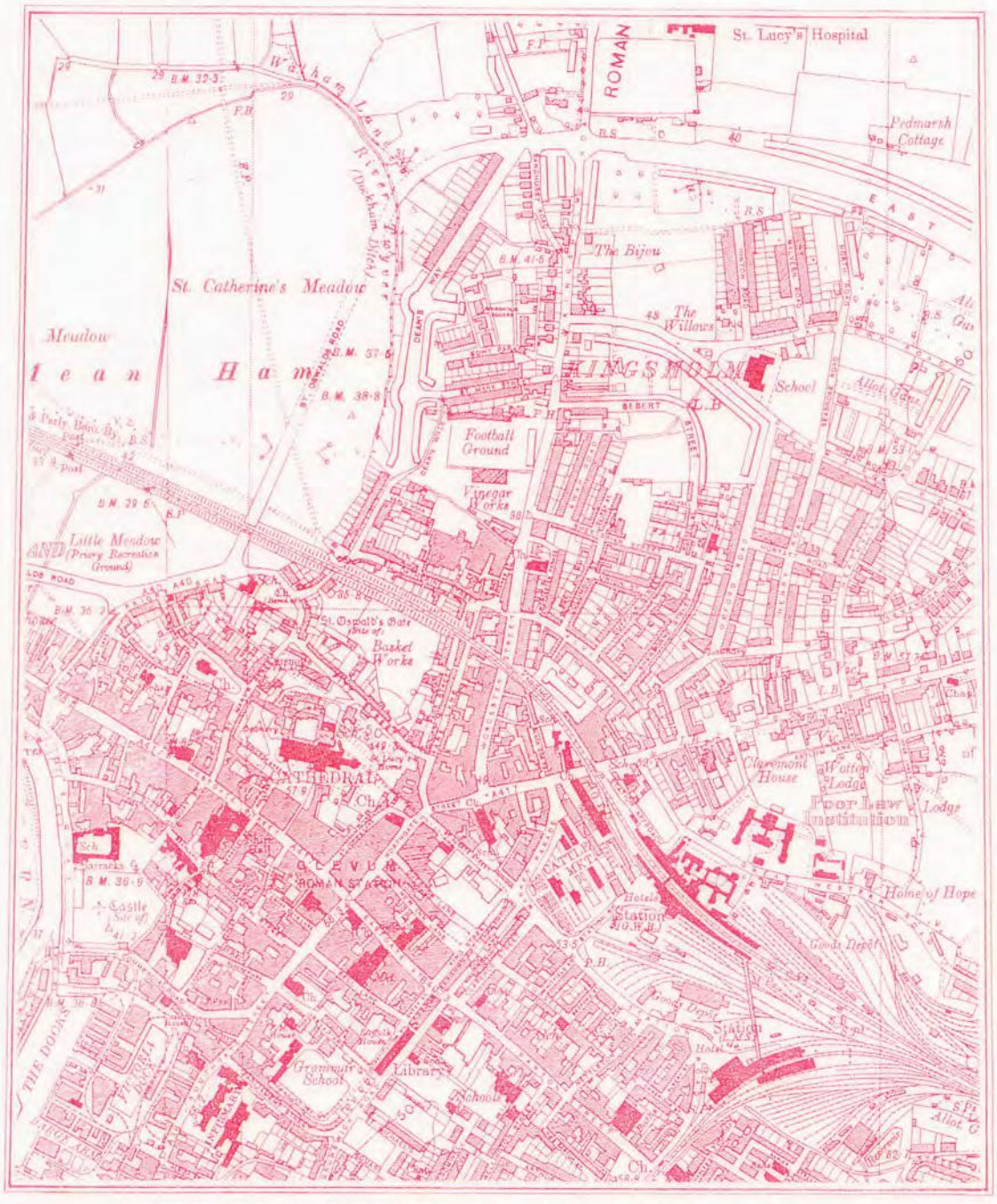
DENMARK ROAD HIGH SCHOOL FOR GIRLS

An Archaeological Excavation prior to the phase II redevelopment



GLOUCESTERSHIRE COUNTY COUNCIL DECEMBER 1995

Philip J Piper
Archaeology Service
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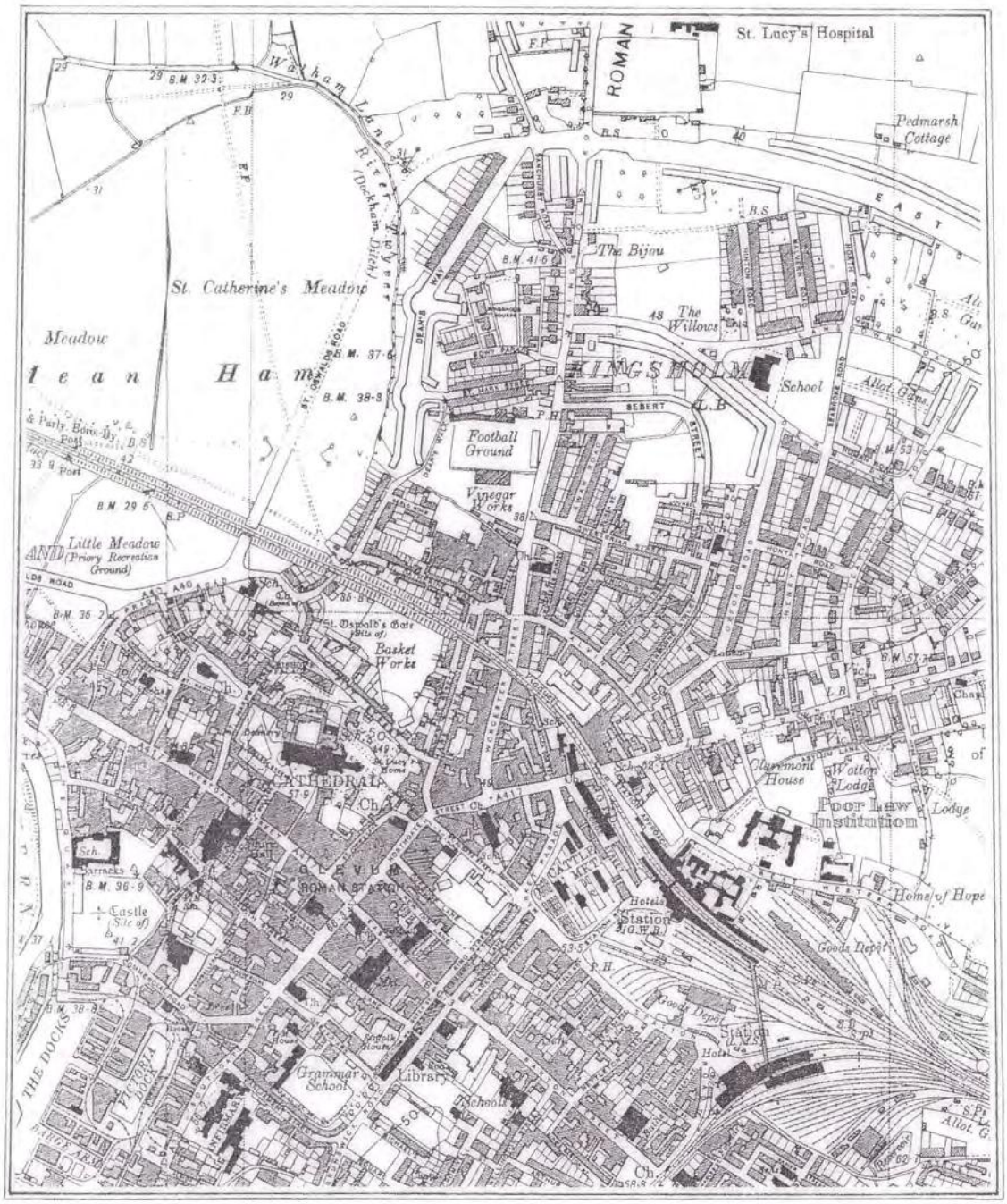

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Denmark Road High School For Girls, Gloucester, An Archaeological Excavation Prior To The Phase II Redevelopment

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Planning Department
Gloucestershire County Council

December 1995

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1 Summary

1.1 An archaeological excavation was carried out at Denmark Road High School during September 1995 prior to the construction of an extension to the gymnasium and a new dining hall and kitchen facility.

1.2 Within the footprint of the proposed new development evidence of Romano-British activity was uncovered in the form of a boundary ditch and pits.

2 Introduction

2.1 Following the results of an evaluation (Piper 1995) an archaeological excavation was commissioned by the Education Department of Gloucestershire County Council in advance of the construction of an extension to the gymnasium and new science and dining accommodation (fig 1). The excavation was undertaken by the Archaeology Service, Gloucestershire County Council, during September 1995. The details of the area to be developed are shown on plan no. AL 1/1 (job 1869) drawn up by Frank Timothy Associates of 18 Brunswick Square, Gloucester.

3 Archaeological background

3.1 The known archaeology of the Denmark Road school site and its surrounding area has been described in a preliminary archaeological assessment carried out in advance of phase I of this development (Reilly 1994).

3.2 The earliest Romano-British occupation at Gloucester was sited at the Kingsholm fort, the eastern boundary of which may have been c. 300m to the west of the proposed development area. The original line of Ermin Street, which ran from Kingsholm to Cirencester, was just to the south of Denmark Road, less than 50m away from the site of the proposed new gymnasium extension and dining rooms. Romano-British pottery was retrieved during the construction of the school in 1909. A Romano-British surface and pits were also recorded within the school grounds in 1992. Other findspots of Romano-British and Saxon date, including cemeteries, are widespread throughout the general vicinity (Garrod and Heighway 1984).

3.3 A watching brief carried out during 1994 within the area of the phase I construction uncovered a large ditch, a gully and several pits of Romano-British date. The ditch was orientated south south-west to north north-east, roughly at right angles to the projected line of Ermin Street. The ditch had been backfilled with a large quantity of domestic waste (Reilly 1994).

3.4 An evaluation undertaken during August 1995 in the area of the present excavation provided further evidence of Romano-British occupation. A large ditch running north to south, backfilled with a large quantity of domestic refuse, was discovered. Amongst this material were fragments of human skull (Piper 1995, Fig. 2).

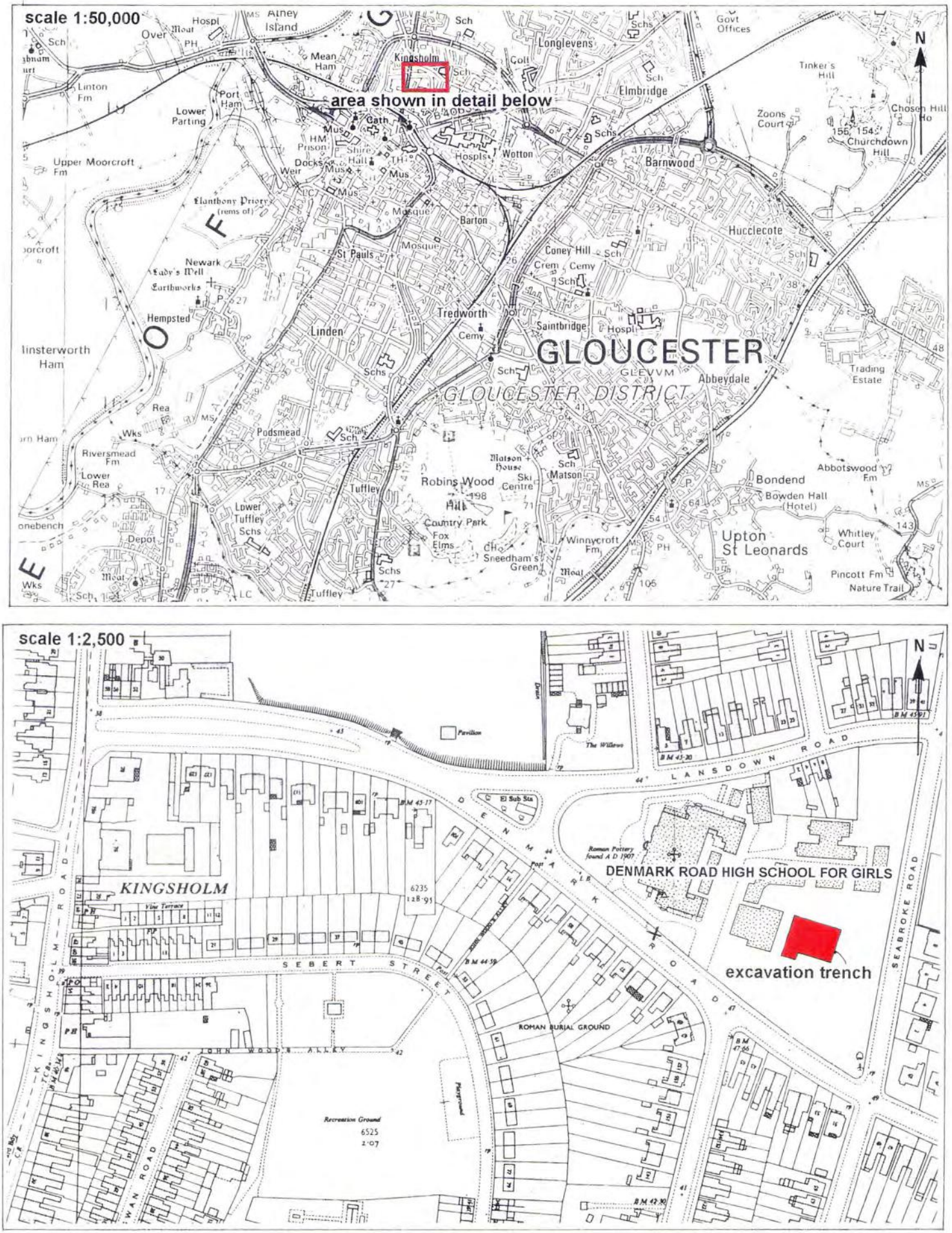


Fig 1: *Site and trench location plan*

4 Methodology

4.1 The excavation was carried out on the recommendation of the Archaeology Officer (Planning and Development) of Gloucestershire County Council and to specified standards (Hunter 1995).

4.2 The entire footprint of the proposed new development area was stripped of topsoil and subsoil using a mechanical excavator. Machine excavation was halted at the surface of the natural substratum.

4.3 The area was then cleaned by hand and photographed. All archaeologically significant features were recorded, sectioned and photographed using standard archaeological techniques.

5 Results of the excavation (Figs.2 and 3)

5.1 Three layers, (101), (102) and (104) were observed overlying the natural silty sand substratum (103) within the sections around the perimeter of the excavation. The turf layer (104), a dark grey brown silty sand, 0.15m in depth, overlay a layer of topsoil (101), a dark brown silty sand which related to the previous usage of this land as a market garden. Throughout the southern half of the area of excavation these layers overlay (102) a mid grey brown silty sand subsoil (maximum depth 0.40m). Beneath (102) in the south and (104) in the north was the natural sand substratum (103).

5.2 Of the thirty three features uncovered within the excavation area twenty six were post holes and pits, six were linear furrows and one was a ditch (Fig. 2).

5.3 Twenty four of the twenty six postholes and pits contained very dark, loose and humic fills. When a number of these features were sampled they proved to be Post-Medieval in date, containing glazed pottery and fragments of clay pipe.

5.4 Although the plough furrows (106), (107), (108), (110) ,(111) and (112) all followed the same south south-east to north north-west alignment, when sampled they appeared to represent two, or possibly three, separate phases of ploughing. Furrows (107) and (112) were approximately 5m apart, very shallow and wide containing light orange brown sandy silt fills. These furrows were cut by later linear furrows (106) and (111) respectively and would seem to represent the earliest phase of ploughing. The finds recovered from furrows (107) and (112) would suggest that the earliest phase of ploughing was undertaken during the late medieval period (Fig 2).

5.5 Furrow (106) was truncated by furrow (108). This suggests a further phase of ploughing following the earlier alignments. Finds retrieved from both these later phases of ploughing suggest a post-medieval date.

5.6 The Romano-British features

5.6.1 Two pits, contexts (154) and (169) were of archaeological significance. Pit (154) was irregularly shaped, 1.90m wide and 0.95m deep and contained a singular light reddish brown silty sand fill (155) from which several fragments of Romano-British pottery were retrieved. Pit (169) was subcircular in shape, 1.46m in diameter and 0.70m deep. This pit contained two distinct fills, the later being (168), a red brown silty sand containing a large quantity of sandstone rubble, mortar and other construction debris. The primary fill (176), was a very black silty sand, consisting almost entirely of burnt material and daub.

5.6.2 Truncated by furrows (108), (110) and several of the post-medieval pits was feature (109), a linear ditch 2.10m wide and 0.50m deep extending north to south across the excavation trench. The ditch had regular shallow sloping sides and a slightly rounded base. When sampled in several separate locations, the fill, a dark yellowish brown sandy silt, appeared to be constant throughout its length. The fill contained a large amount of domestic debris, the majority of which was animal bone. In one excavated section, amongst the animal bone a quantity of human bone in the form of skull and mandible fragments were retrieved (Figs. 2 and 3).Although finds were evident throughout the length of the ditch within the excavation area, specific concentrations were apparent within the various sampled areas.

6 Conclusions

6.1 Due to the shallow depth of the topsoil and subsoil within the area of excavation, any modern activity deeper than 0.35m in the north and 0.60m in the south has penetrated the natural substratum. It is therefore likely that the majority of the irregularly shaped shallow pits and postholes relate either to the previous usage of this land as a market garden, or to activity within the school playing fields, i.e: posts for netball, goalposts or volleyball nets.

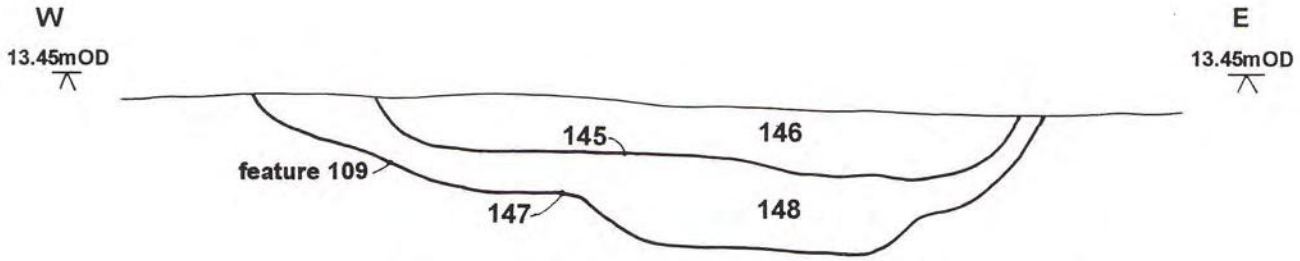
6.2 The earliest plough furrows would appear to date from the late medieval period, the field system consisting of large, wide plough furrows over 5m apart, running at a north north-west to south south-east orientation. This field system may have eventually gone out of use, with a similar system being readopted during the post-medieval period.

6.3 The primary functions of the two Romano-British pits, (154) and (169) are unclear. Both the pits were excavated into the more clayey natural substratum which discounts any form of gravel extraction. This could suggest they were used as small storage pits. What is evident from the fills, and finds retrieved, is that these pits were backfilled with domestic waste during the 3rd or 4th century A.D.

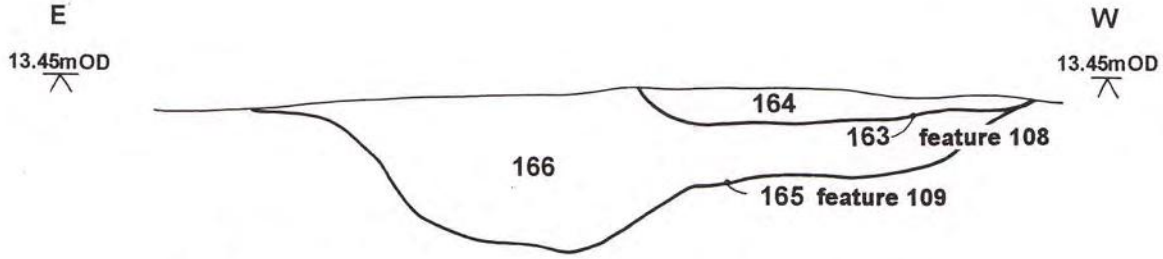
6.4 The ditch (109) would appear to have been associated with a land boundary running at right angles to the projected line of Ermin Street, the main Romano-British route between Gloucester and Cirencester. The large quantity of domestic waste within the fill of this ditch suggests that the ditch was eventually used as a rubbish

dump. The pottery retrieved suggests that the ditch, like the pits (154) and (169), was also backfilled during the 3rd or 4th century A.D.

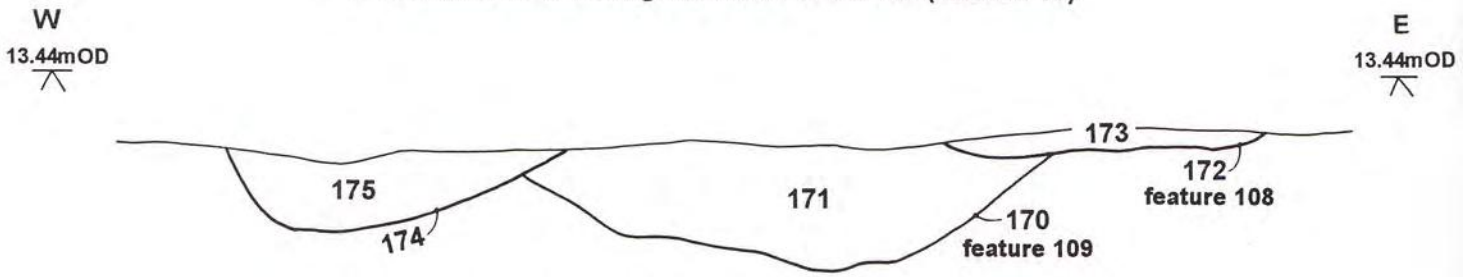
6.5 The material contained within the fills of the ditch (109) and the pits (154, 169) is likely to be related local activity. There is an indication that the primary butchery of domestic animals was taking place within the vicinity of the excavation (Appendix II). It is likely that the human skull and mandible fragments are residual, belonging to inhumations pre-dating the backfilling of ditch (109). Inhumations of Romano-British date are known to exist nearby, notably the cemeteries at the junction between Kingsholm Road and Denmark Road, and on the opposite side of Denmark Road approximately 100m to the southwest (Garrod and Heighway 1984).



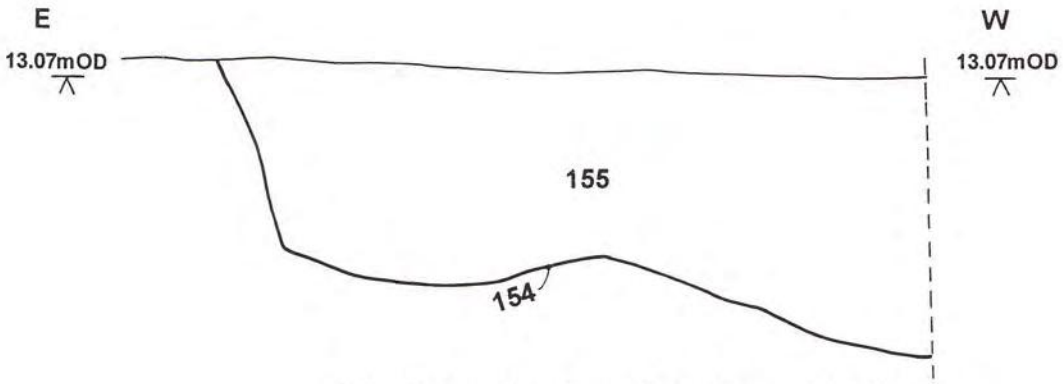
S facing section through features 109 & 145 (section 14)



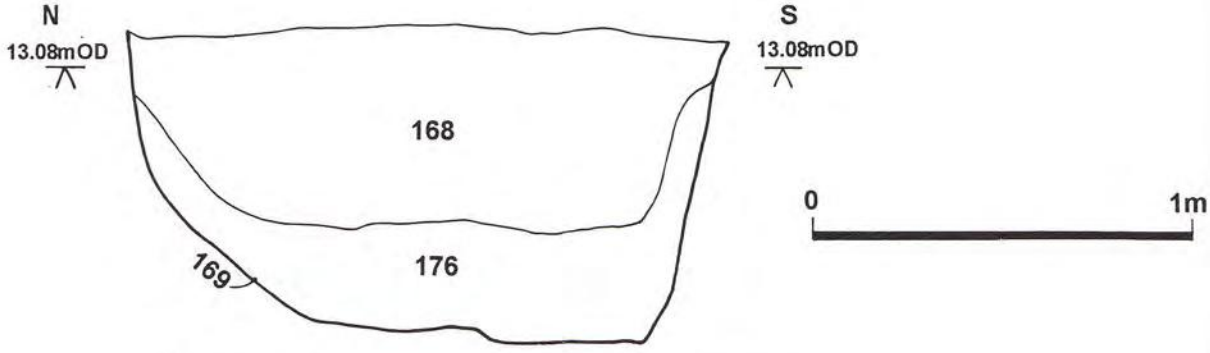
N facing section through features 108 & 109 (section 13)



S facing section through features 108, 109 & 174 (section 20)



N facing section through feature 154 (section 6)



E facing section through feature 169 (section 16)

Fig 3: *Sections*

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8 Acknowledgements

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Mr Neil Gwynne of the Education Department of Gloucestershire County Council who commissioned the excavation;

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Mr M. Sims, Ms P. Adams, Ms L Jones, Mrs H. Jack and Mr P. Nichols the archaeological site assistants.

9 Context list

Context no.	Type	Period
100	Arbitrary cleaning layer	none
101	Layer	Modern topsoil
102	Layer	Subsoil
103	Layer	Natural substratum
104	Layer	Modern imported topsoil
105	Layer	Mixed layer between natural and subsoil
106	Feature no.	Post- Medieval plough furrow
107	Feature no.	Medieval plough furrow
108	Feature no.	Post-Medieval plough furrow
109	Feature no.	Romano-British ditch
110	Feature no.	Post-Medieval plough furrow
111	Feature no.	Post-Medieval plough furrow
112	Feature no.	Medieval plough furrow
113	Fill	Fill of 116
114	Fill	Fill of 117
115	Fill	Fill of 118
116	Cut	Section through feature 106
117	Cut	Section through feature 107
118	Cut	Section through feature 108
119	Cut	Modern posthole
120	Fill	Fill of 119
121	Cut	Irregularly shaped modern pit
122	Fill	Fill of 121
123	Feature	Modern bore hole
124	Feature	Modern posthole
125	Feature	Modern posthole
126	Feature	Modern posthole
127	Feature	Modern posthole
128	Feature	Modern intrusion
129	Feature	Modern posthole
130	No. invalid	See contexts 174 and 175
131	Feature	Modern intrusion
132	Feature	Modern intrusion
133	Feature	Modern posthole
134	Feature	Modern posthole
135	Fill	Fill of 136
136	Cut	Section through feature 111
137	Cut	Post-Medieval pit
138	Fill	Fill of 137
139	Cut	Post-Medieval pit
140	Fill	Fill of 139
141	Feature	Modern posthole

142	Feature	Modern posthole
143	Feature	Modern intrusion
144	Feature	Modern posthole
145	Cut	Post-Medieval pit
146	Fill	Fill of 145
147	Cut	Section through 109
148	Fill	Fill of 147
149	Box section	none
150	Fill	Fill of 151
151	Cut	Section through 110
152	Fill	Fill of 153
153	Cut	Section through 109
154	Cut	Roman-British pit
155	Fill	Fill of 154
156	Fill	Fill of 157
157	Cut	Post-Medieval pit
158	Fill	Fill of 159
159	Cut	Post Medieval pit
160	Box section	None
161	Fill	Fill of 162
162	Cut	Modern pit
163	Cut	Section through 108
164	Fill	Fill of 163
165	Cut	Section through 109
166	Fill	Fill of 165
167	Feature	Modern posthole
168	Fill	Secondary fill of pit 169
169	Cut	Romano-British pit
170	Cut	Section through 109
171	Fill	Fill of 170
172	Cut	Section through 108
173	Fill	Fill of 172
174	Cut	Post-Medieval pit
175	Fill	Fill of 174
176	Fill	Primary fill of 169
177	Cut	Section through 109
178	Fill	Fill of 177
179	Fill	Fill of 180
180	Cut	Modern testpit

APPENDIX I

Pottery Report on the ceramics retrieved from the phase II excavation at Denmark Road High School, Gloucester

Annette Hancocks

1 Introduction

All the pottery recovered from Phase II excavations at Denmark Road High School, Gloucester was hand retrieved. It was subsequently quantified by period, count and weight (g). This enabled spot dating of key contexts, providing *terminus post quems* and allowed the overall nature of the assemblage to be ascertained.

The site produced a limited stratigraphic sequence, which largely tailored the nature of any further analysis. The aim of this report is to produce a summary and analysis of the primarily Roman pottery assemblage.

A detailed study of forms and fabrics was undertaken to enable accurate dating of important contexts. This involved the identification of fabrics using a X 8 hand lens and comparison with the Gloucester City type fabric series (Heighway 1983). A list of all fabric types present in the assemblage was then compiled (Table 1). This data allowed for a detailed summary of each fabric present in a context to be listed (see fabric summary sheets for each context).

2 The pottery : quantification and fabrics

The pottery assemblage consists of 248 sherds, weighing some 3,144g. The degree of sherd fragmentation is relatively low at 12.70g, with large diagnostic sherds surviving and limited abrasion. Initial spot dating was carried out and preliminary t*erminus post quems* (TPQ) allocated. This information enabled the chronological development of the site to be clearly determined.

The primary objectives were to enable the percentage proportion of each fabric in the assemblage as a whole to be shown (see Table 1), for a discussion of the date range, phasing and the presence or not of particular fabric types on site. A total of eleven fabric groups were identified, covering three archaeological periods. Only 25 contexts contained dateable ceramics.

Of the eleven fabrics identified, eight are Roman, two medieval and one category for post medieval pottery (+1650). The following fabric descriptions are based on Heighway's 1983 fabric series.

Fabric 4 is Dorset Black Burnished ware, reduced dark grey or black throughout. Within the total assemblage it comprises 1.2% by count and 0.95% by weight (g). Only three sherds were recovered, one of these was a dog dish rim, with incised arc decoration.

Fabric 5 is micaceous greyware, usually burnished with large flakes of white mica (up to c. 0.5mm). It is locally produced and comprises 2 % by count and 1% weight (g) within the whole assemblage. Five sherds were recovered from the excavations.

Fabric 8 is Samian. This is the only fineware recovered from the site. It makes up 4% by count and 2% by weight (g). Eleven sherds were retrieved.

Fabric	Description	Count	%	Weight (g)	%
Roman					
4	Dorset Black Burnished ware	3	1	30	1
5	Micaceous greyware	5	2	32	1
8	Samian	11	4	53	2
10	Amphorae (Dressel 20)	8	3	906	29
11B	Severn Valley ware	110	44	1174	37
11Bv	Reduced Severn Valley ware	36	14.5	278	9
18	Malvernian 'native' ware	5	2	28	1
Miscellaneous Roman	Too small to identify	2	1	2	0.5
Medieval	Medieval	11	4	52	2
43	Sand and limestone tempered wares	1	0.5	2	0.5
Post medieval	Post Medieval	56	23	587	19
Total		248	100	3144	100

Table 1 The percentage proportion of fabric types present in the assemblage, by count and weight (g).

Fabric 10 represents Dressel 20 amphorae. Some eight sherds were retrieved, representing 3% by count and 29 % by weight (g).

Fabric 11B represents Severn Valley ware, usually reddish orange, but may be brown and sometimes reduced with grey core. Some 110 sherds, comprising 44% by count and 37% by weight (g) were recovered.

Fabric 11Bv is reduced Severn Valley ware, the reduction produces a grey finish. Some 36 sherds were recovered making up 14% by count and 9% by weight (g).

Fabric 18 Malvernian 'native' wares. Handmade / wheelthrown containing metamorphic and Palaeozoic inclusions. 2% by count and 1% by weight (g).

Miscellaneous Roman comprises of fragments too small to identify to a specific fabric. Less than 1% by count and weight (g) was retrieved.

Medieval fabrics made up 4% by count and 2% by weight (g).

Fabric 43 was the only identifiable medieval fabric. It was a sand and limestone tempered ware comprising less than 1% by count and weight (g) of the total assemblage.

Post medieval fabrics were identified under one heading and contributed the second largest fabric group. They comprised 23% by count and 19% by weight (g) of the total assemblage.

3 The pottery : discussion

At least three phases of occupation can be identified on the basis of the pottery, within the assemblage. Since no complex phasing appears to exist on the Phase II excavations it is easy to split the assemblage into periods : Roman (phase 1), medieval (phase 2) and post medieval (phase 3).

Phase 1 appears the represent the earliest occupation on site. 8 Roman fabrics were identified, dating this period to the late second / early fourth century. The phase is represented on site by a linear ditch F(109), which showed evidence of some post medieval contamination, with three sherds of residual post medieval pottery been recovered, from two of the five sections which were excavated along its length. The contaminated fills were (148) and (178) respectively.

The other Roman features, two pits, cuts (169) and (154) appear to be later in date than the linear ditch. All fills date to the late third / fourth century. The Roman ditch does not appear to be contemporary with the two pits. It is possible that these pits represent another phase of Roman occupation.

There is a distinct difference in the composition of the ditch fill compared to those of the two pits. A greater variety of fabrics and forms were recovered from the ditch, including plain samian (fabric 8) and amphorae (fabric 10). This may be a reflection of the length of use of the ditch compared to the pits, although abrasion and sherd size indicate that the Roman features were not in use for very long. All three features do essentially reflect a domestic assemblage, although no mortaria were recovered. The locally made coarsewares prevail with Severn valley ware (fabric 11B), the dominant fabric in the whole assemblage (Table 1).

With the exception of 11 sherds of Samian (fabric 8), the Romano-British pottery assemblage is predominantly made up of coarsewares, of which the locally produced Severn Valley wares dominate. The coarsewares consist primarily of storage and wide mouth jars in the Severn Valley ware tradition. Webster (1976) has given an adequate discussion of the Severn Valley wares in the region and the forms in which the vessels are produced. A few feature rim sherds have confirmed the initial spot date range of late second / late third century Webster (1976, 27-28, fig. 5). Sufficient numbers do not survive to warrant illustration.

The late date range for the Roman assemblage is confirmed by the presence of a few sherds of Malvernian 'native' ware, which is known to have continued in use into the late third / early fourth centuries (Table 1).

Phase 2 of occupation appears to date to the late medieval period, with two possible plough furrows, features (107) and (112). Unfortunately only fill (114), from cut (117), contained any dateable pottery. The fill contained 3 sherds of mid / late medieval pottery, with a couple of Roman sherds from underlying occupation cut by the plough furrow.

The final phase of occupation dates to the post medieval period. What is very evident is the degree to which both medieval and post medieval activity on site has severely truncated the Roman occupation phase. Nearly all the post medieval and medieval features contain a small quantity of Roman pottery, reflecting the deep ploughing and truncation of Roman features. This is especially the case with pits (137), (139), (145), (157), (162), (172) and (174), which are probably Roman in nature given the amount of Roman pottery contained within them. However, because of a small amount of post medieval pottery, the pits have been given TPQ's of (+1650). This I feel is a result of the truncation of Roman pits by post medieval ploughing.

4 Conclusion

The site of Denmark Road High School Phase II excavations adds to our knowledge of Roman occupation within the Kingsholm environs. The assemblage is consistent with other domestic settlement sites in Gloucestershire and highlights the reliance on locally produced coarsewares, such as Severn Valley ware. With the exception of the samian the site appears to be rural in nature, given the distinct lack of finewares and regional imports from areas such as Oxfordshire. The late date range of late third / fourth century is confirmed by the presence of diagnostic Severn Valley forms and the appearance of small amounts of Malvernian 'native' wares.

Three distinct phases of occupation can be recognised, although later activity on site has led to the truncation of a large number of Roman features.

5 References

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A report on the animal bone recovered from the phase II excavation at Denmark Road High School

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THE ANIMAL BONE FROM DENMARK ROAD HIGH SCHOOL, GLOUCESTER

Kathy Ayres
Kate M. Clark

November 1995

Introduction

A small assemblage of animal bone (647 fragments in total) was recovered from excavations undertaken at Denmark Road High School, Gloucester, preceding the phase II redevelopment in 1995. The majority of the material (631 fragments) came from a large ditch, feature 109, which has been given a provisional date of the third to fourth century AD. A smaller quantity of only 16 fragments was retrieved from two pits which have been dated to the Romano-British period but with less certainty. The identification of the species (table 1) has been presented separately for the ditch and the pits but in all other tables, due to the sparse information obtainable from the pits, the features have been discussed together. Although the assemblage was small, the condition of the bones was very good, particularly the cattle remains, as reflected in the number of measurements which could be taken from the bones of this species.

Methods

The animal bone was identified using the reference collection at the Department of Archaeology, University of Southampton, with those fragments unidentified to species level being classed as 'cattle size', 'sheep size' or 'unidentified'. Sheep and goat are classified under one heading, as diagnostic features on which to differentiate these species were not available.

Species Representation

Domestic Species

The majority of the fragments were identified as the three main domestic species, namely cattle, sheep/goat and pig. Cattle fragments predominate, consisting of 76% of the major species, with pig and sheep/goat remains having much lower proportions. Other domestic species are represented to a lesser degree and include horse which is represented by 10 fragments only, and dog which was represented by a mandible and teeth, a maxilla fragment and a calcaneum fragment A bird ulna was also identified and is likely to be that of a domestic fowl. Minimum number of individuals (MNI) counts were calculated from the element representation (table 2a) which produced a value of seven for cattle and one for all other species.

Dog

The posterior portion of a left mandible and a small fragment of left maxilla were recovered. The mandibular dimensions which could be recorded (carnassial length 20.8 mm, height of mandible behind M_1 20.6 mm, thickness of mandible at M_1 11.1 mm) indicate a reasonably strong-jawed animal. These measurements conform closely to those of a modern alsation and a labrador in the Southampton comparative collection.

A left calcaneum, although too incomplete to measure, is also clearly from a medium to large-sized dog. This bone had been cleanly chopped through transversely, showing that the carcase had been butchered, at least in the hind limb. Maltby has discussed patterns of butchery in later prehistoric dog bones from Owslebury (Maltby 1987a), Balksbury (Maltby nd), and Winnall Down (Maltby 1981), and points out that at Owslebury dogs continued to be eaten occasionally even in the late Romano-British Period. Wilson has drawn attention to the obvious consumption of dog evident in the material from Ashville Trading Estate (1978), and skinning marks have also been noted on dog bones from the ditch at Brighton Hill South (Maltby 1987b). Both skinning and disarticulation are evident in the Early Romano-British phases at Coombe Down and Chisenbury Warren on Salisbury Plain (Clark forthcoming). It is not possible on this single calcaneum to draw conclusions regarding the dog from Denmark Road, but it can be said that some degree of butchery was performed on the animal.

Wild species

Red deer (*Cervus elaphus*) was the only wild species present and was represented by a femur fragment.

Ageing

The ageing methods, using epiphyseal fusion data and tooth wear, were based on Silver (1969) and Grant (1982) respectively.

Cattle: Information on the age of the cattle was available through both fusion data and tooth wear analysis. The fusion data (table 3a) indicate that the majority of the animals appear to have died after the age of at least 12 months, and some between the age range of 2-4 years (Silver 1969). This impression of a group of cattle in which the majority was juvenile or older is supported by the tooth wear data (table 4). Here, two mandibles and a number of loose lower fourth premolars and third molars indicate ages of animals ranging from juvenile through adulthood to 'senile' (Halstead 1985).

Sheep/goat: There was no tooth wear evidence available for sheep/goat and the fusion data were very limited also (table 3b). An unfused distal humerus suggests an individual of under six months, a fused scapula suggests an age of over 6-10 months and a distal tibia an age of at least 18 months (Silver 1969).

Pig: The fusion data for pig were limited to a single first phalanx, suggesting an age of under 30 months. A mandible and a lower molar were also present and could both be aged as over 18 months (Silver 1969).

To summarise, the ageing data, although limited, can give a tentative estimate for the cattle population at least. There is evidence for juvenile cattle, but the majority appear to have survived into adulthood before being killed. The lack of very young animals could indicate that the ditch contained the remains of food waste, as cattle may have been allowed to outlive their usefulness in breeding, traction and so on before being killed for their meat. Alternatively, it could be a result of preservation

factors, with young, unfused bone being more prone to processes of decomposition. The ageing data for sheep/goat and pig is really too scarce to allow for an estimation of the age range of the population, but does indicate that both very juvenile and immature sheep were represented, as well as immature pigs. As the only important product gained from pigs is their meat, they are usually killed whilst fairly young, and this again mitigates against preservation and may result in the under-representation of the species.

Taphonomy
A large number of butchery marks were observable on the bones of all three main domestic species, particularly those of cattle and 'cattle size' fragments (table 5). They included both chop and cut marks and occurred mainly on the shafts of the long bones and ribs. Marks were also identified on sheep/goat and pig, and suggest butchery activities on all three main domestic species

A small number of gnaw marks were also identified, 2 on cattle bones and four on sheep. There were another 9 marks observed but it could not be said with certainty that these were the results of gnawing. This low level of gnawing and overall good condition of the bones may indicate their quick disposal.

The minimum number of elements (MNE) data which was calculated by the presence or absence of certain 'zones'' of the bone, was extremely limited for all species bar cattle, due to the small number of fragments identified for each. The cattle data indicate that most of the anatomical elements of the body were represented, with fore- and hindlimbs being recovered in relatively equal proportions. A large number of skull fragments from both cattle and 'cattle size' categories was also present. Carpals, tarsals and phalanges were also present from the larger mammals. From this, no specific stage of butchery can be determined and it suggests that the deposit is the result of waste from both primary butchery and food preparation.

Measurements
Measurements were taken with reference to von den Driesch (1976) and these can be seen in table 5. Very few could be taken on sheep/goat and pig, although a substantial number were obtainable from the cattle bones. These were then compared with the range and average for this period for each measurement, which have been calculated from the database of the Animal Bone Metrical Archive Project (ABMAP) (Centre for Human Ecology,1995). From the table it can be seen that the majority of measurements taken from the Denmark Road bones fell within the ranges for the period. There were a some anomalies, and although most tended only to deviate from the ABMAP range by a few millimetres a small number need further discussion. These included the distal humerus and calcaneus breadth measurements for cattle, where the values fell below the minimum calculated from ABMAP data by a greater amount, and may indicate the presence of a particularly small animal. The sole sheep tibia fell within the expected range as did the pig measurements bar a low value of 31mm for the length of a lower molar (fig 3).

Pathology
Only one slight abnormality was noted. A cattle metatarsal exhibited a circumferential split in the subchondral bone. Such evidence of joint stress has been noted in other assemblages (Clark 1994) and may be due to environmental factors such as prolonged cold conditions (D. Brothwell pers. comm.).

Summary and Discussion

Considering the small size of this assemblage, useful information has been gained from the bones. The predominance of food species in both the ditch and the pits may indicate that the features contain some waste from meals. The ageing data, together with evidence of butchery marks on the bones supports this by suggesting that they were killed for their meat. Wild animals were rare, indicated only by a red deer fragment which could indicate exploitation on a small scale of wild animals for food, although this is extremely tentative. The presence of a large number of non-meat bones such as the carpals, tarsal, phalanges and skull fragments could suggest waste from primary carcase preparation. The high presence of cattle relative to the other domestic species in the assemblage could be due to a number of reasons, one of which could be taphonomic, as cattle bones break into a greater number of pieces than those of smaller mammals. This is emphasised by the large number of fragments which could only be classed as 'unidentified cattle size'. In all, the features appear to represent waste from all stages of animal processing.

The assemblage bears similarities with that from the Portway site (Noddle,1984), which also contained a ditch dating to the third to fourth centuries. Cattle predominates in the assemblage, and the remains tended to consist mainly of mature animals. In the element distribution the high numbers of less edible parts of the carcass was also noted. Pigs on this site were very poorly represented, much more so than at Denmark Road and this was suggested as being the result of disposal practices, with the bones of mainly larger animals being disposed of in ditches, and smaller animals elsewhere. This may apply to Denmark Road also, possibly explaining the predominance of cattle, although horse, the other large mammal present, constitutes only a low proportion of the assemblage. Cattle dominates a number of other assemblages of the period, however, such as Haymes, Cleeve Hill (Noddle,1986) and the Roman levels at 1 Westgate Street (Maltby,1975) where ageing data suggested that the majority of cattle bones belonged to mature animals (of at least 3 years), and the pig and sheep populations appear to have been killed during their second year. This closely corresponds with the ageing data obtained from Denmark Road, as does that from Barnsley Park (Noddle 1985) where although the proportions of the major species is contrary to those of this site, the majority of animals were killed after they had passed juvenile status.

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TABLE 1 : Number of Identified Specimens

FEATURE	*Cattle*	*Shee[/goat*	*Pig*	*Horse*	*Dog*	*Bird*	*Red Deer*	*Sub-total*	*Sheep size*	*Cattle size*	*Unid.*	*TOTAL*	*% i.d*
Ditch	172	20	20	10	3	1	1	227	26	184	194	631	36
Pits	0	1	3	0	0	0	0	4	0	12	0	16	25
TOTAL	**172**	**21**	**23**	**10**	**3**	**1**	**1**	**231**	**26**	**196**	**194**	**647**	**36**
% i.d. species	74	9	10	4	1	<1	<1						

TABLE 2a : Minimum Number of Elements (MNE)

Element	*Cattle*	*Sh/g*	*Pig*	*Horse*	***Total***
Horn Core	1	0	0	0	**1**
Mandible	13	0	3	0	**17**
Scapula	3	1	1	1	**6**
Humerus	8	2	1	0	**11**
Radius	6	0	0	0	**6**
Ulna	1	0	0	1	**3**
Pelvis	6	1	1	0	**8**
Femur	3	0	0	0	**4**
Tibia	6	2	0	2	**10**
Patella	0	0	1	0	**1**
Astragalus	5	0	0	1	**6**
Calcaneus	5	0	0	1	**7**
Carpal	0	0	0	1	**1**
Tarsal	1	0	0	0	**1**
Metacarpal	1	0	0	0	**1**
Metatarsal	4	1	0	1	**6**
Phalanx1	7	0	1	0	**8**
Phalanx 2	3	0	0	0	**3**
Total	**73**	**7**	**8**	**8**	**100**
% main domesticates	76	7	8	8	
MNI	**7**	**1**	**1**	**1**	**13**

TABLE 2b : Fragment Count of Other Elements

	Cattle	*Sh/g*	*Pig*	*Cattle size*	*Sheep size*	***TOTAL***
Skull Frags	24	0	0	55	0	**79**
Ribs	4	0	0	23	3	**30**
Vert.	2	0	0	18	0	**20**
Loose teeth	18	1	3	0	0	**22**
Tooth frags.	3	0	1	0	0	**4**
TOTAL	**51**	**1**	**4**	**96**	**3**	

TABLE 3a : Bone Fusion Data for Cattle

Age (mo.)	*Element*	*F*	*UF*
7-10	Scap	3	0
	Pelv	1	0
12-18	Hum D	1	0
	Rad P	3	0
	Ph 1	7	0
	Ph 2	3	0
24-36	Mc D	0	1
	Tib D	1	2
	Mt D	1	0
36-48	Calc	2	2
	Fem P	0	1
	Hum P	1	0
	Tib P	1	1

TABLE 3b: Bone Fusion Data for Sheep/goat

Age (mo.)	*Element*	*F*	*UF*
6-10	Scap.	1	0
	Hum D	0	1
18-28	Tib D	1	0

TABLE 4 : Summary of Tooth Wear
(after Grant, 1982, Halstead, 1985 & Silver,1969)

Taxon	*Anatomy*	*P4*	*M1*	*M2*	*M3*	*Comments*
Cattle	Mandible		l	l	k	senile
	Mandible	g	k	j	e/f	young adult
	Lower Premolar	g				> 28 mo.
	Lower Premolar	g				> 28 mo.
	Lower Molar				g	adult
	Lower Molar				b	30-36 mo.
	Lower Molar				b	30-36 mo.
Pig	Mandible			h	c	> 18 mo.
	Lower Molar				f	>18 mo.

TABLE 5 : Summary of Butchery and Gnawing

	Butchery			*Gnawing*		
Species	*Chop*	*Cut*	*Both*	*Surface*	*Heavy*	*Probable*
Cattle	12	12	8	0	2	9
Sheep/goat	0	4	0	4	0	0
Pig	1	0	0	0	0	0
Sheep size	1	0	0	0	0	0
Cattle size	2	10	0	0	0	0
Unid	1	0	0	0	0	0
TOTAL	**17**	**26**	**8**	**4**	**2**	**9**

TABLE 6 : Summary of Measurements

			Denmark Road (mm)	*ABMAP (mm)*		
				Min	*Max*	*Av.*
Cattle	Humerus	SD	27.6, 31.2	26.1	41.2	33.7
		Bd	55.2, 66.0, 63.5	61.0	94.7	77.2
		BT	65.0, 57.4	50.6	66.1	71.2
	Tibia	SD	41.8	33.0	40.8	36.5
		Bd	71.2	43.3	71.8	59.2
	Radius	Bp	72.6	65.6	87.3	75.0
		BFp	66.5	59.7	80.2	69.4
		SD	34.9	35.1	62.8	44.9
	Metatarsal	Dp	41.5	37.4	46.7	42.7
		Bp	42.6	39.5	51.4	45.0
		SD	23.1, 22.4	22.0	28.6	26.4
	Astragalus	GLl	60.1, 63.4, 60.4	53.9	77.2	64.0
		GLm	55.7, 57.8, 55.9	49.7	66.1	57.3
		Bd	37.8, 33.3, 37.6, 37.5	34.6	48.3	40.5
	Calcaneus	GL	118.0	114.0	140.4	122.7
		GB	34.0	41.9	51.0	46.5
	Lower Molar	L	31.3			
		B	12.5			
	Ph 1	GLl	50.1, 50.4, 52.3, 56.3, 48.9			
		GLm	52.6, 52.9, 54.7, 51.7			
		Bp	26.0, 25.1, 26.5, 25.8, 30.6, 25.3	23.4	36.8	29.3
		SD	21.8, 22.3, 23.0, 22.0, 25.6, 22.0	19.5	31.1	24.9
		Bd	24.6, 25.3, 22.6, 26.5, 25.7	21.0	33.0	27.4
Sh/g	Tibia	Bd	21.8	20.1	29.8	25.2
Pig	Humerus	Bd	36.1	35.2	37.4	36.3
		BT	28.5			
	Lower Molar	L	31.0	33.9	36.8	35.0
		Br	18.0	15.7	20.9	18.3

Fig.1 : Distal Breadth of Humerus of Cattle

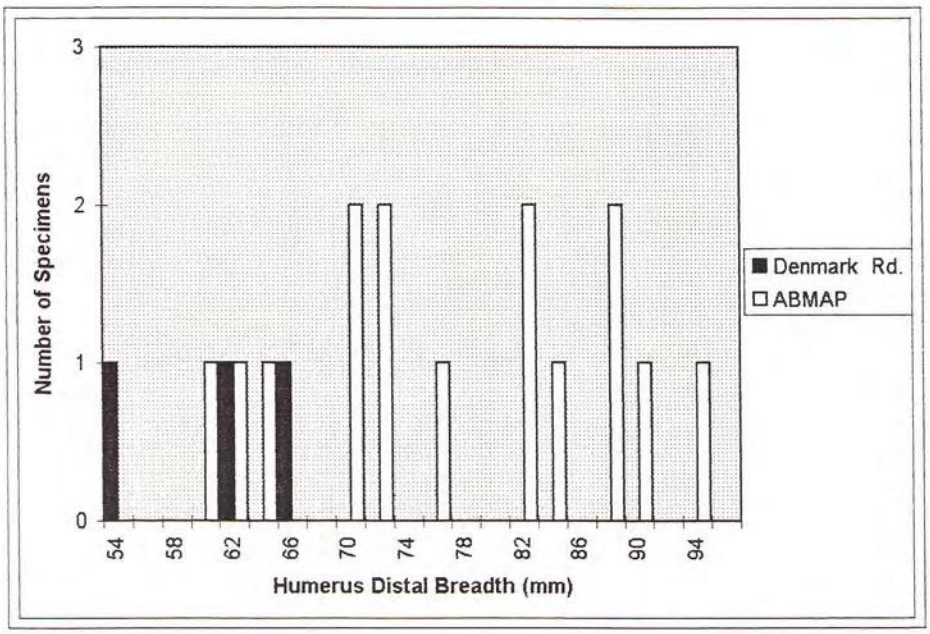


Fig 2 : Breadth of Calcaneus of Cattle

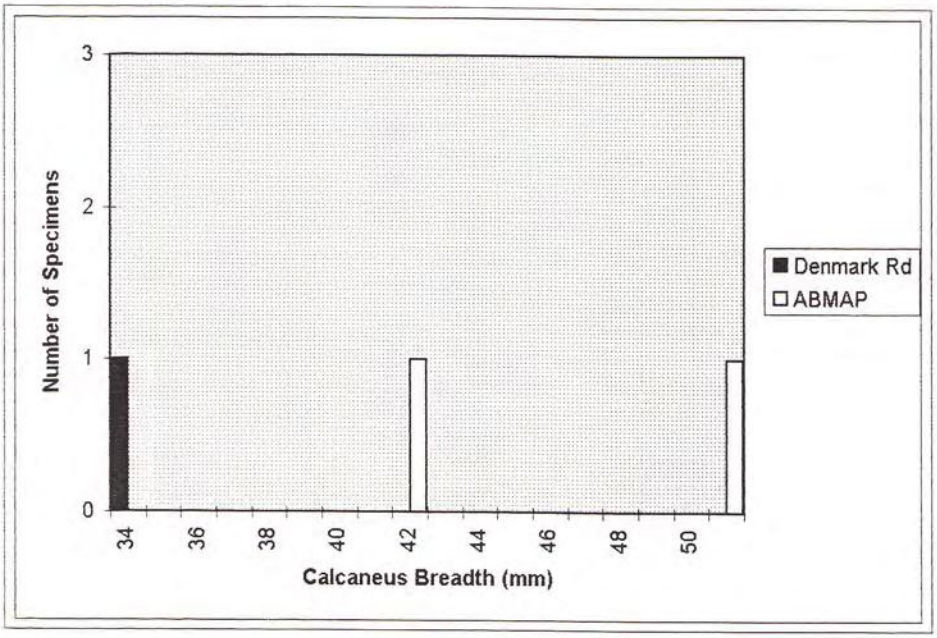
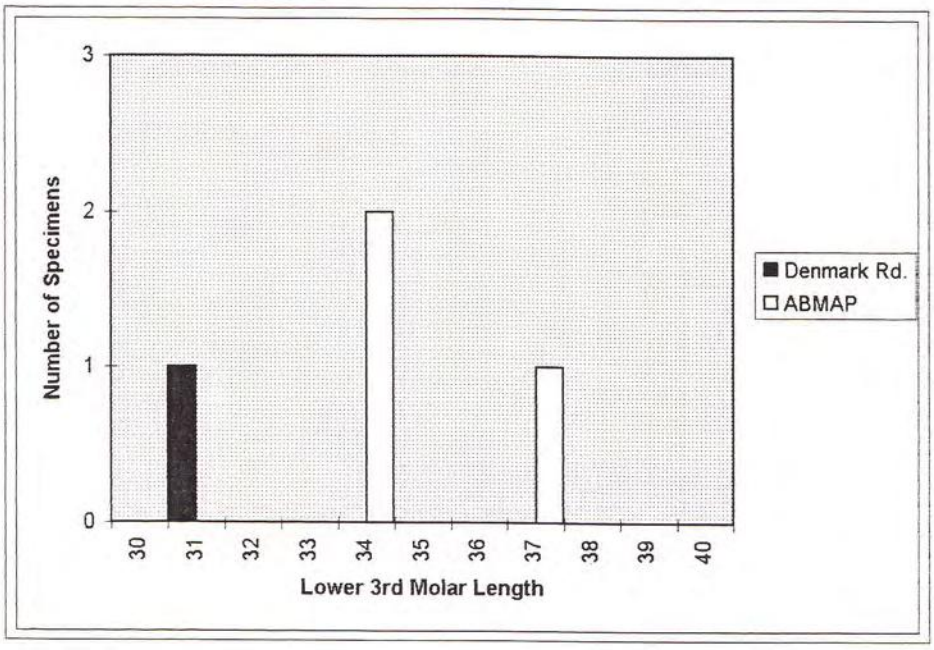


Fig. 3 : Length of Lower 3rd Molar of Pig



APPENDIX III

A report on the human skeletal remains from the phase II excavation at Denmark Road High School

Dr James Steele

HUMAN SKELETAL REMAINS FROM DENMARK ROAD HIGH SCHOOL, GLOUCESTER.

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Summary: Disturbed remains of at least three adults (two probably male and one unsexed), were recovered from a sealed ditch fill of Romano-British date. Only cranial bones were represented. Two of the adults had pathological changes — to the orbital roofs (in the one case where they survived) and to the cranial vault (in both cases) — consistent with childhood anaemia.

Individual No. 1.

Context: Recovered as part of the human bone assemblage from context 166 (= context 115).

Material: Well-preserved mandible.

Age: Probably young adult (25-35 years - dental wear, Brothwell 1981).

Sex: Male (mandible - Workshop of European Anthropologists 1980; lower canines - Molleson 1993).

Dental formula:

	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
R	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	L
R	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	L
	-	*	.	.	X	X	X	.	.	.	.	.	.	.	.	.	
												C					

Key: . = tooth present in socket X = tooth lost post-mortem, socket present * = tooth lost ante-mortem C = caries - = tooth and socket missing post-mortem

Dental calculus present to Dobney and Brothwell (1987)'s Grade 1.

Measurements: H_1 34.0 mm.

Pathology: One minor incipient caries lesion to the mesial interproximal cervico-enamel junction of mandibular P1. Moderate dental crowding with misalignment of the central incisors. Ante-mortem loss of mandibular right M2 with complete resorption of the root, and sealing of the former root cavity with well-formed compact bone.

Individual No. 2.

Context: Part of human bone assemblage recovered from context 113.

Material: Well-preserved but fragmentary mandible.

Age: Probably young adult (25-35 years - dental wear, Brothwell 1981).

Sex: Probably male (mandible - Workshop of European Anthropologists 1980; lower canines - Molleson 1993).

Dental formula:

	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
R	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	L
R	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	L
	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	

Key: . = tooth present in socket X = tooth lost post-mortem, socket present * = tooth lost ante-mortem C = caries - = tooth and socket missing post-mortem

Dental calculus present to Dobney and Brothwell (1987)'s Grade 1.

Measurements: ZZ 47.3 mm., RB (right) 39.5 mm., H_1 37.0 mm.

Individual 3.

Context: Part of human bone assemblage recovered from context 113.

Material: Well-preserved but fragmentary maxillae and facial skeleton, including intact maxillary dentition, both maxillae, frontal bone including both orbital roofs. Fragments of parietal and temporal bones.

Sex: Unsexed.

Age: Adult, 30-40 years (dental wear - Brothwell 1981; cranial suture closure - Perizonius 1984).

Dental formula:

		C															
	.	.	*	.	.	.	X	X	X	X	.	.	.	.	.	.	
R	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	L
R	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	L
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Key: . = tooth present in socket X = tooth lost post-mortem, socket present * = tooth lost ante-mortem C = caries - = tooth and socket missing post-mortem

Pathology: Cribra orbitalia (trabecular type, Brothwell 1981: 165) to the roofs of both orbits (Figure 1). Cranial vault thickening caused by expansion of the diploitic space in the frontal and parietal bones. Local thinning and porous lesions to the endocranial surface of one vault fragment. One advanced interproximal carious lesion at the mesial cervico-enamel junction of

maxillary right M2. Maxillary right M1 was lost ante-mortem and the root resorbed (loss perhaps also due to caries).

The additional cranial vault fragments

Cranial vault fragments from at least one other individual, presumably either Individual 1 or Individual 2, were included in the assemblage. Because of the mixed and fragmentary nature of the assemblage, it was not possible to assign every fragment to a distinct individual. Two individuals with pathological changes to the skull consistent with porotic hyperostosis are represented (one of whom is Individual 3: see Figure 2). The unassigned fragments included the petrous parts of both temporal bones of a single individual from context 113, and from context 115 a second left temporal articulating with a fragment of left parietal which has a pronounced temporal line (the latter fragment has thickening of the diploe clearly indicative of porotic hyperostosis).

Discussion.

The mixing of fragments from the crania of at least three individuals, and the absence of post-cranial remains, suggest that this assemblage derives from a heavily disturbed context. The majority of the bone comes from context 113; the remainder is from contexts 115 and 166 (which are in fact reported to be a single context), except for one small fragment of cranial vault from context 171, which probably belongs with the other fragments from context 113. Although many fragments refit and can thus be demonstrated to be from the cranial vault of a single individual, no one such refitted vault segment is made up of fragments from more than a single numbered context. The remains were found sealed in a ditch fill in a mixed assemblage in which animal bones were predominant: it is thought that the human remains may have derived from disturbed primary burials in a cemetery some 200 metres distant.

Two of the individuals (Individual 3 and one other) have pathological changes to the skull consistent with childhood anaemia. Cribra orbitalia and expansion of the diploe of the cranial vault bones in the adult skeleton are each associated, either singly or (as with Individual 3) conjointly, with chronic iron-deficiency anaemia in childhood (Stuart-Macadam 1992). Dental caries is also common in such cases (and occurred in the teeth of Individual 3), and gives additional evidence of stress. The abnormal growth patterns are caused by expansion of the areas containing haemoglobin-producing cells in the cranial vault, while the bones are still developing and flexible: expansion of the marrow space in the long bones is often also found in this condition (Ortner and Putschar 1981). This type of skeletal lesion is common in ancient populations: in the Romano-British cemetery at Poundbury, cribra orbitalia was recognised in 28% of individuals with intact orbits, including 41% of the children (Molleson 1993:178, 183). The anaemia may have been caused by iron-deficient diet: however, the disease process still occurs with high frequency in archaeological populations where diet appears to have been iron and protein rich (review in Andersen 1994). The clustering of high frequencies of these lesions in ancient populations from malarial zones, lowland zones, and populations in dense settlements, and its decrease in northern Europe in modern times (one study of 2,000 skulls from modern Sweden found not a single case), support Stuart-Macadam (1992)'s hypothesis linking the disease process to chronic high pathogen loads (viruses, bacteria, fungi, parasites).

In modern cases of anaemia involving hyperplasia of the bone marrow, visual disorders are sometimes associated including hyperteleorism (abnormally increased distance between the eyes, Andersen 1994).

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Phase 3

A SUMMARY OF THE POTTERY RECOVERED FROM 9/83W

INTRODUCTION

Approximately 3,500 sherds of pottery have been sorted, identified and catalogued. The pottery has been sorted according to the Gloucester type fabric system, whereby a name and type fabric number is allocated to all identifiable sherds. This dictates, the pottery's source, date and/or vessel type (cf Ireland 1983).

The type fabric system is split into three main sections, Roman, Mediaeval and Post-Mediaeval. All the pottery from the grave fills and ditch feature had a Roman date (apart from where there has been modern disturbance), and the bulk of this pottery had a local source, ie. Kingsholm or Gloucester. Nearly all this local pottery can be dated around the Ist and 2nd centuries and appears in the summary grouped under the title Residual Local Pottery. *

The non-local and imported pottery has all been noted in the summary with names, type fabric numbers and general dating.

The most frequently recovered non-local fabric was TF4 - Dorset BBI (commonly known as black burnished ware). The Roman manufacture of TF4 spans from the late 1st to the fourth century. It is possible, by following the development of rims and lattice decoration to ascertain quite an accurate date for this fabric and where it is apparent a possible date has been noted.

A small number of complete vessels were recovered. These have all been illustrated, briefly described and (where possible) given a vessel comparison and date. The vessel comparisons have all been taken from 'Types of Roman Coarse Pottery Vessels in Northern Britain' by J.P. Gillam. 1957, unless otherwise noted.

Other pottery finds of interest (e.g. a stamped mortaria rim), have also been noted and illustrated.

The summary follows the order context by context, burial by burial as set out in A.V. Jenkins' site report. The ditch feature and individual pot burials follow on from the grave fills.

* need to explain this

A LIST OF FABRICS USED IN THIS REPORT (C.F. IRELAND 83)

Local Wares

TF no.	Name
2	Grog tempered ware
3a	Mica-coated ware
5	Micaceous Grey ware
7	Local White slipped
9b B	Local Mortaria
9s S	Kingsholm Mortaria
11a A	Local micaceous wares
11b B	Severn Valley ware
11d D early	Severn Valley ware
24	Kingsholm Flagon Fabric
36	TF24 with added sand
39	Sandy Grey ware
213	Kingsholm Jars (gritty ware)
*also 15	South West white slipped

Non Local

TF no.	Name
4	Dorset BB1 (Black Burnished Ware)
9a A	Oxford White ware Mortaria
9f F	Verulamium Region Mortaria
12a A	Oxford Colour coat
13	Oxford White ware
210	North Wiltshire Fine ware
120 (12 zero)	Colchester Red-slipped

Imported

TF no.	Name
10a A	Dressel 20 Amphorae
10b B	Pélichet 47 Amphorae aka Dressel 30
10e E	South Spanish Amphorae
10f F	Carrot type Amphorae
10g G	Koan Type Amphorae
9c C	North Gaul Mortaria.

(SLUMPED PART OF DITCH)

Feature 98 Contexts (154) (230) (405)

(154) contained residual local pottery
(230) contained residual local pottery
(405) contained residual local pottery

(THE FLAGON AND STAMPED MORTARIA)

Context (28)

(28) contained one complete small colour coated ring necked flagon, fabric unknown, probably local, late Roman, 3rd-4th century (see Young 1977 fig 30). (Fig. ,7) (? pg 101) what is this?
Also contained one rim of 9c (England or Gaul mortaria) with a stamp reading (Fig. 8) N. LITVGEN/IVGI FIL (see pg fig M5) (see pg. , and Fig. ,M5)
report on MSC stamped pottery.
plus Roman and post mediaeval pottery.

BIBLIOGRAPHY

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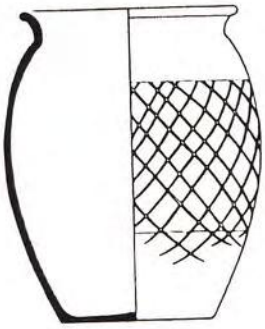
COMMENTS:

Why not say that (28) is ploughsoil ?

STAMPED MORTARIUM RIM (9/83W FIND 269)

about 1/3 of the rim of a mortaria made in Kent between about AD65 and 100 by the workshop of LITVGENVS. His is the name on the stamp, plus that of his father IVGVS. 'Litugenus, son of Iugus' is like a 'Mac-' or 'Mc-' name today. Litugenus was not a Roman citizen but was probably a successful Gaulish artisan supplying the Roman army.



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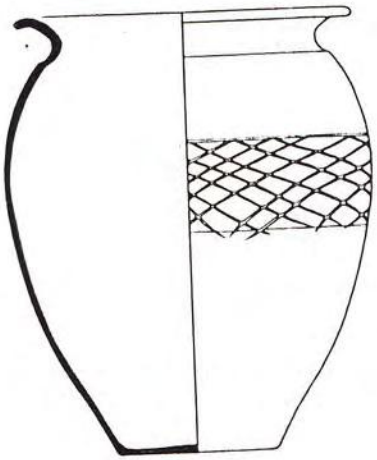

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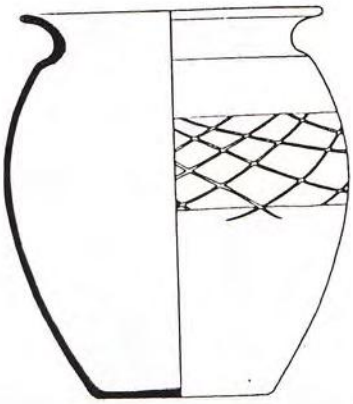

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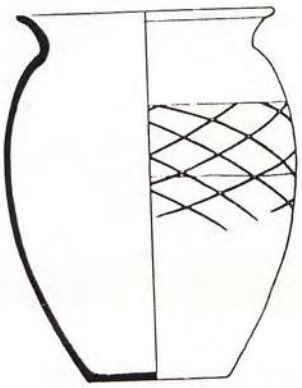

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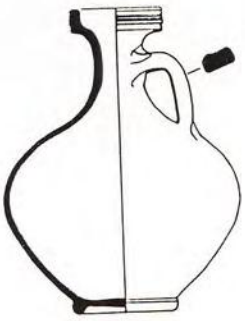

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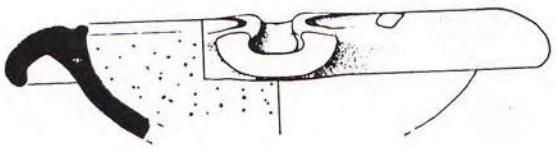

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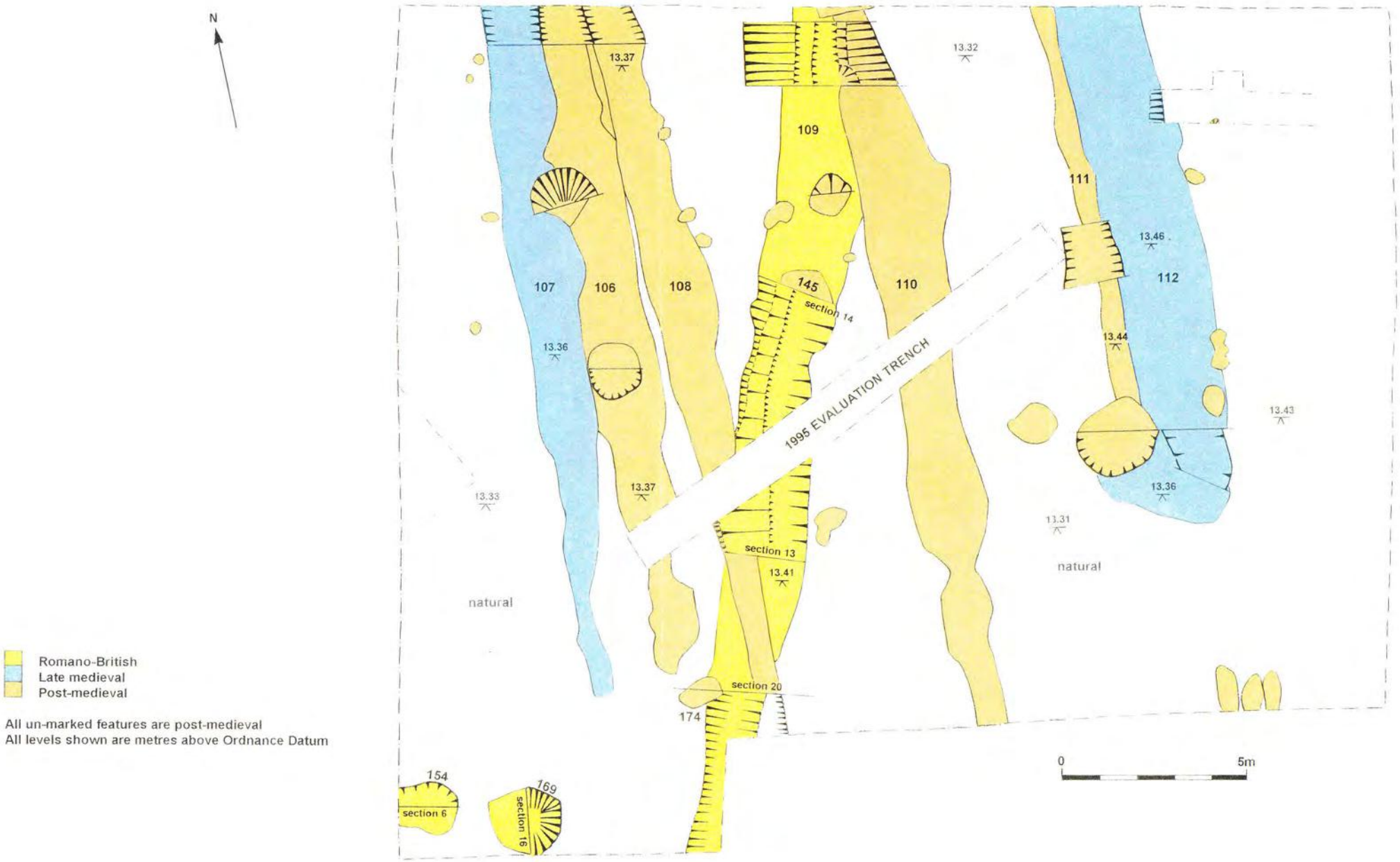

Fig 2: *Site plan*