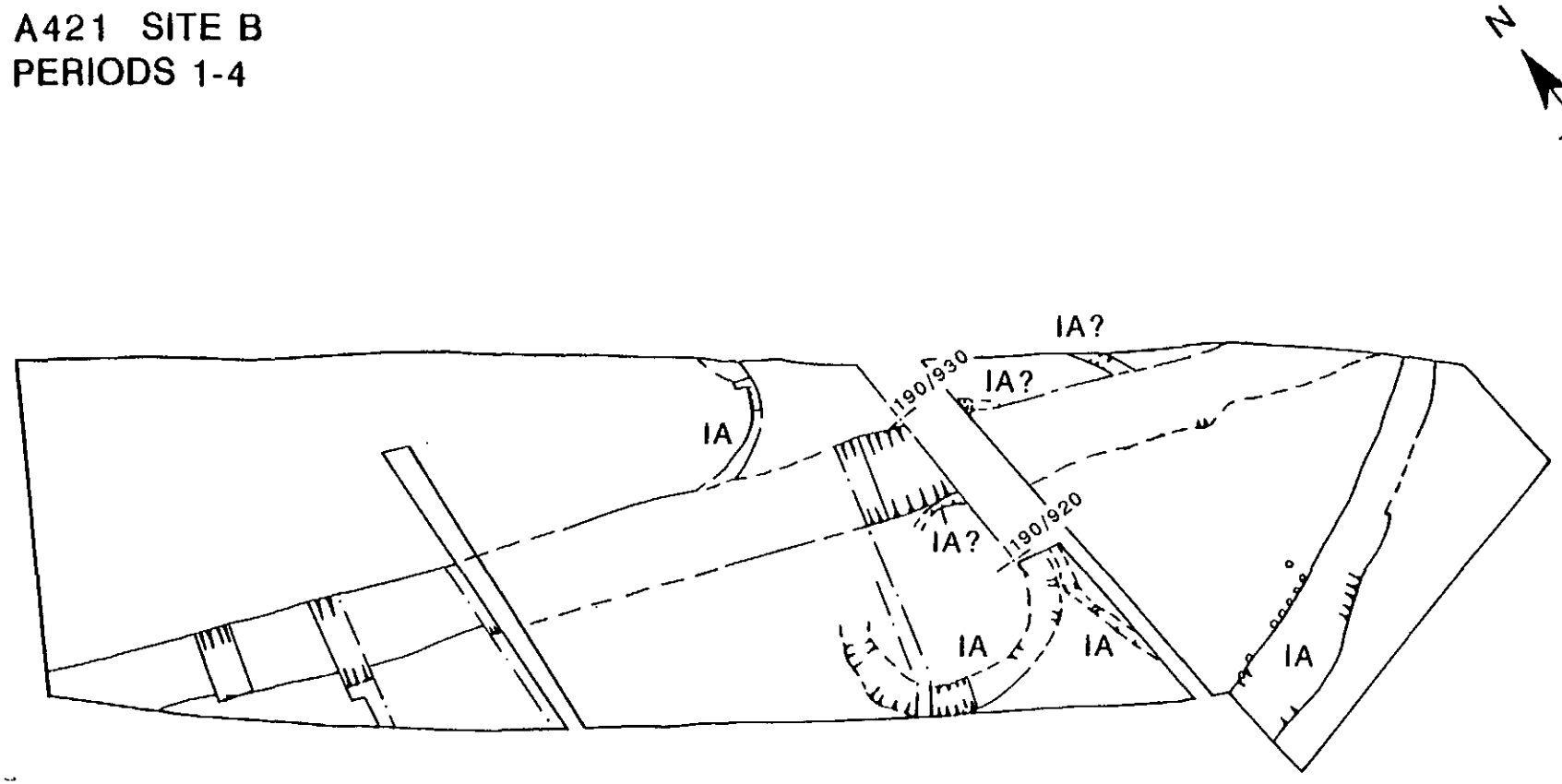

KEY
B, C Main excavated areas
Evaluation trenches
Trenches 1937
Trenches 1983
Approximate extent of salvage recorded areas
Approximate extent of protected deposits
N
SITE C
SITE B
Fenceline
Fenceline
A421
A421
Chesterton Lane
Chesterton Lane
Hedgeline
Hedgeline
Wretchwick Lane
Faccenda Chicken Farm
21000
20950
20850
57050
57100
57150
57200
57250
0
50
100m

Figure 2

A421 SITE B
PERIODS 1-4



0 10 20m

Period 1: geological
Period 2: Iron Age
Period 3: circa 50AD
Period 4: late 1st century, early 2nd century

Figure 3

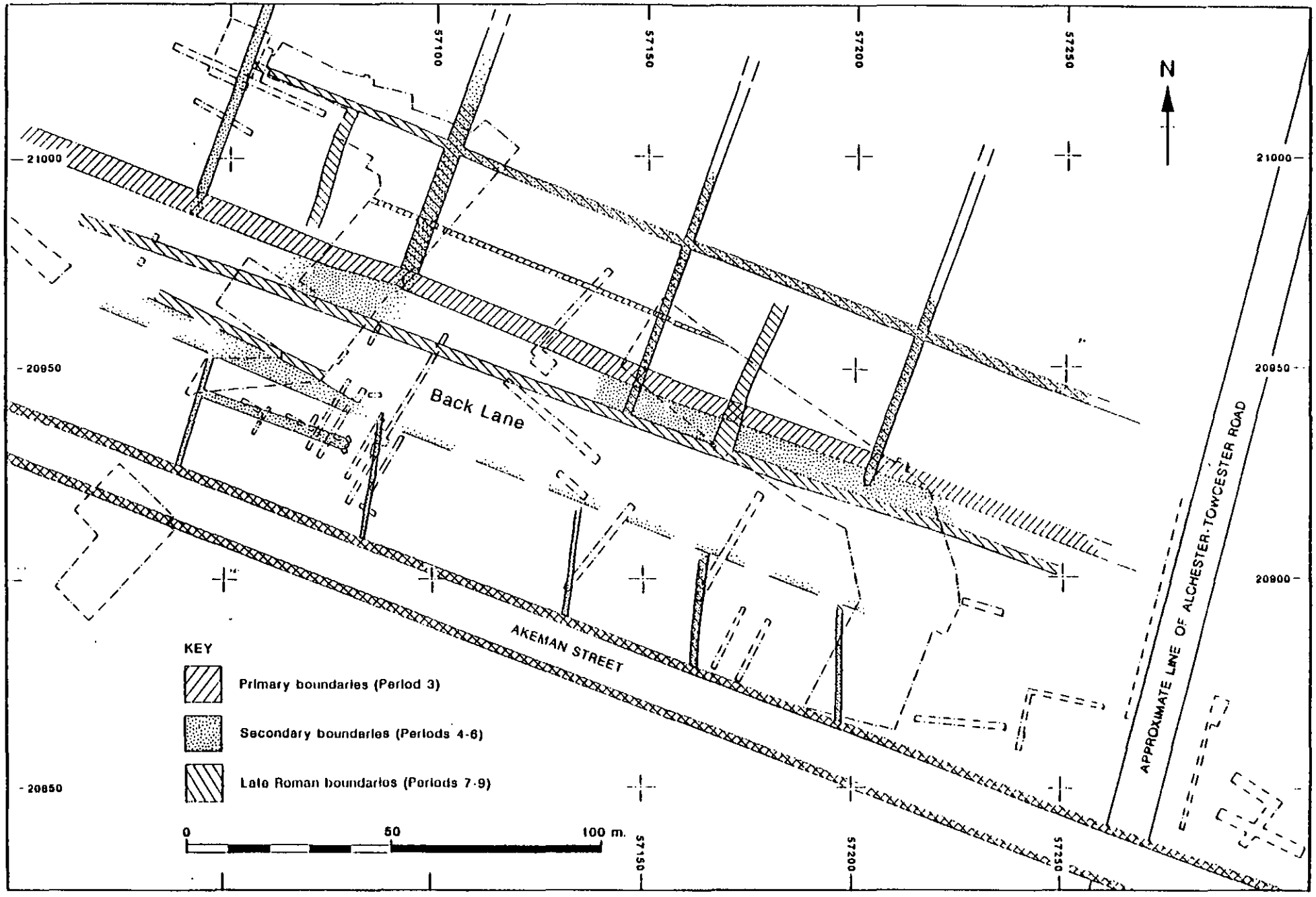
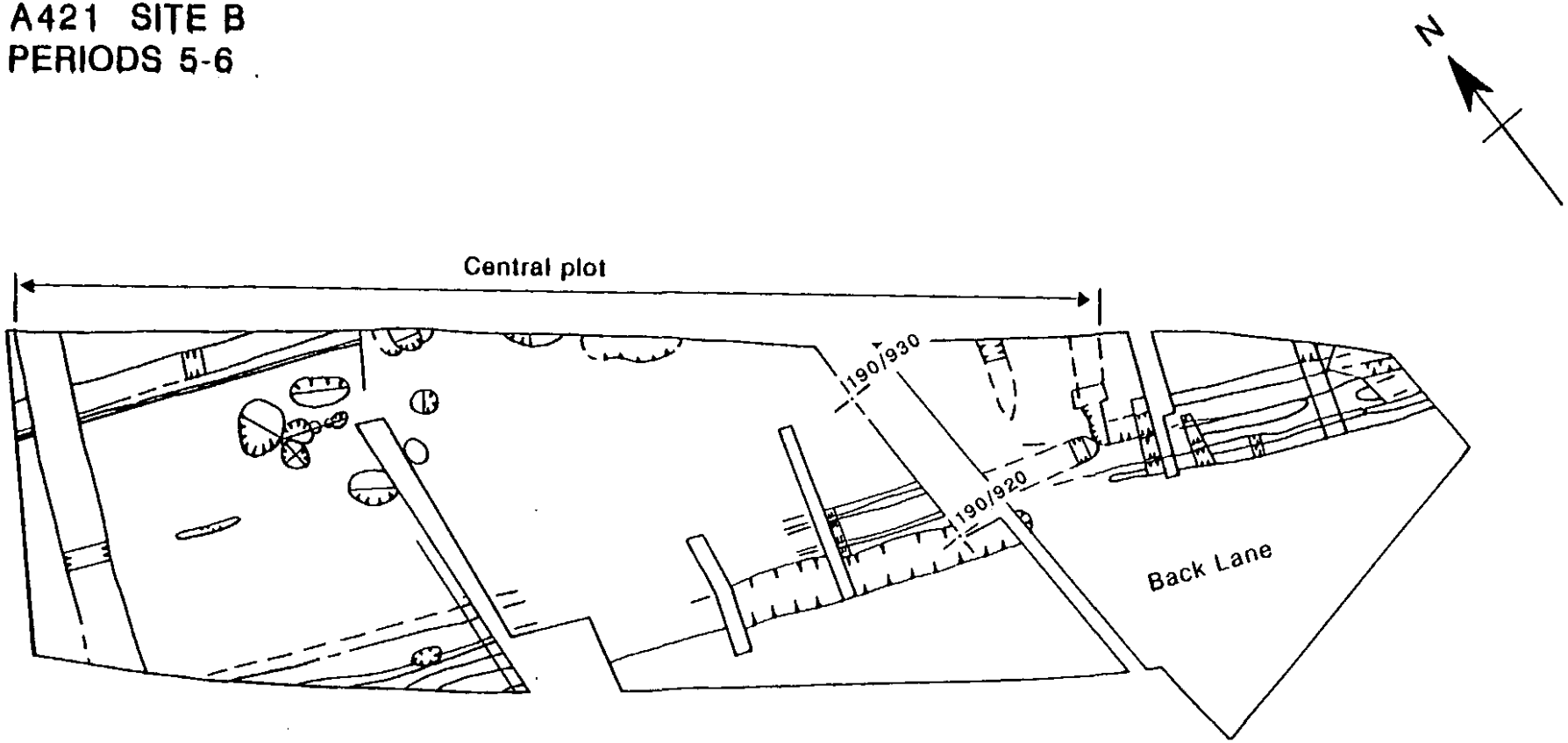

57100
57150
57200
57250
N
21000
20950
20900
20850
Back Lane
AKEMAN STREET
APPROXIMATE LINE OF ALCHESTER-TOWCESTER ROAD
KEY
Primary boundaries (Period 3)
Secondary boundaries (Periods 4-6)
Late Roman boundaries (Periods 7-9)
0
50
100 m.

Figure 4

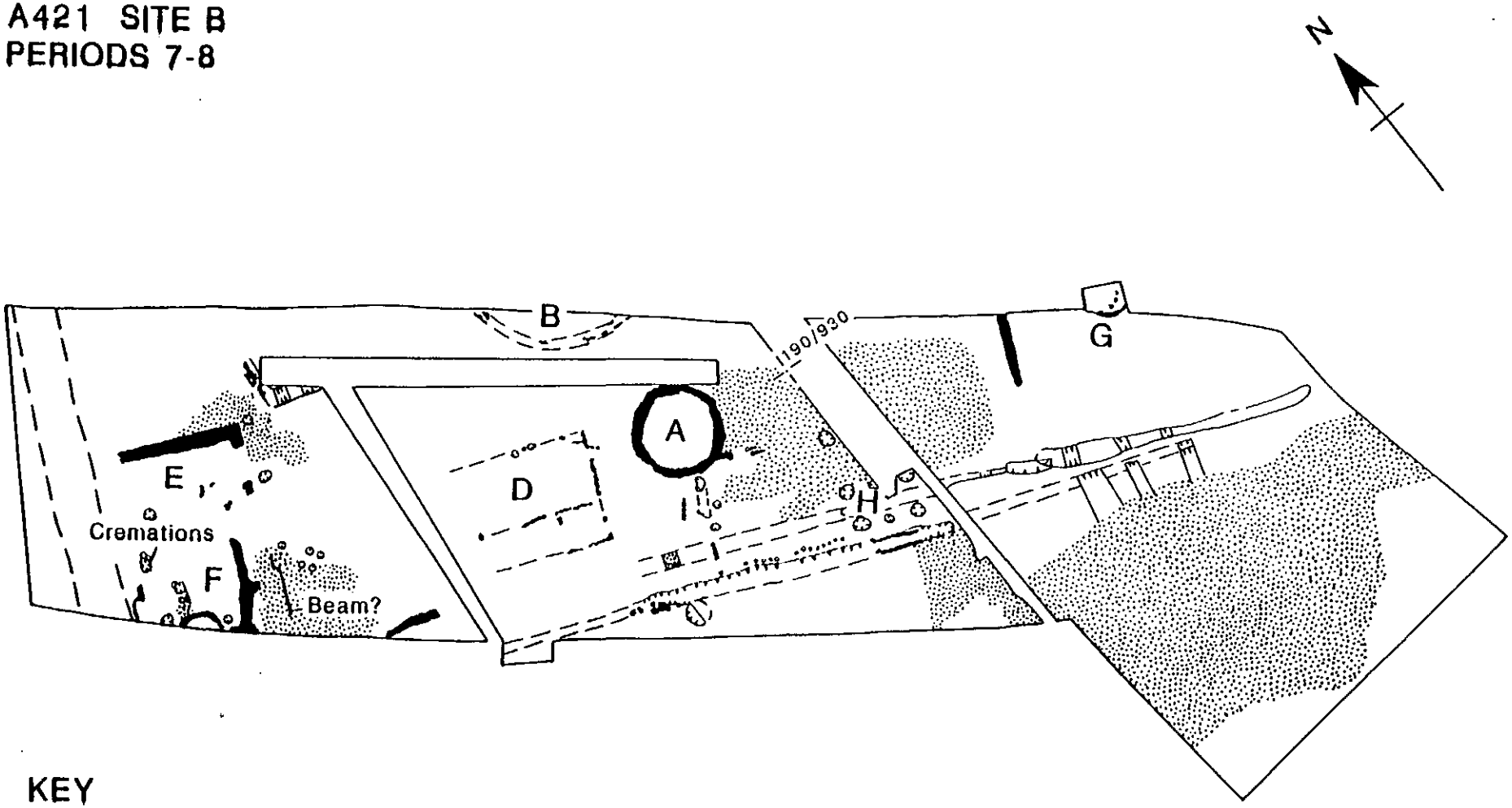
A421 SITE B
PERIODS 5-6



Period 5: early-mid 2nd century
Period 6: mid 2nd-mid 3rd century

Figure 5

A421 SITE B
PERIODS 7-8



KEY

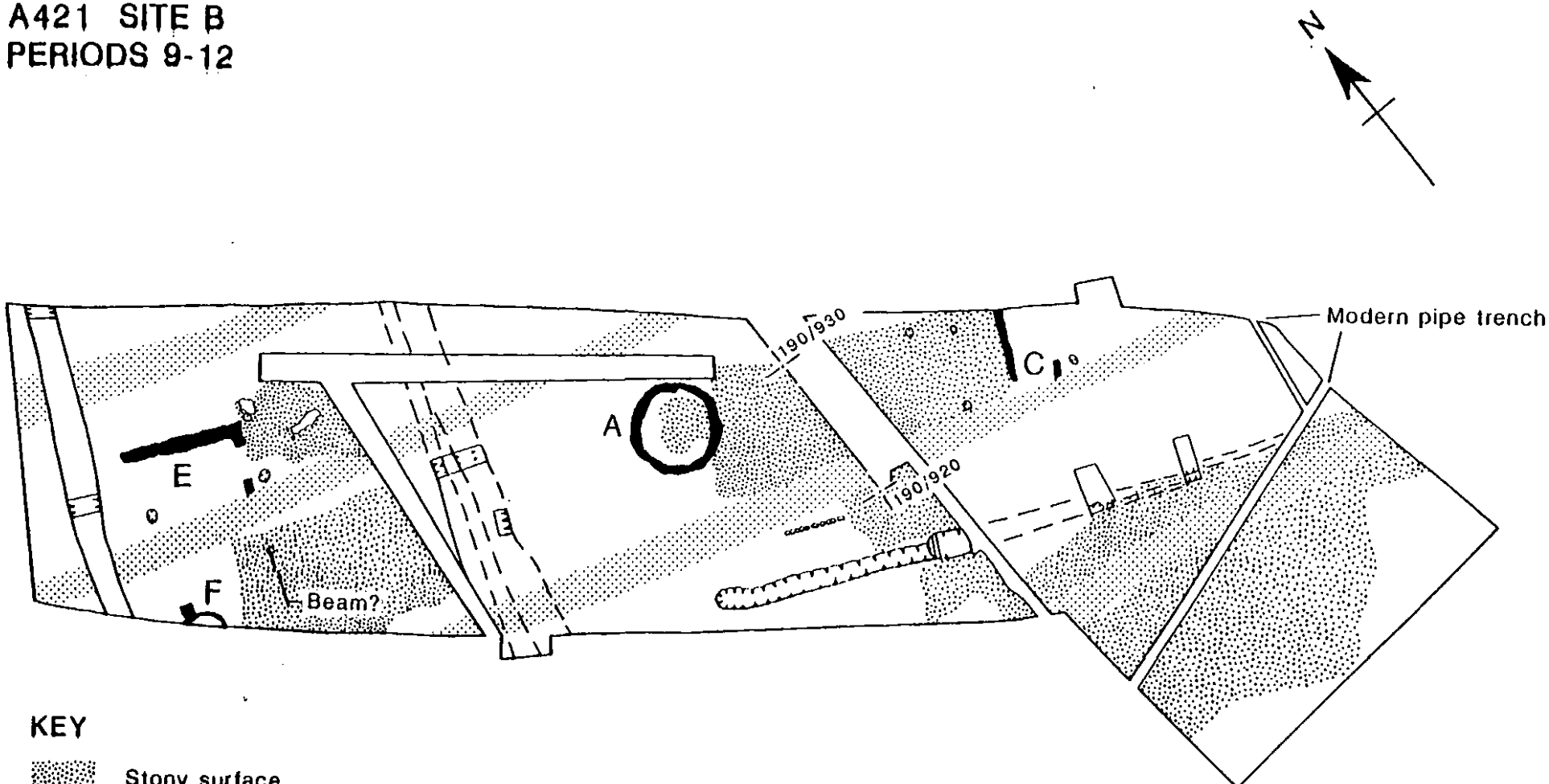
Stony surface

0 10 20m

Period 7: mid 3rd century-circa 300/320AD
Period 8: 300/320AD-circa 350-360AD

Figure 6

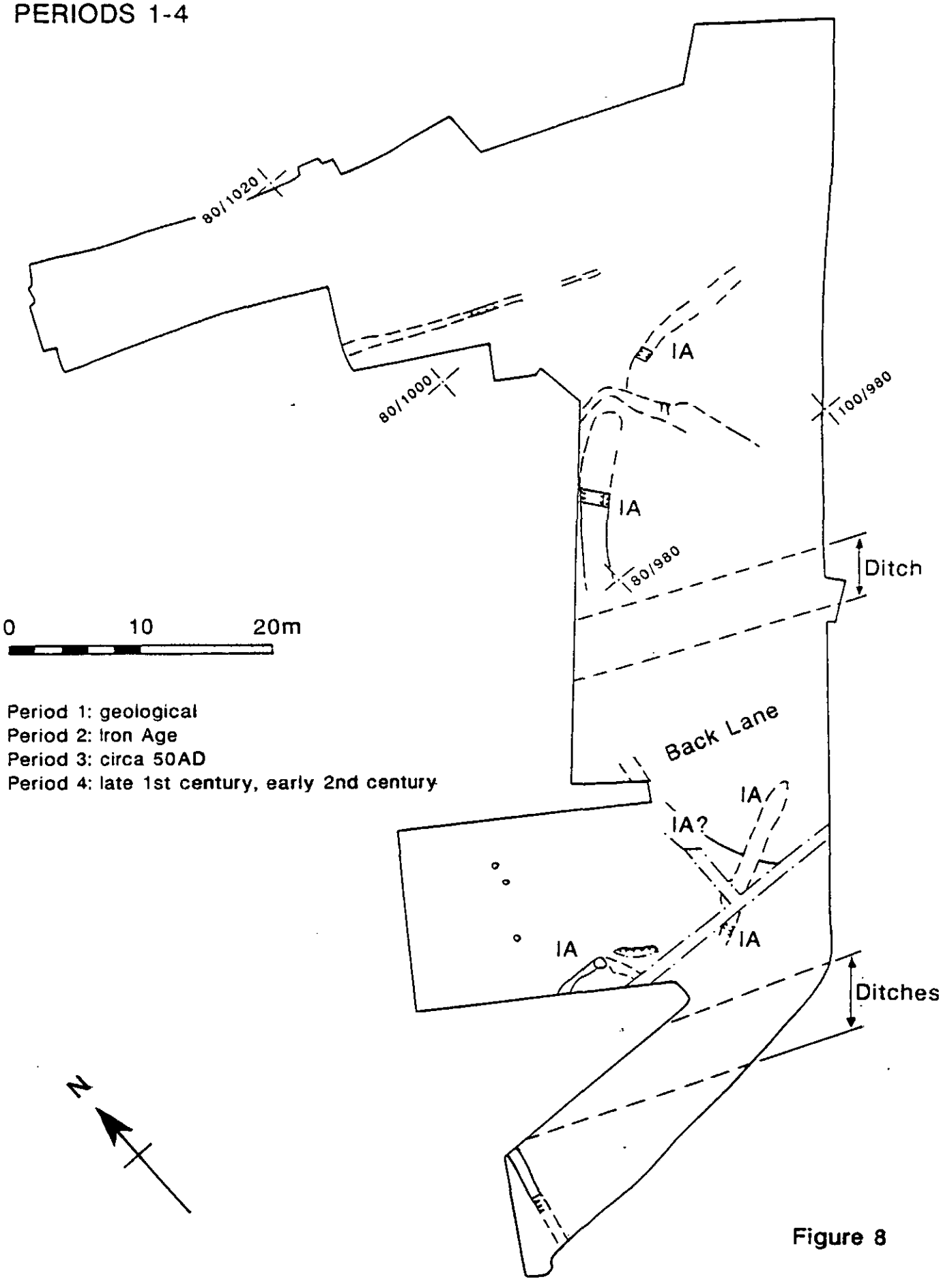
A421 SITE B
PERIODS 9-12



Period 9: 350AD-400AD
Period 10: 'sub-Roman',400AD+
Period 11: Medieval furrows
Period 12: modern pipe trenches

Figure 7

A421 SITE C
PERIODS 1-4



Period 1: geological
Period 2: Iron Age
Period 3: circa 50AD
Period 4: late 1st century, early 2nd century

Figure 8

A421 SITE C
PERIODS 5-6

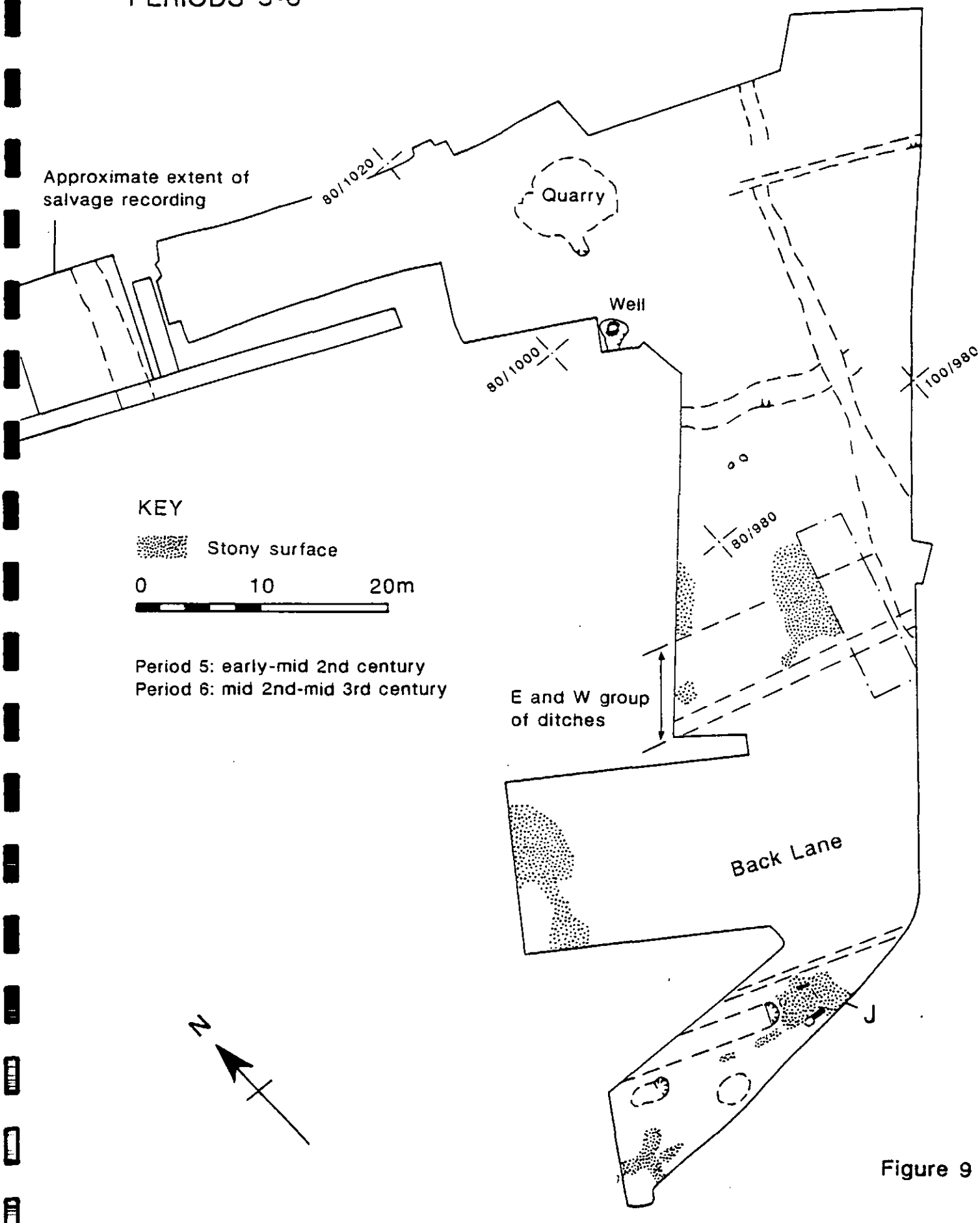
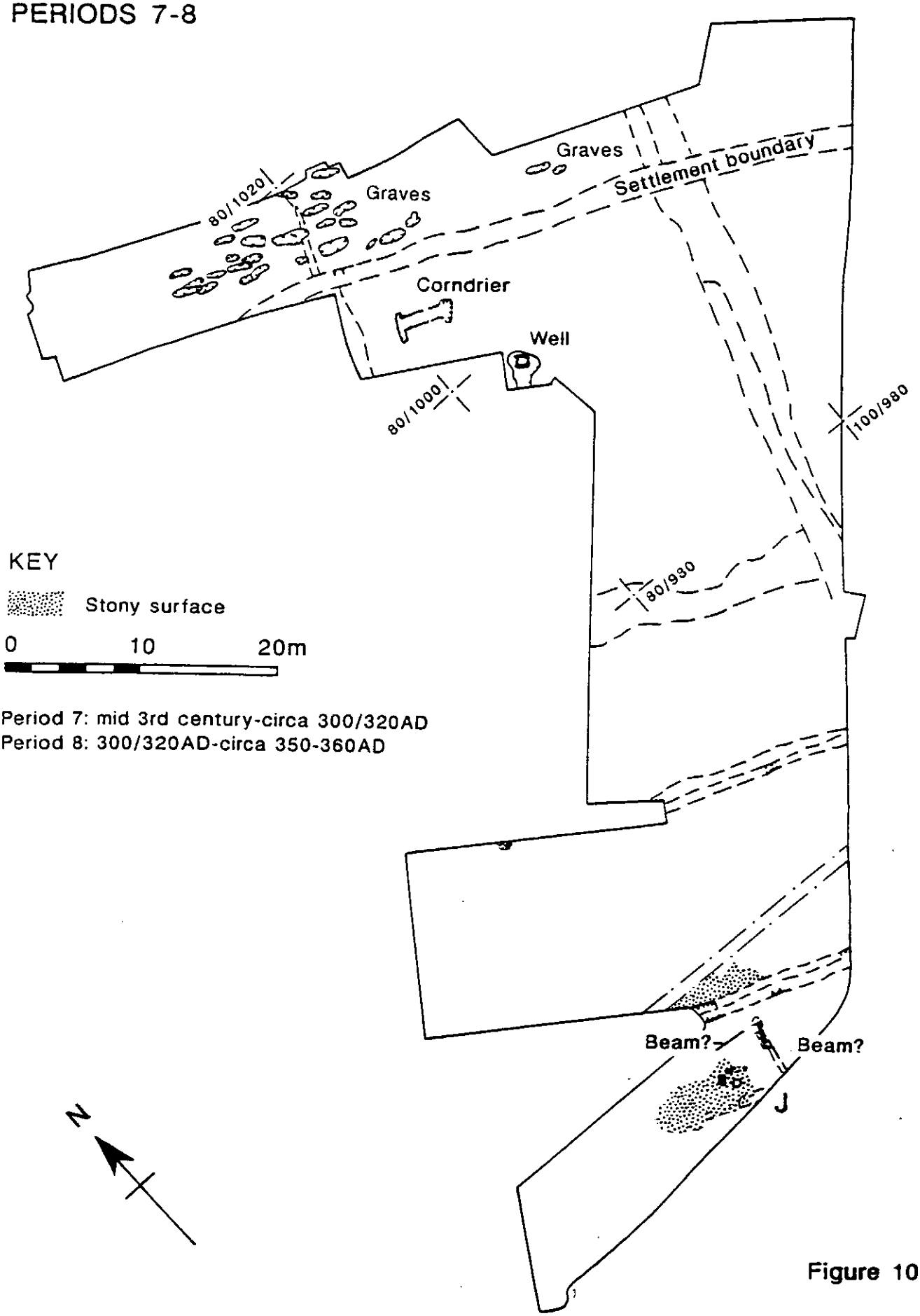


Figure 9

A421 SITE C
PERIODS 7-8



Period 7: mid 3rd century-circa 300/320AD
Period 8: 300/320AD-circa 350-360AD

Figure 10

A421 SITE C
PERIODS 9-12

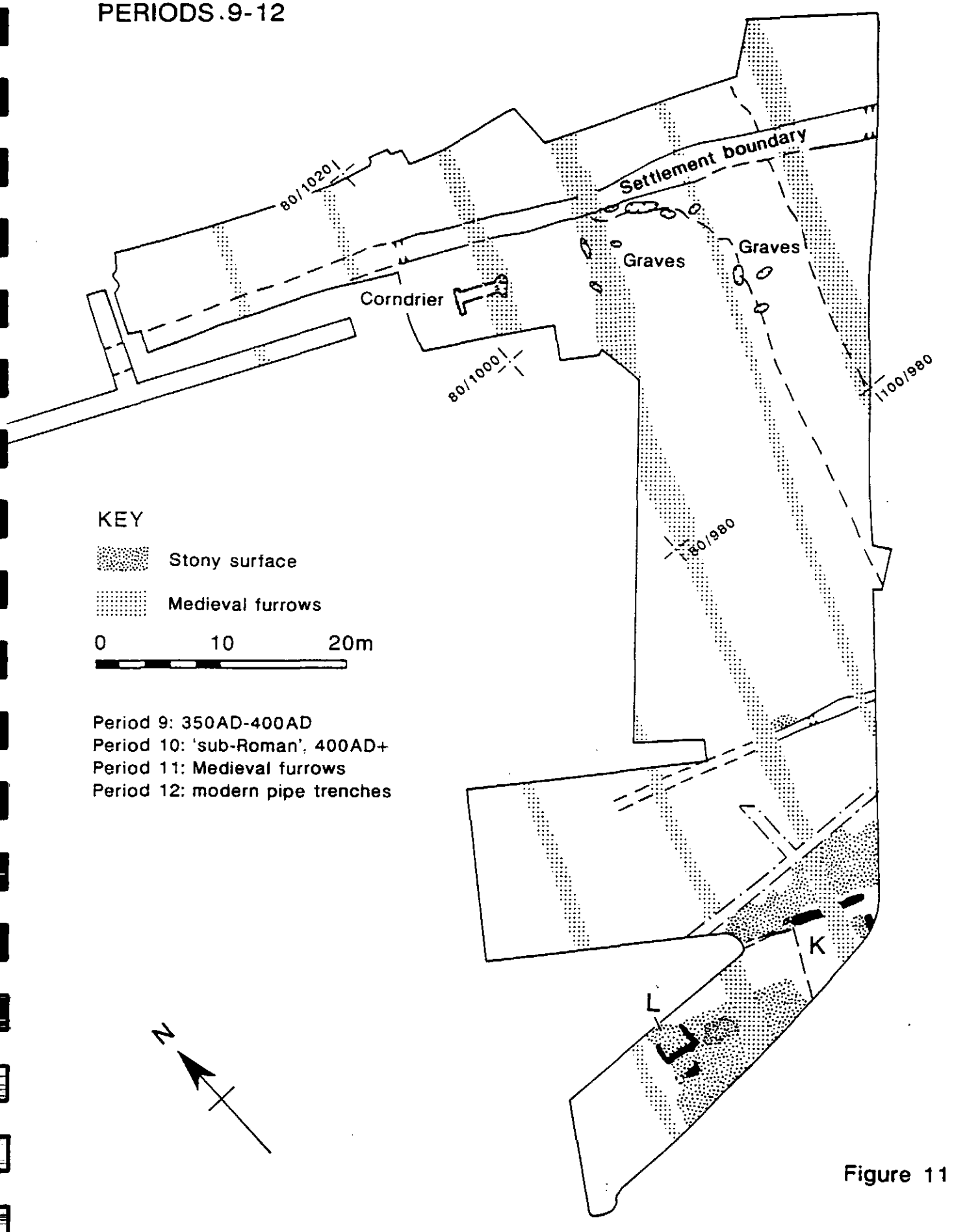
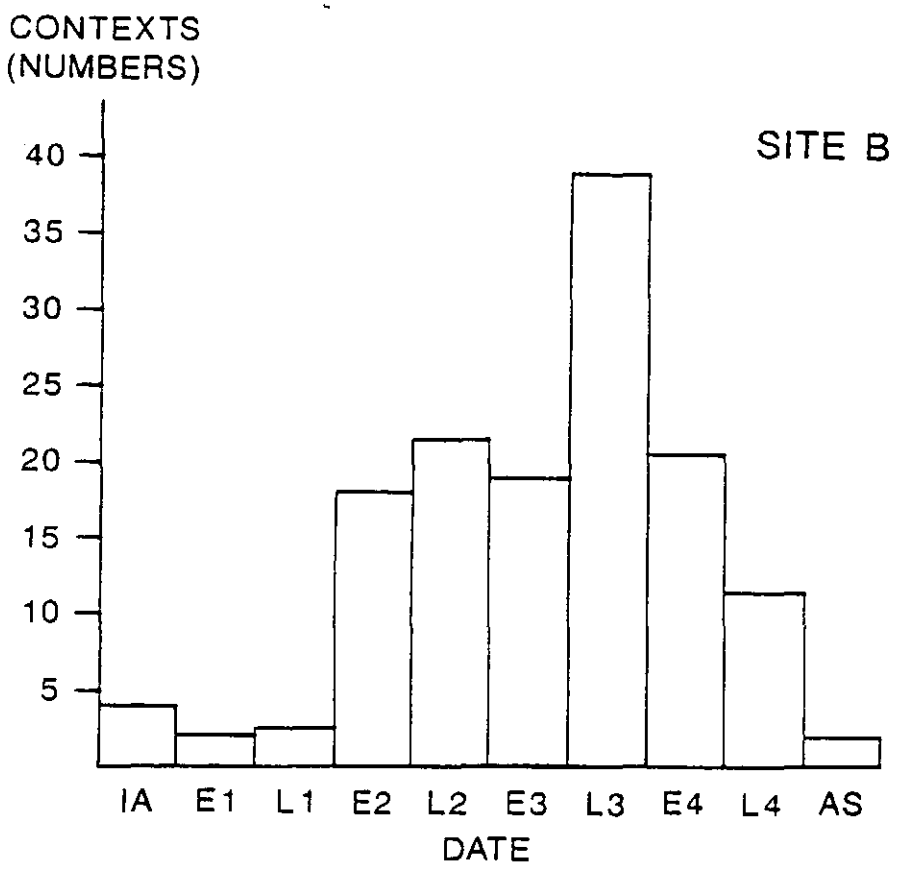


Figure 11



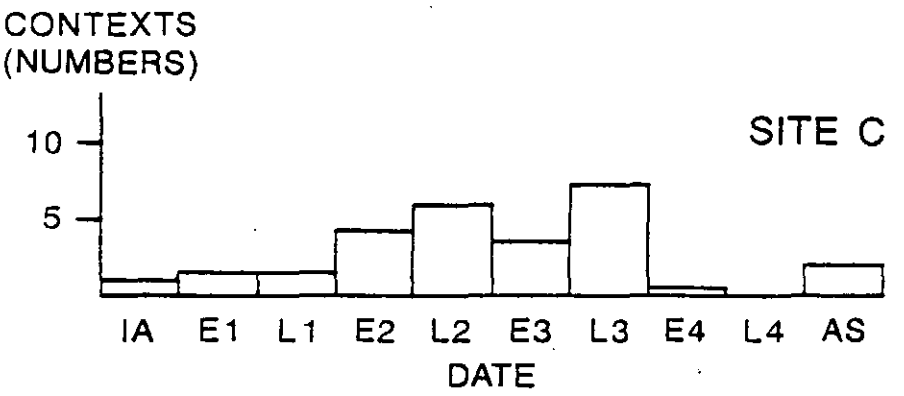
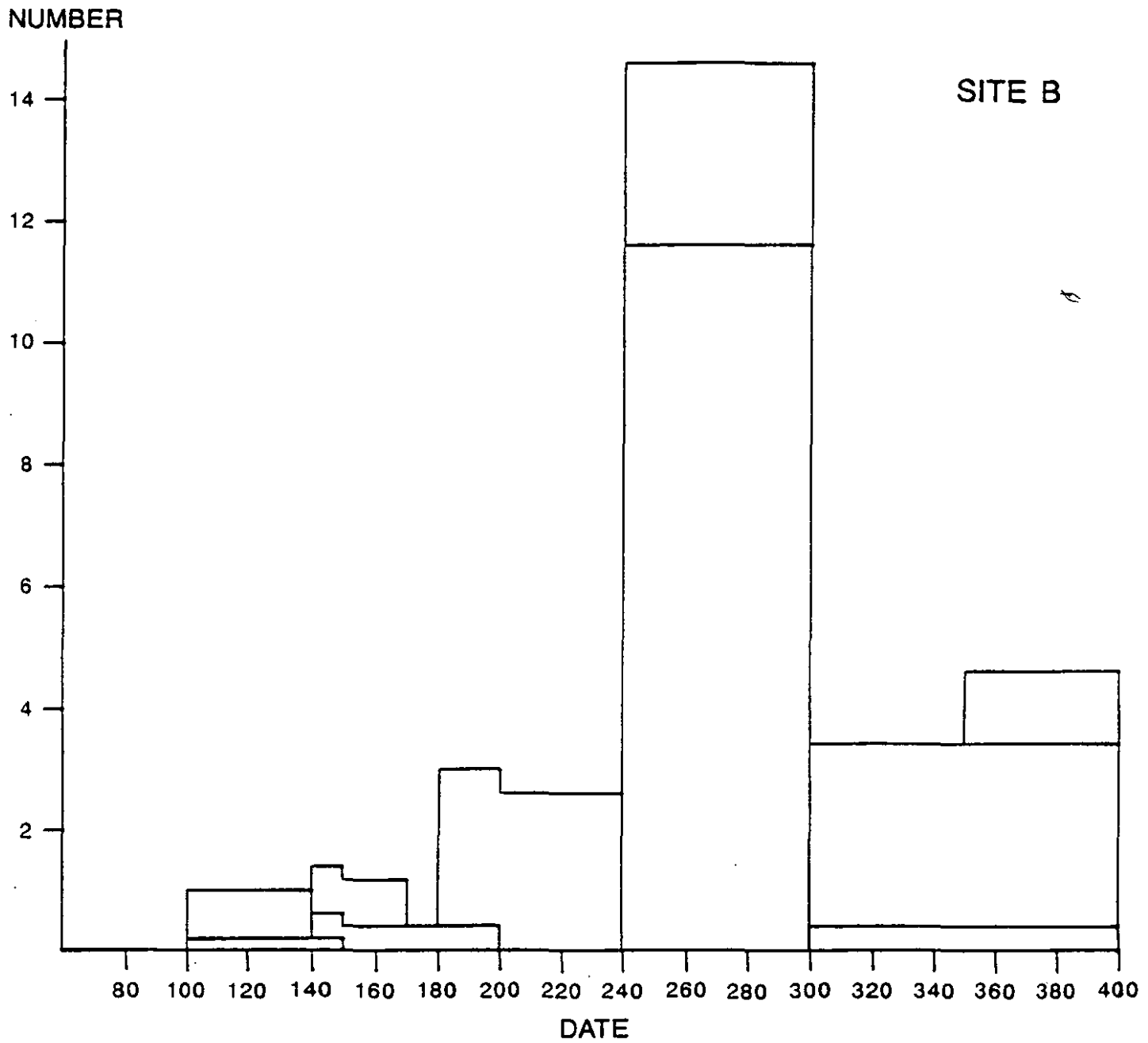


Figure 12 Numbers of pottery spot dates assigned by period (mainly in half-century units)



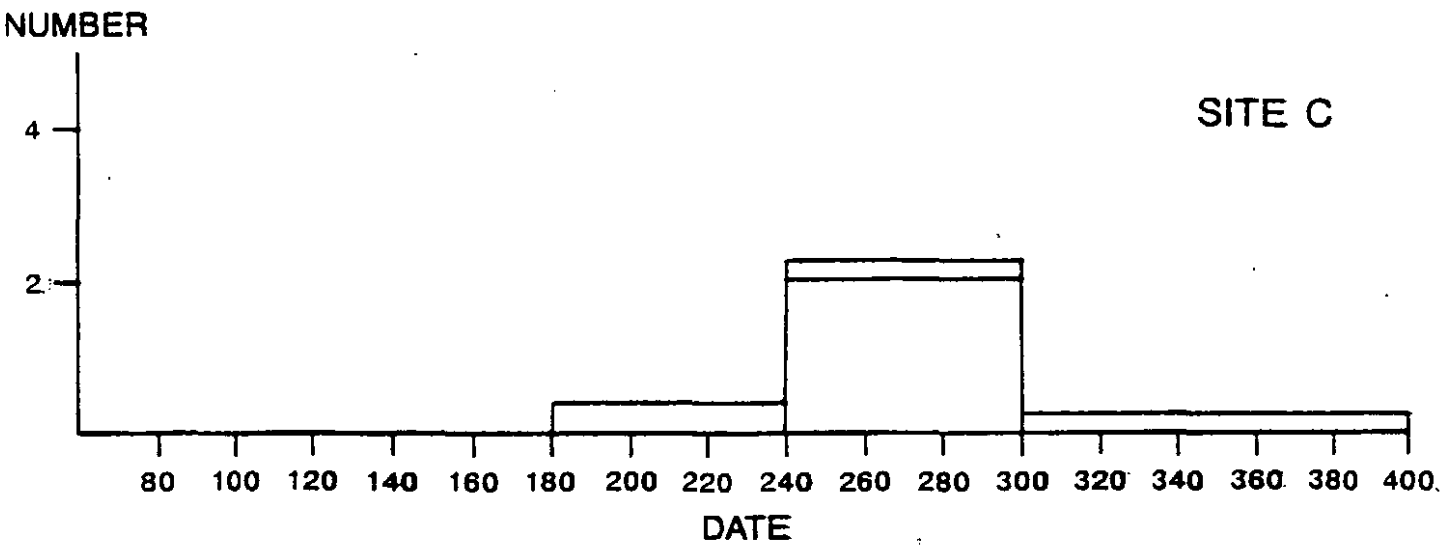


Figure 13 Oxfordshire mortaria per decade

PART C: APPENDICES

Appendix 1 List of documents relating to the A421 project

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- Ironwork by Q Mould
- Iron slag by J Bayley
- Glass by Dr D Allen
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- Stone by Dr F Roe
- Bronze Age pottery by A Barclay
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- Samian ware by B Dickinson
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- Human bone by A Boyle
- Animal bone by D Serjeantson
- Environmental data by Dr M Robinson
- Conservation by V Fell

Assessments omitted from the revised research design

- Technology of ferrous artefacts by V Fell
- Oyster shell by Dr J Winder
- Investigating DNA from skeletal remains by Dr M Richards

APPENDIX 1: LIST OF OAU DOCUMENTS RELATING TO THE A421 PROJECT

These documents are listed in chronological order

1 A421 Wendlebury-Bicester Dualling (not dated, but July 1990)

2 A421 Wendlebury-Bicester Dualling: Assessment Report and Proposal for Further Excavation (April 1991)

3 A421 Wendlebury-Bicester Dualling: Project Proposal for Excavation of SE Half of A421/Chesterton Lane Overpass (June 1991)

4 A421 Wendlebury-Bicester Dualling: Proposal for Extension of Current Excavation of SE Half of A421/Chesterton Lane Overpass (September 1991)

5 A421 Wendlebury-Bicester Dualling: Chesterton Lane Overpass North West Half, Project Proposal (October 1991)

6 A421 Wendlebury-Bicester Dualling: Proposal for Archiving, Post-Excavation Assessment and Research Design (September 1992)

APPENDIX 2: A CONSIDERATION OF THE SITE EVALUATION METHODOLOGY IN THE LIGHT OF THE EXCAVATION OF SITES B AND C

The original evaluation proposal envisaged a programme of field-walking succeeded by trial excavation. In the event it was not possible to carry out this scheme since those parts of the project area which were suitable for field-walking only became available at a very late stage, by which time the only sensible option was to proceed directly to trial-trenching. It may be noted, however, that in the area that became site C almost no finds were seen on the ploughed surface of the field during the excavation of the trial trenches (and subsequently). It is almost certain that systematic field-walking of this area with no background information would have produced a very low-level scatter of surface material which would have been very difficult to interpret. In the light of what was known about the adjacent site B, such a surface scatter might have been interpreted as derived from the intensive occupation seen there rather than representing activity in its own right.

In parenthesis it may be noted that neither of the small sites A nor D would have been located by fieldwalking at all, since the quantity of associated finds was very small (and there was no evidence in excavation for the presence of significant material in the ploughsoil). Neither site was anticipated from background information; both were located by traditional machine trenching. Both lay in the linear strip of the proposed carriageway, in which the proposed trenching strategy of c one 30 m trench per 100 m was soon modified to 20 m trenches approximately 50 m apart. This gave a more uniform coverage of the strip and reduced the likelihood that small but significant groups of features would 'fall between the gaps' between the trenches.

The evaluation of the SE half of the Chesterton Lane overpass area, which became site B and upon which most of the major assumptions about the character of the site and its component deposits were based, was (like that of site C) carried out by the standard technique of trenching. These trenches were dug by machine to various points in the stratigraphic sequence. In some trenches deposits above the subsoil were completely removed by machine to allow examination of cut features, and of any other deposits in section only. Elsewhere, machine excavation stopped at the perceived top of archaeological deposits, with the result that in several trenches the full sequence was not examined because of the time that hand excavation and recording would have taken. Techniques and estimates of time based on the experience of working on Thames Valley gravel sites with little or no stratigraphy were not appropriate here.

In contrast, the sample size of this evaluation was greater than would normally have been the case on a gravel site, working out at c 3% of the threatened area in the SE half of the proposed junction. This was sufficient to demonstrate adequately the quality and extent of deposits across the site, and to give an idea of their variability within the area. What this approach does not do is to allow characterisation of the full range of deposit types likely to emerge in subsequent larger-scale work. In particular, the potential presence of stone built structures was detected except in trench 1, in an area which was not examined subsequently. Whilst the fact that evaluation trench 5 passed within less than 3 m of three partly stone-built structures (and within less than 1 m of two of them) might be regarded as a classic, if extreme, case of 'sod's law', it is more worrying that the presence of none of these buildings could even reasonably have been postulated on the basis of the evidence recorded within the trench. The only way in which these structures *might* have been detected would have been by complete hand excavation of the (ephemeral) uppermost deposits in the evaluation trench,

and even then it is doubtful if the correct deduction would have resulted.

Conclusions to be drawn from these events vary depending on one's perception of the purpose of evaluation. If the objective of the evaluation of the SE half of the A421/Chesterton Lane junction was to demonstrate the potential of the deposits to repay further work then this was easily achieved. However, the failure to detect the presence of surfaces and partly stone-built structures within the area subsequently excavated resulted in the need to reassess the funding of the project in the course of excavation. These problems might have been averted by the application of a more extensive (and expensive) evaluation strategy, perhaps involving a higher density of trenches, but certainly requiring complete hand excavation of the sequences from top to bottom. The use of geophysical techniques might have been productive, but the precise technique would have to be carefully selected, since recent experience at another Roman small town in Oxfordshire (Asthall) has shown that a routine application of magnetometry completely failed to characterise a complex sequence of structures and associated deposits as anything other than vague, uninterpretable anomalies.

Evaluation techniques therefore need to be tailored as far as possible to the type of site anticipated on the basis of background information (while acknowledging that the approach should not be so period specific that unanticipated features of other periods would not stand a reasonable chance of detection). Roman urban and suburban deposits, for example, with their potential for great complexity and rapid changes of character, may therefore require much more intensive evaluation than many other types of site. The use of geophysical techniques as standard might be valuable, with due consideration given to the selection of an appropriate technique. There might even be a case to be made for deploying geophysics after some excavation has taken place, either to elucidate particular problems or to enlarge upon a framework established from the excavated data. The advantage of this approach (over the more normal one of deploying geophysics first and siting evaluation trenches on the basis of the geophysical results) might be that in working from already characterised deposits the chance of major errors arising in interpretation would be substantially reduced.

APPENDIX 3: SPECIALIST ASSESSMENT REPORTS

Introduction: Revisions to assessment reports

Coins by Dr C King

Copper alloy, jet/shale, bone and antler objects by Dr G Lloyd Morgan

Ironwork by Q Mould

Iron slag by J Bayley

Glass by Dr D Allen

Flint by P Bradley

Stone by Dr F Roe

Bronze Age pottery by A Barclay

Roman pottery by Dr J Evans

Samian ware by B Dickinson

Tile by L Allen

Human bone by A Boyle

Animal bone by D Serjeantson

Environmental data by Dr M Robinson

Conservation by V Fell

Assessments omitted from revised research design

Technology of ferrous artefacts (metallographic examination) by V Fell

Oyster shell by Dr J Winder

Investigating DNA from skeletal remains Dr M Richards

INTRODUCTION: REVISIONS TO ASSESSMENT REPORTS

The revision of the project design for submission to the Department of Transport, has resulted in the cutting of various aspects of research which were initially incorporated in the proposal submitted to English Heritage. These research elements which have been cut are those which are not central to the interpretation of the site and/or were more specifically orientated towards regional or national research questions. These were: analysis of the oyster shells; the metallographic examination of ferrous artefacts; revision of Young's Roman pottery type series for the Oxfordshire reduced and oxidised wares; and DNA analysis of the late/post-Roman cemetery. These discarded assessments have been incorporated at the end of this appendix in condensed type. In the case of the pottery assessment, the elements of the assessment report which relate to the revision of Young's type series are shown in condensed print within the report.

In addition to restricting the scope of the initial research design, vigorous attempts have been made to reduce the cost of the specialist work being undertaken. In particular the costs of the conservation, animal bone report, and environmental report have been substantially reduced by contracting non-English Heritage resources to do the work. Further savings have been made by reducing the time allocated to undertake the work detailed in some of the assessment reports. This applies specifically to the coins, pottery, stone, environmental data and possibly the conservation. Therefore, the original time-estimates included in these assessment reports have not been ultimately used in the final project design, and as a result only the task list in Part C should be used as a definitive reference for the time allocations which have been made for these tasks.

The assessment reports are presented in this appendix as received from the various specialists. Therefore, in order to highlight where significant changes have been made to the initial proposal 'editorial comments' have been appended at the end of various assessments.

Coins, by Dr Cathy King (Ashmolean Museum)

Some 420 coins from sites B and C, including metal-detected finds from the spoil heap, were scanned by Dr King, who summarises them very briefly "They are most certainly worthy of further study since they will be helpful in establishing the chronology of the site as well as adding to our general picture of the pattern of coin loss on Romano-British sites". The coins are almost entirely of the later 3rd-4th centuries. Only seven are provisionally assigned to the 1st and 2nd centuries. The pattern of coin loss probably reflects in part a change of function in site B in the later Roman period, with domestic activity taking place from period 7 (c mid 3rd century) onwards, resulting in a large increase in the use of coinage in this part of Alchester. Whilst 1st-2nd century coinage is always much less common than later issues it should have been better represented on the site had there been continuous domestic activity from the later 1st century onwards. Some 114 coins were indicated as requiring some cleaning before identification could proceed, but in general they are in good condition.

Copper alloy, jet/shale, bone and antler objects, by Dr G Lloyd-Morgan

Some 134 items in all these materials were examined (c 106 copper alloy, 3 jet/shale, c 25 bone and antler). The copper alloy items can be classified under two main headings; firstly, items of personal adornment, and secondly, other items of domestic use and other related material.

Items of personal adornment include eight fibulae in varying states of preservation dating from the 1st to 2nd or 3rd century. One example, (SF3221), is a disc shaped brooch with enamel inlay of red and yellow. A fragmentary item, (SF116), is the foot of a fibula, probably from a trumpet brooch, which appears to have been part of an unsuccessful casting. Five fragments of bracelet have been identified, though some other poorly preserved strips may also have once belonged to this category. No finger rings have been identified amongst these finds.

Amongst the items of domestic use are four spoons, all incomplete and represented by either the handle section or the bowl. They include at least one 1st century type and two of later date. Implements used either for medical purposes with probe and spoon sections were noted, with some others being used for cosmetic purposes. Curiously no tweezers have been identified. There is one large needle (SF2061) broken across the eye, and a fragment of a seal box with part of the hinge (SF3070) was noted.

A noteworthy component of the assemblage is a group of seven pieces of military equipment, all (?redeposited) in later Roman contexts in site B. The significance of these is not yet clear, but their possible date ranges and location within the excavated area will need to be carefully considered to see if they could have derived from the earliest activity on the site or whether they could have arrived there at various times in the Roman period.

Other smaller pieces of post-Roman date, with items of scrap and other unidentifiable objects can be briefly listed for inclusion amongst the project archive.

A small jet bead of hexagonal cross-section (SF404) was noted. Shale items were a fragment of a massy bracelet SF1153 and a disc SF142, possibly a gaming counter. Fragments of eleven bone pins or needles were noted, as was a gaming counter with graffito SF3194. Of particular interest are the fragmentary bone handles of two clasp knives, SF1168 in the form of a

stylised military scabbard; and the more complete SF530 with a turned finial and the remains of a hole for the rivet which would have held the metal collar in situ and acted as the axis for the knife's blade.

Although a fair proportion of the finds are residual, the better preserved items, including those noted above, are worthy of more complete recording and discussion, with adequate dating and parallels from the region, as well as those noted from elsewhere in Britain as appropriate. It is proposed that the collection would take a maximum of *c* 50 hours to be catalogued, with a brief commentary to put the finds into the appropriate context.

Ironwork, by Quita Mould

The assessment has been produced following the scanning of 40 radiographs. The radiographs showed *c* 792 individual small finds of which 317 were seen to be objects, the remainder being timber nails. A small quantity of nails were originally allocated small find numbers and radiographed but the majority were treated as bulk finds. The timber nails recovered from the excavation have not been considered in the assessment; however, a number of coffin nails are mentioned in the documentation provided and their study might be thought useful providing they have been individually plotted on the relevant grave plans. In the following text quantification does not include nails.

The majority of the ironwork (265, 84%) comes from site B. A small quantity was recovered from site C (23, 7%), although the excavated areas of sites B and C were of comparable size. In addition a small number of iron objects were recovered from the spoil heaps of each excavation by metal detector (site B 20, 6% and site C 9, 3%)

Period	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*u/c*	*Total*
Site B	*2*	*0*	*1*	*1*	*9*	*20*	*57*	*37*	*11*	*70*	*3*	*54*	*265*
Site C	*0*	*0*	*0*	*1*	*1*	*5*	*3*	*3*	*0*	*0*	*0*	*10*	*23*

Table 1: Quantity of iron objects found in each period. u/c = unassigned contexts.

Site B: The majority of the ironwork was recovered from contexts provisionally dated to the later 3rd (period 7, 8%) and the 4th century (periods 8, 22% and 9, 14%). Over a quarter of the entire assemblage (26%) came from contexts assigned to the medieval period (period 11) but largely comprising material redeposited from Roman contexts (cleaning layer 8 and its constituent /analogous deposits).

Period 2 (Iron Age). Three small fragments occurred apparently intrusively in this period.

Period 4 (late 1st-early 2nd century). A T-shaped lift key (SF1140) was found in ditch fill 2133.

Period 5 (early-mid 2nd century). A fragment of nailed binding (SF1115) was found in pit fill 3108. As 20% of the assigned contexts belong to this period the small quantity of ironwork recovered is noticeable (though it can be explained, because many of the contexts of this period were ditch fills seen and recorded only in section).

Period 6 (mid 2nd-mid 3rd century). An L-shaped lift key, a possible needle stem and a limited number of structural/domestic fittings were recovered.

Period 7 (mid 3rd century-AD 300/320). A small quantity of structural items, a knife and a possible brooch fragment (SF612) were found along with a hipposandal fragment and a fragment of a curved strap (SF694), possibly from a horseshoe.

Period 8 (AD 300/320-350/360). A small domestic assemblage was recovered from this period along with a small quantity of agricultural and craft tools. A stylus, the only one from the excavations, was also found in this period.

Period 9 (AD 350/360-400+). A small domestic assemblage was found in this period with a small number of possible craft tools. A fragment of nailed binding (SF860), possibly a broken horseshoe, was also recovered.

Period 10 (sub-Roman). A small assemblage including an L-shaped lift key, a pruning hook and fragments of hipposandal came from contexts assigned to period 10. There is, however, no reason to think they are anything other than residual Roman objects at present.

Period 11 (Medieval). 26% of the ironwork came from contexts assigned to the medieval period. However, 59% of the objects from this period came from the cleaning layer 8 and are likely to be of Roman origin, although it should be noted that intrusive modern iron (eg SF195) was also identified from this context. A possible foot from an iron vessel and strap fragments were found in furrow fill and are of medieval date. The date of the file and saw blade fragment from this period are uncertain without further stratigraphic evidence.

Period 12 (Post-medieval). Three items occurred in deposits of this period.

Unassigned contexts. 20% of the ironwork recovered came from contexts at present unassigned to a period. Of note are a socketed cleaver, knife, shears blade, two padlock keys and a possible awl.

Spoil heap finds. A small number of domestic items and a hipposandal fragment, a horseshoe and possible snaffle bit links were found by metal detector.

Site C: A cheek piece from a curb-bit (SF2054) was found in ditch fill 5266 dated to period 5 (early-mid 2nd century). Fragments of a latchlifter (SF2053) were found in a treehole fill and a knife (SF2016) was found in cobbling, both belonging to period 9 (AD 350/360-c 400). The rest of the ironwork comprised broken structural/domestic fittings and hobnails. No ironwork from spoil (SF4000+ numbers) has been scanned from radiographs.

Potential for analysis

The iron can help define the character of the occupation as objects reflecting domestic and agricultural activities and craft tools have been noted. Spatial analysis of the iron may suggest possible uses for individual structures and/or identify functional zones. The study of the tools found may suggest the nature of the craft(s) being undertaken in the vicinity and possibly the types of objects being manufactured and/or repaired. Concentrations of iron slag were noted at the extreme W end of site B during excavation. This implies the presence of a blacksmith. No quantities of scrap metal collected for recycling were apparent, however. The occurrence of the hipposandal, possible horseshoe and harness fragments are probably a reflection of the proximity of the road network. The possible horseshoe fragments will be of wider interest to Romano-British metalwork studies if they are found to come from securely dated Roman deposits.

Methodology

All objects will be scanned. Those from well sealed contexts, interesting groups or occurring residually will be noted. Objects from selected contexts will be catalogued. Selected objects such as the possible horseshoe fragments, tools and possible brooch will be cleaned as necessary to allow identification. Find spots of selected functional categories of ironwork will be plotted to help suggest uses for individual structures/areas. A discussion of the ironwork will be written. Those objects mentioned in the text will be illustrated, though the number of such pieces is unlikely to exceed *c* 40. Timing 15 days.

Iron Slag, by Justine Bayley (AML)

About 19 kg of slag came from site B, with a further 0.5 kg from site C. The slag included hearth bottoms (with diameters of 5-12 cm), small amorphous pieces of smithing slag, fuel ash slag and fragments of vitrified clay hearth lining, one (from site B, 1142) with part of a tuyere hole surviving. Slag types are defined in Bayley (1985).

The slag indicates that a blacksmith worked in this Roman settlement. The relatively small quantity of material suggests that the focus of this activity was outside the excavated area. However, the distribution of slag, which concentrates at the W end of site B, can be interpreted to suggest a likely location for the smithy - in the unexcavated area adjacent to the concentration.

It is not thought that the slag requires further recording and reporting, though a distribution plot of the material will be of use in helping to understand patterns of economic activity on the site.

Glass, by Dr Denise Allen

Site B: vessel glass of Roman date totals 142 fragments, of which 42 fragments can be identified as having come from bottles of the first two centuries AD. There are 22 fragments considered worthy of discussion and illustration. They represent forms ranging in date from the late 1st-early 2nd century AD to the end of the Roman period, and include items of tableware and a variety of containers. There is one facet-cut fragment which could be classed as a 'luxury' item, and a substantial bath-flask neck and upper body. Of the remaining indeterminate vessel fragments, most are blue-green, 12 are colourless, and there are only two of the bright colours typical of the 1st century. Characteristically bubbly and streaky greenish glass of the late Roman period is quite well represented.

In addition there are five fragments of matt-glossy window glass, of the type in use to about AD 300, and a further five fragments of late Roman blown window glass. Thirteen beads are of common Roman types.

Site C: Nine vessel fragments and one window glass fragment came from this site. Most of the vessel fragments are from bottles, and there is one jug or flask rim.

Flint, by P Bradley

A small quantity of worked flint was recovered during the excavations. The material was quickly scanned, diagnostic artefact types were noted and raw material types were recorded.

Factual Data

A total of 54 pieces of flint and a burnt quartzite pebble were recovered from the excavations. All of the flint was recovered from features which have been assigned to later periods; therefore all of the material has been redeposited. The material represents Neolithic and Bronze Age activity. A leaf-shaped arrowhead and two blade-like flakes were recovered from site C. A barbed and tanged arrowhead and another unfinished example were found on site B. Several scrapers from site B were neatly retouched and may be Neolithic in date. Several blades and blade-like flakes also probably Neolithic, were recovered from various features on site B. Few small flakes and chips were recovered, perhaps indicating sampling biases. The majority of the raw material was fairly good quality flint with a white, chalky cortex. This material may be from the Clay with flints to the E. There were a few pieces of poorer quality flint.

Statement of potential

In terms of the site, the worked flint is of limited importance. The material seems to reflect intermittent activity spanning the Neolithic and Bronze Age. The material warrants brief recording, it is not envisaged that any flint will be drawn.
Estimated further time 1/2 day.

Stone, by Fiona Roe

Thirty-two items of stonework were briefly examined. Stone type and possible sources were noted, and the types of object identified where possible. The assemblage included 13 quern and 10 whetstone fragments and miscellaneous pieces. This is a relatively small collection of worked stone, but it shows a wider area of trading contacts than might be expected for a Roman extra mural settlement, even allowing for the Purbeck Marble inscription, which is assumed to have come originally from the central area of the town.

Amongst the querns were 5 fragments made from Upper Old Red Sandstone (either quartz conglomerate or sandstone) brought in from South Wales or the Forest of Dean, together with one quern fragment of Millstone Grit and another of Lower Greensand from Lodsworth in Sussex. There is also a piece of lava, probably Niedermendig. Three of the whetstones appear to be made of Kentish Rag from near Maidstone.

Other items are made of unidentified stone assumed to be mainly of local provenance. Most notably there is a mortar, 27 cm in diameter and with a pouring lip. This is of interest in itself as a rarity. It is made of a sandy coloured slightly micaceous sandstone. Another item of relative rarity is a weight, of 'cheese' type and made from quartzitic sandstone, probably obtained from the Drift. Three further whetstones are made of calcareous sandstone of uncertain origin, while another may be of Coal Measures sandstone, as may a stone palette made from a similar fine-grained micaceous brown sandstone. A saddle quern from an early context is made of stone which appears to match that used for the mortar. A second, fragmentary mortar is unevenly shaped, and is probably made from Cornbrash, available

locally.

The preservation level of this worked stone is good. Unusually there are two complete whetstones, together with a nearly complete mortar.

Future work would include possible thin sectioning of 2 or 3 of the whetstones, which are too fine-grained for a satisfactory macroscopic identification. Further investigation of the local and other unidentified materials is needed, particularly that of the mortar, and this would include some fieldwork. These finds also need to be put into context with other Roman material from the area.

Seven days work would be needed to complete a satisfactory report.

Bronze Age pottery, by Alistair Barclay

The material consists of the base of a plough damaged cremation urn from site A, and 42 Beaker sherds (weighing 228 grams) from contexts of Roman date in site B. The Beaker material consists of both fine sherds, with impressed comb and incised decoration, and coarse plain sherds, all in grog tempered fabrics. It is consistent with Beaker domestic assemblages of the Early Bronze Age. The cremation urn, though very fragmentary, is likely to belong to the Deverel-Rimbury tradition of the Middle Bronze Age.
The collection is of limited value for the stratigraphic understanding of the site, though the cremation urn is significant in being from the only identifiable feature predating the Iron Age from any of the sites. However, the beaker sherds, although redeposited, represent in regional terms an important collection of 'domestic' material from N Oxfordshire. In the context of such assemblages, which are relatively scarce, the present collection represents a fairly large group of material. A brief description and discussion of both the urn and the beaker sherds is suggested. This would represent a day's work. Some of the Beaker sherds (a maximum of *c* 6?) would require illustration. The cremation urn is too fragmentary for illustration to be worthwhile.

Roman pottery, by Dr Jeremy Evans

Factual data

Some 140 boxes of pottery were recovered from the excavations, of which about 20 contained poorly stratified material. Approximately 46,475 sherds, 629.2 kg, come from stratified contexts. The pottery comes from two excavated areas, sites B and C, with some 5454 sherds (71.9 kg) from site C and the remainder from site B. Sherds are distributed fairly evenly across the two sites, though the overall density of material is considerably less on the less deeply stratified site C. There are a few Beaker sherds (see above section 3.ii.8) and a small number of features of middle Iron Age date. Most of the 700 or so Iron Age sherds and all the Beaker sherds were from site B. There are very few 1st century features, but activity expands considerably in the 2nd century and seems to rise to a peak in the mid-late 3rd, declining in the early 4th century to the previous level and then declining again in the later 4th. the groups do not seem to contain considerable quantities of residual material, although assessment of this is difficult given that there is no precise dating scheme for the abundant reduced wares. Small groups of early Saxon pottery came from localised areas of both sites B and C, which together produced *c* 60 sherds of this material.

Figure 12 provides histograms of numbers of contexts by ceramic date for those context groups which can be reasonably closely dated in sites B and C. Figure 13 presents histograms of the frequency of Oxfordshire mortaria identified to type in the assessment (these data are not of publication quality, but mortarium forms have been consistently enough noted for them to be used to give an impression of frequency by date for the 2nd-4th centuries). These histograms suggest that the bulk of activity on the site was in the later 3rd century, like Figure 11, although with substantial activity remaining in the 4th century. Table 2 lists the number of sherds by the provisional periodisation. This once more suggests little activity on the site before the 3rd century, but does not show the later 3rd century peak visible in figures 12 and 13 and produces a peak of activity in the early-mid 4th century. Since the dating here is based largely on stratigraphic rather than ceramic criteria the pottery assigned to the later periods in particular will contain some residual material.

Period	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*unassigned*
% sherds	*0.9*	*0.5*	*2.9*	*5.6*	*12.8*	*7.1*	*23.8*	*12.4*	*1.7*	*4.0*	*0.7*	*27.4*

Table 2: Percentages of sherds occurring by period in the provisional periodisation.

The data used in this assessment were collected from a rapid scan and summary quantification of all the stratified material (tables 3 and 4) and a brief scan of the unstratified collection. Sherds were assigned to a number of major ware groups defined in the Oxford Archaeological Unit's pottery recording system (see below). In a few cases recording was at the level of distinct individual fabrics (eg Oxfordshire and Nene Valley colour-coated wares). Quantification was by sherd count by fabric/ware group per context. The total weight of pottery in each context was also recorded.

The collections are complete. The largest single element comprises grey wares, principally of Oxfordshire origin, together with substantial components of Oxfordshire colour-coated and oxidised wares, shell-tempered and grog-tempered wares. Samian ware is not particularly frequent, especially for an urban site, and is subject to a separate assessment report (by Brenda Dickinson: see below). The condition of the material is variable, many sherds have eroded surfaces and consistent recording of surface decoration will not be very productive. However, a number of the earlier groups contain at least semi-votive material with substantially complete vessels and a number of miniature vessels.

The ware codes used in the tables below are as follows:

S = samian ware
F51 = Oxfordshire colour-coated ware
F52 = Nene Valley colour-coated ware
F40 = miscellaneous imported colour-coated wares
F = general fine ware category (excluding wares listed above)
A = amphora fabrics
M22 = Oxfordshire white mortaria
M41 = Oxfordshire red colour-coated mortaria
M = general mortarium category (excluding wares listed above)
W = general white ware category (except mortaria)
Q = general white-slipped ware category
O = general oxidised coarse ware category
R = general reduced ware category
B = black-burnished ware

C = general category for calcareous tempered fabrics
G = general category for coarse tempered (storage jar etc) fabrics
IA = Iron Age
AS = Anglo-Saxon

Period	S	F51	F52	F40	F	A	M22	M41	M	W	Q	O	R	B	C	G	IA	AS
0	2	8	1		1	2	2	+	+	2	+	10	50	4	7	10	1	
2										1		1	7	+	1	6	84	
3	5								2	4	+	2	75		2	8	1	
4	4					1				1		4	47		5	31	5	
5	1		+		14	12	+		+	4	2	7	69	2	4	7	3	
6	2	+	+		+	1	+		+	2	+	12	63	3	7	5	1	
7	2	2	+		+	1	1			2	1	12	58	5	9	5		
8	2	12	1		+	2	2	+		1		11	40	9	10	10	+	
9	1	15	1	+	+	2	2	1	+	2	+	8	37	5	7	13		
10	1	17	1			5	3	1		1		8	32	6	10	14		+
11	1	9	1			1	1	+		1		7	50	14	5	9	+	
12	2	1		3		4	+			1		13	61	2	5	6		

Table 3 Site B: Quantification of Roman pottery by period. Fabric/ware codes as OAU recording system. Figures are percentages of total sherds per period (rounded to nearest percentage point).

Period	S	F51	F52	F40	F	A	M22	M41	M	W	Q	O	R	B	C	G	IA	AS
0	3	7	1	+		3	1	+		1	+	10	48	5	9	9	2	1
4	+			+						6		1	75	+	17	+		
5	1			+		1	+			4	+	3	74	3	6	7	+	
6	2		1	1		4	4			2		9	63	1	3	10	+	
7	2	7	+	2	1	4	1			7		14	39	5	13	6		
8	1	1	+	1		2	1			3		12	57	4	8	6	2	
9	3	14	1			2	3			2		13	32	8	7	14		
10	5	7	1		1					1		3	33	1	6	7	1	31

Table 4 Site C: Quantification of Roman pottery by period. Fabric/ware codes as OAU recording system. Figures are percentages of total sherds per period (rounded to nearest percentage point).

Potential

Review of the April 1991 project design (A421 Wendlebury-Bicester dualling: assessment report and proposal for further excavation) and the post-excavation assessment proposal produces a number of questions upon which the ceramics might provide valuable evidence. In particular the latter document specifies:

i) "The relationship of Roman to pre-Roman settlement on the site.... was a pre-existing Iron Age component more important than has been realised, or is the association of Iron Age

and Roman settlement purely fortuitous?"

ii) "The position of the site in the context of the town as a whole. Does it appear to be marginally located? How does the character and chronology of activity here compare with that further south?"

iii) "The economy and environment of the site. The finds should provide useful evidence of the economic basis of the community. What were the trade connections of the town, as exemplified by (amongst other classes of material) the pottery? If the settlement extends back into the 1st century, as seems likely, the developing ceramic assemblage could be very important for shedding light on the early development of the Oxfordshire potteries, much the least well-understood aspect of this industry."

The ceramic evidence provides strong indications of a lack of continuity between the Iron Age occupation and subsequent Roman activity on this particular site (although this does not provide definitive evidence for Alchester as a whole). This is contrary to the conclusions reached by Harden (1937) in an adjacent area to the present excavations, and a brief re-assessment of this material should be made.

The ceramics can also contribute evidence as to the character of activity on the site and will provide the bulk of the evidence as to the chronology of activity in comparison with the walled town. A full comparison of the nature of activity on this site relative to that within the walled area cannot be carried out until a good sequence of quantitative data is recovered from within the enceinte.

The ceramics will provide the bulk of the evidence for the town's trade connections and changes in the pattern of these through time.

The pottery assemblage is from a large enough area and is sufficiently sizeable to allow it to be examined for contemporary variations in functional composition as well as for functional change in time. Coarse ware and fine ware data may be compared with the distribution of glassware.

The assemblage from this site is definitely of regional importance and should do much to establish a regional ware and type series for northern Oxfordshire (Fulford and Huddlestone 1991, 52, Recommendation 5.4.3). In particular the early development of the Oxfordshire industries is poorly understood and the oxidised and reduced coarse wares are poorly divided into types and dated in Young (1977). For example, indented grey ware and oxidised beakers both seem to be misdated on the evidence from the assessment (Young 1977, types O23-24 and R36-37). The data from this site should help to develop a clearer understanding of the Oxfordshire industry and will hopefully refine the dating of at least the commoner coarse ware types. Apart from the significance of this assemblage as the first from the regional urban centre for northern Oxfordshire from which significant quantitative data may be derived, it is also important for its production of quantitative data which may be compared with those from the neighbouring centres of Dorchester, Towcester, Magiovinium and Cirencester and Verulamium, as well as with other sites of varying status within the local settlement hierarchy.

The small Iron Age group is of importance as little is known of middle Iron Age pottery from this part of Oxfordshire, in contrast to the Thames Valley region.

The early Saxon material, though only a small quantity, nevertheless represents the first evidence of activity of this period to be identified from any part of Alchester. As such it is an important group of some significance for understanding the development of the regional settlement pattern in the post-Roman period. As with the Iron Age pottery, there is relatively little comparative material from the area.

There is reasonable potential for using the pottery data in comparison with other elements of the finds assemblage composition in order to attempt to elucidate other aspects of the archaeology of the settlement. In particular, attention will be paid to spatial variations in the

functional composition of the assemblage relative to the functional distribution of other finds classes. Data on average sherd size will be examined relative to context type for information on taphonomy and will be compared with data on animal bone distribution and attrition and the occurrence of other bulk finds types. Chronological trends in the relationship between quantities of pottery and other common finds classes (eg glassware, bone, tile and nails) will also be examined for long term trends (cf Evans forthcoming)

Publication synopsis

	Text (words)	Fiche (A4)	Figs (A4)
Introduction	1000		
Iron Age pottery	4000	10	1
Period dating (see separate section of report	3000	10	1
Fabric supply/form occurrence	10000	80	40
Functional analysis	2000	10	2
Fine wares	2000	10	2
Taphonomy	2000	10	2
Ceramic small finds/graffiti	1000	10	1
Anglo-Saxon pottery	1000	5	0.5
Discussion/regional context	4000		5

Methods

The pottery will be recorded using the standard system implemented in the Oxford Archaeological Unit over the last three years, which allows instant comparability of results from different assemblages within the region through the use of unified fabric and vessel type codes, an approach noticeably lacking until recently (Fulford and Huddlestone 1991, 14, section 1.4.2.2). The stratified pottery will be recorded by sherd numbers, weight and rim percentage for form and fabric. Owing to serious surface erosion of much of the material the consistent recording of decoration or deposits on vessels is not possible. The material will be illustrated most economically by a fabric and form type series, although the early 'ritual' vessels will be illustrated by group. Reduced, grogged and shell-tempered wares will not necessarily be grouped to visually exact fabric groups, but will be subdivided into general classes (eg early fine reduced wares and other fine reduced wares (OAU fabric classes R11 and R10)) as these classes appear to contain a number of chronologically significant fabrics. Fabric divisions at a more detailed level than those used in the assessment are essential in order to see chronological trends in the assemblage properly.

It is important to identify vessels to precise form if the project is to attempt to refine the chronology of Oxfordshire reduced and oxidised wares, and the quantification of form data is one of the most important recommendations of the Fulford report (Fulford and Huddlestone 1991, 44, sections 4.3.3 and 51, section 5.4.1). Sub sampling the assemblage is unlikely to produce the data necessary to address the research aims. The recent examination of over 16,000 sherds from a sequence at Lower Farm, Nuneham Courtenay (by P Booth), has demonstrated that this is not an adequate database for reviewing the Oxfordshire coarse wares and Millett's (1983) examination of typological diversity and group size suggests that very large group sizes are necessary.

The pottery coding will be undertaken according to a prioritised list of contexts so that,

should problems occur with the programming, material from all periods and all areas of the site will have been examined. A full examination of the Oxfordshire oxidised and reduced ware assemblage from the site is essential to provide data with which to review and refine the chronology and typology of these classes. The Iron Age pottery will be processed by J Evans but written up jointly with Paul Booth. J Evans will report on the Anglo-Saxon material.

Tasks and programming

Tasks

a) agree a form type series from Young (1977) for oxidised and reduced wares and a modified type series of mortaria and colour-coated wares with PB (2 weeks)
b) code the stratified pottery onto standard recording forms, selecting potential vessels for illustration (40 weeks)
c) scan unstratified pottery (1 week)
d) select material for illustration (1 week)
* samian catalogue and sherds required
e) code samian ware (1 week)
* phasing and list of key groups for dating required
f) code recording sheets onto computer (2 weeks)
* information on animal bone, tile, glass, nails and small finds required
g) analyze data (2 weeks)
h) reexamine pottery from Harden excavation (3 days)
i) draft report (7 weeks)
j) prepare text figures (1 week)
k) check drawings (1 week)
l) proofs

* - critical input from OAU

Training: Study group for Roman pottery conference 1994
Roman finds group meetings

EDITORIAL COMMENT

The revision of the project design for submission to the Department of Transport, has led to the limitation of the research aims for the pottery. In particular the proposed revision of Young's type series for the Oxfordshire reduced and oxidised wares will not be undertaken, and analysis will concentrate on the contribution the pottery can make to the site interpretation. This will obviate the need to undertake task a) outlined in the Tasks and Programming section, and in an attempt to limit costs processing times have been cut, which will probably result in parts of the assemblage being sampled rather than fully recorded.

Samian ware, by Brenda Dickinson

Quantification

Site B produced 971 fragments from 246 contexts and site C 146 fragments from 40 contexts. The total of 1117 fragments includes 29 potters' stamps and two signatures.
All the material has been examined in order to undertake this assessment. It comprises (Table

5):

Source	*Fragments site B*	*Fragments site C*	*Total*
South Gaulish	*58*	*8*	*66*
Central Gaulish:			
Les Martres-de-Veyre	*58*	*43*	*101*
Lezoux	*750*	*90*	*840*
East Gaulish	*105*	*5*	*110*

Table 5: Quantity of samian ware by source and site

Assessment

Whilst the samian provides closer dating than the coarse wares for some of the stratified contexts, the real value of this assemblage lies in the light it casts on the level of prosperity and the settlement pattern of the peripheral area of the town, in comparison with the more central area. The samian ranges from the pre-Flavian period (one vessel only) to the first half of the 3rd century, but the proportion of pre-Antonine, particularly of Hadrianic, material is not great and the bulk of the assemblage is later than AD 160. This contrasts sharply with the published material from the excavations of 1926, in which pre-Antonine vessel forms and decorated ware were dominant (Hawkes 1927, 166-173).

The range of plain forms seems restricted, with a marked preference for a relatively small number of vessel types. Very few gritted mortaria were found, but other types of bowl had been used for grinding, as often happens on less prosperous sites in Britain, though usually at rural settlements in more inaccessible areas than Oxfordshire. Although the number of decorated fragments seems no lower than average for a British site, it was clear on examination that they represent a comparatively small number of vessels and a lower proportion than average for a civilian site in the southern part of the province. The number of potters represented by decorated ware is also restricted and the latest (East Gaulish) samian from the site includes no decorated ware at all. Heavily worn footrings and the mending of vessels give further hints of a relatively impoverished community.

The decorated samian includes a few intrinsically interesting pieces, two of which have signatures of potters about whom comparatively little has been published. On both bowls the scheme of decoration is virtually complete.

The samian forms a valuable part of one of the largest collections of finds from a small town in Britain and it is important that the detailed analysis of it should be integrated with the general pottery report.

Research objectives

To provide a complete archive, with identifications and dates for each sherd.
To quantify the vessel types and to use the presence/absence of dated types to trace fluctuations in activity on the site.
To examine the origins of the samian, by potteries.
To compare the assemblage, as far as is possible, with some of the published material from Alchester (Hawkes 1927, 166-173; 1929, 120-123) and to assess the implications of any

differences between the two collections.
To present the dating evidence for the potters' stamps and to discuss any decorated sherds which date their contexts or are interesting in themselves.
To examine the economic status of the site, as illustrated by the samian

2 weeks archive
2 weeks report

Tile, by Leigh Allen

Introduction

There were 26 boxes of tile recovered from the excavations, 21 from site B and 5 from site C. Eleven boxes (81243 grammes, 1947 individual fragments) were examined in some detail for the assessment. These included 9 boxes from site B, originating from both cleaning layers and excavated features, and a further two boxes from site C which include near complete examples of imbrices recovered from the lining of a grave (5587). This sample was considered to cover a representative range of all the tile in the assemblage, as well as providing some data which would be of use in any subsequent analysis. Where possible the form and fabric of the tile fragments were identified although the sample did include many badly abraded fragments which were not examined in detail at this stage. Five distinct tile types and twenty fabric types were identified amongst the Roman material, although it is envisaged that the fabric types could be refined to take into account variations in firing technique. Post-Roman tile and brick was also noted but not recorded in detail.

Methodology

Only those fragments with a measurable thickness were examined in detail. This gave a sample large enough to establish the likely range of fabrics and types across the sites. For each fragment the following details were recorded, context, fabric, condition (ie how many fragments make up the tile), thickness, complete width and length (where applicable), weight, form and any decoration or distinguishing feature. The remaining abraded fragments were assigned to a 'miscellaneous' category and only their total weight recorded. Post-Roman fragments (most if not all of post-medieval date) were also recorded by weight. The following discussion relates solely to the Roman material; figures for post-Roman brick/tile are excluded from the tables and calculations.

Tile Forms

Five individual tile types were identified. Tegulae (A) distinguishable by the existence of a flange, or in the absence of a flange, a groove at the base of the flange. Imbrices (B) distinguishable by their curve. Tubuli or box-flue tiles (C) distinguishable by the presence of a key for plaster or the remains of a perforated side panel through which the hot air could flow. The fourth group (D) consists of all those fragments of flat tile that show none of the above characteristics and may include fragments of tiles from other groups that cannot at present be distinguished as such. The fifth group (E) consists of large bricks with a thickness greater than 40 mm.

Table 6 shows the total weight in grammes of the sample of the five tile types as well as the number of individual fragments examined. The weights have also been expressed as a

percentage of the total weight. In the first instance this includes all the fragments examined from both sites B and C. The second percentage figure excludes the near complete examples of imbrices that were recovered from site C as they distort the figures quite considerably.

Type	*A*	*B*	*C*	*D*	*E*	*Misc*	*Total*
Weight in grams	4535	1155+ 16800	9270	19881	5070	24532	81243
No. of fragments	28	22+12	115	262	22	1486	1947
Percentage of the total weight	5.6%	22.1%	11.4%	24.5%	6.2%	30.2%	100%
Percentage of the total weight excluding the near complete examples from A421 C.	7.0%	1.8%	14.4%	30.9%	7.9%	38.1%	100%

Table 6: Roman tile types, a summary of results.

Tile Fabrics

Each fragment with a measurable thickness was examined macroscopically with a x20 achromatic hand lens and assigned to one of the twenty separate fabric categories. Table 7 gives the weight in grammes for each fabric type and these weights are also expressed as a percentage of the total weight recorded (81243 grammes). As with the tile types there is a second percentage weight which excludes the near complete imbrices from site C. The post-Roman material from the sample, which totalled 3600 grammes, is not included in the table.

The individual fabric types have not been described in detail at this, the assessment stage, but the fabrics have been combined into groups with common major characteristics in an attempt to make the figures more manageable and to remove those categories that initially appeared as a separate type due merely to differences of firing technique. Table 8 gives details of the 8 fabric groups (F1-F8), their weights, and that weight expressed as a percentage of the total. The results are distorted due to the fact that the miscellaneous pieces did not have their fabric type identified at this stage, this is more likely to affect the totals of the softer fabrics which abrade more easily.

Fabric	*Weight in g*	*Percentage of the total weight*	*Percentage of the total weight excluding the near complete examples from A421 C.*
1	3855+16800	25.4%	6.0%
2	245	0.3%	0.4%
3	270	0.3%	0.4%
4	1735	2.1%	2.7%
5	5415	6.7%	8.4%
6	2115	2.6%	3.3%
7	2210	2.7%	3.4%
8	911	1.1%	1.4%
9	5810	7.2%	9.0%
10	355	0.4%	0.6%
11	2395	2.9%	3.7%
12	1070	1.3%	1.7%
13	825	1.0%	1.3%
14	1560	1.9%	2.4%
15	1120	1.4%	1.7%

Fabric	Weight in g	Percentage of the total weight	Percentage of the total weight excluding the near complete examples from A421 C.
16	285	0.4%	0.4%
17	5067	6.2%	7.9%
18	2260	2.8%	3.5%
19	1863	2.3%	2.9%
20	545	0.7%	0.8%
Misc	24532	30.2%	38.1%
TOTAL	81243	100%	100%

Table 7: Roman tile fabrics, a summary of results.

Group	Description, in brief	Fabrics in the group	Weight in g	Percent. of total weight	% of total weight excluding egs from A421C
F1	Pink, grog tempered fabric	1	3855 + 16800	25.4%	6.0%
F2	Soft, soapy, smooth fabric with minimal inclusions	2,3,4,5 and 15	8785	10.8%	13.6%
F3	Hard, rough fabrics with abundant large quartzite inclusions	6,7,9,11 and 16	12815	15.8%	19.8%
F4	Soft, rough, sandy fabrics with abundant fine quartzite inclusions	8 and 14	2471	3.0%	3.8%
F5	Hard, rough fabrics with moderate well spaced large quartzite inclusions	13 and 18	3085	3.8%	4.8%
F6	Very hard fired fabrics with well spaced moderate quartzite inclusions	12 and 19	2933	3.6%	4.6%
F7	Hard fired fabrics with very fine quartzite inclusions	10 and 17	5422	6.6%	8.5%
F8	Soft, friable fabrics with abundant shelly inclusions	20	545	0.7%	0.8%
	Misc		24532	30.2%	38.1%
	TOTAL		81243	100%	100%

Table 8: Roman tile fabric groups.

Discussion

In total 81243 grammes of tile were examined, of this 24532 grammes are from the miscellaneous category, which as a percentage of the total weight is just over 30% of the sample. The second largest group is category (D) the plain flat tiles. As has been mentioned above this group could include many fragments from other categories which are not immediately recognizable as such. Further analysis of the thicknesses of these individual fragments compared with the thicknesses of more complete examples from the site may help to assign them to a specific category. 14.4% of the sample consists of tubuli or box-flue tiles (C). Plotting out the distribution of the tile types may give a clearer indication of the structures from which these tiles originated. The roof tiles (categories A and B) are not as well represented as expected. Analysis of the fragments of imbrices from site C illustrates that they are very straight sided with a sudden and angled curve at the ridge. If this is a general pattern there may be many imbrex fragments amongst the category D fragments which would only be distinguished as imbrices by a closer examination of the individual tile thicknesses and by comparison with these more complete examples.

This may help to even out the balance, which is at present heavily against the roofing material.

The fabric types range from the soft, soapy type with few inclusions through the moderately quartzitic fabrics to those examples with abundant sandy, shelly or quartzite inclusions. As mentioned above it will be necessary to make a more detailed analysis of the individual fabric matrices and to assess the fabric type of the fragments in the miscellaneous category in order to gain an accurate picture of the overall distribution of the types. Further work would also involve seeking possible sources for the various fabric types, and considering the trade implications suggested by these results.

Summary of potential

The tile from this site appears to be somewhat unusual in having a low representation of roofing material in proportion to other types. The reasons for this need to be examined, though until the fragments from the miscellaneous category are examined in more detail it will not be possible to determine how low a proportion the roofing materials are. The tile can inform discussion of the character of structures on the site, in particular by examination of the distribution of particular tile types in relation to structures. This can be used to determine which, if any, buildings had tiled roofs and if there are any significant concentrations of box flue and thick floor tiles which might indicate the presence of heated rooms. The chronological distribution of the tile can also be considered. It is likely to concentrate in the later Roman period, but this needs to be demonstrated. The correlation of tile types and fabrics with the stratigraphic sequence will be important for demonstrating changes in the use of tile on the site through time (eg is it possible that in some periods much of the tile was brought to the site for secondary use?). It should also be possible to use the stratigraphy to determine the date range of individual tile fabrics, which will be of significance in assessing trade related aspects. This can be linked to the identification (where possible) of possible sources of supply for individual fabrics. Provisional identifications include fabric group F1, identical to an important pottery fabric with a likely source in south Northamptonshire/north Buckinghamshire, and shelly tiles (fabric group F8) are also likely to have come from Northamptonshire. Comparison of evidence from the tiles with that for the pottery may shed significant light on supply networks of basic bulk products to the Roman town.

Summary of further work

1. To analyze the total sample of 26 boxes including all the miscellaneous fragments not already examined (the material already assigned to fabric and form will not need to be reexamined). (Time allocated: 7 days)

2. To computerize the material according to the database system for Roman tile which already exists at the Oxford Archaeological Unit. (Time allocated: 3 days)

3. To make a more detailed study of the individual fabric types.
(Time allocated: 2 days)

4. To seek possible parallels or possible sources for the fabric types and assess the trade implications. (Time allocated: 2 days)
5. To analyze the thicknesses of the fragments in order to make a more accurate assessment of the forms of tile present on the site. (Time allocated: 2 days)

6. To plot the distribution of the tile forms across the site in order to establish the possible construction of buildings on the site. (Time allocated: 2 days)

7. To write up the results. (Time allocated: 4 days)

Total time allocated: 22 days.

Human bone, by Angela Boyle

Introduction

The human bone assemblage from the site comprised one prehistoric cremation from site A, three Roman cremation deposits from site B and two cremations and 41 inhumations of both Roman and post-Roman date from site C. The prehistoric cremation has already been examined in detail (report in archive) and the results are summarised in Table 11 (below).

Methodology

The assessment is based on the rapid scanning and sample examination of the material. Cremations have been assessed according to weight and quantity of identifiable bones. Inhumations were assessed according to degree of preservation (a consideration of the condition of individual bones as well as the completeness of skeletons) and the likely potential for the ageing and sexing of the remains. Pathology and the presence of epigenetic traits were recorded where seen although it must be emphasised that this is incidental to the assessment and does not necessarily reflect the true incidence of either within the assemblage. Estimations of both age and sex should be treated with some caution as they are preliminary and based on minimal examination of the material.

Results

The detailed results of the assessment are to be found in Tables 9-11 (below). All of the cremation deposits, with the exception of 733, are lightweight and contain little in the way of identifiable bone. The forty one inhumations are in fair condition and it has been possible at this preliminary stage to extract a considerable amount of information. Within this number there are two separate and well defined groups: thirty burials from period 8 represent a discrete and well defined group of late Roman burials (two are associated with 4th century coins); a further eleven from period 10, although more randomly organised, are clearly post-Roman in date. The Roman cemetery comprises nine females, seven males, three unsexed adults and eleven subadults. Within the post-Roman group there are two females, four males, two unsexed adults and three subadults. Adults in neither group appear to have lived to a particularly old age.

Proposals for further work

The cremation deposits are believed only to merit the minimum of recording in contrast to the inhumation assemblage which it is believed merits full and detailed recording. The potential of the material is amply illustrated by the preliminary results in Table 9. The timings below are estimated on the assumption that full and detailed analysis will be carried out. This will incorporate the recording of bones present and their condition, a detailed assessment of both age (for adults above 30 based largely on degree of attrition and

degenerative change; for subadults based on long bone length, epiphyseal union and dental development) and sex (through examination of morphological characteristics and assessment of metric measurements where appropriate), calculation of stature, presence/absence of discontinuous traits, calculation of metrics and a detailed examination of any pathological conditions.

Skeleton no.	*Period*	*Degree of preservation*	*Age*	*Sex*	*Comment*
5126	*8*	*C*	*adult*	*?*	
5172	*8*	*B*	*1.5-2.5 y*	*-*	
5194	*8*	*B-*	*25-35 y*	*M?*	
5195	*8*	*B+*	*18-25 y*	*F?*	*wormian bone, Schmorl's nodes*
5196	*8*	*C+*	*5-7 y*	*-*	
5404	*8*	*B*	*17-25 y*	*M?*	*caries*
5436	*8*	*C+*	*adult*	*M?*	*possible vertebral degeneration, some porosity on right femur head*
5438	*8*	*C*	*subadult*	*-*	
5440	*8*	*B*	*16-18 y*	*F??*	*orbital osteoporosis*
5444	*8*	*B*	*3-5 y*	*-*	*metopic suture still visible*
5448 = 5236	*8*	*B*	*33-45 y*	*M*	*wormian bones, supra-condylar spur, gross caries, medium calculus, Schmorl's nodes*
5452	*8*	*B*	*25-35 y*	*M*	*calculus, caries*
5454	*8*	*C*	*infant*	*-*	
5463	*8*	*B-*	*25-35 y*	*F*	
5546	*8*	*B-*	*11.5-12.5 y*	*-*	*wormian bones*
5548	*8*	*A-*	*17-25 y*	*F?*	*Schmorl's nodes*
5555	*8*	*C+*	*adult*	*F??*	*wormian bones*
5561	*8*	*C*	*?*	*?*	
5574	*8*	*C+*	*5-7 y*	*-*	
5577	*8*	*C*	*adult*	*?*	
5580	*8*	*C+*	*adult*	*F?*	*wormian bones*
5582	*8*	*B*	*25-35*	*F?*	
5586	*8*	*C+*	*10-15 y*	*-*	
5590	*8*	*B-*	*9-15 m*	*-*	
5594	*8*	*C+*	*25-30 y*	*F*	*calculus*
5597	*8*	*B-*	*30s/40s*	*F?*	
5608	*8*	*C+*	*10-12 y*	*-*	*orbital osteoporosis*
5610	*8*	*B*	*25-35 y*	*F?*	*possible osteoporosis*
5612	*8*	*B*	*30s/40s*	*M*	*caries, calculus*
5615	*8*	*B-*	*5-7 y*	*-*	*wormian bone?*
5618	*8*	*C+*	*adult*	*M?*	*wormian bones (10+)*
5101	*10*	*C+*	*adult*	*M*	

Skeleton no.	Period	Degree of preservation	Age	Sex	Comment
5102	10	C+	adult	M?	minor vertebral degeneration
5103	10	C+	2.5-3.5 y	-	
5104	10	A	25-35 y	F	wormian bones, large septal aperture, calculus, caries
5105	10	C+	adult	M	very slight lumbar lipping
5106	10	C	adult	?	
5107	10	B	5-7 y	-	
5134	10	B+	30s	M	lambdoid wormians, asterionic ossicles, very slight thoracic lipping
5159	10	C	adult	?	
5188-5192 *1	10	B-	7-10 y?	-	
5396	10	B	17-25 y	F	

Table 9: Human bone assessment; summary of results

A = nearly complete-complete (75-100%) liable to give all or most of the required information
B = incomplete but still liable to give some information
C = partial though some information may be obtainable

Skeleton no.	Period	Degree of preservation	Age	Sex	Comment
924	?	C	adult	?	right tibia only
5212	?	C	infant	-	

Table 10: Human bone assessment; other deposits

Site	Deposit no.	Period	Weight	Identifiable bones
B	664	7	c 100 g	tibia shaft
B	665	7	c 150 g	long bone shafts, radius and ulna
B	733	7	c 320 g	distal humerus,proximal ulna, vertebrae
A	2	BA	601 g	skull, humerus, ribs, extremities
C	5390	7	< 5 g	
C	5453 *2	?	c 30 g	skull
C	6044	7	c 120 g	

Table 11: Human bone assessment; cremation deposits

Notes:
*1. This individual was severely disarticulated and many of the bones were recorded as separate deposits; they do however seem to represent one burial
*2. This material was deposited in grave fill 5453, associated with skeleton 54542

Estimated timings

Cremation analysis	1
Inhumation analysis (to incorporate report writing)	25
Total	26

Animal bone, by Dale Serjeantson

Introduction

The site, which was visited by the author while the excavation was in progress in December 1991, produced features of middle Iron Age, Romano-British, medieval and post-medieval periods, of which the Romano-British are the most important.

The middle Iron Age settlement (period 2) consists of ditches and gullies, most of which contain bones. The great majority of the features are of Roman date, with occupation from the middle of the 1st century until into the 5th century, which has been assigned to seven major periods (3-9), with a little post-Roman activity (period 10). In the middle ages (period 11) the site was cultivated, and traces of ridge and furrow cover the site. Cultivation continued into the post-medieval period (period 12).

Dating and potential residuality

The site has been dated from the stratigraphic sequence, small finds and in part from the pottery. Some features have not yet been assigned to periods (and are recorded as period 0 on the site database). The bone from the medieval ridge and furrow is considered to be mainly reworked Roman material. The existence of residual material in some contexts can be demonstrated from the evidence of certain classes of finds, but the pottery suggests that this is not an overwhelming problem. The proportion of bone likely to be grossly residual (eg period 4 material in period 9 deposits) is not likely to be sufficient to cause significant distortion of the data.

Recovery and samples

The silty clay sediments were sufficiently alkaline to preserve bone well, though retrieval was not easy in the heavy soils. Despite the good preservation, bones were sparse in the deposits, with the exception of some important contexts. There are many contexts recorded as ditch fill from which no bones were recovered (cf section 3.ii.3.3 period 5 above).

Approximately 150 samples were taken for various purposes, including *c* 50 specifically for bone recovery from features where bone was abundant or perceived as important, such as the well in site C and the prehistoric ditch fills.

The assessment

Method and quantification

The bone was examined over two days in March 1993. Information on period, context and

feature type was provided in advance of the visit, and lists of the contexts with the number of bags of bone were provided at the time of the visit. In order to reconcile these lists, two of the linked databases were later provided on disc.

In the assessment securely phased bones were examined from periods 2 to 10. We made no record of bones from features still unphased (period 0), but these form a substantial proportion of the total.

As the list of contexts with bone and number of bags of bone was not on the computer listing of the contexts the sampling strategy was ad hoc. We aimed to look at over 10% of the bones from the later periods which had more bone, and at least 25% from the earlier periods from which less bone survives. In the event, we looked at nearly 20% of the dated bones from the later periods and a larger but varying proportion from the earlier periods (tables 12 and 13). No bones from the ploughsoil were scanned.

Quantity

The quantities seen are shown in tables 12-14. The number of bags is from the box lists which do not distinguish between those retrieved by hand and those which are from sieved samples. It may therefore slightly overestimate the quantities.

PERIOD	No. Bags	No. Bags Seen	No. Bones Seen	% Bags Seen	No. Bones Est.	No. Bones ID	% Bones ID	No. IDs. Est.
2	55	24	222	43.6	509	85	38.3	195
3	7	2	7	28.6	25	2	28.6	7
4	6	2	2	33.3	6	1	50.0	3
5	28	12	71	42.9	166	28	39.4	65
6	120	52	418	43.3	965	168	40.2	388
7	113	20	118	17.7	667	49	41.5	277
8	198	22	124	11.1	1116	47	37.9	423
9	169	17	200	10.1	1988	60	30.0	596
10	15	0	0		0	0		
11	128	0	0		0	0		
0	199	0	0		0	0		

Table 12: A421 Animal Bones: Site B

PERIOD	No. Bags	No. Bags Seen	No. Bones Seen	% Bags Seen	No. Bones Est.	No. Bones ID	% Bones ID	No. IDs. Est.
2	3	2	11	66.7	17	1	9.1	2
3	0	0	0			0		0
4	7	5	26	71.4	36	15	57.7	21
5	14	12	59	85.7	69	17	28.8	20
6	11	7	22	63.6	35	8	36.4	13
7	62	23	171	37.1	461	96	56.1	259
8	52	24	79	46.2	171	21	26.6	45
9	18	16	64	88.9	72	11	17.2	12
10	15	8	106	53.3	199	42	39.6	79
11	16	0	0		0	0		
0	28	0	0		0	0		

Table 13: A421 Animal Bones: Site C

PERIOD	No. Bags	No. Bags Seen	No. Bones Seen	% Bags Seen	No. Bones Est.	No. Bones ID	% Bones ID	No. IDs. Est.
2	58	26	233	44.8	520	86	36.9	192
3	7	2	7	28.6	25	2	28.6	7
4	13	7	28	53.8	52	16	57.1	30
5	42	24	130	57.1	228	45	34.6	79
6	131	59	440	45.0	977	176	40.0	391
7	175	43	289	24.6	1176	145	50.2	590
8	250	46	203	18.4	1103	68	33.5	370
9	187	33	264	17.6	1496	71	26.9	402
10	30	8	106	26.7	397	42	39.6	157
11	144				635			213
0	227				1002			336
TOTAL	1264	248	1700	19.6	8665	651	38.3	2766

Table 14: A421 Animal Bones: Total

Note: estimated totals for phases 11 and 0 are based on the average no. of bones per bag and % identified bones in period 8.

Middle Iron Age (period 2)
The estimated number of identified bones is *c* 190, from an estimated total of *c* 520. Cattle, sheep, horse, pig and canid were present. The first three species are frequent in some contexts.

Romano-British (periods 3-9)
Total numbers are few from periods 3-5, up to the mid 2nd century, with estimated totals of identified bones fewer than 100 from any period. Periods 6-9 (from the mid 2nd until the end of the 4th century) have larger samples, with *c* 1000 or more bones in each period, and an estimated number from *c* 400-600 in each period identified. It is likely that many of the *c* 1000 bones from the as yet unphased features (period 0) will in due course be assigned to period.

Site B
Period 5: Cattle, pig, sheep, horse and canid are present, and horse and canid part skeletons were noted.

Period 6: The same species are present, and cattle and sheep bones were frequent in some contexts. One domestic fowl bone was seen. The 'ritual' pit contained a part skeleton of a horse.

Period 7: Cattle and sheep were present in most bags, pig and horse in two bags only.

Period 8: The four main species were present, with pig more frequent than in earlier periods.

Period 9: The three main domestic species are present and canid and horse are frequent in some contexts.

Site C
Period 4: Cattle, sheep and pig are present.

Period 5: Cattle, sheep, pig and horse are present. Sheep and horse were noted as frequent in some contexts.

Period 6: Cattle, pig, sheep and horse present. None frequent in any context.

Period 7: Cattle, sheep, pig, horse and canid present. Cattle, sheep and horse frequent in some contexts.

Period 8: Cattle, pig and sheep noted, and horse in two contexts.

Period 9: Cattle, sheep and domestic fowl bones noted. Animal bones recovered from graves.

Sub-Roman (period 10)
This group, all from site C, is again small, with an estimate of *c* 160 identified bones. Animal bones were recovered from the graves.

Medieval (period 11)
None of the 144 bags from the medieval ploughsoil were examined. By extrapolation from earlier periods, the number of bones is likely to be *c* 630.

Sieved samples

Bones were present in some of the samples taken for other purposes as well as from the samples taken for bone recovery. They were not quantified, but other than some amphibians in the well, the bags contain almost exclusively small fragments, few identifiable.

Quality

The bone recovered from all periods and all context types was in good condition. Much was relatively unfragmented, except by excavation damage, though some contexts contained more fragmented material. The percentage of identifiable bones is high, at least 38% overall.

Other data

Measurements will be possible of horse, dog, and some cattle and sheep bones. Domestic fowl bones are very scanty, and very few bones of wild birds were seen. No fish bones were recovered. Amphibian bones were recovered in the sieved samples from the well.

Details on anatomical elements were not recorded, but impressions were recorded. At least in site C a substantial quantity of cattle and sheep teeth and jaws were present, and a quantity of cattle foot bones which may be disproportionately high compared to the other parts of the skeleton.

Pathological changes were seen on many of the cattle phalanges.

The later 3rd century well in site C contained more than one horse skeleton or part skeleton, one or more canid skeletons and a few other bones.

Bone from the as yet unphased contexts was at least as well preserved as that from phased contexts.

Recommendations

Middle Iron Age (period 2)
The estimated total of < 500 bones will not provide a large sample from which deductions can be made about the animal economy in the region, but some record and comparison with local sites is worthwhile.

Romano-British (periods 3-9)
One of the main aims of the post-excavation analysis will be to identify the function of the features in the area excavated and their relationship to the town. The preliminary hypothesis about the function of the area is that it was largely agricultural. One of the main research aims of the animal bone analysis is to see if this hypothesis is supported.

Specifically, the following questions can be addressed:

1. Distribution of bone as evidence for site activities.

2. Are the bones the remains of domestic consumption of food? If so do they reflect a diet of rural or urban character?

3. Are they remains from industrial or centralised processes (including primary butchery)?

4. What is the role of horses at the settlement, as reflected in the finds?

5. Is the role of cattle illuminated by analysis of age at death and oral and appendicular pathology?

6. Are animal bones from the graves grave goods or incidentally incorporated in the grave fills. These bones will need separate attention.

Sub-Roman (period 10)
The question to be addressed is the nature of the occupation in the 5th century. Did settlement change to a more self-sufficient subsistence economy? Analysis of species ratio, age at death and anatomical distribution can help to answer this question.

Again the graves contain some animal bones which need separate consideration.

Several contexts contain reworked human bones which need to be extracted and submitted for study with the human bones. The contexts from which these were recovered need to be reassessed for the possibility that some of the animal bone component is also reworked.

Medieval (period 11)
No work is recommended on the bones from the ridge and furrow.

Methods and personnel

No special equipment or reference material will be necessary for recording and analyzing this assemblage. However, study of the cattle pathology will require special expertise.

As the understanding of the nature of the occupation depends on comparisons with other Roman sites, time needs to be allowed for these comparisons. It would be advantageous, but not essential, for the work to be done by someone with experience of Roman period sites.

The availability of staff of the Faunal Remains Unit to do the work will depend on the exact timetable of the project. While at present it is possible that FRU may be able to handle this cannot be certain until details of the timetable are established. Dale Serjeantson and Paul Booth will liaise on this question.

Timing

Recording @ 150 bones per day	54 days
Tables	8 days
Research	5 days
Writing	25 days
Editing	6 days
TOTAL	98 days

EDITORIAL COMMENT

In order to reduce costs the work will no longer be undertaken by the Faunal Remains Unit but by the Centre for Human Ecology based at Southampton University.

Environmental data, by Dr Mark Robinson

The site consisted of an Iron Age settlement which developed into a roadside suburb of the town of Alchester in the Roman period. It was situated on an area of floodplain gravels or low terrace of the River Ray. Numerous soil samples were taken during the excavation to help determine the economic basis of the site, to establish whether it experienced flooding and to give details of the local environment.

A total of 87 flots from 48 numbered samples for charred plant remains, 26 charcoal samples, 4 molluscan samples, 3 waterlogged samples and some waterlogged wood were assessed at the University Museum, Oxford.

Each flot was separated using a stack of sieves down to 0.5 mm, scanned under a binocular microscope and an estimate of the abundance of the taxa observed was recorded. Only five samples from Area B contain significant quantities of charred plant remains: 12, 19, 21, 26, 27. All are from mid 2nd to mid 3rd-century AD pits and ditches of Period 6. Concentrations in some are high, with up to 200 items per sample. The assemblages are mainly dominated by *Triticum spelta* (spelt wheat) glumes and *Hordeum vulgare* (six-row hulled barley) grains, and weed seeds are rare. The differences between the assemblages suggest that the material was from more than one event of burning crop processing debris. With the exception of single, unidentifiable cereal grains, charred plant remains were absent from the Iron Age and Roman samples from this area.

Significant quantities of charred plant remains from Area C are restricted to an early 4th-century AD corndrier belonging to Period 8 (Samples 78-81 and a post-Roman ditch of Period

10 (Sample 70). The corn drier assemblages contain up to about 500 items of grain, chaff and weed seeds. The grain comprises roughly equal quantities of *T.* cf. *spelta* and *H. vulgare* but the chaff is mostly spelt wheat glumes. The weed seeds are mixed but *Antheris cotula* (stinking mayweed) and various Chenopodiaceae (orache, fat hen etc) predominate.

Although post-Roman, Sample 70 contains an assemblage with a very Roman character, including numerous spelt glumes, spelt-type wheat grains and grains of six-row hulled barley as well as seeds of *A. cotula*.

The charcoal samples and wood were examined using low-power microscopy. The majority of the charcoal is *Quercus* (oak), but there is a little *Alnus/Corylus* (alder/hazel), *Fraxinus* (ash) and "hedgerow" type (hawthorn/sloe type). The charcoal from the cremation (Sample 83) is ash. The larger pieces of waterlogged wood are oak but there are also bags of assorted twigs.

Sub-samples of about 200 g were taken from the molluscan and waterlogged samples, sieved (down to 0.5 mm for molluscs and 0.2 mm for waterlogged remains) and the residues sorted under a binocular microscope. Sample 41, from the bottom of a middle Iron Age ditch, contains a few stagnant water snails such as *Anisus leucostoma*. Sample 45, however, from another Iron Age ditch belonging to Period 2 contains a rich aquatic molluscan fauna including *Bithynia tentaculata*, which requires well oxygenated flowing conditions. The molluscs from the old ground surface of this period (Sample 40) largely comprise a fauna of wet open ground, with *Vallonia pulchella* and *Lymnaea truncatula* but a drier ground element of *Pupilla muscorum* and *Vallonia excentrica* is also present. Fully aquatic species are absent from the old ground surface, suggesting that the site was not experiencing flooding and therefore the flowing water taxa in Sample 45 resulted from the ditch being linked to the local stream system. An early Roman ditch of the later 1st century AD (Samples 43, 44) also contained a flowing water molluscan fauna. Shells were absent from sealed Roman soils on the site (eg Sample 42) but were present in the upper fill of a late 4th-century Roman ditch. They include *Bithynia tentaculata* and the sediment was probably alluvial in origin. However, this deposit could have post-dated the Roman and indeed any early Saxon occupation of the site.

Sample 45 also contains badly preserved organic remains, primary seeds from aquatic plants such as *Apium nodiflorum* (fool's watercress) and *Glyceria* sp. (reed grass), and small water beetles such as *Helophorus brevipalpis* and *Ochthebius* sp. which lived in the ditch. Evidence for terrestrial conditions is sparse but there are a few seeds and insects from various open habitats.

Sample 44, from the bottom of the early Roman ditch, also contains numerous seeds of *A. nodiflorum*, in company with seeds of *Lycopus europaeus* (gypsy wort), a waterside plant. The other abundant plant remains from this context are well-preserved leaves, buds and capsules of *Salix* sp. (willow), suggesting the ditch had been lined with trees or bushes. The only insects remains recorded are fragments of *Prosocuris phellandrii*, a beetle which feeds on aquatic *Umbelliferae* including *Apium* spp. Organic preservation in Sample 43, from the layer above Sample 44 is poor, but seeds of *Ranunculus* s. *Batrachium* sp. (water crowfoot) are present.

The assemblage of charred plant remains are unexceptional for a Roman site. However, the presence of rich assemblages in the Period 6 deposits of Area B is useful in demonstrating the different nature of activity on the site during this period. The apparent evidence of spelt wheat cultivation in the 5th century AD suggested by Sample 70 is of more general

significance in the understanding of continuity and change in the post-Roman period. The molluscs proved useful in establishing whether there was flowing water in the ditches and that there was no certain evidence for flooding of the site until after the Roman period, but are unlikely to give much additional information about the site. The waterlogged remains are unfortunately mostly from plants which grew in the contexts and although useful, the results do not give much information on the terrestrial environment. The site did not produce the exotic waterlogged plant remains that have been identified from other sites at Alchester.

Full-scale analysis of all the material from the site cannot be justified. It is recommended that Sample 70 is fully analysed and that work on the assessment samples is completed. This would take about two weeks including the preparation of a report for inclusion in the published excavation report.

EDITORIAL COMMENT

In order to decrease the costs Dr Robinson has agreed to a reduction in the time to complete the work from 10 to 8 days and that the work will be undertaken on a freelance basis.

Conservation

Factual Data

Quantification

Material	*Total*	*Selected for conservation*	*Time in days to treat*
Iron (excluding nails)	*336*	*49*	*18*
Coins	*421*	*114*	*10*
Other Copper Alloy	*106*	*40*	*5*
Lead (alloy)	*38*	*0*	*0*
Glass	*188*	*0*	*0*
Glass frit (analysis only)	*2*	*0*	*0*
Jet/shale	*3*	*1*	*0.5*
Worked bone/antler	*21*	*0*	*0*
Leather	*4*	*0*	*0*
Waterlogged wood	*2*	*0*	*0*

Table 16: Quantities of objects examined for conservation requirements

Condition

In general, the metalwork is in good condition. Copper alloy and lead alloy artifacts are superficially corroded though the surface detail of many items is obscured by soil (some also with iron salts). Most items appear to be stable. Ironwork is lightly corroded. The potential for long-term storage and survival is reasonable providing that metalwork is desiccated.

Worked bone/antler and glass items are stable. The one shale fragment is fissured and has fractured, and requires consolidation if it is to survive. The four small, fragmentary leather items have dried out but are stable. The waterlogged wood objects (or samples) are unlikely to survive in the long-term (if required) unless treated.

Means of collecting data

Metal artifacts were X-rayed where appropriate prior to selection for investigative conservation (c 30% of the copper alloy; 100% of non-nail ferrous objects - recognisable nails were not X-rayed). Selection of ironwork for conservation was based on X- radiographic screening (by the finds specialist) in conjunction with visual screening (by the conservator and excavator). Other materials were screened visually by the finds specialists/researchers and conservator.

Statement of potential and conservation requirements

There are no immediate conservation requirements. Medium-term needs relate to the publication programme. These would consist of investigative examination to assist identification, description and illustration - to enhance finds catalogues and contribute to the archaeological interpretation of the excavation. There may be long-term requirements for additional cleaning and stabilisation for museum purposes.

EDITORIAL COMMENT

In order to decrease the costs the conservation work will not be undertaken by V Fell the English Heritage conservator, but by the Oxfordshire County Museum Service, who will eventually be receiving the finds for long-term storage.

ASSESSMENTS OMITTED FROM REVISED RESEARCH DESIGN

Technology of ferrous artefacts (metallographic examination), by Vanessa Fell

Fifteen artefacts (7 tools, 6 knives, 2 agricultural implements) were selected from preliminary X-radiographs as possible candidates for metallographic examination. Of these fifteen, two require phasing to be confirmed and a further five may prove unsuitable for sampling if sufficient metal does not survive at the area of technological interest. Phasing will be confirmed during archaeological analysis; the degree of metal survival will be known after conservation.

The selected artefacts offer the opportunity to analyze specific types of artefacts and thereby to contribute to regional and national data on late Roman ferrous technology. The aim would be to examine edge tools and blades for method of manufacture and technological enhancements. This would be done by:

1) metallographic examination of small samples for carburization, hardness, slag distribution, welding etc

2) analysis of samples by electron microprobe (or SEM-EDXA) if necessary to resolve problems related to the interpretation of metal structures, and possibly also a semi-quantitative elemental analysis if facilities are available.

Facilities for metallography are available at the University of Oxford and at AM Lab. Time to analyze a maximum of 15 artefacts, some of which may benefit from multiple sampling, to produce AML report plus synthetic report for publication, *c* 20 working days. Sampling should normally follow typological study and archival illustration.

Oyster shell, by Dr Jessica Winder

Quantity and quality

The contents of six boxes of shells were examined. For each of the contexts the shells were separated into right and left valves, measurable and unmeasurable shells. The results of this examination are summarised in Table 15 below, where the total numbers of shells for each period and the percentages of shells which are too badly damaged to be used for analyses are also indicated.

PERIOD	*LV*	*UMLV*	*%UMLV*	*RV*	*UMRV*	*%UMRV*	*TOTAL*
2	*0*	*1*	*100*	*0*	*0*	*0*	*1*
3	*0*	*0*	*0*	*0*	*0*	*0*	*0*
4	*2*	*0*	*0*	*3*	*0*	*0*	*5*
5	*19*	*2*	*10*	*17*	*5*	*23*	*43*
6	*60*	*10*	*14*	*37*	*12*	*25*	*119*
7	*15*	*15*	*50*	*16*	*8*	*33*	*54*
8	*144*	*118*	*45*	*161*	*64*	*28*	*487*
9	*19*	*30*	*61*	*48*	*20*	*29*	*117*
10	*0*	*0*	*0*	*1*	*0*	*0*	*1*
11	*33*	*53*	*62*	*49*	*41*	*46*	*176*
12	*2*	*1*	*50*	*0*	*0*	*0*	*3*
0	*42*	*23*	*35*	*56*	*21*	*27*	*142*
TOTAL	*336*	*253*	*43*	*388*	*171*	*31*	*1148*

Table 15: Numbers of oyster shells from Roman Alchester

LV left valve; UMLV Unmeasurable left valve; RV Right valve; UMRV Unmeasurable right valve

A total of 1148 oyster shells (Ostrea edulis L.) have been recovered, with insignificant numbers of other molluscs such as marine mussels, land snails and freshwater gastropods - usually in a fragmented condition. The oyster shells are distributed amongst 269 contexts from eleven periods. This represents an average number of around four shells per context. With the exception of context 142 from period 8, no individual context had a minimum of thirty right or left hand valves which is considered to be the smallest number of specimens suitable for statistical comparisons of samples.

Problems of residuality mean that the shells from the medieval period 11 and post-medieval period 12, amounting to 179 shells, have to be excluded from consideration. This leaves 969 shells potentially available for analyses. However, 329 shells (34%) of this total are too badly damaged to record in detail. This leaves 301 left valves and 339 right valves from which measurements and infestation details could be taken.

Potential of the material

Despite the small size of individual samples, comparisons can be made at an intrasite level between grouped samples representing, for example, the oysters consumed at different periods of occupation, and oysters discarded in different types of feature or specific areas of the

site. Comparisons are also possible on an intersite level between oyster shells from Alchester and other sites.

Table 15 shows that only periods 6, 8 and 9 have large enough numbers of shells to allow statistically meaningful comparisons of size, infestation and other characters on an intra- or intersite basis. The shells temporarily assigned to period 0 may alter this situation when properly allocated to period. The condition of the shells is good enough to permit a description of the spatial and temporal distribution of oysters on the site by using abundance and qualitative characterisation.

In addition to straightforward descriptions relating to site distribution of shells, it should also be possible to address such problems as the source of the oysters, the relative importance of this component of the diet, and the degree and method of exploitation of this marine resource.

Timings

(based on processing all the material)

Cleaning the 640 selected shells	*2 days*
Measurement/recording details (20 characters per spec.)	*2 days*
Data collation	*2 days*
Analysis and interpretation	*3 days*
Writing report	*3 days*
TOTAL	*12 days*

INVESTIGATING DNA FROM SKELETAL REMAINS

(Text supplied by Martin Richards)

Introduction

The study of ancient DNA has been heralded as a revolution in scientific archaeology. However, it is now eight years since DNA was first isolated from an Egyptian mummy (1), four years since we reported the first extraction from bone (2) and the field has yet to fulfil its early promise. Why is that? The short answer is that ancient DNA is present in only tiny amounts, it is often degraded and is extremely easily contaminated. Ancient DNA is very hard to work with successfully, but it can be done. The great rewards to be gained from the routine recovery of DNA from a high percentage of archaeological bones provide, we believe, the necessary incentive for continued persistence and support.

It is possible to study ancient DNA only because of the exquisite sensitivity of the polymerase chain reaction (PCR) which amplifies the DNA to quantities that can then be analysed. This sensitivity means that minute traces of non-indigenous, environmental DNA, negligible under other circumstances, are also amplified. This is a central problem, but one which has been insufficiently regarded by some workers in the field until the First International Conference on Ancient DNA in July 1991 (3). Until it is solved, the only results likely to be accepted are those that fit with current ideas. The field is then limited to corroboration of accepted theory rather than its providing an entirely independent source of data. We firmly believe this to be unacceptable and that, ultimately, it is methodological confidence that will decide the fate of the field.

Outline of proposal

Our proposal has two components: (i) to improve methodological confidence, chiefly with respect to contamination, (ii) to use ancient DNA sequences to investigate one major and several minor archaeological questions. In part (ii) the major project will address the Anglo-Saxon settlement of Britain. we believe this combination of a large, genetically ambitious survey and several smaller studies of more easily validated populations is a reasonable way of advancing on both methodological and archaeological fronts.

Current work: Methodology

Our methodological work, detailed in (4), has focused on the two special problems that arise from applying PCR to the study of ancient DNA, namely non-amplification and contamination. Non-amplification is due to one of three reasons: (a) no surviving DNA, (b) no amplifiable DNA or (c) inhibition of the amplification reaction by substances present in the bone extract. Contaminating DNA can be present in the bone sample itself, or amy be introduced subsequently during the extraction or amplification procedures. Our approach has been to explore each area systematically.

Non-amplification

We have devised an assay to measure the degree of PCR inhibition in bone extracts, caused mainly by the presence of humic acid in the sample. The assay, which tests the effect of the extract on a standard dilution series of bacteriophage DNA, has helped us to optimise our yield from many samples which contain high levels of amplification inhibitors.

Contamination

The most potent form of contamination is product carry-over from one reaction to another, since the products are generated in huge copy numbers. To minimise the risk, we perform our DNA extractions and PCR setup in a separate building from that in which they are amplified and analysed. These precautions have been highly effective in bringing operator and PCR carry-over contamination under control. With PCR carry-over controlled by isolation, contamination prior to extraction is the most serious difficulty facing ancient DNA research.

We have devised a rapid method of identification of contamination where different mammalian species are involved. this is based on the presence of species-specific unique restriction endonuclease sites in a fragment of the mammalian mitochondrial cytochrome b gene. This procedure is valuable for the detection of human contamination in animal bones, and therefore for the assessment in general of the extent to which archaeological bones are contaminated with modern human DNA. The restriction method is more potent than sequencing. It is cheaper and quicker and gives a more quantitative indication of the extent of contamination.

DNA content

We have devised a method to quantify the DNA surviving in bone. This is also based on the cytochrome b region and uses competitive amplification between indigenous DNA and a known amount of an artificial, calibrating template into which we have engineered a new restriction site. Based on this assay we have estimated the range of indigenous, amplifiable, cytochrome b DNA surviving in bone to be between 0-80pg per gram dry bone.

Mitochondrial DNA

We have concentrated our efforts on the recovery of mitochondrial DNA (mtDNA). The initial, technical, reason for doing so was its relative abundance. There are >1000 copies of mitochondrial per cell compared to only two (autosomal) nuclear genes. There are, however, advantages stemming from other aspects of mitochondrial genetics. First, unlike nuclear DNA which is inherited equally from both parents, mtDNA is maternally inherited. This means that all copies in a cell are identical and this makes sequencing and other characterisations easier. It also means there are no opportunities for recombination, which tends to scramble sequences over long time periods. Second, the annual mutation rate of mtDNA is ten to twenty times higher than it is in nuclear genes. This means that individuals descended from a common, female ancestor at some point in the past are more likely to have accumulated changes in their mtDNA than in their nuclear genes. These two aspects mean that an individual's mtDNA is an unbroken and unscrambled link with his or her remote maternal ancestors. The mtDNA variants found in a population can be thought of as a series of deep-rooted lineages whose relationship and common ancestry can, theoretically, be deduced by comparing their sequences. This is a powerful tool for reconstruction of population makeup and movement.

As a technical exercise, we have amplified the mitochondrial DNA from well-preserved pig bones recovered from the Mary Rose shipwreck of 1545, and confirmed that it is genuine by identifying a variant not present in the modern pig sequence used in our laboratory. The Mary Rose bones are especially well-preserved and contain up to 0.2% of their original DNA content. We have also examined several 3000-year old well-preserved Amerindian bones by sequence analysis and confirmed by comparison with modern data that these are very likely to be genuine. However, we have also surveyed a number of British animal bones and found that many of them contain human DNA. We also suspect that our Anglo-saxon results (see below) imply contamination. It appears that contamination of bone material may be widespread but only becomes important when the survival of indigenous DNA is low.

Current Work: Archaeology

Our main interest lies with European problems. European archaeology is known in detail, the material is comparatively well-preserved and accessible, there is considerable public enthusiasm for questions concerning British history, and we can take maximum advantage from the construction of a European mtDNA database (see below). A fuller summary of our work to date can be found in (5).

One important implication of our ancient DNA work will be its contribution to the study of population dynamics. A major example of a disputed historical migration is the Germanic settlement in Britain between about AD 400 and 700. Once imagined by historians as a folk movement involving whole tribes, there has been a shift of opinion in recent years towards a view in which the English language was imposed by elite dominance involving much smaller numbers of newcomers. In practical terms, the question can be addressed by identifying the ethnic affiliation of individuals in Anglo-Saxon cemeteries, whether Germanic, or native British.

We considered it likely that an examination of mtDNA could shed light on this problem, and to this end we have collected bone samples in duplicate from about 200 early English burials in six cemeteries. From these we have been sequencing 300 base pairs mtDNA control region. This control region has the highest mutation rate in the mtDNA genome and the variation is concentrated into two (5' and 3') segments. The bulk of our data comes from the 5' segment, though we now routinely sequence both regions.

Our data so far indicates a very high frequency of the reference sequence (6), which is also the commonest European sequence, leading to concern that we may be amplifying DNA contaminating the surface of the bones. We know the control region sequence of all the personnel who have been involved on sample preparation and DNA extraction but none have the reference sequence. We therefore conclude that either the sequences are genuine or they derive from modern DNA from those involved in excavating or handling the bones before they reached the laboratory. This latter explanation is supported by our ability to amplify the human-specific reference from many animal bones.

Current Work: Modern populations

In order to provide a context for our archaeological sequences we are sequencing the same region from modern individuals. To this end we have sequenced nearly 200 North german and Danish samples and begun to sequence 600 rural Welsh samples collected during 1992. Maternal histories were collected at the same time as the samples. So far our results show that the reference sequence is common in both

populations and that the bulk of the other sequences differ from it by one, two or three base changes. Most of these variant sequences are restricted to one geographical region.

This is more than simply the construction of a database, as the modern data is in itself extremely valuable in suggesting hypotheses about past population movements, which can be tested using ancient DNA. We consider the accumulation of modern sequences as an important part of the overall research programme and have obtained a separate pump-priming grant from Oxford University for six months as a larger application to an outside granting body.

Proposed research programme

Methodology

i) Contamination

It is abundantly clear from our work over the last three years that the field cannot develop fully until the persistent problem of sample contamination is satisfactorily resolved. Up to now we have used sand-blasting of the surface layer but our results show us that this is clearly inadequate as a complete decontamination procedure. We intend to develop physical (such as thermal) and chemical (such as oxidative) surface treatments. The work will entail treating a controlled series of samples from contaminated animal bone and checking the resulting extracts for human DNA. We are also assessing the value of teeth, which are likely to be both better preserved, better protected from percolating contamination and more robust to degradative surface decontamination treatments (7).

A classical way of validating important results and for raising confidence in the methodology of a new field is for workers to exchange samples and compare the results. We have already begun such an approach in an informal way with Professor S Paabo (Munich) and Dr N Tuross (Smithsonian, Washington) and intend to encourage this type of interchange with other groups active in the field.

ii) Nuclear genes

We have outlined the technical and genetic advantages of working with mitochondrial DNA. However, there are other archaeological questions that can only be answered by the analysis of nuclear genes. One is kinship relationships within cemeteries where mtDNA lineage comparisons between individuals are of only limited use. The best way of demonstrating kinship relationships is with multi-allelic nuclear DNA markers. Many amplifiable markers are available, often based on variable numbers of oligonucleotide repeats. Being single copy, they are more difficult to recover from ancient material. We will assess a number of different marker systems in the material that gives good recovery of indigenous mtDNA. If this is successful we will apply it to individual cemeteries in which questions of kinship are of interest (eg Rossberga - see below).

iii) Diagenesis and DNA survival

One aspect of our current work involves the comparison of DNA content with bone micromorphology (in collaboration with L Bell, University College London). This work will be expanded to include correlation with other bone diagenetic changes such as protein loss, porosity (which might influence exogenous DNA contamination) and crystallisation changes. Samples from known burial environments (provided by G Turner Walker (Norwich)) will indicate the extent to which it is possible to predict the indigenous DNA content in a bone of known burial environment and diagenetic state.

Archaeology

i) The Anglo-Saxon settlement of Britain

There is an abundance of readily accessible and well preserved skeletal material available for this, our major archaeological project. We aim to sequence systematically the two hypervariable parts of the mtDNA control region from early Anglo-Saxon, Romano-British and British and German Iron Age inhumations. These sequences will allow us to examine theories about the nature of the settlement.

1. A large scale tribal migration, which included women, would lead to a substantial influx of Saxon lineages into the British mtDNA pool which we would detect in both contemporary and modern populations. The extent of this genetic influx would depend on the nature of the displacement of the native Celts, itself likely to have differed in different regions, hence the need for the examination of a number of sites.

2. A small scale immigration of Saxon elite would not greatly alter the mitochondrial gene pool of subsequent generations and we would then see little change in mtDNA lineages as a result. The same is true of a large-scale invasion by males who left descendants by mating with native British females. In that case DNA recovered from these males, presumably warriors, would yield 'Germanic' lineages.

3. Are weapon-bearers genetically differentiated from non-bearers, as suggested by Härke (8)? Through a collaboration with Dr Härke (Reading) we shall analyse the same individuals that he used in his morphometric comparisons.

Certain conditions have to be met before we can answer these questions. The first is a technical condition and it is that we must have solved the decontamination problem. Clearly, the analysis of an ancient population by the modern descendants removes any possibility of verifying the recovered sequences by their context - as we have been able to do with the Amerindian sequences, for example. The second condition is that the Saxon and Romano-British populations were genetically differentiated before the settlement occurred. Though this is best answered empirically, there is some theoretical basis for optimism. The data of Ward et al (9) and Vigilant et al (10) suggest a divergence rate for the hypervariable regions of up to around 30% per million years. If the 'Germanic' and 'Celtic' populations separated from an ancestral population around 5000 BC (11), we would expect an accumulation of 1-3 new variants in most individuals somewhere in the 600bp of the two regions.

(ii) Limited projects with specific aims

1. Port aux Choix, Newfoundland: in collaboration with R Newell (Groningen), we plan further work to characterise the mtDNA lineages present in this native American cemetery.

2. Lankhills: We intend to look for distinctive lineages in a group of 8-16 4th century Winchester burials, which may be of Hungarian origin.

3. Putative African burials in early English contexts. These were identified on morphometric grounds. Again, we intend to look for distinctive mtDNA lineages.

4. Neolithic chambered tombs. We are collaborating with P Persson and K-G Skjogren on recovering DNA from well preserved remains of 165 individuals from Rossberga (Sweden). As well as analysing recovered mtDNA sequences this would be a good resource for examining kinship relationship by nuclear genes if this proves technically feasible (see above).

5. Mesolithic/neolithic transition: we will carry out a pilot study on the question of genetic continuity across the neolithic transition. We have already arranged access to material in collaboration with R Newell and D Price (Wisconsin). This project would ultimately form a natural successor to the Anglo-Saxon work, drawing on the same European database. If, as explained above, there is insufficient differentiation for tackling the question of the Anglo-Saxon settlement, our contingency plan is to move to the neolithic transition project. If the Saxon settlement question problem proves genetically soluble, the neolithic transition project would not begin in earnest until we obtain further funding.

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