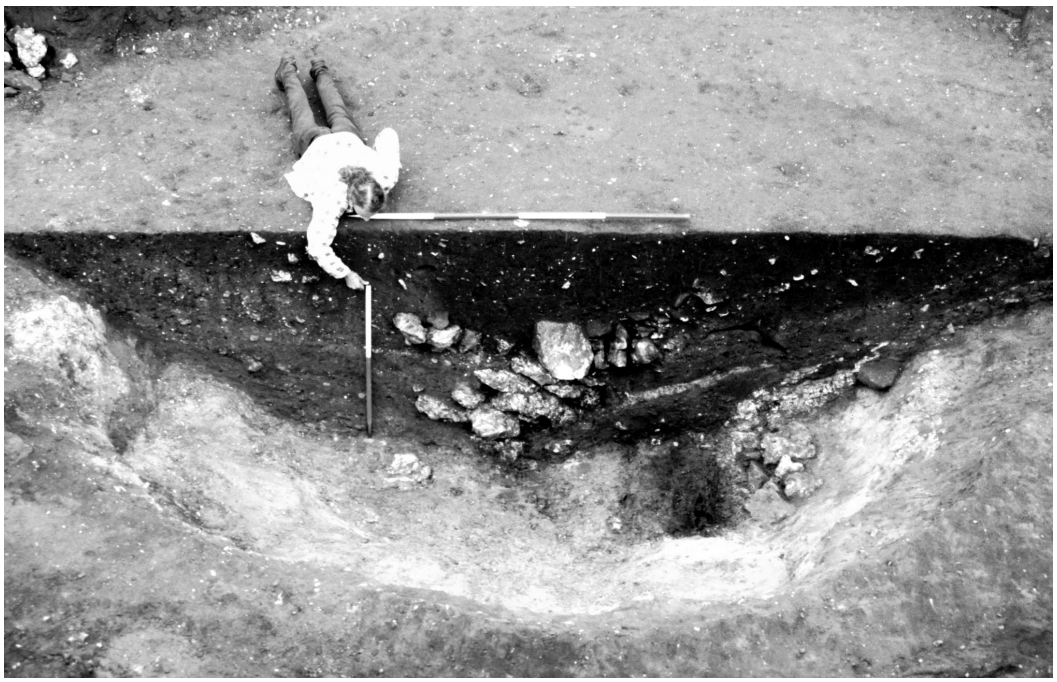
EAST ANGLIAN ARCHAEOLOGY



Frontispiece:
A Roman ironstone quarry pit *515*, Trench 11. The section showed large fragments of building stone, probably from a fairly substantial house that had been demolished by the 4th century AD, and used along with metalworking and pottery production waste to backfill this feature.
Photo: Andy Crowson

Romano-British industrial activity at Snettisham, Norfolk

Archaeological investigations at Strickland Avenue and Station Road

by Alice Lyons

with major contributions by
Mark Brennand and Myk Flitcroft

and with contributions by
Shadreck Chirikure, Julie Curl, Val Fryer, Richenda Goffin, Sarah Paynter and Adrian Popescu

illustrations by
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Cover illustration:
An almost complete Dr 37 samian bowl of Central Gaulish origin produced between the mid-late 2nd century AD, depicting Gladiatorial scenes. Recovered from deposit *505* within quarry pit *502*, Trench 10. *Illustrated by Mark Hoyle.*

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I would like to express my thanks to the specialists who have contributed this report, also to Sarah Percival for specialist advice on the prehistoric pottery, and Cathy Tester (Suffolk Archaeological Unit) for identifying the samian; as well as to Jenny Glazebrook (*East Anglian Archaeology*), Liz Popescu (formerly NAU) and John Davies (NMAS) for their support and practical advice on the content, structure and format of the publication. I would like to recognise the patient and skilful work of David Dobson who contributed to, and co-ordinated, the graphics within this report. David Gurney (Norfolk Landscape Archaeology Section) is to be thanked for his role as monitor during the fieldwork stages of this project and for his advice and comments as editor. Thanks are also due to Brian Ayers (NMAS), Jayne Bown (NAU) and Bill Boismier (NAU) for their contributions to the project design and overall project management.

Summary

In 1991 the Norfolk Archaeological Unit (NAU) carried out an evaluation ahead of residential development at Snettisham in north-west Norfolk. The work revealed widespread remains datable to the Roman period including field boundary ditches, a road, a chalk path, an inhumation and two upstanding pottery kilns. In 1994 a geophysical survey sought to identify further evidence for industrial activity, primarily additional pottery kilns. In 1998 the NAU excavated targeted areas, although in the event no further kilns were found: the 'spikes' identified by the geophysical survey all proved to be large pits, up to 8m across and over 2m deep.

The thirteen such features excavated are typical of Roman quarry pits, used to extract the abundant ironstone contained in the natural sand. One was provided with a chalk access ramp and revetted timber steps, while two more had subsequently been re-used as wells. Most of these pits had eroded rapidly and were finally closed with large dumps of pottery and metalworking debris, domestic waste and building material. The presence of large flint and limestone slabs suggests that substantial buildings had once existed in the area but were in a state of disrepair by the 4th century AD. Four sections of a Roman road were excavated where wheel ruts and mended pot holes could clearly be seen. On either side of the road were vast drainage and demarcation ditches that were repeatedly cleaned and recut.

The site was known to have an unusually thick covering of topsoil, meaning that development could take place without buried features necessarily becoming damaged. Much of the site was therefore left unexplored and lies preserved for future generations.

Résumé

En 1991, des fouilles préventives entreprises à Snettisham dans le nord-ouest du Norfolk ont révélé la présence de vestiges très étendus datant de la période romaine et comprenant une route, un chemin de craie, une trace d'inhumation, des fosses marquant les limites de champ et deux fours à céramique en place. En 1994, une étude géophysique a été lancée pour découvrir d'autres traces d'activités industrielles, en particulier dans le domaine des fours à céramique. En 1998, Norfolk Archaeological Unit (NAU) a fouillé des zones bien précises sans découvrir pour autant de nouveaux fours. Les marques identifiées à l'aide de l'étude géophysique se sont toutes révélées être de grandes fosses dont certaines avaient un diamètre supérieur à 8m, et une profondeur supérieure à 2m.

Ces fosses sont représentatives de l'exploitation de carrières romaines destinées à l'extraction du fer que l'on trouve en abondance dans le sable naturel. On a ainsi découvert une rampe d'accès en craie avec des marches recouvertes de bois ainsi que deux autres rampes qui ont été réutilisées par la suite comme puits. La plupart de ces fosses se sont rapidement érodées et ont finalement été fermées par de grands amas de poterie, de débris métalliques, de déchets domestiques et de matériaux de construction. La présence de grands blocs de silex et de calcaire suggère que des bâtiments importants se trouvaient dans cette zone mais qu'ils étaient délabrés à la fin du quatrième siècle ap.J-C.Quatre sections d'une route romaine ont été mises à jour; elles contenaient les traces bien visibles de nids-de-poule comblés et d'ornières creusées par des roues. De chaque côté de la route se trouvaient de grands fossés de démarcation et de drainage qui avaient été souvent nettoyés et recreusés.

Le site est recouvert d'une couche arable d'une épaisseur inhabituelle, ce qui explique que le développement d'activités n'a pas systématiquement endommagé les éléments enterrés. Un compte-rendu de diagnostic effectué en 2000, pendant la construction du nouveau lotissement, a permis d'établir que la plus grande partie du site restait inexploré et préservé pour les générations futures.

(Traduction: Didier Don)

Zusammenfassung

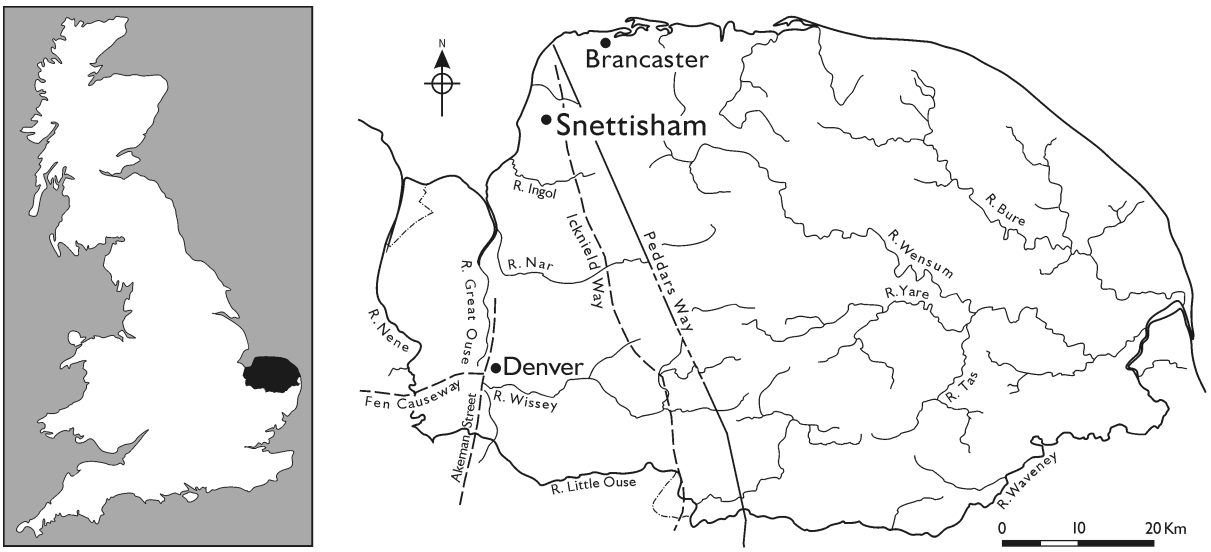
1991 enthüllte eine vor Beginn eines Erschließungsprojekts durchgeführte Evaluation in Snettisham im nordwestlichen Norfolk großräumig verteiltes Fundmaterial aus der Römerzeit, darunter Begrenzungsgräben, eine Straße, einen Kreideweg, ein Erdgrab und zwei erhaltene Töpferöfen. 1994 wurde durch eine geophysikalische Prospektion versucht, weitere Belege für eine handwerkliche Nutzung zu finden, in erster Linie weitere Töpferöfen. In den 1998 durch die Norfolk Archaeological Unit (NAU) ausgegrabenen Zielgebieten kamen jedoch keine weiteren Öfen zum Vorschein.

Die durch die geophysikalische Prospektion identifizierten »Ausschläge« erwiesen sich allesamt als

große Gruben, einige mit bis zu 8m Durchmesser und mehr als 2m Tiefe, die typisch sind für römische Steinbrüche, die dazu dienten, den im Natursand vorhandenen Eisenstein zu extrahieren. Eine dieser Gruben war mit einer Kreiderampe und befestigten Holzstufen versehen, zwei weitere wurden in der Folgezeit als Brunnen genutzt. Die meisten der Gruben erodierten schnell und wurden schließlich mit großen Mengen an Keramik- und Metallschutt, Hausabfällen und Baumaterial verfüllt. Die Anwesenheit großer Feuerstein- und Kalksteinplatten ließ darauf schließen, dass in der Gegend einst größere Gebäude existiert haben mussten, die jedoch bereits vor dem 4. Jahrhundert n. Chr. verfallen waren. Es wurden vier Abschnitte einer Römerstraße freigelegt, die deutliche Radfurchen und ausgebesserte Schadstellen aufwiesen. Zu beiden Seiten der Straße verliefen riesige Entwässerungs- und Begrenzungsgräben, die wiederholt gesäubert und neu ausgehoben worden waren.

Die Ausgrabungsstätte war von einer ungewöhnlich dicken Erdschicht bedeckt, wodurch eine Erschließung möglich war, ohne die eingelagerten Strukturen zu beschädigen Durch eine Baustellenbeobachtung während des Baus der neuen Wohnsiedlung im Jahr 2000 wurde sichergestellt, dass ein Großteil der Stätte unerforscht blieb und damit für kommende Generationen gesichert wurde.

(Übersetzung: Gerlinde Krug)



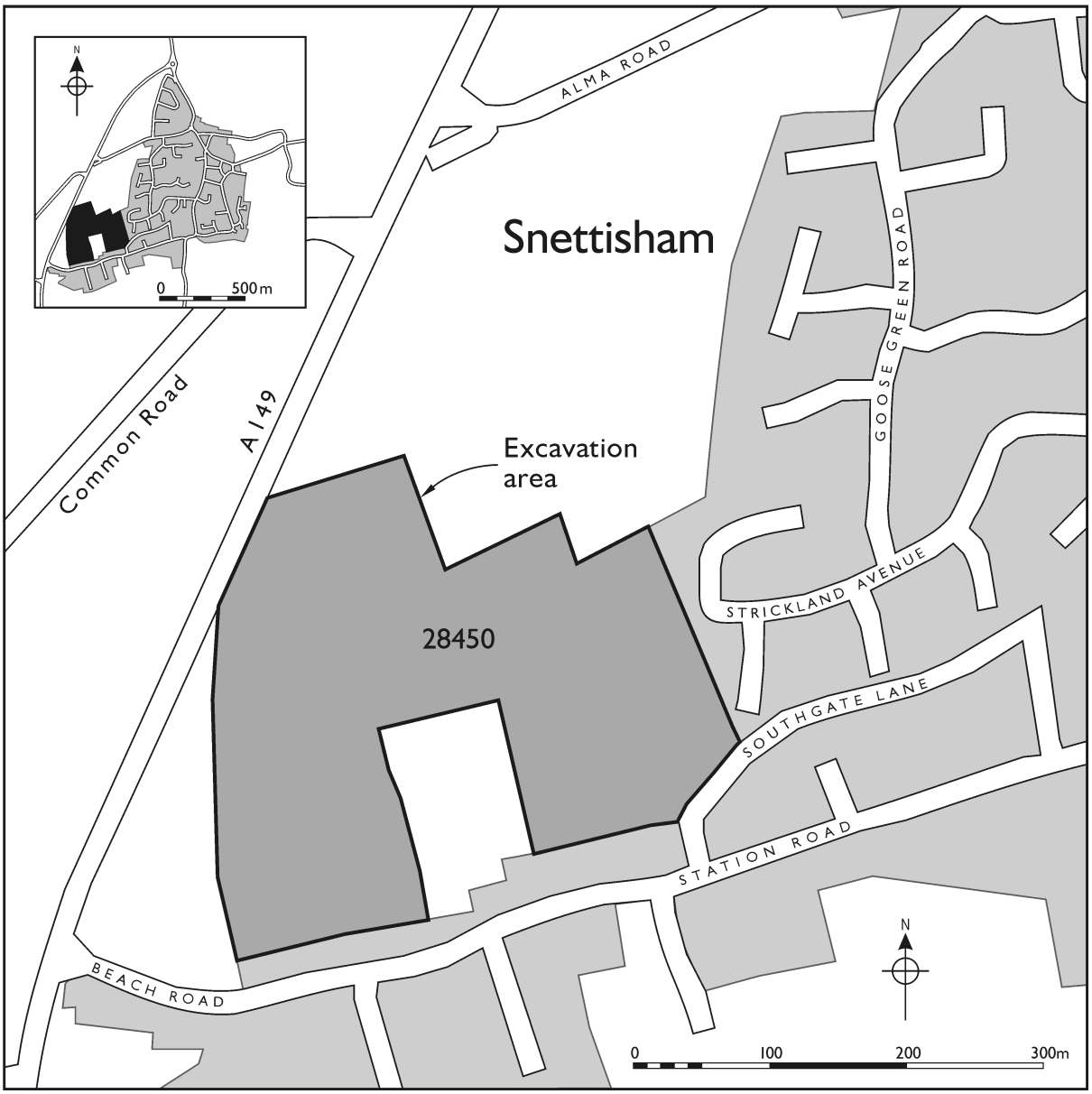


Figure 1 (top of page) Location of Snettisham within Norfolk
Figure 2 Location of fieldwork within Snettisham, scale 1:40,000 (inset); 1:5,000 (main)

Chapter 1. Introduction

I. Project Background

(Figures 1–4)

The site between Strickland Avenue and Station Road at Snettisham in north-west Norfolk (Site 28450; NGR TF 6790 3370) comprises a block of agricultural land situated to the south-west of the modern village. It covers an irregularly shaped area of 10.5 hectares and is bounded to the north by agricultural land, to the east by an existing housing estate, to the south by housing along Station Road and to the west by the A149 Snettisham Bypass.

The area around Snettisham is one of outstanding archaeological importance throughout the Late Iron Age and Romano-British periods. It is the centre of rich metalwork finds with spectacular hoards of Late Iron Age torcs and other artefacts (Stead 1991) discovered *c.*700m to the north on Ken Hill. Also on Ken Hill a large polygonal ditched enclosure has been discovered and provisionally interpreted as a sacred enclosure or tribal meeting place (Stead 1995), although the significance of this feature is not yet fully understood. The area is also noteworthy for the presence of early Romano-British settlement to the south-west (Flitcroft 2001) and later Roman activity in the form of the substantial Park Farm Villa complex located just to the east (Leah and Flitcroft 1993). Any archaeological work undertaken within this area would, as a result of this rich archaeological heritage, have the potential to further our understanding of the nature and development of settlement at Snettisham in the Late Iron Age and Romano-British periods.

Planning permission was granted for residential development, subject to a programme of archaeological work. It was apparent from the density of find spots and cropmarks recorded in the county Historic and Environmental Record (HER) that any building work would be likely to affect areas of potential archaeological interest. Information then available consisted of stray finds of Roman metalwork (Sites 1516, 1517, 1523, 24582), mostly coins, but including the escutcheon from a bronze bowl (Site 24058) and a jewellery hoard (Potter 1986; Johns 1997) from immediately to the east of the development site (Site 1517). Cropmarks of Romano-British field systems had been located to the west and south-west of the area (Sites 1515, 18236) and evidence for settlement and industrial activity of this period had also been recovered (pottery, metalworking debris and building rubble). Of particular interest was a kiln shaped partly clay-lined feature identified below the ploughsoil that was excavated by C.H.Lewton-Brian in 1952 (Site 1515). Pottery wasters were also recovered from Site 1515 during the 1989 Bypass excavations (Flitcroft 2001, 49 and fig. 43).

In 1991, in order to assess how the proposed development (which included the construction of houses, associated roads, car parking facilities and open spaces) would impact on the archaeological remains at Snettisham, the NAU was asked to conduct an evaluation (Flitcroft 1991). A significant number of well preserved Romano-British features consisting of enclosure ditches, pits, a human burial, two pottery kilns and a large amount of metalworking debris was recorded. The evaluation also established that the remains of the pottery kilns could be identified at a higher level in the ploughsoil (which was unusually deep at between *c.* 0.60–0.90m) than the majority of other features, which were only identifiable when cut into the underlying natural sand. The unusually deep overburden present on the site had protected many of the Roman features from damage by modern farming practices. It is thought that this deposit, given the survival of surface and near surface features within the same deposit on the A149 Bypass site (Flitcroft 2001) and the upstanding nature of the surviving Roman kilns with no visible cut from above, was a post-Roman natural phenomenon, due to changes in sea levels resulting in significant marine alluviate deposits.

Further archaeological evaluation of the site was carried out by means of geophysical survey in March 1994 (Geophysical Surveys of Bradford Report 1994). This identified two roads crossing each other, thirteen kiln-like anomalies, numerous ditch and pit type readings and a variety of more ephemeral responses of possible archaeological origin.

When the land was finally developed for housing in 1998 the archaeological strategy was based on the results of the evaluation and the geophysical survey. A research design was formulated (Boismier 1998) with reference to *Research and Archaeology: A Framework for the Eastern Counties* (Glazebrook ed. 1997) which suggests that the development, function and character of the Romano-British rural settlements of industrial and lower status remain only partially understood and are in need of further investigation. The results of the evaluation had clearly demonstrated that the site contained archaeological remains dating from the Romano-British period that could be used to address these research issues. In addition it was anticipated that the site had significant potential for progressing current understanding of Roman pottery kiln technology. The original aims of the excavation can be summarised as follows:

1. to determine, as far as possible, the origins, development, function, character and status of the site, notably those deposits and features associated with the possible thirteen Romano-British pottery kilns;

2. to establish, on the basis of excavation areas, the stratigraphic sequence of the site, the constructional details and date of the various kilns and associated deposits, and the extent, character and date of any other Romano-British deposits and features exposed by the road and service trench layout of the site;

3. to reveal, on the basis of the stripped areas for the roads and service trenches, the spatial organisation of the site and the nature of the activities which occurred during the various phases of occupation;

4. to explore evidence for social, economic and industrial activity on the basis of excavated areas.

II. Geology and Topography

The parish of Snettisham overlies a complex solid geology formed by a mixture of Cretaceous deposits of Carrstone, sandstone, clays and sands — often referred to as the Sandringham Sands (Casey and Gallois 1973). To the east the land rises into an undulating chalk landscape, punctuated by a number of east-to-west aligned river valleys. The soils within this raised area are a mixture of brown sands and brown earths. To the west is an expanse of low-lying ground that, until the last few centuries, would have been saltmarsh and subject to tidal influence and flooding. The soils within this area are marine alluviated silts and fine clays, forming an essentially silt fen environment. From this western coastal plain the ground rises gently to the east into an undulating landscape with a maximum height of 50m OD. The site itself is positioned on land that gently rises from 10–11m OD, lying north of the broad and shallow Ingol Valley floor that runs from the Norfolk uplands into the Wash. The exact position of the Roman watercourse is not known (see below).

III. Archaeological Background and Aerial Photography

by Mark Brennand
(Figures 1 and 3)

A combination of extensive modern agriculture, soil conditions and continued aerial reconnaissance within the low-lying areas of Snettisham parish has enabled the recording of an unusually high density of cropmarks. A fresh examination of the aerial photos has provided a detailed picture of the Roman archaeology in the Ingol Valley generally and Snettisham specifically.

People clearly inhabited this landscape before the Romans, their presence being demonstrated by Neolithic and Bronze Age artefacts that have been found on a number of sites apparently concentrated around Ken Hill. It is also known that wealthy Late Iron Age communities lived in and around Snettisham, demonstrated by the extraordinary hoards of gold and silver torcs also found at Ken Hill (Stead 1991). Unfortunately, although these finds suggest that something exceptional was happening during the Late Iron Age there are few additional finds of this date from Snettisham and the nature of settlement from the period remains poorly understood. Evidence is limited to the polygonal enclosure tentatively identified by Stead (1995) as a sacred enclosure or tribal meeting place and several other irregular enclosure and curvilinear ditches associated with multiple large pits (Site 1554). It is thought that these features may be the vestiges of an Iron Age settlement and system of land division. There is also an equally extensive system of fields and land allotment within Heacham parish to the north that may be of this date.

The rapid rise and expansion of Roman period activity at Snettisham may have been influenced by its situation upon a navigable waterway. Although there is no direct evidence for a port at the river mouth on the eastern edge of the Wash, the concentration of settlement in the Ingol Valley might suggest that the river was navigable during the Roman period. It is also possible that the River Ingol may have benefited from a tidal influence up to the area to the immediate west of the recorded field systems, if not actually to the settlement at Snettisham, allowing boat access when the tides were right. Moreover, the later medieval parish boundaries are also an unusual shape, presumably to allow Snettisham parish to retain the ownership of the Ingol river route to the sea, demonstrating its use as a navigable waterway in antiquity. The presence of a navigable waterway leading from the sea to the site of dense settlement is therefore a possibility that should be considered. Indeed a riverside location would have allowed access to both sea-borne trade and fishing resources, providing the impetus for 1st-century expansion and giving access to emerging trade contacts within the area of the Wash and beyond.

The course of the Ingol is however, now heavily canalised in the area of the Roman period settlements and the width and depth of the former river is unknown. There are, moreover, several double-ditched droveways that appear to cross the modern river, running between Sites 21847 and 1515, which might suggest either multiple bridges or that the river was fordable at that time, or that the river did not follow this course during the Roman period. Curiously the river channel was not detected during the work on the bypass in 1989, and consequently a course significantly further to the south was discussed (Flitcroft 2001, 1). There are no visible signs of a relic river channel within the aerial photographic record.

In addition to this waterway Snettisham was well served by land based routeways. The major north-south prehistoric trackway known as the Icknield Way, in use throughout the Roman period as the presence of Roman settlements indicates, was located only 2km to the east of Roman Snettisham. The north-south Peddars Way — possibly built by the Roman military (Gurney 1994, 34), with a probable ferry terminal at its northern end at Holme next the Sea (Flitcroft 2001, 1) — was located only slightly further to the east at a distance of 5km from Roman Snettisham. Between them these major routeways provided a means of contact with the areas to the north, by road then sea, and inland to the south, west and east. The major east-west routeway, which both the Icknield and Peddars Way crossed (approximately 40km to the south), was the Fen Causeway. This route traversed the fens from Durobrivae entering Norfolk at Denver, where it intersected a third north-south route known as Akeman Street. This latter route cannot be traced north beyond Denver but it has been suggested that it followed the fen edge at least as far as Shouldham and the River Nar (Flitcroft 2001, 1) and it is possible it continued north as far as Snettisham and perhaps even as far as the ferry terminal at Holme.

It can be seen that the sides of the Ingol Valley were the location of extensive and important settlement between the 1st and 2nd centuries AD (Flitcroft 2001, 2). This concentration of sites was extremely dense, but possibly relatively short-lived. Excavations on the line of the Snettisham Bypass would suggest that the sites within that area were only sparsely populated or largely abandoned by the 3rd century (Flitcroft 2001, 70) although later finds are known from some sites (Site 1554). It has been suggested (Flitcroft 2001, 80) that the decline in activity on the valley floor is contrasted by the growth of settlement further east on the edge of the chalk escarpment, which includes the Park Farm Villa complex (Site 1514).

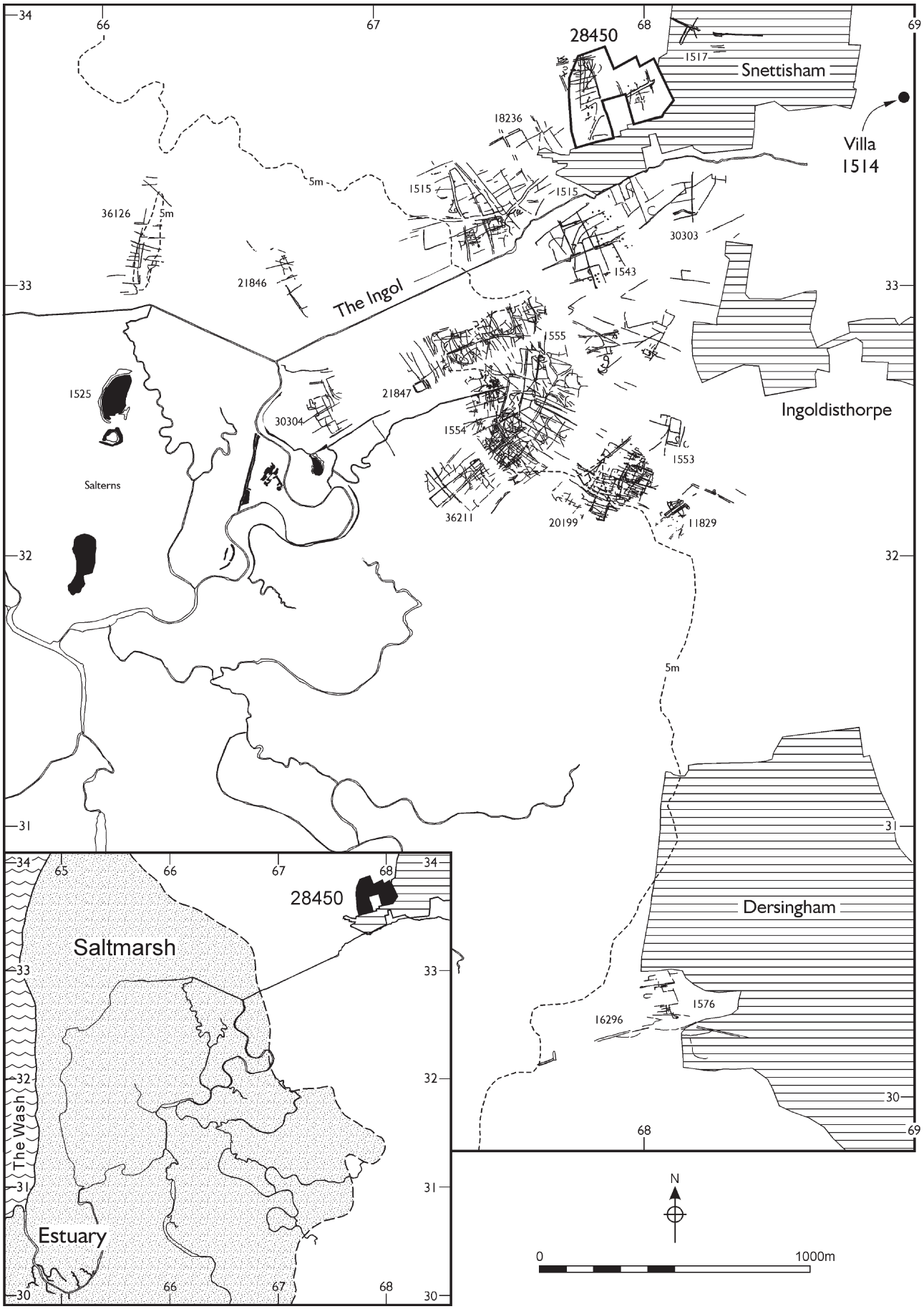


Figure 3 Cropmarks and other significant archaeological remains around Snettisham (data supplied by the English Heritage National Mapping Programme)

Figure 4 Results of the 1994 geophysical survey. Scale 1:2000

Groups of settlements and field systems exploit the first area of habitable ground to the east of the coastal saltmarsh. An (present day) elevation of 2m OD appears to have been sufficiently high above the saltmarsh for occupation, although the majority of the fields exploit the area situated along the 5m OD contour. The slightly raised area occupied by Site 36126 appears to be an isolated island of ditched allotments, surrounded by the low-lying salt marsh. The Snettisham field system is not consistent with having been laid out in a single planned phase along the lines of centuriation. Although there are tempting glimpses of large-scale land allotment and division (Sites 1515 and 1554) the finer detail suggests that many of the plots and allotments were laid out or subdivided on a piecemeal basis. There is also evidence of substantial alteration and realignment in some areas, and three separate phases of allotment may be visible within Site 1554. There are still many indicators that the different areas of mapped fields are contemporaneous, most especially the multiple drove or route ways that appear to join a 1.5km square area of fields from Site 1554 up to Site 18236 and across to Site 1555. While the field systems largely represent an agricultural system there are several potential settlements or structures within the field systems. The presence of two large, double-ditched enclosures to the west, combined with the evidence for multiple pits might suggest the presence of large farmsteads or hamlets. The circular anomaly within Site 1554 may also represent the site of a large roundhouse. To the north there is evidence for the laying out of a system of more regular, surfaced roads (Site 18236) that might suggest the location of intensive occupation or high status buildings.

IV. Excavation and Post-Excavation Methodologies

(Figure 5)

The 1991 evaluation and the 1998 excavation were undertaken in accordance with the briefs set by LAS and a Method Statement approved by them.

During the evaluation three long linear trenches, totalling 630m in length and between 1.5–1.9m wide, were excavated by machine. The trenches were located to sample the whole field available and constituted approximately 1.2% of the total area. These are referred to as Evaluation Trenches 1–3 within this report. During the 1998 excavation eleven (roughly square) trenches were opened around the thirteen anomalies identified by the geophysical survey, and another opened to record the main Roman road. These are referred to as Trenches 1–12 (T1–T12) within this report and ranged in size from 7–13m x 9–15m, an average of 120 square metres, dependant upon feature size and spacing. On completion of these targeted areas, the housing estate road and service areas were excavated. Within this report the roads associated with the new development are referred to as 'Estate Roads' (R1–R7) and the courtyard areas as 'Estate Courtyards' (C1–C5).

The entire length of Estate Road 1 (R1) was machine stripped, as this was the main access road during the construction phase of the project, with all exposed archaeological features half-sectioned. Estate roads 5, 6 and 7 were also stripped of ploughsoil and overburden. In all the trenches mechanical excavation continued until natural sand or archaeological deposits were recognised. The natural sand was generally between 0.6–0.9m below the ground surface. Full written, drawn and photographic records were made.

All contexts were recorded using standardised NAU recording methods utilising a sequential numerical series in which unstratified deposits and artefacts were included. General finds were collected by hand then washed and marked with the site code and context number. A separate numerical series was established for small finds and environmental samples.

The pottery was analysed using the pottery recording procedure described in the Norfolk Archaeological Unit Finds Manual (Shepherd ed. 1999). All sherds were counted and weighed to the nearest whole gram and recorded by context. Each diagnostic sherd was assigned a form type and where possible the diameter and percentage of the rims were recorded. The presence of decoration, abrasion, limescale and sooting were also noted. The pre-Roman, Roman and post-Roman pottery were separated and sent to the relevant specialist. All percentages, unless otherwise stated, are of weight. Pottery fabric codes used in the text are explained in Chapter 3, Part V (pp32–4). The pottery form descriptions and parallels can be found in Appendix 1.

The animal bone was scanned and notes were made of the species present along with any modifications. The material from stratified Roman deposits however, was the only material analysed fully and forms the basis of this report. It was recorded using modified versions of the methodologies published in Davis (1992), von den Driesch (1976) and Grant (1982). Bone weight and the total number of counted pieces for each context were recorded and these are included, along with a summary of the bone found in each context, in the catalogue.

During the post-excavation programme the contexts and finds records were computerised using an in-house Access database application.

The excavation methodology combined with the nature of the archaeology meant that it was impossible to construct a comprehensive stratigraphic matrix across the complete site. Although relationships within individual groups of features were recorded, these clusters could not be related to each other in a secure manner. During the post-excavation programme, the site was divided into four periods that covered the whole chronological gamut of the site. A system of phasing was then constructed (Table 1), building upon the stratigraphic relationships surrounding the large ironstone quarry pits. Stratigraphic and artefactual evidence was combined for the most effective interpretation of this data.

Periods 3 and 4 are not discussed further within this report due to their lack of potential to fulfil the aims outlined in the project design. The site archive (including finds and environmental evidence) is stored by the Norfolk Museums and Archaeology Service.

V. Survival of the Archaeology and Artefacts

The condition of the archaeology was largely good. The presence of an exceptionally deep overburden had effectively protected the Roman archaeology, including the upstanding kilns. As discussed above (I. Project Background) archaeological evidence suggests that this significant deposit is post-Roman in date, which in turn

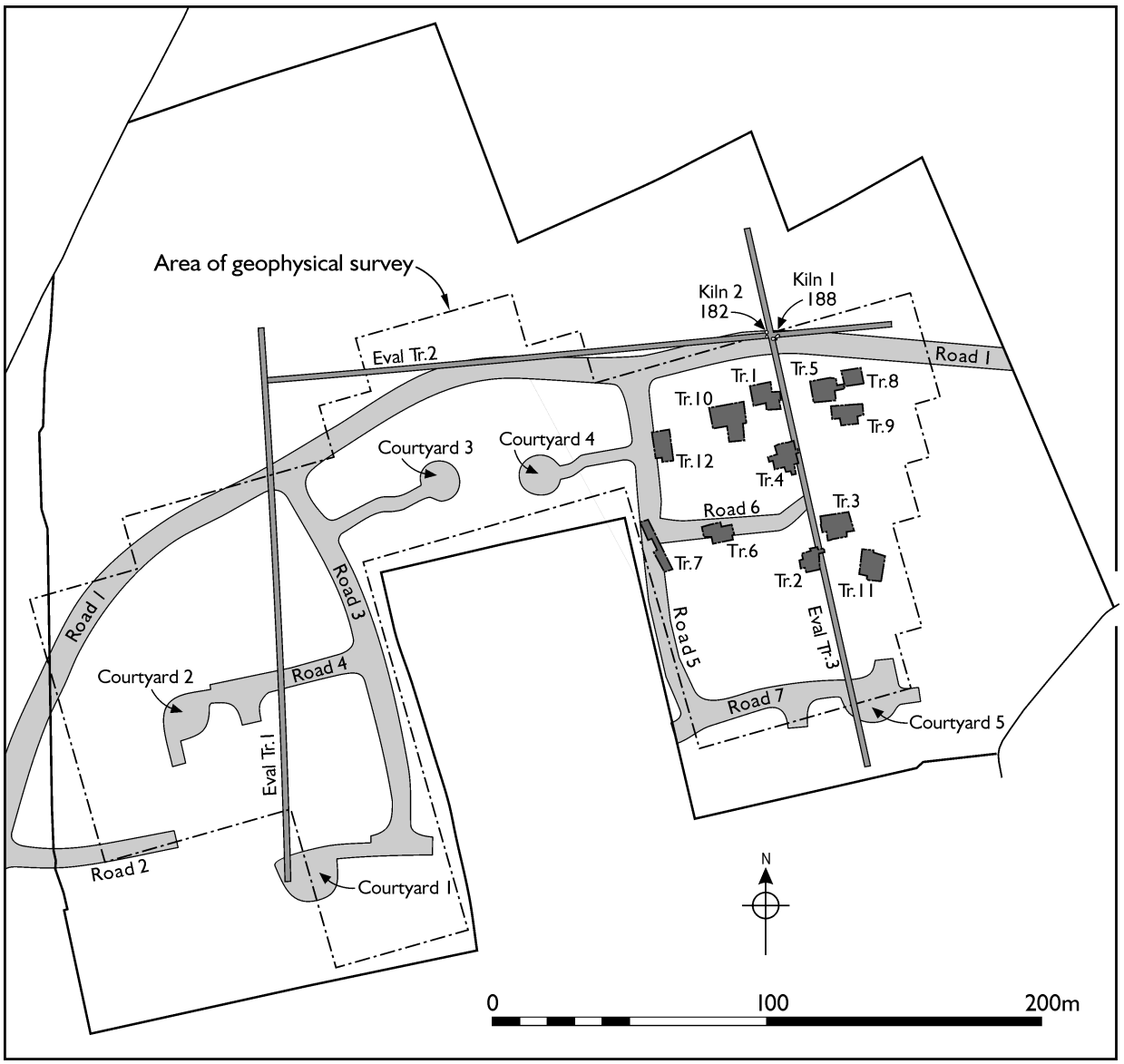


Figure 5 Location of the 1991 evaluation and 1998 excavation trenches and the layout of the proposed development. Scale 1:2500

Periods	*Sub-Periods*	*Date*	*Description*
Period 1: Prehistoric			
	1.1	5,000BC to 1st century BC	pits, linear features and post-holes
	1.2	1st century BC to late 1st century AD	buried soils
Period 2: Romano-British			
	2.1	mid 1st to early/mid second century AD	field boundaries/drainage ditches and Kiln 1
	2.2	mid 2nd century AD	road and roadside ditches
	2.3	mid 2nd to mid/late 3rd century AD	Kiln 2, quarry pits, road maintenance and other features
	2.4	late 2nd to late 3rd/early 4th century AD	quarry recuts and other features
	2.5	late 3rd to late 4th century AD	features post-dating the road
Period 3: Post-Roman			
		5th century AD onwards	subsoil
Period 4: Post-Medieval			
		mid-late 16th to 18th centuries AD	topsoil

Table 1 Site periods and sub-periods

suggests that the deep plough marks visible in the metalled surface of the Roman road are not the result of modern plough damage but may be of some antiquity themselves. Much of the surviving archaeology, that which was not excavated as part of the project, is now sealed under this overburden beneath the footings of the new houses. The modern water table is fairly low (water was not encountered and excavations were undertaken up to 3m in depth) with the result that few organic remains survived. Timber 'ghosts' were seen but no leather or plant material (other than on a macroscopic level) was found. Larger pieces of animal bone have survived, although the evidence for many smaller species has inevitably been lost due to these environmental conditions.

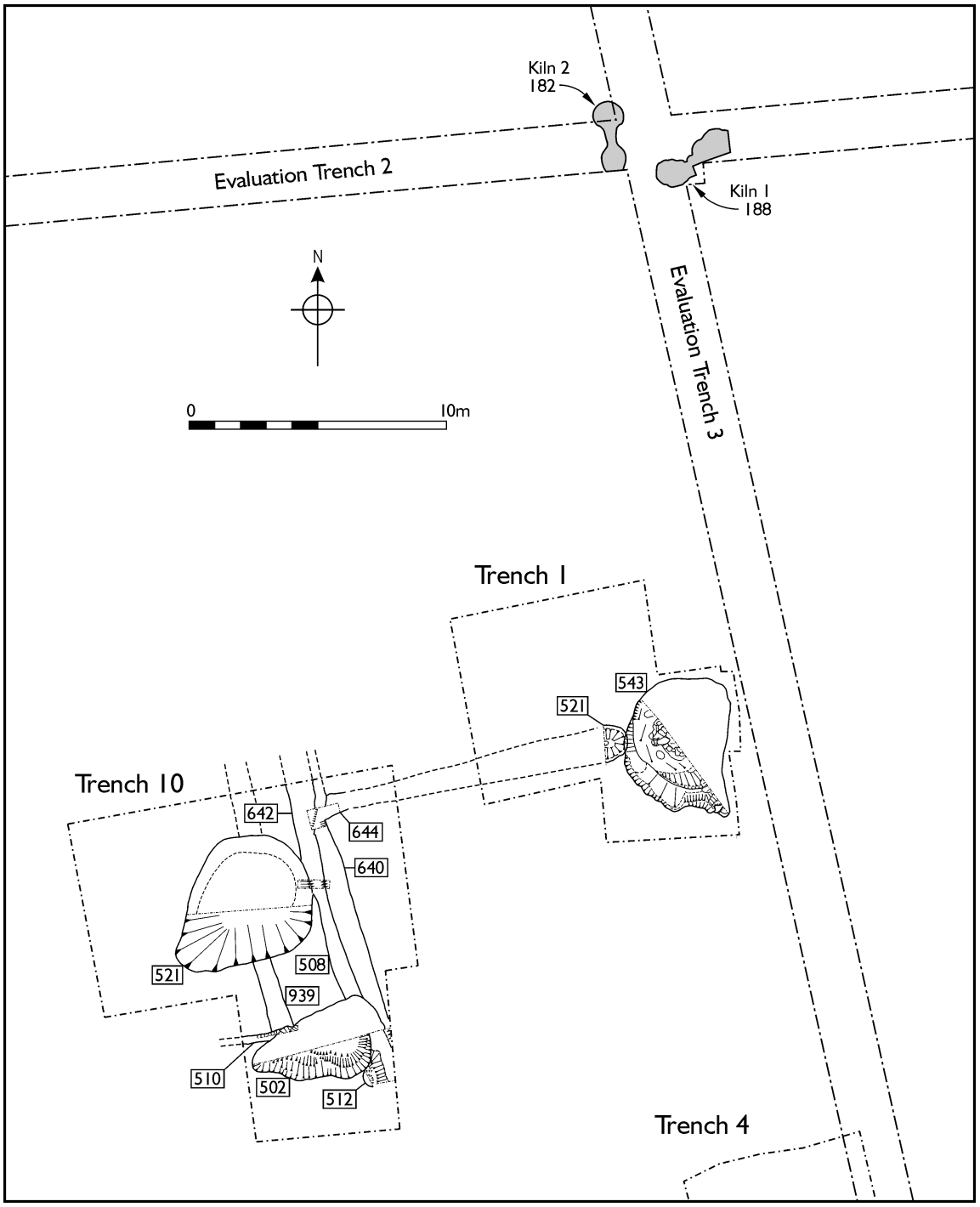


Figure 6 Period 2.1 field boundaries (Trenches 1 and 10). Scale 1:2500

Chapter 2. The Archaeological Sequence

I. Geophysical Survey
(Figure 4)

Summary
Additional archaeological evaluation of the site was carried out by means of geophysical survey in March 1994 (Geophysical Surveys of Bradford Report 1994). This identified two roads crossing each other, thirteen kiln-like anomalies, numerous ditch and pit type readings and a variety of more ephemeral responses of possible archaeological origin.

Results
A rectilinear system of ditches, representing a field system and possible enclosures, was detected throughout the survey area. The weak magnetic readings received from these features were interpreted as evidence that they pre-dated the Roman roads and their associated features, where the waste from the industrial processing provided strong magnetic traces. A presumed Roman road, approximately 7m wide, however, dominated the survey area running roughly east-west across the site. The ditches at the side of the road provided extremely strong readings indicating a highly enhanced fill. A smaller road aligned north-south could be seen to cross the larger in the east of the survey area. Two possible additional roads, or droveways, represented by two parallel ditches running northwards from the major east-west road and appearing to join, have been detected towards the centre of the site.

In the east of the survey area, in the vicinity of the cross-roads, thirteen kiln type anomalies were located. In addition, several large pit type responses were noted some of which might represent concentrations of slag or other fired material.

In the west of the survey area there was a concentration of strong linear and pit-like responses, many of which appeared to be archaeological. However, the density and the strength of the anomalies made it difficult to formulate a precise interpretation. It was possible that some of the anomalies represented noise from building rubble associated with roadside structures. The majority of the anomalies were almost certainly archaeological although some may have been due to agricultural processes such as ploughing, where the plough has dug into the deposits and produced enhanced plough furrows.

II. Evaluation and Excavation
by Alice Lyons and Myk Flitcroft

Period 1: Prehistoric (5,000 BC to 100AD)
(Figure 10)

Period 1.1: Pits, Ditches/Gullies and Post-Holes
Five prehistoric features were identified, four of which were sealed beneath the section of Roman road recorded in Trench 7. These comprised a circular pit *639*, two shallow east-to-west aligned linear features (*647* and *649*) and an oval post-hole *656* that contained a significant quantity of Bronze Age beaker pottery (Percival in prep), but little else. The remaining prehistoric feature was a small semi-circular pit *512* observed in Trench 10.

Period 1.2: Buried Soils
A series of buried soils (recorded in Trenches 6, 7 *807* and 9) infilled and sealed the features described above and probably represent later prehistoric soils that had been preserved by the overlying Roman deposits.

Period 2: Romano-British (1st to 4th centuries AD)

Period 2.1: Field Boundaries and Drainage Ditches and Kiln 1 (1st to early/mid 2nd centuries)
All of the features interpreted as early Roman were located in adjacent Trenches 1 and 10 (Figure 5), close to the intersection of Evaluation Trenches 2 and 3 where Kiln 1 was situated. Early boundary ditches were only excavated in this part of the site, although both aerial photography (Figure 3) and the geophysical survey (Figure 4) show a landscape heavily covered with such features, at least some of which may relate to this phase.

Boundary/Drainage Ditches
(Figure 6)
Four early ditches were recorded in Trench 10. Two ran parallel on a north-to-south alignment and were spaced 4m apart (*506=640* and *939*), the easternmost having subsequently been recut *642*. These may have delimited a route across the site, serving a dual function as drainage ditches and field boundaries. On either side of and at right-angles to them were less substantial ditches or gullies, again probably demarcating fields. To the north-east one example *644=521* terminated at its intersection with ditch *506=640*, continuing eastwards where its other butt end was recorded in Trench 1 in the vicinity of a later quarry. Running parallel to this feature about 8m from it, on the other side of the possible trackway, was the base of another ditch or gully *510*.

Useful dating evidence came from the primary fill of ditch *506* (fill *587*) from which a single sherd of residual prehistoric pottery was found alongside locally produced coarse wares (SGW, FSGW and MRW) in the form of wide mouthed jars (type 5.2.3) and a beaker (type 3.12). Also found were a single sherd of abraded intrusive east Gaulish samian (a Dr35 bowl form dated to the late 2nd century AD), and a wide mouthed glass jar fragment dated between the mid 2nd and mid 3rd centuries AD (SF 337 unillustrated). The glass together with the sherd of samian and fragment of NVCC suggests that this series of ditches was not finally backfilled until the late 2nd or early/mid 3rd century AD.

Kiln 1
(Figures 7–9, Plate I)
Two pottery kilns were discovered during the evaluation, located at the junction of Evaluation Trenches 2 and 3. The earliest (Kiln 1) was the southernmost of the two and was

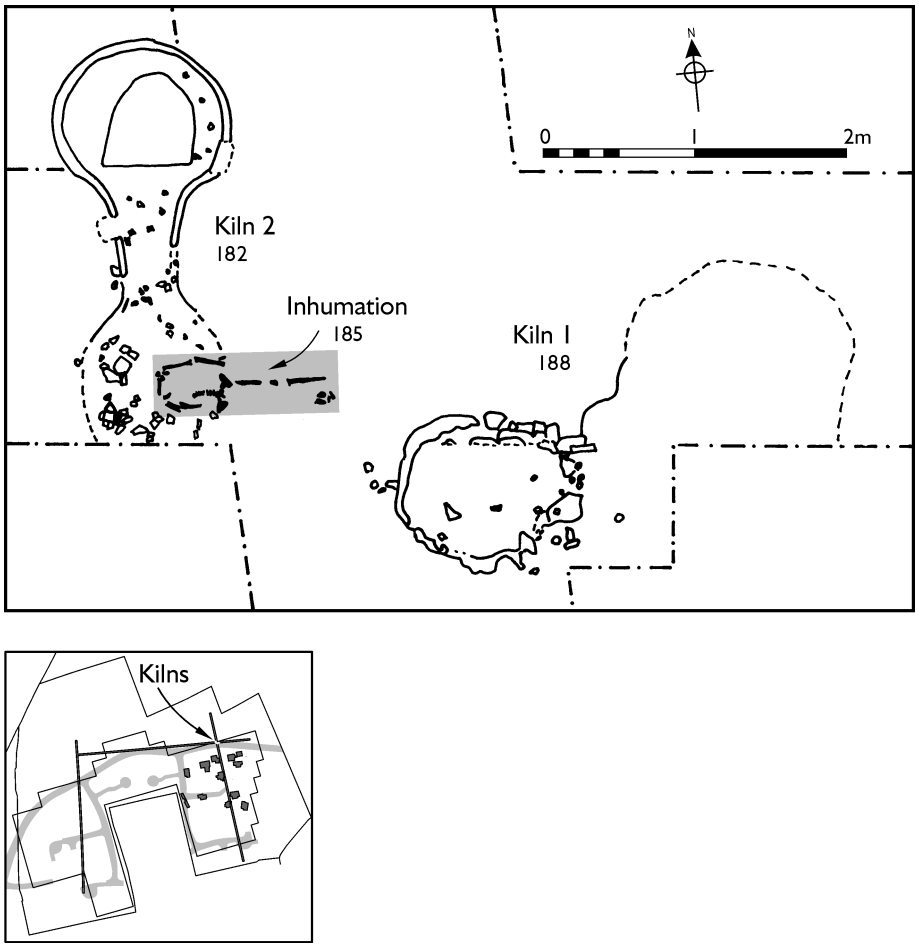


Figure 7 Kilns 1, 2 and associated inhumation burial (intersection of Evaluation Trenches 2 and 3). Scale 1:50

aligned east-to-west. It consisted of a small oval firing chamber *188*, measuring 0.80x0.50m internally, excavated into the natural sand to a depth of 0.40m and sloped down towards the flue *188* and stoke pit *190* in the east. The kiln base consisted of four, transverse (north-to-south) ridges of burnt sandy, that were probably all that remained of a series of permanent pilasters used to support a temporary oven floor. These pilasters ran almost from wall to wall, at 90º to the flue and, therefore, would have had to be perforated to allow for the free distribution of air and flame. Although no kiln furniture was found *in situ* large numbers of kiln bars were recovered from the backfill of both the kiln and stoke pit, which suggests they were used in conjunction with the pilasters to raise the kiln load away from the oven floor. This type of kiln would have been sunken below the Roman ground surface with a permanent open-topped structure that would have been resealed (primarily with turf) before each firing event.

The walls of the chamber were lined with roughly packed clay *243*, supplemented towards the flue by prefabricated clay blocks, more of which were recovered from the backfill of the kiln. The rear wall was stepped to create a shelf 0.33m from the base of the chamber; probably for the support of fire bars, although this did not continue all the way to the front of the firing chamber. At the eastern end of the firing chamber a short flue angled down towards the stoke pit. A rectangular clay block flanked the southern side of the flue, while the northern

Plate I Kiln 1

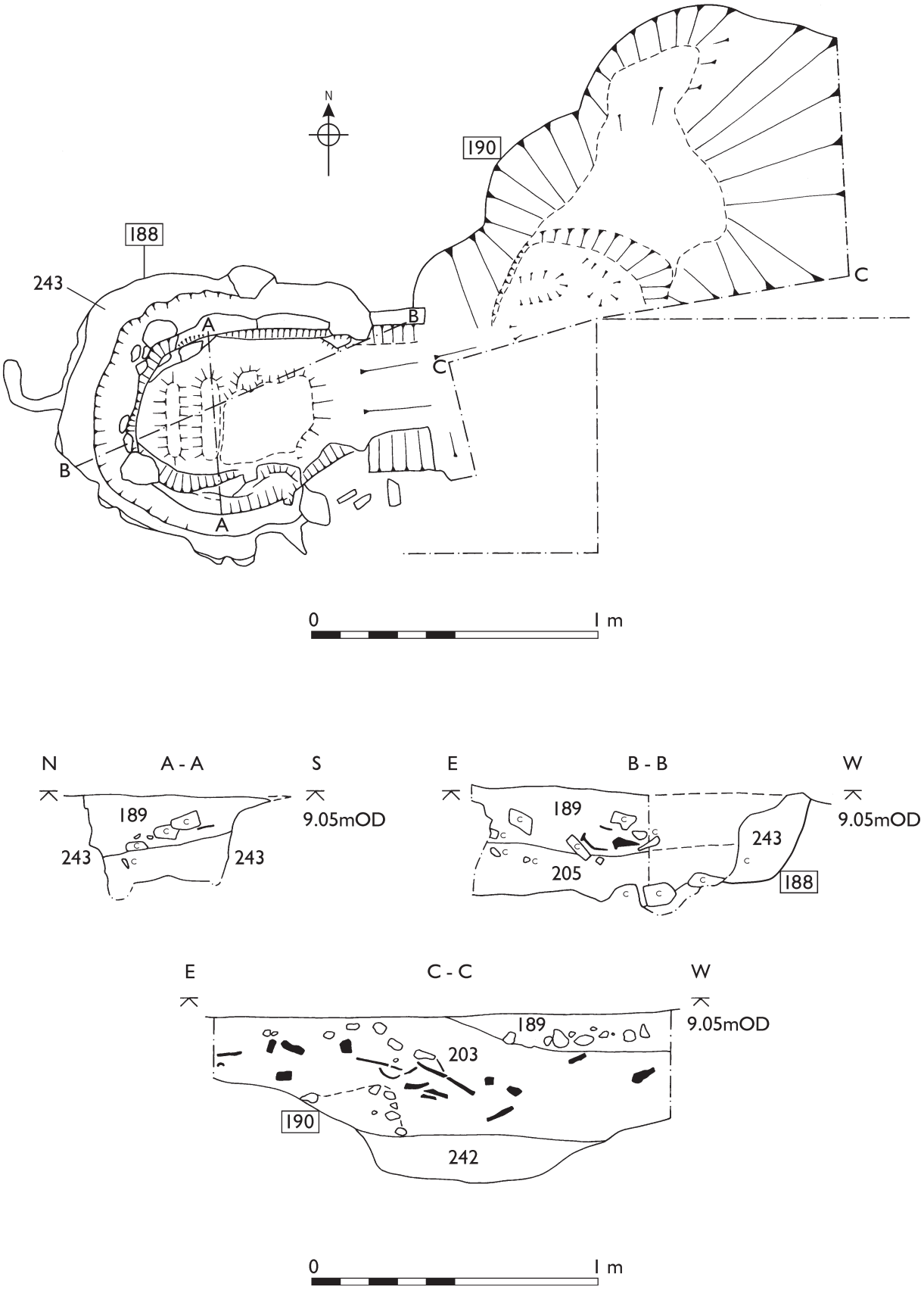


Figure 8 Kiln 1, plan and sections (intersection of Evaluation Trenches 2 and 3). Scale 1:20

side was lined with clay, (part of a second clay block was found in the backfill of the kiln which may have originated from the flue). The stoke pit continued the slope of the flue to a maximum surviving depth of 0.59m; it formed a hollow irregular based pit with sheer sides. To the north-east of the stoke pit it became progressively shallower, forming two level steps leading up towards the ground surface.

After a period of use that resulted in the firing of the clay lining of the kiln chamber, the flue and stoke pit were backfilled with a mixture of soil, pottery wasters and kiln furniture fragments. The lower fill of the chamber and flue consisted of a dark grey-black sandy silt *205*, which also made up the major fill of the stoke pit *203*. Above this a layer of lighter grey-brown sandy silt filled the upper parts of the firing chamber and flue *189*. It could be seen that the lower fill of the kiln was packed more against the southern side of the chamber that suggests that the kiln was backfilled from the north. In the lowest parts of the stoke pit a second black silt layer was identified *242*; this layer was darker and siltier and may represent material deposited during the period of use rather than a backfilled deposit.

Deposits from the kiln flue and stoke pit produced notably light grey sandy pottery sherds (SGW) with several matching breaks from different parts of the kiln. Much of the assemblage must be presumed to be the product of this kiln, though a few sherds in dissimilar fabrics may be remains of vessels used rather than manufactured on the site. The vessels recovered are of a variety of forms and inevitably the kiln contained a high proportion of misfired wasters. The majority of vessels present (and thought to have been products of the kiln) were types of small cooking or serving jars (type 4, unillustrated due to fragmentary nature) and bowls (type 6.4) though flared bowls (type 6.15, also unillustrated due to fragmentary nature) and larger wide mouthed carinated jars (type 5.2.2) were also found. Of particular note is a grey ware bowl (type 6.9), a copy of samian form Dr29, which is decorated with a band of combed wavy lines. Undiagnostic body sherds were found decorated with incised lines, cross-hatching and rustication. This assemblage can be broadly defined as 'early Romano-British' and assigned a date of between the mid/late 1st to mid 2nd centuries AD.

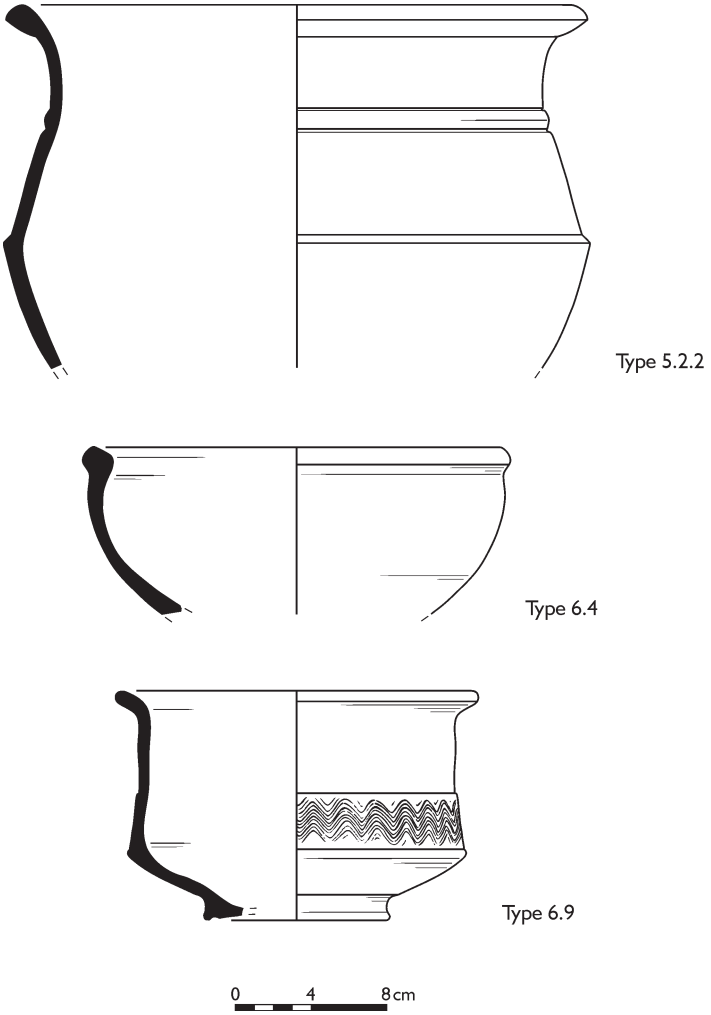


Figure 9 The pottery from Kiln 1. Scale 1:4

Period 2.2: Road and Roadside Ditches (mid 2nd century)

Road Construction
(Figures 4, 10 and 11)

A substantial road was recorded over a distance of more than 300m by geophysical survey (Fig. 4) and was investigated in detail to the south-west (R3, Fig. 11), also in an Evaluation Trench (ET3) and two Trenches (T4 and 7, Fig. 14) further to the north-east. This major feature was constructed in Period 2.2, running south-west to north-east, and gradually turning to a more west-north-west/east-south-east direction as it proceeded eastwards. Two drainage and demarcation ditches up to 2m in depth had been dug on either side of it (*599* and *630*), through which eight separate sections were recorded. In one area (Trench 7, Figs 11 and 14) upcast from the ditches (*812–819*) provided the foundation levels for the metalled road surface itself (*811, 854*). Only the primary road deposits are included here, later road maintenance deposits being discussed in Period 2.3.

The metalled road surface, the majority of which survived in good condition at the time of excavation, was up to 4m wide. Some damage was visible however, in the form of several plough marks (Fig. 11) running through the original surface. It is possible that, as these marks lie below the exceptionally deep site overburden, they may be of some antiquity themselves, perhaps associated with the Saxon reclamation of the fen (Ashwin 2000, 2). It should also be noted that the continual recutting of the roadside ditches (discussed below in the Period 2.3 feature descriptions) removed approximately 3m from the original width of the metalled surface over the period of time this feature was in use. The sequence of roadside ditches themselves, which were recut many times, measured up to 5m wide. The combination of these features shows that at the time of construction the road and associated ditches measured 14m across.

This new discovery provides further evidence for the extent of the road network in Roman Norfolk. The eastern end of the road, proceeding in a north-west to south-east direction, would have passed *c*.300m north of the Park Farm Villa complex (Site 1514). After a further 1.5km it would have met with the Icknield Way, and 5km eastwards with the Peddars Way. In a westerly direction the road may have met with a coast road (Akeman Street), or even

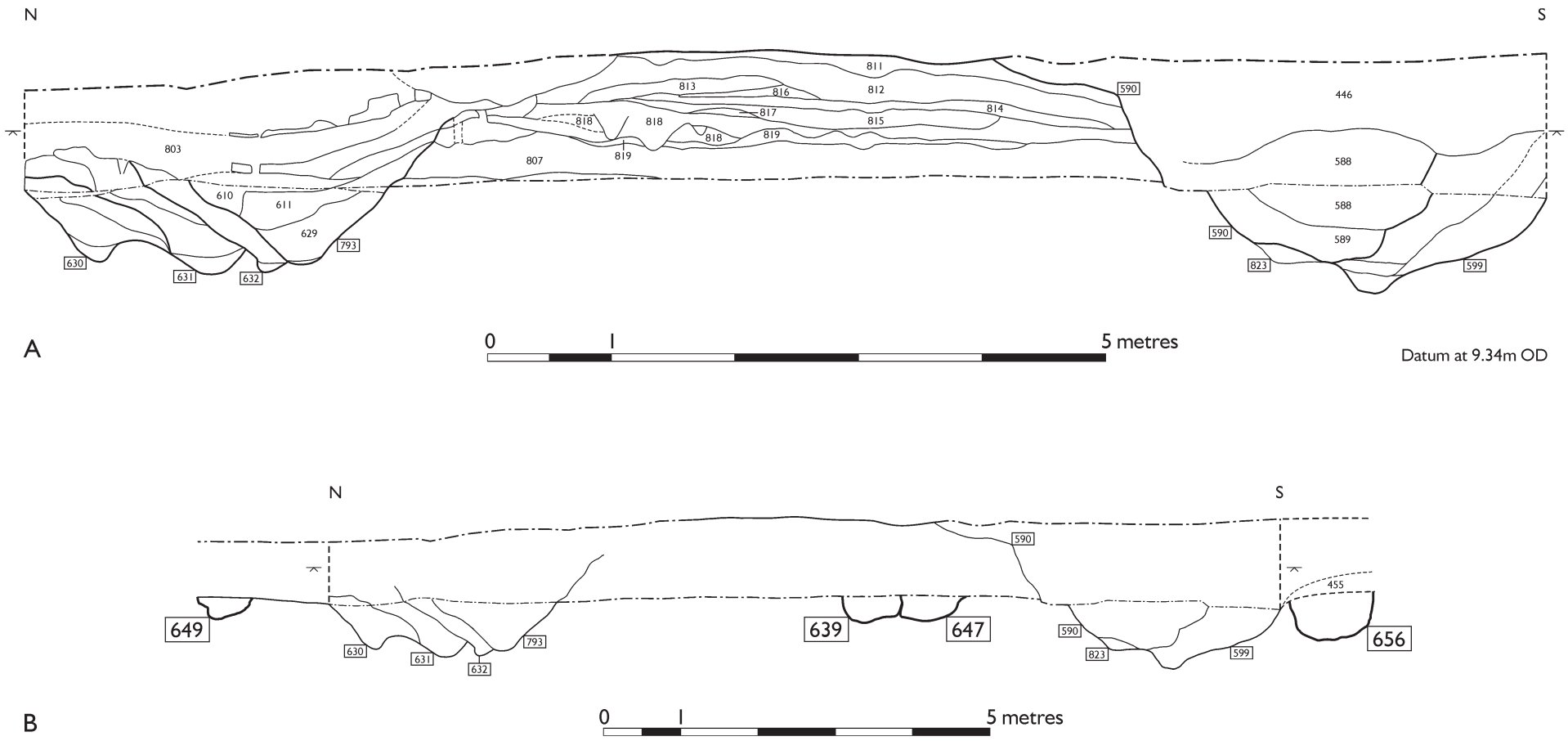


Figure 10 a) The Roman road and roadside ditches (Trench 7), scale 1:50; b) Period 1.1 features sealed beneath the road, scale 1:80

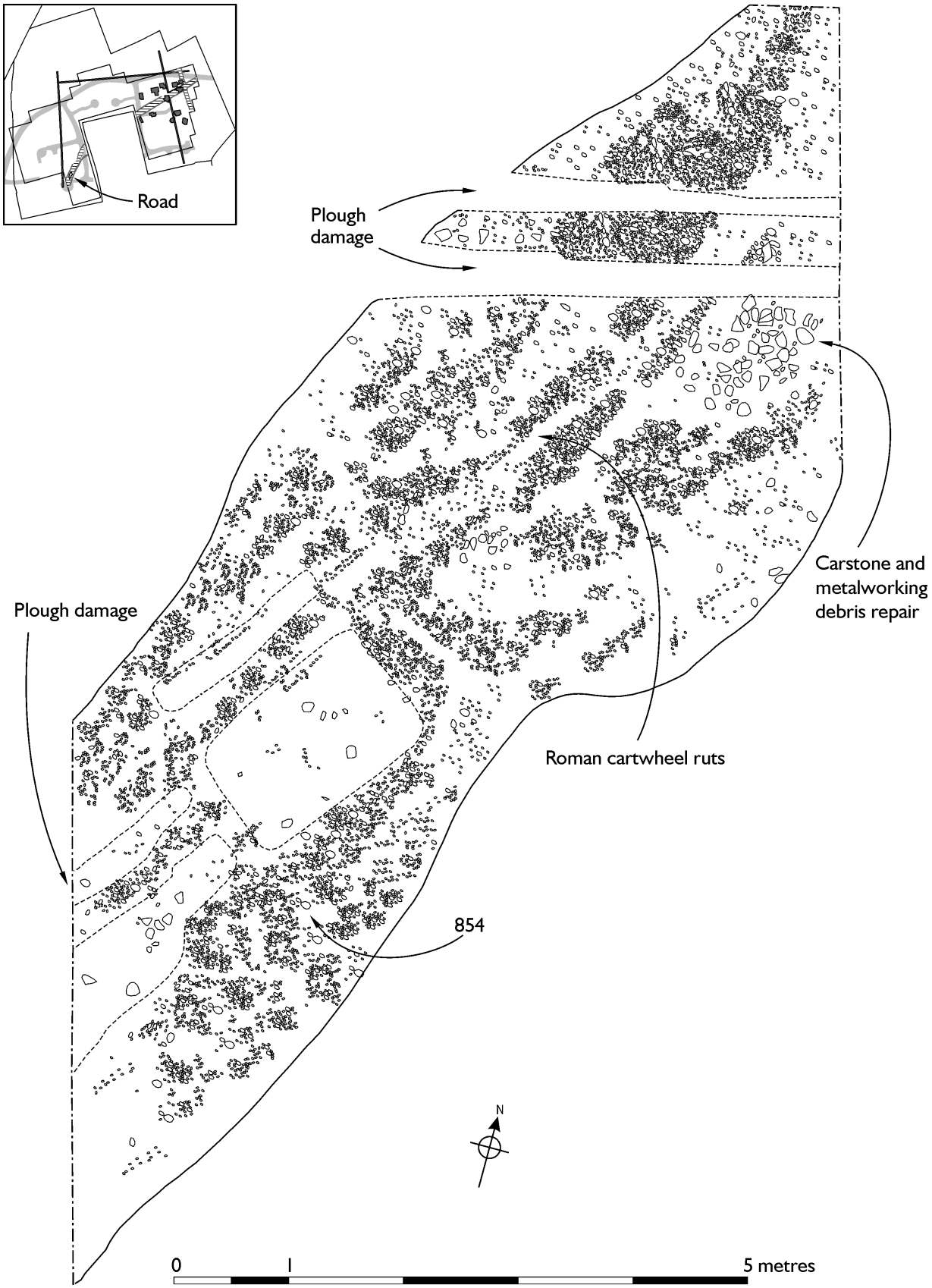


Figure 11 The metalled surface of the Roman road (Estate Road 3). Scale 1:50

reached a port at the mouth of the River Ingol on the edge of the Wash. The existence of these routes is unproven but tentatively suggested above (p.2) where the land and waterways that surrounded Roman Snettisham are discussed more fully.

At the extreme eastern limit of the site, the major road was crossed by a minor route aligned north-west to south-east (*404*). This was exposed in Trench 8 and ran broadly on the same alignment as the earlier drove-road identified in Period 2.1. It was recorded over a distance of 80m and was approximately 2m wide. The geophysical survey indicates that ditches again flanked this road, although these were not investigated archaeologically.

A fascinating collection of hobnails (SF Nos 704, 707, 710 and 715–717) was retrieved from the environmental samples taken from the ditches associated with the major route: a total of 44 were found which are perhaps all that remain of shoes discarded by travellers as they approached the end of their journey. This also serves as a useful reminder of how much organic evidence has been lost due to the local soil conditions.

Period 2.3: Kiln 2, Quarry Pits, Road Maintenance and Other Features (mid 2nd to mid to late 3rd century AD)

Kiln 2
(Figures 7, 12 and 13, Plate II)

To the west of the earlier kiln lay a second example of quite different construction to its predecessor. Kiln 2 *182* was aligned north-to-south, with an initial cut excavated into the natural to a depth of 0.45m. It consisted of a flat-based oval clay lined firing chamber, measuring 1.02x1.09m (internally), a single flue and stoke pit. The firing chamber contained a large sub-rectangular central pedestal, which occupied around 70% of the internal area of the chamber. To construct the pedestal deposits of dark soil (*240* and *241*) and yellow sand (*239*) were used to form a core around which layers of clay (*183*, *184* and *238*) were built up. The pedestal narrowed slightly towards the top and was cut away on its southern side to aid the flow of gases during firing. The upper surface of the pedestal appears to have been flat originally, but it had become damaged during use or demolition. Running south from the firing chamber was a flat-based flue 0.5m long, decreasing from 0.55m to 0.28m wide, which survived to a depth of 0.15m. South of the flue lay a shallow flat based stoke hole *211* 1.0m wide and 0.7m deep. While in use the kiln structure became fired and particularly affected were the upper parts of the kiln wall and pedestal. As no evidence for a permanent kiln floor was retrieved and many kiln bar fragments found in the backfill of this feature, it is assumed the central pedestal was used to support a portable kiln floor of bars. A slight recess in the firing chamber wall at the same height as the top of the pedestal would support this interpretation.

The backfill of the stoke pit, the flue and the kiln chamber consisted of a single layer of dark grey-black sandy silt *230* which contained large quantities of fragmentary pottery. Most of the pottery from Kiln 2 consisted of sherds of misfired WNRW, a dark red/brown fabric generally with black burnished surfaces. Fabrics not produced in the kiln constituted a minor element. Sherds in a light sandy grey fabric (SGW) not present in the later layers were recovered from the soil underlying the central pedestal. This material is similar to fabrics present in Kiln 1 and may have been dumped unintentionally during the construction of this kiln. The assemblage contained a similar range of utilitarian types to Kiln 1 composed mainly of small to medium sized cooking and serving jars (type 4), but also included rusticated jars (4.10.1) and sherds of a folded beaker (type 3.3) decorated with an incised leaf design. Combing does not appear to have been a widely used method of decoration, but linear rustication and cordoning are both common features on the unburnished vessels, and the burnished ones are regularly decorated with inscribed circles. There were a slightly lower proportion of obvious waster sherds than for Kiln 1 and the average sherd size was considerably smaller. The base sherds commonly showed marks of the cutting wire used to remove them from the potter's wheel. Typologically the pottery retrieved from the kiln and stoke pit backfill are significantly later than Kiln 1, datable to the period from the mid/late 2nd to 3rd centuries AD.

Plate II Kiln 2

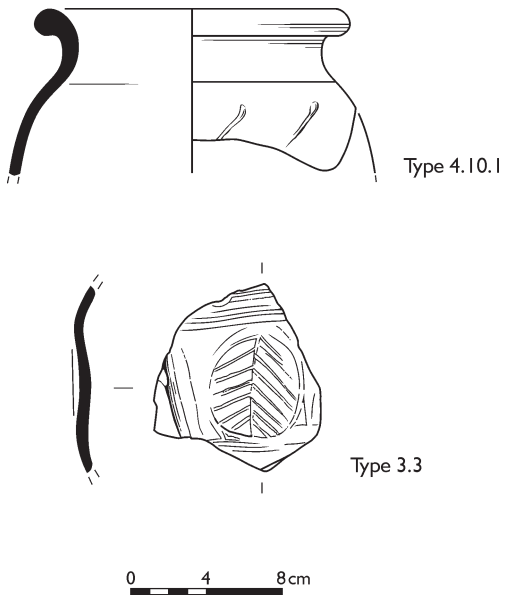


Figure 12 The pottery from Kiln 2.
Scale 1:4

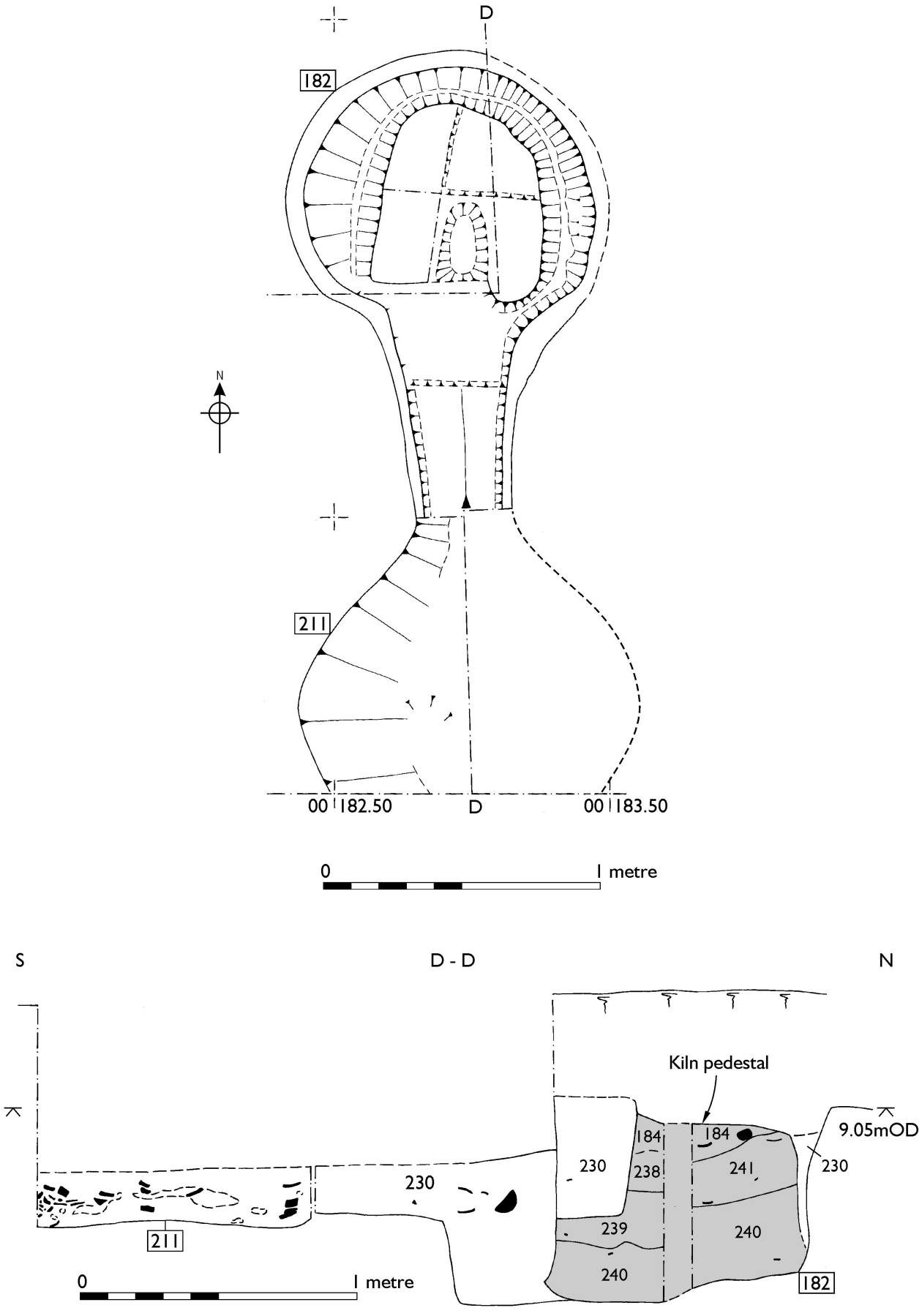


Figure 13 Kiln 2, plan and sections (intersection of Evaluation Trenches 2 and 3). Scale 1:20

Possible Structure Associated with Kiln 2
(Unillustrated)
Immediately north of Kiln 2, at the crossing of Evaluation Trenches 2 and 3, a ditch *127* was located, aligned east-to-west but curving round to the south-east. The recovery of pieces of kiln bar from its backfill suggests that it may have been an enclosure ditch associated with the kiln.

Quarry Pits
(Figures 4, 5, 14 and 15 and Plate III)
A total of thirteen large pits (*295*, *263*, *355*, *422*, *434*, *483*, *502*, *515*, *524*, *529*, *537*, *543* and *702*) of similar shape were excavated. These features were specifically targeted for excavation after the geophysical survey and were relocated by dousing after traditional methods failed (due to the removal of the relevant survey pegs during agricultural activity). Originally thought to be kilns, they proved upon excavation to be large quarry pits backfilled with metalworking debris, pottery production waste, domestic refuse and building materials. All the pits were between 3.85 and 8.3m long (an average of 5.92m), 1.40 and 6.0m wide (an average of 3.8m) and between 0.65 and 2.0m deep (an average of 1.54m). They were oval with a tail, tapering to a point, at one end. The direction of the tail varied with every pit, although those north of the road tended to point south (with the exception of pit *502* which pointed west) and those south of the road pointed north. The 'tail' appears to have worked as an access ramp, allowing the removal of material from the pits and its transportation to the road with relative ease. It is probable — and samples of the local stone support the idea — that these pits were used to quarry the local ironstone, which was then transported to nearby smelting ovens for processing. Sand was also probably quarried from them for the construction of kilns and furnaces.

One of the larger quarry pits *515* had a chalk ramp with revetted wooden steps built to provide access; this suggests the pit must have been in use for a significant period to make such an investment of time and materials worth while. It also contained several of the more significant small finds including an iron knife blade (SF 237 Fig. 22), a glass bottle fragment (SF 244 unillustrated) and an iron leaf shaped arrowhead (SF 547 Fig. 34). As this quarry pit was also backfilled with large quantities of flint and limestone building rubble, perhaps all these strands of evidence taken together may suggest a significant domestic dwelling close by.

As the quarry pits were so similar in character however, one has been selected for illustration and discussion of its pottery assemblage. Quarry pit *295*, Trench 2, was 7.6x5.2x1.85m in size and lay south of the road with an access ramp pointing north towards the road. The pottery retrieved from this feature represents 3% of the Roman assemblage (by weight) from the entire site. The pit contained a sequence of fourteen layers, seven of which contained pottery (Table 2).

One primary fill *519* was consistent with natural infilling or slumping of the pit sides thereby incorporating some surface material. This deposit contained a decorated sherd of central Gaulish samian (Dr37) dated to the later part of the 2nd century AD and several later Roman sherds were also found, including a folded and painted NVCC sherd and a STW fragment. Except the samian sherd no recognisable vessel forms were recorded. The main primary fill of this feature (*518*), also comprising marginal collapse of sandy sides and some silty in-wash, contained only a single sherd of not closely datable FSGW, which was clearly a waster as it was badly bubbled.

Fabric	*Quantity (sherd count)*	*Weight (g)*	*Vessel types*	*Weight (%)*
WNRW	115	3437	3.3.1, 3.12, 4.1, 4.4, 4.5, 4.5.2,4.5.4, 4.11, 4.16, 5.4, 6.18, 6.19.4, 6.19.6, 8.1.	43.58
SGW	49	841	2.1.1, 3.6.1, 4.1, 4.5.1, 4.5.2, 4/5, 4.6.1, 4.11, 5.4, 6.18, 6.18.3, 6.19.3.	10.66
SAM	19	755	Dr37, Dr38, Dr45.	9.57
UOW	3	592	1.7, 4.13.1.	7.51
UBB	6	452	3.1	5.73
NVOW	13	402		5.10
VRW	18	394	2.1.1, 4.13, 5.3.	5.00
NVCC	12	303	3.1.	3.84
MRW	4	194	4.8, 6.19.2, 6.19.4.	2.46
SMSTW	1	108	4.5.2	1.37
SJW	1	92		1.17
RW(f)	2	80		1.01
BSHGW	1	66		0.84
SOW	1	46		0.58
URW	1	46		0.58
NVWW	1	30		0.38
UGW	2	16	4.13.1	0.20
FSGW	3	13	4.5.2.	0.17
STW	3	11		0.14
STDW	1	8		0.10
URFW	1	1		0.01
TOTAL	257	7887		**100.00**

Table 2 The pottery fabrics and forms retrieved from quarry pit *295*

The remaining deposits that contained pottery (*294, 324, 325, 362, 364* and *497*) were higher up the stratigraphic sequence. These date to the mid to late 3rd century AD and are remarkably homogenous considering the size of the feature assemblage and the number of individual deposits involved — suggesting the pit was in-filled over a fairly short period of time. The layers are typically a mixture of ash and silty sand with intentional dumps of domestic and industrial waste, consistent with the cleaning out of hearths, kilns or furnaces. Most of the pottery was retrieved from the upper fills (a pattern that can be seen in all of the quarry pits at Snettisham).

A total of twenty-one fabrics was recovered from this feature, the majority of them being the locally produced WNRW (43.58% by weight). Forms found include folded beakers (3.3.1, 3.12) and medium mouthed jars (4.1, 4.4, 4.5, 4.5.2, 4.5.4, 4.11, 4.16), also a single wide mouthed jar type (5.4), several straight-sided dishes (6.18, 6.19.4 and 6.19.6) and a lid (8.1). Samian was unusually well represented, although the presence of an almost complete lion-head mortaria (Dr45) does positively skew the data, and the material indicates that the household (or households) dumping rubbish in this pit was wealthy enough to buy high status ceramics imported from the continent. NVCC was the only other fine ware found,

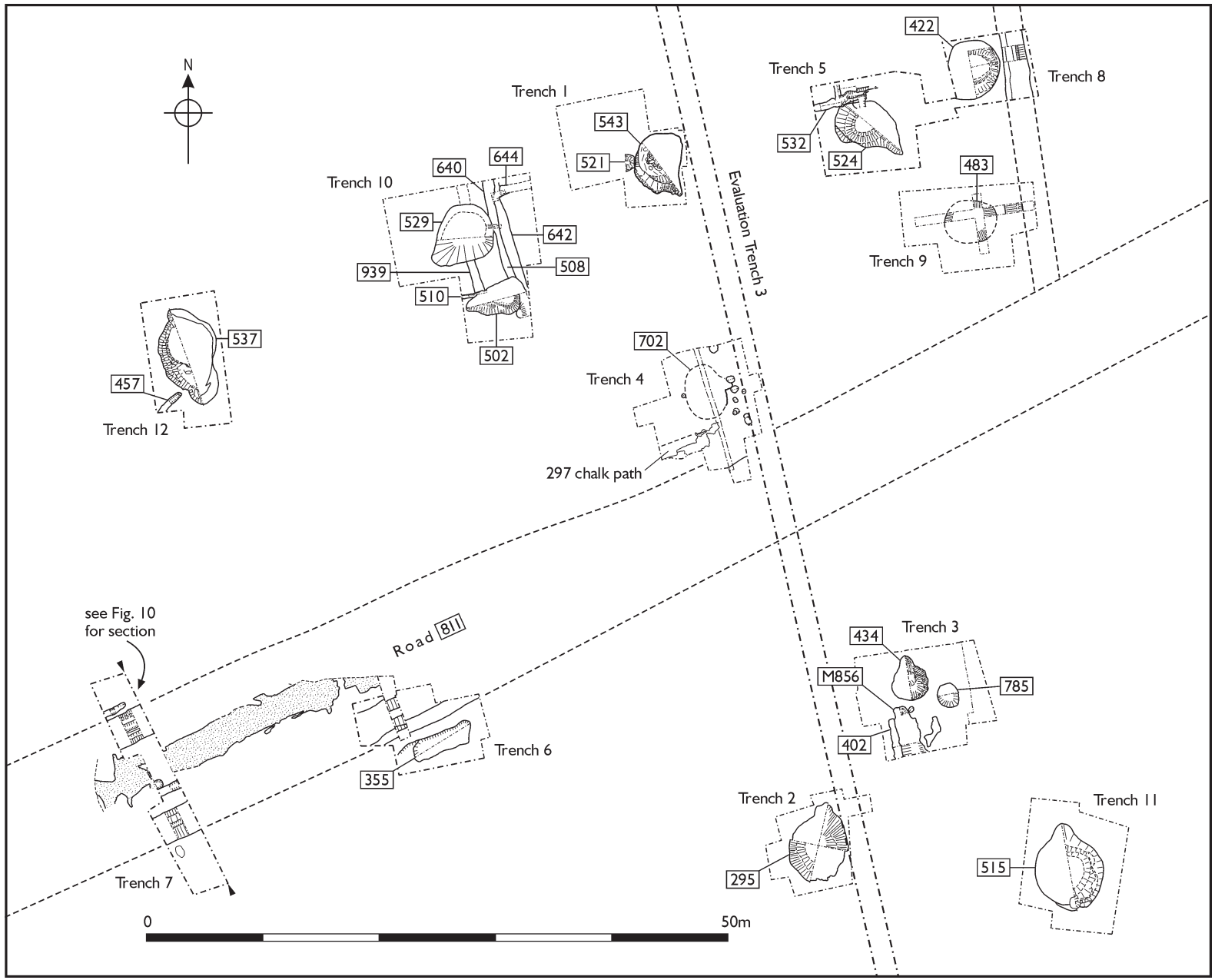


Figure 14 Location of the main features. Scale 1:500

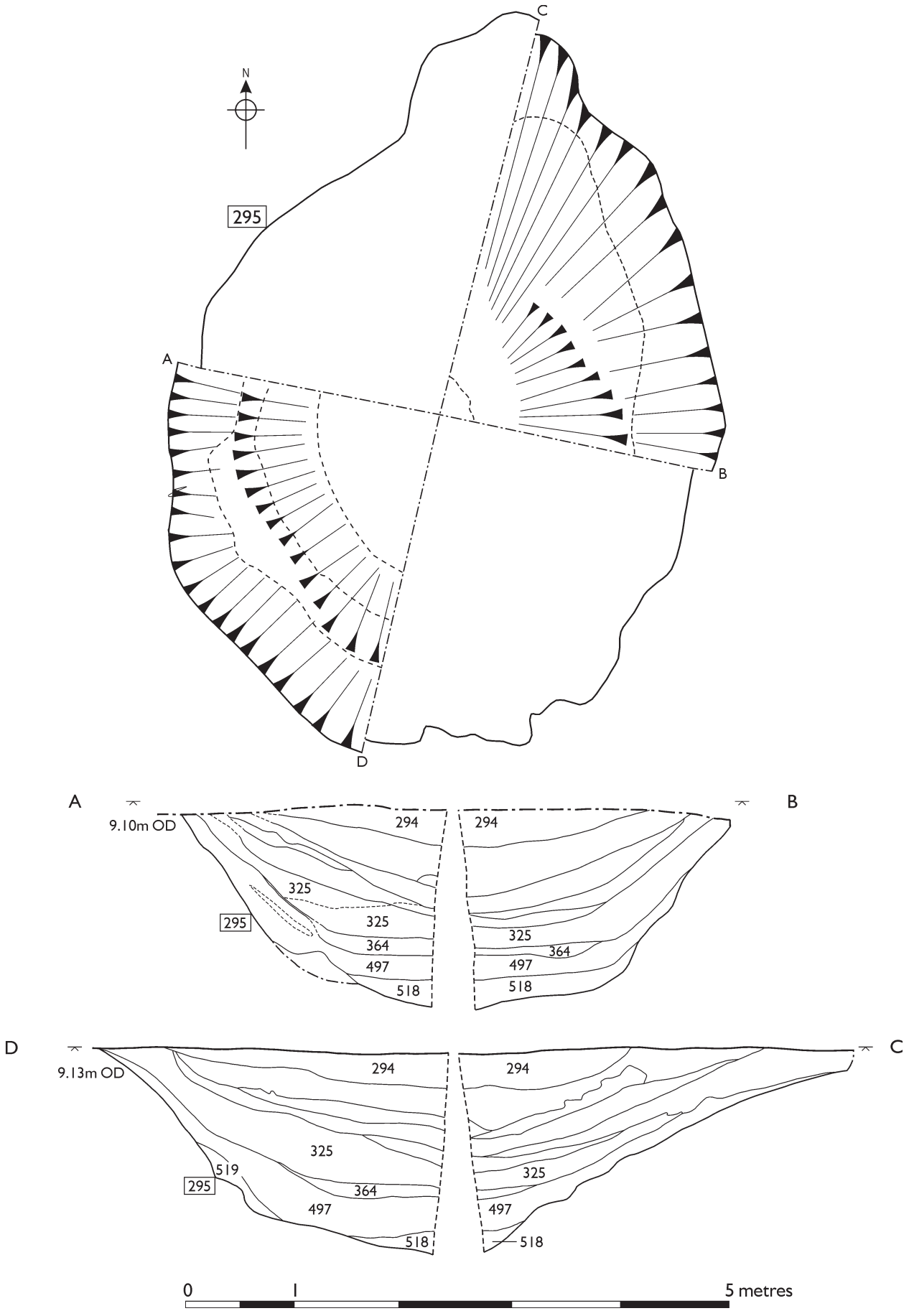


Figure 15 Quarry pit *295*, plan and sections (Trench 2). Scale 1:50

Plate III Quarry pit *295* under excavation

albeit in very small quantities. The pottery recovered from this feature was generally abraded, however evidence for sooting (cooking), liming (boiling water) and general wear survived in some cases. This indicates that the pit has been used to dump household rubbish, (although small amounts of kiln waste are included), including kitchen and table wares, accumulated (although not necessarily deposited) over a considerable period of time.

Environmental evidence collected from the quarry pits provides additional support for an industrial landscape. Material from quarry pit *529*, BS 48, appears to be derived from a mixture of cereal processing waste (principally spelt glume bases), grasses and grassland herbs and heather stem fragments, all of which were probably used for kindling or fuel for the nearby kilns. Spelt processing debris appears to have been commonly used as kindling or fuel for light industrial processes during the Roman period (Van der Veen forthcoming) and may have been a tradable commodity. Quarry pit *295*, BS 23, also contained cereals, chaff and heather stem fragments, although in this instance the presence of sprouted grains may indicate that storage waste is also represented within the assemblage. The composition of this assemblage is consistent with material derived from small-scale industrial processes, where the high temperatures of combustion have destroyed most of the delicate plant macrofossils, leaving only 'cokey' residues and amorphous organic concretions. The remaining pit assemblages all contain a low density of material, much of which is probably associated with scattered refuse and/or wind blown detritus.

Circular Pit
(Figure 14)

Another significant feature associated with this phase of activity was a circular pit *785* located in Trench 3. It was relatively small (2.05x1.95x0.85m) but deep. Located south-east of quarry pit *434*, it may also have been utilised for mineral extraction. Its lower fills were sandy and sterile, while its upper fill was full of domestic waste and building rubble — a similar pattern of infilling to the larger quarry pits. The upper fill contained 87 sherds of pottery weighing 1.5kg that were not wasters but the remains of utilised domestic pots. A total of eleven Roman fabrics was recovered, the most common of which was the locally produced SGW. Single examples of a narrow mouthed jar (2.1.1), medium mouthed jars (4.1 and 4.13) a wide mouthed jar (5.2/3) and a dish (6.21), were recovered. Decoration consisted mostly of various burnishing or rustication. The pottery is lightly abraded with some soot marks surviving. NVCC was the most common fine ware found, although only one beaker type was identified (3.1). Samian was also relatively well represented, all of the material being eastern Gaulish Dr 31 bowl types dated between the late 2nd and mid 3rd centuries AD. It is noticeable within this assemblage that no 4th-century fabrics or forms were found, giving it quite a secure date of the mid 3rd century. Also found in the upper fill were large pieces of unworked flint and limestone and chalk blocks, all of which was probably building rubble.

Road Maintenance and Other Features
(Figures 10 and 11)
As noted above, the roadside ditches were recut many times. There is evidence for up to four recuts adjacent to the northern side of the main east-to-west road (recorded in Trench 4) and it is likely that evidence for many more small-scale clearances has not survived. The process of ditch renewal is particularly clear for the northern ditch of the main east-to-west road (recorded in Trench 7). Here the primary cut *630* was recut by *631*, *632* and finally by *793* which in turn was backfilled with silt (*611)* and ash deposits (*610*, *803*). It can also clearly be seen that where the final recut *793* occurred, it cut through the metalled surface of the road *811* and the disturbed gravel then fell (or was rain washed) into the open ditch (*629*). This demonstrates the phenomena that the roadside ditches, although remaining the same approximate width and depth, encroached on the metalled surface of the road as time went by, effectively making the metalled road narrower by up to 3m (1.5m on the north and south sides) by the end of this phase of activity.

The quantity of finds from the roadside ditches is surprisingly small and must reflect their well-maintained character. On both the north and south sides of the main east-to-west road only the last recuts (*793* to the north and *590* to the south) contained significant amounts of pottery. Of these *590* had the most informative assemblage. The pottery from this ditch included two sherds of intrusive post-Roman pottery, weighing 0.054kg however, as this feature is at the top of the stratigraphic sequence (below the large sealing layer of topsoil *446*) such contamination is not unexpected. Only two deposits containing pottery were excavated from which a slight progression in the dating can be discerned. The primary fill *589* contained material dated to between the late 2nd and early 3rd centuries, while the upper fill *588* can be dated to between the early and mid 3rd century AD. The majority of pottery recovered from the primary fill constitutes the locally produced SGW which was found in the form of medium (4.1 and 4.5.2) and wide mouthed jars (5.3 and 5.4), with some abrasion and occasional sooting recorded on these vessels. Other locally produced coarse wares were identified (WNRW, NVGW, SOW) and two sherds of the STDW material from Lincolnshire were also found. The only fine ware retrieved from this deposit was a NVCC bag shaped beaker (type 3.6.4) that is provisionally dated to the 3rd century AD. The majority of pottery from the secondary deposit *588* also consisted of the SGW fabric. Similar forms were identified constituting medium (4.5 and 4.13) and wide (5.4) mouthed jars, although a straight-sided dish (type 6.18) was also identified. Some of this pottery was abraded, although a larger quantity was sooted. As before other locally produced coarse wares were identified (WNRW and MRW) and four sherds of the STDW material were found. NVCC was retrieved and was again identified in the form of a bag shaped beaker (3.6) and another Nene Valley product was recorded in the form of NVWW base sherds from substantial bowls (perhaps mortaria). Significantly three samian vessels were retrieved from this fill; two from central Gaul (Dr31 and Dr18/31) dated to the 2nd century and the third from east Gaul (Dr 31 or 37) that can be dated to the late 2nd to mid 3rd centuries AD.

Although the deposits are very similar and quite closely dated, the presence of east Gaulish samian in the upper fill suggests it is of a slightly later date. Significantly both deposits are consistent with a domestic rubbish dump of both kitchen and table wares. The pottery suggests domestic activity occurred nearby but no further evidence of this was found.

The only stratified coin found during this project came from the upper fills of the main east-west road roadside ditch M381 R3. It was a copper alloy issue (No. 50, SF 60) depicting 'she-wolf with twins', presumably Romulus and Remus the mythical founders of Rome, and can be dated to post AD 330. This provides a *terminus post quem* for roadside ditch maintence at Snettisham.

Evidence for six phases of road surfacing for the main east-to-west road was recorded (in Trench 4) but because the construction of the metalled surface was substantial, maintenance was mainly concerned with filling potholes, commonly with deposits of smithing slag and Carstone. Wheel ruts, presumably from Roman carts, can still be clearly seen in the worn surface of the metalled road. These impressions are between 0.20 and 0.50m wide, representing not only the width of the cart wheel, but also the effect of numerous vehicles using the same rutted surface to traverse the road. Road repairs and wheel ruts can both clearly be seen in the section of road examined in R3 (Fig. 11). However, no full scale resurfacing was needed or undertaken after the initial construction.

Chalk Path
(Figure 14)
During the period of road use and maintenance a chalk path *297* was constructed. It had been recorded during the evaluation stage of the project in Evaluation Trenches 1 and 3 and was picked up again during the excavation in Trench 4. It lay on the north side of the main east-to-west road, leading off in a north-easterly direction. The path was between 1m and 1.5m wide, while a length of 4.5m was recorded in plan. It was composed of packed chalk pebbles deposited directly over clean natural sand. No artefacts were found in association with this feature. It seems unlikely that this path was constructed solely for pedestrian use, as the land was not known to be swampy or boggy, it is therefore suggested the path may have been intended for the use of a hand cart or barrow whereby goods were transported to the road for distribution.

A recent excavation by Oxford Archaeology on a site in Higham Ferrers, Northamptonshire, has uncovered a parallel for this feature. The excavation looked at *c.*2ha of a Roman roadside settlement, where a packed gravel path running alongside the main road through the settlement for a distance of over 100m was found. The path was maintained for a considerable period and was even terraced slightly into the sloping ground to provide a level surface (M. Flitcroft pers. comm.).

Possible Structure
(Figure 14)
A gully *457*, running north-east to south-west was located in Trench 12. This did not align with any known land division and may have been the remnants of a structure. Small workshops, storage facilities and dwellings must have existed in this area.

Plate IV Quarry pit *543* cut by well *685*

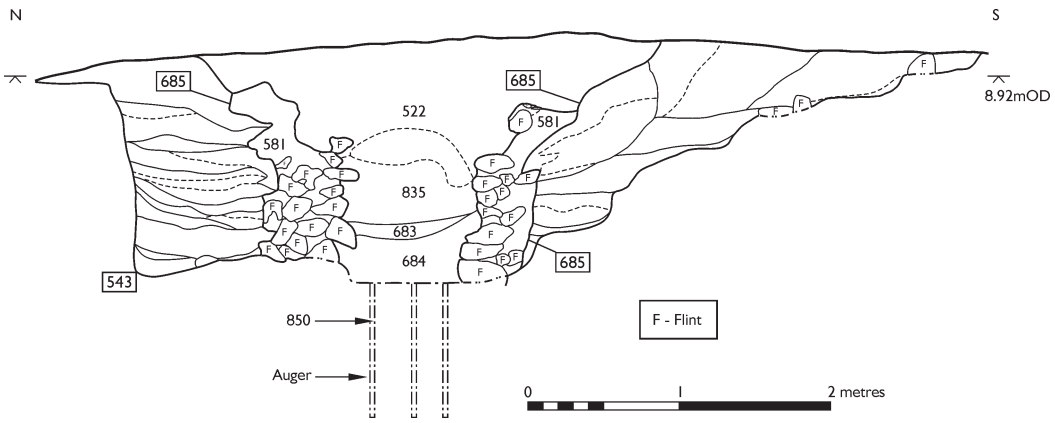


Figure 16 Quarry pit *543* cut by well *685*, section (Trench 1). Scale 1:50

Period 2.4: Quarry Recuts and Other Features (late 2nd to early 4th centuries AD)

Well *685*
(Figure 16 and Plate IV)
Quarry pit *543* (in Trench 1) was cut through its centre by well *685*. The well measured 3.05m across the top, with a central shaft 0.80m across and it was augured to a depth of 2.40m. The oval well shaft was lined by a mixture of clay *581* and large flints with a combined thickness of 0.60m. The base of the well was also filled with large flints, which was either the result of the lining collapsing or a deliberate attempt to filter the water. The well was backfilled with a series of silty sandy deposits *850, 684* and *683* that between them contained only one sherd of SGW globular beaker (type 3.7). This suggests a largely natural infill from rain washed deposits. The next deposit (*835*) was charcoal rich, although still free from other cultural remains. It was not until the final substantial backfilled deposit *522* that large quantities of pottery, bone, flint fragments, grit and oyster shell were retrieved — consistent with the well finally being deliberately filled with domestic rubbish.

The different pottery types retrieved from fill *522* date between the mid 2nd to 4th centuries AD (Table 3). The C/EWW mortaria base and the SGW narrow mouthed jars were produced in the 2nd century AD, while the WNRW flanged bowls (6.17) are indicative of a later 3rd to 4th

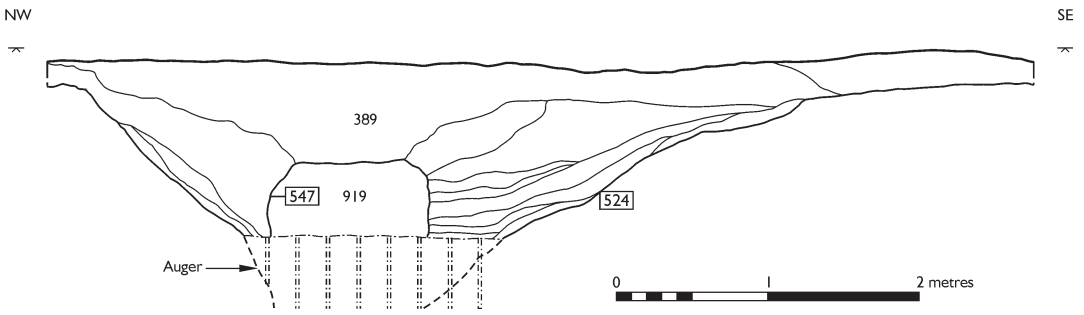


Figure 17 Quarry pit *524* cut by well *547*, section (Trench 5). Scale 1:50

century date and when manufactured in a fine ware NVCC fabric they are known to date to the 4th century AD. The fact that all of this pottery was found within one deposit indicates that the layer accumulated over a long period of time, possibly a midden constructed elsewhere but deposited within well *685* after it fell into disuse during the 4th century AD.

Nine pottery fabrics were recovered from well *685*. A single sherd of central Gaulish samian was retrieved, with a spot date between 117–192AD. The mortaria found was produced either in Colchester or Ellingham, while the fine ware NVCC (which constitutes the majority of this deposit by weight) originate from the relatively close by Nene Valley. A single sherd of micaceous reduced ware probably originates from south Norfolk or north Suffolk, while all of the remaining fabrics are locally produced (probably on site) coarse wares. Although the vessel types found include narrow mouthed jars (2.1.1) and medium mouthed jars (4.4 and 4.5.1), the majority of recognisable vessel types from this feature are straight-sided dishes (6.18, 6.19.4, 6.19.6) with some flanged examples (6.17).

Other finds from this deposit included a copper alloy hairpin SF 291 (Figure 21). Sample BS 65 retrieved from the primary deposit *850* of well *685* is worthy of note as it contains both charred and de-watered plant macrofossil assemblages, the latter probably being indicative of the local environment i.e. a drop in the water level, which may explain why the well fell into disuse. It also contains abundant Ruderal species, for example *Urtica dioica* (stinging nettles) and colonising plants *Conium maculatum* (hemlock) and elderberry, possibly indicating that the well was situated in an area overgrown with weeds and scrub when the silting process began.

Fabric	*Quantity (sherd count)*	*Weight (g)*	*Vessel types*	*Weight (%)*
NVCC	7	274	6.17.	22.48
SGW	24	265	2.1.1, 3.7, 4.5.1, 6.3.	21.74
SOW	3	238		19.52
FSRW	8	168	6.19.4, 6.19.6.	13.78
WNRW	13	134	4.4, 6.17, 6.18	10.99
C/EWW	1	78		6.40
MRW	2	50	6.18.	4.11
SAM	1	6		0.49
UOW	1	6		0.49
Total	60	1219		**100.00**

Table 3 Pottery from well *685*

Well *547*
(Figure 17)
The second well *547* cut through fill of quarry pit *524* in Trench 5. The well was 5.50m across the top with gentle sloping sides to a shoulder leading to a sub-circular vertical shaft 1.05m in diameter and augured to a depth of 2.1m. This well had no distinctive lining. It was backfilled first by a loamy deposit (*919*) almost like topsoil, and then with a substantial layer of sand (*389*) which marks the closing usage of the well. This was the only deposit from which any finds were recovered. The tip of a bone hairpin SF 397 (unillustrated) and four sherds of pottery, weighing 0.355kg, were found. All the pottery was locally produced coarse wares SGW and FSRW, in which a wide mouthed jar type 5.4 was recorded, broadly dated to between the early-mid 2nd century and the mid 3rd century AD, and all are probably largely residual. A sandy clay (*371*) and a sandy loam (*372*) were recorded above this, but again they contained no cultural remains.

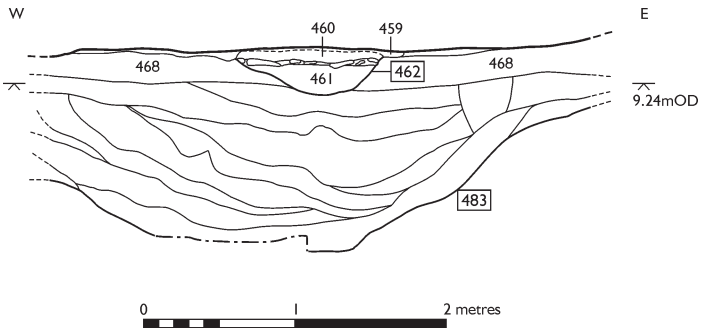


Figure 18 Quarry pit *483* cut by hearth *462*, section (Trench 9). Scale 1:50

Metalworking Hearth
(Figure 18)
The upper fill of quarry pit *483* (in Trench 9) was cut by an oval hearth *462*, approximately 1.0x1.75x0.32m, which had a vitrified dark brown-red *in situ* clay surface, beneath which were long thin slabs of chalk sitting on a heat-affected deposit of sand and clay *461*. The chalk was sealed by several burnt sandy clay deposits (*460* and *459*). Surrounding this feature were two deposits (*577* and *579*) that contained large quantities of iron smelting debris. The hearth was found associated with a series of sub-rectangular pits (*573*, *615* and *926*) one of which was clay lined *573* and all of which were filled and surrounded with metalworking debris. Several circular pits backfilled with burnt deposits were also found (*470*, *495* and *576*) and they did not cut quarry pit *483*. It was initially thought

(during excavation) that these features were a smelting complex, however, specialist examination of the metalworking debris, alongside the context record, revealed the hearth could not have been smelting iron ore as the clay was oxidised where the smelting process would have reduced the clay. The soil sample BS 32 taken from deposit *579* did not yield sufficient hammerscale to suggest that iron smithing could have been taking place. The only process associated with iron production that could have been taking place in hearth *462* is the practice of roasting the iron ore that aided the smelting procedure. The associated sub-rectangular and circular pits could not have been directly used for iron production, as they had not been heated to a high enough temperature. No pottery or other finds were retrieved from this group of features.

Sub-Rectangular Pits

Close by in Trench 4 was another series of sub-rectangular pits (*573*, *615*, *926* and *927*, unillustrated), one of which was clay lined. All of them contained burnt silty sand deposits including ash and metalworking debris. Again deposits of metalworking debris surrounded these features but there was no evidence for *in situ* working. It is likely that these are the features recorded during the evaluation stage of the project as 'a series of industrial-processing hearths, possibly associated with the preparation of the local ironstone for smelting, or for pottery production' (Flitcroft 1991, 5 paragraph 5.8).

Stepped Pit

(Figure 19)

South of the road, quarry pit *434* in Trench 3 was recut by pit *751*. The recut substantially cleaned out the earlier fills and provided a steep cut on the south side of the feature, levelling the base and incorporating two timber steps (*597*). No actual timber survived only a very dark grey silty ghost of decayed wood. Deposit *741* consisted of burnt silty sand with fired clay, possibly fragments from a kiln superstructure and other kiln cleaning debris, and was deposited up against the lower timber step to act as hard core to lock the step into place and to provide a firm footing. On the north side of the feature several deposits of chalky sand were laid down (*746, 747* and *748*) to provide ramp access.

No pottery was recovered from this feature although an incomplete copper alloy hairpin (SF 252 unillustrated, Chapter 3, p.29) dated to the 2nd century AD was found, also a fragment from a triangular loom weight of Iron Age type, probably residual (Chapter 3, p.45).

Although the function of this feature remains uncertain it could be interpreted as a cellar, or underground storage facility, whereby goods could be rolled down the ramp and retrieved by individuals using the steps. Environmental evidence was recovered from the disuse fills of this feature. Sample E from deposit (582) near the top the stratigraphic sequence, appears to be derived from rake-out material from a fire pit or similar feature. With the exception of charcoal fragments, plant macrofossils are rare, but moderate to high quantities of black porous 'cokey' material, burnt/fired clay, burnt organic concretions and ferrous globules were recorded. The composition of this assemblage is consistent with material derived from small-scale industrial processes, where the high temperatures of combustion have destroyed most of the delicate plant macrofossils, leaving

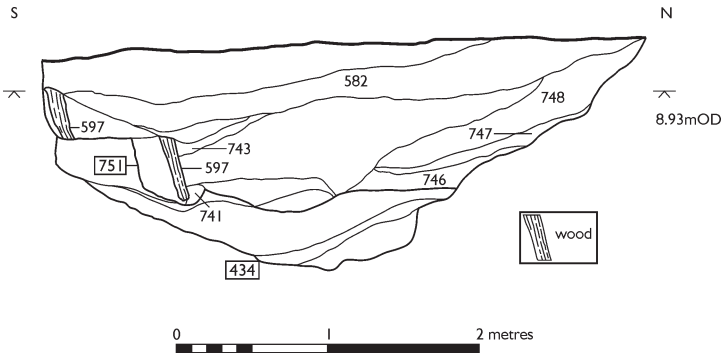


Figure 19 Quarry pit *434* cut by stepped pit *751*, section (Trench 3). Scale 1:50

only 'cokey' residues and amorphous organic concretions. This provides evidence that industrial processes were continuing in the vicinity of this feature in the mid-late Roman period.

Period 2.5: Features Post-dating the Road (late 3rd to 4th Centuries AD)

Inhumation

(Figure 7 and Plate II)

Cutting into the upper fill of the stoke hole of Kiln 2 was a west-to-east inhumation (its head to the west), recorded during the evaluation. The grave (*185*) consisted of a slight cut, of which only the eastern half was visible. It contained an extended skeleton (*187*) probably of an immature adult, measuring 1.14m from ankle to collar. The skeleton was damaged during machining as the grave had not been deeply cut into the natural, and the remains were incomplete — only two fragments of skull were recovered. No grave goods were found. Cremation burial tended to be replaced by inhumation in the late 2nd century AD. Such isolated burials are well known from rural sites across south-eastern England, often set close to the boundary of an enclosure (Liz Popescu pers. comm.; *cf.* Flitcroft 2001, 42 and fig. 28). Recent research however, suggests this type of burial was not usual in Norfolk before the 4th century AD (Gurney 1998 18).

Possible Late Roman Structure

(Figure 20)

Of particular interest is a series of post-holes excavated in Trench 4 (*432*, *551*, *553*, *555*, *592*, *608* and *624*), which may provide evidence for a structure. That one of these post-holes was recut (*555*), while others cut one another (*926* cuts *615*) and some are not located in alignment (*592*), suggests that this structure was rebuilt or altered during its period of use. A small amount of residual Roman pottery was collected from these features consisting mostly of locally produced coarse wares (FSRW, UOW, SGW, NVGW, FSGW and WNRW) in which only two examples of one medium mouthed vessel (type 4.13) was recorded. A single sherd of east Gaulish samian (dated between the mid 2nd and early 3rd century AD) was also found.

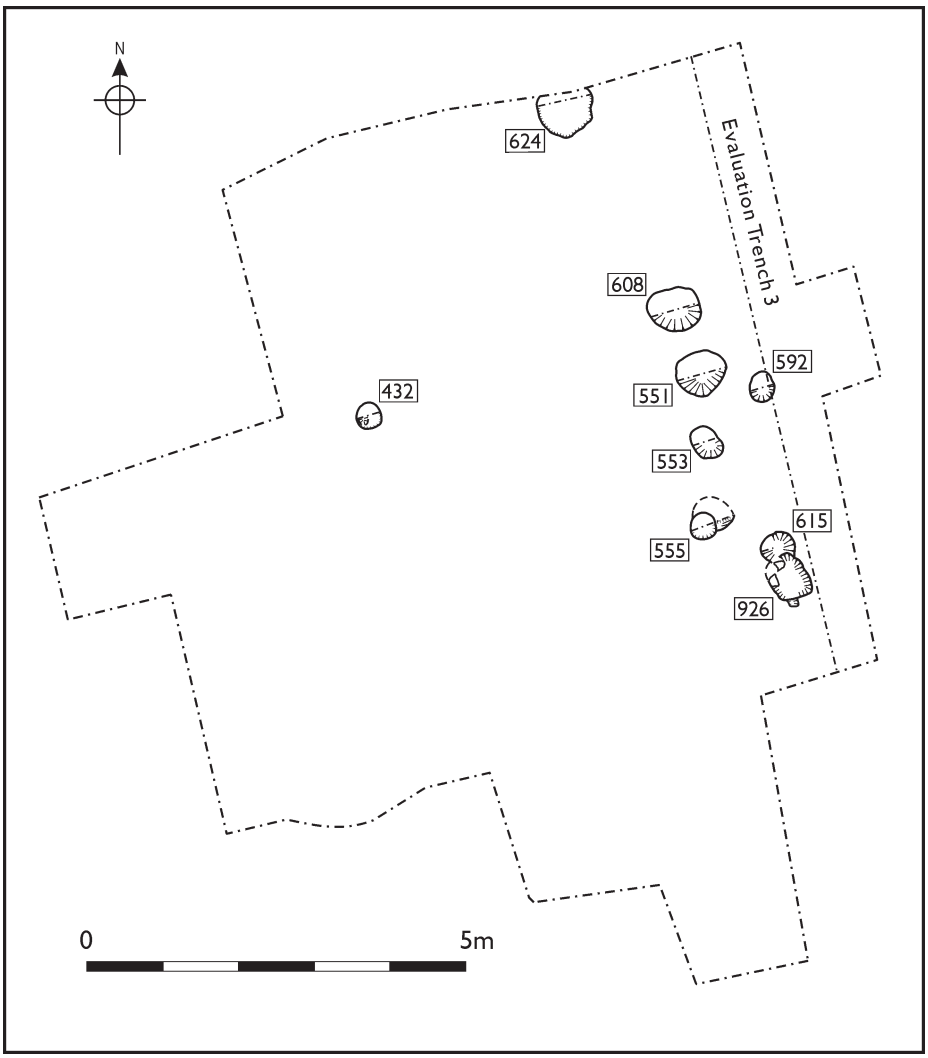


Figure 20 Possible late Roman structure (Trench 4). Scale 1:100

Ditch and Gully
(Unillustrated)

A north-to-south ditch *390* and a gully *402* in Trench 3 may represent a final phase of land division before abandonment of the site. Later disturbance had introduced two intrusive sherds (weighing 0.052kg) of post-Roman pottery into the ditch.

Locally produced WNRW material constitutes the majority of pottery from this feature (Table 4) and numerous forms were found. Narrow mouthed jars (2.1, 2.1.2), a beaker (3.1), medium mouthed jars (4.5.2, 4.5.3, 4.5.4, 4.6,4.11), flanged dishes (6.17 and 6.17.1) and straight-sided dishes (6.18, 6.19.3 and 6.19.6) were identified. A lot of this material is decorated by burnishing, in the case of the dishes inside and out. The pottery is only lightly abraded and many of the vessels are sooted, a few with surviving wear marks. NVCC is the only other fabric represented in significant quantities. Three examples of the same beaker (type 3.1) were retrieved, one with barbotine scroll decoration, all of which date from the 3rd century AD. Another fabric worthy of note is HW. The distribution of this fabric is only just becoming understood, (Evans 1991), but its presence on the west coat of Norfolk is of some significance. The large sherd size is fairly typical as much of the material exported from the kilns in Cambridgeshire consisted of very large storage jars. All of these vessels show evidence of considerable use before deposition.

The ceramic evidence suggests that this is largely a deposit of kitchen waste. The absence of samian would support this argument, but may also reflect the late date at which pottery was deposited within this feature.

Fabric	*Quantity (sherd count)*	*Weight (g)*	*Vessel types*	*Weight (%)*
WNRW	99	3468	2.1, 2.1.2, 3.1, 4.5.2, 4.5.3, 4.5.4, 4.6, 4.11, 6.17, 6.17.1, 6.18, 6.19.3, 6.19.6.	66.40
NVWW	1	770	7.9.1	14.72
HW	2	540		10.34
NVCC	18	177	3.1	3.39
SGW	3	118	3.12, 6.18.	2.26
SOW	1	102	5.4	1.95
STW	2	22		0.43
UOW	1	22		0.43
BSRW	3	2		0.04
MRW	1	2		0.04
TOTAL	131	5223		100.00

Table 4 Pottery from ditch *390*

III. Metal Detector Survey

Significant crop coverage made it impossible to conduct a comprehensive metal detector survey of the site during both the evaluation and excavation. The topsoil removed during machining of the trenches and excavation of the subsoil features was, however, systematically detected and produced a very large multi-period assemblage of metalwork (nearly 700 objects; Table 5). Most of these are post-Roman artefacts from the subsoil, topsoil or unstratified deposits (a full catalogue is in the archive). Intrinsically interesting objects (including coins) are included in this report.

Period	*Sub-Period*	*Object total (count)*	*Object total (%)*
Roman	2.1	2	0.29
	2.2	5	0.74
	2.3	80	11.64
	2.4	8	1.16
	2.5	10	1.46
Post-Roman	3.1	193	28.09
Post-Medieval	4.1	205	29.84
Undated	U/S	184	26.78
	TOTAL	687	**100.00**

Table 5 The distribution of Small Finds by period and sub-period, the majority of which were retrieved during the metal detector survey

IV. Watching Brief

A watching brief was carried out between January and July 2000, when a series of ten visits was undertaken. Conditions for inspection were difficult as work was continuously ongoing. However, two pottery kilns were observed in footings dug west of the north end of Estate Road 3, together with pottery and kiln furniture. A further two kilns were observed around Estate Road 4, reported as patches of red, burnt clay with domes that were removed during the excavation of footings alongside patches of what the workmen called 'workable clay'. No further recording of these features was possible. The four new kilns recorded during the watching brief phase of this project were not detected during the geophysical survey. Full details of the notes taken during this part of the project can be found in the site archive.

V. Discussion

In accordance with the original research aims of the project (Chapter 1) targeted archaeological examination of the site has clarified the spatial organisation of different classes of feature type and how they changed through time. It has been demonstrated that, after limited prehistoric activity, between the mid 1st and mid 2nd centuries AD the site was divided by boundary ditches and droveways to produce small allotments in which subsistence activities (such as arable farming and animal husbandry) and pottery production were established. Aerial photography over a wide surrounding area suggests that the Snettisham field system was not laid out in a single, planned block along the lines of centuriation (Brennand above, p.5). No set pattern of field size is apparent. Measurements taken from the aerial photographs indicate the larger fields are generally random in dimensions, although typically: 23x59m, 24x55m, 28x59m, 16x18m, 25x29m and 37x59m in size. These larger fields were then sub-divided into smaller areas, often on the edge of droveways or larger boundaries. These smaller enclosures measure 4x6m, 6x10m, 6x16m, 6.5x7m, 7.5x8m, 7x9m, 7x12m, 11x10m, 11x13m, 11x15m, 13x13m, and 14x16m. Evidently the enclosure ditches recorded during this project fitted into a broader pattern of land usage: similar developments during the early to mid 2nd century were recorded during the 1989 excavations (Flitcroft 2001, 31).

At the same time that the field system was established, ceramic production took place in a kiln of unusual type (Kiln 1). Within the structure, the combination of permanent long pilasters with temporary kiln bars does not appear to be one that has previously been documented (Swan 1984, 31 fig. III) although both individual characteristics are known in Norfolk (Bates and Lyons 2003). It is possible, however, that this kiln can be included in a group of early and rare Roman kilns, closely related to the Iron Age technique of bonfire-firing whereby the vessels were stacked directly onto a series of blocks in the base of a clay lined oven, which were just high enough to allow a draught to circulate (Swan 1984, 114). On balance, the presence of large numbers of kiln bars (although none *in situ*) suggests the former interpretation is the most likely. If so Kiln 1 could be an early and atypical exponent (using portable kiln bars instead of a solid vented floor technology) of a group of oval pilastered kilns that first appeared in Britain in the early conquest period and formed a small but distinctive group in Norfolk (Swan 1984, 121) from the early mid 2nd century onwards. Whichever interpretation is correct Kiln 1 does not easily fit within any recognisable group of known kilns and may represent an individual experimenting with pottery production techniques before the larger industry at Snettisham was established.

The construction of roads in the mid 2nd century AD changed the landscape dramatically. The size and well-built character of the major east-to-west thoroughfare do not appear to have been justified by the status of the adjacent settlement and must also be explained by the proliferation of industrial activity. This road was maintained from its construction until the later part of the 3rd century, when activity declined. The repeated recutting of the roadside ditches implies a minimum maintenance of approximately every thirty years, although it is probable that many small-scale clearance works are not visible in the archaeological record. Such maintenance is also demonstrated by the patching of the road with metalworking waste, the use of slag for road repair being common during the Roman and Anglo-Saxon periods (Liz Popescu pers. comm.). Road maintenance may have declined in tandem with local industry. The road was so well constructed, however, that it could have remained a potentially functional part of the landscape for many hundreds of years.

Soon after road completion, large ironstone quarry pits were dug. One example cut into the minor trackway (Period 2.1), confirming that quarrying in this area occurred after this particular route fell from use. The spatial distribution of the pits was extremely regular, as is

particularly obvious for five examples north of and parallel to the major road (*537* T12, *529* T10, *543* T1, *524* T5 and *422* T8), spaced between 10 and 20m apart. This spacing may reflect some aspect of land division (trackways, paths, field boundaries or property boundaries) direct evidence for which has not been recovered. If so this would not necessarily mean that the land was individually owned, but it does suggest that the quarry pits were individually worked and there was no single large-scale ore extraction operation. Two quarry pits close to the roadside *483* (T9) and *702* (T4), which do not fit into this pattern of regular distribution, may be later examples. It is notable that the majority of metalworking debris was also recovered close to these two quarry pits.

Ironstone extracted from these quarry pits was probably smelted locally, although no contemporaneous hearths were found despite the large quantities of smelting waste present. The single hearth identified as a possible ore roaster was undoubtedly of a later date. When exhausted of their ore some of the quarry pits were reused: two as wells, one as a hearth and one as a cellar. The majority however, were backfilled with large quantities of metalworking and pottery production waste, domestic rubbish and building rubble in the later part of the 3rd and early 4th centuries AD.

The Snettisham quarries are of particular interest as few similar features have been excavated or conclusively identified, despite the fact that they must have surrounded many iron working sites. The dating of known quarries is problematic. Examples in Roman Norfolk include a possible quarry pit at Caister-on-Sea (Rodwell 1993, 41), while at Ashwicken (Tylecote 1962a) two large pits, 12.2 and 24.4m in diameter, were tentatively identified as ore pits. At West Runton, Norfolk, there are more than a thousand pits with diameters of 2.4m to 6.1m, although these are believed to be Anglo-Saxon (Tylecote 1962b). The most comprehensive research for the Roman period has been undertaken in the Weald (Cleere and Crossley 1985) where, although the geology is different to Norfolk, ore also appears to have been dug from shallow quarries or bowl-shaped pits. Examples of such extraction were found at Petley Wood where the pits measured between 15–20m across and 15m deep, and in the Bardown area where some of the many pits had a key-hole plan with a slight ramp at one end. The Snettisham quarries therefore appear fairly typical in their form and size, although discovery in such numbers is unusual and they are exceptionally well dated.

Kiln 2, representative of the main period of pottery production at Snettisham (mid/late 2nd to 3rd centuries AD) where large quantities of pottery were produced for external markets, was in use at the same time as the quarry pits were being exploited. It must have been one of many kilns producing utilitarian vessels in WNRW and SGW fabrics at Snettisham, as the quantity of these fabrics found (7457 sherds 184.604kg) was very large, and all the more significant as it was retrieved from a limited excavation area. This type of single chambered kiln, semi-sunken with an integral 'bollard'-type pedestal, used in conjunction with portable oven-floor supports (Swan 1984 31, fig. XVII), is well represented in East Anglia. Such kilns were especially characteristic of the Wattisfield Industry (Swan 1984, 115) in north Suffolk and are often referred to as 'Wattisfield-type' kilns. The kiln type first appeared in the early 2nd century, was most frequent in the 3rd and continued in use until the 4th century AD.

The major routeway had evidently provided a most important economic boost to Roman Snettisham as a result of improved communications. Its morphology demonstrates the need to cope with the size, weight and frequency of carts carrying smelted iron and completed pots — and probably other Fenland products too such as grain, meat, reed, leather, wool and perhaps the salt from the nearby saltern (Fig. 3) — to the market place. Taken westwards, products would have arrived at the coast for distribution around the Fen basin by sea, or they may have joined a north-to-south track known as Akeman Street (Flitcroft 2001, 2 fig. 1) thought to have joined the Fen Causeway at Denver, thereby gaining access to Ermine Street and the military route north. Travelling eastwards they would have joined the Icknield or Peddars Way near Fring and could have headed south towards Colchester or north to the coast. Further comments on both pottery production and metalworking are given in Chapter 3, with more general considerations on the local economy presented in Chapter 5.

Evidence for domestic houses on this site is ephemeral (Chapter 3.VI). That the land was divided first into allotments (Period 2.1) and then into plots suggested by the spatial distribution of the quarry pits (Period 2.3) is apparent. It is possible that these land divisions were also associated with domestic dwellings. Large fragments of flint and chalk masonry and also limestone slabs were recorded as demolition waste from pits *515* and *785* in Trench 11, presumably from a fairly substantial nearby building that had fallen into disrepair. Relatively small amounts of ceramic building material (both roofing and floor material) were retrieved as well as daub and a single fragment example of possibly Roman painted wall plaster (SF 702). Other evidence of internal fittings for domestic houses was found in the form of nails, spikes (SF 327 and 522) and upholstery tacks (SF 577 and 709) as well as two pieces of window glass (SF 290 and 348).

In the later part of the Roman period both pottery production and iron working declined. A number of the earlier quarries were recut to provide wells. These were not timber lined like the early Roman examples excavated as part of the Snettisham Bypass project in 1989 (Flitcroft 2001, 29–36). This may reflect a change in the environment whereby wood was less freely available than before, perhaps due to over exploitation providing fuel for the hearths, furnaces and kilns working in the vicinity.

An inhumation burial, post-dating the end of the 2nd century AD and perhaps even as late as the 4th century AD, was laid down over the stoke hole of Kiln 2, suggesting that the area had become peripheral to contemporary settlement.

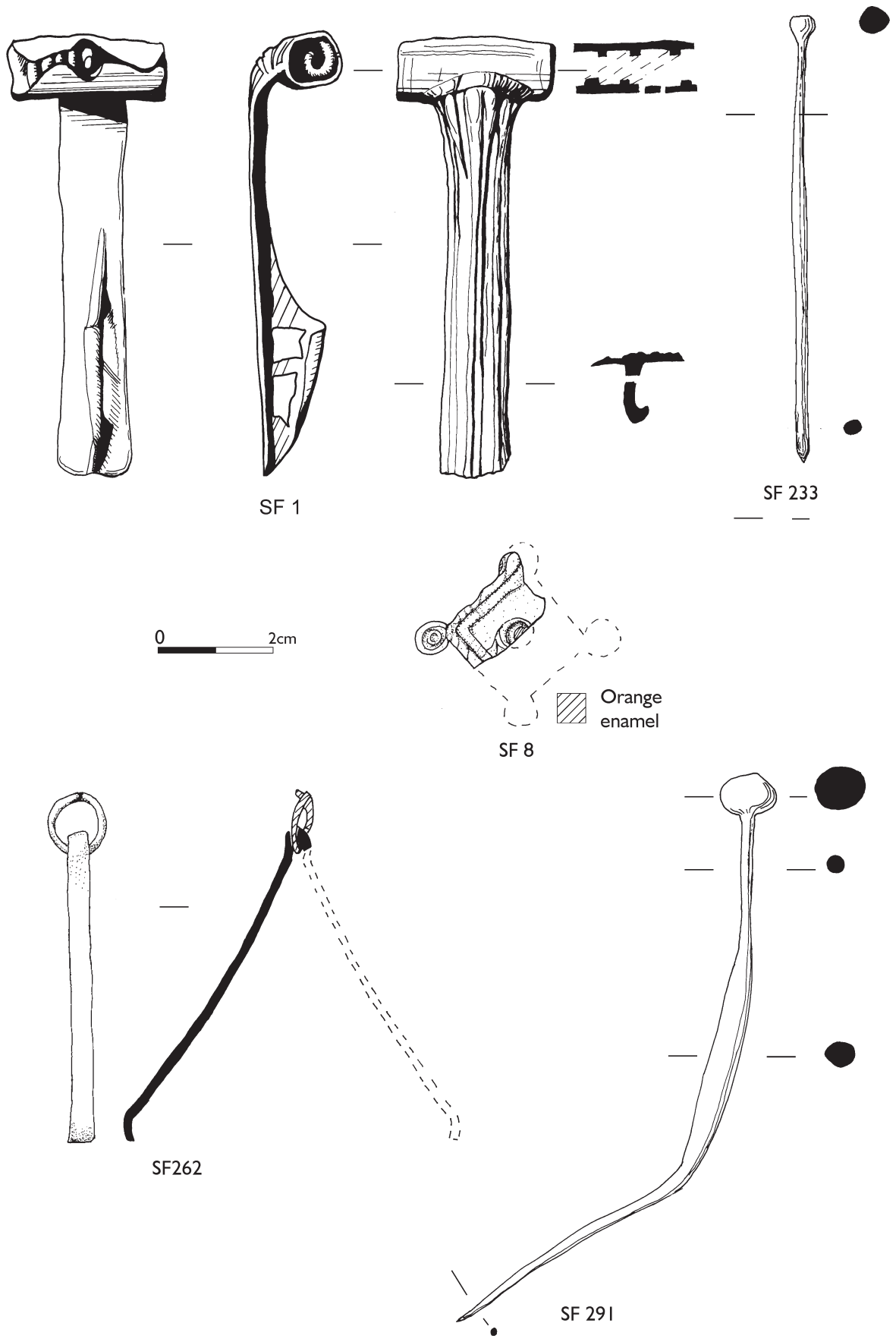


Figure 21 Brooches, hairpins and tweezers. Scale 1:1

Chapter 3. The Finds

I. Introduction

A total of 105 stratified Roman objects was recovered; other artefacts of the period were retrieved from the plough and subsoil most of which however, were coins. Many types of artefacts were recovered, but none (except pottery and metalworking waste) were found in large quantities. This assemblage therefore, provides evidence for the lifestyle of the people who lived and worked at Snettisham over nearly 300 years. Some of the objects found are utilitarian and some are products of the craft actives undertaken there. Commercial activity is well represented by the coinage, while other items are more decorative and personal. The assemblage provides evidence for the social, economic and industrial activity undertaken at Snettisham and fulfils one of the original research aims of this project.

II. Methodology

The following report takes the form of a catalogue arranged by functional categories accompanied by discussion and illustration (where appropriate). Where possible, Small Find numbers have been used as catalogue references so that each object has only one unique identifier. The coins have additional catalogue numbers to allow clearer discussion in chronological order using a sequential numbering system; and the illustrated pottery has catalogue numbers instead of Small Find numbers. Only those finds dated to the Roman period, or retrieved from Roman deposits, are described within this report, with the exception of a notable 14th-century coin. A full catalogue of the post-Roman finds can be accessed through the archive.

III. Dress Accessories and Personal Possessions

Summary
Objects associated with dress and personal grooming are few from this site, perhaps reflecting the industrial nature of the settlement and lack of domestic deposits excavated. However two brooches, four hairpins, forty-four hobnails and a single pair of tweezers are represented.

Brooches
(Figure 21)

SF 1 Copper alloy Langton Down brooch, Class B variant (Hattatt 1987 fig. 16, no. 770). Unusually this example has a double perforation on the catchplate (a single was more normal). This type of bow brooch originated on the continent towards the end of the 1st century AD and is one of many found in Britain and Western Europe. A few came to Britain before the invasion, their numbers increasing thereafter, but production is not thought to continue into the 2nd century AD.
(001) unstratified 1991 evaluation

SF 8 Copper alloy plate brooch fragment, lozenge shape with lugs (comparable to Hattatt 1987 fig. 63, 1088). Similar examples have previously been found in Norfolk (Hattatt 1987 fig. 63, 1087). This type of brooch has a well defined distribution where almost all are found south of a line from the Severn estuary to Norfolk. It dates from the 2nd century AD and is thought likely to be made in Britain.
(082) unstratified 1991 evaluation

Hairpins
(Figure 21)

SF 233 Bone hairpin with oval head and flat top. A similar example was found at Caister-on-Sea Norfolk, (Darling and Gurney 1993 fig. 45, 83 and 107).
(458) quarry pit 537, Period 2.3

SF 397 Bone hairpin fragment, only the tip surviving, (maximum diameter 2mm). Not illustrated.
(389) well 547, Period 2.4

SF 252 Copper alloy hairpin shaft, with head and tip missing. Although very slight (maximum diameter of 1.5mm) it maybe a hair or dress pin, similar to an example from Colchester (Crummy 1983 fig. 26, 466) described as a pin with a plain conical head and assigned a 2nd century date. Not illustrated.
(447) pit 751, Period 2.4

SF 291 Copper alloy hairpin with a circular-sectioned hemispherical head and shank. The shank has a pronounced expansion half-way down and then tapers to a point. This type is well represented in the Norfolk-Suffolk area although rare elsewhere in the Roman world. Unfortunately it is not closely datable. It is very similar to an example from Caister-on-Sea, Norfolk (Cool 1993 fig. 46, catalogue number 112).
(522) well 685, Period 2.4

Hobnails
A total of forty-four iron hobnails (not illustrated) was recovered from sorted environmental samples (BS 16, 23, 34, 43, 65, and 70). The majority of the hobnails (thirty-seven by object count or 84%) were retrieved from roadside ditch deposits, which suggests they are all that remain of shoes discarded along the road. The hobnails were probably used in the construction of the *calcei* or *caligae,* a nailed shoe, where the nails were used in a variety of decorative patterns to join the soles to other layers (de la Bedoyère 1989, 127). All of the hobnails found were of the same type with a domed head and short square tapering shank (10mm long).

SF 704 *(374) roadside ditch 540 M381, Period 2.3*
SF 707 *(375) roadside ditch 593 M381, Period 2.3*
SF 710 *(465) roadside ditch 467 M381, Period 2.3*
SF 715 *(850) well 685, Period 2.5*
SF 716 *(391) ditch 390 M856, Period 2.5*
SF 717 *(458) quarry pit 537, Period 2.3*

Tweezers
(Figure 21)

SF 262 Single copper alloy arm and suspension loop from a pair of tweezers. The blade is slightly flared widening from 4mm at the top to 5mm at the base of the arm, the end of which curves in like a pincer. This object may be Roman or medieval in date (similar to Crummy 1983, fig. 63, 1879).
(930) unstratified

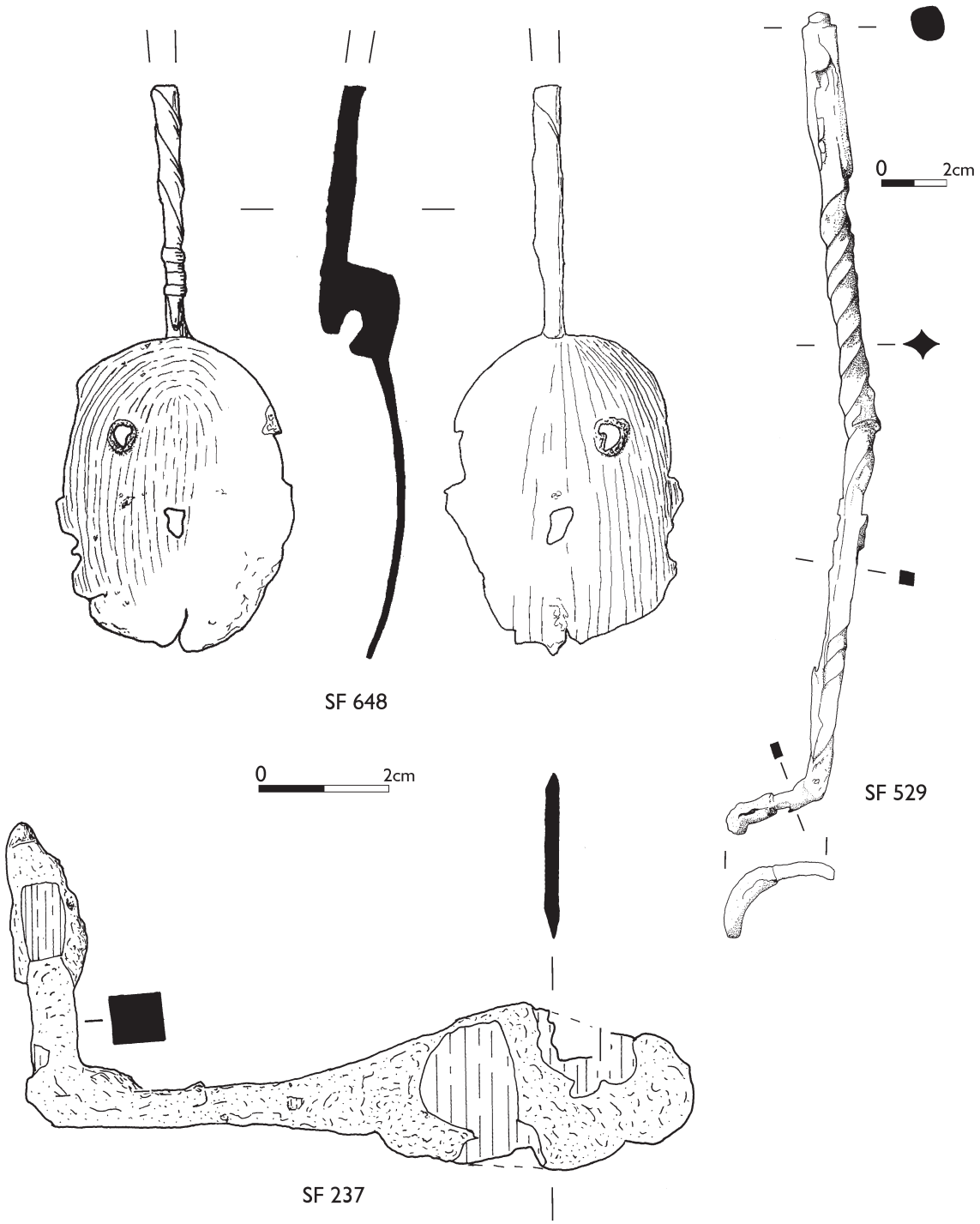


Figure 22 Knife, spoon and household utensil. Scale 1:1 except SF 529 at 1:2

IV. Furnishings and Household Equipment

Summary
A small number of objects associated with household furnishings and equipment were found on this site, perhaps (as for the objects associated with dress and personal grooming) reflecting the industrial nature of the settlement and lack of domestic deposits excavated. Several objects however, hint at the activities that would have taken place including a knife and spoon for probable table use, also a possible flesh hook for use in the kitchen. Several fragments from prismatic glass bottles and a jar were found, as well as the very decayed remains of a possible wine strainer. Lead strapping that would have bound a box has been found as well as several upholstery tacks for securing soft furnishings. A small but interesting assemblage.

Knife

(Figure 22)

SF 237 Narrow iron knife blade with tang on line with straight back. The blade is heavily corroded and incomplete, while the tang had been bent to 90º. A similar example was found at Caister-on-Sea, Norfolk (Mould 1993a fig. 93 608).
(516) quarry pit 515, Period 2.3

Spoon
(Figure 22)

SF 648 Copper alloy oval spoon bowl and incomplete offset handle, coated with tin (that imitates silver). A common 4th century type, a similar example was found at Caister-on-Sea, Norfolk (Sherlock 1993 fig. 64 no. 343).
(932) unstratified

Household Utensil
(Figure 22)

SF 529 Iron object with a long tapering square shank with the middle part twisted to form a break between the upper and lower parts. The end of the shank is bent away from the main body at 90º and curved (this is an adaptation to the original design although it is not clear whether it was accidental). A household utensil of some kind possibly an incomplete flesh hook or ladle. Similar objects have been found at the Roman small town of Scole, Norfolk (Rogerson 1977 fig. 61 no. 14) and at Homersfield, Suffolk (Smedley and Owles 1959, 182–3).
(458) quarry pit 537, Period 2.3

Vessels (glass and copper alloy)
(Unillustrated)

SF 336 Fragments of thin sheet of copper alloy that have been punctured and moulded, the exterior surface is sooted. X-ray shows the survival of an *in situ* rivet. It is possible that this may be the remains of a wine strainer that was exposed to heat during preparation of the beverage. Unfortunately it is too fragmentary to draw.
(531) quarry pit 529, Period 2.3

SF 240 Square glass bottle base fragment, the metal is blue/green and there is a single raised circle on the base. A long-lived form *c*.mid 1st-late 2nd centuries AD, but particularly common from the late 1st century AD (Price and Cottam 1998, 195–198 fig. 89).
(458) quarry pit 537, Period 2.3

SF 244 Glass bottle body fragment, the metal is pale green with dark specks and heavily bubbled. Although this shard is undiagnostic of any specific form the colour and quality of the glass suggest a 4th century AD date (Price and Cottam 1998, 16). This glass was retrieved from the upper fill of the quarry pit and may be intrusive to the main deposit.
(516) quarry pit 515, Period 2.3

SF 276 Square glass bottle base fragment, the metal is pale green and heavily bubbled. The fragment is thin walled, flat, with part of a slight raised quarter circle design surviving. Very bubbly thin walled examples of this vessel type are known to occur in 2nd century deposits (Price and Cottam 1998, 194).
(458) quarry pit 537, Period 2.3

SF 294 Glass bottle base fragment, the metal is blue/green and heavily bubbled. The fragment is thick walled and at sometime has been reused or grozed on one edge. Its probable date of manufacture would have been between the late 1st to 2nd centuries AD.
(507) quarry pit 502, Period 2.3

SF 337 Wide mouthed glass jar with a fire-rounded rim, the metal is pale green and bubbled. The rim has a reverse 'S' profile, although this example is irregular and may be a second. The technique of softening a sheared edge (known as fire rounding) was most common between the mid 2nd and mid 3rd centuries AD. Similar forms have been found at Caister-on-Sea, Norfolk (Price and Cool 1993a fig. 132 catalogue numbers 108 and 109).
(506) ditch 506, Period 2.1

Box Fitting
(Figure 23)

SF 241 Incomplete lead rectangular strip, or strap, with two iron rivets *in situ*. A possible box fitting, although a lead example would be rare. Similar to the copper alloy box fittings found at Butt Road Colchester (Crummy 1983 85–87).
(458) quarry pit 537, Period 2.3

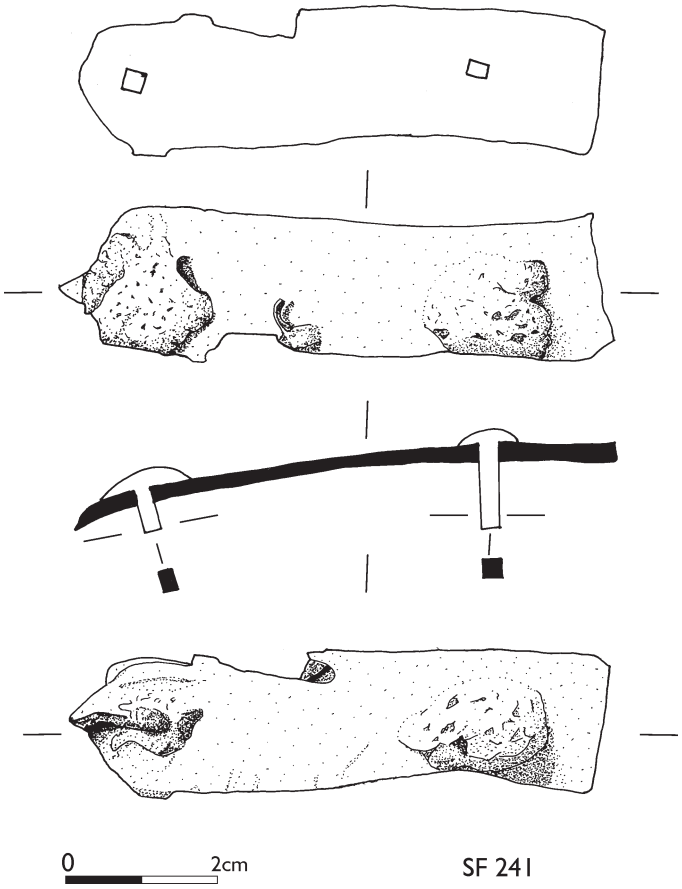


Figure 23 Box fitting. Scale 1:1

Upholstery Tacks
(Unillustrated)

SF 577 Iron tack (probably used for securing upholstery)
(426) deposit, Period 2.4

SF 709 Tiny iron tack with a square shank and round head probably used for securing upholstery or leather.
(579) deposit, Period 2.4

V. Occupations, Industry and Craft

Summary
The vast bulk of objects retrieved from this site fall into this category as it includes the artefactual evidence for both pottery manufacture and use, as well as the various stages of iron production. Corroboration of other activities was also found however, with the recovery of additional artefacts. These include: a sewing needle and a loom weight associated with textile and needlework, bone and antler knife handle blanks that may have been worked on site, a significant coin assemblage and scale-pan fragment that give some indication of the commercial activity taking place. A collection of quern and hone stones was also found.

Pottery Manufacture

The Pottery

Summary

This large pottery assemblage is of regional significance. It is the first ceramic assemblage of this size excavated on the west coast of Norfolk on a non-military site and provides evidence for manufacture of a type of utilitarian pottery previously described as Nar Valley reduced ware (Gurney 1990). In light of the new evidence described here, whereby it can be seen that pottery of similar type was made not only within the Nar Valley but also within the Ingol Valley at Snettisham, it is suggested that this material be renamed 'West Norfolk reduced ware'.

Pottery of the type produced at Snettisham was found in large quantities at the Saxon shore fort at Brancaster (Andrews 1985, 123–4) and this military installation may have provided the main market for the pottery produced at Snettisham.

Much of the pottery retrieved shows no evidence for use (wear, lime, soot or other residues) and is consistent with dumped waste from unsuccessful kiln loads. The pottery was found in association with two upstanding pottery kilns, kiln furniture, fired clay and ashy deposits. The types of vessels produced suggest large scale manufacture began in the mid 2nd century AD and slowed in the mid to late 3rd century AD with the production centre falling into recession by the 4th century AD.

Introduction

A total of 10,206 sherds, weighing 266,204kg (with an average sherd weight of 26.08g), were recovered from the excavation at Snettisham. The majority of this was Roman (Table 6), but small amounts of both pre- and post-Roman pottery were also recovered.

Era	*Quantity (sherd count)*	*Weight (g)*	*Weight (%)*
Prehistoric	56	2251	0.85
Roman	9911	260407	97.82
Post-Roman	239	3546	1.33
Total	10206	266204	100.00

Table 6 Pottery by era

Feature Type	*Quantity (sherd count)*	*Weight (g)*	*Weight (%)*
Topsoil	3091	100856	38.73
Pit	3094	83707	32.15
Ditch	1900	48272	18.54
Layer	658	8913	3.42
Unstratified deposits	476	8911	3.42
Road and road foundation	314	4912	1.89
Subsoil	282	2607	1.00
Well	69	2055	0.79
Post-hole	15	102	0.04
Gully	6	60	0.02
Buried Soil	6	12	<0.01
Total	9911	260407	100.00

Table 7 The Roman pottery listed by feature type

Most of the assemblage was recovered from the topsoil although pottery was also recovered from pits, ditches, gullies, roads, wells and post-holes (Table 7). The small amount of pottery that was retrieved from unstratified deposits has not been included in this analysis.

Fabrics

A total of forty-one individual fabric types were recorded. By far the most common however, are those coarse wares manufactured at Snettisham, the sandy grey ware (36.68%) and the West Norfolk reduced ware (33.21%) which is visually identical to pottery produced in the Nar Valley (Gurney 1990).

Fabric description

Fabrics are listed in alphabetical order. Fabric name, abbreviation, description and published reference are given, also a summary of vessel types.

Amphora
AMP
Description: Tyers 1996, 87. Tomber and Dore 1998, 82–113.
Vessel types: Dr2–4 and Dr20.

Brampton/Spong Hill grey ware
BSHGW
Description: Green 1977, 31–92.
Vessel types: Flagon:1.3. Narrow mouthed jars: 2.1, 2.1.1, 2.3. Beaker: 3.8.2. Medium mouthed jar: 4.14. Wide mouthed jar: 5, 5.6. Dishes and bowls: 6.11.1, 6.19.1.

Brampton/Spong Hill oxidised ware
BSHOW
Description: Green 1977, 31–92 and Tomber and Dore 1998, 170.
No vessel types identified.

Caistor white ware
CAISTOR WW
Description: Swan 1981, 136–144.
Vessel type: Mortaria:7.13.1.

Chalky ware
CW
A powdery soft handmade fabric of pale brown colour, distinctive due to the frequent large chalk inclusions.
No vessel types identified.

Colchester colour coat
ColCC
Description: Tyers 1996, 167–168 and Tomber and Dore 1998, 132.
No vessel types identified.

Colchester/Ellingham white ware
C/EWWM
Description: Hartley and Gurney 1997, 21–23.
Vessel type: Mortaria: 7.

Fine sandy grey ware
FSGW
Description: Andrews 1985, 92–93 (RW10).
Vessel types: Beakers: 3.1, 3.7, 3.11, 3.12. Medium mouthed jars: 4.4, 4.5.1, 4.5.2, 4.13. Wide mouthed jars: 5, 5.2, 5.2.3, 5.3, 5.4. Dishes and Bowls: 6.4, 6.14, 6.15, 6.15.1, 6.18, 6.19.6. Lid: 8.1.

Fine sandy reduced ware
FSRW
Essentially identical to the WNRW fabric, although slightly finer, used on more thin walled vessels and is decorated (burnished) more commonly.
Description: Andrews 1985, 89–90 (RW1).
Vessel types: Narrow mouthed jars: 2.1, 2.1.2. Beakers: 3.1, 3.6.1, 3.7, 3.7.1. Medium mouthed jars: 4.5, 4.5.1, 4.5.2, 4.8.1. Wide mouthed jars: 5, 5.2, 5.3, 5.4. Dishes and bowls: 6.5, 6.17, 6.17.1, 6.18, 6.19.3, 6.19.4, 6.19.6, 6.21, 6.22. Lid: 8.1.

Era	*Fabric*	*Sherd Count*	*Weight (g)*	*Weight (%)*
Pre-Roman		56	2251	0.85
Roman	Amphora	22	4986	1.87
	Brampton/Spong Hill grey ware	51	2154	0.81
	Brampton/Spong Hill oxidised ware	11	1975	0.74
	Black surfaced red ware	9	23	0.01
	Caistor white ware	1	168	0.06
	Colchester colour coat	2	3	<0.01
	Colchester/Ellingham white ware	9	1192	0.45
	Chalky ware	10	306	0.12
	Fine sandy grey ware	209	3341	1.26
	Fine sandy reduced ware	172	3265	1.23
	Horningsea ware	26	2604	0.98
	Mancetter-Hartshill white ware	8	218	0.08
	Micaceous reduced ware	105	1990	0.75
	Nene Valley colour coat	595	9915	3.73
	Nene Valley grey ware	4	50	0.02
	Nene Valley white ware	49	5066	1.90
	Nar Valley oxidised ware	43	2082	0.78
	Oxfordshire red colour coat	9	208	0.08
	Oxfordshire red ware	1	12	<0.01
	Oxfordshire white ware	2	46	0.02
	Patchgrove grog tempered ware	2	16	0.01
	Painted white ware	4	48	0.02
	Red colour coat	3	7	<0.01
	Red coarse ware	11	197	0.07
	Reduced ware, flint tempered	44	3073	1.15
	Reduced ware, vegetable temper	1	48	0.02
	Samian	285	6706	2.52
	Sandy grey ware	4590	97633	36.68
	Storage jar ware	9	843	0.32
	South Midland shell tempered ware	22	740	0.28
	Sandy oxidised ware	134	7258	2.73
	Shell tempered Dales ware	71	2312	0.87
	Shell tempered ware	101	3902	1.47
	Unspecified black burnished ware	33	922	0.35
	Unsourced colour coats	4	16	0.01
	Unsourced grey ware	20	153	0.06
	Unsourced red fine ware	5	5	<0.01
	Unsourced red ware	7	226	0.07
	Unsourced oxidised ware	198	6226	2.33
	Visible clay relict reduced ware	85	2068	0.77
	West Norfolk reduced ware	2944	88404	33.21
Post-Roman		239	3546	1.32
TOTAL		10206	266204	100.04

Table 8 Pottery listed by era, with the Roman fabrics listed in alphabetical order

Horningsea ware
HW
Description: Evans 1991, 35 and Tomber and Dore 1998, 116.
Vessel types: Wide mouthed jar: 5.5. Bowls: 6.15.

Mancetter-Hartshill white ware
MAHWH
Description: Tomber and Dore 1998, 189.
Vessel type: Mortaria: 7.

Micaceous reduced ware
MRW
Description: Gurney 1995, 102.
Vessel types: Narrow mouthed jars: 2.1.2. Beakers: 3.1, 3.7, 3.12. Medium mouthed jars: 4.1, 4.5, 4.5.1, 4.5.2, 4.8, 4.13. Wide mouthed jars: 5.3. Dishes and Bowls: 6.4, 6.15, 6.18, 6.19.1, 6.19.2, 6.19.3, 6.19.4.

Nar Valley oxidised ware
NVOW
Description: Gurney 1995, 101 and Tomber and Dore 1998, 171.
Vessel types: Narrow mouthed jar 2.1. Medium mouthed jars: 4.5.4, 4.101, 4.11. Dish: 6.19.4.

Nar Valley reduced ware
NVRW
All fabrics that previously would have been described under this heading have been regrouped under WNRW.

Nene Valley colour coat
NVCC
Description: Anderson 1980, 38, Howe *et al* 1980 and Tomber and Dore 1998, 118.
Vessel types: Flagon: 1.9, Narrow mouthed jar: 2.1.1. Beakers: 3, 3.1, 3.3, 3.3.2, 3.6, 3.6.1, 3.6.2, 3.6.3, 3.6.4, 3.6.7. Medium mouthed jars: 4.1, 4.5.2. Wide mouthed jars: 5.4. Dishes and Bowls: 6.2, 6.2.1, 6.4, 6.6, 6.14, 6.15.1, 6.17, 6.18, 6.19, 6.19.1, 6.19.2, 6.21.5. Mortaria: 7.9.1, 7.9.2.

Nene Valley grey ware
NVGW
Description: Anderson 1980, 38; Howe *et al* 1980.
Vessel types: Medium mouthed jars: 4.1, 4.5.2. Bowl: 6.5.

Nene Valley white ware
NVWW
Description: Anderson 1980, 38; Howe *et al* 1980 and Tomber and Dore 1998, 119.
Vessel types: Mortaria: 7, 7.9.1.

Oxfordshire red colour coat
ORCC
Description: Young 1977, 123 and Tomber and Dore 1998, 176.
Vessel types: C55, C61, C81.

Oxfordshire red ware
ORM
Description: Tomber and Dore 1998, 176.
No vessel types identified.

Oxfordshire white ware
OWM
Description: Tomber and Dore 1998, 174.
Vessel type: Mortaria: 7.

Painted white ware
PWW
Description: Lyons 2003, 99.
Vessel type: Bowl: 6.15.

Patchgrove grog tempered ware
PGTW
Description: Tomber and Dore 1998, 167.
No vessel types identified.

Red coarse ware
RCW
Mis-fired local grey wares.
Vessel type: Dishes and Bowls: 6.8, 6.9, 6.17.

Red colour coat
RedCC
Miscellaneous products.
Vessel type: Beaker: 3.1.

Reduced ware, flint tempered
RW(f)
Description: Lyons 2000, 213 (RB 95)
Vessel type: Lid: 8.1.

Reduced ware, vegetable temper
RW(v)
Description: Lyons 2000, 213 (RB 91)
No vessel types identified.

Samian
SAM
Description: Webster 1983, 7 and Tomber and Dore 1998, 25–41.
Vessel type: Dr15/17, 18/31, 18/31 or 31, 18/31 or 31R, Dr27, Dr30, Dr31, Dr31R, Dr32, Dr33, Dr35, Dr36, Dr37, Dr38, Dr40, Dr44 or 81, Dr45, Dr79, Dr79R, Dr80, Dr81, Curle 15, Curle 21, O+P LV13.

Sandy grey ware
SGW
A hard, fairly rough fabric, in which colour varies from grey to dark grey to sometimes greyish brown. Frequent sub-angular quartz grains together with sporadic flecks of mica form the main inclusions. The majority of pottery produced at Snettisham was produced in this fabric.
Description: Andrews 1985, 92–93 (RW10).
Vessel types: Flagons: 1, 1.9, 1.9.1. Narrow mouthed jars: 2.1, 2.1.1, 2.1.2, 2.2, 2.4, 2.7. Beakers: 3.1, 3.4.1, 3.6.1, 3.7, 3.10, 3.10.1, 3.10.2, 3.10.3, 3.11, 3.12, 3.14. Medium mouthed jars: 4, 4.1, 4.4, 4.5, 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.6, 4.6.1, 4.8, 4.8.1, 4.10.1, 4.10.2, 4.10.3, 4.11, 4.13, 4.13.1, 4.13.2, 4.13.3, 4.15. Wide mouthed jars: 5, 5.1.2, 5.2, 5.2.1, 5.2.2, 5.2.3, 5.3, 5.4, 5.6, 5.7. Dishes and Bowls: 6, 6.2, 6.3, 6.4, 6.4.2, 6.5, 6.9, 6.14, 6.15, 6.15.1, 6.15.2, 6.16, 6.17, 6.17.1, 6.17.6, 6.18, 6.18.2, 6.18.3, 6.19, 6.19.1, 6.19.2, 6.19.3, 6.19.4, 6.19.5, 6.19.6, 6.21, 6.21.1, 6.21.5, 6.22. Lids: 8, 8.1. Oddity: 9.3.

Sandy oxidised ware
SOW
Description: Andrews 1985, 90 (OW1).
Vessel types: Narrow mouthed jar: 2.1.1. Medium mouthed jars: 4.10.2, 4.14, 4.15, 4.16. Wide mouthed jar: 5.4.

Shell tempered Dales ware
STDW
Description: Loughlin 1977, type 108 and Tomber and Dore 1998, 157.
Vessel types: Medium mouthed jars: 4.13.2, 4.13.3.

Shell tempered ware
STW
Description: Tomber and Dore 1998 212.
Vessel types: Narrow mouthed jar: 2.1. Medium mouthed jars: 4.5.1, 4.5.4, 4.6.1. Lid: 8.1.

South Midland shell tempered ware
SMSTW
Description: Brown 1994, 51 and Tomber and Dore 1998, 115.
Vessel types: Medium mouthed jars: 4.5, 4.5.1, 4.5.2, 4.5.3, 4.5.4. Lid: 8.1.

Storage jar ware
SJW
Description: Gurney 1995, 101.
No vessel types identified.

Unspecified black burnished ware
UBB
Descriptions: Gurney 1995, 101 and Andrews 1985, 93.
Vessel types: Beakers: 3.1, 3.12. Wide mouthed jars: 54.3, 5.4. Dishes: 6.17, 6.17.1.

Unsourced colour coats
UCC
This fabric number is a general identifier for all colour coated fine wares not defined elsewhere.
No vessel types identified.

Unsourced grey ware
UGCW
Fabrics vary, but are probably locally made.
Vessel types: Narrow mouthed jars: 2.1.1. Medium mouthed jars: 4.13, 4.13.1. Wide mouthed jars: 5.3.

Unsourced oxidised ware
UOW
Description: Andrews 1985, 94–95 (OW2).
Vessel types: Flagons:1, 1.2, 1.7, 1.9. Medium mouthed jars: 4.5.2. Dish: 6.19.3.

Visible clay relict reduced ware
VRW
Description: Lyons 2000, 213
Vessel types: Narrow mouthed jars: 2.1.1, 2.2. Beaker: 3.1. Medium mouthed jar: 4.13. Wide mouthed jar: 5.1.1, 5.2.2, 5.3. Dish: 6.19.2.

West Norfolk reduced ware
WNRW
A hard rough fabric, very dark grey throughout, with a moderate amount of quartz and the odd fragment of flint. Visually identical (although no thin section analysis has yet been undertaken) to pottery fabrics produced at Pentney, Shouldham and Middleton in the Nar Valley, West Norfolk. This was the second most common fabric produced at Snettisham.
Description: Andrews 1985, 89–90 (RW1) and Gurney 1990, 89.
Vessel types: Narrow mouthed jars: 2.1, 2.1.1, 2.1.2. Beakers: 3.1, 3.3.1, 3.6, 3.7, 3.11, 3.12. Medium mouthed jars: 4, 4.1, 4.4, 4.5, 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.6, 4.8, 4.9, 4.10, 4.10.1, 4.11, 4.13, 4.13.1, 4.14, 4.15, 4.16. Wide mouthed jars: 5, 5.2.2, 5.3, 5.4, 5.6, 5.7. Dishes and Bowls: 6.3, 6.5, 6.15, 6.15.3, 6.17, 6.17.1, 6.17.2, 6.17.3, 6.18, 6.19, 6.19.1, 6.19.2, 6.19.3, 6.19.4, 6.19.6, 6.21, 6.21.3, 6.21.5, 6.22. Lid: 8.1.

Forms

The vessels produced at Snettisham are best described as a mixture of local Black Burnished Ware 2 (Tomber and Dore 1998, 131) copies and Icenian rusticated types (Swan 1981, 146–147). The most frequently produced

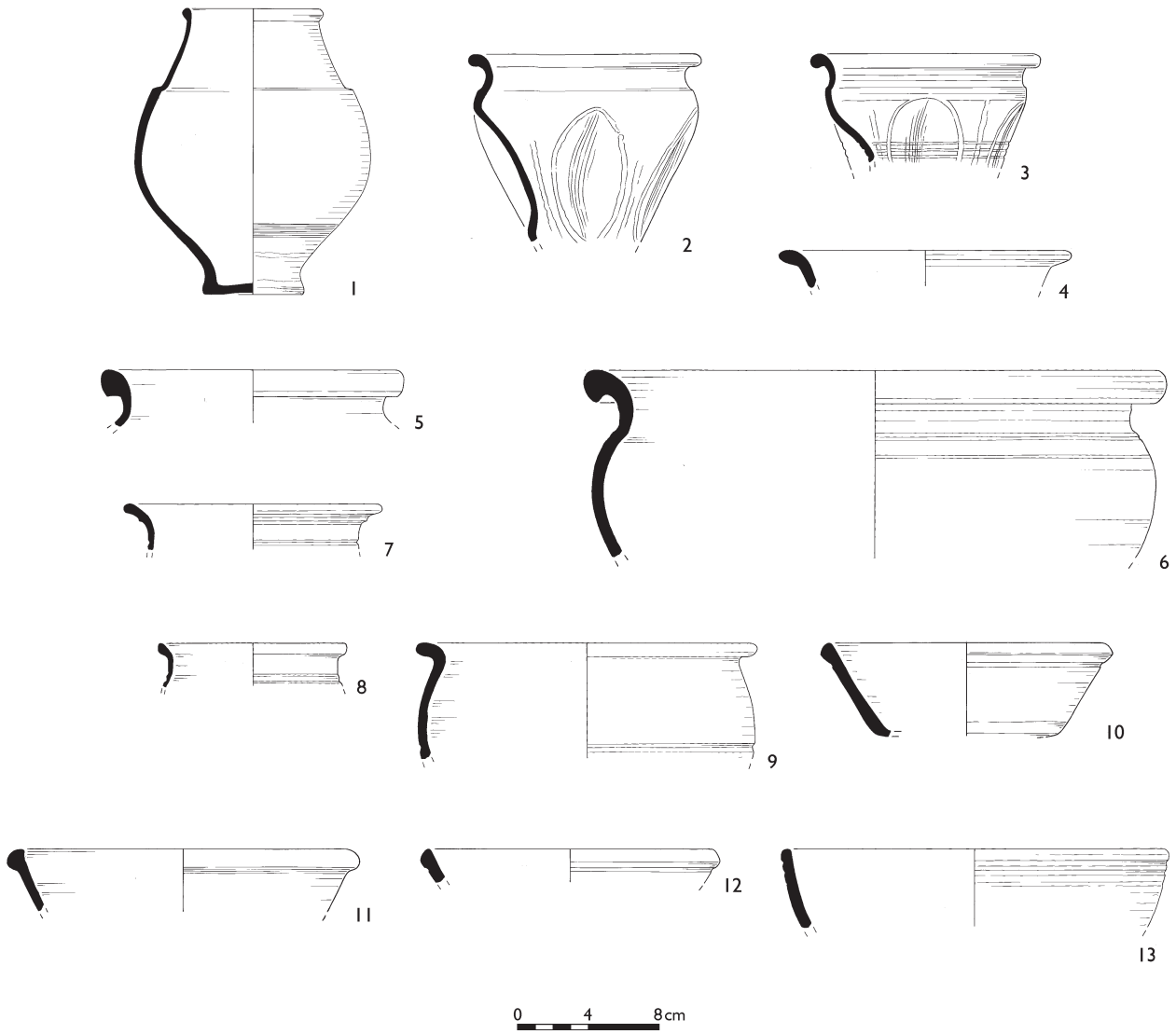


Figure 24 Pottery from quarry pit *295* (Trench 2)

ceramic vessel types manufactured at Snettisham in the prolific SGW fabric were narrow mouthed jar type 2.1, medium mouthed jars type 4.5, 4.8.1, 4.10.3 and 4.13, wide mouthed jars 5.2.2, 5.2.3, 5.4 and dish 6.18. These vessels were most often decorated with area burnishing, burnished cross-hatch or vertical lines but a combination of incised lines, grooves and folds, coarse rouletting, combed wavy lines and rustication were also used. The second most frequent fabric WNRW produced a similar range although the emphasis was more on straight-sided dishes. The most common types produced were the narrow mouthed jar type 2.1, medium mouthed jars and storage jars 4.5.1, 4.11, 4.15 and 4.16, wide mouthed jar type 5.3 and dishes types 6.17.1, 6.18, 6.19.4 and 6.19.6. For this fabric although area burnishing and burnished design was still common, rustication was the most common motif used, frequently in combination with incised lines and grooves.

Illustration Catalogue

This is not a complete type series as the types of pottery produced at Snettisham are not unique and published examples can be found elsewhere. Groups of sherds for illustrations have been selected to demonstrate the range of pottery in use at Snettisham over time.

Quarry Pit 295, Trench 2 Period 2.3

(294) — upper fill
(Figure 24)

1. 3.1, UBB; of BB2 type, flaw in base — possibly a second. This vessel form was also identified in the NVCC fabric, but the rim was too fragmentary to illustrate.
2. 3.3.1, WNRW.
3. 3.3.1, WNRW.
4. 4.1(ish), SGW.
5. 4.5.4, NVRW.
6. 4.15, WNRW; exterior burnish.
7. 5.2.2, VRW.
8. 5.3, VRW.
9. 5.4, WNRW; burnished exterior.
10. 6.18, WNRW; burnished inside and out.
11. 6.18.3, SGW; exterior burnish.
12. 6.19.4, NVRW; burnished inside and out.
13. 6.19.6, WNRW; exterior burnish.
14. Dr37, SAM, too fragmentary to illustrate.

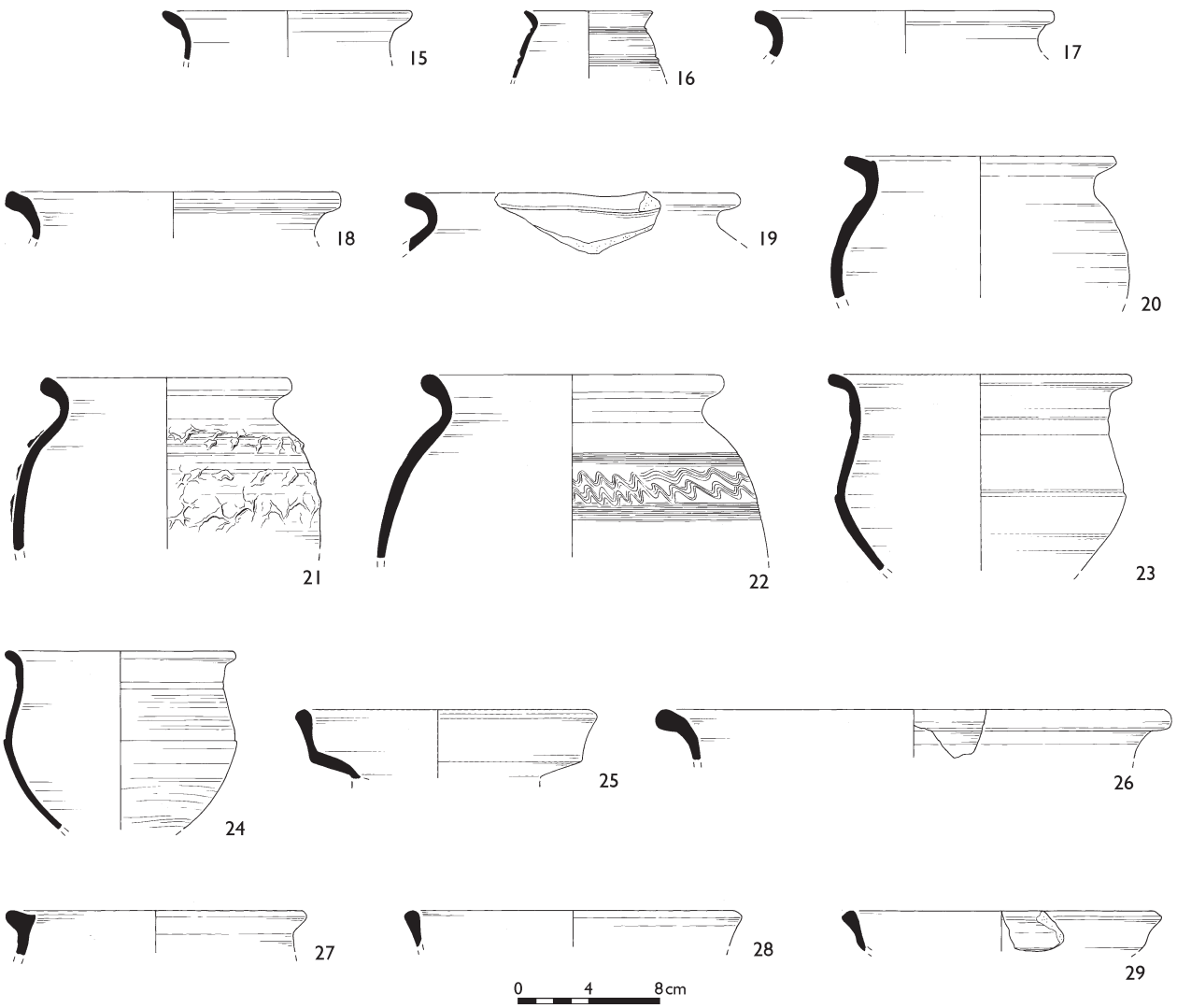


Figure 25 Pottery from the primary deposit *533* of ditch *532* (Trench 5). Scale 1:4

Ditch 532, Trench 5 Period 2.3
The deposits within this feature are consistent with successive kiln dumps.

(533) Primary fill
(Figure 25)

15. 3.1, SGW.
16. 3.7, FSGW, small example ?miniature.
17. 4.1, SGW; cracked/waster.
18. 4.4, SGW.
19. 4.5.1, SGW; waster.
20. 4.4, SGW; two joining sherds that have weathered differently.
21. 4.10.1, SGW; accidental glaze — slight second.
22. 4.10.3, SGW.
23. 5.2.3, SGW; main vessel type found from kiln dump 2 examples illustrated out of 11 found.
24. 5.2.3, SGW;
25. 6.9, RCW.
26. 6.15, BSRW.
27. 4.4, BSRW.
28. 6.19, SGW.
29. 6.22, SGW.

(534) — Upper fill
(Figure 26)

30. 2.1.0, SGW.
31. 2.1.1, SGW.
32. 4.5.1, SGW.
33. 4.5.2, SGW.
34. 4.10.3, SGW.
35. 5.2.2, FSGW.
36. 5.2.3, FSGW; very pale fabric. This is the main vessel type in this deposit, 25 examples were found in this layer alone.
37. 6.14, FSGW; damaged flange.
38. 6.17.2, WNRW; miniature vessel.
39. 6.21.5, WNRW; internal sooting suggests it may have been used as a lid.
40. 6.22, SGW.
41. 8.1, FSGW; very large example with a diameter of 28cm.

Quarry Pit recut 751, Trench 3 Period 2.4
This pottery is consistent with having been utilised, although much of it was probably produced on site.

(447) — upper fill
(Figure 27)

42. Type 1, UOW.
43. 3.10.1, SGW.
44. 4.5.2, SGW, heavily sooted cooking pot.
45. 4.13.1, SGW.
46. 6.18, SGW, internal burnish.
47. 6.21, FSRW.
48. 7.14.1, NarVWW mortarium with flint trituration grits, many of which are dark red.

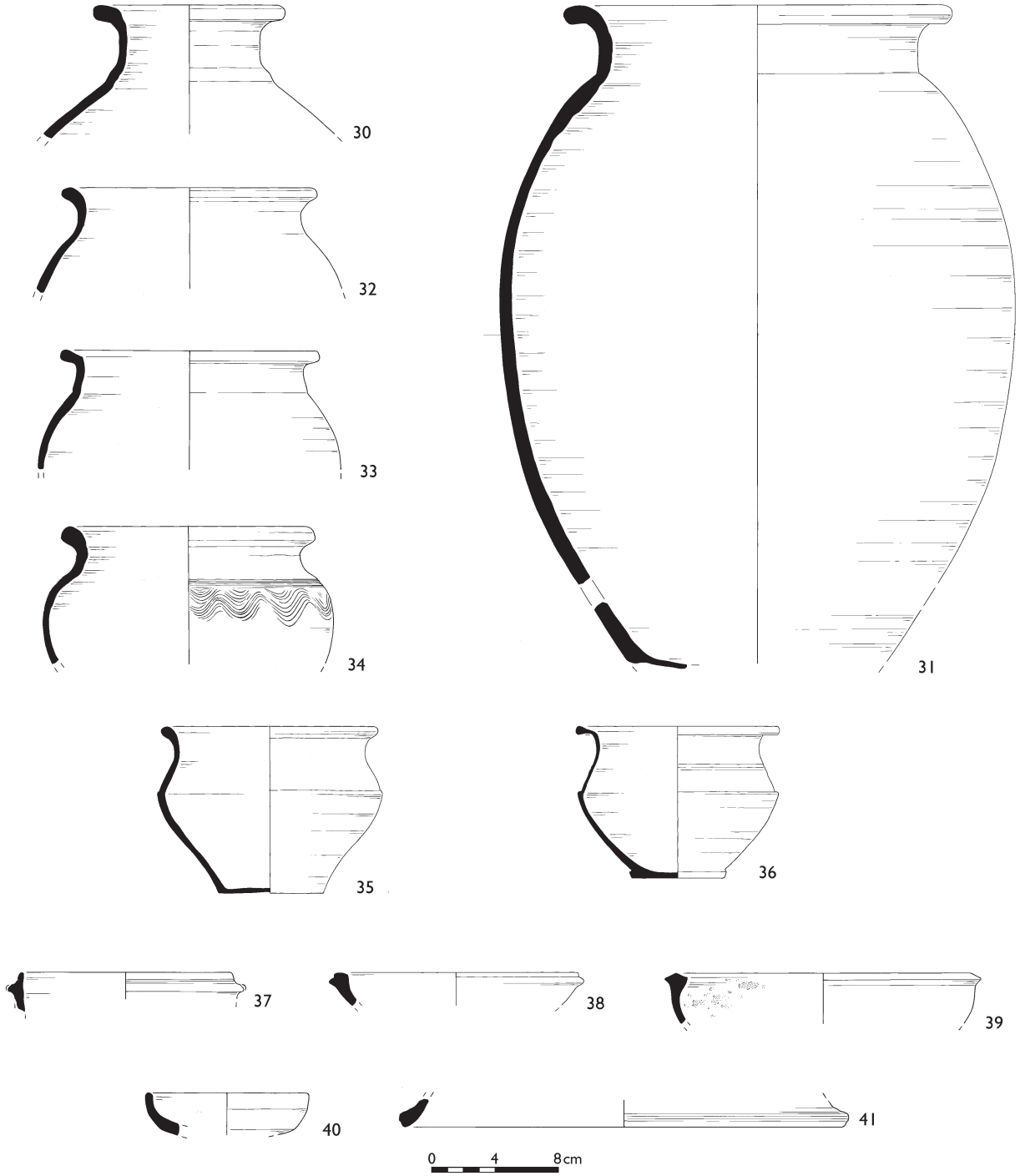


Figure 26 Pottery from the upper fill *534* of ditch *532* (Trench 5). Scale 1:4

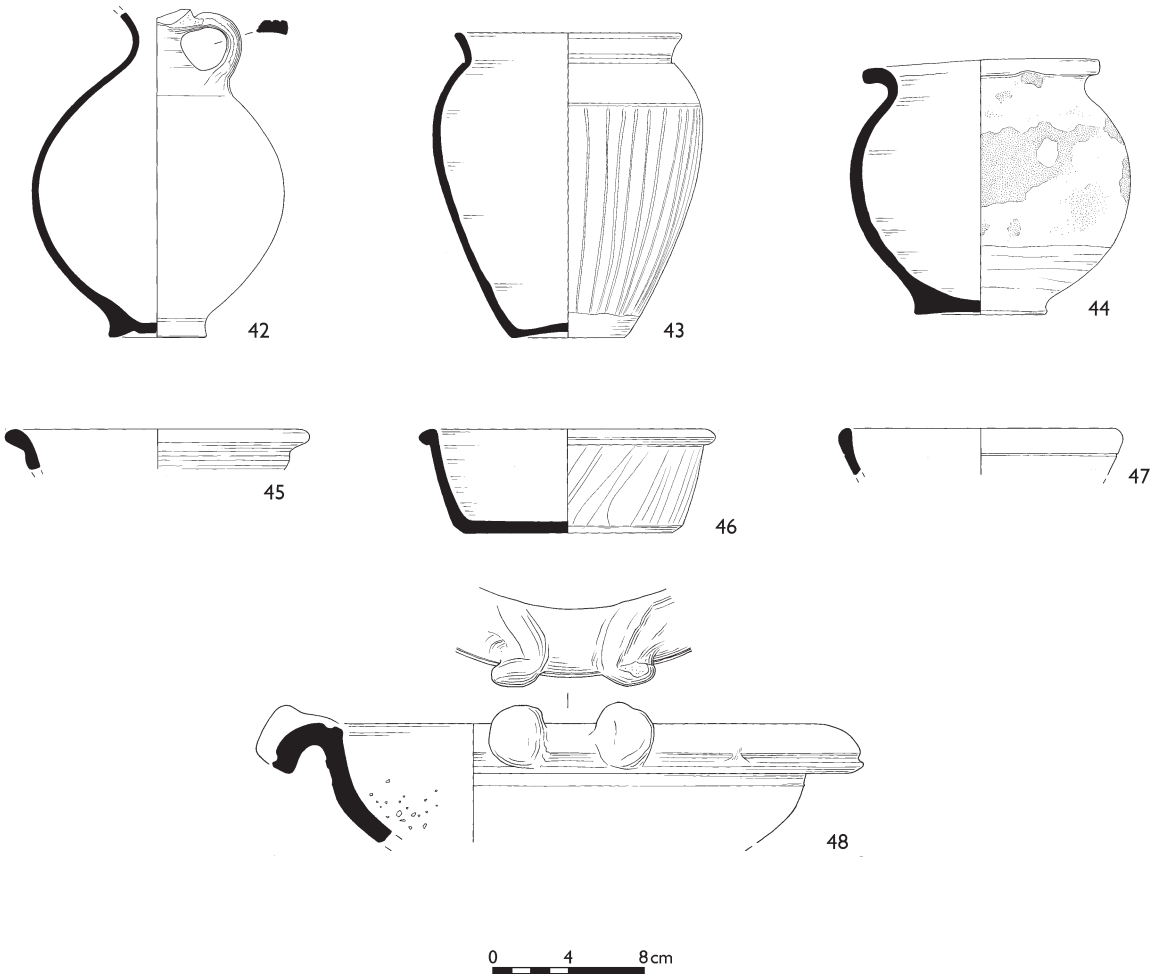


Figure 27 Pottery from the upper fill *447* of quarry pit re-cut *751* (Trench 3). Scale 1:4

Quarry pit 537, Trench 12 Period 2.3
All of the material recovered from this feature has been heavily used; either for cooking, general kitchen use or as table wares. Much of this pottery was probably produced and utilised at Snettisham.

(458) upper fill
(Figure 28)

49. 2.1.2, WNRW.
50. 3.1, NVCC.
51. 4.5.2, WNRW.
52. 4.6, WNRW.
53. 4.11, WNRW
54. 4.15, WNRW.
55. 4.16, SOW; possible batch mark on rim.
56. 5.4, WNRW; external burnish.
57. 5.5.4, SGW.
58. 6.6, NVCC; samian copy.
59. 6.7, ORCC.
60. 6.15, SGW.
61. 6.17.1, WNRW; burnished inside and out.
62. 6.17.2, WNRW, burnished inside and out.
63. 6.18, WNRW.
64. 6.19.3, WNRW; burnished inside and out.
65. 6.19.6, WNRW, heavy external sooting.
66. 6.21.5, SGW.
67. 6.22, WNRW, external burnish.
68. 7.8.7, Oxfordshire white ware mortaria.
69. 7.9.1, Nene Valley WW Mortaria.
70. 8.1, WNRW; burnished on the inside.
71. Dr 80, CG, stamped.

Chronology
(Figures 29 and 30)

The Roman pottery was examined to establish how the use of fabrics changed through time. Only common fabrics that were found in considerable quantities throughout the Roman period and are particularly time sensitive were included in this analysis. The four fabrics chosen were: SGW and WNRW coarse wares, SAM and NVCC fine wares. It is very clear that Period 2.3 is the main period of ceramic activity on the site, when both the coarse wares (a product of industry and domestic use) and the more exotic fine wares (for domestic use only) are frequently found. Moreover, while a greater percentage of SGW than WNRW is found in Periods 2.1–2.4, in the later part of the Roman period when activity at Snettisham decreases generally, (Period 2.5), WNRW continues in use and has become the more common of the two.

It is worthy of note that there is little samian from Period 2.1, it is more common in Period 2.2, with the largest proportion being retrieved from Period 2.3, the supply diminishing in Period 2.4 and almost totally absent in Period 2.5. This pattern fits very well with what is understood about samian importation during the Roman period (Tyers 1996, 105–114). The evidence for NVCC fits equally well with what is understood about the production and distribution of this fabric (Tyers 1996, 173–175). NVCC does not arrive in large quantities at Snettisham until Period 2.3 when it is very well

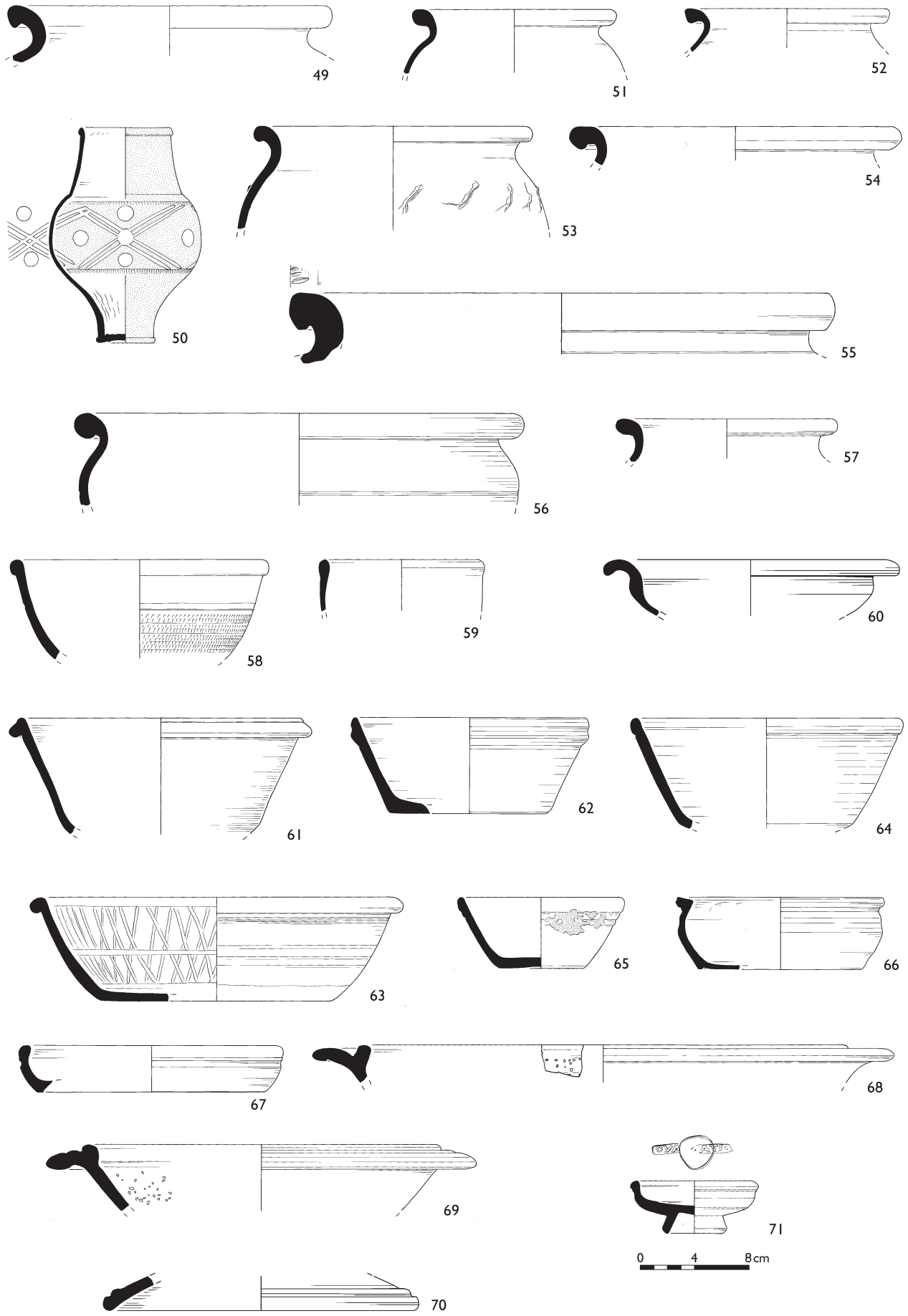


Figure 28 Pottery from the upper fill *458* of quarry pit *537* (Trench 12). Scale 1:4

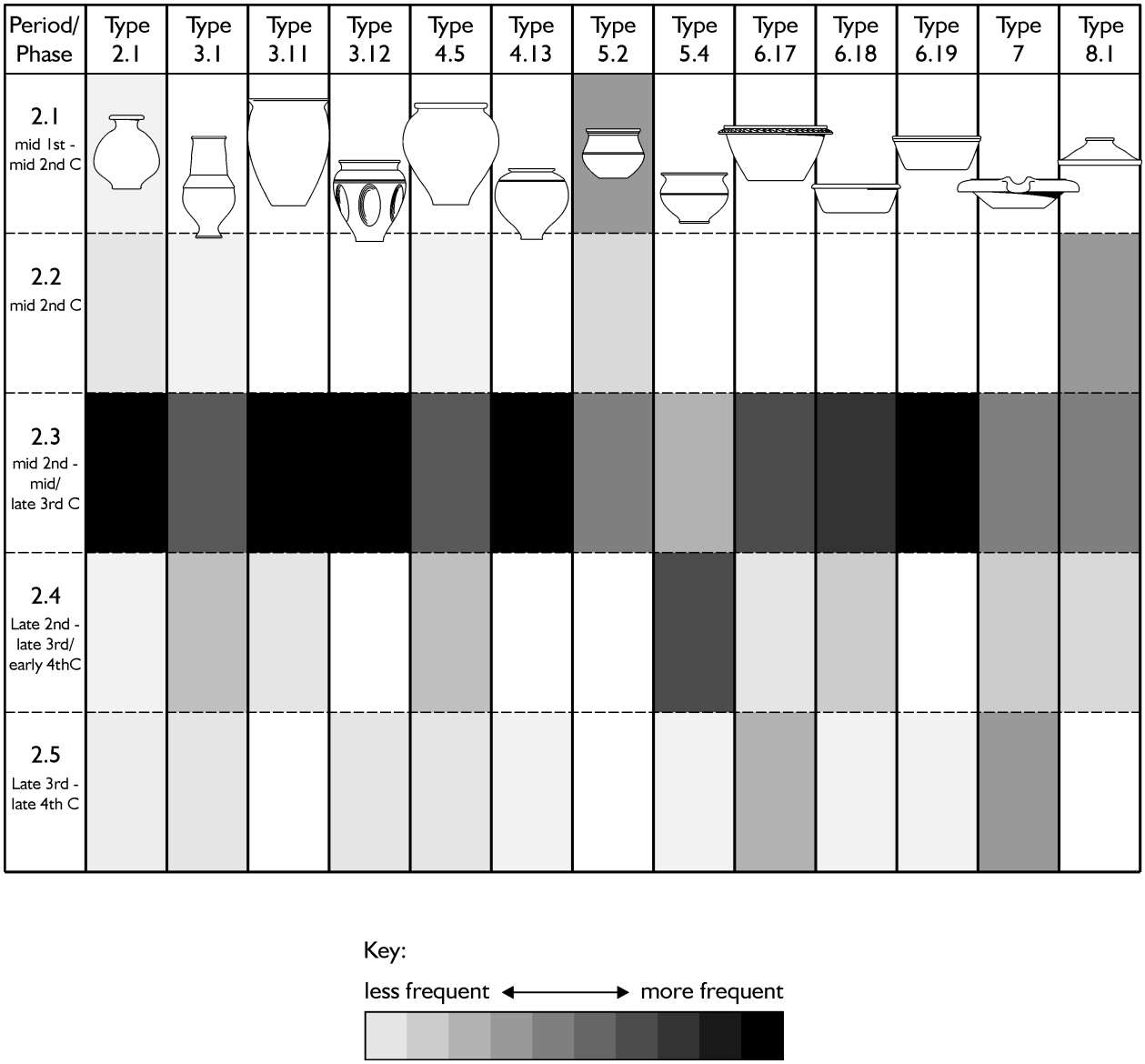


Figure 29 The frequency of the main Roman pottery types through time

represented and although sparse in Period 2.4 it has a late surge in the 4th century, Period 2.5, when the supply of samian has all but disappeared. This demonstrates that NVCC was supplied to Snettisham into the 4th century AD, probably replacing samian as high quality tableware.

The wide mouthed jar type 5.2 was the only vessel to be commonly found in the early Roman period at Snettisham. An example of this form (Figure 9, 1) was found in Kiln 1 and likely to be a product of it. By Period 2.2 other vessel types such as the narrow mouthed jar (type 2.1) and the utilitarian medium mouthed jar (type 4.5) are making an appearance with the wide mouthed jar (type 5.2) declining. In Period 2.3 when the pottery production industry at Snettisham was thriving this is when the majority of most vessel types are found with all (apart from the wide mouthed jar type 5.4) at their most frequent. Those deposits that can be isolated to Period 2.4 (which tend to be domestic deposits — such as the pottery retrieved from the backfill of the quarry pit recut *751* (Figure 27) — show the tall necked beaker (type 3.1), the medium mouthed jar (type 4.5) and the wide mouthed jar (type 5.4), with the dish (type 6.18) and mortaria (type 7.0)

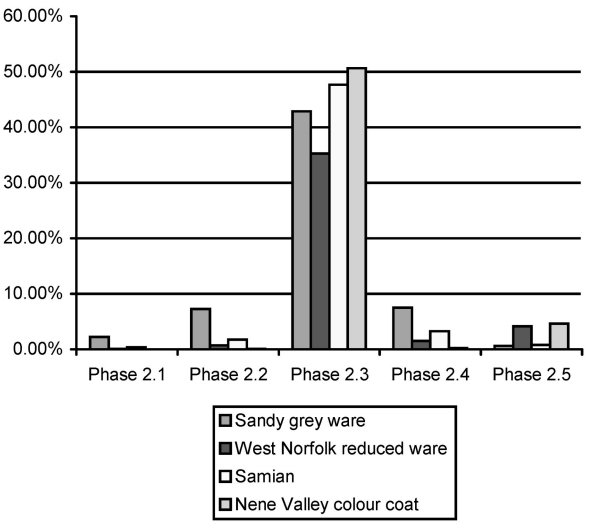


Figure 30 Percentage (by weight) of significant pottery fabrics throughout the Romano-British period

all significantly represented. At the end of the Roman era, Period 2.5, when industry and settlement at Snettisham are in decline, although all the basic vessel types are still present a third of all the flanged straight-sided dishes (type 6.17) and mortaria (type 7.0) are found.

Discussion

There are two main aspects to the site's Roman pottery assemblage. The first is the pottery that was manufactured and the second is the pottery that was utilised by the population in their homes.

Pottery production is known to have started at Snettisham on a small, quite experimental, scale at the end of the 1st century AD (Kiln 1). Large scale pottery production however, did not start until the mid-late 2nd century, reaching its peak in the 3rd century and declining by the end of that century. Kiln products are still found in 4th-century deposits — but these may be residual. Although only one kiln was excavated belonging to this period of industrialisation (Kiln 2) many more must have existed to produce the quantity of pottery wasters and seconds recorded within this assemblage. The type of pottery produced, local Black Burnished ware 2 copies and Icenian rusticated wares, were made in two main coarse ware fabrics: SGW and WNRW. These fabrics are largely contemporary, although WNRW seems to continue in use and maybe in production until the 4th century AD.

This pottery was made largely for external trade and the most likely market was the Saxon shore fort at Brancaster on the North Norfolk coast (Hinchliffe and Sparey Green 1985) that was established in the later part of the 2nd century AD and flourished in the 3rd and 4th centuries. Pottery of the type produced at Snettisham was found in large quantities at Brancaster (Andrews 1985, 123–4) although as the Snettisham kilns were unexplored at the time the Brancaster report was published the Shouldham kilns in the Nar Valley were provisionally put forward as the source of this pottery. An alternative source was not ruled out (Andrews 1985, 90) however, and the results of the recent archaeological work at Snettisham suggest it could have supplied SGW and WNRW to Brancaster in the 3rd century AD with the kilns in the Nar Valley supplementing this supply and taking over in the 4th century, picking up the gap in the market when recession hit Snettisham. Pottery of the type produced at Snettisham and the Nar Valley kilns has also been identified at a 3rd to 4th-century villa site in Gayton Thorpe (Atkinson 1929, de Bootman 1998) and a Saltern at Middleton (Darling 2001, 202–217). Both sites are close to the Nar Valley production sites at Shouldham, Pentney (de Bootman 1984) and Blackborough End, Middleton (Gurney 1990).

Reasonable access to traded products was available as samian (from Roman Gaul) and amphora (from south Spain) are both represented here. There are also a few unusual imports identified from domestic sources such as mortaria from Mancetter-Hartshill in Warwickshire and a jar from Patchgrove in Kent.

Better-known trade links, seen previously within this part of the county at Brancaster Saxon shore fort, the villa at Gayton Thorpe and the Saltern at Middleton, are also found at Snettisham. Specialist wares were arriving from Colchester in Essex and from Oxfordshire to the south, from Lincolnshire and the South Midlands to the north and from the Nene Valley to the east. Small amounts of pottery were also arriving from other coarse ware manufacturers local to Norfolk and Suffolk, such as Brampton and Wattisfield. It is worthy of note however, that late Roman ceramic traded wares, such as SMSTW and ORCC, are only found in small quantities at Snettisham, while others such as Hadham wares (Tomber and Dore 1998, 151) are missing all together. This coincides with the evidence from the coin assemblage that trade was diminishing during the 4th century AD and that Snettisham was suffering the effects of a recession.

The Kiln Bars

(Unillustrated)

A total of eighty-nine separate kiln bar fragments were retrieved, none of them complete. They have a squarish section and are of the tapering 'cigar shaped' type common to north-west Norfolk. Some examples have finger-marks on the tip where they have been squeezed into shape, although no other evidence of manufacture (such as knife marks) was observed. This type of kiln bar has a distinct distribution pattern between the Middle Trent Valley and the river valleys radiating from the Wash basin (Swan 1984, 63). In this case they are a bluish grey colour (Munsell 4/10B) with no visible inclusions, although they have vegetation impression on all sides and numerous internal voids consistent with a vegetable temper having been used in their construction. The blue/grey colour of the kiln bars indicates that they were used in a reducing kiln, *i.e.* for the manufacture of grey ware pottery, which is consistent with the pottery wasters that were found on site.

The presence of kiln bars is evidence for the use of pottery kilns with some sort of pier or pilaster support (such as Kiln 1) or a central pedestal (such as Kiln 2). The kiln bars vary considerably in size (of unknown length x 30–64mm width x 32–70mm depth) which is normal for any kiln bar assemblage as substantial differences in the size of bars were essential for satisfactory arrangement in a single kiln (Swan 1984, 63).

Kiln bar fragments were recovered from most of the site in small quantities from stratified deposits. Two large unstratified dumps were recovered from the subsoil of Trenches 4 (thirty-seven pieces weighing 4.538kg representing 30.61% by weight) and 5 (nineteen pieces weighing 4.716kg representing 31.81% by weight). Examination of the site plan (Fig. 5) shows that neither Trench 4 nor 5 was located near the kilns already found. Large deposits of this kind of kiln furniture are consistent with the clearance of a kiln and therefore this is strong evidence for the presence of two or more kilns that have not been located during this excavation.

Metalworking

(Unillustrated)

Non-Ferrous Waste

The most abundant evidence for non-ferrous metalworking comes in the form of lead droplet waste, (eighty-four examples) although there is no conclusive evidence for its actual use in casting as no moulds were retrieved. Lead can be melted at a very low heat and can be the product of accidental fires. There is substantial evidence for the manufacturing of lead objects on this site with forty-four pieces of manufacturing debris, mostly off-cuts, found. There is also evidence for the use of lead

for pottery repairs with six examples of ovoid repair pieces recorded (SF 86, 107, 226, 279, 345 and 481). Several examples of riveted plates were found which were most likely used for repairs and patches of some sort (SF 75, 443 and 466). Full descriptions can be found in the archive.

Ferrous Waste
by Shadreck Chirikure and Sarah Paynter

Summary
A total of 133.5kg of iron-working debris was recovered, the vast majority of which was iron-smelting waste. An additional 8.8kg of iron-rich stone (from contexts which did not contain iron-working slag) was retained as part of the investigation of potential local ore sources. All of the slag from the site had been disposed of in ditches or pits or had been re-used. A large proportion of the waste was from mid to late Roman contexts, smelting probably taking place at a location near to the site. The slag produced was phosphorus-rich and therefore smelting is likely to have produced some phosphoric iron (stronger but more brittle than ordinary iron). The phosphorus was derived from an ore, likely to be concretionary ironstone nodules and possibly some ferruginous sandstone, obtainable locally from the Lower Greensand. A small amount of smithing slag was also identified. A stone-lined hearth *462* excavated at the site may have been used for ore roasting but alternatively it may simply have been lined with ferruginous sandstone.

Identification of Iron-working Waste
The metalworking waste from Snettisham was examined and categorised on the basis of its morphology. The assemblage included tap slag, other smelting slags, smithing hearth bottom slag, furnace/hearth lining, fired clay, fuel ash slag, iron fragments and some undiagnostic slag. Figure 31 shows the relative proportions of the different types of iron-working waste and includes the debris from all of the contexts except those where only iron-rich stone was found. Tap slag constituted almost three-quarters of the waste by weight, with a large proportion of the rest being iron-rich stone/ore and smelting slag. As tap and smelting slag are by-products of iron smelting it can be concluded that smelting was the main activity at the site. Of the contexts containing in excess of 2kg of metalworking waste, about half are mid to late Roman in date. The remainder include later material in addition to Roman, as well as unstratified and topsoil finds of uncertain date. Therefore smelting probably took place in the mid to late Roman period but there is insufficient evidence to determine whether it continued in later periods.

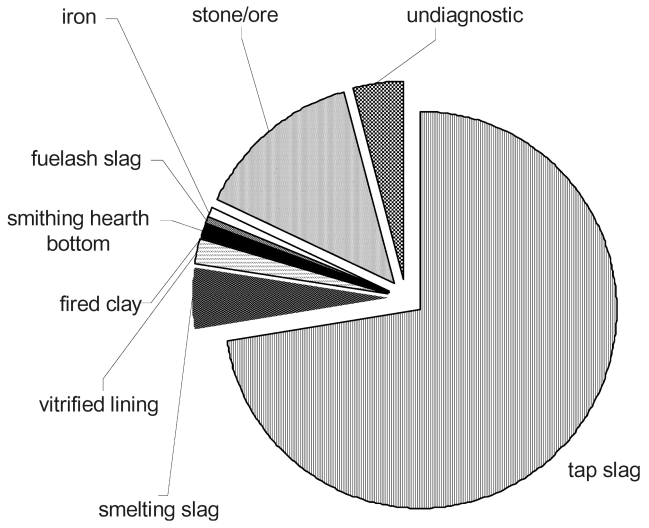


Figure 31 Proportions by weight of different types of iron working waste from Snettisham (from all contexts)

Smithing Slag: A small quantity, 1.3kg, of smithing slag was scattered about the site but was most commonly recovered from the topsoil with some found in mid to late Roman features. The iron produced by bloomery smelting was spongy and had to be consolidated by smithing to form a bar or billet for trading or for producing an object. Therefore some smithing debris would be anticipated from this site, although little was found in securely dated Roman contexts.

Furnace Lining: Fragments of heavily fired clay with a distinctive quartz-rich fabric and slag-lined surface were found amongst the assemblage. Since smelting furnaces and smithing hearths were constructed largely using clay, and both the smelting and smithing processes utilise high temperatures and produce slag by-products, it can be difficult to distinguish vitrified clay lining material derived from a smithing hearth from that derived from a smelting furnace. However since the great majority of the waste from this site consists of smelting raw materials (ore) and by-products (tap and smelting slag) it is likely that the majority of the vitrified lining is from smelting furnaces, discarded during the destruction, repair or rebuilding of the furnace. Analysis of the fragments detected in excess of 80wt% silica as a result of the large number of sub-angular to round quartz grains in the material. The majority of the quartz grains were less than 0.1mm in diameter. The practice of using very quartz-rich clay for furnace construction or lining, due to its temperature resistant properties, has been identified at other Roman sites, such as: Woolaston in Gloucestershire, Westhawk Farm in Kent and Laxton in Northamptonshire (Fulford and Allen 1992; Paynter 2002; Crew 1998).

Iron-rich Stone: Samples of iron-rich stone were collected in order to evaluate potential local sources of iron ore. The stone consisted predominantly of fine-grained, orange-coloured nodules and tabular sheets, and pieces of coarser ferruginous sandstone. Both types of stone were made up predominantly of hydrous iron oxides (goethite and lepidocrocite) with some iron oxide (hematite) and varying quantities of quartz grains.

Some samples had been heated in an oxidising atmosphere and were deep red or purplish-black in colour. In some instances this may be indicative of ore roasting, since archaeological evidence suggests that ore was often roasted prior to smelting in order to break up the stone and convert the other iron compounds present to oxides of iron (Pleiner 2000). The samples included ferruginous sandstone from hearth *462* in Trench 9 and quarry pit *355* in Trench 6 and a goethite nodule from the minor north-to-south

Site	Type	MgO	Al_2O_3	SiO_2	P_2O_5	SO_3	K_2O	CaO	TiO_2	MnO	FeO
Snettisham	nodules (9)	nm	3.8	13.0	1.1	0.2	0.2	0.5	0.4	0.3	80.4
	roastede nodule (5)	nm	2.7	19.6	0.5	0.2	0.3	0.3	0.4	0.3	75.7
	roasted sandstone (4)	nm	2.8	43.5	1.2	0.3	0.1	0.5	0.3	0.2	51.4
Ashwicken	roasted nodule	1.1	4.2	20.0	0.3	nm	nm	1.3	nm	0.9	72.3
West Runton	nodule	0.1	4.9	14.8	1.8	0.3	nm	0.7	0.3	0.9	78.0

Note: nm = not measured. For Snettisham, XRF analysis of 0.4mm diameter areas, number of analyses given in brackets, data normalised

Table 9 Average compositional data (wt%) for iron-rich stone from Snettisham, compared to literature data for roasted ore from Ashwicken and West Runton, Norfolk (Tylecote 1962a and b respectively)

roadside ditch *467* in Trench 9. An unroasted goethite nodule was also found in a layer sealing quarry pit *483* in Trench 9, alongside large amounts of metalworking waste.

Although all of the stone specimens analysed contained some impurities known collectively as gangue (predominantly silica) they nonetheless contained between 50wt% and 93wt% of iron oxide. The fine-grained goethite nodules had higher iron contents than the coarse-grained ferruginous sandstone. The bloomery smelting process was inefficient since the slag waste produced contained in excess of 60wt% iron oxide and so relatively rich sources of ore were required in order to extract iron metal successfully by this process. Therefore the iron-rich goethite nodules are likely to have made up a large proportion of the ore used. Some ferruginous sandstone may also have been smelted if mixed with some of the more iron-rich nodular ore, although sandstone with low iron contents would have been discarded.

The stone samples contained variable amounts of phosphorus oxide, with individual samples reaching levels of up to 2.2wt%. High levels of phosphorus are consequently also detected in the slag by-products of smelting and would be anticipated to also be present in some of the iron produced. The composition of the ore is similar to that described in the literature for other bloomery smelting sites in Norfolk (Table 9) although the manganese contents of the latter are rather higher.

Tap Slag: Fragments of tap slag were selected for analysis from the contexts where the largest amounts of iron-working debris were recovered, from pit *926* in Trench 4 and from deposit *579* in Trench 9. The average compositions of the samples are given in Table 10. The sample from *579* consisted largely of fayalite (iron silicate) laths and wustite (iron oxide) dendrites in a glass matrix, while that from *926* contained predominantly fayalite with small areas containing fine magnetite (iron oxide) dendrites. This sample had cooled slowly as the crystals within the tap slag had grown large enough to be visible with the naked eye. Many fragments of this coarsely crystalline slag were noted within the assemblage.

This compositional data compares well with that for tap slag from Ashwicken, near King's Lynn (Roman) and from West Runton (medieval) (Table 11). Bloomery tap slag from Norfolk (West Runton, Ashwicken and Snettisham) can be differentiated compositionally from slag from many other bloomery smelting sites because of its high phosphorus content. The manganese content of the Norfolk tap slags is variable, even within the same site, as illustrated by the Snettisham samples. Both the manganese and the phosphorus in the slag derive predominantly from the ore used.

Four smelting sites were identified outside Norfolk where phosphorus-rich bloomery slag was also produced and additional sites are likely to be found in the future as more material is analysed, particularly in these areas. Of the four sites two are in North Yorkshire (Baysdale and Ouse Gill), one is in Northamptonshire (Farthingstone) (all in McDonnell 1986) and one is in Kent. Of these, only Westhawk Farm near Ashford in Kent (Paynter 2002) is known to be Roman. The phosphorus-rich compositions of tap slag from these sites are given in Table 12, where they are compared to compositions of tap slag from some other Roman sites.

Soil Samples: Soil samples were collected from across the site. Although some of these contained small quantities of hammerscale, some slag and small fragments of oxidised-fired iron-rich stone (possibly ore fines, indicative of smelting), the majority contained only particles of highly fired clay, which was noticeably

Context	Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	SO3	K_2O	CaO	TiO_2	MnO	FeO
Pit *926*	0.04	0.21	1.92	30.79	1.12	0.17	0.47	1.87	0.08	0.86	62.46
Deposit *579*	0.12	0.23	2.04	17.36	1.63	0.27	0.16	0.81	0.08	0.08	77.22

Table 10 Composition of tap slag measured by EDS, average of four analyses, normalised

Site	MgO	Al_2O_3	SiO_2	P_2O_5	SO_3	K_2O	CaO	MnO	FeO
Ashwicken	1.4	3.3	21.8	1.8	-	0.0	0.4	0.5	70.8
West Runton	0.2	9.1	25.6	2.0	0.1	0.0	1.5	3.1	58.4
West Runton	0.8	10.1	26.9	1.6	0.1	0.0	1.4	3.0	56.2

Table 11 Composition of tap slag from Ashwicken and West Runton, Norfolk (Tylecote 1962a and b respectively)

Site	*Na_2O*	*MgO*	*Al_2O_3*	*SiO_2*	*P_2O_5*	*SO_3*	*K_2O*	*CaO*	*TiO_2*	*MnO*	*FeO*	*Ref*
Westhawk Farm	0.3	0.4	6.6	24.3	1.9	0.1	0.7	2.2	0.3	0.5	62.9	A
Farthingstone	0.2	0.2	8.8	43.8	1.7	0.2	1.7	0.6	0.6	0	42.3	B
Baysdale	0.3	4.1	9.7	27.4	2.5	0.5	2.2	10.4	0.6	1.3	41.1	
Ouse Gill	0.4	4.2	9.6	30.9	1.8	0.5	2.4	11.3	0.6	1.2	36.2	
Camerton	-	0.3	6.9	13.0	0.6	0.4	-	2.3	0.4	-	76.2	C
Wilderspool	-	0.0	2.1	29.6	0.3	-	-	1.7	-	-	66.2	
Sharpley Pool	-	1.1	6.0	32.8	0.0	0.0	-	1.9	-	trace	58.2	D
Worcester	-	1.3	6.0	16.5	0.0	0.0	-	3.1	-	0.2	72.8	

Table 12 Composition of phosphorus-rich tap slag from Westhawk Farm, Kent, Baysdale and Ouse Gill, Yorkshire and Farthingstone, Northamptonshire, compared to the composition of low-phosphorus Roman tap slag from other sites (A: Paynter 2002, B: McDonnell 1986, C: Tylecote 1990 and D: Morton and Wingrove 1969)

magnetic. The quantity of these particles was unusually large relative to the quantities observed in samples from other smelting sites (Paynter 2002) and so may be related to pottery production in the area. The largest quantities of hammerscale and oxidised stone fragments were found in samples from a burnt layer (*579*) — possibly related to hearth *462* in Trench 9 — and roadside ditch *M381* deposit *596* in Trench 4.

Discussion

Metalworking waste was found across the site in stratified deposits from pits, ditches and roads, the largest quantities of which were found in and around pits in Trenches 4 and 9. The only feature with evidence of having been heated *i.e.* having the potential to be an *in situ* metalworking feature, was hearth *462* in Trench 9. Although there was no slag in the hearth fill, large quantities of smelting debris were recovered from around the feature, deposit *577*. A small quantity of slag was also retrieved from a layer of burnt clay, *579*, thought to relate to the hearth. A soil sample BS 32 was taken from deposit *579*, which was red in colour and contained many highly fired, iron-rich stone fragments and some hammerscale. Unfortunately, the absence of large quantities of hammerscale and smithing slag from this area indicates that this hearth was not used for smithing, neither was the feature part of a smelting furnace as the base was oxidised-fired and the surface was not blackened as would be expected if it had been in contact with slag. Large quantities of oxidised-fired ferruginous sandstone were found in the fill of this feature and it is possible that this hearth was used for roasting ore in preparation for smelting. However it is equally likely that the hearth was simply lined with sandstone, this being a temperature resistant material, and that the stone was oxidised-fired and vitrified as a result of normal hearth use. None of the slag appears to have been found *in situ*, none of the contexts was particularly charcoal-rich and there is no evidence of heating in the features except for pit *462* described previously. Therefore none of these features, with the possible exception of pit *462*, can be interpreted as the remains of structures associated with iron-working.

Since iron smelting generates such large quantities of waste it is often found dumped in pits and ditches, or in contexts where it was re-used, rather than *in situ*. Slag can also be found some distance from where the iron-working actually took place, although the largest concentrations of waste are generally in the vicinity of the iron-working furnaces and hearths themselves. Unfortunately it is not possible therefore, to determine where the smelting furnaces were located from the evidence available. However analysis shows that the slag is of a composition typical of the local area and it is likely that it was produced nearby.

Conclusions

'If our knowledge of economic activities associated with the region's coasts is nugatory other kinds of production site inland are still poorly known or understood. Chief among these is metalworking of all kinds, whether of copper alloy or, economically most important of all, of iron. Extraction sites must have existed wherever viable pan deposits were found, yet very little is known of these, or indeed of any other type of metalworking site. Better understanding of Roman iron working in the region must be a major research objective' (Going 1997, 41).

The metalworking debris from Snettisham consists predominantly of waste from iron smelting, largely from the mid to late Roman period. Bloomery furnaces were used from which the slag waste product was tapped whilst molten. The furnaces were constructed from very quartz-rich clay, which had good temperature resistance. The slag produced was phosphorus-rich. More research is required to understand the factors affecting the partitioning of phosphorus between the iron metal product and slag waste during the bloomery smelting process. However it is likely that some phosphorus was reduced and dissolved in the metal to produce phosphoric, as well as pure, iron (Høst-Madsen and Bouchwald, 1999). Phosphoric iron is harder than pure iron, although also more brittle, and was well suited for certain applications as a result. For example phosphoric iron was widely used, along with carburised iron (iron with an increased carbon content), in Romano-British tools (Tylecote 1990).

The phosphorus was derived from the ore, likely to be concretionary ironstone nodules and possibly some ferruginous sandstone, obtained locally from the Lower Greensand. Samples of these types of stone obtained from the site had varying quartz contents but generally contained in excess of 50wt% iron oxide. The concretionary nodules were the most iron-rich. The ore may have been obtained by digging pits although outcrops may also have been observed where these were exposed along river courses (Tyelcote 1962b; Cleere and Crossley 1985). The large pits at Snettisham, which date to the mid to late Roman period, as does much of the iron-working waste, have been identified as Carstone quarry pits. It is possible that iron-rich stone extracted during quarrying

was used for smelting and sand, or sand-rich clay, would also have been required for furnace construction.

A small amount of smithing waste was found on the site, and it is likely that some smithing took place, if only to consolidate the metal produced by smelting.

As none of the metalworking debris was retrieved from *in situ* deposits (with the possible exception of hearth *462*) the exact location of the iron-working activity cannot be determined from the evidence available but it is unlikely to have been within the area covered by the geophysical survey since furnaces, hearths and large deposits of iron-working waste would have given rise to strong readings. In addition very large quantities of slag (tonnes) are generally recovered from the vicinity of Roman smelting areas whereas only 130kg was recovered from this site (Cleere and Crossley 1985; Paynter 2002). These observations suggest that although the iron-working slag recovered from Snettisham was produced fairly locally, the activity was focused outside the perimeter of the area investigated.

Textiles and Needlework
(Figure 32)

Needle

SF 576 Copper alloy needle fragment. The lower part of the circular sectioned shaft and tip survive. Although the head is missing the thickness of the object (maximum diameter 1mm — far too thick to be a securing pin and too thin to be a hairpin) and the patina suggests it is all that remains of a sewing needle.
(374) roadside ditch 540 M381, Period 2.3

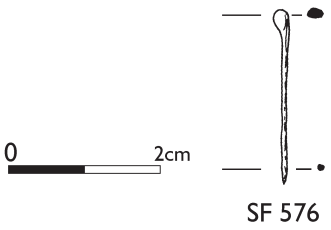


Figure 32 Needle. Scale 1:1

Loom Weights
(Unillustrated)
A clay ball, with a diameter of 80mm, weighing 0.136kg, was recovered from ditch *590* T7, Period 2.3. It is possible that this may have been used as a loom weight. A more positive identification concerned a single fragment of a triangular loom weight, weighing 0.274kg, that was recovered from quarry pit recut *751* T2, Period 2.4. A perforation and wear marks are apparent on the surviving corner. The loom weight is of an Iron Age type and can be directly paralleled with an example found at Spong Hill in central Norfolk (Gurney 1995 131, fig. 130, no. 1). It is probably residual.

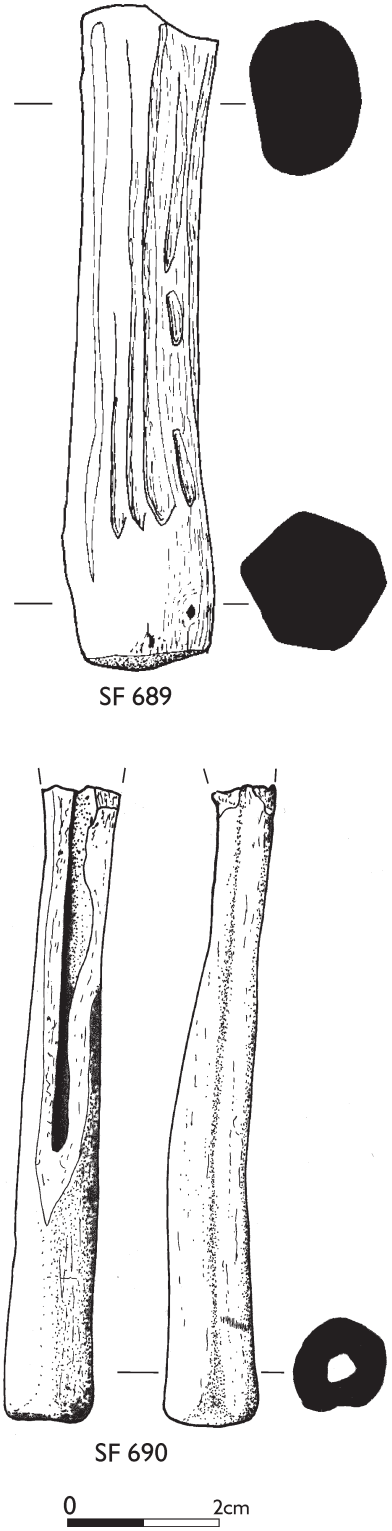


Figure 33 Handle blanks. Scale 1:1

Bone and Antler Working
(Figure 33)

SF 689 Worked piece of antler tine sawn at both ends and trimmed all over, particularly around the ends. Possibly a knife handle blank.
(458) quarry pit 537, Period 2.3

SF 690 Worked sheep metatarsal shaft, broken at the distal end. The proximal end is sawn and chopped flat, with a few other knife marks along the shaft. Probably a knife handle blank.
(423) quarry pit 422, Period 2.3

Commercial Activity

The Coins
by Adrian Popescu
(Unillustrated)

Introduction
Of the total of eighty-one coins recovered from the excavation, seventy-two are Roman with the remaining nine being medieval (1) and modern (8). Despite the small number of Roman coins, the two usual peaks of coin loss on British sites are obvious.

The Roman Coins
The Roman coins span over 270 years with earliest examples from Trajan and the latest from Gratian. The number of coins datable to the 2nd century is nine (13.85%) (Table 13); all of them are bronze and are heavily worn. There are six *sestertii*, two *dupondii* and one *as*, showing a pattern that one would expect from a British site, although strikingly different to that of the early Roman settlement site excavated nearby under the proposed route of the Snettisham Bypass (discussed below). There is only one *denarius* (No. 10) dating from a period known as the 'period of minimal supply' (Walker 1988, 300–301) when bronze coins are rare in Britain. The low number of coins recovered from Periods 10 to 12 is typical of sites in Roman Britain and it cannot be taken as evidence for abandonment of the site.

The number of coins lost on the site after AD 260 increased dramatically showing two peaks in Periods 13 and 17. This pattern is similar to most of the British sites, although in stark contrast with the pattern of coin loss from Site 1555 where most of the coins recovered are dated in the 1st and 2nd centuries (Davies 2001, 51–52), suggesting a possible movement of the activity from Site 1555 to Site 28450. In the period between AD 260 and AD 275, nine out of nineteen coins from site 28450 are struck copies, mostly of the Gallic Empire. Between AD 330 and AD 348 the number of copies of contemporary types is again high but official coins predominate as they do in the following period (AD 348–364).

The latest Roman coins from the site are dated between AD 364 and AD 375. Four coins are dated between AD 367 and AD 375 but judging by the mintmarks of at least three of them (Nos 68–69, 71) were struck towards the end of the interval.

Period	*Date range*	*Total (count)*	*Total (%)*
1	to AD 41	-	-
2	41–54	-	-
3	54–69	-	-
4	69–96	-	-
5	98–117	3	4.16
6-7	117–138/138–161	2	2.77
8	161–180	3	4.16
9	180–192	1	1.38
10	193–222	1	1.38
11	222–238	-	-
12	238–260	-	-
13	260–275	19	26.38
14	275–296	3	4.16
15	296–317	-	-
16	317–330	1	1.38
17	330–348	28	38.88
18	348–364	6	8.33
19	364–378	5	6.94
20	378–388	-	-
21	388–402	-	-
Total		72	100.00

Table 13 Chronological breakdown of the Roman coins

The Post-Roman coins
Nine post-Roman coins were found, of which only one is medieval; the rest belong to the 16th to 19th centuries, and are mainly low value British coins dating from George I onwards. The earliest coin in this group is a copper *penning* of King Christopher II of Denmark, struck between 1319 and 1332. The piece came out of the Roskilde mint during a troubled period for the Danish kingdom, for which reason its copper pieces were called by numismatists 'Civil War coins' (Bendixen 1967, 39). This is only the second known example from Norfolk (Popescu 2002, 147, no. 109). Among the remaining eight pieces there is a worn jetton struck in Nuremberg in the second part of the 16th century (a very common find) and a very worn token struck between 1650–1671 (Williamson 1891, 840), possibly a Norfolk one as those from other counties are very rarely found in Norfolk. A full catalogue of post-Roman coins is available in the archive.

Roman Coin Catalogue
The following catalogue uses the specialist catalogue number, rather than Small Find number, in order to permit chronological presentation. Small Find numbers are given for reference, also the contextual/phasing information presented with each coin.

Trajan

1. *Sestertius* VI 18.31g
Obv. [...], Rev. Illegible
Illegible type, Rome
(929) unstratified R5. SF 659

2. *Dupondius* ? 8.94g
Obv. [IMP CAES NERVA] TRAIAN AVG GERM D[ACICVS P M], Rev. Illegible
Illegible type, Rome, AD 103
(082) topsoil 1991 evaluation.. SF 16

3. *Dupondius*? 9.31g
Obv. [...]IANO AVG GER [...], Rev. Illegible
Illegible type, Rome, AD 103–117
(397) topsoil T12, Period 4.1. SF 296

Hadrian or Antoninus Pius

4. *As* VI 8.45g
Obv. Illegible, Rev. Illegible
Illegible type, Rome, AD 117–138 or 138–161
(892) subsoil R3, Period 3.1. SF 31

Faustina I

5. *Sestertius* XII 22.84g
Obv. D[I]VA FAV[STINA], Rev. [AVGV-STA], S-C
RIC 1126, Rome, post AD 141
(303) topsoil T4, Period 4.1. SF 350

Marcus Aurelius

6. *Sestertius* XII 12.43g
Obv. [M AVREL ANTONINVS AVG ARMENIACVS P M], Rev. [TR POT XIX IMP II COS III], S-C
RIC 909, Rome, AD 164–165
(300) topsoil T1, Period 4.1. SF 410

7. *Sestertius* XII 21.20g
Obv. [...], Rev. Illegible
Illegible type, Rome, AD 161–180
(438) subsoil R7, Period 3.1. SF 579

Faustina II

8. *Sestertius* VI 21.91g
Obv. [F]AVSTINA-AVG[VSTA],
Rev. D[IANA-LVCIFE]RA, S-C
RIC 1630, Rome, AD 161–176
(052) ditch [051] 1991 evaluation. SF 2

Marcus Aurelius deified

9. *Sestertius* VI 14.65g
Obv. DIVVS M ANTONINVS AVG,
Rev. [CONSECRATIO]
RIC 654, Rome, AD 180?
(930) unstratified R7. SF 667

Julia Maesa

10. *Denarius* VII 2.11g
Obv. IVLIA MAESA AVG,
Rev. SAECVLI FE-LICITAS, ✳ - //
RIC 272, Rome, AD 218–222 (223)
(047) unstratified R7. SF 5

Postumus or Victorinus

11. Radiate XII 2.40g
Obv. [...], Rev. [...]
Sol 3, AD 260–269 or 269–271
(929) unstratified R5. SF 663

Victorinus (269–271)

12. Radiate XII 1.96g
Obv. [IMP C PIAV VICTO]RINVS [P F] AVG,
Rev. [F]ID[ES]-M-ILITVM
Cunetio 2522, 'mint I'
(046) topsoil 1991 evaluation. SF 4

13. Radiate XII 1.72g
Obv. IMP C VICTORIN[VS P] F AVG,
Rev. SA[L]VS AVG
Cunetio 2552, 'mint I'
(901) subsoil R4, Period 3.1. SF 376

14. Radiate VI 3.82g
Obv. IMP C VICTORINVS P F AVG, Rev. SALVS [A]V[G]
Cunetio 2567, 'mint II'
(881) subsoil C5, Period 3.1. SF 384

15. Radiate XII 1.79g
Obv. IMP C [VICTORI]NV[S P F AVG],
Rev. [PI]ETA[S AVG]
Cunetio 2574, 'mint II'
(388) unstratified. SF 298

16. Radiate ? 2.37g
Obv. [...], Rev. Illegible
Illegible type
(905) subsoil R4, Period 3.1. SF 62

Tetricus I

17. Radiate VI 1.39g
Obv. [IMP TETRICVS P F AVG], Rev. LAE[TITIA AVG N]
Cunetio 2639, 'mint II'
(397) topsoil T12, Period 4.1. SF 297

18. Radiate VI 1.19g
Obv. IMP TETRIC[VS P F] AVG, Rev. L[AETITI]A AVG N
Cunetio 2639, 'mint II'
(319) topsoil T6, Period 4.1. SF 358

Tetrici

19. Radiate VI 1.32g
Obv. [...], Rev. [...] Virtus 1
Cunetio 2618 or 2622, 'mint I'
(388) topsoil T11, Period 4.1. SF 299

Uncertain of Gallic Empire

20. Radiate XII 1.31g
Obv. [...], Rev. Illegible
Illegible type, AD c.268–274
(365) topsoil T9, Period 4.1. SF 310

Gallienus

21. Radiate copy V 1.44g, 16mm
Obv. [GA]LLIEN[...], Rev. SECVR[...]
As RIC 280K, uncertain mint, post AD 266
(889) subsoil R3, Period 3.1. SF 32

Claudius II deified

22. Radiate copy XII 1.37g, 15mm
Obv. DIVO CLA[VD]IO, Rev. [...]ICI[...]
Cunetio 2873, uncertain mint, post AD 270
(931) unstratified R3. SF 679

23. Radiate copy XII 1.38g, 17mm
Obv. [...], Rev. [...] Altar 1a
Cf. Cunetio 2873, uncertain mint, post AD 270
(891) subsoil R3, Period 3.1. SF 39

Tetricus I

24. Radiate copy VI 1.71g, 16mm
Obv. [I]MP TETRI[CVS P F AVG], Rev. SALV-S A[VGG]
As Cunetio 2653, uncertain mint, post AD 271
(047) topsoil 1991 evaluation. SF 6

25. Radiate copy VI 0.84g, 15mm
Obv. [...], Rev. [...] Spes 1
Uncertain mint, post AD 271
(436) subsoil R7, Period 3.1. SF 649

26. Radiate copy X 1.98g, 15mm
Obv. [...]ΛCV)OII, Rev. DTI I[...] Altar 1a
Reverse proper to Claudius II deified, uncertain mint, after AD 271
(366) topsoil T10, Period 4.1. SF 309

27. Radiate copy II 1.99g, 15mm
Obv. [...], Rev. [...] Sacrificial implements
Reverse proper to Tetricus II, uncertain mint, post AD 271
(929) unstratified R5. SF 661

Uncertain of Gallic Empire

28. Radiate copy XII 1.10g, 15mm
Obv. [...], Rev.[...]
Illegible type, uncertain mint, post AD c.269
(896) subsoil R3, Period 3.1. SF 57

29. Radiate copy ? 1.62g, 15mm
Obv. [...], Rev. [...]
Illegible type, uncertain mint, post AD c.269
(442) subsoil R7, Period 3.1. SF 651

Carausius

30. Radiate II 3.09g
Obv. IM[P CA]RAVSIVS P F AVG, Rev. PA[X] AVG
RIC 880, uncertain mint, struck on radiate of Claudius II
(343) topsoil R1, Period 4.1. SF 411

31. Radiate VI 3.35g
Obv. [...]VSIVS AVG, Rev. [...] Pax
Uncertain mint
(366) topsoil T10, Period 4.1. SF 304

Allectus

32. *Quinarius* VI 1.23g
Obv. IMP C ALLECTVS P F AVG,
Rev. [VIRTV]S AV-G, //QL
RIC 55, Londinium
(932) unstratified R1. SF 687

Constantine I

33. *Nummus* XII 2.82g
Obv. CONSTAN-TINVS AVG,
Rev. BEATA TRAN-QVILLITAS, VO/TIS/XX, //PTR
RIC 368, Treveri, AD 322–323
(082) topsoil 1991 evaluation. SF 7

Constantinopolis

34. *Nummus* VI 1.78g
Obv. CONSTAN-TINO[POLIS],
Rev. Victory on prow, //PLG
RIC 246, Lugdunum, AD 330–1
(930) unstratified R7. SF 670

Constantine II

35. *Nummus* VI 1.59g
Obv. [CONS]TANTINVS [IVN] NO[B C],
Rev. GLOR-[IA EXERC-ITVS], //TRP
RIC, 520, Treveri, AD 330–1
(528) unstratified R1. SF 656

Urbs Roma

36. *Nummus* XII 2.52g
Obv. VRBS-ROMA, Rev. She-wolf with twins, //TRP
RIC 524, Treveri, AD 330–1
(932) unstratified R1. SF 682

37. *Nummus* VI 1.66g
Obv. VR[B]S-ROMA, Rev. She-wolf with twins, //TRP
RIC 529, Treveri, AD 330–1
(929) unstratified R1. SF 662

38. *Nummus* VI 2.11g
Obv. VRBS-ROM[A], Rev. She-wolf with twins, //TRS
RIC 542, Treveri, AD 332–3
(929) unstratified R1. SF 664

39. *Nummus* VI 1.48g
Obv. VRBS-ROMA, Rev. She-wolf with twins, //TRS
RIC 553, Treveri, AD 333–4
(528) unstratified R1. SF 653

Constantine II

40. *Nummus* XII 2.25g
Obv. CONSTANTINVS IVN NOB C,
Rev. GLOR-IA EXERC-ITVS, branch//TRP
RIC 556, Treveri, AD 333–334
(046) topsoil 1991 evaluation. SF 12

Constantine I

41. *Nummus* XII 2.51g
Obv. CONSTANTI-NVS MAX AVG,
Rev. GLOR-IA EXERC-ITVS, branch//PCONST
RIC 364, Arelate, AD 332–3
(319) topsoil T6, Period 4.1. SF 354

42. *Nummus* XII 2.07g
Obv. CONS[TANTI]-NVS MAX AVG,
Rev. GLOR-IA EX[ERC]-ITVS, //AQ[?]
RIC 118, Aquileia, AD 334–5
(883) subsoil R3, Period 3.1. SF 657

Constantine II

43. *Nummus* VI 1.09g
Obv. [CONSTANTI]-NVS IVN N C,
Rev. [GLOR-IA EXERC]-ITVS, //TRP
RIC 591, Treveri, AD 335–7
(902) topsoil R4, Period 4.1. SF 377

Constantius II

44. *Nummus* VI 0.87g
Obv. [FL IV]L CONSTAN[TIVS AVG],
Rev. GL[OR-I]A EXE[R]-CITVS, //TRP branch
RIC 83, Treveri, AD 337–340
(878) subsoil C2, Period 3.1. SF 38

House of Constantine

45. *Nummus* VI 1.20g
Obv. [...] AVG, Rev. [GLOR]-IA EXERC-IT[VS], 1 standard
Illegible mint, AD 337–340
(930) unstratified R7. SF 672

Helena

46. *Nummus* XII 1.70g
Obv. FL IVL HE-[LENAE] AVG, Rev. [PAX PV]-BLICA
Illegible mint, AD 337–340
(930) unstratified R7. SF 674

Theodora

47. *Nummus* VI 1.55g
Obv. FL MAX [TH..DOR]AE AVG,
Rev. [PIET]AS-ROMA[NA]
Illegible mint, AD 337–340
(929) unstratified R1. SF 665

Urbs Roma

48. AE copy X 1.06g, 14mm
Obv. VRBS-ROMA, Rev. She-wolf with twins, //PLG
As RIC 242, uncertain mint, post AD 330
(397) topsoil T12, Period 4.1. SF 408

49. AE copy VI 0.96g, 12mm
Obv. [VR]BS-ROMA, Rev. She-wolf with twins, //PLG
As RIC 242, uncertain mint, post AD 330
(933) unstratified T6. SF 681

50. AE copy X 0.43g, 12mm
Obv. VR[BS-R]OM[A], Rev. She-wolf with twins, //PL[G]
As RIC 242, uncertain mint, post AD 330
(899) roadside ditch M381 R3, Period 2.3. SF 60

Constantinopolis

51. AE copy V 1.14g, 15mm
Obv. CONSTAN-TINOPOLIS, Rev. Victory on prow, //PLG
As RIC 246, uncertain mint, post AD 330
(528) unstratified R1. SF 655

52. AE copy VI 0.60g, 13mm
Obv. [CONSTAN-TINOPOLI]S,
Rev. Victory on prow, //PL[G]
As RIC 246, uncertain mint, post AD 330
(932) unstratified R1. SF 683

Constantine II

53. AE copy VI 1.15g, 16mm
Obv. CONSTANTINVS IVN NOB C,
Rev. GLOR-[IA E]XERC-ITVS, //TRP
As RIC 539, uncertain mint, post AD 332
(880) subsoil C4, Period 3.1. SF 385

Constantinopolis

54. AE copy X 1.20g, 14mm
Obv. CONSTAN-TINOPOLIS, Rev. Victory on prow, //TRP
As RIC 543, uncertain mint, post AD 332
(897) subsoil R3, Period 3.1. SF 658

Urbs Roma

55. AE copy VIII 0.63g, 11mm
Obv. [VRBS]-ROMA, Rev. She-wolf with twins
Uncertain mint, post AD 330
(930) unstratified R7. SF 673

Constantinopolis

56. AE copy VI 1.17g, 13mm
Obv. CONSTAN-TINOPO, Rev. Victory on prow
Uncertain mint, post AD 330
(931) unstratified R3. SF 678

House of Constantine

57. AE copy XII 0.54g, 8mm
Obv. [...]OI, Rev. [...] Two soldiers, between them 1 standard
Uncertain mint, post AD 335
(931) unstratified R3. SF 676

Constans

58. AE VI 1.04g
Obv. CONSTAN-S P F average,
Rev. VIC[TORIAE DD A]VGGQ NN, ♥//TRP
RIC 185, Treveri, AD 347–8
(930) unstratified R7. SF 675

59. AE VI 1.17g
Obv. CONSTAN-S P F average,
Rev. VICTORIAE DD A[VGGQ NN], D//TRS
RIC 195, Treveri, AD 347–8
(528) unstratified R1. SF 654

60. AE XII 1.36g
Obv. [CONSTAN]-S P F AVG, Rev. VICTORIA[E DD AVGGQ NN], branch//TRS
RIC 206, Treveri, AD 347–8
(929) unstratified R5. SF 666

Constantius II or Constans

61. AE VI 0.73g
Obv. […], Rev. […], two Victories, M//[TR?]
Treveri, AD 347–8
(931) unstratified R3. SF 677

Constans

62. AE VI 1.50g
Obv. D N CONSTA-NS P F average,
Rev. [FE]L TEMP REPARATIO, Phoenix (1)
Treveri, AD 348–350
(884) subsoil R3, Period 3.1. SF 61

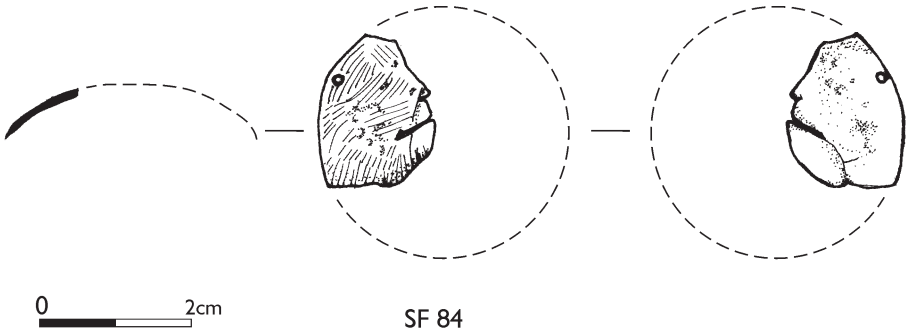


Figure 34 Scale-pan. Scale 1:1

Magnentius

63. AE XII 2.22g
Obv. D N MAGNEN-TIVS P F AVG,
Rev. VICT DD NN AVG ET CAE, VOT/V/MVLT/X, //TR[?]
RIC 316C, Treveri
(930) unstratified R7. SF 669

64. Clipped AE XII 0.52g
Obv. […]NEN-[…],
Rev. [SALVS] DD NN [AVG ET CAES] (2)
Illegible mint, AD 351–353
(932) unstratified R1. SF 684

Constantius II

65. AE XII 2.18g
Obv. D N CONSTAN-[TIVS P F AVG],
Rev. [...], Falling horseman (3)
Illegible mint, AD 353–357
(302) topsoil T3, Period 4.1. SF 409

66. AE copy XII 1.40g, 12mm
Obv. […]STA-TIV[…],
Rev. […]MP-P[…], Falling horseman (3)
Uncertain mint, AD 353–357
(410) subsoil R5, Period 3.1. SF 359

67. AE copy VI 1.02g, 14mm
Obv. […]ONSTΛ[…],
Rev. FEL[…], Falling horseman (3)
Uncertain mint, AD 353–357
(932) unstratified R1. SF 686

Gratian

68. AE VI 1.96g
Obv. D N GRATIAN-VS AVGG AVG,
Rev. SECVRITAS-REIPVBLICAE, OF I/ S R//[L]VG[P]
RIC 21b/XXVIIIa, Lugdunum, AD 367–375
(930) unstratified R7. SF 671

69. AE XII 2.29g
Obv. D N G[RATIANVS] AVGG [AVG],
Rev. GLORI[A NO-VI SAE]CVLI, //TCO[N]
RIC 15/XIVc, Arelate, AD 367–375
(898) topsoil R3, Period 4.1. SF 59

70. AE VI 1.86g
Obv. [D N GRATIANVS AVGG AVG],
Rev. [GLORIA NO-VI SAECVLI]
RIC 15/IXc, Xb or XIVc, Arelate, AD 367–375
(441) subsoil R7, Period 3.1. SF 650

Valentinian I

71. AE VI 2.22g
Obv. D N VALENTINI-[NVS] P F AVG,
Rev. SEC[VRITAS-REIP]VBLICAE, OF III//CON✳
RIC 17a/XIIIc, Arelate, AD 367–375
(930) unstratified R7. SF 668

House of Valentinian

72. AE VI 1.48g
Obv. [...], Rev. [SECVRITAS-REIPVBLICAE], OF [?]//[?]
Lugdunum or Arelate, AD 364–375
(932) unstratified R1. SF 680

Scale-Pan
(Figure 34)

SF 84 Part of a thin (0.25mm) circular concave copper alloy scale-pan (estimated diameter 32mm) with a single suspension hole surviving — probably one of three — near the outer edge. The small size of the pan suggests it may have been used for measuring the minute quantities involved in pharmaceutical transactions. The pan was constructed by repeated hammering, the marks of which are still visible. Broadly similar to an example from Colchester (Crummy 1983 fig. 104 2508), although that is larger and of a more complex design, however Crummy does provide an excellent description of how a steelyard arm works. Possibly of Roman date, although similar pans were used throughout the medieval and post-medieval periods.
(338) subsoil, Period 3.1

Miscellaneous Tools

Quernstones
stone type identified by Julie Curl
(Unillustrated)

SF 697 Fragment of the upper stone of a quern. Maximum thickness 37mm. The lower surface is worn smooth, but with traces of concentric grooves still visible. Made from sandstone with coarse grains and numerous small to medium sized quartz pebbles. Provenance uncertain, probably local.
(325) quarry pit 295, Period 2.3

SF 699 Fragment of the upper stone of a quern. Maximum thickness 33mm. The lower surface is worn quite smooth. Made from micaceous quartz sandstone with medium grained quartz inclusions, provenance uncertain, possibly local.
(381) road M381, Period 2.2

SF 700 Fragment of the upper stone of a quern, the lower surface has been worn smooth. The stone is fine-grained sandstone, very dense, with a maximum thickness of 57mm. Possibly imported from Lincolnshire.
(381) road M381, Period 2.2

Hones
(Figure 35)

SF 287 Complete hone, rectangular section although worn to oval in places. Made from an unidentified, slightly micaceous, sandstone local to East Anglia. Similar to an example found in Colchester (Crummy 1983, fig. 114 catalogue number 2962).
(458) quarry pit 537, Period 2.3

SF 703 Incomplete hone, square section with a flat end (one surviving). Blade marks can clearly be seen on the flat end. Manufactured from micaceous sandstone, probably local.
(854) roadside ditch M381, Period 2.3

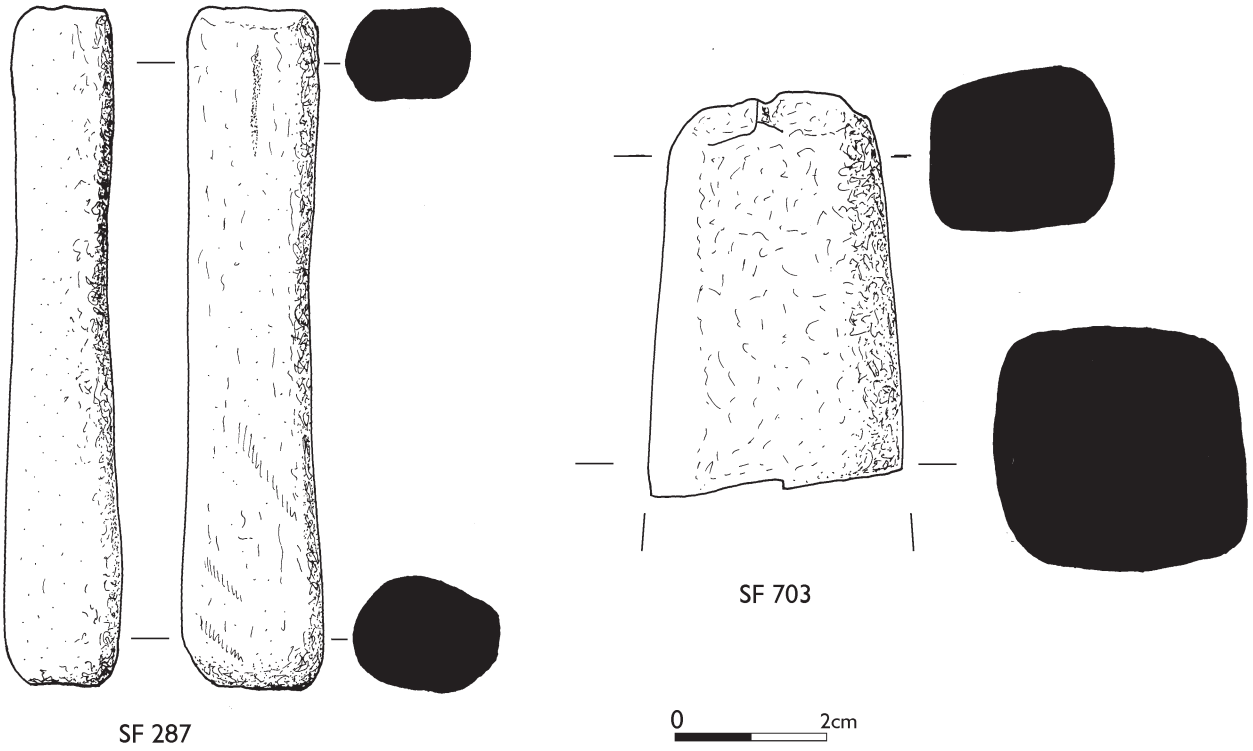


Figure 35 Hones. Scale 1:1

VI. Buildings

Summary
No primary evidence for domestic houses was found on this site however, large fragments of flint and chalk masonry also limestone slabs were recorded as demolition waste from pits *515* and *785*, in Trench 11, presumably from a fairly substantial nearby building that had fallen into disrepair. Relatively small amounts of ceramic building material (both roofing and floor material) were retrieved as well as daub and a single fragment example of possibly Roman painted wall plaster (SF 702). Other evidence of internal fittings for domestic houses was found in the form of structural ironwork constituting nails, spikes (SF 327 and 522), as well as two pieces of window glass (SF 290 and 348).

Structural Ironwork

The most common category amongst the structural ironwork is the nail (unillustrated) 99 by object count, of which 41 were retrieved from sealed Roman deposits. Twenty of these nails were recovered from a single feature, quarry pit *537*, Trench 12. Most of those that could be assigned to type were classified as Mannings Type Ib (Manning 1976, 41): 'A timber nail with square/rectangular shank and a flat round/sub rectangular head', although one type II 'timber nail with square/rectangular-sectioned shank which expands in width at the top to form a triangular head.' was also identified. Eight of the type Ib nails retrieved from sealed Roman deposits were complete and varied in length from 34–90mm. It is possible that these nails were a product of the iron working industry at Snettisham and that might go some way to explain their uniformity of type. A full catalogue of the iron nails is available in the archive.

Spikes
(Unillustrated)

SF 327 Incomplete, (both head and tip missing), fragment of an iron spike. It would have been driven into masonry or timber joints to tighten and secure them.
(531) quarry pit 529, Period 2.3

SF 522 Incomplete, (both head and tip missing), fragment of an iron spike.
(458) quarry pit 537, Period 2.3

Window Glass

(Unillustrated)
For a useful discussion on Roman window glass see Price and Cool 1993b, 109.

SF 290 Triangular fragment of cast matt/glassy window glass, pale green, slightly bubbled and thick (3.5mm).
(538) quarry pit 529, Period 2.3

SF 348 Small fragment of thin (1mm) blown window glass, clear with a greenish tinge and slightly bubbled. One original, slightly rounded, edge survives.
(587) ditch 506, Period 2.1

Ceramic Building Material

A total of 1145 (unillustrated) brick and tile fragments, weighing 149.048kg, was recovered. This is a large fragmentary assemblage with no complete examples of any form surviving. Pieces have an average weight of 0.130kg. The majority of the assemblage was Roman in date (96.03%, see Table 14), although post-Roman material was also found.

Era	*Quantity*	*Weight (g)*	*Weight(%)*
Roman	1109	143136	96.03
Medieval/post-medieval	2	858	0.58
Post-medieval	30	4102	2.75
Modern	4	952	0.64
Total	1145	149048	100.00

Table 14 Brick and tile types by era

Type	*Quantity*	*Weight(g)*	*Weight(%)*
Tegula	207	49707	34.73
Flat (floor)	115	30406	21.24
Imbrex	207	20485	14.31
Brick	93	15654	10.94
Unidentifiable fragment	352	9996	6.98
Flat (miscellaneous)	68	8296	5.80
Flat (roof)	44	4282	2.99
Flue	22	4226	2.95
Pipe	1	84	0.06
Total	1109	143136	100.00

Table 15 Roman brick and tile types

Most of the Roman brick and tile was recovered from the top and sub soils (57.32%, see Table 15) although material was also commonly retrieved from the quarry pits (30.13%). Smaller amounts of ceramic building material were retrieved from roads (5.43%), ditches (3.02%), wells (2.20%), layers (1.57%), post-holes (0.33%) and a gully (0.001%).

This assemblage is one of the largest recovered from Norfolk in recent years. It consists largely of fragmentary, although not particularly abraded, Roman brick and tile. Different fabrics were identified which were produced in various unsourced locations, probably at several sites throughout the East and Midlands of Britain. All the major Roman tile forms were recognised: tegula, imbrex, floor, flue and brick, some of which were identified as coming from relatively high status buildings (the flue tile and ceramic pipe in particular). However, as all were recovered in secondary deposits the buildings from which they originated are unknown.

Insufficient ceramic building material was recovered to have made a single Roman house roof or wall (Brodribb 1987). No complete brick or tile examples were found and no *in situ* examples identified, therefore this assemblage does not provide evidence for collapsed or demolished buildings but rubbish disposal of relatively small amounts of material. The only exception to this is the assemblage retrieved from stratified and topsoil deposits in Trench 10, from which 25% of the total Roman assemblage was gleaned. It is possible that this represents a robbing or demolition dump from a nearby structure.

Daub

A total of 572 (unillustrated) daub fragments weighing 28.477kg was retrieved during this project. Small amounts of daub were recovered from all twelve trenches excavated, however a significant percentage (47.20% by weight) was retrieved from Trench 5, primarily from the three early boundary ditches *393*, *395* and *532*. This material was light red (Munsell 6/8) with frequent small and common medium/large chalk inclusions. Much of the daub is marked with withie impressions (i.e. the wooden framework used to support an unfired clay structure which often decays, or is burnt away, leaving the clay structure in place). Most of the material also has deliberately smoothed surfaces, some with finger marks surviving. Some of this material is probable kiln superstructure and one dome plate fragment was identified (Swan 1984, 37), other than this the material is undiagnostic and can only be said to be probably associated with wattle and daub structures of some type.

Wall Plaster

by Richenda Goffin

SF 702 Single fragment of painted plaster (unillustrated) with a layer of pigment had been applied directly onto a fine-grained soft stone. The pigment was not applied onto a sand and lime mortar with a fine *intonaco* layer, which was good Roman practise, but immediately onto the stone. The pigment is likely to be a red ochre, naturally occurring and inexpensive to produce. This fragment has no chronologically diagnostic features and although the deposit from which it was retrieved is a Roman one, it is possible that this is an intrusive fragment of medieval date.
(530) quarry pit 529, Period 2.3

Stone Building Material

Numerous large fragments of flint and limestone building material were seen in the sections of quarry pit *515* (frontispiece) and pit *785* in Trench 11. The flint is of local origin while the limestone and chalk blocks may have been extracted locally but equally well may have been imported from another source (Julie Curl pers. comm.). Some of the limestone fragments measured over 0.50m long x 0.25m wide x 0.20m deep. These stones were not removed from site and therefore, never received specialist attention. Their presence however, suggests substantial buildings may have been standing in close vicinity to the site, but in a state of disrepair, or demolished by, the 4th century AD.

VII. Other Activities

Summary

Iron arrowheads presumably kept for self-defence or hunting are reported on here as well as two fragments of repoussé copper alloy leaves, perhaps from a ceremonial crown, that have been cut up for scrap. The final object described here is a possible horse harness fitting — perhaps dropped from one of the horses and carts whose wheel ruts are still visible in the Roman road.

Iron Arrowheads

(Figure 36)

SF 547 Iron leaf-shaped blade from an arrowhead or small spearhead, heavily encrusted, the tang appears to be hollow. Other Roman examples are known from Norfolk, notably those from Caister-on-Sea (Mould 1993b fig. 108 catalogue number 757).
(635) quarry pit 515, period 2.3

SF 548 Iron object with a square sectioned head and a round sectioned neck, possibly an arrowhead. Similar to a Caister-on-Sea example (Mould 1993b fig. 108 catalogue number 762).
(786) layer 787, Period 2.3

Copper Alloy Repoussé Leaves

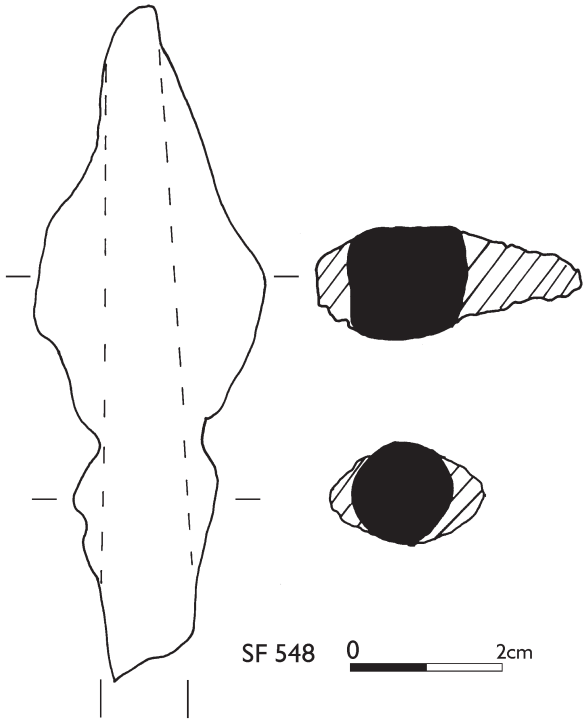
(Figure 37)

SF 599 and 600 Copper alloy repoussé leaf fragments cut up for scrap, possibly one of many leaves made for a wreath or crown. Similar to examples found at Fison Way, Thetford (Gregory 1992 131–132, fig. 117 no. 21).
(528) unstratified

Iron Horse Harness Fitting

(Figure 38)

SF 416 Iron loop with a plate attached, possibly a mounted terret or harness fitting.
(458) quarry pit 537, Period 2.3



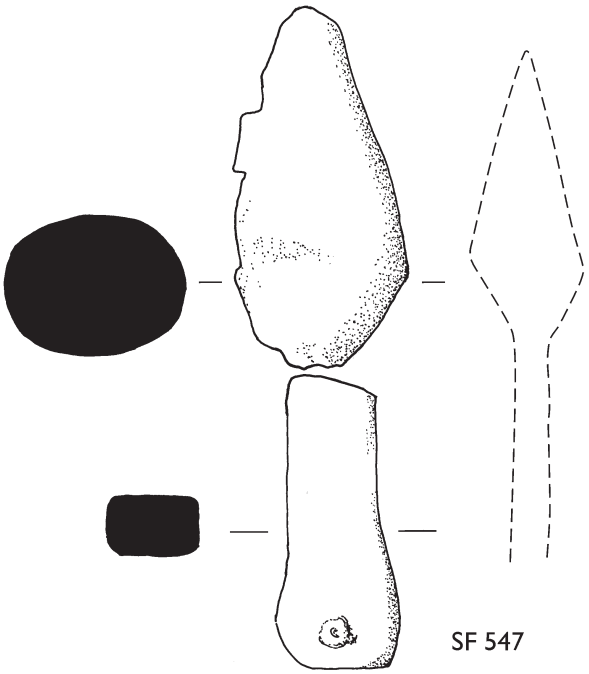


Figure 36 Arrowheads. Scale 1:1

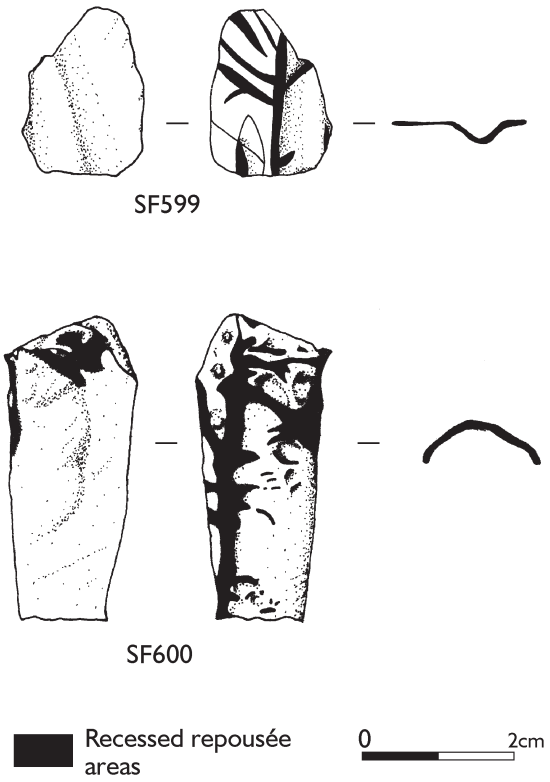


Figure 37 Repoussé leaf pieces. Scale 1:1

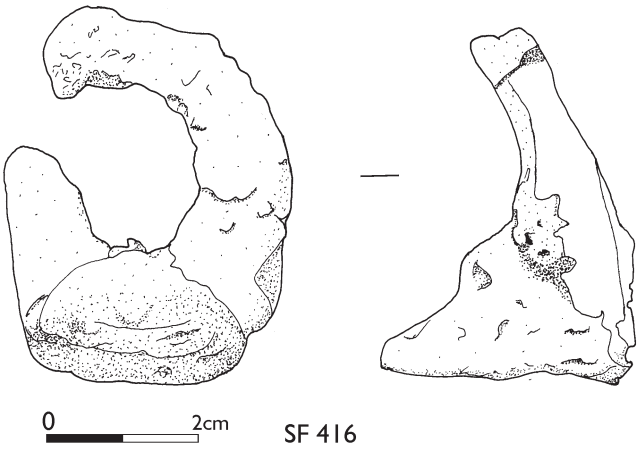


Figure 38 Horse harness fittings. Scale 1:1

Chapter 4. Environmental Evidence

I. Animal and Bird Bone

by Julie Curl

Summary

The majority of the bone belonged to the three main domestic species: cattle, sheep/goat and pig. The ages of the cattle indicate that they were used for traction before being culled for meat. The additional presence of equids (horse) is also evidence for the use of other working animals at Snettisham during the Roman period. Sheep at this site almost certainly had a primary use for wool and milk, with a secondary use for meat. There were few domestic birds present and little evidence for the utilisation of wild species of birds or mammals. Fishbone was totally absent from this assemblage (even from samples taken for environmental analysis) and is not thought to survive in the unsympathetic soil conditions present on this site. The abundance of domestic mammals and the scarcity of wild species is typical of Roman excavations in Britain (Albarella 1997a). The majority of bones were recovered from deposits dated to Period 2.3.

Introduction

A total of 57.931kg of animal bone was recovered during the excavation; 20.692kg (35.7%) from unstratified contexts and 37.239kg (64.3%) from stratified contexts. A high level of fragmentation was recorded consistent with bone derived from food and butchering waste. Numerous surface scratches suggest some trampling and re-working of the bone before final deposition. The majority of the bone however, remained in fairly good condition.

Species Present

A minimum of sixteen species were positively identified, with the assemblage dominated by the main domestic species: cattle, sheep/goat, horse and pig (Table 16). There was little evidence of domestic birds and no fish bone. Very few wild species identified although isolated finds of grouse, woodcock, black-headed gull, red deer, roe deer, red fox, and hare were found. It is of course possible that the absence of wild species, particularly birds, is due in part to a lack of sieving.

Cattle

The cattle present at Snettisham varied little in size; any difference was almost certainly due to sexual dimorphism rather than differing species. The sizes here were comparable to those from Roman sites in Cambridge (Albarella 1997b) and Scole in Norfolk (Baker 1998). The ages at death, obtained from the tooth wear and eruption data, varied considerably, which indicates a wide range of uses for these animals. Some calves were slaughtered between 4–6 months and 1 year either for prime veal meat or to exploit the milk supply of the mother (or both). Other cattle were killed at about 3–4 years old, probably after a brief period of breeding, milking or traction before being used for meat. The presence of the very young cattle does suggest that there was breeding on, or close to, the site.

Most bovines at Snettisham survived until around 8–10 years of age, clearly showing that they had uses other than for food. Many showed signs of ageing and stress, especially on some metapodials, indicating that these animals had probably been used for traction before being butchered for meat. Most of the mandibles from individuals of over 4 years showed a high rate of periodontal disease associated with heavy calculus deposits, in the oldest animals this disease had begun to cause a loosening of the teeth. An arthritic femur was recovered suggested an older, strained, animal. One mandible fragment from the same period also exhibited

Species Common name	*Species Latin name*	*Total number of countable elements (stratified contexts only)*	
		Fragment count	*%*
Cattle	Bos taurus	190	51
Sheep/Goat	Ovis capra/Ovis aries	114	30
Pig/wild boar.	Sus (wild/domestic)	19	5
Equid/Horse/Pony/Donkey	Equis sp.	29	8
Dog/Wolf	Canis familiaris/Canis lupus lupus	5	1
Roe Deer	Capreolus capreolus	3	1
Red Deer	Cervus elephas	3	1
Brown Hare	Lepus europaeus	1	<1
Red Fox	Vulpes vulpes	2	<1
Chicken/Guinea fowl/pheasant	Galliformes	4	1
Goose	Anser sp.	1	<1
Duck	Anas sp.	1	<1
Black-Headed Gull	Larus ridibundus	1	<1
Grouse	Lagopus lagopus	1	<1
Woodcock	Scolopax rusticola	1	<1
?Polecat	Mustela putorius	1	<1
Total		**376**	

Table 16 Animal and bird species present with quantities and percentages for whole excavation

extra growth around the condyle, possibly as a result of an infection.

Bones from all parts of cattle were present, although a higher number of skull, mandible, metapodial fragments and phalanges were present than any other bone. These elements were commonly removed close to the primary butchering area, which suggests that the main meat bearing parts of the animal were consumed elsewhere. Although it is equally possible that these elements could have been brought to the site on hides and disposed of during the processing of the skins. Skinning of cattle was suggested by knife cuts on some foot bones and metapodials, particularly the proximal phalanges.

The majority of cattle bones had been butchered. Chop marks made during the dismembering of the carcass (the most common evidence for butchering on cattle) were noticed on all parts of the body. Some skull fragments had sagittal and vertical chops, possibly to gain access to the brain for food. Several horncores were present, but none showed any evidence of having the horn sheath removed for working. Mandibles had been both chopped and cut. Chops were made at the front and at the rear of the jaw with finer knife cuts located on the inside of the mandible, presumably to remove the tongue. Numerous metapodials had been chopped, removing either the proximal or distal end (sometimes both), possibly to allow for the removal of nutritious marrow. Some metapodials had also been split lengthways, probably as another method of marrow extraction.

Most of the scapulae present had been heavily butchered. The articular ends each showed many chops and there were numerous cuts along the spines. A few displayed holes in the blade. This trimming of the scapulae was similar to that at Scole, Norfolk (Baker 1998) and Brancaster, Norfolk (Jones 1985), suggesting preparation of the joints for soaking in brine or for smoking. The cuts along the spine may have occurred when the meat was removed from the blade. The upper fill *423* of quarry pit *422* in Trench 8 produced many fragments of heavily chopped cattle rib, the pieces were between 55–130mm long and each fragment bore several chops or knife cuts. It is possible that these ribs had been prepared with the intention of using them for decorative plates, although probable they had been prepared for cooking in, for example, a soup.

Sheep/Goat

Although referred to as sheep/goat, most of the caprine remains are sheep. The sheep were of a small build with rather slender limbs, similar in appearance to the present day Soay sheep. Although elements from all parts of the animal were recovered, there are far more remains of the head and lower limb bones, a similar retrieval pattern to that of the cattle. The elements of goat found, metacarpal and horncore, could provide evidence for trading hide, as the skull and metapodials would have remained attached.

The majority of elements present had been butchered to some degree; much of the body had been chopped in the primary butchering phase to dismember the carcass. Less heavy methods were employed on the sheep/goat remains than on the cattle, in most cases a bone had just received one or maybe two chops. A few metapodials bore both chop and cut marks, although many had just received knife cuts (including one metapodial positively identified as goat), usually to the proximal end of the bone. It is quite likely that these cuts would have occurred during skinning, before the body was dismembered. It is also interesting to note that most of these sheep/goat metapodials had undergone heavy canid gnawing. It is possible that these were discarded in the early stages of the carcass preparation and may have been intentionally given to the pet or working dogs as food.

There was a great deal of variation in the ages that the sheep/goat were killed, ranging from less than 6 months to over 10 years, with most being killed at around 2–4 years old. This range suggests that sheep/goat population had many uses; although it is probable that many of them would have been kept primarily for wool and milk supplies. The Romans did prefer sheep milk to that of cows (White 1970; Albarella 1997a). Some of these animals would have been kept for breeding and the presence of quite young lambs does suggest that they were probably bred on or close to the site.

Pigs

There were far fewer pig remains at Snettisham than the other main domestic species. The most common elements recovered were the mandible and these had nearly always been chopped, occasionally at both the front and rear of the jaw. There were sparse remains of other elements such as metapodials, vertebrae, pelvis and sacrum and the occasional limb bone. Most of these bones had been butchered by chopping.

Little information could be obtained about the size of these pigs due to their young ages at death. The majority of the pigs at this site were killed before reaching one and a half years of age. Some mandibles came from piglets of around 6 months or less so it is possible that they were bred on or close to the site. No pathologies had been found on any of the pig remains, probably because most had died before any could develop. The findings at Snettisham are consistent with other Roman sites in Norfolk and elsewhere in the country.

Equids

Analysis suggests that the equids at Snettisham were small to medium-sized ponies rather than full-sized horses. The sizes of the animals at this site compare well with the average sizes of those found at Scole, Norfolk (Baker 1998). The most frequent elements found were teeth, metapodials and phalanges, although other bones such as humeri, pelvis and femur were also found. None of the stratified elements had shown any signs of butchering, although the possibility that they were used as food should not be discounted.

The ages at which death occurred did vary. Five bones from a juvenile of about a year old were retrieved, but the majority of remains were adult with estimated ages of around 10–12 years, (an arthritic condition was recorded). The smaller size of these animals would almost certainly rule out any possible military use, so it is likely that they were primarily used as work animals. The presence of the juvenile could indicate local breeding.

Canids

There were five countable elements from canids in the stratified material. The remains included a tooth and phalange from a large adult animal and a few bones from a young puppy. The puppy had a clear-cut mark on the

humerus that shows that it had either been eaten or skinned, possibly both.

There was plenty of other canid evidence from this excavation in the form of gnawed bones, most frequently on sheep/goat metapodials. This does suggest that selection took place during processing whereby the most suitable bones to feed pet, or working dogs, were put to one side.

Deer

Red and Roe deer were identified within this assemblage. The most numerous remains were that of Red deer, pieces of antler (some worked), vertebrae, tibia, molars and a proximal phalange were recorded. Some of the vertebrae had clearly been chopped, suggesting that some animals were utilised for meat. The Roe deer remains constituted a tibia and a juvenile calcaneus.

Other mammals

There were few other mammal bones found on this excavation, consisting of a complete red fox pelvis and a single butchered radius from a brown hare. The remains of a polecat were also located, consisting of an isolated vertebrae, there are no butchery marks on this bone but it is possible that the animal was killed for its pelt.

Birds

The remains of domestic fowl and geese were the most common among the few bird bones found. Duck, woodcock, goose, grouse and black-headed gull constitute the species retrieved. The size of the domestic fowl and the geese varied within the species, one goose bone was similar in size to that of a smaller wild bird such as the Brent goose, while the fowl bones are comparable with the modern chicken and bantam. The bones of duck and grouse may represent welcome additions to the diet, while the presence of the black-headed gull may be nothing more than the remains of a scavenger on the rubbish pits. The presence of a butchered woodcock does also suggest that there may have been some hunting in local woodland.

This assemblage is similar in terms of species and relative quantity to that of Scole, Norfolk (Baker 1998) and there are similarities to those at Caister-on-Sea, Norfolk (Darling and Gurney 1993). Both of these sites have low numbers of bird bones, with domestic fowl as the dominant species. It seems that on many Roman excavations, birds of any form do not appear to have significantly contributed to the economy. Domestic fowl was not commonly kept in Britain before the Roman period, so the low number of bones from this site is not surprising.

Herpetofauna

Herpetofauna remains were only found in samples and from four trenches. The majority were retrieved from Trench 6 (mostly from BS 18, context 379) and were of 2nd–3rd century date, all elements belonging to frog or toad. Further remains were recovered from Trenches 1, 4 and 12. Both frog and toad can be found in a variety of habitats and, with the toad, often some distance away from water. It is possible that some or all of the herpetofauna remains are intrusive, given the 'burrowing' habits of toads in particular. For hibernation a toad will often burrow into soft soil or make use of existing burrows of rabbits or rodents.

Conclusions

This assemblage was largely retrieved (70%) from the upper fills of the disused quarry pits north of the main east-to-west Roman road. These pits were routinely backfilled with large deposits of rubbish, perhaps the overflow from domestic middens, in the later part of the 3rd century AD. The majority of the faunal remains are primary and secondary butchering waste from cattle, sheep/goat and pigs, although the assemblage does also include the remains of working animals (sheep for wool and milk, cattle and horse for traction). In the Roman period large quantities of hide were needed for making clothing, shields, harnesses and other items (Jones 1985) there would have also been a demand for wool to make clothing at this time. This would appear to be a fairly typical assemblage, comparing well to the Roman small town of Scole and coastal shore fort at Caister-on-Sea, within this region.

II. Charred Plant Macrofossils and Other Remains

by Val Fryer

Summary

Examination of forty-three plant macrofossil assemblages showed that at least seven probably contained deposits of kindling or fuel waste, possibly derived from either the nearby kilns or similar light industrial processes. A further three samples contained burnt mollusc shell assemblages which may be related to the use of riverine clay in the construction of the kilns.

Condition of the Material

Preservation of the plant macrofossils was mainly by charring. Rare mineral replaced seeds were also noted. Although waterlogged contexts were not encountered, de-watered macrofossils were recovered from four samples. Plant remains were generally well preserved, although some grains had become puffed and distorted during charring. Modern contaminants were present throughout and included seeds/fruits, arthropods and fungal sclerotia.

Plant Macrofossils

Cereals and Other Food Plants

Cereals grains and/or chaff were recovered from all but one assemblage (BS 2 post-hole *270* R1): *Avena* sp. (oat), *Hordeum* sp. (barley), *Secale cereale* (rye) and *Triticum* sp. (wheat) grains were found, with wheat being predominant. *T. spelta* (spelt wheat) glume bases with double keels and characteristic longitudinal nerves, were noted in seventeen samples. Sprouted grains (including wheat), either with attached sprouts or characteristic concave sides, and sprout fragments were found in four samples (BS 20 quarry pit *355* T6, BS 23 quarry pit *295* T2, BS 53 quarry pit *515* T11 and BS 65 well *685* T1). Remains of other food plants were rare but cotyledon fragments of a large pulse (pea/bean) were found in BS 16 (road side ditch recut *540* T6) and a possible rounded *Pisum sativum* (pea) seed was recovered from BS 43 (quarry pit *537* T12). *Prunus spinosa* (sloe) fruit stone fragments were noted in BS 65 (well *685* T1).

Wild Flora
Seeds/fruits of common weed species were present in all but one sample (BS 61 fired clay surface *666*, T4). Segetal taxa were predominant and included *Bromus* sp. (brome), *Chenopodium album* (fat-hen), *Fallopia convolvulus* (black bindweed), *Galium aparine* (goosegrass), *Rumex* sp. (dock), *Stellaria* sp. (chickweed) and *Vicia/Lathyrus* sp. (vetch/vetchling). Grasses and grassland herb macrofossils were also common and included *Arrhenatherum* sp. (onion-couch) tubers and seeds of *Medicago/Trifolium/Lotus* sp. (medick/clover/ trefoil), *Plantago lanceolata* (ribwort plantain) and indeterminate grasses (Poaceae). Wetland/aquatic plant macrofossils were present throughout and included *Carex* sp. (sedge) and *Eleocharis* sp. (spike-rush) nutlets and seeds of *Juncus* sp. (rush), *Lemna* sp. (duckweed), *Lychnis flos-cuculi* (ragged robin), *Montia fontana* (blinks), *Potamogeton* sp. (pondweed) and *Ranunculus flammula* (lesser spearwort). *Corylus avellana* (hazel) nutshell fragments and seeds of *Rubus* sp. (bramble) and *Sambucus nigra* (elderberry) were noted in thirteen samples.

Other Plant Macrofossils
Charcoal fragments and pieces of charred root, rhizome or stem were common or abundant throughout. Heather (Ericaceae) stem fragments and/or florets were recorded, often at high densities, in thirty samples. *Calluna vulgaris* (ling) capsules were also present in BS 46 (quarry pit *537* T12) and BS 65 (well *685* T1) and *Pteridium aquilinum* (bracken) pinnule fragments were noted in BS 19 (deposit *385* T6) and BS 53 (quarry pit *515* T11). Other plant macrofossils included indeterminate culm nodes, galls, inflorescence fragments, seeds and tuber fragments.

Molluscs
Burnt mollusc shell assemblages were recovered from BS 16 (road side recut *540* T6), BS 17 (road side recut *593* T6) and BS 73 (pit *927* T4). Taxa from all four ecological groups of terrestrial molluscs (Evans 1972) were recorded, namely woodland or shade loving species, open country species, catholic species and marsh/freshwater slum species. Freshwater obligate species were also present. Unburnt mollusc shells were present in BS 23 (quarry pit *295* T2), BS 29 (roadside ditch *599* T7) and BS 53 (quarry pit *515* T11) and in all cases, terrestrial species were predominant.

Other Materials
The fragments of black porous 'cokey' material, black tarry material and the siliceous globules are all probably derived from the combustion of organic remains, including cereal grains and straw or grass, at very high temperatures. Fragments of burnt or fired clay and vitrified globules may be associated with material from the nearby kilns. Other possible industrial residues included ferrous globules and small pieces of ferrous ?slag. Fragments of mammal, fish and small mammal/amphibian bone, marine mollusc shells and small pieces of coal were also recovered.

Discussion

Prehistoric Features
Only two features of prehistoric date were sampled. Pit *639* and ditch *647* both contain cereal grains and abundant fragments of hazel nutshell and burnt bone. Weed seeds and other remains are rare. It appears most likely that both assemblages are derived from a low density of hearth waste/dietary refuse.

Romano-British Features

Pits
A total of twelve pit fills were sampled, of which four are of particular interest. The assemblage from BS 48 (quarry pit *529* T10) appears to be derived from a mixture of cereal processing waste (principally spelt glume bases), grasses and grassland herbs, and heather stem fragments, all of which were probably used for kindling or fuel for the nearby kilns. Spelt processing debris appears to have been commonly used as kindling or fuel for light industrial processes during the Roman period (Van der Veen 1999) and may have been a tradable commodity. Fuel/kindling debris may also be present in sample BS 20 (quarry pit *353* T6). Sample BS 23 (quarry pit *295* T2) also contains cereals, chaff and heather stem fragments, although in this instance, the presence of sprout fragments and sprouted grains may indicate that storage waste is also represented within the assemblage. Sample BS 69 (quarry pit recut *751* T3) appears to be derived from rake out material from a fire pit or similar feature. With the exception of charcoal fragments, plant macrofossils are rare, but moderate to high quantities of black porous 'cokey' material, burnt/ fired clay, burnt organic concretions and ferrous globules are recorded. The composition of this assemblage is consistent with material derived from small-scale industrial processes, where the high temperatures of combustion have destroyed most of the delicate plant macrofossils, leaving only 'cokey' residues and amorphous organic concretions.

The remaining pit assemblages all contain a low density of material, much of which is probably associated with scattered refuse and/or wind blown detritus.

Ditches
Nine ditches were sampled. Samples BS 42 (roadside ditch *701* T4) and BS 34 (roadside ditch *467* T9) appeared to contain kindling/fuel residues (grasses/grassland plants and heather), although some domestic refuse, including hazel nutshell and burnt mammal and fish bone, was present in BS 34. Sample BS 40 (roadside ditch *701* T4) from an ashy deposit containing kiln furniture, contained a high density of grass/grassland herb macrofossils. Siliceous globules were also common, probably indicating that the material was burnt at a very high temperature.

Material taken from the recuts of the main east-to-west Roman road roadside ditches BS 16 (*540* T6) and BS 17 (*593* T6) are of particular interest as both contain burnt mollusc shell assemblages. Although these comprise a mixture of taxa from terrestrial, marsh/ freshwater slum and freshwater habitats, marsh and freshwater species predominate, and it appears most likely that these are derived from riverine clays which would have been imported to the site for use as kiln lining material. It is

perhaps of note that quantities of fired clay were recorded in the ditches at the time of excavation. A similar burnt mollusc assemblage was also recovered from BS 73 (pit *927* T4).

The remaining ditch samples contain very little material, much of which is probably derived from low-density scatters of refuse of unknown origin.

Other Features

Sample BS 65 (late in the stratigraphic sequence of well *685* T1) is of particular interest as it contains both charred and de-watered plant macrofossil assemblages, the latter probably being indicative of the local environment. Ruderal species (for example *Urtica dioica* (stinging nettles)) and colonising plants (*Conium maculatum* (hemlock) and elderberry) are abundant, possibly indicating that the site was falling into disuse during this period and becoming overgrown with weeds and scrub.

Conclusions

In conclusion, at least seven of the assemblages studied appear to contain deposits of kindling or fuel waste. Although cereal processing waste (principally spelt chaff) was being utilised, it is not as abundant as at other contemporary industrial sites, and the favoured fuels at Snettisham appear to have been grasses, grassland herbs and heather. Although this probably indicates that locally gathered raw materials were more readily available, it should also be considered that the choice of fuel type might be related to the temperature required for the production of specific pottery types.

Chapter 5. General Discussion and Conclusions

I. Archaeological Background

This project is one of several archaeological research assignments in the area of Snettisham in recent times. Each block of work has looked at different, but particularly interesting aspects of Snettisham during the Late Iron Age and Roman periods. The burial of Late Iron Age torcs on Ken Hill (Stead 1991), a possible religious enclosure (Stead 1995), field survey (Leah and Flitcroft 1993) in the estate of the 3rd to 4th-century Park Farm Villa complex (Site 1514), a Roman Jeweller's hoard (Potter 1986; Johns 1997) and the early Roman agricultural and subsistence settlement within the Ingol Valley floor (Flitcroft 2001) have all contributed to our understanding of the origins, development and character of settlement at Snettisham. A review of the aerial photographic evidence has also added to our comprehension of the geography and topography of the site.

The specific area examined as part of this project, between Strickland Avenue and Station Road Snettisham (Site 28450), revealed a different aspect of function and status, being largely of a mid Roman date and industrial character, providing evidence for quarrying iron ore and producing coarse ware pottery.

II. Environment and Economy

The location of Snettisham was key to its success as a centre for continuous activity throughout the Late Iron Age and Roman periods. Snettisham was positioned to take advantage of the various surrounding environmental features such as the Fen-edge tidal saltmarsh (to the west) with its potential for producing tradable goods such as salt. At least three saltern mounds on the saltmarsh (Fig. 3) are thought to be Roman, providing evidence for a salt production industry. The fen also provided reed, a tradable commodity, as well as providing a variety of fish and birds to supplement the local diet.

The location of the Romano-British Settlements on the junction of the upland and fen suggests that there was a powerful attraction to the Fen-edge. This is certainly due to the potential exploitation of adjacent geological (and consequently environmental) zones, with access to a wide range of both upland and Fenland resources (Gurney 1986, 47–48).

Situated upon a complex solid geology of Carrstone, sandstone, clays and sands, the people of Snettisham had ready access to many of the raw materials necessary for iron and pottery production including iron ore, clay, sand and stone. This geology overlain by loam provided a good base for agricultural exploitation. Environmental evidence suggests oats, barley, rye and wheat were the cereals grown in the surrounding area, with wheat the most common. Faunal evidence suggests cattle and sheep were the main livestock species, providing meat, milk, cheese, leather and wool for the local population.

Recent research demonstrates that the area around Snettisham, within the Ingol Valley, was characterised by a network of rectilinear enclosures separated by ditched trackways (Flitcroft 2001, 79). This project has revealed a stratigraphic sequence whereby a similar series of north-to-south trackways and drove-roads dated to the early Roman period were superseded by the construction of the main east-to-west Roman road in the mid 2nd century AD. This wide road occupied a large part of the landscape and was metalled to a high standard. The road was built in response to a change in land use from one primarily of animal husbandry and subsistence farming to a centre of industrial activity where pottery was produced and iron ore was extracted for smelting at a nearby, but unknown, location. Both products, pottery and iron, were probably largely destined for the Roman fort at Brancaster (Hinchliffe with Sparey Green 1985) approximately 18km to the north-west.

Snettisham was well serviced by road with both the Icknield and Peddars Way a short distance to the east. The use of waterways to transport goods should also be considered, as it is possible that the River Ingol was navigable during the Roman period, and may have led to coastal trade routes (see Brennand above, p.2). It is also thought that the Peddars Way terminated at a ferry station on the north Norfolk coast at Holme next the Sea, providing access to northern markets.

The change from the cultivation of food and small-scale production of pottery and metal for use within a single community, as seen on the Ingol Valley floor in the early Roman period (Flitcroft 2001), to production of a surplus of desirable goods for trade in the 2nd and 3rd centuries AD, reflects a major change in the economy of the settlement. What instigated this change and who managed it is open for discussion. As noted above (p.41), the establishment of a military presence at Brancaster in the early 3rd century was almost certainly a stimulus for the production of tradable goods.

III. Status and Development

The nature of occupation at Snettisham therefore, fits into the category of a minor settlement that began as a valley bottom subsistence community in the Late Iron Age (Flitcroft 2001, viii). As time went on this settlement moved to higher ground (possibly due to environmental factors) and became more industrialised (possibly due to the economic stimulus of the fort at Brancaster), with evidence for iron ore extraction, iron smelting and working and pottery production taking place within the vicinity. This industrialised settlement is not defined as a small town as no nucleated settlement has yet been discovered. It is clear however, that activities at Snettisham were well organised with land division, road building, well construction and industrial processes successfully undertaken on a significant scale and maintained over several hundred years. It seems likely therefore, to have been part of the managed estates of the

Park Farm Villa, situated a short distance to the east on the Icknield Way.

The Park Farm Villa overlooks Snettisham and the Ingol Valley. The villa was partially excavated in the mid 1930s by H.C. Sheringham. Although never published, the site is known to have produced 3rd and 4th-century pottery and to have provided evidence for substantial Romanised activity. It has been suggested by Gregory (1982, 357) that the villa represents the centre of 'a single estate, with upland grazing on the high chalk, arable on the valley slopes and in the valley basin, and water meadow along the Ingol'. It is likely that the settlement at Snettisham was part of the estate belonging to this complex which in turn was one of a series of seven villa estates situated over an 11km stretch of the Icknield Way (Gregory 1982, 360–366). These villas were possibly used by assistants of the provincial procurator to manage this area as part of an Imperial Estate (Gurney 1986, 147). The villas are all located on the junction of the greensand and chalk, close to watercourses, and appear to date to the 3rd and early 4th centuries (Leah and Flitcroft 1993, 70). It is possible that drainage of the Fen-edge in the Roman period, which extended the available land, was managed by this series of villas. The virgin nature of the territory had precluded the establishment of a small town network that may otherwise have provided this role.

Although not of an equal size or status with the small towns of Roman Norfolk, the settlement at Snettisham does share some of their characteristics. It had a similar industrial character to Brampton, in central Norfolk, where extensive pottery production is known to have taken place in an industrial zone outside the town walls (Green 1977; Knowles 1967; 1977). The small town of Scole (Ashwin forthcoming), on the present day Norfolk/ Suffolk border, is also thought to have been associated with a local powerful estate of the Villa Faustini. Many similarities are apparent between Snettisham and the Fen-edge settlement at Hockwold-cum-Wilton (Salway 1970; Gurney 1986). Both settlements utilised ditched trackways connecting large rectangular enclosures which produced evidence for industrial activity and livestock management, and both went into decline in the later 3rd century. These similarities have been thoroughly addressed by Flitcroft (2001, 80) in discussing Late Iron Age and early Roman settlement on the Ingol Valley floor.

IV. Decline of Roman Activity

Industrial activity at Snettisham went into recession during the later part of the 3rd century and although evidence for settlement continues into the 4th century, it is on a relatively small scale. The slow-down in activity within Snettisham during this time is well reflected in the coin assemblage (Chapter 3.V The Coins) and has also been commented on previously by Flitcroft (2001, 80). Adverse economic conditions may have been aggravated by an increase in rainfall causing the fen drainage system to fail and much of the surrounding area to become flooded. While the settlement at Snettisham itself was unaffected by the rising waters, its important commercial hinterland (providing useful trade and subsistence products) and communication routes may have been adversely effected. It is possible that as the settlement at Snettisham became less viable, contracting away from the valley floor (Flitcroft 2001, 80) and the higher industrialised land discussed here, the population became concentrated around the villa complex in the later part of the Roman period. After the collapse of the Roman villa estate, activity at Snettisham appears to have died down until the surrounding fen was again reclaimed in the Middle to Late Saxon period (Ashwin 2000, 2).

Appendix 1. Roman Pottery Type Series

Form Descriptions and Codes

1 **Flagons and Jugs,** miscellaneous or indeterminate

1.1 Ring necked flagons
Scole: 10, 14, 18, 49, 90. BUG: 186. WS: 201, 203.

1.2 Flagons with a thickened rim, includes hammerhead rim types.
Scole: 213. WS: 194–197.

1.3 Flagons with a disc rim.
Scole: 213. WS: 194–197.

1.4 Flagons with a flanged narrow neck.
NV: 67. IKL: 5.

1.5 Flagons of the Hofheim type. Single and double handled flagons with cylindrical necks and out-curved lips that are triangular in section.
BUG: 188–190

1.6 Derivations of Hofheim type flagons.
BUG: 182, 183, 185.

1.7 Flagons with straight, narrow, necks.
NV: 66. Scole: 48.

1.9 Flagons with cupped, plain, rims.
WS: 202.

1.9.1 Flagons with cupped rims, the outer part of which is squared.
Scole: 163

2 **Narrow Mouthed Jars,** miscellaneous or indeterminate.

2.1.0 Narrow mouthed jar with a rolled everted rim, rounded body. It can have cordons with decoration on the neck, body and base of the vessel.
Scole: 63, 114, 183. WS: 222. BUG: 175, 176. Brampton: 7–9.

2.1.1 Narrow mouthed jar with an out-turned rim with flat upper surface. It can have cordons with decoration on the neck, body and base of the vessel.
CoS: 367.

2.1.2 Narrow mouthed jar with an out-turned under-cut rim. It can have cordons with decoration on the neck, body and base of the vessel.
CoS: 400.

2.2.0 Narrow mouthed jar, slim and pear-shaped, can be painted with horizontal stripes, while rim and neck cordons can be frilled.
Brampton: 183.

2.3 Narrow mouthed jar — broader, globular, thickened everted rim and frilled cordons around neck and rim.
IKL: 37, 48. Scole: 166.

2.4.0 Narrow mouthed jar, neckless and globular.
CoS: 452

2.7 Narrow mouthed jar with a straight ringed neck and globular body.

3 **Beakers,** miscellaneous.

3.1.0 Beaker with tall straight neck and rounded body.
IKL: 28. NV: 50, 54–57. Scole: 110.

3.3.0 Miscellaneous or indeterminate indented beaker.

3.3.1 Indented beaker with a curved neck, little or no neck, with oval indents.
NV: 40, 41.

3.3.2 Indented beaker with a funnel neck, oval indents and plain rim, can have incised lines around middle, rouletting around the shoulder and base, or barbotine scale decoration down ridges.
NV: 38, 39, 43.

3.4.1 Beaker with a ringed straight neck and globular body.
CoS: 337

3.5.0 Beaker with an inturned rim and rounded body.
BUG: 247, 248, gb20, 21.

3.6 A beaker with a straight neck, squared everted rim and globular body.
CoS: 331.

3.6.1 Bag-shaped beaker, plain rim.
NV: 44.

3.6.2 Bag-shaped beaker, cornice rim.
NV: 46.

3.6.3 Bag-shaped grooved beaker.
NV: 45.

3.6.4 Barbotine decorated plain or cornice rim.
NV: 48.

3.6.7 Bag-shaped beaker with roughcast decoration.
Scole: 37

3.7 Globular beaker with an everted rim
Scole: 190.

3.7.1 A truly globular beaker with an everted rim.
Scole: 20, 45, 190. WS 205, 206.

3.7.2 An asymmetrical, not truly globular, beaker with an everted rim.
Scole: 187.

3.10.1 Beaker with a high shoulder, simple everted rim and vertical burnished lines.
Scole 117, 121, 124, 126, 137, 146. ILK: 43,79.

3.10.2 Beaker with a high shoulder, simple everted rim and cross-hatch burnished lines.
Scole: 189.

3.10.3 Beaker with a less high shoulder and simple everted rim.
Brampton: 103.

3.11 Beaker with 'Cavetto Rim'.
Brancaster: 105. Burgh Castle: 142. BUG: 217.

3.12 Beaker with 'Cavetto Rim' high shouldered, small base, indented body. Often decorated with burnished line decoration in dents.
Scole: 135, 144, 151. IKL: 13.

3.13 Butt beakers.
BUG: 228–244.

3.15.1 A tall pedestal beaker with flattened sides and a rounded slightly everted rim, burnished and grooved decoration on body.

4 **Medium Mouthed Jars,** miscellaneous or indeterminate.

4.1 Medium mouthed jar with high-shouldered profile.
Scole: 1, 2, 19, 22, 44, 107. WS: 209.

4.4.0 Medium mouthed jar with a short angular neck, lid-seated or flattened rim.
Brampton: 174, 186. CoS: 432, 433, 468–471.

4.5.0 Medium mouthed jar, short neck and globular body.
Scole: 43, 93, 115, 202.

4.5.1 Medium mouthed jar, short neck, rolled rim and globular body.
CoS: 387, 413.

4.5.2 Medium mouthed jar, short neck, squared rim and globular body.
CoS: 397, 398, 408.

4.5.3 Medium mouthed jar, short under-cut neck and globular body.
CoS: 416.

4.5.4 Medium mouthed jar, short-neck with a rim rolled to form large bead and globular body.
CoS: 404.

4.6.1 Medium mouthed jar, short neck, and globular body, rolled rim with grooves at base of neck, (same as type 4.5 except for grooves).
Scole: 127, 186, 198.

4.8.0/1 Medium mouthed jar, everted rim — hollowed or with projection underneath, globular body.
IKL: 56. Scole: 199–201, 134.

4.9 Medium mouthed jar globular body, stab decoration around shoulder.
Scole: 36, 70. CoS: 410.

4.10.1 Medium mouthed jar — globular body, with slash decoration on shoulder and some grooving.
Scole: 162.

4.10.2 Medium mouthed jar, globular body and coarse rouletting.
Scole: 164.

4.10.3 Medium mouthed jar with combed wavy lines on the shoulder.

4.11 Medium mouthed jar, globular body, with rusticated decoration on the shoulder.
CoS: 392.

4.13.0/1 /2 Medium mouthed jar, rounded body, and everted rim (/1 has a less well defined rim. /2 has a slightly longer rim).
Scole: 5. BUG: 250, 251.

4.13.3 Medium mouthed jar, rounded body and lid-seated everted rim.
CoS: 442.

4.14 Large storage vessels — miscellaneous or indeterminate sherds.

4.14 Large storage jar — high shouldered and plain with no decoration on the shoulder.
Water Newton: 459–464.

4.16 Medium mouthed jar with a hooked rim.
Water Newton: 46.

5 **Wide mouthed Jars,** miscellaneous.

5.1.1 Carinated jar, a heavily cordoned 'Belgic type bowl'.
BUG: 196–210. Scole: 31, 34, 67, 100.

5.1.2 Carinated jar, with heavy cordons, distinguished from 5.1.1 by straight almost concave external wall above carination.

5.2.0 Carinated wide-mouthed jars.

5.2.1 Carinated wide-mouthed jars, with grooved cordons.
Scole: 21. WS: 221.

5.2.2/3 Wide mouthed carinated jars with a grooved bead/cordon on neck and above carination point.
Brampton: 58

5.3 Wide mouthed jar with a rounded body creating a reverse 'S' profile.
Scole: 39, 46, 94.

5.4 Wide mouthed jar with a reverse 'S' profile and one or two grooves mid-body.
Scole: 6, 40, 62, 66, 73, 92, 122. WS: 211, 212, 213.

5.5 Wide mouthed storage vessel — Horningsea type, with flange below rim.
IKL: 40.

5.6 Wide mouthed jar, with a plain 'S' profile.
Scole: 75. IKL: 41. WS: 240.

5.7 Wide mouthed jar with a short neck and thickened rim.
IKL: 46, 50, 85. NV: 75.

5.13.0/1 Carinated wide mouthed jar, plain (no cordons) with groove at base of neck (/1 has a ridge under the rim).
WS: 214. Scole: 52.

5.14 Same as 6.4.

5.15 Jar with applied pseudo ring handle, imitating a suspended cauldron.
CoS: 375.

6 **Bowl, Cup, Dish, Platter; any open form,** miscellaneous or indeterminate.

6.1.0 Bowl with a reverse 'S' profile and cordon or groove at base of neck; some footring bases.
IKL: 64, 76, 86, 90. NV: 86.

6.2.0 Caister box base.
Water Newton: 198–207. NV 89. CoS: 296.

6.2.1 Caister box lid.
Water Newton: 208–213. CoS: 295. Brampton: 218.

6.3.0 Carinated bowl with a flattish out-turned rim.
Scole: 16, 69, 72. WS: 282.

6.4.0 Hemispherical bowl.
BUG: 269, 270, 273–275.

6.4.2 Hemispherical bowl with a wavy flange.
CoS: 584.

6.5 Straight-sided cup/bowl — copy of samian form 30, with decorative zone of stamped, combed, rouletted, incised or impressed designs of West Stow type ware.
WS: 252–258, 260, 261. Scole: 81.

6.6 Bowl — copy of samian form 37. Same form and decorative design as 6.5 but larger diameter bowl probably formed a cup and bowl set.
BUG: 295. WS: 2440247, 249–251. Scole: 41, 42, 61.

6.7 Carinated bowl — straight sided.
Scole: 159. NV: 85.

6.8 Straight-sided cup with a flat base and no footring.
GE: fig. 39(j).

6.9 Sharply carinated cup/beaker — upper part concave externally, footring and base.
Scole: 88. WS: 281.

6.11.0/1 Campanulate Bowl, copy of samian form 27.(/1 local copy).
Scole: 4, 15, 53, 108.

6.14.0 Flanged bowl; hemispherical with plain hooked flange, usually well down the wall. Footring base. Copy of samian form 38.
NV: 83, 101

6.15.0 Bowl with curving sides and out-turned rim, flanged and unflanged, footring base.

6.15.1 Bowl with curving sides and out-turned rim, unflanged, footring base.
Scole: 74, 76, 97, 112.

6.15.2/3 Bowl with curving sides and out-turned rim, `bead and flange' type rim, footring base.(/3 squared everted rim).
WS: 228, 230, 231.

6.16 Bowl flaring rim, footring base common.
Scole: 84, 111. WS: 229.

6.17 Flanged rim dishes; straight sided, flat base, miscellaneous or indeterminate.

6.17.1 Flanged rim dish with a slight bead.
IKL: 16, 25.

6.17.2 Flanged rim dish with a small flange.
CoS: 508.

6.17.3 Flanged rim dish with a plain flange and a standard with high bead.
Scole: 147, 155, 181, 182, 224.

6.17.6 Flanged rim dish with an impressed/incised flange decoration.
IKL: 61, 65, 81.

6.18.0 Straight-sided dish, flat based, and thickened everted 'triangular' rim.
Scole: 123, 129, 148, 175, 222.

6.18.2 Straight-sided bowl with finger frilled rim.
CoS: 584.

6.18.3 Straight-sided dish and thickened everted rim, lid-seated.

6.19.0 Dish with straight sides that may be upright or angled, with a plain rim that may have an external groove just below it.

6.19.1 Straight-sided dish with a plain rim, nearly upright.
IKL: 20, 39, 67. Brancaster: 71.

6.19.2 Straight-sided dish with a plain rim, angled sides.
Brancaster: 157.1–7.

6.19.3 Straight-sided dish, upright, with an external groove below rim.
IKL: 34. Brancaster: 153.1, 2, 10.

6.19.4 Dish with angled sides with external groove below rim.
Scole: 119, 128.177. Brancaster: 70, 153.6, 7.

6.19.5 Larger dish, straight or angled sides, with a 'shovel-shaped' rim.
PKM: 4099/4.

6.19.6 Dish with angled sides with two external grooves below rim.
CoS: 598, 599,604.

6.21.0 Open dish with an internal angle, incurving rim, and flat or foot ring base.
Brampton: 27.

6.21.1 Dish with a sharp inside angle often marked by a ridge internally where it curves inwards.
WS: 225.

6.21.3 Dish with a heavy inward curve.
Scole: 120.

6.22 Platters, Gallo-Belgic type.
BUG: GB1–9.

7 **Mortaria**

7.1 *Miscellaneous fabrics*

7.1.4 A mortarium with a triangular bead with a thick gently curving flange with a squared distal end.
Snettisham (ctxt 389).

7.1.5 A mortarium with a collared flange that expands towards the distal end, it has a single groove at the top and one at the bottom of the collar.
(Snettisham ctxt 300).

7.3 *All Colchester/Ellingham Fabric B forms*
Miscellaneous

7.3.9.1 Mortarium with a high square bead and large thick, almost straight, flange with a bulge in the middle and a square distal end.
Snettisham (ctxt 549).

7.3.10 Mortarium with a low triangular bead and thick well curved flange where the squared distal end is almost parallel with the vessel body. (Very similar to previously recorded Ellingham products).
Snettisham (ctxt 530).

7.3.11 Mortarium with a rounded bead above a thick short straight flange with a rounded distal end.
Snettisham (ctxt 302).

7.4 *All slightly micaceous, probable Brampton, forms*
Miscellaneous

7.4.8 Mortarium with a high bead and a relatively thick rounded flange and a squared distal end.
Snettisham (ctxt 366).

7.4.8.1 Mortarium with a high squared bead with a sharply curved flange with a broad (rolled) distal end.
Snettisham (ctxt 617).

7.4.8.2 Mortarium with a high small bead over a large flange that curves slightly and broadens at the distal end.
Snettisham (ctxt 514).

7.8 *All Oxfordshire White Ware forms*
Miscellaneous

7.8.1 Mortarium with upright squared bead with a relatively long and thin flange that curves gently.
Snettisham ctxt (458).

7.9 *All Nene Valley forms*
Miscellaneous

7.9.1 Mortarium with slightly angled reeded rim, (usually with three grooves), the bead is substantial and often square in section.
NV: 102. RC: 500. CoS: 728.

7.9.2 Mortarium with a steep sided wall or collared rim, with an applied lion's head spout, derived from samian form Drag. 45.
NV: 84.

7.13 *All Caistor (St Edmund) Miscellaneous mortaria*

7.13.1 Low squared bead with a shallow groove in front. A thin gently curving flange with a slightly tapering distal end. (This example has an incomplete herringbone stamp). Grey, white and red flint trituration grits.
(Snettisham ctxt 571).

7.14 *All Nar Valley Oxidised mortaria*

7.14.1 Thin walled mortaria with an out-turned flange that flares towards the distal end and a very high squared bead that curves inwards (slag trituration grits).
(Snettisham ctxt 301).

7.14.2 Mortaria with a thick curving flange that flares slightly at the distal end, with a high circular bead (slag trituration grits).
(Snettisham ctxt 301).

8 **Lids**
Miscellaneous or indeterminate.

8.1 Lid — standard type to fit cooking/storage pot inturned or out-turned, can have terminal grip.
Scole: 102, 103, 104.

9 **Oddities**

9.3 Cheese Press WS 297.
WSF: 003 (unpublished).

Samian

Curle 15. A bowl that forms a set with the smaller Dr46. Both forms have flaring walls that are concave externally. The rim generally turns upward, however various are common with this form.

Curle 21. A mortar-like bowl but without trituration grits. The external surface of the lower vessel wall is deeply horizontally rilled. There is a curved flange.

Dr15/17. A platter with an internal quarter-round moulding at the junction of the wall and floor.

Dr18/31. A shallow bowl, with a very slightly curved wall, (the division between the wall and the floor is apparent), while the floor rises noticeably in the centre.

Dr18/31R. Similar to 18/31 although the division between the wall and floor has become very slight.

Dr27. Cup with a double curved wall and beaded rim. A groove or offset just below the rim internally and a groove on the footring may occur in 1st century examples. Examples with the grooved footring are denoted as form 27g.

Dr 30. A straight-sided bowl, with the lower 2/3rds of the vessel wall covered in moulded relief design and the upper ?rd consisting of an ovolo border. Elaborate footrings.

Dr31. A shallow bowl with a curved wall and beaded rim (the division between wall and floors apparent).

Dr31R. A shallow bowl with a curved wall and beaded rim (the division between floor and wall is vestigial).

Dr32. A dish with plain curving sides and footstand, forms a set with cup Dr40.

Dr33. A conical cup with a footring. There are often grooves (or a groove) on the external vessel wall.

Dr35. A cup with curved walls and over-hanging rim. Trailed leaves are applied on the rim; forms a set with dish Dr36.

Dr36. Dish with curved walls and over-hanging rim; trailed leaves are applied on the rim, forms a set with Dr35.

Dr37. A deep bowl with slightly curved sides. The wall of the vessel is usually divided into two (approximately) equal zones, where the lower half is decorated.

Dr38. A hemispherical bowl with a plain hooked flange below the mid-way point on the wall. The rim can be beaded or plain.

Dr40. A cup with plain curving sides and foot-stand, forms a set with Dr 32.

Dr44. Globular bowl with beaded rim and a cordon below the mid-way point on the wall.

Key to abbreviated site names in pottery type series

Site abbreviation	*Site name*	*Publication reference*
BRANCASTER	Brancaster, Norfolk	Andrews 1985
Brampton	Brampton, Norfolk	Green 1977
BUG	Burgh, Norfolk	Martin 1988
Burgh Castle	Burgh Castle	Johnson 1983
CoS	Caister on Sea	Darling and Gurney 1993
GE	Grimstone End, Suffolk	Unpublished, available through the Suffolk SMR
IKL	Icklingham, Suffolk	West and Plouviez 1976
NV	Nene Valley, Cambridgeshire	Howe *et al*. 1980
PKM	Pakenham, Suffolk	Unpublished, available through the Suffolk SMR.
RC	Roman Colchester	Hull 1963
Scole	Scole, Norfolk	Rogerson 1977
Water Newton	Water Newton, Cambridgeshire	Perrin 1999
WS	West Stow, Suffolk	West 1990
WSF	Wattisfield, Suffolk	Unpublished, available through the Suffolk SMR.

Dr45. A mortarium with a near upright upper wall. There is an overhang at the junction of the upper and lower walls. A spout in the form of a loin or bat head is applied to the wall. Rilling can occur near the footring externally.

Dr79. A large dish with strongly curving walls and beaded rim, forms a set with Dr80. There is a groove below the rim internally. The fabric is thicker than in other comparable forms (Dr27 and Dr18).

79R also occurs (very helpful).

Dr80. Cup with strongly curving walls and beaded rim, forms a set with Dr79. The fabric is thicker than in other comparable forms (Dr27 and Dr18).

Dr81. Almost a jar with a wide neck and slightly everted rim. The upper wall thickens and allows an overhang at between one-third and half-way up the wall from the base.

OandP LV13. Cup form of a Curle 23, with a curved wall and a hooked rim.

W79. Dish with strongly curving walls and beaded rim. There is a groove below the rim internally and often a slight offset at the junction of wall and floor.

Amphora

Dressel 2–4. Cylindrical amphora with long bifid handles with a small beaded lip and distinct carinated shoulder.

Dressel 20. Large globular form, with two handles and thickened, rounded or angular rim, concave internally.

Oxfordshire

C55 Hemispherical bowl with a bead rim, perhaps copying Dr 37. 240–400+.

C61 Variant of C55 with a cordon mid-way down the wall. 350–400+.

C81 Wall sided, bead rim, carinated bowl. 300–400.

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