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SUMMARY

The Museum of London Archaeology Service (MoLAS) was commissioned by Union Railways (South) Limited (URS) to undertake detailed archaeological investigations at Area 330 Archaeological Zone 3, Northumberland Bottom, south of Gravesend, Gravesham, Kent. This work formed part of an extensive programme of archaeological investigation carried out in advance of the construction of the Channel Tunnel Rail Link (CTRL).

This zone, which stretches for 1.75km from west to east, consists of a low knoll in the area of Hazells Farm, with a dry valley to the east, containing Downs Road. From here the land rises fairly gently for approximately 800m to a high point at Northumberland Bottom before descending into second dry valley with fairly gentle sides, now occupied by the A227 (Wrotham Road).

The site showed evidence for:

Late Neolithic – Early Bronze Age (c 2500 – 1600 BC):

- Double inhumation with pottery beakers on high ground facing east (Wrotham Road dry valley)

Early Bronze Age (c 2000 - 1400 BC):

- A single cremation in an upturned vessel on low ground to the north of Hazells Farm.

Later Bronze Age (c 1000 – 700 BC):

- Cremation and Deverel-Rimbury vessel on high ground at Northumberland Bottom, facing west.
- Possible associated cremations

Later Bronze Age – Early Iron Age (8th to 6th, possibly to the 3rd century BC)

- Rubbish pits and metal working area, animal pens and associated buildings and cooking pits to the north of Hazells Farm.

Mid – Late Iron Age (c 3rd to 1st century BC)

- Concentration of pits to the north of Hazells Farm, one of which contained a ‘ritual deposit’ of animal carcasses; another, a rare La Tène brooch
- Boundary ditches, roads, four post structures and enclosures on moderately high ground facing west
- Enclosure ditches on high ground facing west
- Dispersed pits across the Zone

Late Iron Age – early Roman (1st century BC to 1st century AD)

- Large multi-phased enclosure and road on moderately high ground facing west. The enclosure contained a horse burial, ovens/kilns, pits, postholes and a possible ‘ritual cooking pit’ (occupation 1st century BC to around 70 AD)

Roman (1st to 4th century AD)

- Enclosures, roads, ditches, pits, inhumations, ovens/kilns, possible buildings and mines on medium to high ground facing east (Wrotham Road dry valley; occupation 1st to 3rd century AD).
- Occupation is also indicated as continuing on high ground at Northumberland Bottom.
- Part of an enclosure on high ground at Northumberland Bottom
- Chalk built double malting oven (preserved *in situ*), two phases of road (also preserved *in situ*), associated pits, boundary and enclosure ditches on low ground to the east of Hazells Farm (occupation until late 3rd century AD)

Medieval (11th to 15th century)

- Enclosures (2 phases dating between 1050 and 1350), buildings, ovens and pits on high ground at Northumberland Bottom
- Malting ovens and enclosures (1100 – 1300) on low ground to the east of Hazells Farm
- Pits and postholes (1050 – 1300) on low ground to the east of Downs Road

Post-medieval and modern (16th to 20th century)

- Brick clamp to the north of Hazells Farm (1450 – 1700)

- Dispersed field boundaries, tracks and quarry features
- Second World War Army Camp and Anti Aircraft Battery at Northumberland Bottom

Significant amounts of artefactual and ecofactual material were recovered from the above features across the Zone.

1. INTRODUCTION

1.1 Project Background

1.1.1 The Museum of London Archaeology Services (MoLAS) was commissioned by Union Railways (South) Limited (URS) to undertake detailed archaeological investigations at Archaeological Zone 3, Northumberland Bottom, south of Gravesend, Gravesham, Kent (Figure 1). This work formed part of an extensive programme of archaeological investigation carried out in advance of the construction of the Channel Tunnel Rail Link (CTRL).

1.1.2 The archaeological Written Scheme of Investigation was prepared by Rail Link Engineering (RLE), agreed in consultation with English Heritage and Kent County Council (KCC) on behalf of the Local Planning Authorities.

1.1.3 Zone 3 location:

Approx. Compass direction of Co-ord.	URL Easting	URL Northing	NGR Easting	NGR Northing
North-west	42540.233	51751.859	562536.197	171753.454
South-east	44127.181	51004.736	564123.145	171006.331

1.1.4 Zone 3 lies between CTRL Chainage 39+250 and 41+000 and covers a length of 1.75km.

1.1.5 The topography of this zone, from west to east, consists of a low knoll in the area of Hazells Farm, with a dry valley to the east, containing Downs Road. From here the land rises fairly gently for approximately 800m to a high point at Northumberland Bottom. From here there is a further dry valley, now occupied by the A227 (Wrotham Road).

Table 1: Previous work on site

Event name	Event code	Contractor	Dates	Type
Environmental Assessment	ARC URL 94	OAU	1994	Surface Artefact Collection
Northfleet	ARC NFT 95	Bartlett Associates	1995	Geophysical
West of Tollgate	ARC TGW 95	Bartlett Associates	1995	Geophysical
West of Tollgate	ARC TGW 97	MoLAS	April 1997	Trial trench evaluation

Event name	Event code	Contractor	Dates	Type
West of Northumberland Bottom	ARC WNB 97	MoLAS	April 1997	Trial trench evaluation
West of Northumberland Bottom	ARC WNB 98	MoLAS	June to September 1998	Detail Excavation
Package 330 Watching Brief	ARC 330 98	MoLAS	December 1998 to May 2000	Targeted Watching Brief
Hazells Road Diversion	ARC HRD 99	MoLAS	April 1999	Detail Excavation

1.2 Geology and Topography

1.2.1 The solid geology consists of Upper Chalk overlaid locally by the silty sands and sandy clays of the Thanet Beds (Figure 2).

1.2.2 The site is situated at the foot of the North Downs, but the local topography is varied. It is dominated by a hill, rising to 50m OD in the area occupied by the former Northumberland Bottom army camp. To the east the ground falls fairly steeply towards Wrotham Road (A227), which lies in a dry valley. The west-facing side of the hill is generally less steep, although the gradient increases towards Downs Road, which lies in another dry valley, a relict tributary of the Ebbsfleet. To the west of Downs Road the ground rises to a low knoll (at c. 30m OD) occupied by Hazells Farm.

Table 2: Topographic and geological details; Zone 3

Topography	Levels	Chainage	Geology
Hazells Farm knoll, overlooking Downs Road dry valley to the east and upper Ebbsfleet valley to the north.	27m OD (maximum – archaeological works to 23m OD)	39+500	Eroded Thanet sands and alluvial silts over Chalk.
Downs Road dry valley, orientated south to north	20m OD	39+700	Chalk
West-facing slope rising to Northumberland Bottom	Rising to 54.4m OD	40+560	Chalk
East-facing slope descending into Wrotham Road dry valley	Dropping to 35m OD	48+480	Chalk

1.2.3 The surface of the Upper Chalk undulates and where the gradient is shallower yellowish brown sandy silts and gravels overlay the chalk. Periglacial striations

and run-off channels indent the slopes and are filled with silty clay containing flint nodules. On the eastern side of Downs Road the surface of the chalk descends in a series of shallow terraces. In the Hazells Farm area Thanet sands are prominent.

- 1.2.4 Colluvial deposits of relatively recent origin have accumulated on the lower slopes of the dry valleys. In some areas the colluvium seals earlier archaeological features.

1.3 Archaeological and Historical Background

- 1.3.1 A preliminary desk-top assessment, conducted for Union Railways Limited (URL) between 1990 and 1994 (URL 1994, vol 1, 101, section 5.14.1.3), identified the site as having possible archaeological interest. Aerial photographs showed cropmarks in ARC WNB 98 Area A/B (corresponding to evaluation ARC WNB 97) suggesting the 'paddocks, enclosures and pits of an Iron Age/Roman rural settlement' and 'enclosures and field boundaries' to the east (URL 1994, vol 2, drawing 3013; vol 3, gazetteer 1557 & 1909; SMR No. TQ 67 SW 125). In ARC WNB 98 Area C (corresponding to evaluation ARC TGW 97) 'undated rectilinear enclosures' or 'field boundaries of a more recent date' (URL vol 3, 1558; SMR No. TQ 67 SW 123). The desk-top assessment also indicated that the site was 300m south of the route of the main Roman road between Dover and London (Watling Street, the A2) and 1.5–2km east of the Roman small town at Springhead. A surface artefact collection (or fieldwalking) survey in the vicinity of the site in 1993 located scatters of prehistoric worked flint (URL 1995, part 1, 23, section 2.2.5.3; part 2, maps 3a–3i; URL 1994 vol 3, gazetteer 1803 & 1804). The small quantities of Roman pottery and tile, and post-Roman pottery recovered were considered insignificant.
- 1.3.2 The desk-top assessment was supplemented by geophysical prospection (URL 1996). Magnetometer surveys within two areas (ARC NFT 95, corresponding approximately to ARC WNB 98 Area A/B, and ARC TGW 95, corresponding approximately to ARC WNB 98 Area C) identified a range of anomalies which included linear and curving ditches and distinct concentrations of features with possible archaeological significance.
- 1.3.3 Two archaeological evaluations of the Zone were commissioned by URL and undertaken in 1997 by MoLAS. Forty-four trial trenches were excavated to the west of the former Northumberland Bottom army camp (ARC WNB 97). These trenches revealed a group of possible Middle to Late Bronze Age to Early Iron Age features and other groups of features which dated to the Late Iron Age/ early Roman period. These features were interpreted as a settlement site with an adjoining field system. The second evaluation, West of Tollgate (ARC TGW 97) revealed a number of intersecting field ditches dating from the Late Iron Age/early Roman period through to the early 3rd century AD, a medieval field ditch and a large quarry pit.
- 1.3.4 These evaluations were followed by the main archaeological excavation ARC WNB 98, Areas A/B and C between June and September 1998. Immediately prior to the excavation a metal detector survey of Areas A/B and C was carried out under MoLAS supervision. This produced a range of artefacts, principally of post-medieval date but including some Roman coins, jewellery and dress fittings. The finds have been plotted on a distribution map. A standing building survey of

Northumberland Bottom Second World War Army Camp (ARC NBAC 98) was also undertaken at this time.

- 1.3.5 The archaeological excavations were followed by a watching brief on construction works (ARC 330 98) between December 1998 and May 2000. The construction works included the Hazells Road Diversion (ARC HRD 99), excavation of cuttings through the area to the north of Hazells Farm and the rising land towards the east, service trenches and access roads preparing the CTRL Northumberland Bottom Construction Site. Much of the construction works between Northumberland Bottom and the A227 consisted of topsoil stripping only and thus did not reveal archaeological features. The area of the previous Army camp was shown to be severely truncated.

2. ORIGINAL PRIORITIES, AIMS AND METHODOLOGY

2.1 Research Objectives

- 2.1.1 The site is located within the Landscape Zone of the North Kent Downs (A2 Corridor). As such it was seen as a key area for studying the following research objectives as defined in the CTRL Research Strategy and set out in the Written Scheme of Investigation:

Farming communities (2000-100BC)

- Determine spatial organisation of the landscape in terms of settlement location in relation to fields, pasture, woodland, enclosed areas and ways of moving between these
- Consider environmental change resulting from landscape organisation and re-organisation
- Determine how settlements were arranged and functioned over time

Towns and their rural landscapes (100 BC – AD 1700)

- What was the effect of the development of towns (eg. London, Springhead) on the organisation of the landscape?
- Did population increase and concentration effect natural resource exploitation and accelerate environmental change?
- How were settlements and rural landscapes organised and how did they function?
- How did the organisation of the landscape change through time?
- Consider the effect on the landscape of known historical events, eg. the arrival of Roman administration

The recent Landscape (1700 – 1945)

- In what ways was local rural economy affected by Enclosure and agricultural intensification
- Consider changes in land use and organisation following construction of the railways
- Consider the defence of the Thames Estuary and North Kent during periods of threat eg Napoleonic Wars and World Wars
- Consider the effects of river(side) exploitation and trading

2.2 Landscape Zone Priorities

- 2.2.1 In light of the above the following Landscape Zone Priorities were identified.

Reconstruction of the changing palaeo-environment for all time periods present, through 'on-site' and 'off-site' studies, and the interaction with past economies.

- The interaction of hunter foragers with the natural environment
- Changes arising from the adoption of agricultural based economies
- The effects of 'urban' growth and decline at Springhead, and the adoption of Roman ways and organisation in general

Spatial organisation of the landscape, and changes through time

- The socio-economic landscape of later agriculturists (2000-100 BC)
- The immediate pre-Roman – early Roman urban-rural landscape

- Pre-Roman urban origins
- The effect of the Roman administration on the established economic landscape
- The impact and effect of the development of Roman Watling Street
- Character, function and development of the rural urban fringe, and satellite uses

The late and immediate post-Roman landscape

- The decline of the urban economy and wider changes in the later Roman economy in general – how this is reflected in the archaeological resource, and its effect on rural settlement and economy

Ritual and ceremonial use of the landscape

- The environment of the long barrow-mortuary enclosure at Tollgate;
- Roman burial and ceremonial use in the environs of Springhead

2.3 Fieldwork Event Aims

2.3.1 The Fieldwork Event Aims for the main excavation (ARC WNB 98), as stated in the WSI were as follows:

Primary aims

- To establish a record of changing settlement and landscape morphology for the area, including habitation areas and associated enclosures and track-ways etc.
- To determine the function of these areas and changes through time (eg. the effect of the imposition and decline of Roman administration)
- To determine the palaeo-economy of settlement through the recovery of charred plant material and other palaeo-economic indicators
- To determine the local environment of settlement through the recovery of assemblages of molluscs from cut features and colluvial sequences

Secondary aims

- To recover suitable pottery assemblages for study of the Late Bronze Age to early Iron Age transition
- To recover suitable late Iron Age/early Romano-British pottery assemblages to refine the understanding of fabric types and chronologies
- To recover assemblages from late Iron Age/early Roman contexts for archaeo-zoological studies

2.3.2 Additional Fieldwork Event Aims were formulated for the archaeological watching brief in this area:

- To establish the nature of landscape division through time
- To recover dating evidence from the features located to enable a chronology for the division of the landscape to be established
- To establish changes in the local environment through the recovery of suitable palaeo-environmental samples and dating evidence from the sedimentary sequence located at the western end of the area
- To establish if the medieval building(s) located to the west are associated with activity of a similar date within the area of investigation

2.4 Fieldwork Methodology and Summary of Excavation Results

2.4.1 In summary, the fieldwork consisted of surface artefact collection, geophysical prospecting, archaeological trial trench evaluations, metal detector survey, bulk excavation, archaeological excavation and recording, watching brief monitoring, archaeological excavation and recording. The methods of investigation were set out in a series of Written Schemes of Investigation, prepared by RLE, detailing the scope and methods of fieldwork and agreed with English Heritage and KCC on behalf of the local authority. These works may be briefly defined as:

Strip, Map and Sample

- The excavation and recording of sufficient contexts to establish a relative and absolute chronology of remains, and undertake sufficient sampling to gain artefactual, economic and palaeoenvironmental indicators to achieve the project aims.

Detail Excavation

- The excavation and recording of all significant contexts and relationships to establish the sequence of development and function of the site. Consideration was given to single context planning in areas of complex stratification.

Watching Brief

- All construction groundworks which potentially contained archaeological remains were monitored by MoLAS archaeologists. Construction backactors were fitted with flat bladed ditching buckets when conducting area stripping. Where archaeological remains were observed the area was cordoned off, excavated and recorded by MoLAS archaeologists.

Standing Building Survey

- The production of a record of the built structures present on site that conformed with Level 2 of the levels of recording detailed in '*Recording Historic Buildings: A Descriptive Specification*' Royal Commission on the Historic Monuments of England 1996 Third Edition.

2.4.2 On exposure all features were partly or wholly excavated by hand and plotted using a pen-computer or planned on pre-printed gridded permatrace and related to the site grid. Individual contexts were recorded on pro-forma context sheets. Sections were drawn on pre-printed, gridded sheets of draughting film and the section positions accurately plotted using a total station.

2.4.3 A photographic record was kept of individual archaeological features, sections, and appropriate groups of features and structures. Finds were bagged and retained and environmental samples, both bulk and column, were taken where necessary from features and deposits.

2.4.4 In summary the excavations revealed:

Late Neolithic – Early Bronze Age (c 2500 – 1600 BC):

- Double inhumation with pottery beakers on high ground facing east (Wrotham Road dry valley)

Early Bronze Age (c 2000 - 1400 BC):

- A single cremation in an upturned vessel on low ground to the north of Hazells Farm.

Later Bronze Age (c 1000 – 700 BC):

- Cremation and Deverel-Rimbury vessel on high ground at Northumberland Bottom, facing west.
- Possible associated cremations

Later Bronze Age – Early Iron Age (8th to 6th, possibly to the 3rd century BC)

- Rubbish pits and metal working area, animal pens and associated buildings and cooking pits to the north of Hazells Farm.

Mid – Late Iron Age (c 3rd to 1st century BC)

- Concentration of pits to the north of Hazells Farm, one of which contained a ‘ritual deposit’ of animal carcasses; another, a rare La Tène brooch
- Boundary ditches, roads, four post structures and enclosures on medium-high ground facing west
- Enclosure ditches on high ground facing west
- Dispersed pits across the Zone

Late Iron Age – early Roman (1st century BC to 1st century AD)

- Large multi-phased enclosure and road on moderately high ground facing west. The enclosure contained a horse burial, ovens/kilns, pits, postholes and a possible ‘ritual cooking pit’ (occupation 1st century BC to around 70 AD)

Roman (1st to 4th century AD)

- Enclosures, roads, ditches, pits, inhumations, ovens/kilns, possible buildings and mines on medium-high ground facing east (Wrotham Road dry valley; occupation 1st to 3rd century AD)
- Occupation is also indicated as continuing on high ground facing north at Northumberland Bottom.
- Part of an enclosure on high ground at Northumberland Bottom facing west/south
- Chalk built double malting oven (preserved in situ), 2 phases of road (also preserved in situ), associated pits, boundary and enclosure ditches on low ground to the east of Hazells Farm (occupation until late 3rd century AD)

Medieval (11th to 15th century)

- Enclosures (2 phases dating between 1050 and 1350), buildings, ovens and pits on high ground at Northumberland Bottom facing west
- Malting ovens and enclosures (1100 – 1300) on low ground to the east of Hazells Farm
- Pits and postholes (1050 – 1300) on low ground to the east of Downs Road

Post-medieval and modern (16th to 20th century)

- Brick clamp to the north of Hazells Farm (1450 – 1700)
- Dispersed field boundaries, tracks and quarry features
- Second World War Army Camp and Anti Aircraft Battery at Northumberland Bottom

2.5 Assessment Methodology

- 2.5.1 This assessment report was commissioned by URS to the specification for assessment reports produced by RLE (CTRL Section 1 Archaeology: Post excavation Assessment Instruction no. 000-RMA-RLEVC-00030-AB), as discussed with English Heritage and Kent County Council. The production of this assessment was by the Museum of London Archaeology Service (MoLAS) with specialist advice provided by the Museum of London Specialist Services (MoLSS).

3. FACTUAL DATA AND QUANTIFICATION

3.1 The Stratigraphic Record

- 3.1.1 The archaeological evidence consisted mainly of intrusive features (pits, ditches, postholes etc) that were recognised immediately below the modern topsoil, cut into natural strata. The features were all truncated as a result of recent ploughing. There were indications that the movement of deposits down-slope has also played a significant part in the loss of archaeological evidence. Generally, ancient land surfaces could not be identified. Some Roman road surfaces did survive in places, mainly because they had formed hollow-ways and been sealed by colluvial deposits.
- 3.1.2 Several foci of activity were identified, indicating changing patterns of land use over time (Figures 3a/3b). Within these areas the intensity of activity varied: in some the evidence was fairly dispersed and there was little intercutting of features that would otherwise have allowed a better understanding of the stratigraphic sequence. In areas of more intensive activity stratigraphic relationships exist which provide the basis for phasing the archaeological sequence. The results of the fieldwork can be summarised by period, as follows:
- 3.1.3 As the various areas of occupation generally occupied discrete zones there was very little problem with intrusiveness or residuality of finds. This has enabled a fairly clear sequence to be demonstrated.
- Late Neolithic-Early Bronze Age (c 2500 – 1600 BC)*
CTRL Research strategy time period: Farming Communities (2,000 – 100BC).
- 3.1.4 A late Neolithic-Early Bronze Age double inhumation [107] (ARC WNB 98) was found on the shoulder of the hill overlooking the dry valley at the east end of Zone 3 (Plates 1 and 2, Figure 16). Each of the adult skeletons was flexed, the earlier (female) with the head to the south and the later (male), overlying the first, with the head to the north. It remains unclear whether the two burials occurred at the same time or if the grave was re-opened for the insertion of the second burial. A beaker vessel accompanied each of the inhumations. A sample of the grave fill contained other human bones, probably of a child. It is possible that this was a third inhumation that had been disturbed by animals.
- 3.1.5 There was no evidence for an overlying barrow or surrounding ditch. There were a number of shallow pits and erosion features in the immediate vicinity; these are undated. One of the pits contained some oyster and mussel shells.
- 3.1.6 A shallow, linear depression [1059] (ARC WNB 98) to the east of the grave and running along the contour of the dry valley is interpreted as an erosion feature, perhaps a prehistoric track. The only dating evidence for this feature is a single sherd of Roman pottery in its fill.
- Early Bronze Age (c 2000 – 1400 BC)*
CTRL Research strategy time period: Farming Communities (2,000 – 100BC).
- 3.1.7 An Early Bronze Age cremation burial [106] (ARC 330 98) was found in a small, circular pit in a relatively low-lying area at the western end of Zone 3

(Figures 4 and 5). The cremation was contained in a Collared Urn that was inverted at the time of burial.

- 3.1.8 There is no evidence for other Early Bronze Age activity in the immediate vicinity of the cremation burial. The only features that might have been contemporary with it were two (undated) parallel ditches [320] and [343] (ARC 330 98) to the east. These might have formed part of a nearby enclosure.

Late Bronze Age (c 1000 – 700 BC)

CTRL Research strategy time period: Farming Communities (2,000 – 100BC).

- 3.1.9 The only definite evidence for late Bronze Age activity was a cremation burial in a pottery urn [2013] (ARC WNB 98), found on the higher ground in the vicinity of the former Northumberland Bottom army camp (Figure 13). The vessel was truncated by recent ploughing and the absence of diagnostic fragments means that at present the precise dating of the cremation is uncertain. The flint-tempered vessel could be of Deverel-Rimbury type or a late Bronze Age urn.

- 3.1.10 Another (undated) cremation [2164] (ARC WNB 98) was found in an oval pit about 18m to the south of the late Bronze Age cremation. Other (undated) features that might have been associated with funerary activity are an area of scorched ground [167] (ARC WNB 98), a circular hearth [164] (ARC WNB 98) or fire-pit and a small rectangular pit [166] (ARC WNB 98). These were all located about 20m to the north of the cremation vessel. However, these features might relate to the medieval enclosures located nearby.

Late Bronze Age-Early Iron Age (8th to 6th, possibly to the 3rd, century BC)

CTRL Research strategy time period: Farming Communities (2,000 – 100BC).

- 3.1.11 The earliest evidence for actual occupation within Zone 3 dates to the Late Bronze Age/Early Iron Age, concentrated near to Hazells Farm, on the knoll to the west of the Downs Road dry valley (Figure 5). Here a scattered group of five rubbish pits [109], [118], [156], [406] and [1263] (ARC 330 98) a metalworking [1427] (ARC 330 98) area and an area of possible animal pens indicate the presence of a settlement site extending over an area of at least 0.2 ha.

- 3.1.12 The five pits all produced domestic refuse in the form of pottery and animal bone, together with quantities of fired clay/daub. The pottery assemblage is characterised by coarse ware jars, but includes a number of finer ware vessels.

- 3.1.13 The metalworking area consisted of a complicated sequence of intercutting pits, some of which are likely to have been used as bowl furnaces. There was intense scorching of the sides and bases of some of the pits, and some have associated working hollows or stoking areas. There is also a possible water hole/quarry surrounded by a fence and a cooking pit [1273] (ARC 330 98) containing much fire-cracked flint.

- 3.1.14 The evidence for animal pens is concentrated in an area of about 16m x 6m, to the west of the pits and furnaces. Approximately 200 stakeholes were found, mostly in a large, shallow depression in the underlying subsoil. Preliminary analysis suggests that the stakeholes indicate the positions of temporary hurdles that were arranged to form a series of 'bays'. The ground inside at least one of these bays seems to have been trampled. In the same area are two parallel rows of larger postholes that might represent more substantial structures such as fences. The bone assemblage from elsewhere within the settlement indicates that cattle and sheep or goats were husbanded at that time.

- 3.1.15 Just to the west of the postulated animal pens were two parallel ditches [1268] and [1270] (ARC 330 98), closely spaced and of equal length. Their function is unclear. One of them produced 14 sherds of Late Bronze Age/Early Iron Age pottery, probably all from the same vessel. This might have been a 'placed deposit' with ritual significance.
- 3.1.16 There is some evidence for activity in this period elsewhere within Zone 3. On higher ground about 300m to 350m to the east of the occupation site an isolated pit [119] (ARC WNB 98) contained 57 sherds of flint-tempered pottery, some of which are large and apparently from the same vessel, perhaps another 'placed deposit' (Figure 9). The pit also contained some fire-cracked flint. The pottery seems to represent a primary deposit and implies the presence of a focus of activity in the vicinity, presumably outside of the excavated area.
- Mid-late Iron Age (c 3rd to 1st century BC)*
CTRL Research strategy time period: Farming Communities (2,000 – 100BC).
- 3.1.17 In the mid-late Iron Age activity seems to have extended over a much wider area, with further occupation of the site near Hazells Farm and greater use of the rising ground to the east of the Downs Road dry valley. At this stage it is not possible to say whether occupation of the settlement site was continuous from the Late Bronze Age/Early Iron Age into the mid-late Iron Age. Further analysis of the pottery assemblage will help to elucidate this.
- 3.1.18 The evidence for later activity consists of 11 pits dated to the mid-late Iron Age. Some of the pits are dispersed while others form a closely spaced and intercutting group (Figure 6).
- 3.1.19 The group of intercutting pits [111], [113], [122], [142], [210], [223] and [327] (ARC 330 98) was located slightly to the north of the area occupied previously in the Late Bronze Age/Early Iron Age (Figure 5). They contained much charcoal and fired clay/daub and might therefore have been associated with industrial activity, such as the earlier sequence of furnaces and working hollows described above.
- 3.1.20 Four of the mid-late Iron Age pits [120], [147], [156] and [313] (ARC 330 98) are dispersed but fall within the same general area as the pits from the earliest phase of occupation. They all produced quantities of domestic refuse and one, [313] contained a rare example of a La Tène brooch.
- 3.1.21 One of the pits [147] (ARC 330 98) was large with a bell-shaped profile, characteristic of a grain storage pit. One of its lower fills contained a large quantity of animal bones (Plate 3). They include at least six relatively complete juvenile (as opposed to infant) calves and at least three juvenile red deer that had their heads removed. The absence of butchery marks on the bones, and their distribution within the pit, suggests that the animals were deposited as entire carcasses or as partial articulations. The nature of the deposit is suggestive of ritual activity rather than the casual disposal of domestic waste. The inclusion within the deposit of a barbed and tanged flint arrowhead might also have had a ritual significance.
- 3.1.22 Large numbers of voles or mice were also found in the pit, perhaps suggesting that it remained open for some time. The primary fills of the pit contained a few sherds of undiagnostic prehistoric pottery and the only secure dating for this feature came from its upper fill. It is possible therefore that the primary (ritual?)

deposits were substantially earlier and that some time elapsed before the pit was infilled with domestic refuse in the mid-late Iron Age.

- 3.1.23 Nearby was another large pit [205] (ARC 330 98) that seems to have had more than one phase of use. It was used originally as a storage pit (judging from the profile), then partially infilled with domestic refuse, that included a bone pin and a bone tool made from a sheep/goat metacarpal. Stakeholes in the base of the pits and charcoal deposit around inner face of the pit indicates that the pit was subsequently lined (perhaps with wattle) and a fire was lit inside it. Ultimately the sides of the pit collapsed and it was infilled with further deposits of refuse and ash.
- 3.1.24 There are two other (undated) pits that are characterised by the presence in their fills of large quantities of fire-cracked flint. They are interpreted as cooking pits. One was located some distance (not shown) to the east of the main area of Iron Age settlement. The other [1305] (ARC 330 98) was located in an area that had been used previously for animal pens (see above).
- 3.1.25 To the east of the Iron Age settlement site (on rising ground on the east side of modern Downs Road) was a major boundary ditch [332] (ARC 330 98), a number of other ditches forming parts of enclosures for containing stock, and an associated drove-way [588] (ARC 330 98). There were also two small timber structures that are interpreted provisionally as granaries (Figures 6 and 9).
- 3.1.26 Near the bottom of the slope (Figure 6) a discontinuous, L-shaped ditch [608], [676] and [702] (ARC 330 98) formed two sides of a rectangular enclosure with a causewayed entrance at its south-west corner. The enclosure ditch was infilled rapidly, mostly with chalk rubble, and it seems likely that the construction of this enclosure was abandoned before completion.
- 3.1.27 Further to the east, two converging ditches [461] and [512] (ARC WNB 98) appear to have formed a funnelled entrance, possibly into the same enclosure. Subsequently a third ditch [460] (ARC WNB 98) was dug between these two, presumably to block the entrance.
- 3.1.28 Two adjacent timber structures were built next to one of the ditches [461], forming the funnelled entrance. They were square with a post in each corner and were of slightly different dimensions, being 2.2m and 2.8m wide. The postholes for these structures were infilled with deposits that were very similar to those in the adjacent ditch, suggesting that they were broadly contemporary with the ditch. 'Four-post' structures of this kind are found frequently on Iron Age occupation sites and are usually interpreted as granaries.
- 3.1.29 A substantial linear ditch [332] (ARC WNB 98), probably forming part of a major land division or boundary was located a little further up-slope, following the contour of the hill. It was traced over a distance of at least 70m. It must have survived in reduced form into the Roman period as pottery of that date was found in its uppermost fill.
- 3.1.30 A number of less substantial ditches near the terminus of the major boundary ditch probably formed additional enclosures or field boundaries.
- 3.1.31 A shallow hollow-way [588] (ARC WNB 98) that ran uphill towards the terminus of the boundary ditch was probably a drove-way for cattle. Flanking ditches and banks contained it at its eastern end.

- 3.1.32 The presence of dispersed pits indicates that there was occupation over most of this west-facing hillside in the mid-late Iron Age. Notable among these is a possible working hollow [610] (ARC WNB 98) that contained evidence of burning, and a probable mine shaft or well [591] (ARC WNB 98) (Figure 6). The latter was located south of the entrance to the abandoned enclosure. It was a circular pit 2.9m in diameter with a depth in excess of 1.55m. Pottery from the upper fill indicates that it was infilled in the mid-late Iron Age, although it might have been dug much earlier.
- 3.1.33 Another mid-late Iron Age enclosure was located close to the summit of the hill overlooking the dry valley at the eastern end of Zone 3 (Figure 14). It was represented by two sections of ditch [69] and 71] (ARC 330 98) separated by a narrow causeway forming a slightly staggered entrance. There was no evidence for occupation within the enclosure, so it is likely to have been used for containing stock.
- 3.1.34 Finally, a deep pit [1248] (ARC WNB 98) containing three sherds of late prehistoric pottery was located on the northern slope of the same dry valley, in an area that was to be used intensively during the Roman period (Figure 16).
- Late Iron Age-early Roman (1st century BC to 1st century AD)*
CTRL Research strategy time period: Towns and their rural landscapes (100BC – AD1700).
- 3.1.35 In the late Iron Age/early Roman period an enclosed occupation site was established on the west-facing hillside (Figures 9, 10 and 11, plate 5). The precise dating of the period of occupation is difficult to determine at present. The pottery assemblage contains much that is ‘native’ in style and clearly influenced by ceramics traditions of the late Iron Age. However, this material was found in association with a smaller amount of early Romanised wares. The occupation site probably had its origins in the pre-Roman Iron Age and continued in use into the Roman period. The pottery evidence indicates that it was abandoned before c. AD 70.
- 3.1.36 The enclosure went through several phases of development, which are discussed below. Activity within the enclosure is represented by a number of pits, some ovens or kilns, a possible hearth and two burials (Figure 10). Although the development of the enclosure can be provisionally phased, the internal features need further consideration, relating artefactual evidence to contextual morphology. The dating evidence is imprecise and there is little intercutting of features that would otherwise have provided stratigraphic relationships.
- 3.1.37 The provisional phasing of the development of the enclosure (Figure 11) can be summarised as follows.
- 3.1.38 *Phase I.* A sinuous bank and ditch [334] (ARC WNB 98) that ran along the contour of the hillside bound the enclosed area to the west. This feature might have originated as part of an earlier phase of land use, possibly relating to the mid-late Iron Age enclosures downhill to the west. An eroded hollow-way ran parallel to the boundary ditch on its east side. This was presumably an important route locally, and was probably used for transferring stock between enclosures or areas of grazing.
- 3.1.39 *Phase Ia.* A relatively shallow ditch [268] (ARC WNB 98) was dug to create a sub-circular enclosure to the east of the earlier boundary ditch. It is possible that this was actually the foundation trench for a palisade fence, although there is no

direct archaeological evidence for this. Access to the enclosure was from the north and was defined by two deeper ditches [255] and [273] (ARC WNB 98) forming a funnelled entrance. This suggests that in its original form the enclosure was intended to retain stock. It is possible that the earlier hollow-way on the western side of the enclosure continued in use in this phase.

- 3.1.40 *Phase II.* The enclosure was enlarged by the construction of a new bank and ditch and the original entrance was moved to the north and reduced in width. A causeway across the enclosure ditch [226] (ARC WNB 98) created an additional entrance on the eastern side. It is possible that this remodelling of the enclosure related to a change of use to domestic occupation. The hollow-way seems to have gone out of use during this phase, as shown by the presence of pits, ovens and a hearth against the western edge of the enclosure (see Figure 10).
- 3.1.41 *Phase III.* The enclosure was enlarged further. The ditch [290] (ARC WNB 98) on its eastern side was straightened and extended, and the ditches [285] and [342] (ARC WNB 98) forming its northern entrance were infilled. The area to the east of the enclosure was sub-divided by a new ditch [270] (ARC WNB 98) to create two separate fields. Occupation continued within the enclosure but there is no evidence for domestic activity in the fields to the east.
- 3.1.42 The evidence for domestic activity within the enclosure is non-intensive and fairly dispersed (Figure 10). There are no intrusive features along the main axis of the enclosure, in line with the northern entrance. This strip might have functioned as a route through the enclosure, or could have been occupied by domestic buildings that have left no archaeological record. The principal occupation features are described below.
- 3.1.43 A human cremation [232] (ARC WNB 98) in a pedestal urn was interred in a small pit on the east side of the enclosure. This type of vessel was used frequently in burials in the pre-Roman Iron Age. A horse (Plate 4) was buried on the west side of the enclosure, probably towards the end of the period of occupation. The position of the skeleton suggests that the animal's legs were tied, which might indicate that the burial had ritual significance. At least two partial horse skeletons were deposited nearby, in the ditches marking the northern entrance to the enclosure.
- 3.1.44 Most of the pits within the enclosure are of indeterminate function, although some of them were used ultimately for the disposal of domestic refuse. There are two that seem to have had particular significance. The first is a large, deep pit [564] (ARC WNB 98) with an unusual V-shaped profile, lying close to the entrance on the north side of the enclosure. An ashy deposit at its base contained a small amount of pottery dated to the late Iron Age-early Roman period. This basal fill was sealed by chalky soil derived from the weathering of the sides; presumably the pit remained open for some time. It was subsequently used for the disposal of some disarticulated human remains. Eventually it was infilled with domestic refuse, among which was a copper alloy brooch. The unusual form of the pit, which is sometimes associated with cooking (boiling water), and the presence of human remains suggest that this feature might have had a ritual significance.
- 3.1.45 Near to the 'ritual' pit and close to the enclosure ditch was a large circular pit [170] (ARC WNB 98) almost 5 metres wide at the top, narrowing to 1.90m at a depth of 1.50m. From this point onwards, the sides became vertical and

continued below the maximum depth it could be excavated for health and safety reasons. This feature was presumably either a mine shaft or a well.

- 3.1.46 Two domed clay structures are provisionally interpreted as either ‘beehive’ ovens or single-chambered pottery kilns (Swan 1984, 30). One [389] (ARC WNB 98) was truncated by the phase II enclosure ditch and must therefore have been associated with the earlier (phase I) use of the site. The other [415] (ARC WNB 98) was built on the western side of the enclosure at a relatively late date; it overlies the infilled hollow-way. A circular scorched area of ground [311] (ARC WNB 98) in the south-west part of the enclosure was either a hearth or the truncated remains of another oven/kiln. In the north-west part of the enclosure a banjo-shaped feature [230] (ARC WNB 98) is interpreted as the construction cut for another type of oven or kiln with a raised floor (Swan 1984, 30-31). The circular part of the pit would have been the combustion chamber. It had a rectangular depression at its centre that might have contained a central pillar supporting the floor. The backfill contained quantities of fired clay/daub that might have been part of the superstructure of the kiln. The narrower part of the pit was probably the flue or fire-tunnel; the fill at this point contained a lot of ash.

- 3.1.47 Although the evidence for late Iron Age-early Roman occupation is concentrated at the enclosed site on the west-facing hillside, there are some indications that activity was more widespread. Pottery of that date was found in the terminus of a ditch on the higher ground to the east, in an area that was later the site of medieval enclosures. The upper slope of the dry valley at the east end of Zone 3 was also used, as shown by a number of ditches that seem to form parts of rectangular enclosures (Figures 12 and 14). A series of intercutting plough marks (Figure 14) scored into the natural stratum near those enclosures are undated, but possibly indicative of contemporary agriculture.

Roman

CTRL Research strategy time period: Towns and their rural landscapes (100BC – AD1700).

- 3.1.48 There were two foci of activity in the Roman period. The earliest was located on the side of the dry valley at the eastern end of Zone 3, to the west of Wrotham Road (Figures 15 and 16). In the 1st century AD a group of adjoining rectangular enclosures bounded by banks and ditches was constructed in an area that had seen little activity previously. The enclosure system was approached from the south and east *via* three metalled roads or tracks (Figure 16 Roads 1, 2 and 3). There was evidence for occupation (represented by pits, ovens/kilns, possible structural features and burials) in at least one of the enclosures. Pottery evidence indicates that the occupation of the site continued into the 3rd century AD.
- 3.1.49 Only the south end of one of the enclosures was subjected to detailed investigation. The enclosure was rectangular, measuring 80m x 60m and was bounded by a deep ditch [1149] (ARC WNB 98). There was dispersed evidence for occupation, principally in the form of pits containing varying amounts of domestic refuse, but including a number of more specialised features (Figure 16) seen by burnt deposits and clay linings. Taken together the evidence for occupation implies the presence of a permanent settlement, perhaps a farmstead or villa and estate, in the immediate vicinity. The location of the site, around 2km from Springhead, would be an appropriate position for a farm in relation to a town.

- 3.1.50 Two human inhumations were located in the south-east corner of the enclosure. Both were neonates and one [1190] (ARC WNB 98) was buried with a small carinated jar or beaker dated AD 70-120 (Figure 16). A number of other small, truncated pits in the same area of the enclosure might once have contained similar burials that have decayed or been destroyed by recent ploughing. There is a body of evidence to suggest that infants were often buried in discrete cemeteries in rural areas; for example, at Barton Court villa in Oxfordshire an infant cemetery was found in the corner of the farmyard (Frere 1977, 419). There are other examples of infants being buried in or near to barns or other outbuildings belonging to rural settlements (Philpott 1991, 97). The linear features close to the neonate burials might therefore be interpreted as robbed foundation trenches.
- 3.1.51 A rectangular pit adjacent to the ditch on the southern side of the enclosure contained a 'beehive' oven or single-chambered kiln [1044] (ARC WNB 98) of a type noted previously (see above and Plate 5). It had a domed clay superstructure supported by a framework of 28 thin stakes. These were driven into the natural chalk in the base of the pit. The sides of the pit were mostly vertical but there was a step cut into the north-west corner to facilitate access. After the oven/kiln went out of use the pit was backfilled with dumps of ash and charcoal containing burnt mammal bones, fish and bird bones and charred chaff, grain and seeds. The fills also contained a large amount of pottery (>200 sherds) dated AD 70-100.
- 3.1.52 There was some slight evidence for structures within the enclosure, some of which have been discussed above in relation to the neonate burials. In the south-west corner two shallow trenches [1012] and [1016] (ARC WNB 98) at a right angle to each other might also have been robbed foundation trenches. They seem to have been associated with a nearby shallow pit [1010] (ARC WNB 98). Both trenches were deeper and wider at the end nearest the pit, perhaps indicating the positions of post settings. One of them, [1016] had a complete 'dog dish' placed deliberately at the deeper end, possibly as a foundation deposit. All three features were infilled with soil contained pottery dated to AD 45-100.
- 3.1.53 The roads associated with the enclosure system were little more than metalled tracks within shallow, eroded hollow-ways. However, they were maintained (there is evidence for localised patching of the road surface) and the road from the south (Road 1) was drained by shallow, flanking ditches.
- 3.1.54 The roads converged at the south-east corner of the enclosure system and then passed along the south side of the enclosures. Along that stretch of Road 3 a much deeper, V-shaped ditch [1062] (ARC WNB 98) served both to drain the road and as a prominent boundary marker. Since there is no evidence for domestic activity to the west of Road 1 and south of Road 3, it seems likely that that area was under cultivation and that the deep ditch was designed to keep traffic (or livestock) out of the field.
- 3.1.55 Preliminary analysis of the stratigraphic sequence suggests that Road 1 and Road 3 were contemporary, and that Road 2 was constructed after hill-wash deposits had, to some extent, buried the other roads.
- 3.1.56 A number of other factors indicate Roads 1 and 3 went out of use during the period of Roman occupation of the site. For example, Road 1 was cut by at least one pit [1127] (ARC WNB 98) dated AD 70-120. A much larger feature, [1119] (ARC WNB 98) interpreted as a quarry but of uncertain date, also cut Road 1.

- 3.1.57 It is possible that these roads represent the local infrastructure prior to the laying out of Roman Watling Street at the end of the 1st century AD. It may be that Road 3 was a continuation of the road seen at Henhurst Road, Singlewell (Area 330 Zone 4). This road then goes out of use with the construction of Watling Street more on the line of the present A2.
- 3.1.58 At the point where Road 3 passed between the enclosure system and the field to the south, it was cut by a number of transverse ditches. These lay between the southern ditch [1049] of the enclosure and the northern boundary ditch [1062] of the field, and effectively divided the 'road corridor' into a number of small, rectangular 'compartments' or even some form of large building. These features indicated that occupation had extended beyond the limits of the northern enclosure.
- 3.1.59 The most significant features were two shallow, rectangular depressions, interpreted provisionally as sunken-floored buildings or working hollows (Figure 16, Plate 5). One, [1089] (ARC WNB 98) was superimposed on Road 3, and was filled with horizontal deposits of soil. The other, [1147] (ARC WNB 98) overlay the infilled eastern end of the field boundary ditch. A number of postholes in and around the edges of this feature suggest the presence of a timber-framed structure. A compacted layer of clay containing frequent charcoal and fragments of fired clay/daub sealed the postholes, and extended across the area of the postulated building. This might be the remains of collapsed walls, and suggest that the building was destroyed by fire. The fire debris contained pottery dated to AD 70-120.
- 3.1.60 Subsequently, the field boundary ditch was re-dug at its eastern end [1131] (ARC WNB 98), cutting through the remains of the collapsed building. The infilling of this part of the ditch included pottery dated to the 3rd century AD.
- 3.1.61 Another notable feature close to the postulated buildings was a large, circular pit [1146] (ARC WNB 98) with a diameter of 4.8m and a depth in excess of 2.4m. This was interpreted originally as a well, but is now seen as the shaft of a chalk or flint mine. It was infilled in the period AD 120-160.
- 3.1.62 The second focus of Roman occupation was located in the dry valley at the western end of Zone 3, adjacent to Downs Road and Hazells Farm (Figures 6 and 7). The masonry foundations of a malting oven (or 'corn dryer') were found adjacent to a metalled road (Plate 6). Nearby were a number of ditches, a hearth or cooking pit [70] (ARC HRD 99) and an oven or kiln [4] (ARC HRD 99). There was certainly activity in this area, but whether this was activity associated with the estate of a villa, or actual occupation at Hazells Farm, could not be determined. It is likely that this site represented a form of 'processing area', where grain could be malted, near to where it was grown, and transported via the road to Springhead.
- 3.1.63 The roads, the malting oven and most of the associated features have been preserved *in situ* below the Hazells road diversion. The masonry malting oven was infilled with sand to the existing ground level and covered with a permeable geotextile, then sealed with a layer of sand 400mm thick. The voids of all the other archaeological features were infilled with sand and sealed with a blanket layer of sand 100mm thick.
- 3.1.64 The earliest features were two ditches [6] and [10] (ARC HRD 99), one of which is dated to the 2nd century AD. These went out of use following the construction

of a metalled road, which was oriented from north to south. The road was 3.0m wide and was flanked by banks and ditches, giving an overall width of 9.0m. Wheel ruts in the surface of the road contained pottery and coins dating to the 3rd century AD. Re-cutting of the roadside ditches indicates that after a period of poor maintenance the road was re-established slightly to the west of its original alignment.

- 3.1.65 A few metres to the east of the road were the foundations of a twin-chambered, chalk-built structure that is interpreted as a malting oven. It had overall dimensions of approximately 8.0m x 6.0m and survived to a height of 0.56m. The interior of the structure was divided into a series of flues, the walls of which were lined with clay/daub that was scorched heavily. An external stoking pit was located against the south wall of the structure. A large quantity of charred grain has been found in environmental samples of deposits within the structure.
- 3.1.66 Pottery from the backfill of the stoking pit and from within the flues is dated to the 3rd century AD (indicating the ovens' demolition). A very similar structure but with a single chamber was excavated during the construction of the Wainscott Bypass, near Cobham, another at the CTRL site at Thurnham, Kent. A very complete example, dated to the 4th century AD, has been excavated previously at Foxhole Farm, Hertfordshire (Reynolds and Langley 1979).
- 3.1.67 A number of ditches aligned from east to west, and a possible oven or kiln [4] (ARC HRD 99) of later Roman date cut the road. Other ditches, [13], [16],[46] and [49] (ARC HRD 99) were located some distance to the north-west of the malting oven, forming a series of rectangular enclosures. In the same area was a hearth or cooking pit [70] (ARC HRD 99). These were infilled in the 3rd century AD.

Medieval

CTRL Research strategy time period: Towns and their rural landscapes (100BC – AD1700).

- 3.1.68 There were three foci of activity in the medieval period; two located on the lower slopes of the dry valley in the vicinity of modern Downs Road and one on the higher ground to the east, near to the former Northumberland Bottom army camp. Pottery dating indicates that occupation of all three sites occurred mainly in the period 1125-1250/1300.
- 3.1.69 To the east of Downs Road, on an area of level ground formed by the natural terracing of the lower slope of the dry valley, there was a farmstead or settlement (Figure 8). It is represented by a concentration of postholes marking the position of one or more rectangular buildings surrounded by other clusters of postholes, indicating a number of outbuildings or associated structures. At this stage it is not possible to be more specific about the ground plans of these buildings. There were a number of pits (of indeterminate function) in the vicinity of the buildings, and to the south there was a shallow ditch [700] (ARC WNB 98) that formed part of the boundary of the settlement site.
- 3.1.70 There is very little secure dating for the settlement. A small pit [740] (ARC WNB 98) within the main building contained a cooking pot dated 1050-1100. It seems to have been placed deliberately as a receptacle rather than as a casual discard. Other postholes and one of the larger pits produced small amounts of pottery of 11th- to 13th-century date. Some of the other pits and the boundary ditch [700] to the south of the settlement produced a few sherds of Iron Age and

Roman pottery; these might have been residual, but could imply that the site had also been occupied at an earlier date.

- 3.1.71 To the west of modern Downs Road, adjacent to Hazells Road, the earliest medieval activity consisted of a working hollow containing two circular ovens or kilns [170] and [202] (ARC HRD 99) (Figure 7, Plate 7). They were of single-chambered construction with domed clay superstructures on frameworks of stakes. Pottery from the earlier structure [170] is dated to 1100-1250. The later structure [202] was subjected to archaeomagnetic dating, which provided a date range of 1200-50. The working hollow was filled with much ash, charcoal and debris from the use of the ovens/kilns. A quantity of charred grain was also recovered that may indicate their functions; one at least (the large one) appears to be a malting oven, the other (smaller) perhaps for bread or food. A similar 'oven' structure was identified on high ground at Northumberland Bottom (Figure 13 [896]).
- 3.1.72 A number of ditches in the same area as the ovens/kilns probably represent field boundaries or a system of enclosures. One of the ditches [155] (ARC HRD 99) that truncated the ovens/kilns was infilled in the late 13th century.
- 3.1.73 On the high ground near to the crest of the hill (in the vicinity of the former Northumberland Bottom army camp) was a sequence of enclosures (Figures 12 and 13). Apart from two Bronze Age cremations [2013] and [2164] (Figure 13) and an Iron Age ditch there is little to suggest that this area was used to any great extent before the medieval period.
- 3.1.74 Again, dating evidence is sparse but the enclosures seem to be broadly contemporary with the 'farmstead' site near the bottom of the dry valley. The following provisional phases have been identified.
- Phase 1*
- 3.1.75 The earliest dating evidence comes from a linear ditch [208] (ARC WNB 98) that produced 127 sherds of pottery from up to 67 vessels; mostly cooking pots dated to 1050-1100. Associated with this ditch was a curvilinear ditch or gully [903] (ARC WNB 98) that partially enclosed a row of five postholes. These might represent the east side of a timber building.
- 3.1.76 These features were located within an area that was enclosed by a penannular bank and ditch [205] and [240] (ARC WNB 98). The enclosure measured about 47m by at least 55m. The entrance was to the north, represented by a break in the ditch. Just inside the entrance two postholes set 3.0m apart probably indicate the position of a gate. Apart from the ditches and the possible building described above there were a number of undated pits and ditches within the enclosure that might have been associated with this earlier phase of activity.
- Phase 2*
- 3.1.77 The western half of the enclosure ditch seems to have been backfilled deliberately, in contrast to the eastern half, which shows signs of having silted up more gradually. The enclosure was extended to the west and north by the excavation of new ditches [214], [2011] and [2102] (ARC WNB 98) and made more rectangular in form. A number of ditches oriented from east to west within the area of the enlarged enclosure are undated but, since they cut the infilled ditch of the penannular enclosure, they are assumed to have been broadly contemporary with the later phase of activity.

- 3.1.78 A large, rectangular depression [896] (ARC WNB 98) in the western part of the enclosure is provisionally interpreted as the base of a sunken-floored building. Although there is no actual structural evidence, such as wall foundations or postholes, the building might have been of a relatively temporary nature that has left no archaeological record.
- 3.1.79 A possible malting oven (or perhaps a kiln) was constructed on a slightly raised platform at the south end of the postulated building. The base of the structure was made of flint nodules and the walls of chalk rubble. It was circular with an internal diameter of 1.90m. It had an opening on its north side, interpreted as part of the flue. Adjacent to this was an area of scorched ground that was subjected to archaeomagnetic dating. This provided a date range of 1295-1325 at the 95% confidence level.
- 3.1.80 In the north-east corner of the building was an oval pit with a narrow “flue” at one end. The sides of the pit were scorched, suggesting that this was the fire-box for another oven or kiln. There were two distinct tread horizons within the area of the building, both of which contained much ash, charcoal and fragments of fired clay. A moderate assemblage of pottery (unlikely to have been residual) from these occupation deposits is dated 1100-1225, which is earlier than the archaeomagnetic date for the firing of the oven/kiln. Samples taken from the tread deposits contained charred cereal grains and pulses and some fruit stones, suggesting that the oven was used in food preparation.
- 3.1.81 Two of the pits within the area of the enlarged enclosure contained reasonable amounts of pottery with date ranges of 1100-1225 [909] (ARC WNB 98) and 1175-1225 [320] (ARC WNB 98). One of them [320] also contained animal bones, iron nails and some quern-stone fragments, all indicative of occupation within the enclosure.
- Late medieval/post medieval*
CTRL Research strategy time period: Towns and their rural landscapes (100BC – AD1700).
- 3.1.82 The remains of a brick clamp were located to the west of Downs Road, near Hazells Farm (Figures 4 and 5). The base of the structure consisted of a large area of scorched sand overlaid by a layer of compacted clay with frequent ash and charcoal. Above this was another layer of scorched clay with brick wasters and lumps of fired clay; this is the basal layer of green bricks that did not fire properly. A number of parallel slots within this deposit are interpreted as the fire channels; they would have been filled with fuel at the commencement of the firing (Brunskill 1997, 27-28). The *in situ* remains of the clamp were sealed by a more extensive layer of fired clay and brick wasters that has probably been disturbed and scattered as a result of ploughing. This clamp has been preserved *in situ*.
- 3.1.83 The mis-fired bricks from the last firing of the clamp are dated 1450-1700, although it is noted that bricks were not used extensively in Kent until *c.* 1480. During the excavation it was seen that very similar-looking bricks were used in the construction of some of the buildings at Hazells Farm, located just to the south of the brick clamp. A number of undated quarry pits in the same general area might indicate the exploitation of local clay and sand deposits for brick-making.
- 3.1.84 A few pits and ditches of post-medieval date were located throughout Zone 3. These are of limited significance and no further discussion of them is warranted.

Modern:

CTRL Research strategy time period: The recent Landscape (1700 – 1945)

- 3.1.85 The Second World War Army camp and Anti Aircraft Battery at Northumberland Bottom have been dealt with in a separate report (URS 1999).

3.2 The Artefactual Record

Ceramics

Prehistoric and Roman Pottery

- 3.2.1 A total of 6522 sherds (78.561kg) of pottery were recovered during the excavation of the Zone 3 area including ARC WNB 98, ARC HRD 99 and ARC 330 98. This large assemblage, with pottery dating from the early Bronze Age (Beakers and a Collared Urn), Late Bronze Age/early Iron Age, mid Iron Age and late Iron Age/early Roman, as well as later Roman material. The assemblage was recovered from inhumation and cremation burials, and settlement features including roads, occupation deposits, buildings, ditches, pits and posthole structures.

Post Roman pottery

- 3.2.2 A total of 520 sherds (5.867kg) of pottery were recovered from Area 330 Zone 3 from ARC WNB 98 and ARC HRD 99. These small assemblages of domestic pottery dated to the mid-12th to later 13th century; in addition there is a single sherd of Saxon pottery from ARC WNB 98. Only eight sherds were found in contexts forming part of ARC 330 98, mostly of late medieval or post-medieval date. The bulk of the medieval material comprises kitchen equipment made in local shell-tempered wares, but a few jugs or pitchers are also present, both in local wares and imported from further afield. Many of these pieces can be paralleled in other Kentish assemblages. The material has some potential for informing about the date and status of the sites and on their place in the surrounding landscape.

CBM and Fired Clay

- 3.2.3 A total of 72.81 kilogrammes of building material, including 55.85 kilogrammes of daub/fired clay and 11.42 kilogrammes of stone (probably not all building stone), has been examined. Of the total 188 contexts containing building material, 149 are small, 22 medium, seven large and ten very large. Of the 59 contexts with datable material, 47 are of Roman date, four of medieval or post-medieval date and eight contain early post-medieval material. Forty contexts with prehistoric or Iron Age spot dates contain daub (ARC WNB 98 and ARC 330 98). Roman tile accounts for between 1.4 % (ARC 330 98) and 45.3% (ARC HRD 99) of the assemblage. ARC HRD 99 has an unusually large proportion of box flue or voussoir tiles. Daub and fired clay are more common than tile on all three sites, accounting for between 52.7% (ARC HRD 99) and 86.6% (ARC WNB 98) of the assemblage; much of the daub is likely to be of Iron Age date. Variations in the daub suggest that it is likely to derive from a range of structures such as houses, kilns or hearths, and burials, and may also include small fragments of fired clay objects.

Lithics

- 3.2.4 Small to medium-sized assemblages of worked flint were recovered from ARC WNB 98, ARC 330 98 and ARC HRD 99. Diagnostic retouched forms indicate a Neolithic to early Bronze Age presence. Some of the less diagnostic and cruder debitage may be later in date. The assemblages represent domestic activity; a single flake was recovered from a double Beaker inhumation burial although it is

unclear if this was deliberately included as a grave good. Varying quantities of burnt unworked flint were also recovered from the sites.

Stone

- 3.2.5 A total of 16 stone artefacts were recovered from archaeological work in Zone 3. Two stone artefacts, part of a smoothing stone and a small fragment of a quern, came from ARC 330 98. The remains of a hone and part of a quern were recovered from ARC HRD 99 and eight stone quern fragments and four other objects were recovered from ARC WNB 98.

Glass

- 3.2.6 A total of eleven glass accessions were recovered from archaeological work in Zone 3. Virtually all of the glass is Roman in date and is vessel glass. All of the glass is fragmentary and most is too small to identify the vessel form. A glass bead was recovered from ARC HRD 99.

Metalwork

- 3.2.7 A total of 116 accessioned metal artefacts were recovered from archaeological work in Zone 3. Of this total:
- five accessions were recovered from ARC 330 98 of which four are iron and one is copper alloy.
 - 23 metal accessions were recovered from ARC HRD 99 of which eleven are iron, ten copper alloy, one lead and one possibly gold.
 - 22 metal accessions were recovered from the excavations at ARC WNB 98
 - 63 unstratified (from the topsoil over the site, located two dimensionally) metal accessions came from the metal detecting project which was undertaken prior to the excavation of ARC WNB 98.

Coins

- 3.2.8 A total of 51 coins were recovered during archaeological work in Zone 3. Of these, 20 coins (eleven copper alloy, five lead and four silver), dating from Roman to modern, were recovered from the metal detecting project undertaken prior to the excavation at ARC WNB 98. Only one coin was recovered from the excavation itself. A total of 29 copper alloy coins were recovered from the excavation at ARC HRD 99, all dating to the Roman period. Only one coin was recovered from ARC 330 98 in Zone 3, a modern two pence piece.

Ceramic artefacts

- 3.2.9 A total of 6 ceramic artefact accessions were found during the excavation at ARC WNB 98. One is part of a ring-shaped loom weight, probably Bronze Age in date and five are fragments of triangular loom weights, dating to the mid-late Iron Age. A further nine ceramic artefacts were recovered from ARC 330 98 in Zone 3. A number of these are loom weights dating to the Bronze Age and the Iron Age.

Worked bone

- 3.2.10 Three bone artefacts were recovered from Zone 3, two from ARC 330 98 and one from ARC WNB 98. The former were recovered from a pit that also produced mid Iron Age pottery. ARC WNB 98 produced a fragment of bone working waste, the distal end of a horse metacarpus. It is indicative of bone working having taken place in the vicinity of the site.

3.3 The Environmental Record

Human Bone

- 3.3.1 Human skeletal material was encountered from two periods. These were two “beaker burials”, of a man and a woman, respectively, and two neonates of Romano-British date. There were three cremations – one Bronze Age and two Iron Age/Roman. Published beaker burials, especially a double inhumation such as this, are rather rare in the locality.

Animal Bone

- 3.3.2 The sites in this Zone all produced large quantities of animal bones from hand collection and from sampling. Individual site (sitecode) quantities can be found in the Specialist Appendix, but in total, these provided a hand collected total of 4,916 fragments, weighing 69.74kg, arising from 303 contexts. In addition 78 fragments, weighing 1.79kg, of sieved bones were recovered from 78 samples.

Macroscopic plant remains & charcoal

- 3.3.3 All samples taken across Area 330 Zone 3, over 150 in total, have been assessed for the presence of plant macrofossils, and their potential to answer the fieldwork aims of the project. A wide variety of features was sampled, including ditches, pits, and kilns or ovens, ranging in date from Bronze Age to medieval. Very large assemblages, consisting of many hundreds or thousands of charred grains, chaff, and weed seeds, were recovered from 29 samples. These came from Roman pitfills and two ovens in different areas of the site, from medieval tread layers and an oven or kiln. Several other samples from the same periods contained smaller plant assemblages. Samples from prehistoric features generally contained little or no surviving plant material, but 17 included occasional charred cereal grains and/or chaff. Charred pulses were common in several of the medieval samples, and occasional remains of other food plants were found in samples of all periods. Ten samples included charcoal large enough for species identification.

Mollusca

- 3.3.4 The four sites included in Zone 3 produced 88 sample groups containing molluscs, a total of approximately 5,800 shells. This material derived from sitecodes ARC TGW 97, ARC 330 98, ARC WNB 98 and ARC HRD 99. Molluscs were recovered from column samples (ARC WNB 98 [332]), and wet-sieved/floated bulk samples taken from cut features. The material comprised almost entirely of terrestrial species with no freshwater forms, with minor recovery of edible marine species. The terrestrial assemblage included catholic, shade loving, open country, and burrowing species.

Geo-archaeology – Downs Road

- 3.3.5 One monolith sample was obtained slightly down-slope of an area of Iron Age activity, where pits contained large amounts of charcoal, burnt daub and other burnt material, and a later medieval brick clamp, were located just to the north of Hazells Farm. Initial assessment suggests that the lowest deposit sampled is likely to be a truncated soil, developed in brickearth-like slope sediments. The overlying sediments contain frequent charcoal flecks and possibly ash. They are likely to be derived from activities associated with burning and have probably been transported down by slope processes.

Geo-archaeology – Wrotham Road

- 3.3.6 Monolith samples were taken through a sequence of colluvial sediments in the evaluation area ARC TGW 97. The trial trench was numbered 1472TT and was

located close to the dry valley floor at the eastern end of Zone 3. Assessment of these monoliths has identified two major episodes of erosion. The first appears to have eroded brown-earth soil material from up-slope. This may have been caused by forest clearance as charcoal was common in the redeposited soil material. This was succeeded by a period of gradual soil accumulation and soil formation, prior to a second, more dramatic hillwash event, which may have truncated the soil that had formed in the earlier colluvial sediments. Gravel and chalky soil material deposited as a result of the second erosion event indicates that by this time the valley side soils had become thinner causing agricultural activities to cut into the chalk bedrock of the valley sides. It is likely that further soil movement downslope as the result of lower magnitude soil creep processes led to the accumulation of the upper part of the profile, in which the modern soil formed.

3.4 Dating

- 3.4.1 It may be possible to obtain Accelerator Mass Spectrometry (AMS) radiocarbon dates on the snails obtained from the bulk samples from the evaluation ARC TGW 97, if required. As a sequence of samples for snail analysis was taken adjacent to the monolith sequence, AMS dating of the snails would probably be the best way of dating the sediment sequence. Unfortunately there were no snails preserved in the lowest redeposited soil material and it will not be possible to date the charcoal from the unit as there is an insufficient amount and the monoliths will be set in resin.

Radiocarbon

- 3.4.2 No radiocarbon samples were taken.

Dendrochronology

- 3.4.3 No dendrochronology samples were taken.

Luminescence

- 3.4.4 No Luminescence samples were taken.

Archaeo-magnetic dating

- 3.4.5 Several features were subject to archaeo-magnetic dating by the Clark Laboratory at MoLAS. These were:

- Roman oven in ARC WNB 98 Area C,
- Roman malting oven in ARC HRD 99,
- medieval oven in ARC WNB 98 Area A/B,
- medieval oven in ARC HRD 99,
- post-medieval brick clamp at Hazells Farm ARC 330 98.

- 3.4.6 It is not considered necessary to use such dating on any of the other material recovered.

3.5 Archive Storage and Curation

Stratigraphic archive

- 3.5.1 The stratigraphic archive has been microfilmed and can be prepared for long term storage. The contexts have been entered onto the MoLAS Oracle database, and subsequently transferred to RLE Datasets.

Finds and environmental archive

- 3.5.2 The majority of the archive is not in need of any significant treatment to enable it to be put into long term storage. There are a few points that should be made (see below).
- 3.5.3 Some of the key pottery vessels would benefit from reconstruction or consolidation to allow display and to aid research and illustration.
- 3.5.4 The temporary fabric type series (HRD1 to 4, WNB1) for the ceramic building material should be accessible to enable comparisons to be made with examples of tiles from known kilns and other sites in Kent, London and East Sussex. This should not necessarily conflict with long-term storage for the remainder of the assemblage. It is recommended that samples of all the tile fabrics should be retained.
- 3.5.5 One unidentified copper item ARC WNB 98 <120> [1158] continues to corrode and requires further stabilisation. All the coins from ARC HRD 99 have been conserved by the Museum of London conservation department.
- 3.5.6 The three fragments of glass from ARC WNB 98 are mildly iridescent but no active conservation work is necessary.
- 3.5.7 The loom weight fragments <133> [413] from ARC WNB 98 should be re-adhered for illustration purposes.
- 3.5.8 The shells are mainly small and fragile and therefore liable to accidental damage by crushing. They should be stored by context/sample groups in glass tubes or clear plastic boxes, each contained within labelled plastic bags. The complete assemblage should then be stored in an archive quality box.
- 3.5.9 If thin sections are made of the monolith samples they will take up less storage space, stand a better chance of long term preservation and be amenable to a similar method of archiving to that for finds and environmental samples. As monoliths, the samples are not easily stored, need to be kept in a cool to cold and dark environment and are likely to deteriorate with time. Thin sections are easily available for further research and can be examined frequently without loss of information.
- 3.5.10 It is recommended that all material is retained at this stage, in order to be incorporated into any analysis and publication aspect of the project. Discard policies can be applied during the succeeding analysis stages.

3.6 Archive Index

Table 3 ARC 330 98 Zone 3 Archive Index

Item	Number Of Items or boxes or other	No of Fragments or litres or weight	Condition (No. of items) (W=washed; UW=unwashed; M=marked; P=processed; UP=unprocessed; D=digitised; I=indexed)
ARC 330 98 – ZONE 3			
Contexts records	427		I
A4 plans	81		I
A4 sections	65		D, I
Small finds	See ARC 330 98, zone 4	20	W, M, P, I
Films (monochrome) S=slide; PR=print	324S (Image quantity)		M, I
Films (Colour) S=slide; PR=print	324P (Image quantity)		M, I
Lithics (boxes)	9 size 1	202	W, I
Burnt flint (boxes)	11 size 1	13.27kg	W, I
Pottery (boxes)	11 size 1	1800	W, M, I
Fired clay (boxes)	3 size 1; 2 medium crates	27.75kg	W, I
CBM (boxes)	3 size 1	4.49kg	W, I
Stone (boxes)	1 size 1		W
Metalwork (boxes)	1 size 1		W
Glass (boxes)	1 size 1		W
Slag & metalwork debris (boxes)	1 size 1		W
Human Bone (boxes)	n/a		
Animal Bone (boxes)	21 size 1	2636	W, I
Molluscs	1 size 1; 1 size 2	77+	P, I
Flora	See 33098, zone 4		P, I
Flots	See 33098, zone 4		P, I
Misc.	n/a		P
Soil Samples (10lit. buckets)	100		P – 100%
Soil Samples (no. of contexts)	52		I
Soil Samples (Monolith/kubiena tin)	1		M, I

Quantification of Finds by volume (ARC 330 98 – ZONE 3)

Description	Capacity	No.	Total Volume
Shoe box (size 1)	0.0108m ³	63	0.6804m ³
Skeleton box (size 2)	0.0311m ³	1	0.0311m ³
Medium crate (size 7)	0.03648m ³	2	0.0730m ³
Total			0.7845m ³

Table 4 Archive Index ARC WNB 98

Item	Number Of Items or boxes or other	No of Fragments or litres or weight	Condition (No. of items) (W=washed; UW=unwashed; M=marked; P=processed; UP=unprocessed; D=digitised; I=indexed)
West Northumberland Bottom ARC WNB 98			
Contexts records	1996		I
A1 plans	10		I
A4 plans	388		I
A1 sections	n/a		
A4 sections	70		
Small finds	2 boxes size 1; 1 size 3	64	W, M, I
Films (monochrome) S=slide; PR=print	122 S (Image quantity)		M, I
Films (Colour) S=slide; PR=print	122PR (Image quantity)		M, I
Lithics (boxes)	1 size 1	166	W, I
Burnt flint (boxes)	3 size 1	9.69kg	W, I
Pottery (boxes)	29 size 1; 1 size 9	4706	W, M, I
Fired clay (boxes)	6 size 1	17.29kg	W, I
CBM (boxes)	2 size 1	1.96kg	W
Stone (boxes)	n/a		
Metalwork (boxes)	n/a		
Glass (boxes)	n/a		
Slag & metalwork debris (boxes)	n/a		
Human Bone (boxes)	2 size 2; 1 size 4	7 individuals	W, I
Animal Bone (boxes)	24 size 1; 2 size 2	3198	W, I
Molluscs	1 size 1	4750	P, I
Flora	1 size 1		P, I
Flots	1 size 1		P, I
Misc.	1 size 1		P
Soil Samples (10lit. buckets)	200		P – 100%
Soil Samples (no. of contexts)	167		I

Quantification of Finds by volume (ARC WNB 98)

Description	Capacity	No.	Total Volume
Shoe box (size 1)	0.0108m ³	71	0.7668m ³
Large 'body box' (size 2)	0.0311m ³	4	0.1244 m ³
Half 'Stewart box' (size 4)	0.00773m ³	1	0.00773m ³
Skull box (size 9)	0.00856m ³	1	0.00856m ³
Total			0.90749 m ³

Table 5 Archive Index ARC HRD 99

Item	Number Of Items or boxes or other	No of Fragments or litres or weight	Condition (No. of items) (W=washed; UW=unwashed; M=marked; P=processed; UP=unprocessed; D=digitised; I=indexed)
ARC HRD 99			
Contexts records	235		I
A4 plans	101		I
A4 sections	56		I
Small finds	2 boxes size 1; 1 size 3	61	W, M, I
Films (monochrome) S=slide; PR=print	102S (Image quantity)		M, I
Films (Colour) S=slide; PR=print	102PR (Image quantity)		M, I
Lithics (boxes)	1 size 1	40	W, I
Burnt flint (boxes)	See lithics	2.79kg	W, I
Pottery (boxes)	1 size 1	543	W, M, I
Fired clay (boxes)	2 size 1	10.82kg	W, I
CBM (boxes)	4 size 1	9.30kg	W, I
Stone (boxes)	n/a		
Metalwork (boxes)	1 size 1		W
Glass (boxes)	n/a		
Slag & metalwork debris (boxes)	See metalwork		W
Human Bone (boxes)	n/a		
Animal Bone (boxes)	6 size 1	510	W, I
Molluscs	See animal bone	131	P, I
Flora	1 size 1		P, I
Flots	1 size 1		P, I
Misc.	1 size 1		W
Soil Samples (10lit. buckets)	100		P – 100%
Soil Samples (no. of contexts)	51		I
Soil Samples (Monolith/kubiena tin)	n/a		
Samples absolute dating	n/a		

Quantification of Finds by volume (ARC HRD 99)

Description	Capacity	No.	Total Volume
Shoe box (size 1)	0.0108m ³	20	0.216m ³
Large Stewart box (size 3)	0.0154m ³	1	0.0154 m ³
Total			0.2314 m ³

4. STATEMENT OF POTENTIAL

4.1 Stratigraphy

4.1.1 The stratigraphic evidence has the potential to contribute in varying degrees towards the following Time Periods:

- Early Agriculturists (4500-2000 BC)
- Farming Communities (2000-100 BC)
- Towns and their rural landscapes (100 BC – AD 1700)

4.1.2 Within these time periods the stratigraphy can contribute towards the following Research Objectives or Landscape Zone Priorities:

Early Agriculturalists (4500-2000 BC)

- *Define ritual and economic landscapes and their relationships*

4.1.3 The double inhumation of Late Neolithic-Early Bronze Age (plates 1 and 2) date located on the western edge of the Wrotham Road dry valley (Figure 16) might have been contemporary with the ritual and funerary monuments in the Tollgate area, on the other side of the same valley.

4.1.4 There is no indication as to the economic function of the landscape during this period.

Farming Communities (2000-100 BC)

- *Determine spatial organisation of the landscape in terms of settlement location in relation to fields, pasture, woodland, enclosed areas and ways of moving between these*

4.1.5 The nature of the linear cut through the landscape will only give a representative sample of the actual nature of land use – any gaps in the sequence may simply be due to activity not being affected by the CTRL works. The results from Zone 3 show a shifting pattern of continuous settlement (although the Later Roman/Anglo-Saxon period evidence is minimal) from the Late Neolithic – Early Bronze Age through to the modern period. Foci change with time and clear patterns are visible.

Late Bronze Age – Early Iron Age to Mid-Late Iron Age

4.1.6 Settlement is concentrated on the higher ground to the east and west of Downs Road, overlooking the upper Ebbsfleet valley to the north and the Downs Road valley to the east. The discovery of rubbish pits, a metalworking area and possible animal pens to the west of Downs Road, demonstrates occupation commencing in the Late Bronze Age-Early Iron Age and continuing into the mid-late Iron Age (Figure 5). On rising ground to the east of Downs Road there were livestock enclosures, some possible field boundaries and a major land boundary ditch, all of mid-late Iron Age date. The presence of post-built structures (interpreted as possible granaries), and a working hollow in the same area provides further evidence for more-widespread occupation.

- 4.1.7 A drove-way with flanking ditches was associated with the mid – late Iron Age enclosures. This track appears to have been a routeway up from the base of the Downs Road valley during the Iron Age (Figure 6).
- 4.1.8 Dispersed pits across the Zone indicate casual occupation elsewhere. Part of another ditched enclosure of mid to late Iron Age date was located on the crest of the hill, overlooking the Wrotham Road dry valley. It is presumed the unoccupied areas were fields or woodland.
- *Determine how settlements were arranged and functioned over time*
- 4.1.9 The prehistoric settlement site to the west of Downs Road, north of Hazells Farm, only part of which was affected by CTRL works, could have been occupied continuously from the Late Bronze Age to the Late Iron Age. There are indications of zonation within the settlement. For example, the evidence for possible metalworking is mostly concentrated in a discrete area, and there is a well-defined area where animals were penned. There is also a concentration of pits in one area of the settlement.
- 4.1.10 To the east of Downs Road the settlement features appear to be more agricultural, with boundary ditches and granaries predominating.
- 4.1.11 The enclosure ditches at the crest of the hill appear to show that the area was used for stock enclosure rather than settlement.
- *Ritual and ceremonial use of the landscape*
- 4.1.12 An Early Bronze Age cremation was found at the west end of Zone 3 (Figure 5). A Later Bronze Age cremation in an urn was found on higher ground to the east (Figure 13), with another, undated cremation (not in a vessel) nearby. No evidence for settlement activity were recovered associated with these burials.
- 4.1.13 A large pit within the prehistoric occupation site near Hazells Farm contained a basal deposit of many animal bones (Plate 3) from numerous complete or partially articulated carcasses. The absence of butchery marks, the distribution of the bones and articulations and the nature of the deposit suggest that this pit is likely to have had a ritual significance associated with a settlement.
- Towns and their rural landscapes (100 BC – AD 1700)
- *How were settlements and rural landscapes organised and how did they function?*
- 4.1.14 The evidence for rural landscapes relates to the late Iron Age, Roman, medieval and post-medieval periods.
- Late Iron Age - early Roman*
- 4.1.15 Two late Iron Age/early Roman occupation sites were located on the west-facing side of a hill. One of the sites is low lying, the other on medium-high ground and associated with a boundary ditch and associated track or drove-way.
- 4.1.16 The low lying site is characterised by a number of rubbish pits on a terrace just to the east of Downs Road. It is likely that some of the undated postholes in this area (Figure 7) belong to this phase. The indication is of a domestic building, probably with fenced stock enclosures.
- 4.1.17 The site on medium high ground (Figure 10) was sub-circular and enclosed by banks and ditches. It might have originated as a corral for livestock. Subsequent human occupation is demonstrated by a number of pits, ovens/kilns etc within

the enclosure. Adjacent areas are devoid of such features and might therefore have been used for agriculture.

- 4.1.18 The track, oriented from north to south may be a replacement for the track which passed along the Downs Road dry valley during the mid to late Iron Age (see above). A lack of evidence for occupation at of this date from the rest of Zone 3 indicates the presence of fields or woodland.

Roman

- 4.1.19 There are two areas of Roman activity in the Zone, one near Hazells Farm, the other at Northumberland Bottom on the crest over, and upper slopes of, the Wrotham Road dry valley. Both areas are associated with roads. The Hazells Farm site is associated with a road in the Downs Road valley, that presumably followed the contour to the north and connected with Watling Street c 400m to the north. The Northumberland Bottom site is associated with a road junction in the Wrotham Road dry valley. One of the roads is aligned parallel to Watling Street before turning to the north on the high ground at the top of the hill.

- 4.1.20 At Hazells Farm the Downs Road dry valley road was re-established in the early Roman period, following the base of the valley floor. Adjacent to this a Roman malting oven or 'corn dryer' was built. The presence of the malting oven and a number of field ditches suggests that there was a farmstead or settlement in the immediate vicinity (probably at Hazells Farm), and provides evidence for cereal cultivation. The settlement continued, and the road was re-surfaced and new side ditches added, until the 3rd century when the malting oven was demolished and the road appears to have gone out of use. Field ditches seem to indicate a continuity of agricultural practice at this site until the end of the Roman period.

- 4.1.21 On the crest of the hill and on the flanks of the Wrotham Road dry valley a settlement appears to have been established in the late 1st century AD, possibly around AD70 and continued in use into the 2nd- or 3rd centuries. Evidence for the settlement included cut features, neonate burials, possible timber buildings and a wealth of ceramic and environmental evidence. The focus of the settlement appears to have been slightly to the north of the limits of archaeological investigation. The establishment of this settlement might have coincided with the abandonment of the earlier Late Iron Age enclosure site above. The Roman settlement area was based on rectangular enclosures of banks and ditches. Access to the site was *via* metalled roads approaching from the east in the Wrotham Road dry valley.

- 4.1.22 Area 330 Zone 3 lies in the hinterland of Springhead Roman town, situated approximately 1km to the east of Hazells Farm, approximately 2km from Northumberland Bottom. Such distances are fairly typical for the location of villas/farms from Roman towns, comparison can be made to the location of the Northfleet Roman Villa in the Ebbsfleet valley, also approximately 2km from Springhead.

Medieval

- 4.1.23 Between the 11th and 13th centuries activity is recorded to the east and west of Downs Road. To the east of Downs Road are numerous pits and postholes indicating a building, finds indicate an occupation site. To the west of Downs Road medieval field or enclosure ditches and a working hollow containing two ovens or kilns were found. These features may well relate to a agricultural activities being undertaken near to a farm, possibly established on the present Hazells Farm site.

- 4.1.24 A sequence of enclosures of similar date was located near the crest of the hill near the former Northumberland Bottom army camp (Figure 13). These might have originated as cattle corrals but the presence within them of rubbish pits and a possible sunken-floored building containing an oven or kiln indicates that there was also human occupation within the enclosed area.

Post-medieval

- 4.1.25 A brick clamp of late medieval or post-medieval date was located near to Hazells Farm. Quarry pits in the same area are likely to have been contemporary. These features demonstrate how local resources were exploited to produce materials on site for the construction of rural buildings.

- 4.1.26 The brick clamp was probably associated with the construction of Hazells Farm in brick (the present buildings date from the 19th century).

- 4.1.27 At the crest of the hill the medieval enclosed area was disused and it is likely that a post-medieval farm was established at Northumberland Bottom (as evidenced from finds – especially coins from the metal detecting survey- and trackways).

- *How did the organisation of the landscape change through time?*

- 4.1.28 The late Iron Age-early Roman occupation site on the west-facing side of the hill (Figure 10) probably had its origins in the pre-Roman Iron Age but continued in use into the early part of the Roman occupation. The enclosure was based on curvilinear ditches, rather than a Roman rectilinear system and went through several phases of development and expansion before its abandonment, in the late 1st century AD. The settlement may have been abandoned as a result of the imposition of a Roman administrative system but results are not conclusive.

- 4.1.29 The Roman settlement activity on the eastern side of the hill was probably planned. Its construction (on a previously unused site) might have coincided with the abandonment of the earlier settlement. By the 2nd century occupation had extended beyond the area of the original enclosure.

- 4.1.30 There is less evidence for changing patterns of land use in the medieval period. The three foci of activity in this period seem to have been broadly contemporary. They had probably all gone out of use by the end of the 13th century.

- 4.1.31 The overall effect is one of continuity of land use (agricultural activities and settlement foci). As one area is abandoned, another is established. This can best be seen by the roads on the western side of the site. During the Iron Age there is a road in the Downs Road dry valley, which climbed the hill to the north. During the later Iron Age the road is at a higher level up the hillside. During the Roman period it is re-established in the base of the dry valley and during the medieval and post-medieval period it is established on a terrace near the base of the valley.

- 4.1.32 There appears to be a similar pattern in the Wrotham Road valley. The first track may be at a high level, near the Beaker burials (Figure 16, track), the next is a Roman road (Road 2) that lies on the lower, western side of the valley and forms a 'T' junction with another road oriented east to west (Road 3). Road 3 goes out of use during the 2nd century AD and it is possible this was a result of the laying out of Roman Watling Street further to the north, which provided a more direct route to Springhead/Rochester. This possibility is allowed as a similar gravel road was recorded c 350m to the south of the A2 at Henhurst Road, Singliewell (Area 330 Zone 4) which also went out of use at the end of the first/early second century AD, potentially as a result of the creation of Roman Watling Street.

- *Consider the effect on the landscape of known historical events, eg. the arrival of Roman administration*

- 4.1.33 The creation of a new settlement site on the eastern side of the hill coincided with the establishment of Roman administration. It is significant that it seems (on the evidence available) to have been constructed on a previously unoccupied site. If, as suggested above, this site replaced an earlier settlement on the other side of the hill, this change could have been linked to Romanising influences coming into effect towards the end of the 1st century AD. These would include the growing influence of Springhead, the adoption or imposition of new agricultural practices, perhaps the redistribution of land, the adoption of a new lifestyle by the existing population or to the development of the local infrastructure (see below).
- 4.1.34 Medieval occupation of the area seems to have commenced in the late 11th century, after a hiatus that had lasted since the late Roman period. It is possible that renewed activity in this area was a consequence of changes in patterns of land tenure following the Norman Conquest.
- *The late and immediate post-Roman period*
- 4.1.35 There is no evidence to suggest occupation of the Roman settlement on the east side of the hill towards the end of the Roman period. It seems that the site had been abandoned (or contracted) by the 2nd- or 3rd century AD. The malting oven or corn drier in the dry valley to the west was demolished and backfilled in the 3rd century AD. The adjacent road probably went out of use at about the same time; it was cut by a number of ditches and an oven or kiln, of later Roman date.
- 4.1.36 One piece of Saxon pottery was recovered from the works. It is likely that any evidence for Saxon occupation was slight, dispersed and destroyed by later agricultural activities; the finds subsequently mixed in with the modern topsoil. Given the continuity of activity in this Zone since the Late Neolithic/early Bronze Age it is unlikely that the area was completely abandoned.
- *The impact and development of Roman Watling Street*
- 4.1.37 Zone 3 is located a few hundred metres south of Roman Watling Street. It is likely that this important route would have had a major effect on patterns of settlement and land use in the area. It is also likely that Roman Watling Street was established on the line of an earlier Iron Age routeway, accessed by the tracks found on site.
- 4.1.38 A Roman metalled road (associated with a Roman malting oven) was oriented north to south along the dry valley at the west end of Zone 3. It is possible that this was a spur road coming off of Watling Street. The Roman road can be seen as a precursor of modern Downs Road. The existence of this road, or at least a route that followed the same course, might have influenced the siting of the nearby medieval farmstead.
- 4.1.39 It has been suggested above that the establishment of a Roman farmstead or settlement on the upper slope of the dry valley occupied by modern Wrotham Road could have been associated with the development of the local infrastructure. Two of the metalled roads or tracks that gave access to the settlement approached from the east. This suggests that Wrotham Road might also have had its origins in the Roman period.

- 4.1.40 The stratigraphic evidence has the potential to contribute in varying degrees towards the following Fieldwork Event Primary Aims:
- *To establish a record of changing settlement and landscape morphology for the area, including habitation areas and associated enclosures and trackways etc.*
- 4.1.41 The evidence for sites of occupation, enclosures and routeways has been summarised above, in the section dealing with Landscape Zone Priorities. Perhaps the most important concept to have emerged from the post-excavation assessment is a partial understanding of the way in which local patterns of land use changed over time.
- 4.1.42 A number of foci of activity have been identified. The nature of the sample ensures that only parts of 'sites' were excavated archaeologically so when sites are 'abandoned' it probably means they 'shifted away from the line of the trace'. However in most cases the continued, shifting settlement pattern, from the early Bronze Age to the post-medieval period has been recorded.
- 4.1.43 Preliminary analysis suggests that there was little continuity of actual settlement areas within the foci from one Time Period to another. For example, the occupation site to the west of Downs Road seems to have been abandoned in the mid-late Iron Age. Enclosure ditches of a similar date to the east of Downs Road were backfilled rapidly, perhaps even before they had been completed. There is no evidence for activity there in the 1st century AD. By then the main focus of activity had shifted to the enclosed site on the higher ground to the east.
- 4.1.44 The late Iron Age/early Roman settlement site went out of use by about AD 70, and was perhaps replaced by a new settlement (on a previously unused site) on the other side of the hill. That site was abandoned (or contracted) in the 3rd century AD, and there is no evidence that it was used for anything other than agriculture after that time.
- 4.1.45 There is no stratigraphic evidence for settlement locally in the immediate post-Roman period. The next phase of known occupation commenced in the 11th century. A farmstead was built on a terrace on the east side of the Downs Road dry valley and ovens and a field system were sited to the west of Downs Road.
- 4.1.46 A sequence of medieval enclosures near the crest of the hill is likely to have been contemporary with the farmstead, perhaps originating as corrals for livestock. This area does not seem to have been occupied since the later prehistoric period.
- *To determine the function of these areas and changes through time (eg. the effect of the imposition and decline of Roman administration)*
- 4.1.47 Another important concept to have emerged from the post-excavation assessment is the multi-functional aspect of the various foci of activity. It has already been noted that there is an element of zoning within the Late Bronze Age - late Iron Age activity areas (Section 3), specifically concerning the occupation site to the east and west of Downs Road, with areas given over to metalworking, pit digging and stock control. There is also evidence for ritual activity (the pit containing articulated animal skeletons) within the area of potential settlement.
- 4.1.48 The late Iron Age/early Roman enclosed settlement might have originated as a stock enclosure, for which there are a number of examples in the locality (specifically South of Station Road ARC SSR 99, Area 330 Zone 2, and Fawkham Junction ARC 330 98, Area 330 Zone 1). This is based on the

characteristic arrangement of ditches at the northern entrance, which would have helped to corral the animals into the enclosure. The presence of pits, ovens/kilns etc within the enclosure demonstrates that it was used subsequently (or additionally) for human habitation. There is some evidence for activity zoning within the enclosure. Rubbish pits were confined to the sides and the central area was undisturbed. Since there is no evidence for structures or hearths in this central area, it is possible that it was left as an open space to allow clear passage through the enclosure. Most of the ovens/kilns/hearths are confined to the western edge of the enclosure, suggesting that this area was more appropriate for those activities (perhaps as a result of the prevailing wind/proximity to the north to south hollow way).

4.1.49 The Roman settlement on the flank of the Wrotham Road dry valley also revealed evidence for multi-functional use and zoning, notably by the presence of neonate burials in the south-east corner of the enclosure.

4.1.50 The medieval enclosure near the top of the hill was presumably designed to retain livestock; the surrounding ditches are unlikely to have had a defensive function. The presence of refuse pits and a possible sunken-floored building containing an oven or kiln within the enclosure also indicates human habitation.

4.2 Artefacts

Ceramics: Prehistoric and Roman pottery

4.2.1 The prehistoric pottery assemblage, which shows little confusion derived from intrusiveness/residuality has good potential to contribute to the following Landscape Zone Priorities:

Early Agriculturists (4500-2000 BC)

- *Determine ritual and economic landscapes and their relationships*

4.2.2 The double inhumation Beaker burial and Collared Urn cremation both contained ceramic vessels that date and characterise the funerary evidence. The stylistic traits of these vessels are worthy of comparison with other examples from Kent. The location of these features needs to be considered in relation to others in the area including the barrows at Whitehill Road (ARC WHR 99) and Cobham (ARC CGC 98).

Farming communities (2000-100 BC)

- *Determine spatial organisation of the landscape in terms of settlement location in relation to fields, pasture, woodland, enclosed areas and ways of moving between these.*
- *Determine how settlements were arranged and functioned over time.*

4.2.3 The pottery will contribute greatly to the construction of a chronological framework within which the spatial organisation of the landscape and its development through time can be examined. Zone 3 is particularly important for the movement of both settlement and agricultural/pastoral activity across the landscape over time. The continued presence of burial/ritual activity is a further component of this landscape.

4.2.4 The late prehistoric and Roman pottery assemblages have good potential to contribute towards the following Research Objectives:

Towns and their rural landscapes (100BC – 1700 AD)

- *How were settlements and rural landscapes organised and how did they function?*
- *How did the organisation of the landscape change through time?*
- *Consider the effect on the landscape of known historical event, eg the arrival of Roman administration.*

4.2.5 The pottery assemblage will contribute to the characterisation of activity of this period and chronology of changes. This can be demonstrated with reference to the considerable assemblage recovered from the Pepper Hill Roman cemetery (ARC NBR 98).

4.2.6 Examination of the assemblage in terms of composition, percentage of imported wares and non-local wares will contribute to the study of the effects of the Roman conquest and levels of Romanisation.

4.2.7 The prehistoric and Roman pottery assemblages have good potential to contribute to the following Fieldwork Event Primary Aims:

- *To establish a record of changing settlement and landscape morphology for the area.*

4.2.8 The pottery provides a good chronological framework for examining the changing settlement and landscape morphology. Through more detailed examination of the assemblage and comparative analysis with other assemblages, the chronology of each phase could be refined.

- *To determine the function of these areas and changes through time*

4.2.9 The pottery has the potential to contribute to the characterisation of each area. The assessment has not highlighted any groups that are particularly functionally distinct but show a continuity of functions in differing areas through time.

4.2.10 The prehistoric and Roman pottery assemblages have good potential to contribute also to the Fieldwork Event Secondary Aims.

4.2.11 The secondary aims were directed at the recovery of suitable pottery assemblages for the study of the Late Bronze Age - early Iron Age and late Iron Age-early Romano-British transition periods. This was clearly achieved during the excavation and the assemblage has the potential to contribute to ceramic studies of these periods. The discovery of the Beaker inhumation burial, Collared Urn cremation and middle Iron Age broadens the chronological range of the ceramic assemblage. The limited identification of the pottery by fabric carried out so far suggests this assemblage has good potential to contribute to the characterisation of prehistoric and early Roman assemblages.

Ceramics: Post-Roman pottery

4.2.12 The post-Roman pottery assemblage will contribute towards the following Research Objectives:

Towns and their rural landscapes (100 BC - AD 1700)

- *Did population increase and concentration effect natural resource exploitation and accelerate environmental change?*

4.2.13 There is insufficient pottery from either site to really answer this question, but the dominance of fabric EM35 fits with the known pattern for the area (CAT fabric series). The widespread use of the related fabrics EM35 and EM48, and

also EM36, reflects the increasing consumer market in the 12th century, which was supplied by local potters using local shell-bearing clays.

- *How were settlements and rural landscapes organised and how did they function?*

4.2.14 Comparison of the assemblage with others in the area may help understand patterns of trade. The relative proportions of different wares and forms are consistent with rural domestic sites.

4.2.15 The post-Roman pottery assemblage will contribute towards the following Fieldwork Event Aims:

- *To establish if the medieval building(s) located to the west are associated with activity of a similar date within the area of investigation.*

4.2.16 The finds show that most pottery is of much the same period on both sites and gives a good guide to the main period of occupation. It would seem that the site at ARC WNB 98 continued in use beyond that at ARC HRD 99, although the current dating of the pottery from the sunken-floored building is slightly earlier than that obtained from the archaeomagnetic sample. The finds from ARC 330 98 are simple dating indicators, and cannot be used for detail interpretation.

- *To determine the function of these areas and changes through time.*

4.2.17 The finds from both the main sites (ARC HRD 99 and ARC WNB 98) are quite similar and are in keeping with a rural context. Both have a limited range of wares and form, the latter comprising almost entirely cooking pots and dishes, with few jugs. No imports were found, and the amount of pottery from Tyler Hill is extremely limited. The latter occurs in Rochester, so the absence here might suggest that the Medway formed the western limit of its distribution.

4.2.18 Spatial analysis of the pottery may help determine the extent of domestic activity. Field boundaries and rubbish disposal is seen on ARC WNB 98 and ARC HRD 99, but the finds from ARC 330 98 are too few to offer any useful information. The most informative groups on ARC WNB 98 are all from the enclosed site near the crest of the hill and are derived from an early medieval ditch, the sunken-floored building and three pits. Contexts with few sherds may be less significant for the pottery analysis, but they will help define the extent and morphology of structures/features in which they were found and to interpret the function of these areas.

Ceramics: Ceramic building material

4.2.19 The ceramic building material has the potential to provide information for the following Research Objective:

Towns and their rural landscapes (100 BC – 1700 AD)

- *How were settlements and rural landscapes organised and how did they function?*

4.2.20 The presence of Roman material on sites with ample evidence of Late Iron Age occupation has the potential to provide evidence of continuity of use from the Iron Age to the Roman period.

4.2.21 Although sparse, the Roman tile indicates the presence of Roman tile built structures in the vicinity of the site. The Roman tile, mostly probably derived from the chalk-built malting oven at Hazells Road, should be examined in the light of its proximity to the higher status settlement at nearby Springhead. The

absence of concentrations of tile in ARC WNB 98 Area C indicated that the buildings here probably did not use large amounts of tile.

4.2.22 The manufacture of bricks in the early post-medieval period is evidence of high-status building activity in the locality, and the brick wasters will provide comparanda for local material of this period.

4.2.23 The ceramic building material has the potential to provide information for the following Fieldwork Event Aim:

- *To determine the function of these areas and changes through time*

4.2.24 The ceramic building material and daub/fired clay assemblage from Downs Road has the potential to provide information on malting and grain processing activities carried out on the site in the Roman period.

Ceramics: Fired clay

4.2.25 The fired clay (daub) has the potential to provide information for the following Research Objective:

Farming communities (2000-100 BC)

- *Determine spatial organisation of the landscape in terms of settlement location in relation to fields, pasture, woodland, enclosed areas and ways of moving between these*
- *Determine how settlements were arranged and functioned over time*

4.2.26 If the daub assemblages from Northumberland Bottom and ARC 330 98 can be shown to be of prehistoric date they have the potential to provide information on the location of and activities carried out in Middle to Late Iron Age settlements, possibly continuing into the early Roman period at Northumberland Bottom.

4.2.27 The fired clay (daub) has the potential to provide information for the following Fieldwork Event Aims:

- *To establish a record of changing settlement and landscape morphology for the area, to include habitation areas and associated enclosures and trackways etc.*
- *To determine the function of these areas and changes through time*

4.2.28 If the daub/fired clay from ARC WNB 98 and ARC 330 98 represents, as seems likely, the remains of structures from the Middle or Late Iron Age, its analysis has the potential to provide information on Iron Age to early Roman land use and environment.

4.2.29 The daub/fired clay assemblage from Downs Road has the potential to provide information on the manufacturing activities carried out on the site in the Roman period.

Ceramics: Artefacts

4.2.30 The ceramic loom weights can assist the following Research Objective:

Farming Communities (2000-100 BC)

- *Determine how settlements were arranged and functioned over time*

4.2.31 The loom weights supply further evidence for human settlement in the area in the prehistoric period. The earliest fragments are probably Bronze Age, but all of these occur with Iron Age material. The remaining loom weights all appear to be triangular with rounded corners and three or more perforations. They belong to the most commonly found type of Iron Age loom weights (Poole 1984, 406).

They indicate the presence of a settlement in the vicinity, as these weights are thought to have been used either for looms or for some other in-door based activity, such as weaving (ibid, 406).

- 4.2.32 The loom weights from ARC 330 98 can assist the following Landscape Zone Priority:

Spatial organisation of the landscape, and changes through time

- *The socio-economic landscape of later agriculturists (2000-100 BC).*

- 4.2.33 The presence of the loom weight fragments is indicative of a mid- to late Iron Age settlement in the vicinity, as well as possible Bronze Age activity. It is interesting to note that more fragments of the same type of triangular and cylindrical loom weights were recovered from ARC WNB 98, also in Zone 3.

- 4.2.34 The loom weights from ARC 330 98 can assist the following Fieldwork Event Aim:

- *To recover dating evidence from the features located to enable a chronology for the division of the landscape to be established*

- 4.2.35 The triangular loom weight fragments are of a type that was common during the mid- to late Iron Age and may, therefore, be of use for dating purposes. It adds to the Iron Age pottery and other Iron Age artefacts found elsewhere in Zone 3. The cylindrical fragments may come from Bronze Age loom weights but will require further work on their identification.

- 4.2.36 The ceramic loom weights from ARC WNB 98 can assist the following Fieldwork Event Aim:

- To determine the function of these areas and changes through time

- 4.2.37 The ceramic loom weights are further evidence of human activity and settlement at or near the site in the Bronze Age and Iron Age. The presence of these weights, whether intended for looms, weaving or some other function, indicate that a settled community existed in the vicinity.

Lithics: Worked and Burnt Flint

- 4.2.38 The flint can contribute to the research objectives of the project following the fieldwork event aims and the Landscape Zone aims:

- *To establish a record of changing settlement and landscape morphology for the area.*

- 4.2.39 Although mainly residual, the lithics can aid the production of a chronological framework for examining the changing settlement and landscape morphology. A more detailed analysis of the technology of the material would be able to define more clearly the likely later prehistoric flintwork.

- *To determine the function of these areas and changes through time*

- 4.2.40 The lithics provide evidence for the activities occurring through the Neolithic and Bronze Age.

Early Agriculturists (4500-200 BC)

- *Determine the ritual and economic landscapes and their relationships*

- 4.2.41 A single flint flake was recovered from the double inhumation burial. A barbed and tanged arrowhead was recovered from an Iron Age pit fill, and other potentially contemporary pieces were identified indicating a domestic and

funerary uses. This is a pattern of activity that can be matched by many of the other sites on the CTRL route (eg ARC NBR 98, ARC CGC 98).

Farming Communities (2000-100BC)

- 4.2.42 The lithics will have some potential to contribute to some of the research questions although the size of the assemblages may be problematic. The possible later prehistoric flintwork will shed light on the domestic activities occurring, and the changing use of resources through time.

Humanly modified and unworked stone

- 4.2.43 The stone artefacts can assist the following Fieldwork Event Aims:
- *To establish a record of changing settlement and landscape morphology for the area, including habitation areas and associated enclosures and trackways, etc.*
 - *To determine the function of these areas and changes through time*

- 4.2.44 The stone artefacts provide further evidence for human occupation and activity in the area. Their exact dating is, at present, unclear. With further integration of the accessioned finds, stratigraphy and pottery dating, their place within the context of the site and the processes going on there, will become clearer.

- 4.2.45 The hones and querns have the potential to inform about domestic activity in the area and also trade routes (stone querns and other artefacts were often traded over long distances). Sources can be investigated based on stone type and forms.

Glass

- 4.2.46 Glass has little potential and it is not thought that the glass assemblage can be of use to either the Landscape Zone Priorities or the Fieldwork Event Aims. However, it would be of interest to see if the general lack of Roman glass is unusual and if it can indicate anything about the uses that this area was being put to in that period. Mould-blown glass bottles such as the fragments found on this site, date to the 1st to late 2nd century AD and are commonly found on Roman sites (Price and Cottam 1998, 195). They were used as storage, and also transport, containers. The bead is also of interest and may be more closely dateable.

Metalwork: Coins

- 4.2.47 The coins from ARC HRD 99 may assist the following Landscape Zone Priority:
- The late and immediate post-Roman landscape
- *The decline of the urban economy and wider changes in the later Roman economy in general*

- 4.2.48 The quantity of late Roman coinage present on the site appears to be unusual in that it is larger than on other CTRL sites in Area 330. This implies a continuity of activity during this period, the other evidence of which appears not to have survived.

- 4.2.49 The coins from ARC HRD 99 may assist in the following Fieldwork Event Aim:
- *To recover dating evidence from the features located to enable a chronology for the division of the landscape to be established*

- 4.2.50 The majority of the coins date to the mid-4th century AD. They are mostly derived from the road metallage and the disuse of the malting oven.

- 4.2.51 The coins from ARC WNB 98 are only of use for dating purposes and as only one of them can be related to a stratified feature, this potential is rather limited.
- Metalwork: Artefacts*
- 4.2.52 The metalwork from ARC 330 98 can aid the following Landscape Zone Priority:
- Spatial organisation of the landscape and changes through time
- *The socio-economic landscape of the later agriculturalists (2000, 100 BC)*
- 4.2.53 The recovery of the La Tène brooch, dating broadly to the 4th to 3rd centuries BC is of intrinsic interest. Comparison should be made with the other sites in Area 330 to identify other forms of Iron Age jewellery or dress accessories to build up a picture of the relative wealth of the population during this period.
- 4.2.54 The metal work from ARC HRD 99 and ARC WNB 98 can assist with the following Research Objective:
- Towns and their rural landscapes (100 BC-AD 1700)
- *How were settlements and rural landscapes organised and how did they function?*
- 4.2.55 A number of early Roman artefacts were recovered. These are largely items of personal adornment and as such can contribute little to identifying what types of activities were taking place on the site, but may be able to indicate something about the population of the area and the types of people who were living and working there.
- 4.2.56 The excavation produced less metal dating to the medieval to post-medieval periods, but the metal-detected material should be analysed further in the light of this Landscape Zone Priority, to see if the function of the area was mainly agricultural, or whether evidence for more intense land uses can be identified in the post-Roman period.
- 4.2.57 The metalwork from ARC HRD 99 may assist the following Fieldwork Event Aims:
- *To determine the spatial organisation of the landscape, and changes through time*
- 4.2.58 The majority of the accessioned finds (as outlined above) have little to add to this aim. The Iron Age brooch is, however, of interest and may be able to aid the interpretation of the function and settlement type of the Hazells Farm area at this time.
- *To recover dating evidence from the features located to enable a chronology for the division of the landscape to be established*
- 4.2.59 Most of the metal work found is probably associated with structural or other fittings (ring, rove, hinge and staple) and as such is difficult to date or to interpret without other datable material recovered from the same contexts.
- *To determine the ritual and ceremonial uses of the landscape*
- 4.2.60 The brooch is in good condition and is virtually complete, such as is found in a burial or as a votive offering. It is from a pit fill, the content and function of which should be further analysed.
- 4.2.61 The metalwork from ARC HRD 99 may assist the following Fieldwork Event Aims:

- *To recover dating evidence from the features located to enable a chronology for the division of the landscape to be established.*
- 4.2.62 Some of the accessioned metal finds may be of use in dating the contexts that they occur in, as well as aiding in the interpretation of the site.
- *To determine the late and immediate post-Roman landscape.*
- 4.2.63 The dateable Roman finds are largely late Roman and may therefore be of use in interpreting the uses to which the site was put to during this period and the sort of population that was using it. It is interesting to note the relatively high occurrence of objects of personal adornment amongst the copper alloy. Of a total of 10 accessions, five are Roman bracelets, one is a pin from a Roman brooch and one is a fragment of wire which may come from a pin or a brooch. Although the copper alloy assemblage is quite small, this bias should be analysed and compared with other sites in Area 330, especially with the grave goods from ARC NBR 98.
- 4.2.64 The following Fieldwork Event Aim can be assisted by the metal finds from ARC WNB 98:
- *To determine the function of these areas and changes through time (e.g. the effect of the imposition and decline of Roman administration)*
- 4.2.65 The finds, when fully integrated with the stratigraphic information, should be able to help with this aim. It is interesting that the excavation produced mainly Roman finds, whereas the metal detecting survey produced medieval and later material (with some Roman). As mentioned above the early Roman brooches may be able to indicate what type of population was present, for example they may be indicative of an early military presence. Although the material from the metal detecting survey is unstratified, it has been plotted by grid square, and the distribution of artefacts can be used to identify signature groups for activities.
- Worked bone*
- 4.2.66 The worked bone artefacts may assist the following Research Objective:
Farming Communities (2000 - 100 BC)
- *Determine how settlements were arranged and functioned over time*
- 4.2.67 The two bone artefacts have a limited potential beyond providing further evidence, along with the pottery and the other Iron Age finds, of human activity and occupation in the area. Both are types frequently found on Iron Age sites and, therefore, would probably have been common implements in use at that time. The tool or point was probably a multi-functional implement, summed up by Coles as 'the prehistoric Swiss army knife' (1987, 53) and similar implements have been found in large numbers on other Iron Age sites (ibid, 51).
- 4.2.68 The bone waste can assist the following Fieldwork Event Aim:
- *To determine the function of these areas and changes through time*
- 4.2.69 The bone waste would suggest that horse bone working was taking place in the Late Iron Age/early Roman enclosure.

4.3 Environmental

Environmental: Human bone

- 4.3.1 The human bone has the potential to contribute towards the following Research Objective:

Early agriculturists (4500-2000 BC)

- *Define ritual and economic landscapes and their relationships*

- 4.3.2 The beaker burials are extremely important in the light of the ritual use of the landscape as stated in the CTRL Research Strategy. In view of the paucity of publications in this area it is recommended that these two skeletons (and the associated disarticulated bones from an infant) be analysed and recorded to publication level.

Towns and their rural landscapes (100 BC – AD 1700)

- *How were settlements and rural landscapes organised and how did they function?*

Ritual and ceremonial use of the landscape

- 4.3.3 The Roman neonate burials are significant in terms of their location within the settlement and their contribution towards the study of Roman burial practices. The study of the distribution of neonate burials within settlements indicate ritual activity and land/building use (for example such burials are often beneath thresholds).

Environmental: Animal bone

- 4.3.4 The animal bone has the potential to provide information for the following Fieldwork Event Aims:

- *To determine the palaeo-economy of settlement through the recovery of charred plant material and other palaeo-economic indicators*

- 4.3.5 There are moderately large assemblages dated to the Middle-Late Iron Age, Early Roman, Late Roman and early medieval periods. These can be used to provide information on which animals were exploited within each period and area, and to a limited extent, how they were exploited, as suggested by the relatively good representation of ageable bones. The condition of the bones suggests that the younger individuals are likely to be underrepresented. However, the presence of older individuals does at least suggest that secondary products, as milk and wool, were important. It should also be pointed out that there was a scattering of very young individuals, usually calves or lambs, within these assemblages. Considering the poor survival potential of such bones, it can be assumed that these represent only a small proportion of all that were originally deposited. These bones clearly show that these sites represent livestock production centres.

- *To establish if the medieval building(s) located to the west are associated with the activity of a similar date within the area of investigation*

- 4.3.6 Relatively few bones were recovered from the post-pits making up the building to the east of Downs Road (Figure 8), and it would appear that few similarly dated deposits were found in the immediate vicinity. There is, however, a reasonable quantity of bones from the medieval enclosure area situated at the eastern end of Area A/B within this same site (Figure 13).

- *To establish changes in the local environment through the recovery of suitable palaeo-environmental samples from the fill of cut features*

4.3.7 Establishing changes in the local environment is perhaps beyond the scope of these bone assemblages. Environmental indicators, as some birds, the smaller rodents and amphibians, were rarely recovered from these sites. There is, however, one notable exception: the Middle-Late Iron Age pit near Hazells Farm (ARC 330 98). This provided hundreds of small rodent bones, clearly representing a large number of mouse and vole skeletons. Such a presence is not unusual and may represent ‘pit falls’ which imply the pit was open for some time prior to final backfilling. A closer study of these bones could result in the identification of species, which could then provide some information concerning local environmental conditions during this late prehistoric period.

4.3.8 The animal bones have the potential to contribute towards the following Landscape Zone Priorities:

Ritual and ceremonial use of the landscape

4.3.9 There are at least two deposits which can be viewed as ritual in origin, these being the Middle-Late Iron Age pit [147] (Figure 5) with numerous skeletons from ARC 330 98 and the horse burial within the Late Iron Age/Early Roman enclosure in ARC WNB 98 (Figure 10). Both clearly deserve further study, including research into comparisons from other contemporary sites in this part of Kent (for example Fawkham Junction Area 330 Zone 1 and South of Station Road (Area 330 Zone 2).

Macroscopic plant remains and charcoal

4.3.10 The plant remains and charcoal have the potential to provide information for the following Fieldwork Event Aim:

- *To determine the palaeo-economy of settlement through the recovery of charred plant material and other palaeo-economic indicators*

4.3.11 Few plant remains were recovered from the Bronze Age and Iron Age samples, so their value is limited. Very little material of this date, and from this area of Kent, has been previously studied, however, and analysis of the 12 samples will improve our knowledge of cereal use and cultivation in these periods. Identification of the four charcoal samples will give an idea of the wood species being exploited.

4.3.12 Many of the samples from Roman (and possibly late Iron Age) features, in different parts of the study area, were very rich in charred plant remains, and have the potential to contribute substantially to our knowledge about the palaeo-economy of the settlements. Oven and hearth features on ARC WNB 98 and ARC HRD 99 all contain rich assemblages of charred plant remains, which can be used to investigate their functions, and to compare the nature of the materials used as fuel. Very large assemblages from ten pitfills inside the square enclosure in ARC WNB 98 (area C), and from a ditchfill and pitfill nearby will help to determine the nature and economy of this settlement, and crop-related activities taking place. Samples with moderate-sized assemblages from Roman ditch- and pitfills will provide extra background data on cereal use and processing.

4.3.13 Charred plant remains from the medieval sunken building in ARC WNB 98 (area A/B), which included pulses and fruit stones as well as cereal remains, may be useful in determining the function of the feature. These remains will also provide information on the economy of the site and, to a limited extent, the diet of its

inhabitants. The function of the medieval oven/kiln in ARC HRD 99 may be revealed by analysis of the plant remains associated with it. Plant materials used as fuel in this feature can also reflect aspects of the site economy.

Mollusca

- 4.3.14 The mollusc assemblage which produced 88 sample groups containing a total of approximately 5,800 shells, has the potential to contribute towards the following Research Objective:

Farming communities (2000-100 BC)

- *Consider environmental change resulting from landscape organisation and re-organisation*

- 4.3.15 The study of the snails would contribute to an understanding of the environment of a mid-late Iron Age boundary ditch.

- 4.3.16 The mollusc assemblage has the potential to contribute towards the following Fieldwork Event Aims:

- *To determine the local environment of settlement through the recovery of assemblages of molluscs from cut features and colluvial sequences*

- 4.3.17 The assemblage has considerable potential for the detection of spatial and temporal variation resulting from changes in local conditions, such as shading, and to consider their implications for changes in land use.

- *To determine the palaeo-economy of settlement through the recovery of charred plant material and other palaeo-economic indicators*

- 4.3.18 As there is an adequate sized assemblage, analysis of the oysters from the fill of a medieval enclosure ditch might provide information on the source and nature of the food supply available to the local population.

Geo-archaeology

- 4.3.19 The data from monolith samples has potential to address the following Research Objectives:

Early agriculturists (4500-2000 BC)

- *Define nature of contemporary environment*
- *Determine nature and effect of clearance for agricultural activity*

Farming communities (2000-100 BC)

- *Consider environmental change resulting from landscape organisation and re-organisation*

- 4.3.20 Monolith samples were taken through a sequence of colluvial deposits near the bottom of the Wrotham Road dry valley at the eastern end of Zone 3. Although the samples have yet to be analysed, the pollen might provide information on the changing vegetation of the valley and the possible role of human activities in landscape change. Thin section analysis would allow the testing and enhancement of the sequence of events suggested in the monolith assessment.

- 4.3.21 The data from monolith samples has potential to address the following Fieldwork Event Aims:

- *To determine the function of these areas and changes through time*

- 4.3.22 A monolith sample was taken down-slope of an area of Iron Age activity to the west of Downs Road, where pits contained large amounts of charcoal, burnt daub and other burnt material. Initial assessment indicates a lower deposit of truncated

soil, developed in brickearth-like slope sediments. Overlying sediments contain frequent charcoal flecks and possible ash, that might be derived from further up-slope.

- 4.3.23 Magnetic susceptibility of the samples to the west of Downs Road may indicate whether the upper sediments were derived from kiln materials. Thin section analysis would help to identify the composition of the sediments, the processes that led to their deposition and any post-depositional processes that have altered them. This might enable the activities associated with the area to be better understood.

4.4 Statement of overall potential

- 4.4.1 The principal site data has the potential to contribute towards the following Time Periods as defined in the CTRL Archaeology Research Strategy

- Early Agriculturists (4500-2000 BC)
- Farming Communities (2000-100 BC)
- Towns and their rural landscapes (100 BC – AD 1700)

- 4.4.2 Within these Time Periods the data can be used to address the following Research Objectives and Landscape Zone Priorities

Early Agriculturists (4500-2000 BC)

- Define ritual and economic landscapes and their relationships
- Define nature of contemporary environment
- Determine nature and effect of clearance for agricultural activity

- 4.4.3 The 'Beaker' period double inhumation is a comparatively rare example of this rite and is therefore of great significance. It needs to be considered in relation to the possible Neolithic mortuary enclosure at nearby Tollgate, and the barrows at Whitehill Road (ARC WHR 99) and Cobham (ARC CGC 98).

- 4.4.4 Monolith samples were taken from colluvial deposits at the base of the dry valley that was overlooked by the Beaker-period grave. Thin section analysis of the samples could give some indications of the local environment and any changes that occurred as a result of human intervention.

Farming Communities (2000-100 BC)

- Determine spatial organisation of the landscape in terms of settlement location in relation to fields, pasture, woodland, enclosed areas and ways of moving between these
- Determine how settlements were arranged and functioned over time
- The socio-economic landscape of later agriculturists (2000-100 BC)

- 4.4.5 A settlement site was located to the west of the Downs Road dry valley, with occupation spanning the period from the Late Bronze Age to the late Iron Age. On rising ground to the east there were stock enclosures and an associated drove-way, a major land boundary ditch and evidence for more widespread occupation represented by timber structures (possible granaries), pits, a mine or well and a working hollow. Another ditched enclosure was located on the crest of the hill overlooking the Wrotham Road dry valley.

- 4.4.6 Analysis of the pottery and other categories of finds will contribute to the construction of a chronological framework within which the spatial organisation of the prehistoric landscape and its development through time can be examined.

- 4.4.7 Analysis of the mollusca, non-domestic animal bones and soil samples may contribute to an understanding of the contemporary environment and any local variations that might have existed in terms of spatial and/or chronological differences.
- 4.4.8 There is clear stratigraphic evidence for zonation within the prehistoric settlement sites. The evidence for metalworking is important, as it is the only area where evidence for this activity was recovered for all time periods. This evidence needs to be assessed in more detail; this could be enhanced by the analysis of fired clay and soil samples from the vicinity of the furnaces.
- 4.4.9 Certain categories of finds, such as pottery, stone artefacts and loom weights can provide information on the nature of settlement and the types of activities involved, and analysis of the domestic animal bones can contribute to the study of the local economy.
- Towns and their rural landscapes (100 BC – AD 1700)*
- How were settlements and rural landscapes organised and how did they function?
 - How did the organisation of the landscape change through time?
 - Consider the effect on the landscape of known historical events, eg. the arrival of Roman administration
 - The late and immediate post-Roman period
 - The impact and development of Roman Watling Street
- 4.4.10 Much of the evidence for rural landscapes (from all categories of data) relates to the mid to late Iron Age, Roman and medieval periods.
- 4.4.11 In the late Iron Age/early Roman period an enclosed settlement was located on middle-high ground on the west-facing side of the hill. It seems to have developed next to a pre-existing boundary ditch and associated track or drove-way, and probably originated as a corral for livestock. It subsequently went through several phases of piecemeal development, but was abandoned by c. AD 70.
- 4.4.12 In the early Roman period a settlement of a different character was established on the other side of the hill. This might have coincided with the abandonment of the earlier ‘native’ site. The new settlement was more regular in form and was approached *via* metalled roads. Its establishment might be linked to the introduction of Roman administration or lifestyles and the impact of nearby Watling Street. The settlement seems to have been abandoned (or contracted) by the 2nd-or 3rd century AD.
- 4.4.13 Another Roman site was located in the Downs Road dry valley. A malting oven or ‘corn dryer’ was built next to a metalled road. It was abandoned in the 3rd century AD. The presence of this building and road suggest that a farmstead existed nearby and provides further evidence for the adoption of a Romanised lifestyle in this part of Kent.
- 4.4.14 The artefactual evidence has the potential to contribute to the dating and characterisation of all of these occupation/activity sites. The pottery is seen as particularly significant for addressing the CTRL research questions relating to the late Iron Age-early Roman transition, the effects of the Roman conquest and levels of Romanisation. The study of the domesticated animal bones and plant remains will also help to characterise the sites and might indicate changes in the local economy during the transitional period.

- 4.4.15 There is no real evidence for occupation in the late Roman or immediate post-Roman period, and there seems to have been a hiatus until the late 11th century, when a farmstead was established on a terrace on the east side of the Downs Road dry valley. A working area containing ovens or kilns was located on the other side of the valley. A ditched enclosure was built near the crest of the hill to the east of the farmstead, and subsequently enlarged. The enclosure probably served as a livestock corral but the presence of rubbish pits and a possible sunken-floored building containing an oven or kiln indicates that there was also human habitation within the enclosed area.
- 4.4.16 The assessment of the pottery suggests that the medieval sites were broadly contemporary, although the farmstead and enclosed sites might have continued in use after the area to the west of Downs Road was abandoned. Analysis of the pottery will help to characterise the medieval occupation, by the types of wares represented.
- 4.4.17 Analysis of the animal bones and plant remains (particularly from the Northumberland Bottom enclosure site) can contribute towards the study of the local economy in the medieval period. The plant remains, by identifying the types present, might indicate the function of the various structures that have been identified provisionally as ovens or kilns, and the use of the sunken-floored building.
- 4.4.18 There are two key Landscape Zones Priorities that can be applied to the evidence from all Time Periods:
- *Spatial organisation of the landscape and changes through time*
 - *Ritual and ceremonial use of the landscape*
- 4.4.19 A number of foci of activity have been identified and the assessment suggests that there was little continuity of settlement within those foci from one Time Period to another. The full integration of the stratigraphic, artefactual and environmental evidence will help to modify or refine this model and contribute to an understanding of the underlying causes for these shifting patterns of land use.
- 4.4.20 There is widespread evidence for ritual, relating principally to funerary practices. Within the foci of activity there are examples of other types of ritual activity, such as the animal inhumations and 'placed deposits'. There is much scope for considering these forms of ritual activity, as part of the CTRL research aim relating to the ritual use of the landscape, in their wider context and for comparison with similar evidence from other sites in the region.
- 4.4.21 Although the archaeological assessment has confirmed the potential of the archive to address both detailed questions about typologies and landscapes few areas of further research which were not already apparent at the conclusion of fieldwork have been revealed.
- 4.4.22 The new aims are summarised below. They enhance the existing aims rather than replacing them.
- The beaker burials are extremely important as it is more common to recover cremations than burials for this period. In view of the paucity of publications on this subject these two skeletons should be analysed and recorded to publication level.

- The cremations ought to be analysed, with the aim of establishing the age of the individuals and also sex and pathologies.
- An additional aim should include an analysis of the stature of the major domesticates throughout the occupation periods. This study will be especially useful regarding the Iron Age/Roman transition (an study aim in the CTRL Research Strategy), where evidence from other sites clearly shows an increase in cattle overall stature (Maltby 1981. 185).

5. BIBLIOGRAPHY

- Maltby, M. 1981. Iron Age, Romano-British and Anglo-Saxon animal husbandry - a review of the faunal evidence. In M. Jones and G. Dimbleby (eds). *The environment of man: the Iron Age to the Anglo-Saxon period*. B.A.R. British Series 87. 155-203.
- URL [Union Railways Limited], 1994 *Channel Tunnel Rail Link, Assessment of Historic and Cultural Effects, Final Report*, Oxford Archaeological Unit
- URL, 1995 *Channel Tunnel Rail Link, Assessment of Historic and Cultural Effects, Supplementary Fieldwork Report*, Oxford Archaeological Unit
- URL, 1996 *Channel Tunnel Rail Link, Geophysical Surveys, Final Report*, A Bartlett Associates, Oxford
- URL, 1997a *West of Northumberland Bottom (ARC WNB 97), an archaeological evaluation*, Museum of London Archaeology Service
- URL 1997b *Area of Neolithic potential west of Tollgate (ARC TGW 97), an archaeological evaluation*, Museum of London Archaeology Service
- URL, 1998a *Agreement for the provision of archaeological investigations at Pepper Hill to the River Medway (package 381)*
- URL1998b, *Written Scheme of Investigation: Archaeological Watching Brief, Project Area 330* prepared by Rail Link Engineering
- URS (Union Railways (South) Limited), 1999a, *West of Northumberland Bottom Interim Report* prepared by MoLAS
- URS 1999b, *Northumberland Bottom Army Camp Interim Report* prepared by MoLAS
- URS, 2000, *Area 330 Archaeological Watching Brief Interim Report* prepared by MoLAS
- URS, 2000, *Channel Tunnel Rail Link Section 1 Archaeology: Post-excavation Assessment Instruction no. 000-RMA-RLEVC-00030-AB* prepared by RLE

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APPENDIX 1: ASSESSMENT OF PREHISTORIC AND ROMAN POTTERY

Louise Rayner

1. Introduction

- 1.1 A total of 6,522 sherds (78561g) of pottery were recovered during the excavation of the Zone 3 area including ARC WNB 98, ARC HRD 99 and ARC 330 98. All of this assemblage has been assessed. The pottery dates from the Early Bronze Age (Beaker and Collared Urn), the Late Bronze Age/Early Iron Age transition period, the Mid/Late Iron Age, the Late Iron Age-early Romano-British period, and 1st to 3rd century Roman material.
- 1.2 The pottery was recovered from a range of feature types including pits, ditches, postholes, inhumation burials and cremation burials.
- 1.3 All of the pottery examined was recovered by hand-collection with the exception of three vessels excavated as environmental samples due to the presence of cremated human bone. All of the recovered pottery was recorded and assessed.
- 1.4 The recovery and study of this material was to assist the following fieldwork event aims:
 - To establish a record of changing settlement and landscape morphology for the area, including habitation areas and associated enclosures and trackways etc
 - To determine the function of these areas and changes through time (e.g. the effect if the imposition and decline of Roman administration)
 - To recover suitable pottery assemblages for the study of the Late Bronze Age to Early Iron Age transition
 - To recover suitable Late Iron Age/early Romano-British pottery assemblages to refine the understanding of fabric types and chronologies

2. Methodology

- 2.1 All of the hand-collected pottery was recorded using standard MoLSS recording methods. The material is recorded on a context by context basis using fabric, form and decoration as unique identifiers. The prehistoric sherds were recorded using the Canterbury Archaeological Trust fabric codes.
- 2.2 The Late Iron Age/Belgic and Roman pottery was recorded using the CAT fabric reference collection codes. In some cases, particularly for the Late Iron Age/Belgic and early Romano-British material, these codes should be taken to indicate broad fabric groupings and not defined fabric types. Due to local variation, sherds recorded under the same fabric code (both within the Zone 3 assemblage and from other sites recorded using CAT codes) will not represent one defined fabric but enable sherds to be grouped with other similar material. The pottery was quantified by count and weight and aspects of condition were also noted.
- 2.3 At this stage the pottery recovered from environmental samples has not been recorded, with the exception of the samples identified as containing possible cremation urns.

3. Quantification

3.1 The following tables show the quantification of the Zone 3 pottery:

Table 6: Prehistoric pottery quantification

Event code	Total Count	Total Weight (gms)
ARC WNB 98	872	7383
ARC HRD 99	5	23
ARC 330 98	1384	15426
Zone 3 Totals	2261	22832

Table 7: Late Iron Age/Roman pottery quantification

Event code	Total Count	Total Weight (gms)
ARC WNB 98	3401	46315
ARC HRD 99	451	4435
ARC 330 98	409	4988
Zone 3 Totals	4261	55738

4. Provenance

- 4.1 The pottery from Zone 3 spans a wide chronological period. Two Beakers were recovered from a double inhumation burial excavated within the site ARC WNB 98. The first is complete and intact [1205], whilst the second is largely complete but fragmentary [1204]. Both Beakers have a sandy fabric and have S-shaped profiles. The intact Beaker has all-over decoration of broken, scored horizontal lines; the second beaker has a band of impressed decoration, executed with a toothed comb.
- 4.2 An Early Bronze Age Collared Urn containing cremated human bone was excavated in the area of Hazell's Farm (ARC 330 98 [106]). The urn is very fragmentary and no base sherds survive suggesting it was inverted when buried and has subsequently been truncated. The Collared Urn has a grog-tempered fabric and is decorated with impressed cord. The collar has a peaked base which along with the bold style of decoration and absence of decoration below the collar, would suggest the Urn belongs to the later phase of development of these vessel types. This late phase is dated by Burgess to *c* 1450-1250 (un cal) bc (1986, 350)
- 4.3 There is no pottery that can be confidently dated to the Middle Bronze Age period from Zone 3. However the very fragmentary remains of another cremation vessel were recovered from the east end of area A/B of the site ARC WNB 98 (sample 79 [2012]). The vessel has coarse flint-temper and is probably of later Bronze Age date, possibly the remains of a Deverel-Rimbury type or later Bronze Age urn. Unfortunately the absence of diagnostic fragments and the general condition of the pottery means that at present the dating of this cremation remains uncertain.
- 4.4 A number of features produced pottery of Late Bronze Age/Early Iron Age transition date. This pottery was mainly recovered from pits and ditches to the north of Hazells Farm (ARC 330 98), although a pit and a section of ditch in the

area of the site ARC WNB 98 also produced pottery of this date. The assemblage is characterised by coarse ware jars predominately occurring in flint- and flint with shell-tempered fabrics. The jars are a range of sizes but commonly are slack-shouldered or slightly carinated, with simple upright necks and flat, folded over rims. Frequently the rims and shoulders are decorated with fingertip impressions. The presence of this decoration on the majority of the jars suggests the assemblage should be classified as a 'decorated assemblage', which developed from the 'plain ware' post Deverel-Rimbury assemblages of the late Bronze Age (Barrett 1980). Barrett has suggested that 'decorated assemblages' appear by the 8th century BC and continue to c 6th century. However the coarse ware jars with fingertip decoration on the rims or shoulders may have continued in use as late as the 3rd century BC (Cunliffe 1982, 41).

- 4.5 Although coarse ware vessels are predominant in the LBA/EIA assemblage, a number of fine ware vessels are present. These include a small bowl or cup in a fine flint-tempered fabric and a fine sandy ware bowl with incised decoration, which may be the only example of a decorated fine ware bowl, but may be of later Iron Age date. Further research is required to find parallels for this vessel and establish the date.
- 4.6 The next ceramic phase is distinguished from the LBA/EIA material by the appearance of sandy fabrics with only sparse shell or flint inclusions. These occur alongside shell-tempered wares and to a lesser extent glauconite-rich wares, in s-shaped profile, rounded jars or bowls with simple everted rims. Some of these vessels exhibit fingertip decoration on the rim, which gives a 'rippled' or 'cabled' effect, but decoration on the shoulder is absent and on the whole the vessels are undecorated, with burnished surfaces. The dating of this material is suggested as c 3rd- 1st century BC.
- 4.7 This mid pre-Roman Iron Age assemblage from ARC WNB 98 has a fairly limited range of fabrics and forms and as such forms a very homogenous assemblage. The features from which it was recovered are also spatially distinct from the features that produced pottery more typical of the later pre-Roman Iron Age/early Roman transition period. This spatial distinction means that each assemblages can be studied as discreet groups and to a great extent removes the confusion that residuality and intrusion can cause by continued occupation on one area. Study of these assemblages will contribute greatly to the characterisation of Iron Age ceramics in Kent.
- 4.8 From the site of ARC WNB 98 the mid pre-Roman Iron Age pottery was recovered from a series of ditches, pits and post-hole structures at the west end of the main excavation area A/B. Pottery of a similar character was also recovered from pits to the north of Hazells Farm from the same area as those producing late Bronze Age/early Iron Age pottery (ARC 330 98).
- 4.9 The question of whether the ARC 330 98 material from these pits represents two phases needs to be examined. Although the sandy wares and everted rim jars are like the material recovered from the ARC WNB 98 area, the ARC 330 98 pit groups include a greater quantity of coarse ware sherds in flint- and flint and shell-tempered fabrics. These fabrics are used for the jars with fingertip decoration on the rim and shoulder as discussed in 4.5. This raises the question of whether these assemblages are in fact contemporary and represent an early-mid Iron Age group or whether it represents the continued use of similar fabrics from the LBA/EIA to middle Iron Age. The pottery from both the ARC 330 98 pit groups and the ARC WNB 98 mid Iron Age activity has the potential to be

closely examined and compared, this will ascertain the chronological relationship.

- 4.10 A smaller group of pottery including glauconite-rich fabrics and everted rim jars with foot-ring bases was also recovered from an area of ARC 330 98, from a possible boundary ditch feature. These wares are more comparable to the material from ARC WNB 98 and appear to form a separate discrete group from the pit assemblages discussed in 4.10 of the main report.
- 4.11 Pottery of late Iron Age/early Roman date comprises the largest proportion of the Zone 3 assemblage as a whole. Much of the pottery is 'native' in style and clearly influenced by ceramics traditions of the Late Iron Age, even if post-conquest in date. Whether the assemblage is wholly post-conquest or whether a pre-conquest element is present is difficult to distinguish. Early Romanised wares are present alongside 'native' type vessels but these are relatively sparse and although indicative of a post-conquest date do not suggest wide reaching influence on the ceramic traditions in use in this area until the later 1st century AD.
- 4.12 Shell-tempered fabrics, predominately in bead-rimmed jars and grog-tempered wares in necked and everted rimmed jars, flagons and Gallo-Belgic style plates and beakers dominate this assemblage. The use of shell-tempered fabrics for forms such as bead rimmed jars appears from the later 1st century BC in west Kent, and a similar date can be suggested for the introduction of grog-tempered fabrics for 'Belgic' type vessels. Coarse wares such as Patchgrove grog-tempered ware (R68) and Thameside shell-tempered vessels (R69) are present, which are probably post-conquest in origin.
- 4.13 What may be of chronological significance is the absence of glauconite-rich fabrics from the LIA/ER groups. This fabric appears to have been abandoned in the early part of the 1st century AD, and therefore the absence of this fabric may suggest the pottery and associated activity dates from the mid 1st century onwards (Pollard 1988, 33).
- 4.14 The identifiable Roman wares consist of oxidised wares from the *Verulamium* region (R15), fine wares from Upchurch and the north Kent marshes (R16; R17) and imported wares such as South Gaulish samian (R42) and a handful of amphorae sherds. The lack of imported wares, both early fine wares, amphorae and mortaria (which are entirely absent from the early Roman assemblage) is notable and may be indicative of the relatively low impact the Roman conquest had on the indigenous populations in Kent (Pollard 1988, 36).
- 4.15 A late pre-Roman Iron Age pedestal urn was recovered from area A/B within an area enclosed by ditches. The pedestal urn was associated with cremated human bone and appears to have been used as a cremation vessel. The pedestal base is fragmentary but complete and a few other sherds survive from the lower body of the urn; the top of the vessel is absent due to later truncation. The pedestal urn has a grog-tempered fabric, with evenly oxidised surfaces. The external surface of the pedestal has been covered with a black paint or pitch. The pedestal urn is a typical component of Late Iron Age 'Belgic' assemblages and appears to have been frequently used in burials. The cemetery at Aylesford, which is a type-site for 'Belgic' style pottery, which is also known as 'Aylesford-Swarling' type pottery is to the south-east of Zone 3.

- 4.16 The Roman assemblage from the site of ARC HRD 99 is predominately 3rd and 4th century in date, although some contexts are dated from the early 2nd century. The majority of the Roman pottery from ARC HRD 99 was recovered from the fill of ditches, probably field boundary or enclosure ditches.
- 4.17 As is typical for the later Roman period the assemblage is composed of both locally produced and non-local wares. The probable local wares are largely reduced sandy fabrics used to produce utilitarian jars and bowls, but also include shelly wares and grog-tempered fabrics.
- 4.18 The ARC HRD 99 assemblage has a reasonable range of non-local wares present including: mortaria and colour-coated fine wares from the Oxfordshire region (LR22; LR10), colour-coated fine ware from the Lower Nene valley (LR11), oxidised and reduced ware from Hadham, Hertfordshire (LR13; LR13.1), Blackburnish fabric 1 (R13) and Portchester D type (LR6), from Surrey. Alice Holt/Farnham ware or type wares are also well represented in the assemblage. Later imported wares are also present including examples of Eifelkeramik (LR19) and samian from central Gaul (R43).
- 4.19 The presence of types such as LR6, LR19, LR13 and LR10 suggests a mid/late 3rd-4th century date is most appropriate for the majority of this assemblage.

5. Conservation

- 5.1 Some of the key vessels would benefit from reconstruction or consolidation to allow display and to aid research and illustration. These vessels are: ARC 330 98 [106] collared urn, ARC WNB 98 [316] pedestal urn, ARC WNB 98 [1204] Beaker.

6. Comparative material

- 6.1 A number of other Beakers and Beaker burials are known from Kent. At the time of Champion's summary of the Bronze Age in Kent, at least 36 substantially or complete Beakers were known (1982, 32) and undoubtedly further unpublished examples have since come to light. However as is frequently the case with Antiquarian finds, many of these Beakers have poor provenance. The majority of Beakers from Kent come from three of Clarke's typological groups: Eastern, East Anglian, and Barbed wire (Clarke 1970). The Beakers from ARC WNB 98 need to be compared to Clarke's corpus to ascertain which grouping they fall within.
- 6.2 Similarly, a number of Collared Urns are known from Kent and as with the example from ARC 330 98, the majority of these are associated with burials. The Collared Urn from ARC 330 98 appears to be an isolated find and associated settlement of this period has not been identified. The Collared Urn and context of burial can be compared to others from the county.
- 6.3 The probable Later Bronze Age cremation urn although not well dated does suggest funerary activity continued in this area in the prehistoric period.

- 6.4 For the late Bronze Age/early Iron Age pottery comparative assemblages are limited. A small assemblage was recovered at Darenth, which has a similar range of forms and fabrics (Couldrey 1984, 123-27). Aside from these a number of broadly contemporary assemblages have been recovered from within the CTRL project with which the Zone 3 assemblage should be considered. The area of Zone 5 produced a late Bronze Age 'plain ware' assemblage and Zone 6 produced an early Iron Age group, which included vessels typical of the LBA/EIA transition period. Late Bronze Age/early Iron Age material was also excavated at White Horse Stone (OAU). Comparative study of these three assemblages recovered from a relatively small area would contribute greatly to our understanding of the development of late Bronze Age to Iron Age ceramics in this area of Kent.
- 6.5 For the mid pre-Roman Iron Age assemblage, the most comparable published assemblage is that recovered from Farningham Hill in the Darenth Valley (Philp 1984). The earliest elements of the Farningham Hill assemblage, which has been given a general date of *c* 50BC – AD50, include everted rim jars with foot-ring bases, very similar to the examples from ARC WNB 98 and from the smaller ARC 330 98 assemblage. The range of fabrics is very comparable with a range of glauconite-rich, sandy and shelly wares, as well as later grog-tempered fabrics (Couldrey 1984, 38).
- 6.6 The assemblage from Stone Castle Quarry, Greenhithe which is to the north-west of Zone 3 on the Thames estuary, also produced an assemblage of s-profile jars with foot rings as well as other shell-tempered Iron Age wares and Roman material. The features excavated at this site are also comparable consisting of pits, ditches, hearths and enclosures.
- 6.7 The Farningham Hill assemblage also contains elements comparable to the later pre-Roman Iron Age/early Roman assemblage from ARC WNB 98 and ARC 330 98. Shell-tempered beaded rim jars are common in both assemblages, as are grog-tempered cordoned jars. The assemblage would also benefit from comparison with assemblages from Rochester, Cooling and Lullingstone (Pollard 1988, 39-40), which all produced material of 1st century date. From the CTRL project Thurnham Roman villa will also provide comparable data, with both late Iron Age and early post-conquest occupation.
- 6.8 Somewhat further to the west, the Roman villa site at Keston also produced assemblages of middle and late Iron Age, as well as large amounts of Roman material (Philp 1991).
- 6.9 There are a number of sites from west Kent that produced Roman assemblages suitable for comparison, although many of these were recovered from sites of a different nature to the activity evidenced in Zone 3. As such comparison with these assemblages may provide information on the differing status and function of the Roman settlements in this area.

7. Potential for further work

- 7.1 The Zone 3 assemblage as a whole is important because it covers a wide chronological span and yet the assemblage can be related to discrete foci of activity. Collectively the assemblage is large enough to provide reliable statistical analysis and the range of fabrics and forms present will allow a good

level of comparative research with other assemblages from the vicinity and region in general.

7.2 The pottery assemblage from Zone 3 has good potential to contribute to the following fieldwork event aims and Landscape Zone aims:

- *To determine the function of these areas and changes through time*

7.3 The pottery provides a good chronological framework for examining the changing settlement and landscape morphology. Through statistical comparison of selected groups of pottery and comparison with other assemblages the chronology of each phase could be refined. The pottery has the potential to contribute to the characterisation of each area in general terms but the assessment has not highlighted any groups from particular features that are functionally distinct. The composition of the assemblage by form and function would be examined to address this aim.

7.4 The secondary aims were directed at the recovery of suitable pottery assemblages for the study of the Late Bronze Age - early Iron Age and late Iron Age-early Romano-British transition periods. This was clearly achieved during the excavation and the assemblage has the potential to contribute to ceramic studies of both of these periods. The discovery of the Beaker inhumation burial, Collared Urn cremation and middle pre-Roman Iron Age broadens the chronological range of the ceramic assemblage from this zone. The basic identification of the Middle Iron Age pottery suggests this assemblage has good potential to contribute to the study of ceramics of this period. The assemblages for these three period are large in size and contain a range of identifiable fabrics and forms, which will provide sound statistical data for analysis.

7.5 Early Agriculturists (4,500-2,000 BC)

- *Determine ritual and economic landscapes and their relationships*

7.6 The double inhumation Beaker burial and Collared Urn cremation both contained ceramic vessels that date and characterise the funerary evidence. The decoration and traits of these vessels need to be studied to ascertain which stylistic groups they belong to and compared with other examples from Kent. This may refine the dating for these vessels and allow them to be considered within a regional distribution pattern. The location of these features needs to be considered in relation to others in the area including the barrow at Whitehill Road (ARC WHR 99).

7.7 Farming communities (2,000-100 BC)

- *Determine how settlements were arranged and functioned over time.*

7.8 The pottery from Zone 3 will contribute greatly to the construction of a chronological framework within which the spatial organisation of the landscape and its development through time can be examined. Zone 3 is particularly important for the movement of both settlement and agricultural/pastoral activity across the landscape over time.

7.9 Towns and their rural landscapes (100BC – 1700 AD)

- *How were settlements and rural landscapes organised and how did they function?*
- *Consider the effect on the landscape of known historical event, eg the arrival of Roman administration.*

- 7.10 The pottery assemblage will contribute to the characterisation of activity of this period and chronology of changes. Examination of the assemblage in terms of composition, percentage of imported wares and non-local wares will contribute to the study of the effects of the Roman conquest and levels of Romanisation.
- 7.11 In order to address the research aims and fulfil the potential of this assemblage the following tasks are recommended:
- Define fabric descriptions for assemblage and integrate dominate fabrics into CAT fabric type series
 - Detailed analysis of stratigraphic relationships of assemblages
 - Classification of Beakers
 - Classification of Collared Urn
 - Research of other comparative assemblages
 - Catalogue of illustrated groups
 - Preparation of publication text
 - Illustration of closed groups

8. Bibliography

- Burgess, C, 1986 ‘‘Urnes of no small variety’: Collared Urns reviewed’, *Proceedings of the Prehistoric Society* 52, 339-51
- Barrett, J, 1980 ‘The pottery of the later Bronze Age in lowland England’, *Proc Prehist Soc* 46, 297–360
- Champion, T C, 1982 ‘The Bronze Age in Kent’, in P Leach (ed)
- Clarke, D L, 1970 *Beaker pottery of Great Britain and Ireland*
- Couldrey, P, 1984, ‘The Iron Age pottery’, in B Philp
- Cunliffe, B, 1982 ‘Social and economic development in Kent in the pre-Roman Iron Age’, in P Leach (ed)
- Leach, P (ed) *Archaeology in Kent to AD 1500*, CBA Research Report no 48
- Philp, B, 1984, *Excavations in the Darent valley, Kent*
- Philp, B, 1991, *The Roman Villa site at Keston, Kent, First Report (Excavations 1968-78)*
- Pollard, P, 1988 *The Roman Pottery of Kent*, Kent Archaeological Society Monograph 5

Table 8: ARC WNB 98 Assessment of Prehistoric Pottery, quantification and attributes

Context	Count	Weight	Period	Comments
146	9	54	MIA	FLIN SHEL 2 FTD SHEL Mid/Late Iron Age: 3rd-m 1st c BC
229	2	10	MIA	SAND SHEL Mid/late Iron Age - residual
250	2	37	MIA	FLIN SHEL Mid/late Iron Age
258	2	18	MIA	FLIN SHEL Mid/Late Iron Age
263	64	1277	MIA	SAND 2 SAND SHEL Mid Iron Age: 3rd to 1st c BC
269	17	146	MIA	SAND SHEL 2 FTD SHEL Mid/Late: 3rd 1st centuries BC
270	19	120	MIA	SHEL 2 FTD SHEL 2 SHEL Mid/Late Iron Age (3rd - mid/late 1st centuries BC)
272	5	37	MIA	ORGAN SAND SHEL Mid Iron Age (3rd - mid/late 1st centuries BC)
278	79	427	MIA	SAND SHEL 2 FTD SHEL Mid - Late Iron Age 3rd - 1st century BC (Nothing Belgic/no grog)
296	19	97	MIA	FLIN GROG ORGAN Mid/late Iron Age: 3rd-1st bc
314	48	246	MIA	SAND SHEL Mid/Late Iron Age: 3rd-m 1st c BC
325	3	62	MIA	FLIN Mid/Late Iron Age
345	14	153	MIA	SAND Mid/Late Iron Age
380	22	53	MIA	SAND SHEL 2 FTD Mid/Late Iron Age: 3rd-1st c BC
382	38	243	MIA	SAND SHEL 2 FTD SHEL Mid/Late Iron Age
407	5	16	MIA	SAND Mid/Late Iron Age
410	1	1	MIA	SAND Mid/late Iron Age
413	4	54	MIA	FLIN Mid/late Iron Age
417	32	177	MIA	FLIN SAND SHEL Mid/Late Iron Age
422	31	107	MIA	SAND SHEL Mid/Late Iron Age
481	29	145	MIA	SAND 2 SAND SHEL 2 FTD SHEL Mid/Late Iron Age
484	17	75	MIA	FLIN SHEL Mid/Late Iron Age
492	4	16	MIA	SAND Mid/Late Iron Age
495	18	193	MIA	FLIN 4 RED SAND SHEL Mid/late Iron Age
497	10	91	MIA	SHEL Mid/Late Iron Age
586	37	411	MIA	SAND 2 SAND 2B SHEL 2 FTD SHEL Mid/ Late Iron Age (3rd-1st century BC)
587	6	84	MIA	SAND SHEL Mid - Late Iron Age (3rd - 1st century BC)
596	14	116	MIA	FLIN GLAUC 2 GLAUC SAND SHEL Mid to late Iron Age (3rd to 1st centuries BC)
599	15	74	MIA	GLAUC SAND 2 Mid - late Iron Age (3rd - 1st century BC)
604	32	178	MIA	GLAUC SAND 2 SAND SHEL Mid Iron Age. 3rd- 1st mil BC
607	10	48	MIA	GLAUC SAND SHEL Mid Iron Age. 3rd-1st c BC
609	6	50	MIA	FLIN GLAUC 2 SAND 2 SAND SHEL Mid Iron Age. 3rd-1st c BC
613	32	278	MIA	GLAUC 2 SAND 2 SAND Mid Iron Age. 3rd-1st c BC

Context	Count	Weight	Period	Comments
620	4	4	MIA	SHEL Mid/late Iron Age: 3rd-1st c BC
639	19	83	MIA	FLIN SAND SHEL Mid Iron Age. 3rd-1st c BC
641	8	54	MIA	SAND SHEL Mid/late Iron Age. 3rd-1st c BC
644	12	169	MIA	FLIN SAND 2 SHEL 2 SHEL Mid Iron Age. 3rd- 1st c BC
715	1	3	MIA	SAND Mid/Late Iron Age?
852	46	345	MIA	SAND SHEL 2 MIA 3rd- 1st c BC.
855	3	117	MIA	SHEL (Early?) to Mid Iron Age
888	33	300	MIA	GLAUC 2 SAND 2 NCD SAND SHEL 2 Mid to late Iron Age (no grog; nothing Belgic)
984	5	39	MIA	SAND SHEL Mid-Late Iron Age: 3rd-m 1st BC
1204	43	288	EBA	SAND 3 AOC Fragmented but almost complete Beaker from burial.
1205	1	674	EBA	SAND 3 NCD Complete Beaker from burial, decorated with horizontal lines, scored and broken.
303	1	0	LPR	FLIN
327	1	12	LPR	GROG IMPD Date uncertain; could be LNE/EBA
329	2	15	LPR	FLIN
436	1	73	LPR	FLIN
605	4	4	LPR	SHEL
666	1	9	LPR	FLIN
1036	1	7	LPR	FLIN
1216	1	3	LPR	FLIN
1236	4	9	LPR	FLIN
1247	3	1	LPR	FLIN
1271	4	7	LPR	FLIN
2012	27	72	LPR	FLIN Later prehistoric cremation urn: Later Bronze Age date suggested by fabric but very frag.
2107	1	1	LPR	FLIN Single flint-tempered frag. Date uncertain

Table 9: ARC 330 98 Assessment of Prehistoric Pottery, quantification and attributes

Context	Count	Weight	Period	Comments
72	3	174	MIA	GLAUC 2 SAND Mid Iron Age 3rd- mid 1st BC
76	1	8	MIA	SAND 2 Mid Iron Age. Footring jar/bowl. 3rd-m1stC BC
87	1	6	MIA	GLAUC Mid Iron Age 3rd-m1stc BC
106	164	1454	EBA	GROG 7E IMPD Early Bronze Age collared urn. dec style suggests later phase urn
108	292	3822	LBA/EIA	FLIN 2 FTD GROG SAND BUD SAND SHEL 2 FTD SHEL 2 LBA/EIA 8th-6thc BC
110	35	876	EIA/MIA	SAND 2 SHEL 2 Latest EIA to MIA. SAND sherds are more like MIA groups but SHEL has earlier feel.
112	18	103	MIA	FLIN SAND SHEL SHFL Mid Iron Age 3rd- m 1st c BC
117	13	133	LBA/EIA	FLIN SHEL 2 SHEL LBA/EIA 8th – 6th c BC
119	9	70	MIA	FLIN SHEL Mid Iron Age 3rd-1st c BC
121	2	8	MIA	SAND 2 Mid Iron Age
130	6	20	MIA	GLAUC SAND 2 Mid Iron Age residual.
141	9	35	MIA	SAND SHEL Mid/Late Iron Age: 3rd-m1st c BC
145	22	147	MIA	SHEL 2 FTD SHEL 2 SHEL Mid/late Iron Age?
148	8	70	LBA/EIA	FLIN SHEL LBA/EIA comparable to [108] and [150].
149	394	4772	LBA/EIA	FLIN 2 FLIN 4 SHEL 2 FTD SHEL 2 SHEL
150	127	1577	LBA/EIA	FLIN 2 FND FLIN 2 FTD FLIN 2 FLIN SAND 4 SAND SHEL 2 FTD SHEL LBA/EIA ‘decorated’ assemblage 8th-5th c BC
202	4	6	LPR	FLIN SHEL
206	8	96	MIA	FLIN SAND SHEL
209	7	57	MIA	SAND 2B SAND SHEL 2 SHEL 2A Mid Iron Age; 3rd – m 1st c BC
211	1	7	LPR	SHEL Date? Pre Roman?
212	1	9	LPR	SHEL
213	8	27	MIA	SAND SHEL Mid Iron Age. 3rd – 1st c BC
224	1	17	MIA	SAND Mid Iron Age 3rd- m 1st c BC
250	25	168	MIA	SAND SHEL 2 FND Mid Iron Age 3rd to mid 1st c BC
255	17	86	MIA	FLIN SAND SHEL Mid Iron Age 3rd – m 1st c BC
323	24	145	MIA	SAND SHEL 2 SHEL Mid/Late Iron Age: 3rd-m1st c BC
325	1	2	MIA	FLIN Mid/Late Iron Age
334	1	6	LPR	FLIN Date uncertain; single shd only
356	1	1	MIA	SHEL mid/late Iron Age
364	3	41	LBA	FLIN Late Bronze Age: dated only on fabric type.
366	1	1	LPR	FLIN Later prehistoric – single sherd only.
370	20	161	LIA	SHEL Late Iron Age/Early Roman

Context	Count	Weight	Period	Comments
516	4	0	EBA	SAND 3 Prehistoric: residual sherd of Beaker?
667	13	90	LPR	FLIN
1251	18	57	LPR	FLIN
1253	7	108	LBA	FLIN 2 FLIN Late Bronze Age: plain wares
1262	92	738	LBA/EIA	FLIN 2 FTD FLIN 4 FTD FLIN 4 FLIN LBA/EIA: 8th-6th c BC
1269	14	135	LBA/EIA	FLIN 2 LBA/EIA: 8th-6th c BC
1280	5	71	LBA/EIA	FLIN SHEL 2 LBA/EIA: 8th-6th c
1314	11	72	LBA/EIA	FLIN LBA/EIA: 8th-6th c BC
1330	1	2	LBA/EIA	FLIN Probably LBA/EIA
1336	6	97	EIA	FLIN 4 FLIN SHEL EIA: 6th-4th c. the presence of a footring base suggests a slightly later date.
1337	3	11	LBA/EIA	FLIN Probably LBA/EIA
1343	1	7	LBA/EIA	FLIN Late Bronze Age/early Iron Age: single sherd only
1350	4	14	LBA/EIA	SHEL
1394	9	180	LBA/EIA	FLIN 2 FLIN LBA/EIA: 8th-6th c BC
1394	2	32	MBA	FLIN 7DR Possible MBA residual sherds; id not certain.
1395	9	45	LBA/EIA	FLIN SAND probably LBA/EIA
1399	9	54	LBA/EIA	FLIN 2 FLIN 4 FLIN 8th-6th c BC
1405	3	43	LBA/EIA	FLIN Probably LBA/EIA
1419	3	23	LBA/EIA	FLIN

Table 10: ARC HRD 99 Assessment of Prehistoric Pottery, quantification and attributes

Context	Count	Weight	Period	Comments
61	4	21	LPR	FLIN
191	1	2	LPR	FLIN

Fabric codes:

FLIN	flint-tempered
SAND	sandy/sand-tempered
SHEL	shell-tempered
GLAUC	glauconite-rich/greensand
GROG	grog-tempered
ORGAN	organic-tempered

Form codes:

2 Jar; 3 Beaker; 4 Bowl; 7DR Deverel-Rimbury Urn; 7E Collared Urn

Dec codes:

FTD fingertip impression; FND fingernail impressions; IMPD impressed dec; AOC all-over-combed; BUD burnished; NCD incised

Table 11: ARC WNB 98 Assessment of Roman Pottery, quantification and attributes

Context	Count	Weight	Period	Comments
13	3	21	RO	B2 B8;45-100
199	1	67	RO	R14 2 BUD;140-300
212	3	27	RO	B6 B6.1;45-100
229	3	112	RO	B2 R69;45-100
237	1	1	RO	B6;45-100
238	1	2	RO	R8.1;50-400
251	16	123	RO	B6 B6.1 2 B6.1 2A R105 R15 1;50-100
253	3	32	RO	B6 B6.1;40-100
254	1	17	RO	B2.3 2;40-100
255	41	352	RO	B2 B21 5J B6 R26 2 R68 2T;50-100
260	3	11	RO	B6 R75;50-100
262	1	3	RO	B6;45-100
264	1	1	RO	R8.3;50-400
287	1	5	RO	R73;50-400
292	2	4	RO	B2 R73;50-400
298	1	1	RO	R80;50-400
300	1	37	RO	R68 2;50-100
302	20	181	RO	B6 2A B6 B9 R2;50-100
303	9	98	RO	B2.1 B6 B9 R2;50-100
304	19	149	RO	B2 2 B2.1 B6 B9 2 R114 R42 4DR30 R42 6;50-70
305	5	48	RO	B9 R17.4;5-100
306	13	100	RO	B21 2A R8.3;45-100
307	1	110	RO	B2 5;50-70
308	1	1	RO	B6;45-100
309	21	438	RO	B2 2 B6 2A B6.1 2A RLD;40-70
310	10	71	RO	B2 B2.3;45-100
312	6	87	RO	B21 B6.1 R17.4;50-100
316	0	315	RO –	B1 2PD;50 BC –70 AD
333	2	13	RO	B6;45-100
363	2	8	RO	B6;45-100
369	27	288	RO	B2.1 B6 B9 R114 R2 R42;50-100
372	4	13	RO	B6.1;45-100
374	4	16	RO	R110 R8.3;50-400
381	40	249	RO	B2 B2.1 B6.1 2A RLD B9 R17.4 R8.3;50-100
383	2	9	RO	B2.3 R8.3;50-100
384	18	395	RO	B1 B2 B9 2 R69 2V STAB;50-100
385	59	594	RO	B1 B2 2 NCD B2 2A B2 B2.1 2 BUD B2.3 9H HPRF B21 B5 B6 B6.1 B9 2 B9 R69 2 R74.3 4 R74.3;45-100
387	4	18	RO	B2;45-100
392	29	487	RO	B2 2A RLD B6 2A B6 R2;45-100
393	2	13	RO	B6 2A;45-100
397	3	116	RO	B6 2 B6;45-100
399	21	326	RO	B2;45-100
403	2	4	RO	B6 B9 5 <*>;50-70
406	4	8	RO	B5 B9;45-100
408	1	2	RO	B9;45-100

Context	Count	Weight	Period	Comments
409	29	333	RO	B1 2 B2 B2.1 B6 2 B9 R17.1 R42 5DR18R R49 8 R7;50-100
410	10	132	RO	B1 2/3 B2 2 R49 8;50-100
412	113	2312	RO	B2 2V B2 B2.3 5 B21 2 B5 2 B6 2A RLD B6.1 2 B6.1 2A B9 2A B9 R17.4 3 R42 5 ROD R42 5DR18 R42 R69 2 R69 9A RLD R69 9A R69;50-100
413	52	700	RO	B2 2 B2 2T B2 4 B2 B6 2A B6 R42 6DR27 R42 R74.3 4/5;50-100
414	22	376	RO	B2 2T B2 4 B2 B3 1A R94 3A;50-70
426	29	220	RO	B2 2T B2 B21 B6 B6.1 B8;45-100
427	15	78	RO	B2 B6.1 2 B9;45-100
432	1	10	RO	B21;45-100
436	43	518	RO	B1 2T B2 2T RLD B6 2A16 B6.1 9A;45-100
438	24	211	RO	B1 1 B2 2 B2 B2.3 2 B6 R75;45-100
468	6	12	RO	B9;45-100
489	53	232	RO	B6.1 2A B6.1 2A16 B6.1 B8;40-100
492	22	243	RO	B2 4/5 B2 B2.3 2T B21 2A COMB B5 B6.1 B9 2T;40-100
501	3	63	RO	B2 2V B24 B9 2;45-100
502	10	114	RO	B2 2 B21 ND B9 2 R17.3 R73 4 R73 5;70-100
504	4	102	RO	B2.3 2 R73 5;50-100
506	25	447	RO	B1 1 B2 2 ALX B2 2 B2 2T B2 3 BUD B2 B6 B9 2; 40-70
507	1	5	RO	B2; 45-100
509	33	243	RO	B2 2 B2.3 B6 R73; 50-100
520	3	14	RO	B6; 45-100
527	1	6	RO	B2; 45-100
529	1	8	RO	B2 2; 45-100
531	5	19	RO	B8 3 COMB; 40-70
534	2	11	RO	B2; 45-100
538	56	585	RO	B2 B6 2A B6 B8 2 B8; 40-100
544	105	900	RO	B2 2 B2 2B B2 2T B2 2V NCD B2 B2.3 5 B6 2 B6 2A B6 R105 R17.3 R73 2T R73 R75 3 ROD; 50-100
547	61	707	RO	B2 2 B2 B6 2A B6; 45-100
558	17	277	RO	B2 2 B2; 50-100
566	16	68	RO	B2 2 B2 B6 B9; 45-70
568	22	301	RO	B2 R69 2V STAB R73 2T R73; 50-100
569	14	81	RO	B9 2; 50-70
572	46	458	RO	B1 3A COMB B2 2 B2; 45-100
590	7	153	RO	B2 B6 2V NCD B6 B9; 50-100
612	1	1	RO	B6; 45-100
621	1	17	RO	R73; 50-120
634	14	89	RO	B21 B6 B9.1 R42 5; 50-100
653	2	23	RO	B6; 45-100
674	56	220	RO	B2 2 RLD; 45-100
686	6	406	RO	B2 2 B2 2V NCD B21 2; 50-100

Context	Count	Weight	Period	Comments
687	1	27	RO	R16 2; 100-150
689	3	63	RO	B6 HPOF R73 R75; 50-100
690	18	308	RO	B2 2 B2 B6 2A B6; 45-100
691	1	23	RO	B6; 45-100
698	52	848	RO	B2 B21 B6 2A B6 2A16 B6 B9; 45-100
701	1	3	RO	R17.4; 50-100
707	45	623	RO	B2 2 B2 2T B2 B6 B9 2/3 COMB R17.4 R73; 50-100
709	59	1058	RO	B2 2 B2 2T B2 B21 5J B6 2A B6 B9 2 R69 2V STAB R73 R98 8; 50-70
710	43	231	RO	B2 B6 B9 2 R98 8; 50-100
720	2	13	RO	B21; 45-100
739	1	2	RO	B2; 40-100
791	2	38	RO	B6; 45-100
805	3	6	RO	B6; 45-100
828	2	35	RO	B2; 45-100
829	4	9	RO	B2 B9; 45-100
839	2	15	RO	B2 B6; 45-100
866	8	226	RO	B2 2 B6 B6.1 1; 45-100
867	16	302	RO	B2 2 B21 2 B9 2 B9; 45-100
874	6	4	RO	B6; 45-100
875	1	102	RO	R42 5DR18 <7>; 50-100
878	1	2	RO	B2 2; 45-100
879	29	184	RO	B2 B6 B9 2; 45-100
887	1	3	RO	B6; 45-100
905	3	35	RO	B6; 45-100
910	3	30	RO	B6; 45-100
916	22	326	RO	B2 2 B2 B6 B9; 45-100
922	1	1	RO	B6; 45-100
929	3	15	RO	B6; 45-100
964	50	504	RO	B2 2 B2 B6 2A B6 B9 2 B9 2/3 B9; 45-100
965	17	122	RO	B2 B6 B9 2 B9; 45-100
966	5	45	RO	B2 2A B6; 45-100
983	1	19	RO	R42 4DR30; 50-100
992	1	3	RO	B6; 45-100
994	10	34	RO	B6; 45-100
996	2	13	RO	B6 R68; 45-100
997	2	6	RO	B6 R17.4; 50-100
1001	49	369	RO	LR11 R14 4 R14 R14.1 4H R14.1 R16 R68 R7 2T R73 2T R73 2W R73 R73.1 2F R73.1 4H; 150-300
1008	1	18	RO	B2; 45-100
1009	6	106	RO	B2 2; 45-100
1011	39	423	RO	B5 2 B6 B6.1 2B; 45-100
1014	1	14	RO	R73 2W; 120-300
1015	11	270	RO	B2.3 5; 45-100
1017	11	109	RO	R68 R69 R73 2A16 R73 R75; 50-120
1020	7	95	RO	R16 R17.4 R68 2 R73 2A16 R73 R73.1 2F OAL; 160-300

Context	Count	Weight	Period	Comments
1021	7	86	RO	B2 R68 2 STAB R73 R73.1 2F; 120-300
1023	156	3103	RO	B2 2A NCD B2 9A B2 B24 B5 2 B5 2T B5 B6 5 B6 B6.1 2A NCD B6.1 2A B8 B9 5 B9 R114 1 R114 3G R114 R16 3 ROD R16 3G R16 R17.3 3 R17.4 R42 4 R42 5 ROD R42 5DR15/17 R69 2A R69 2V STAB R69 R73; 70-100
1027	73	1427	RO	B2 B5 2 B5 B6.1 B9 5 R114 R16 3 ROD R16 3G R16 R17.1 3 ROD R17.4 R69 2A R69 R7 5A; 70-100
1029	2	84	RO	B2 2V STAB; 50-100
1032	1	37	RO	B6; 45-100
1033	17	478	RO	B2 B6 2V STAB B6; 45-100
1036	109	1725	RO	B2.3 B5 2B B5 5A B5 B6.1 B8 2/3 R15 R16 3 ROD R16 3G R16 4 R16 R17.4 R42 R56 R68 R69 2 R69 2A16 R69 2M STAB R69 2M R69 2V R7 R73 2T R73; 70-120
1043	11	203	RO	B5 B6 B8 R7; 45-100
1046	31	326	RO	B2 B21 B6 B6.1 9S HPRF B6.1 B8 2/3 ROD R16 R42; 70-100
1047	3	21	RO	BER15 R114 R69; 50-100
1048	59	533	RO	B5 R14.1 4H5 R15 1 R16 3 R17.4 R69 2A R69 R73 R73.1 2 AL; 160-300
1051	22	288	RO	B25 B5 B6 2 RLD B9 2 B9.1 R15 R16 6 R17.1 R26 2T R69 R73; 70-120
1054	1	4	RO	B6; 45-100
1056	17	1149	RO	B24 R69 2V; 45-100
1058	1	5	RO	B6.1 2; 45-100
1064	10	93	RO	R1.2 R14.1 4H R43 5 R68 R69 R73 2T R73; 120-300
1065	6	102	RO	R17.4 1 R69 R74.1; 50-100
1072	42	687	RO	B2 B6 2A B6 2A16 B6 2M B6 B9 2A B9 2T R114 R14.1 4/5 R14.1 4H AL R16 R17.1 R17.4 R68 2 R73 R74.1 R80 2/3 R80; 120-300
1073	5	63	RO	R14 4H R68 R69 2A16 R73 2 R73 4; 120-300
1083	10	80	RO	B9 2 R16 2 R42 5DR18 R69 R73; 70-120
1084	3	26	RO	B9 2T R15; 70-120
1085	4	37	RO	R14 4H R16 3 ROD R69 R73; 120-300
1087	30	1946	RO	B2 B6 B6.1 2A B8 2A16 B9 2A R17.4 R7 R73 R74.1 R8.1; 50-100
1088	10	183	RO	B2 5A B3 B6 R17.4 1; 50-100
1101	1	20	RO	B2 2/3; 45-100
1104	1	4	RO	R73; 50-400
1108	20	197	RO	B6 2A BER15 R69 R7; 50-100
1110	5	75	RO	B6 R68 2; 45-100
1113	2	11	RO	B2 R73; 50-400
1116	14	325	RO	B6.1 R17.3 3 R67 3F BDD R68 2 R69; 70-120
1117	17	438	RO	B21 NCD B25 B6 2A RLD R68 2V BUD R69 9A R69; 50-100
1118	1	6	RO	R69; 45-150
1124	1	9	RO	R16; 70-275

Context	Count	Weight	Period	Comments
1125	4	26	RO	B6 R17.3 R17.4; 50-100
1128	18	97	RO	B2 B6 2 RLD B6 B9 2 R16 3G R17.1 R17.4 R7 R73; 70-120
1129	23	165	RO	B6.1 B8 5 B9 2 R16 R17.4 1A R17.4 R42 6DR27; 70-120
1130	1	13	RO	B9 2; 45-100
1135	1	45	RO	B2.3; 45-100
1151	1	30	RO	B6.1 2A RLD; 40-100
1158	2	5	RO	R73; 50-400
1160	12	254	RO	R17.4 R69; 50-100
1164	177	3998	RO	R109 R14 4/5 R68 R69 2V R7 R73 2; 120-200
1165	11	234	RO	B9 2 R16 4 R16 R17.3 5 R42 4DR37 DE R42 5DR18 R42 R69; 70-100
1179	4	73	RO	B6.1 R16 R69; 70-120
1180	15	56	RO	B6 R16 4; 70-120
1182	24	312	RO	B2 B5 2 R16 3G R69 R73; 70-120
1186	2	8	RO	R69 R73; 50-400
1187	1	1	RO	R17.4; 50-100
1189	18	153	RO	R16 2/3; 70-120
1194	6	5	RO	B2.3 B6; 45-100
1199	3	13	RO	B2.3 R7; 50-100
1206	1	0	RO	B5; 45-100
1208	20	295	RO	R14 2 R14 5J R14.1 4/5 R17.4 R68 R73 2W R73 R73.1 2 OAL; 140-300
1210	14	78	RO	R14.1 4H R69 R7 R73 2 R73 2W R73; 120-300
1216	35	205	RO	B9 2T R109 R16 2 R16 R17.4 3 R17.4 R69 2A R69 R7 R73; 70-120
1219	9	61	RO	R17.4 R43 4/5 BR R43 4DR37 DE R69 R74.1; 120-300
1233	3	25	RO	B25 2T B25 R73.1 2 OAL; 140-300
1236	20	295	RO	B2 4 B2 B6 B6.1 B9 2A B9 3 B9 R17.4 R69 2V STAB R69; 50-100
1239	3	23	RO	B2 B6.1 2A B8 2/3; 45-100
1240	35	251	RO	R17.1 R17.4 R69 2A R69 R73 2T R73 4/5 R73; 70-120
1241	68	266	RO	B3 B6.1 2 RLD; 40-70
1242	8	51	RO	B3 B8 5 R16 R17.4 R71 R8.3 2/3; 70-120
1244	9	264	RO	B2 B21 2 B6; 45-100
1245	4	86	RO	B21 B6.1 2 RLD B8 3A; 45-70
1249	5	63	RO	B21 B3 B6 B8; 45-70
1251	2	97	RO	B6 2A B8 3A ROD; 45-70
1254	2	34	RO	R17.4 R69; 50-100
1260	57	948	RO	B6 2A B9 2 NCD R15 1B2 R15 R17.4 1B R17.4 R7; 70-100

Context	Count	Weight	Period	Comments
1262	1	4	RO	R73; 50-400
1264	13	58	RO	B6.1 R14.1 4H5 R42 5DR18 R50 R73 R73.1 2 BUD R8.3; 120-300
1270	2	32	RO	R69; 45-150
1276	5	161	RO	B2 B6 B9 2; 50-100
1280	22	200	RO	B2 B9 2T R15 R16 3 R16 R17.1 3 ROD R17.4 1 R17.4 R42 4 R69 2A R69 R73; 70-120
1281	1	156	RO	B6 2A; 45-100
1299	6	71	RO	R17.4 R43 5DR18/31 R73; 120-160
1300	8	90	RO	B9 2 R17.4 1A R17.4 R68 R73; 50-100
1303	35	298	RO	B2 2 B2 4/5 LR5 R14.1 4H SL R17.4 R25 3 RD2 R46 5 R68 2 STAB R69 R73 2 BUD R73 2T R73 2W R73 R73.1 2F BUD R73.1 4/5; 250-400
1304	8	18	RO	R17.4 R68 R7 3G; 50-70
1305	17	226	RO	B6 2A1-4 B6 B9 2A RLD R15 R17.4 R7 2/3 ROD R7 3 COMB R7 3G R73; 70-100
1310	1	9	RO	R73 2; 50-400
1312	2	16	RO	R16 R26 2T; 90-120
1315	2	2	RO	B2 R7 3A; 50-100
1317	36	245	RO	R26 2T; 50-100
1318	22	137	RO	B9 2 R26 2T; 50-100
1319	2	36	RO	B6; 50-100
2042	1	6	RO	B6; 45-100
2048	4	3	RO	B6; 45-100
2203	13	169	RO	B2 2A NCD B2 B21 B6 R73; 50-70
2204	1	42	RO	B2 ; 40-100

Table 12: ARC 330 98 Assessment of Roman Pottery, quantification and attributes

Context	Count	Weight	Period	Comments
9	38	798	RO	B1 B2 2 B2 3 B9 2A15 BUD R7 R8.3 3 ROD; 50-70
11	12	155	RO	B2 4; 40-70
24	2	3	RO	B6 B9; 45-100
29	13	366	RO	B6 2A B6 B9 R69; 50-70
63	58	213	RO	B21 2 B6 2A R17.3; 50-70
64	9	224	RO	B9 2 B9 9A R68 R69 2M STAB; 50-70
65	3	18	RO	B6 RLD; 45-100
68	2	18	RO	R17.4 R69; 50-100
130	9	111	RO	B25 B6 R17.4; 50-100
133	2	7	RO	B6; 45-100
134	13	60	RO	B6 R16 R17.4 R73; 50-100
158	41	308	RO	B2 2 B2 B3 2 RLD B3 2 B6 2A B6 B6.1 2T B9 2 B9 2A BUD B9 2T; 45-70
234	124	1677	RO	B2 B6 2A B6 B9 2 R15 R16 1N R16 3F BDD R16 3G R16 4 R16 R17.4 1 R17.4 3A ROD R17.4 5 R7 3 R7 R73 R98; 70-120
235	1	16	RO	R17.4; 50-100
240	3	54	RO	B6; 45-100
270	2	5	RO	R42 5DR18 R8.3; 50-100
274	52	599	RO	R15 R17.4 1; 70-100
282	50	531	RO	B6 2 B6 2A B8 5A R16 R17.4 1 R17.4 R42 6DR27 R69 R7 4 WPD R73 2 R73 2T R8.3; 70-120
325	1	2	RO	R73; 50-400
557	2	3	RO	R73; 50-400
559	10	100	RO	LR1 LR13 LR13.1 LR23 7 LR26 2W LR3 LR5.1 4M; 350-400
598	1	19	RO	LR6 2T; 350-400
600	2	9	RO	R1.2 R7; 50-400

Table 13: ARC HRD 99 Assessment of Roman Pottery, quantification and attributes

Context	Count	Weight	Period	Comments
0	65	970	RO	LR10 4 LR10 4DR38 LR10 LR11 LR13 LR19 LR22 7 LR3 2 LR3 2T LR3 2V LR3 LR5 1 LR5 2W LR5 LR6 2W R1 2V R1 5J R1.2 2 R1.2 2V R1.2 5 R1.2 R100 2 R100 2/3 R100 2AX R100 2T R100 3 R100 5 R100 R105 1 R13 R75; 350-400
2	1	2	RO	R13; 120-400
5	8	79	RO	LR1 LR10 4 LR3 LR5 R69; 250-400
7	41	323	RO	LR10 LR3 LR5 R1 R100 2/3 R100 R101 R15 R73.1 4H R73.1 R75; 250-300
8	10	62	RO	LR5 R100 R14 R73.1; 250-400
12	1	11	RO	LR10 4 ROD; 240-400

Context	Count	Weight	Period	Comments
14	12	96	RO	LR10 4 LR10 LR13 LR19 2X LR5 4 LR5 R1; 250-400
17	1	8	RO	R100; 50-400
23	2	10	RO	R100 R69; 50-150
24	0	2	RO	R1; 50-400
32	5	18	RO	LR6 2T R100 R68 R75; 350-400
43	0	1	RO	LR11; 150-400
45	2	2	RO	LR3; 250-400
48	0	1	RO	R100; 50-400
51	8	58	RO	R1 R1.2 R14 R43; 120-250
53	37	425	RO	LR1 LR1.2 2FX LR1.2 LR10 LR3 LR5 4 LR5 4M LR5 LR6 2W LR6 2X LR6 R100 2T R100 5J R100 R13 4 R73.1 4 R73.1 R75; 350-400
55	2	20	RO	LR5 R100; 250-400
56	19	139	RO	LR1.2 LR11 LR3 2FX LR5 LR5.1 LR6 R1 2/3 R1 R100 2 R100 R73.1; 350-400
58	13	183	RO	LR1 4M LR1 LR10 4 LR5 4M LR5 R1 R100 R15 R75; 250-400
60	4	35	RO	LR13 LR22 7W7 LR5 2FX R100; 250-400
62	1	5	RO	R75; 50-400
67	13	93	RO	LR1 2FX LR1 LR10 LR3 LR5 R1 R100; 250-400
69	70	525	RO	LR1 2T LR1 9M LR1 LR1.2 LR10 4 LR10 ROD LR10 LR22 7 LR3 LR5 2 LR5 5J LR5 LR6 R1 R100 5J R100 R14 R68 R73.1 R75; 350-400
71	3	149	RO	LR5 4M R100; 250-400
75	4	15	RO	LR5 R100; 250-400
77	5	69	RO	LR10 5 LR10 LR5 LR6 R1 R100 2/3 R100 5 R100; 350-400
80	5	55	RO	LR5 1 FND R100 2 R100 2/3 R100 R13 R15 R75; 250-400
86	4	25	RO	R100 R26 R43 R68; 120-160
89	1	3	RO	R69; 50-150
90	4	7	RO	R1.2; 50-400
93	1	4	RO	R100; 50-400
100	1	5	RO	R1 2V; 50-400
102	2	325	RO	LR22 7M22 LR5.1; 250-400
104	4	38	RO	R1 R1.2 2/3 R1.2 R100 R69 R75; 50-150
105	5	17	RO	R1 R1.2 R100 R75; 50-400
106	3	9	RO	LR5 4M R100 4 R100; 250-400
114	2	15	RO	R1 4 R73.1 4; 120-400
123	1	8	RO	LR10; 240-400
127	1	5	RO	LR5; 250-400
131	1	6	RO	LR5; 250-400
135	24	200	RO	LR10 4DR38 WPD LR10 5 LR10 ROD LR10 LR19 LR3 LR5 2FX LR5 R1 2V R100 2T R100 4M R100 5 R100 R43 R67 R75; 270-400
143	1	9	RO	R100; 50-400
149	1	27	RO	LR5.1 4M; 250-400

Context	Count	Weight	Period	Comments
150	5	37	RO	R1.2 R100 R69 R75 4; 50-150
151	6	40	RO	LR10 4 ROD LR3 2T LR3 LR6 R100 R69; 350-400
152	23	137	RO	LR10 LR3 LR5 2T LR5 LR6 R1.2 2T R1.2 R100 R75; 350-400
153	14	82	RO	LR10 4 ROD LR10 4 LR10 LR3 LR5 R1 R100 4 R100 R75; 250-400
156	5	48	RO	LR10 4DR38 LR13 LR5 R1 R100 2T; 250-400
158	1	2	RO	R68; 50-200
159	6	66	RO	LR13 2T LR5 4 LR5 R1 R13; 250-400
167	3	6	RO	B2 LR11 LR5; 250-400
178	9	282	RO	LR10 4 LR11 3 LR5 4 R1 2 R100 2; 250-400
179	2	64	RO	LR1 4M R100 2; 250-400
181	3	33	RO	LR10 LR5 R100; 250-400
191	6	283	RO	LR1 LR5 2 R100 R75; 250-400
217	3	196	RO	LR5 WPD; 270-400
218	3	21	RO	BHAD WL; 200-400
219	2	42	RO	LR5.1 2; 250-400
220	2	7	RO	LR5 ; 250-400

Codes:

FORM	Expansion
1	Miscellaneous or otherwise unidentifiable flagon
1A	Collared (or hofheim-type) flagon
1B	Ring-necked flagon
1B2	Ring-necked flagon with flaring mouth (m&t fig 232.2)
2	Miscellaneous or otherwise unidentifiable jar
2/3	Jar or beaker; enclosed vessel
2A	Bead-rimmed jar
2A1-4	Bead rim jar: simple thickening, triangular section
2A16	Lid seated bead-rimmed jar (m&t fig 234.16)
2AX	Later bead-rimmed jar
2B	Short-necked jar (often with VL)
2C	Necked jar with carinated shoulder; 'figure 7' rim
2F	Black-burnished-type everted-rimmed jar
2FX	Late version of 2f
2M	Rolled-rimmed storage jar
2PD	Pedestal-based jar
2T	Otherwise indistinguishable necked jar
2V	Storage jar (other than 2m)
2W	Hooked-rimmed jar
2X	Lid-seated jars
3	Miscellaneous or otherwise unidentifiable beaker
3A	Butt beaker
3F	'Poppyhead' beaker
3G	Carinated beaker with tall upright plain rim
4	Miscellaneous or otherwise unidentifiable bowl

FORM	Expansion
4/5	Bowl/dish
4DR30	Dragendorff 30
4DR37	Dragendorff 37
4DR38	Dragendorff 38
4H	Rounded-rimmed BB-type bowl
4H5	Undecorated 4H
4M	BB-type flanged bowl
5	Miscellaneous or otherwise unidentifiable plate
5A	Plate with plain exterior profile
5DR15/17	Dragendorff 15/17
5DR18	Dragendorff 18
5DR18/31	Dragendorff 18/31
5DR18R	Dragendorff 18r
5J	Dish with simple rim
6	Miscellaneous or otherwise unidentifiable cup
6DR27	Drag form 27
7	Miscellaneous or otherwise unidentifiable mortarium
7M22	Young form m22
7WC7	Oxford white slipped mortaria copying m22
8	Miscellaneous amphorae
9A	Lid (usually post-70)
9H	Colander
9S	Amphora stopper

DECOR	Expansion
AL	Bb-type acute lattice
ALX	Other acute lattice
BDD	Barbotine dot
BR	Bead rim
BUD	Burnished
COMB	Combed
DEC	Decorated
FND	Finger nail decoration
HPOF	Post-firing hole(s)
HPRF	Pre-firing hole(s)
NCD	Incised
OAL	Open acute lattice
RCD2	Clay pellet/grog roughcast dec
RLD	Rilled decoration
ROD	Rouletted
SL	Single lattice
STAB	Stabbed
WL	Wavy line decoration
WPD	White paint decoration

APPENDIX 2: ASSESSMENT OF POST-ROMAN POTTERY

Lyn Blackmore

Conservation by Liz Barham

1. Introduction

- 1.1 This assessment discusses all the finds from ARC HRD 99, but only the material from the 1998 phase of excavation at ARC WNB 98; finds from the work in 1997 have been reported on elsewhere and were returned to CTRL. These will have to be integrated during further phases of work. The 1998 assemblage comprises a small amount of domestic pottery; most was recovered by hand, but some was recovered from the sieved samples. From the ceramic dating used by the Canterbury Archaeological Trust, the bulk of the collection can be related to occupation between c.1125-1250/1300.
- 1.2 The study of the material should assist the following fieldwork aims:
- To establish a record of changing settlement and landscape morphology for the area
 - To determine the function of these area and changes through time

2. Methodology

- 2.1 The pottery was recorded on a context-by context basis using standard Museum of London proforma sheets. The different fabrics were isolated using a binocular microscope (x20) and recorded using codes consistent with those of the Canterbury Archaeological Trust. For larger groups, sherds of the same fabric types were recorded and bagged together, where possible by vessel or by form. The data was entered on the MoLAS Oracle database and the records converted to a table in the standard CTRL format. It should be noted that the 1997 finds were not recorded on Oracle, and that they have not been seen by the present writer.

3. Quantification

- 3.1 *Totals.* The pottery from ARC HRD 99 amounts to 87 sherds, all of medieval date from 17 contexts (see Table 1). All context groups are small; none has more than 20 sherds, and most have less than ten.
- 3.2 The pottery from ARC WNB 98 comprises 433 sherds of medieval pottery (total weight 4.949 Kg) from 46 contexts; only two sherds are of post-medieval date (weight 80g), while one is of Saxon grass-tempered ware. The largest context group is from [118] (118 sherds from up to 63 pots). Contexts [319] and [885] contain 51 and 21 sherds from 27 and 7 pots respectively, but most contexts contain less than ten sherds; contexts [819] and [956] appear numerically high, but in both cases the sherds are all from the same pot. After sorting and reboxing the pottery fills 2 full standard Museum of London shoe boxes (465 x 185 x 130mm).

- 3.3 The finds from ARC 330 98 include one medieval sherd and seven that date to the 18th or 19th century.
- 3.4 *Fabrics.* Eight different medieval fabrics were identified in the assemblage from ARC HRD 99, and eleven in that from ARC WNB 98. On both sites shell-tempered wares dominate, the most common being fabric EM35 (31 sherds). The second most frequent ware is EM36, which is a sandy ware with variable amounts of shell, again probably from the general area. Sandy wares from the Maidstone/Rochester area are present in small amounts in both assemblages, but London wares are only found at ARC WNB 98. The distribution of the pottery from the latter site is shown in Tables 1 and 2. The one Saxon sherd found on ARC WNB 98 is of chaff-tempered ware. The pottery from ARC 330 98 includes only one sherd of medieval shell-tempered ware; the others comprise a range of post-medieval redwares, stoneware, transfer-printed ware and English porcelain.

Table 14: The distribution of the fabric types from ARC WNB 98

(expansions of the CAT fabric codes are listed at the end of this report)

Fabric	Count	%	Number of vessels	%	Weight
EM3	45	10.4	17	9.0	586
EM4	1	0.2	1	0.5	1
EM22	9	2.1	6	3.2	126
EM31	2	0.5	2	1.1	22
EM35	256	59.1	95	50.5	3345
EM36	91	21.0	47	25.0	626
EM48	7	1.6	5	2.7	35
M5	1	0.2	1	0.5	9
M26	1	0.2	1	0.5	3
M38B	17	3.9	11	5.9	140
M100	3	0.7	2	1.1	56
Sum	433		188		4949

- 3.5 *Forms.* Almost all the pottery from ARC HRD 99 comprises cooking pots (defined by external sooting); the only exception is part of a spouted pitcher. Cooking pots with a range of rim forms also predominate in the finds from ARC WNB 98; the most notable is a large vessel from [721] and [829]. This group, however, also includes several jugs, both locally made and imported from London. No definite spouted pitchers were found in this group. The finds from ARC 330 98 include an extremely strange object in fabric EM35; it may be part of a final, louver or industrial vessel, although the choice of shell-tempered ware for any of these functions is unusual.
- 3.6 *Date.* Almost all contexts at ARC WNB 98 are dated to after 1125, but four can only broadly dated to 1075-1225/1350. A few sherds from other contexts appear to be typologically earlier than the main occupation and are possibly of Late Saxon date. The end date for most groups is placed at 1250, but many could run to 1270-1300, while nine definitely date to after 1270; two of the latter are post-medieval.

4. Provenance

- 4.1 *Origin.* Fabric EM35 contains fossil shell and is made of Woolwich Beds clay; fabric EM48 is basically the same but with more sand. Fabric EM36 is more sandy and less easy to source. It was formerly thought that the greywares found on sites in the area were from the Limpsfield kilns in Surrey. However, it now seems more likely that these and the finds from ARC WNB 98 and ARC HRD 99 (fabric M38) are from a source in the area of Rochester or Maidstone (Streeten 1982, 93). The non-local wares are mainly from London; both the coarse and finer variants are represented.
- 4.2 *Use.* The medieval pottery from ARC HRD 99 mainly derives from ditch fills or from the area of the Roman 'kilns' or corn-drying ovens, which dates the destruction of these features to the 12th or early 13th century. There are no useful pit groups or spreads which can be related to medieval occupation as such, and this must have been outside the excavated area. All groups are small.
- 4.3 The distribution of the medieval pottery on the site of ARC WNB 98 is patchy, and even when the material is viewed by group and subgroup, most are quite small. The largest amounts of pottery are from the early medieval ditch and associated features (Group 40), which contained 124 sherds from up to 67 vessels. The second largest amount by sherd count is from a pit (Group 74), but here 66 of the 67 sherds are from the same pot (contexts [819] and [74]). The only other numerically significant clusters are in two pits within the circular enclosure (group 47: 57 sherds from up to 30 pots), and the sunken-floored building (52 sherds from up to 24 pots). The latter, mainly derived from the floor, trampled layers and a possible oven, would appear to be slightly earlier than the archaeomagnetic date from this feature. There is no difference between these finds and those from the demolition layer. The one sherd of Saxon pottery is from a posthole (Group 75).
- 4.4 *Condition.* Much of the pottery from ARC WNB 98 is abraded and comprises quite small pieces, but some contexts, notably [164] and [918] include some quite large and relatively unabraded sherds which cannot have travelled far. Most of the shell-tempered wares are leached, but this reflects the nature of the fossil shell rather than the conditions on the site, as the shell in other shell-tempered wares appears quite fresh.

5. Conservation

- 5.1 There are no requirements for conservation work on this assemblage unless it is decided to reconstruct the large shell tempered pot from ARC WNB 98 [739] and [819] for display or photography.

6. Comparative material

- 6.1 *Relevant sites.* There are a number of broadly contemporary sites in the west Kent with which this material should be compared. To the east there are a number of excavated groups from Rochester (*eg.* Tester 1968; 1970; 1981), and Temple Manor, Strood. To the west are Joydens Wood (Tester and Caiger 1958), Lesnes Abbey (Dunning 1961) and Dartford (Mynard 1973), while to the south-

west are Eynsford Castle (Rigold 1971; 1973; finds in Maidstone Museum) and the manors of Fawkham and Scotgrove (finds held by Dartford Museum). On all these sites shell-tempered wares are common, and seem to have continued well into the 13th century. Canterbury lies outside the zone of pottery use and supply to the north of the Medway, which has more in common with the London area.

7. Potential for further work

- 7.1 The study of the material may assist the following Fieldwork Event Aims:
 - *To establish a dated sequence of occupation and use.*
- 7.2 The finds show that most pottery is of much the same period on both sites and gives a good guide to the main period of occupation. It would seem that the site at ARC WNB 98 continued in use beyond that at ARC HRD 99, although the current dating of the pottery from the sunken-floored building is slightly earlier than that obtained from the archaeomagnetic sample. Further work is required to establish why this might be. The medieval object from ARC 330 98 is most unusual and should be noted in the report. The other finds from are simple dating indicators, and cannot be used for detail interpretation; there is, therefore, no potential for further work on this material. The one Saxon sherd from ARC WNB 98 hints at earlier activity in the area, but cannot, in itself, be taken as evidence for settlement.
 - *To determine the function and economic basis of the sites.*
- 7.3 Spatial analysis of the pottery may help determine the extent of domestic activity, field boundaries and rubbish disposal on ARC WNB 98 and ARC HRD 99, but the finds from ARC 33098 are too few to offer any useful information. The most informative groups on ARC WNB 98 are from an early medieval ditch (Group 40), the sunken-floored building (Group 56) and three pits (Groups 46 and 74). Contexts with few sherds may be less significant for the pottery analysis, but they will to help define the extent and morphology of structures/features in which they were found and to interpret the function of these areas.
- 7.4 The finds from both the main sites are quite similar; both have a limited range of wares and form, the latter comprising almost entirely cooking pots and dishes, with few jugs. No imports were found, and the amount of pottery from Tyler Hill is extremely limited. The latter occurs in Rochester, so the absence here might suggest that the Medway formed the western limit of its distribution. The finds are, therefore, in keeping with a rural context; despite the lack of exotic items they are of interest as little has been published on the pottery from this type of medieval site in Kent.
- 7.5 The following Landscape Zone aims (Towns and their rural landscapes 100 BC-AD 1700) may be addressed:
 - *Did population increase and concentration effect natural resource exploitation and accelerate environmental change?*
- 7.6 There is insufficient pottery from either site to really answer this question, but the dominance of fabric EM35 fits with the known pattern for the area. The widespread use of the related fabrics EM35 and EM48, and also EM36, reflects the increasing consumer market in the 12th century, which was supplied by local potters using local shell-bearing clays.

- *How were settlements and rural landscapes organised and how did they function?*

7.7 Comparison of the assemblage with others in the area may help understand patterns of trade. The relative proportions of different wares and forms are consistent with rural domestic sites.

7.8 The following wider research aim is important to this study:

- *How can the pottery contribute to the development of Kentish pottery studies?*

7.9 The understanding of pottery types in north-west Kent is less developed than that in the Canterbury area, and these assemblages, although small, form a useful addition to a currently limited corpus of material which has been studied to modern standards. The pottery from these excavations includes wares require better definition. If fabrics EM35 and EM36 could analysed by ICPS analysis (Inductively Coupled Plasma Spectrometry) and possibly thin section analysis the results could be added to those of a wider, ongoing study of shell-tempered wares in south-east England (Vince 1998). Although scientific study of this kind is beyond the remit of the CTRL works, it would be of benefit to wider pottery studies in the county and would help to address some of the research questions raised by the CTRL project.

Further work

7.10 Further work should concentrate on addressing the research aims more thoroughly and using the pottery to understand the development and function of the site. Some finds are suitable for illustration and the large shell-tempered pot from ARC WNB 98 could be restored for photography. For the wider context, comparative study will help show more clearly how the assemblages relate to others in the region.

7.11 Potential Additional works

- Scientific analyses (20 samples)
- Correlate pottery with stratigraphy
- Visit other collections (eg. Maidstone Museum)
- Library work
- Select illustrations, prepare catalogue
- Prepare report text
- Write discussion with reference to research aims
- Conservator's restoration of large pot for photography/display, if required
- Pottery illustrations x c 8

8. Bibliography

- Dunning G C 1961 'A group of English and imported medieval pottery from Lesnes Abbey, Kent' *Antiq Journ* 41, 1-12.
- Mynard D C 'Medieval Pottery from Dartford' *Archaeol Cantiana* LXXXIII, 187-99.
- Rigold S E 1971 'Eynsford Castle and its Excavation' *Archaeol Cantiana* LXXVI, 109-172.
- Rigold S E 1973 'Eynsford Castle: the Moat and Bridge' *Archaeol Cantiana* LXXVIII, 87-116.
- Streeten A 1982 'Potters, kilns and markets in medieval Kent: a preliminary study' in P Leach (ed) *Archaeology in Kent to AD 1500, CBA Res Rep* 48, 87-95.
- Tester P J 1968 'Medieval' in A C Harrison & C Flight 'The Roman and Medieval Defences of Rochester in the light of recent excavations', *Archaeol Cantiana* 83, 94-99.
- Tester P J 1970 'Medieval Pottery' in A C Harrison 'Excavations in Rochester', *Archaeol Cantiana* 85, 108-111.
- Tester P J 1972 'Medieval' in A C Harrison 'Excavations at Rochester East Gate 1969' *Archaeol Cantiana* 87, 142-150.
- Tester P J and Caiger J E L 1958 'Medieval Buildings in the Joyden's Wood square earthwork' *Archaeol Cantiana*, 72, 18-39.
- Vince A G 1998 'Characterisation of shell-tempered wares from South-East England' unpublished.

Table 15: Assessment of Pottery from ARC HRD 99, quantification and attributes

Context	Count	Weight	Period	Early date	Late date	Comments (i.e. fabric groups/ form/ type/ presence of decoration)
0	5	24	MD	1225	1250	EM36 CP; M1 CP; M100 CP; M38 CP; from fieldwalking?
0	1	5	PM	1550	1700	PM1 JAR from fieldwalking?
53	1	6	MD	1050	1225	EM35 CP
58	3	10	MD	1125	1250	EM22
60	4	31	MD	1125	1350	M38 CP 1: rim possibly an import?
77	4	51	MD	1100	1250	EM36 CP; EM48 CP
105	0	6	MD	1100	1200	EM31 CP
127	1	4	MD	1050	1250	EM3 CP
141	8	166	MD	1100	1225	EM35 CP: early medieval rim form; EM36 CP
151	1	14	MD	1100	1250	EM36 CP rim
152	1	8	MD	1050	1225	EM35 CP early medieval rim form
153	12	171	MD	1100	1225	EM35 CP 2 early medieval rims; EM36 CP: 3 early medieval rims; EM48 CP
156	5	30	MD	1050	1225	EM35 CP; EM48 CP
158	2	69	MD	1125	1225	EM35 CP rim; M38 CP
159	13	168	MD	1125	1225	EM1 SPP spout; EM35 CP EM36 CP EM48 CP M38 JAR
163	0	4	MD	1125	1250	EM22 CP
166	3	49	MD	1100	1250	EM36 CP APST; EM48 CP
167	2	10	MD	1100	1250	EM36 CP
181	11	92	MD	1125	1250	EM3 CP fossil shell?; M38 CP very hard ?Tyler Hill

Table 16: Assessment of Pottery from ARC WNB 98, quantification and attributes

Context	Count	Weight	Period	Early date	Late date	Comments (i.e. fabric groups/ form/ type/ presence of decoration)
209	5	31	MD	1100	1200	EM22 JAR; EM36 CP
210	2	10	MD	1100	1200	EM36 CP
211	3	97	MD	1100	1200	EM22; CPEM3; CPEM36 CP
238	1	48	MD	1050	1150	M100 CP
254	2	21	MD	1100	1200	EM36 CP
260	1	2	MD	1050	1150	EM48 CP
261	5	34	MD	1125	1200	EM22 CP; EM35 CP
262	118	718	MD	1050	1100	EM35 CP; EM36 CP; M5 JUG ROU; M5 JUG BAL
264	11	48	MD	1150	1225	EM35 CP; EM48 CP; M38B JUG; EM26 JUG
265	3	31	MD	1150	1225	EM35 CPM38B JUG
266	17	208	MD	1175	1225	EM35 CP RIL; EM35 CP; EM36 CP; M38B JAR, JUG

Context	Count	Weight	Period	Early date	Late date	Comments (i.e. fabric groups/ form/ type/ presence of decoration)
267	6	60	MD	1175	1250	EM36 CP; M38B JUG
274	2	31	MD	1050	1100	EM35 CP
275	1	8	MD	1050	1150	EM35 CP
285	8	56	MD	1050	1250	EM3 CP
288	8	31	MD	1100	1250	EM36 CP
291	15	169	MD	1125	1250	EM3 CP; EM36 JAR DIMP; EM4 CP
292	15	236	MD	1100	1200	EM3 CP; EM35 CP; EM36 CP
293	1	15	MD	1100	1200	EM3 CP
294	7	95	MD	1100	1200	EM3 CP
319	51	226	MD	1050	1150	EM31 CP; EM35 CP; EM36 CP; M100 JAR; M38B JUG RIL
624	1	21	MD	1100	1200	EM35 CP
709	1	6	MD	1050	1150	EM3 CP
722	1	6	MD	1125	1200	EM35 CP
726	1	5	MD	1050	1100	EM35 DISH
739	14	486	MD	1150	1225	EM35 CP
751	6	742	MD	1150	1225	EM35 CP
795	6	64	MD	1175	1225	EM35 CP
803	1	9	MD	1175	1250	EM35 CP
819	52	821	MD	1050	1100	EM35 CP
885	22	153	MD	1050	1150	EM22 CP; EM3 CP; EM35 CP; EM36 CP
892	1	24	MD	1050	1250	M38B JUG
894	8	55	MD	1100	1250	EM3 CP; EM35 CP; EM36 CP; M38B JUG
906	4	23	MD	1125	1250	EM22 CP; EM35 CP
907	6	107	MD	1100	1225	EM35 CP; EM36 CP
956	21	160	MD	1050	1225	EM35 CP
2037	2	22	MD	1100	1225	EM35 CP; EM36 CP
2050	1	8	MD	1050	1225	EM35 CP
2053	1	13	MD	1050	1225	EM35 CP
2067	1	41	MD	1000	1100	EM3
2091	1	8	MD	1125	1250	EM22 JAR
562	1	36	PM	1550	1900	CPM1 DISH
617	1	44	PM	1475	1625	CLM30 JUG
751	1	10	EM	450	750	EMS4 JAR

Table 17: Assessment of Pottery from ARC 330 98, quantification and attributes

Context	Count	Weight	Period	Early date	Late date	Comments (i.e. fabric groups/ form/ type/ presence of decoration)
1	1	9	PM	1800	1940	CLPM10B JAR
169	1	1	PM	1745	1900	CLPM7C BOWL
169	2	15	PM	1745	1900	CPM1 DISH
169	1	3	PM	1745	1900	CPM1.4 FLP
183	1	91	MD	1100	1250	CEM36 INDV?
6	1	4	PM	1780	1825	CLPM12G SAUC
6	1	33	PM	1780	1825	CPM1 DISH

Nb. The comments field lists each fabric code, followed by the forms present; the use of a decoration code beside the form code shows that this is the only type present in the context. Fabric codes are separated by semi-colons.

Expansions for Canterbury Archaeological Trust fabric codes shown in this report

Fabric	Expansion	Range
EMS4	Organic Tempered	400-750
EM1	Canterbury sandy ware	1050-1225
EM3	Misc shelly ware	1050-1250
EM4	West Kent fine sandy ware	1125-1250
EM22	N or W Kent fine sandy with sparse shell and sparse grits	1125-1250
EM26	Coarse London-type ware	1125-1225
EM31	?Kentish coarse sandy ware with moderate shell	1100-1200
EM35	N or W Kent shell-tempered	1050-1225
EM36	N or W Kent sand-and-shell-tempered ware	1100-1250
EM48	N or W Kent? shell-filled fine sandy ware	1050-1250
M1	Tyler Hill Ware	1225-1375
M5	London-type ware	1180-1350
M38	North or West Kent greyware	1125-1350
M38B	North or West Kent fine sandy ware	1175-1400
M100	Misc unidentified medieval wares	1200-1400
LM30	Wealden(?) orange-buff white slipped ware	1475-1625
PM1	Local Post-Med Redware	1550-1700
PM1.4	Fine Post-Medieval Redware	1575-1700
LPM10B	Modern English Stoneware Jars	1800-1940
LPM12G	Transfer-Printed Pearl Ware	1780-1825
LPM7C	English Porcelain	1745-1900

Expansions for form codes shown in this report

BOWL	Bowl
CP	Cooking Pot
DISH	Dish
FLP	Flower Pot
INDV	Industrial Vessel
JAR	Jar
JUG	Jug
JUG BAL	Baluster Jug
SAUC	Saucer
SPP	Spouted Pitcher

Expansions for decor codes shown in this report

APST	Applied Strip
DIMP	Dimpled (Finger Tip) Decoration
RIL	Rilled Decoration

APPENDIX 3: ASSESSMENT OF CERAMIC BUILDING MATERIAL AND FIRED CLAY

Susan Pringle

1. Introduction

- 1.1 All the building material from the three sites, a total of 72.81 kilogrammes, including 55.85 kilogrammes of daub and fired clay and 11.42 kilogrammes of stone (probably not all of which was building stone), was examined.
- 1.2 Material from eleven contexts from ARC HRD 99 was labelled as samples.
- 1.3 The study of the material should assist with the following fieldwork event aims:
 - to establish a record of changing settlement and landscape morphology for the area, to include habitation areas and associated enclosures and trackways etc;
 - to determine the function of these areas and changes through time;

2. Methodology

- 2.1 All the material was examined and recorded for the assessment using a binocular microscope. Fired ceramic building material has been divided by form, and fragments counted and weighed. The fabric types have been noted, using the Museum of London fabric type series, and any complete dimensions or other features of interest recorded.
- 2.2 The fired clay assemblage has been counted and weighed, and the presence of features such as original surfaces, impressions, the presence of mortar or tempering noted.
- 2.3 The data have been entered on an ORACLE database and transferred to the RLE Datasets. All the material has been retained.

3. Quantifications

- 3.1 The total weight of ceramic building material scanned for the assessment is 72.81 kilogrammes, including 55.85 kilogrammes of daub and fired clay and 11.42 kilogrammes of stone, probably not all of which was building stone, was examined. Ceramic building material accounts for 45.3% of the assemblage by weight (9.3 kilogrammes) at ARC HRD 99, 9.8% of the assemblage (1.96 kilogrammes) at ARC WNB 98, and 14% (4.49 kilogrammes) at ARC 330 98. Fired clay and daub account for 86.6% of the assemblage by weight (17.29 kilogrammes) at ARC WNB 98, 85.9%(27.74 kilogrammes) at ARC 330 98 and 52.7% (10.82 kilogrammes) at ARC HRD 99. The remainder of the material is an assortment of scraps of stone of various types, amounting to 3.6% of the assemblage (0.72 kilogrammes) at ARC WNB 98, 2% (0.42 kilogrammes) at ARC HRD 99, and 0.1% (0.02 kilogrammes) at ARC 330 98, where 0.2% of the assemblage consisted of lime mortar (0.05 kilogrammes).

- 3.2 Roman ceramic building material was recorded from all the sites, although quantities are small. Details of the assemblages are set out below in Tables 18, 19 and 20.

Table 18: ARC HRD 99: count and weight of Roman tile types

Form	Number of fragments	Count as % of total	Weight (grammes)	Weight as % of total
Brick	21	19	3545	38.1
Voussoir	31	28	3130	33.7
Tegula	16	15	1305	14
Flue tile	11	10	730	7.9
Unidentified tile	23	21	390	4.2
Imbrex	6	6	180	1.9
Tessera	1	1	20	0.2
Total	109	100	9300	100

Table 19: ARC WNB 98: count and weight of Roman tile types

Form	Number of fragments	Count as % of total	Weight (grammes)	Weight as % of total
Imbrex	8	36	645	32.9
Brick	3	14	630	32.1
Tegula	8	36	545	27.8
Voussoir	1	5	100	5.1
Unidentified tile	2	9	40	2
Total	22	100	1960	99.9

Table 20: ARC 330 98: count and weight of Roman tile types

Form	Number of fragments	Count as % of total	Weight (grammes)	Weight as % of total
Brick	3	43	350	80.5
Imbrex	1	14	25	5.8
Tegula	1	14	25	5.8
Unidentified tile	2	29	35	8.1
Total	7	100	435	100.2

- 3.3 The Roman tile fabrics tend to resemble those from London, and are probably made from very similar London clays. There appear to be, however, some slight local variations, often containing fine black iron oxides and other iron-rich substances, calcareous inclusions, and streaks of cream silt or clay. Five provisional tile fabrics have been identified and are described below. Museum of London fabric codes 2815 (a group of red-firing fabrics containing varying amounts of quartz sand), 3023, 3028, 3060, 3226, 3227, and 3255 have also been used. The quantities of each fabric present on the site are set out in Table 20.

3.4 Provisional Roman tile fabrics:

- HRD1: red or orange slightly micaceous red fabric with moderate ill-sorted medium to coarse quartz (near 2815 group and fabric 3255), large rounded or blocky inclusions of yellowish silty clay sometimes with a white

calcareous speckle; both matrix and inclusions contain common fine black iron-oxide specks. Occurs as tegula on ARC HRD 99 and tegula and imbrex on ARC WNB 98

- HRD2: light brown to orange fabric with abundant fine to medium angular quartz, sparse coarse quartz and sparse coarse or very coarse rounded dark red iron-rich inclusions. Occurs as flue tile or tegula on ARC HRD 99
- HRD3: fine red matrix (near 3006) with inclusions of coarse quartz, iron-rich clays and sparse pale cream silty streaks. Occurs as flue tile on ARC HRD 99
- HRD4: well-fired light orange fabric; abundant very fine to fine quartz and common fine black iron oxide specks; frequent rounded pelletal inclusions of cream and dark red clay/silt. Occurs as brick, flue/voussoir and tegula on ARC HRD 99
- WNB1: orange matrix with white speckle and fine black iron oxides; sparse very coarse rose quartz, coarse pale cream clay and very coarse ferruginous sandstone inclusions. Occurs as unidentified tile on WNB 98.

3.5 The best Roman assemblage in terms of quantity and range of forms is that from ARC HRD 99. The relatively large proportions of combed flue tile and voussoir (which cannot easily be differentiated when the fragments are of small size) would normally suggest the presence of a hypocausted building such as a villa or bath-house, but the absence of ceramic or stone roofing tile and the number of different fabrics represented (six), suggests that the material has been salvaged, probably from several sites, and reused in an industrial context. A voussoir in fabric 3226 similar to those from ARC HRD 99 was found on ARC WNB 98 (context 653, subgroup 486). The other Roman tile is abraded and probably also reused, although of interest is a brick in fabric 3226 with wavy finger-keying on the top surface (context 102, subgroup 809). A very unusual brick fragment was noted from ARC 330 98 (context 110, sub-group 3004); this appears to have been moulded with a corner angle of *c* 60 degrees, and may have been triangular.

3.6 Post-Roman material was noted from only one site, ARC 330 98, where it formed 12.6% of the assemblage by weight (4.055 kilogrammes). The forms present are set out in Table 21.

Table 21: ARC HRD 99: count and weight of post-Roman tile types

Form	Number of fragments	Weight (grammes)
Brick	17	3200
Peg tile	24	715
Curved tile (ridge or hip)	3	115
Unidentified tile	2	25
Total	46	4055

3.7 The post-Roman material is not generally of particular interest, comprising fragments of roof tile and brick; the exception being a brick clamp with wasters on ARC 330 98. All the brick is in MoL fabric 3033 (made from the orange to red firing London clays), which is the commonest brick type in London in the early post-medieval period. The date range for this fabric in London is *c* 1450-1700, but it may be a little later in Kent, where the use of brick is not known before *c* 1480 (pers. comm. T. P. Smith). The roof tile present is all in fabrics known from London; 2271, 3090, 3094 and 3201.

3.8 All three sites produced fired clay and daub. The largest assemblage (27.74 kilogrammes) is from ARC 330 98, with 15.985 kilogrammes from ARC WNB 98, and 10.82 kilogrammes from ARC HRD 99.

- 3.9 The fired clay and daub assemblages have several features of interest. The material from ARC WNB 98 and ARC 330 98 probably contains small fragments of prehistoric loomweight, as a number of fragmentary examples have been found on the sites. Both sites also have several types of daub in a range of fabric types, including a light orange to light brown clay with frequent inclusions of white chalk which has been given the provisional fabric code WNB2. A single fragment of keyed daub walling came from context 1072, subgroup 59, ARC WNB 98. Wattle and lath impressions were noted on some of the daub, and it is likely that both Iron Age and Roman occupation is represented. The patterns of smoothing and burning on daub from all three sites suggest the presence of possible briquetage or moulds, and there is clear evidence of kiln or hearth linings.

4. Provenance

- 4.1 The material comes mainly from pits and ditches on the three sites. It is evident that the material from ARC 330 98 represents pre-Roman, Roman and post-Roman occupation, that both Iron Age and Roman material is represented on ARC WNB 98 and that ARC HRD 99 is predominantly late Roman, but further analysis of the phased sites will be needed before the full significance of the material can be appreciated.

5. Conservation

- 5.1 The temporary fabric type series should be accessible to enable comparisons to be made with examples of tiles from known kilns and other sites in Kent, London and East Sussex. This should not necessarily conflict with long-term storage for the remainder of the assemblage. It is recommended that samples of all the tile fabrics should be retained.
- 5.2 The material is well-preserved and should not deteriorate as long as it is stored in clean, dry conditions.
- 5.3 Access may be needed to the ceramic building material from ARC HRD 99 for the purposes of illustration, and to the daub/fired clay from all the sites for possible further analysis.

6. Comparative material

- 6.1 The material should be compared with the daub and fired clay from Thurnham Roman villa, Springhead and other Iron Age and Roman sites on the CTRL project. Tile fabrics should be compared with those in the Canterbury Archaeological Trust type series.

7. Potential for further work

- 7.1 The assemblage appears to be composed mainly of material of two periods, Middle to Late Iron Age and Roman, with an additional early post-medieval

element on ARC 330 98. It thus has the potential to answer to provide information on the following original Landscape Zone aims and Field Event aims.

- 7.2 Farming communities (2,000-100 BC)
 - *Determine spatial organisation of the landscape in terms of settlement location in relation to fields, pasture, woodland, enclosed areas and ways of moving between these (original landscape zone aim 2.3.a)*
 - *Determine how settlements were arranged and functioned over time (original landscape zone aim 2.3.c)*
- 7.3 If the daub assemblages from Zone 3 can, by association with pottery or other finds, be shown to be of prehistoric date, they have the potential to provide information on the location of Middle to Late Iron Age settlements, possibly continuing into the early Roman period. In addition it could inform on the types of structures present, such as houses, kilns or hearths, and the activities such as the use of kilns and briquetage that were carried out there.
- 7.4 Towns and their rural landscapes (100 BC – 1700 AD)
 - *How were settlements and rural landscapes organised and how did they function? (original landscape zone aim 2.4.c)*
- 7.5 The presence of Roman material on sites with ample evidence of Late Iron Age occupation has the potential to provide evidence of continuity of use from the Iron Age to the Roman period.
- 7.6 Although sparse, the Roman tile indicates the presence of Roman activity in the vicinity of the site. The presence of Roman tile in what appears to be an industrial or manufacturing centre at Downs Road should be examined in the light of its proximity to the higher status settlement at nearby Springhead.
- 7.7 The manufacture of bricks in the early post-medieval period is evidence of high-status building activity in the locality, and the brick wasters will provide comparanda for local material of this period.
- 7.8 Field event aims:
 - *To establish a record of changing settlement and landscape morphology for the area, to include habitation areas and associated enclosures and trackways etc.*
 - *To determine the function of these areas and changes through time*
- 7.9 If the daub from Northumberland Bottom and ARC 330 98 represents, as seems likely, the remains of structures from the Middle or Late Iron Age, its analysis has the potential to provide information on Iron Age to early Roman land use and environment. Some parts of the assemblage will become foci for further work, either inter or intra site and this will depend on the archaeological potential of the site as a whole.
- 7.10 The ceramic building material and daub/fired clay assemblage from Downs Road has the potential to provide information on the manufacturing activities carried out on the site in the Roman period.
- 7.11 No further work, apart from illustration of the box flue/voussoir tiles from ARC HRD 99 and the unusual shaped brick from ARC 330 98, is needed on the Roman ceramic building materials.

7.12

Tasks :

- combine and analyse stratigraphic and building materials/fired clay data to refine the preliminary assessment of the date and context of the assemblages in relation to other sites such as Thurnham Roman villa and Springhead.
- re-examine the daub to define more precisely the function of the different types and materials of which the structures were built (e.g. dimensions of wattles and other organics), and select material for illustration
- search the literature for parallels of similar date with the aim of identifying the function of the flanged fragments
- write report
- editing time to check text and illustrations

8. Bibliography

None

Table 22: ARC WNB 98 Assessment of Ceramic Building Material /Fired Clay

Context	Count	Weight	Type (brick/tile etc.)	Period (spot date)	Comments (decoration/ glaze/ fabric)
229	1	20	DAUB	UN	3102
229	1	30	STON	UN	3116
258	10	70	DAUB	UN	3102
258	3	20	STON	UN	3116
262	1	5	DAUB	UN	3102
264	2	5	DAUB	UN	3102
268	1	70	DAUB	UN	3102
269	11	60	DAUB	UN	3102
270	33	400	DAUB	UN	3102
270	2	35	STON	UN	3111
272	4	10	DAUB	UN	3102
278	5	20	DAUB	UN	3102
282	1	50	DAUB	UN	3102
284	9	20	DAUB	UN	3102
308	6	75	DAUB	UN	3102
363	1	260	BRIC	RO	2815; AD50-160
380	12	150	STON	UN	3111
381	4	15	DAUB	UN	3102
382	1	20	IMB	RO	2815; AD50-160
413	1	80	DAUB	UN	3102
417	8	45	DAUB	UN	3102
422	7	40	DAUB	UN	3102
426	4	20	DAUB	UN	3102
481	4	40	DAUB	UN	3102
484	4	60	DAUB	UN	3102
489	9	25	DAUB	UN	3102
495	22	140	DAUB	UN	3102
495	3	325	STON	UN	3105 3117
497	3	10	DAUB	UN	3102
529	3	30	DAUB	UN	3102
544	1	15	DAUB	UN	3102
546	8	90	DAUB	UN	3102
547	7	30	DAUB	UN	3102
566	1	50	DAUB	UN	3102
586	9	440	DAUB	UN	3102
587	5	80	DAUB	UN	3102
590	4	100	DAUB	UN	3102
592	1	20	TILE	RO	WNB1
601	8	25	DAUB	UN	3102
609	20	175	DAUB	UN	3102
617	1	20	TILE	RO	HRD1
620	4	40	DAUB	UN	3102
641	7	45	DAUB	UN	3102
644	2	20	DAUB	UN	3102
653	1	100	VOUS	RO	3226; AD70-100
679	1	10	DAUB	UN	3102

Context	Count	Weight	Type (brick/tile etc.)	Period (spot date)	Comments (decoration/ glaze/ fabric)
690	11	130	DAUB	UN	3102
710	1	60	DAUB	UN	3102
713	5	20	DAUB	UN	3102
714	5	20	DAUB	UN	3102
716	10	30	DAUB	UN	3102
739	2	20	DAUB	UN	3102
776	2	5	DAUB	UN	3102
776	1	10	STON	UN	3120
791	2	80	DAUB	UN	3102
848	3	20	DAUB	UN	3102;
848	2	110	TEG	RO	2815; AD50-160
852	1	20	STON	UN	3116
852	86	2200	DAUB	UN	3102
855	2	20	DAUB	UN	3102
858	1	5	DAUB	UN	3102
866	4	80	DAUB	UN	3102
867	1	65	DAUB	UN	3102
905	1	140	IMB	RO	2815; AD50-160
949	13	40	DAUB	UN	3102
950	2	10	DAUB	UN	3102
964	2	130	RUB	UN	3105
994	2	50	TEG	RO	2815; AD50-160
994	1	260	BRIC	RO	3226; AD70-100
1001	1	105	IMB	RO	HRD1
1009	1	195	DAUB	UN	3102
1023	24	400	DAUB	UN	3102
1026	2	10	DAUB	UN	3102
1027	1	20	DAUB	UN	3102
1029	26	530	DAUB	UN	3102
1033	20	1270	MUDB	UN	3102
1036	3	70	DAUB	UN	3102
1043	2	45	DAUB	UN	3102
1044	35	2900	DAUB	UN	3102
1046	2	40	DAUB	UN	3102
1048	2	40	DAUB	UN	3102
1056	1	20	DAUB	UN	3102
1063	4	280	IMB	RO	HRD1
1072	2	30	DAUB	UN	3102
1072	1	35	KCW	RO	3102
1084	1	110	BRIC	RO	2815; AD50-160
1085	2	30	DAUB	UN	3102
1110	6	380	DAUB	UN	3102
1124	4	200	DAUB	UN	3102
1125	1	140	DAUB	UN	3102
1128	1	40	TEG	RO	HRD1
1130	18	1500	DAUB	UN	3102
1164	2	300	TEG	RO	HRD1

Context	Count	Weight	Type (brick/tile etc.)	Period (spot date)	Comments (decoration/ glaze/ fabric)
1182	6	50	DAUB	UN	3102
1201	15	1520	DAUB	UN	3102
1208	1	100	IMB	RO	2815; AD50-160
1236	64	1050	DAUB	UN	3102
1240	20	20	DAUB	UN	3102
1242	5	40	DAUB	UN	3102
1249	2	100	DAUB	UN	3102
1252	1	70	DAUB	UN	3102
1304	1	1250	DAUB	UN	3102
1304	1	45	TEG	RO	2815; AD50-160
1319	6	35	DAUB	UN	3102
2099	1	5	DAUB	UN	3102
2130	1	15	DAUB	UN	3102
2203	2	45	DAUB	UN	3102

Table 23: ARC HRD 99 Assessment of Ceramic Building Material /Fired Clay

Context	Count	Weight	Type (brick/tile etc.)	Period (spot date)	Comments (decoration/ glaze/ fabric)
0	1	120	BRIC	RO	HRD4
3	3	10	DAUB	UN	3102
5	2	20	DAUB	UN	3102
8	1	20	DAUB	UN	3102
9	6	120	DAUB	UN	3102
12	1	180	BRIC	RO	2815; AD50-160
12	1	20	DAUB	UN	3102
14	64	2770	DAUB	UN	3102
14	1	60	TEG	RO	HRD4
18	2	10	DAUB	UN	3102
23	2	160	BRIC	RO	2815; AD50-160
23	5	50	DAUB	UN	3102; AD50-160
32	2	90	DAUB	UN	3102
39	1	80	FLUE	RO	2815; AD50-160
53	1	60	DAUB	UN	3102
53	1	20	IMB	RO	2815; AD50-160
53	2	310	TEG	RO	2815 HRD1; AD50-160
53	4	80	TILE	RO	2815; AD50-160
55	1	45	TILE	RO	2815; AD50-160
55	1	65	TEG	RO	2815; AD50-160
56	1	90	BRIC	RO	2815; AD50-160
56	2	10	DAUB	UN	3102
56	2	40	TILE	RO	2815 3226; AD70-100
58	1	160	BRIC	RO	2815; AD50-160

Context	Count	Weight	Type (brick/tile etc.)	Period (spot date)	Comments (decoration/ glaze/ fabric)
58	1	20	DAUB	UN	3102
58	1	140	TEG	RO	HRD1
58	2	10	TILE	RO	2815; AD50-160
67	1	270	BRIC	RO	3060; AD50-120
67	3	40	DAUB	UN	3102
67	2	40	FLUE	RO	HRD3
69	1	110	BRIC	RO	2815; AD50-160
69	6	105	DAUB	UN	3102
69	1	50	IMB	RO	3069; AD70-100
69	1	20	TILE	RO	HRD1
69	4	220	TEG	RO	3060 3069; AD70-100
71	1	40	BRIC	RO	HRD4
71	3	385	FLUE	RO	2815 3060 HRD4; AD50-120
75	1	80	FLUE	RO	HRD2
75	1	100	TEG	RO	2815; AD50-160
77	8	380	DAUB	UN	3102
77	1	40	TILE	RO	3060; AD50-120
80	1	20	DAUB	UN	3102
80	1	110	BRIC	RO	3255
100	1	40	TEG	RO	HRD4
102	176	1775	DAUB	UN	3102
102	22	2330	VOUS	RO	2815; AD50-160
102	5	1690	BRIC	RO	3226 3255; AD70-100
103	85	150	DAUB	UN	3102
104	1	40	BRIC	RO	2815; AD50-160
107	24	620	DAUB	UN	3102
110	15	540	DAUB	UN	3102
114	1	85	BRIC	RO	2815; AD50-160
114	2	120	TEG	RO	2815; AD50-160
114	4	60	TILE	RO	3255
135	1	10	DAUB	UN	3102
135	1	30	FLUE	RO	2815; AD50-160
149	1	80	BRIC	RO	3227
149	1	5	DAUB	UN	3102
150	1	5	DAUB	UN	3102
152	7	55	TILE	RO	2815 3226; AD70-100
152	6	325	DAUB	UN	3102
153	5	150	DAUB	UN	3102
153	2	60	IMB	RO	2815; AD50-160
153	2	65	FLUE	RO	2815; AD50-160
154	67	380	DAUB	UN	3102
156	8	100	DAUB	UN	3102

Context	Count	Weight	Type (brick/tile etc.)	Period (spot date)	Comments (decoration/ glaze/ fabric)
156	1	50	FLUE	RO	HRD3
156	2	50	IMB	RO	2815; AD50-160
156	1	40	TILE	RO	2815; AD50-160
156	1	420	STON	UN	3106
156	2	210	TEG	RO	2815 3226; AD70-100
158	1	20	DAUB	UN	3102
158	1	20	TESS	RO	3023; 50-120
163	40	400	DAUB	UN	3102
169	67	340	DAUB	UN	3102
178	3	410	BRIC	RO	2815 HRD1; AD50-160
178	60	1550	DAUB	UN	3102
178	4	380	VOUS	RO	3226; AD70-100
184	9	10	DAUB	UN	3102
191	1	5	DAUB	UN	3102
191	1	40	TEG	RO	HRD4
191	5	420	VOUS	RO	3226; AD70-100
217	43	300	DAUB	UN	3102
218	58	370	DAUB	UN	3102
219	7	20	DAUB	UN	3102

Table 24: ARC 330 98 Assessment of Ceramic Building Material /Fired Clay

Context	Count	Weight	Type (brick/tile etc.)	Period (spot date)	Comments (decoration/ glaze/ fabric)
29	2	45	DAUB	UN	3102
57	1	30	DAUB	UN	3102
108	136	2310	DAUB	UN	3102
112	3	30	DAUB	UN	3102
117	6	120	DAUB	UN	3102
119	1	20	DAUB	UN	3102
127	1	25	TESS	UN	3102
146	12	40	DAUB	UN	3102
148	6	80	DAUB	UN	3102
149	85	3785	DAUB	UN	3102
149	1	20	RUB	UN	3105
149	6	50	MORT	UN	3101
150	5	220	DAUB	UN	3102
211	3	10	DAUB	UN	3102
234	7	130	DAUB	UN	3102
239	15	17830	DAUB	UN	3102
240	5	130	DAUB	UN	3102
255	3	500	DAUB	UN	3102
282	18	150	DAUB	UN	3102

Context	Count	Weight	Type (brick/tile etc.)	Period (spot date)	Comments (decoration/ glaze/ fabric)
323	1	30	CURV	PM	2276
323	22	160	DAUB	UN	3102
323	2	40	PEG	PM	2276 3498
356	2	5	DAUB	UN	3102
1262	6	140	DAUB	UN	3102
1280	10	270	DAUB	UN	3102
1314	2	100	DAUB	UN	3102
1330	3	80	DAUB	UN	3102
1339	5	20	DAUB	UN	3102
1343	5	20	DAUB	UN	3102
1374	5	100	DAUB	UN	3102
1375	23	360	DAUB	UN	3102
1379	5	400	DAUB	UN	3102
1394	3	20	DAUB	UN	3102
1395	3	20	DAUB	UN	3102
1399	2	5	DAUB	UN	3102
1403	13	240	DAUB	UN	3102
1419	9	160	DAUB	UN	3102
1425	1	40	DAUB	UN	3102
167	1	5	TILE	MD	2271
170	5	70	PEG	MD	2271 3094 3201
1278	2	85	CURV	MD	2271 3090
1278	1	20	TILE	UN	3498
1278	1	25	TEG	RO	HRD1
1278	3	55	PEG	MD	3090 3201
1278	2	15	DAUB	UN	3102
1283	1	800	BRIC	PM	3033
1283	1	100	PEG	MD	2271
176	8	580	BRIC	PM	3033
176	2	15	DAUB	UN	3102
183	6	420	BRIC	PM	3498
183	1	20	DAUB	UN	3102
345	2	1400	BRIC	PM	3033
169	2	35	PEG	MD	2271
169	1	30	TILE	RO	2815
1	11	415	PEG	PM	2271 3094 3201 3234
110	1	190	BRIC	RO	3060; AD50-120
1302	2	160	BRIC	RO	2815; AD50-160
1302	6	70	DAUB	UN	3102
130	2	25	DAUB	UN	3102
130	1	25	IMB	RO	HRD1
557	1	5	TILE	RO	3028; AD70-120

Key to codes:

Expansions for fabric codes used in the tables

Code	Date range	Expansion
HRD1-4	Roman	Provisional fabric codes allocated to Roman tile fabrics from ARC HRD99 (as described in 3.4 above)
WNB1	Roman	Provisional fabric code allocated to Roman tile fabric from ARC WNB98 (as described in 3.4 above)
2271	1200-1600	Local roofing tile (London)
2276	1480-1800	Fine moulding sand roofing tile
2815	50-160	Local Roman fabric (London)
3023	50-120	Radlett, Hertfordshire
3028	70-120	Roman ceramic tile
3033	1450-1700	Local red 'Tudor' type brick
3060	50-120	Radlett, Hertfordshire
3069	70-100	Hertfordshire or Buckinghamshire?
3090	1200-1800	Black iron oxide roofing tile
3094	1200-1800	Sandy/black iron oxide roofing tile
3101		Mortar
3102		Daub
3105		Kentish ragstone
3106		Hassock sandstone
3111		Ferruginous sandstone
3116		Chalk
3117		Flint
3120		Other stone
3201		Daub
3226	70-100	Roman ceramic tile
3227	50-100	Thin-walled combed box-flue tile fabric
3234	1571-1800	17th century kiln furniture/roofing tile fabric
3255	50-400	Roman ceramic tile
3498		Unknown post-Roman fabric

Expansions for form codes used in the tables

Code	Expansion
KCW	Keyed daub walling
MUDB	Mudbrick
IMB	Imbrex
TEG	Tegula
BRIC	Brick
VOUS	Voussoir
RUB	Rubble
FLUE	Box flue
TESS	Tessera
PEG	Peg or plain tile
CURV	Curved roof tile (usually ridge or hip tile)

APPENDIX 4: ASSESSMENT OF WORKED AND BURNT FLINT

Philippa Bradley

1. Introduction

- 1.1 Small to medium-sized groups of worked flint and burnt unworked flint were recovered from the excavations. The worked flint from all sites is dominated by debitage, but there are slightly wider range of cores and core fragments from ARC 330 98. The debitage from all the sites was generally fairly undiagnostic, few blades and blade-like flakes, and no blade cores were recovered indicating that blade production was not being practised. It would also appear that blades and blade-like flakes were not preferentially selected for use as blanks for retouched flakes and other tools. The lack of soft hammer-struck flakes and the general appearance of the majority of the debitage would suggest a later Neolithic to Bronze Age date. An element from ARC WNB 98 and ARC 330 98 was cruder and less well worked, it is possible that this material is of a slightly later date and relates to the later prehistoric activity. ARC HRD 99 and ARC 330 98 produced quite a varied range of retouched pieces, only a single end scraper was recovered from ARC WNB 98. The burnt unworked flint consists of small to medium sized fragments of heavily calcined flint.

2. Methodology

- 2.1 The worked and burnt unworked flint was recorded onto the Oracle database using standard MoLSS methods. This information was transferred to RLE Datasets. The material was recorded by typological group, and where appropriate, notes were made on pertinent technological attributes. Brief notes were also made on the general condition of the material. The burnt unworked flint was briefly scanned and quantified, a general note of the condition of the material was also made. Natural unworked flint was discarded.

3. Quantification

- 3.1 A total of 40 pieces of worked flint and 112 pieces of burnt unworked flint (weighing 2,794g) was recovered from ARC HRD 99. A total of 166 pieces of worked flint and 340 pieces of burnt unworked flint (weighing 9,689g) came from ARC WNB 98 and 202 pieces of worked flint and 522 pieces of burnt unworked flint (weighing 13,272g) were recovered from ARC 330 98. The flint is summarised in the tables below.

4. Provenance

- 4.1 Small to medium-sized assemblages of worked flint were recovered from ARC WNB 98, ARC 330 98 and ARC HRD 99. Varying quantities of burnt unworked flint was also recovered from the sites. The flint from ARC HRD 99 consists of debitage, mostly flakes, and a range of retouched forms including retouched flakes, scrapers, a piercer, a knife fragment and a fabricator. A flake from a

polished implement was also recovered. A Neolithic to Bronze Age date is suggested by these retouched forms. The flint came from a series of later ditch fills eg [26], [45], [78], pit fills eg [71], burnt deposits and layers [8] and [153]. The flint was generally thinly deposited across the site with no context producing more than eight pieces.

- 4.2 The flint from ARC WNB 98 consisted largely of flakes, with an irregularly worked core and a core fragment were also recovered. However, only a single retouched form, an end scraper, was recovered. Thus the dating of this group is somewhat limited but a broad Neolithic-Bronze Age date range is likely given the technology of the assemblage. However, some of the less diagnostic debitage may be of later prehistoric date. This material tended to be more crudely worked with little evidence for maintenance of platform edges during knapping. The flint was sparsely distributed across the site with only three contexts producing more than 15 pieces of worked flint. The material came from various context types including LBA/EIA pit fills [1262], and layers associated with the furnace [1281] and various undated features eg [302]. A single flint, a heavily encrusted flake, came from the double Beaker inhumation [1069]; although it is unclear if it was a deliberate inclusion within the grave.
- 4.3 The assemblage from ARC 330 98 is again dominated by debitage, a slightly wider range of cores and fragments was recovered than the other two sites, and more retouched forms were recovered too. These retouched forms include scrapers, retouched flakes, a barbed and tanged arrowhead and a piercer. A Neolithic to early Bronze Age date is indicated by the retouched forms and the debitage recovered. The flint was mostly recovered from later contexts dating from the later Bronze Age through to the later Iron Age and Roman period. The flint came from pit fills [108], [112], [119], [141], [145-50], [202], [206], [224], [250], [255], [1394], [1399]. Burnt deposits and layers associated with the post-medieval clamp also produced worked flint eg [176], [183]. The flint was generally fairly thinly spread over the excavated contexts, however, five contexts produced 15 or more pieces of flint.

5. Conservation

- 5.1 The flint is appropriately bagged and boxed for long-term storage. Some of the burnt unworked flint is beginning to disintegrate, however, there is little that can be done to prevent this. No conservation is required. All of the natural flint has been discarded. Selected burnt unworked flint could be discarded, keeping only a selection of representative material for archive purposes. The full quantification (by weight and number), together with a description of the material discarded would provide sufficient records for any future work.

6. Comparative material

- 6.1 The flint compares well with other material recovered from the CTRL route. Considerable quantities of Neolithic and Bronze Age flintwork have been recovered from Kent, principally through the fieldwork undertaken for the CTRL route, but also from other, mostly as yet unpublished excavations. In the immediate vicinity of ARC HRD 99 and ARC WNB 98 Neolithic and early Bronze Age flint has been recovered from Pepper Hill ARC NBR 98.

7. Potential for further work

7.1 The flint can contribute to the research objectives of the project following the fieldwork event aims and the Landscape Zone aims:

- *To establish a record of changing settlement and landscape morphology for the area.*

7.2 The lithics can aid the production of a chronological framework for examining the changing settlement and landscape morphology. A more detailed analysis of the technology of the material would be able to define more clearly the likely later prehistoric flintwork. There is some potential for further clarification of the technologies present. Distinctive artefacts of Neolithic-early Bronze Age were recovered together with possible later prehistoric lithics.

- *To determine the function of these areas and changes through time*

7.3 The lithics provide evidence for the activities occurring through the Neolithic and Bronze Age.

Early Agriculturists (4500-200 BC)

- *Determine the ritual and economic landscapes and their relationships*

7.4 A single flint flake was recovered from the double inhumation burial. A barbed and tanged arrowhead was recovered from an Iron Age pit fill, and other potentially contemporary pieces were identified indicating domestic and funerary uses. This is a pattern of activity that can be matched by many of the other sites on the CTRL route.

Farming Communities (2000-100 BC)

7.5 The lithics will have some potential to contribute to some of the research questions although the size of the assemblages may be problematic. The possible later prehistoric flintwork will shed light on the domestic activities occurring, and the changing use of resources through time. The well-documented changes in later prehistoric knapping practices can be explored in relation to the other activities occurring on the sites. As discussed in 7.2 there is some potential to examine the lithics further and more clearly to define the possible later prehistoric lithics. Given that the ceramics present on site span the early Bronze Age through the later prehistoric period a clearer understanding of the lithic technology, and hence dating, from the site would be a useful exercise. It is acknowledged that some of the material is redeposited, but the differences in periods represented have been identified by the assessment.

7.6 In order to answer the research aims the following tasks are recommended

- Examine the assemblages in order to define the possible later prehistoric lithics more fully
- Prepare publication text
- Catalogue of illustrated pieces
- Illustration of selected lithics (it is envisaged that 3 cores and up to 6 retouched pieces will require illustration)

8. Bibliography

URS 2000 'Assessment of worked and burnt unworked flint from Pepper Hill and Waterloo Connection (ARC PHL 97 and ARC NBR 98)', unpublished report prepared by Bradley, P for Oxford Archaeological Unit

Table 25: Worked Flint ARC HRD 99

SH = soft hammer-struck HH = hard hammer-struck

Context	Count	Period	Comments [presence of diagnostic material/dominance tool/flakes etc.]
2	1	UN	Flake
7	7	UN	Flake, ? Some used edges, mostly hard hammer struck
7	1	UN	Retouched flake, HH with semi-circular notch at distal end
8	1	UN	Flake ?SH, worn
8	1	UN	Flake, fresh condition, lateral break
18	2	UN	Wholly cortical flake, 1 possible flake, also 1 natural – discarded
20	3	UN	Flakes inc wholly cortical, 1 almost all cortex, 1 50% cortex - all HH
26	1	UN	?flake, very worn and rolled poss natural
45	1	N	Flake from a polished implement, grey flint with small polished area
51	1	UN	Small flake with ?used edges
67	1	UN	HH flake, some post-dep damage
67	1	UN	Possible side scraper, very minimal retouch, possibly just use rather than formal retouch
71	1	UN	Large end and side scraper, shallow retouch, cortical dorsal face, worn and poss re-sharpened
78	2	UN	Flakes one very battered, other is a flake from a platform edge
153	1	UN	Large flake HF, HH partly cortical
153	3	UN	3 minimally retouched flakes, all have some post-dep damage
153	1	UN	?piercer with large (broken) point and ancillary retouched down one edge
167	1	UN	SH flake
178	1	UN	Flake, worn
178	-	UN	1 natural – discarded
181	1	UN	Retouched flake, HH with minimal steep retouch
187	1	UN	Irregular flake
	3	UN	3 slightly worn and irregular flakes, all broken
CH205 380- 205.609	2	UN	Two misc retouch, ctx is CH205.380-205.609

Context	Count	Period	Comments [presence of diagnostic material/dominance tool/flakes etc.]
CH205 380- 205.609	1	?EBA	?knife frag on very worn blade-like blank with polished bulbar face, also some natural polish
CH205 380- 205.609	1	?EBA	Fabricator/rod steep retouch RHS, worn point much edge damage
	40	UN	

Table 26: Burnt Flint ARC HRD 99

Context	Count	Weight	Comments *
2	2	1	
3	5	157	
5	1	12	
7	15	491	
8	1	15	
12	1	47	
12	5	37	
14	2	100	
18	1	33	
24	2	6	
29	1	132	
45	4	49	
47	9	308	
48	4	255	
53	7	4	
60	3	116	
67	10	143	
69	10	254	
77	1	0	
78	2	111	
131	1	43	
135	2	128	
150	7	180	
163	12	131	
217	1	21	
219	3	20	
	112	2794	

* all heavily calcined white to grey

Table 27: Worked Flint ARC WNB98

Context	Count	Period	Comments [presence of diagnostic material/ dominance tool/flakes etc.]
13	4	UN	4 irregular and thick flakes
238	1	UN	Flake
269	2	UN	2 possible flakes, also 2 natural pieces
273	1	UN	Small flake
284	1	UN	Possible flake, some post-dep damage
302	1	UN	Flake SS 1
302	1	UN	Flake worn
364	3	UN	Flakes inc 1 Bullhead flake, also 1 natural
398	-	UN	Natural discarded
413	1	UN	Irregularly worked core - flake removals, flawed internally
558	1	UN	Large worn flake
569	-	UN	Natural discarded
600	1	N?	End scraper on large slightly blade-like flake, worn edge
655	1	UN	Flake
829	1	UN	Small flake
996	-	UN	Natural discarded
1008	5	UN	Chips, 1 poss natural, SS6
1009	24	UN	Flakes inc some worn ones, S7
1027	-	UN	Not flint – stone unworked
1030	2	UN	Worn flakes
1032	7	UN	Flakes one is burnt, ss12
1036	2	UN	Flakes inc one Bullhead flake
1036	1	UN	Large flake, partly cortical retouched at proximal end, steep retouch
1036	7	UN	Chips, inc 2 burnt ss14
1046	-	UN	Natural discarded
1048	2	UN	Flakes
1051	1	UN	Flake
1069	1	UN	Flake, heavily encrusted with calcium carbonate
1097	-	UN	Natural discarded
1101	1	UN	1 battered flake, also 1 natural
1104	1	UN	Flake
1113	3	UN	Small flakes
1116	-	UN	Natural discarded
1153	1	UN	Wholly cortical flake
1160	1	UN	?side trimming flake
1161	1	UN	Cortical flake
1182	14	UN	Flakes some irregular, all quite fresh
1202	1	UN	Flake, worn also 3 natural – discarded

Context	Count	Period	Comments [presence of diagnostic material/ dominance tool/flakes etc.]
1233	1	UN	Flake with broken edges, fresh condition
1242	2	UN	Flakes, one heavily corticated, 1 fresh
1245	19	UN	Irregular flakes, buff cortex - some refits? Some wear
1247	8	UN	Worn flakes some with cortex, mostly HH
1247	1	UN	Bullhead flake core fragment, also 3 natural - discarded
1249	6	UN	Flakes
1251	5	UN	Flakes 1 is very worn, also 1 blade-like flake
1253	13	UN	Flakes, inc 1 Bullhead flake, also 9 natural discarded
1262	2	UN	Flakes
1262	1	UN	Core fragment from flake core, also 11 natural discarded
1281	1	UN	HH, HF flake
1315	7	UN	Flakes inc 1 Bullhead flake, also 1 natural
1316	3	UN	Flakes, inc 2 Bullhead flakes, also 3 natural
1318	2	UN	Flakes inc 1 distal trimming flake
0	1	UN	Blade with worn edges, blade scars on dorsal face
0	-	UN	Not flint - stone unworked
2203	-	UN	Natural discarded
	166	UN	

Table 28: *Burnt Flint ARC WNB 98*

Context	Count	Weight	Comments*
156	7	39	
163	4	26	
250	1	36	
258	2	66	
263	6	436	
268	5	198	
269	15	568	
269	20	33	
270	4	201	
278	5	246	
278	10	177	
282	5	272	
292	2	19	
292	14	90	
292	35	136	
296	1	19	
297	6	130	
302	1	76	
308	1	24	
314	22	457	
362	9	130	
364	11	247	
380	26	1920	
381	6	306	
387	1	125	
393	1	32	
406	3	134	
426	1	137	
489	3	99	
498	22	1569	
526	1	1	
565	11	275	
601	1	139	
609	7	176	
641	2	168	
642	6	173	
644	2	56	
698	1	26	
818	5	51	
839	1	50	
916	10	14	
964	1	47	
1023	11	337	

Context	Count	Weight	Comments*
1051	1	1	
1060	1	0	
1093	1	1	
1240	3	59	
1262	6	110	
1262	6	12	
1270	6	1	
1279	6	6	
1318	1	22	
2042	1	16	
	340	9689	

* all heavily calcined white to grey

Table 29: Worked Flint ARC 330 98

Context	Count	Period	Comments
1	23	UN	Flakes, some SH but mostly HH some trimming flakes, one or two Bullhead flakes, much post-dep damage,
1	1	? LN	End and side scraper, neatly retouched poss Neolithic later?, also 4 natural
63	3	UN	Flakes 1 is very fresh, sharp edges, other is worn Bullhead, heavily encrusted with cal carbonate, 1 core frag heavily encrusted with calcium carbonate
74	21	UN	Flakes, some SH, mixture of fresh and slightly worn pieces, some med cortication some uncorticated, a couple of Bullhead flakes, also 3 natural
97	1	UN	Flake
98	2	UN	Flakes, 1 is heavily corticated small flake, other has a hinge fracture
100	1	UN	Flake
108	4	UN	Retouched flake, minimal retouch to both lateral edges, distal break, SH?, 3 flakes inc 1 Bullhead
112	8	UN	Flakes mostly HH, side trimming flakes and almost wholly cortical flakes
114	2	UN	Flake, 1 slightly blade-like flake
119	1	UN	Flake, worn
121	1	UN	Natural – discarded
127	1	UN	Thick flake
141	1	UN	Large thick trimming flake
145	17	UN	Flakes, some SH but mostly HH, some trimming flakes, also 7 natural, 1 core fragment, 1 multi-platform flake core
146	7	UN	6 flakes, 1 core fragment on small pebble, also 3 natural
147	3	? LN	2 flakes, flint from pit 147 (fills 145, 146 and 202), two end and side scrapers (one is very large with a pronounced tang for hafting, other is smaller and also has a projecting end which may have been hafted, 1 retouched flake with minimal retouch along one edge, also 1 natural
148	4	UN	2 flakes, 2 core fragments both from flake cores
149	1	UN	Large flake, hinge fracture, possible used edges, 1 natural

Context	Count	Period	Comments
150	3	UN	Flakes, inc 1 large thick cortical flake, also 1 natural
176	1	UN	Retouched flake, large thick flake with large area of crystalline inclusion, small retouched area and poss used edges
183	12	UN	Flakes, including a plunging flake, much post depositional damage, 1 retouched flake/knife square flake with minimal retouch to 1 edge, also 13 natural
190	-	UN	Natural – discarded
202	4	EBA?	Barbed and tanged arrowhead, broken tang and slight damage to one barb, minimal retouch, small eg, vestigial barbs, sharp point, 3 flakes inc 1 burnt flake. Beaker
206	31	UN	26 flakes inc 2 burnt, many are heavily battered and abraded, also several very large flakes, mostly HH some hinges fractures, 2 cores (1 single platform, 1 two platform), 2 core frags – flake cores, 1 tested nodule, also 25 natural pieces
211	3	UN	Flakes, also 2 natural
224	6	UN	Flakes inc 1 possible CRF face/edge, also 2 natural
234	1	UN	Flake
234	2	UN	Flakes both broken and heavily encrusted with calc carbonate
234	-	UN	Natural - discarded
234	1	UN	Flake
234	1	UN	Piercer with worn point, minimal retouch
235	1	UN	Flake some later damage
250	1	UN	Large cortical flake
255	3	UN	Flakes inc 1 blade-like flake, poss used edges
282	1	UN	?? Large irregularly worked piece, some flake removals but several natural fractures
282	1	UN	Large HF flake with patch of ?natural gloss
321	1	UN	Small flake, also 1 natural
323	1	UN	Small flake, also 1 natural
334	3	UN	Flakes all quite worn
355	2	UN	Flakes
356	2	UN	Flakes
357	6	UN	Flakes some used edges
0	1	UN	Flake with used edges, context CH40.900
0	1	UN	Very large and battered flake ctx CH40.900
0	1	UN	Core fragment, battered, flake removals ctx CH40.900
1302	1	UN	Flake
1339	1	UN	Possible flake, HH struck
1390	-	UN	natural - discarded
1394	-	UN	natural - discarded
1395	2	UN	Flakes inc 1 side trimming flake
1399	5	UN	Flakes 3 possibly SH
1401	1	UN	Side trimming flake
	202		

Table 30: Burnt Flint ARC 330 98

Context	Count	Weight	Comments *
1	1	47	
63	2	189	
72	1	74	
74	1	29	
89	3	252	
95	23	1070	
96	1	3	
100	2	133	
106	1	1	
108	13	903	
110	39	1574	
112	17	690	
117	3	206	
119	9	997	
121	10	440	
131	1	15	
133	2	21	
138	100	70	small frags
145	22	101	
146	5	118	
148	5	96	
176	3	2	
190	1	28	
200	4	55	context is 200+620
202	3	2	
206	49	2980	
211	2	32	
224	17	441	
250	2	40	
264	5	149	
282	6	54	
309	5	10	
314	23	365	
323	6	519	
324	1	2	
334	5	146	
338	22	649	
345	15	241	
347	11	20	
355	1	13	
356	5	16	
357	6	183	
395	7	26	
559	6	36	
560	12	50	
567	6	89	
590	9	8	
592	5	9	

Context	Count	Period	Comments
594	5	6	
596	8	27	
598	3	12	
600	8	33	
	522	13272	

* all heavily calcined white to grey

APPENDIX 5: ASSESSMENT OF STONE (HUMANLY-MODIFIED AND UNWORKED)

Jackie Keily

Conservation by Liz Barham

1. Introduction

- 1.1 Two stone artefacts were recovered from ARC 330 98 in Zone 3, two from ARC HRD 99 and twelve from ARC WNB 98.
- 1.2 The stone accessions were recovered by hand excavation, with the exception of one from ARC WNB 98 which was found during the metal-detecting/field-walking project.
- 1.3 Although of only limited potential, the stone artefacts may assist the following fieldwork event aims:
- To establish a record of changing settlement and landscape morphology for the area, including habitation areas and associated enclosures and trackways, etc.
 - To determine the function of these areas and changes through time

2. Methodology

- 2.1 The stone artefacts were accessioned in accordance with the Museum of London system; accession numbers were allocated to each artefact and simple outline drawings of the objects were done on the backs of the accession cards. A number of the stone types, for example the lava stone, were identified by eye. More specific stone identifications await further analysis of the assemblage.
- 2.2 The records have been entered onto the Oracle relational database and transferred to RLE Datasets. No sampling of the accessioned stone artefacts was undertaken.

3. Quantification

- 3.1 The stone can be quantified using tables:

Table 31: Assessment of Stone (Humanly-Modified and Unworked) from ARC 330 98

Context	Count	Material	Comments [brief description: form/ type/ decoration/ working presence]
149	1	Stone	Smoothing stone; large flat fragmentary piece with one very smooth surface; used for smoothing or grinding
559	1	Lava stone	Very small and abraded quern fragment

Table 32: Assessment of Stone (Humanly-Modified and Unworked) from ARC HRD 99

Context	Count	Material	Comments [brief description: form/ type/ decoration/ working presence]
152	2	Stone	<32> Fragments from the same hone; mica-schist.
CH39+600	1	Stone	<67> Quern fragment with one very worn surface and the remains of two vertical round holes – for handles?

Table 33: Assessment of Stone (Humanly-Modified and Unworked) from ARC WNB 98

Context	Count	Material	Comments [brief description: form/ type/ decoration/ working presence]
1027	1	Flint	<1> Naturally occurring spherical flint nodule
0	1	Flint	<2> Naturally occurring spherical flint nodule
784	1	Stone	<3> Hone or smoothing stone fragment
267	1	Lava stone	<20> Quern; small abraded fragment.
375	1	Stone	<40> Quern; small fragment
375	2	Stone	<41> Quern; complete thickness; slightly burnt
375	4	Stone	<43> Quern; parts of a very large quern; slightly burnt
375	3	Stone	<44> Quern; complete thickness
412	1	Stone	<39> Quern; one flat surface and part of a horizontal handle slot remain
412	1	Stone	<42> Quern; fragment with outer edge and one surface remaining
601	2	Stone	<21> Quern; small undiagnostic fragments with mortar traces; reused?
0	1	Stone	<119> Curving fragment recovered from the pre-excavation field-walking project; appears to be heavily burnt and is possibly associated with an industrial process

4. Provenance

- 4.1 The smoothing stone from ARC 330 98 came from [149], (sub-group 3015), Down's Road pit fill and the quern fragment came from [559], (sub-group 3044), Down's Road ditch fill.
- 4.2 The hone from ARC HRD 99 was recovered from [152] (sub-group 725) demolition spread over kilns. This context also produced pottery dating to the 11th to 13th centuries, as well as residual Roman pottery. The quern was recovered from Chainage 39+600.
- 4.3 A number of the querns from ARC WNB 98 came from the fills of pits. The exception to this was the fragments from [375] (sub-group 310), part of the external face of the wall of an oven. All of the latter fragments showed signs of having been burnt. The hone and one of the naturally occurring spherical flint nodules came from fills. Little dating evidence was found with any of the stone artefacts with the exception of <20> [267] which came from the fill of a pit that also produced pottery dating to c 1175 to c 1250.

- 4.4 Most of the artefacts are fragmentary but all are in a stable condition.

5. Conservation

- 5.1 No conservation treatment is required for the accessioned stone artefacts. They are stable and packed appropriately for archive.
- 5.2 All of the stone types will require identification but this is unlikely to damage the artefacts in any way or to conflict with their long term storage.
- 5.3 All of the accessioned stone artefacts should be retained.

6. Comparative material

- 6.1 The material should be compared with the stone artefacts from sites in the vicinity. Archaeological work in Zone 4 produced five abraded fragments of lava stone quern; this stone type should be compared with the lava stone quern fragments from Zone 3. Lava stone querns were imported in large numbers from the Mayan region of northern Europe throughout the Roman and early medieval periods. The lava stone querns from Zones 3 and 4 probably come from this source but further analysis will be required to confirm this identification. Three stone mortars and a hone, all thought to date to the medieval period, were found at ARC PFM 98; once their stone types have been identified it will be of interest to compare them to the stone types of the artefacts from Zone 3. It is hoped that patterns in the use of certain types of stone may be identified and that conclusions can be reached about the trade in stone artefacts in this region, possibly reflecting changes in the economic activity in the area through time.
- 6.2 Further work is required on the form of the quern from ARC HRD 99 and this may include comparison with published quern assemblages.
- 6.3 The stone types of all the accessioned stone artefacts will require identification. This should enable a more detailed analysis of the origins of the stone types and a discussion on any trade patterns that can be identified. As detailed above, the stone assemblage may be compared then to others from the surrounding area; for example those from Zone 4 and ARC PFM 98, in order to see if any trade patterns can be identified.

7. Potential for further work

- 7.1 It is not thought that the stone artefacts can assist the landscape zone aims and are more suited to addressing the fieldwork event aims.
- 7.2 The stone artefacts can assist the following fieldwork event aims:
- *To establish a record of changing settlement and landscape morphology for the area, including habitation areas and associated enclosures and trackways, etc.*
 - *To determine the function of these areas and changes through time*

7.3 The stone artefacts provide further evidence for human occupation and activity in the area. Their exact dating is, at present, unclear. It is hoped that with further integration of the accessioned finds, the stratigraphy and the pottery dating that their place within the context of the site and the processes going on there, will become clearer. The hones and querns have the potential to inform about domestic activity in the area and also trade routes (stone querns and other artefacts were often traded over long distances).

7.4 The following work is required:

- Identification of the stone types of sixteen artefacts
- Integration of the finds and stratigraphic information
- Stone artefact catalogue
- Comparative work with similar assemblages
- Text
- It is estimated that *c* 5 illustrations will be required.

8. Bibliography

None

APPENDIX 6: ASSESSMENT OF METALWORK

Jackie Keily

Conservation by Liz Barham

1. Introduction

- 1.1 Five metal artefacts were recovered from ARC 330 98 work in Zone 3: four are iron and one copper alloy. Twenty-three metal accessioned finds were recovered from ARC HRD 99: eleven iron, ten copper alloy, one lead and one possibly gold. Twenty-two metal accessions were recovered from the excavations at ARC WNB 98 and a further 63 unstratified metal accessions came from the metal detecting project. All of these finds are detailed in the tables in section 3.
- 1.2 The accessioned finds were recovered by hand excavation and metal detection. A field-walking/metal detecting project was undertaken at ARC WNB 98 prior to the bulk excavation and this produced 63 accessioned metal finds, all unstratified, but located by grid square.
- 1.3 The following fieldwork event aims may be addressed by the accessioned finds from ARC 330 98:
- To determine the spatial organisation of the landscape, and changes through time
 - To recover dating evidence from the features located to enable a chronology for the division of the landscape to be established
 - To determine the ritual and ceremonial uses of the landscape
- 1.4 The accessioned metal work from ARC HRD 99 may assist the following fieldwork event aims:
- To recover dating evidence from the features located to enable a chronology for the division of the landscape to be established.
 - To determine the late and immediate post-Roman landscape.
- 1.5 The stratified accessioned metal finds from ARC WNB 98 can assist the following fieldwork event aim:
- To determine the function of these areas and changes through time (e.g. the effect of the imposition and decline of Roman administration)

2. Methodology

- 2.1 All of the metal accessions were recorded using the Museum of London accessioning system. The records have been entered into the Oracle relational database, subsequently transferred to RLE Datasets. All of the iron, and the copper alloy where necessary, have been X-rayed.
- 2.2 No sampling of the accessioned finds took place.

- 2.3 For the finds from ARC WNB 98, the assessment will concentrate on the stratified material but will also mention, where appropriate, items of particular interest that were recovered from the metal detecting project.

3. Quantification

- 3.1 The metal finds have been quantified using the following tables:

Table 34: Assessment of Metalwork from ARC 330 98

Context	Special Number	Material	Count	Period	Comments (Description)
1	89	Iron	1	PM?	Hinge
234	1	Iron	1	UN	Staple
270	5	Iron	1	UN	Ring
323	75	Iron	1	UN	Rove
314	91	Copper alloy	1	IA	La Tène I type brooch – 4th-3rd century BC.

Table 35: Assessment of Metalwork from ARC HRD 99

Context	Special Number	Material	Count	Period	Comments (Description)
53	64	Iron	1	UN	Slag
98	30	Iron	1	UN	Unidentifiable
7	54	Iron	1	UN	Solid spike
181	65	Iron	1	UN	Unidentifiable
7	53	Iron	1	UN	Unidentifiable
14	66	Iron	2	UN	2 joining fragments; poss corroded knife blade?
131	33	Iron	1	PM?	Key bit
69	32	Iron	2	RO	Tool, possibly a knife or razor tang; joining fragments
69	34	Iron	1	RO	Tool; small hook; socketed with a hooked blade. Probably for agricultural use, such as pruning
12	31	Iron	1	RO?	Head of a double-spiked loop
58	29	Iron	1	UN	Hook; part of a hinged fitting?
5	55	Copper alloy	1	UN	Vessel?
7	42	Copper alloy	1	UN	Wire; possibly from a pin or brooch
80	40	Copper alloy	1	UN	Part of a small ring
156	46	Copper alloy	1	RO	Bracelet; decorated; 3rd/4th century AD?
69	39	Copper alloy	1	RO	Brooch pin

Context	Special Number	Material	Count	Period	Comments (Description)
51	41	Copper alloy	1	UN	Unidentifiable
223	45	Copper alloy	1	RO	Half a bracelet with a twisted expanding clasp; 3rd/4th c AD?
14	44	Copper alloy	2	RO	Bracelet; decorated; 3rd/4th century AD?
14	70	Copper alloy	1	RO	Bracelet; decorated; 3rd/4th century AD?
7	47	Copper alloy	1	RO	Complete child's bracelet with hook-and-eye fastening; 3rd/4th c AD?
0	57	Lead	1	UN	Bead
77	69	Gold?	1	UN	Tiny fragment of thin sheet/foil

Table 36: Assessment of Stratified Metalwork from ARC WNB 98

Context	Special Number	Material	Count	Period	Comments (Description)
544	23	Copper alloy	1	RO	Brooch; late Early British type, early-mid 1st c AD. Large
707	22	Copper alloy	1	RO	Brooch; Aucissa? type; early-mid 1st c AD; unusual
1299	24	Copper alloy	1	RO	Brooch; Colchester type; mid-late 1st c AD
1242	25	Copper alloy	1	RO	Brooch; Colchester type; mid-late 1st c AD
518	131	Copper alloy	1	UN	Ring
412	26	Copper alloy	1	RO	Stud head; convex with rim
255	27	Copper alloy	1	RO?	Mount/stud head?
1158	120	Copper alloy		UN	Small unidentifiable fragments
436	14	Iron	1	RO	Bow brooch
212	124	Iron	1	UN	Socketed arrowhead
716	126	Iron	1	UN	Unidentifiable
492	127	Iron	1	UN	Unidentifiable; lock mechanism?
887	123	Iron	1	UN	Whittle tang knife
318	128	Iron	1	UN	Mount; flat bar with round terminals
333	16	Iron	2	UN	Unidentifiable
994	125	Iron	2	UN	Mount; other metal inlay (tinning?)
997	19	Iron	1	RO	Possibly a clasp or fastener
1072	15	Iron	1	UN	Mount; flat strip with a rivet hole
1158	121	Iron	1	UN	Unidentifiable
1192	18	Iron	1	UN	Unidentifiable; nail?
1303	122	Iron	1	UN	Mount; narrow strip with remains of a possible rivet hole
2053	17	Iron	1	UN	Unidentifiable

Table 37: Assessment of Metalwork from Metal Detecting Project at ARC WNB 98

Find no./ grid square	Special Number	Material	Count	Period	Comments (Description)
305/sq. 8	<60>	Copper alloy	1	RO	Brooch; Hod Hill type? Mid-late 1st c AD
366/sq. 68	<58>	Copper alloy	1	UN	Buckle; part of frame with simple decoration. Period?
365/sq. 115	<61>	Copper alloy	1	MD/PM ?	Angled foot of a case vessel
353/sq. 101	<63>	Copper alloy	1	MD	Pendant and suspension mount; horse harness?
363/sq. 121	<64>	Copper alloy	1	MD/PM ?	Near complete rumbler bell; loop and moulded decoration.
358/sq. 107	<65>	Copper alloy	1	MD/PM ?	Part of a rumbler bell
-	<79>	Copper alloy	1	PM	Part of a rumbler bell with loop
301/sq. 6	<67>	Copper alloy	1	PM	Thimble; plain; double thickness
308/sq. 11	<100>	Copper alloy	1	PM	Thimble; only crown remains
331/sq. 39	<71>	Copper alloy	1	PM	Stairrod
322/sq. 31	<73>	Copper alloy	1	PM	Small curving hook
327/sq. 36	<74>	Copper alloy	1	PM	Small right-angled hook; remains of iron attachment pin
408/-	<80>	Copper alloy	1	PM	Complete circular disc weight; 56gms
319/sq. 28	<81>	Copper alloy	1	PM	Mount; flower form with remains of fixing pin on back
323/sq. 36	<82>	Copper alloy	1	PM	Mount; thin sheet embossed with a flower design
351/sq. 84	<83>	Copper alloy	1	PM	Mount; plain, flat; possibly for a box or hinge
348/sq. 86	<84>	Copper alloy	1	PM	Button; hollow with attachment loop; embossed with '54' and a crown and wreath; 19th/20th c
310/sq. 15	<85>	Copper alloy	1	PM	Button; flat disc with gilt
-	<86>	Copper alloy	1	PM	Button; loop missing; decorated with crown and writing; 19th/20th c

Find no./ grid square	Special Number	Material	Count	Period	Comments (Description)
336/-	<88>	Copper alloy	1	PM	Button; decorated with spread eagle(?); 19th/20th c
-	<89>	Copper alloy	1	PM	Button; back missing; decorated with coat-of-arms and 'Southern Railway'; 19th/20th c
350/sq. 85	<90>	Copper alloy	1	PM	Button; plain flay disc with loop; 19th/20th c
-	<91>	Copper alloy	1	PM	Cufflink button; decorated with six-petalled floral motif
352/sq. 94	<92>	Copper alloy	1	MD?	Mount; small ring with one squared end
330/sq. 39	<94>	Copper alloy	1	UN	Mount; semi-circular with two rivet holes
-	<93>	Copper alloy	1	UN	Mount; plain disc with central hole
-	<95>	Copper alloy	1	UN	Mount; hollow sphere
302/sq. 5	<96>	Copper alloy	2	UN	Plain ring for curtain/drape? Also another fragment
341/sq. 59	<97>	Copper alloy	1	UN	Ring; fitting?
313/sq. 18	<98>	Copper alloy	1	PM	Plug/weight with loop
402/-	<101>	Copper alloy	1	UN	Hollow loop; jewellery or fitting?
-	<62>	Copper alloy	1	UN	Brooch; plain, circular frame; pin missing
-	<68>	Copper alloy	1	PM	Watch key fragment
-	<69>	Copper alloy	1	PM	Dividers; simply shaped arms; pins missing
-	<70>	Copper alloy	1	PM	Jew's harp; tongue missing
-	<72>	Copper alloy	1	PM	Small circular padlock
-	<75>	Copper alloy	1	PM	Complete simply shaped buckle; pin missing
-	<77>	Copper alloy	5	PM	Buckles; plain square/rectangular frames; pins missing
78/-	<78>	Copper alloy	4	PM	Buckles; plain D-shaped/sub-rectangular frames; pins missing
-	<87>	Copper alloy	1	MD	Convex disc; faint engraved decoration; possibly a lid?

Find no./ grid square	Special Number	Material	Count	Period	Comments (Description)
-	<99>	Copper alloy	3	PM	T-shaped handles
-	<102>	Copper alloy	1	PR?	Flat fragment; from a Bronze Age razor?
-	<59>	Copper alloy	1	RO	Bell; small plain conical clapper bell with suspension loop; clapper missing
-	<76>	Copper alloy/ Iron	1	PM	Buckle; copper alloy rectangular frame with remains of iron pin; possibly for horse harness?
343/sq. 99	<103>	Lead	1	UN	Mount? Small recumbent lion
-	<104>	Lead	1	PM	Mount? Moulded feather or leaf
414/-	<105>	Lead	1	PM	Finger-ring; plain band with decorated bezel
-	<106>	Lead	1	MD	Spindle-whorl; plano-subconvex
-	<107>	Lead	1	UN	Weight; crudely made disc; scratched lines on one surface (possible letter); 18gms
-	<109>	Lead	1	UN	Weight? Small rough disc; marks on surfaces
401/-	<108>	Lead	1	UN	Weight or ingot
-	<110>	Lead	1	PM	Pendant weight
-	<111>	Lead	1	UN	Ingot
-	<112>	Lead	1	UN	Ingot
361/sq. 113	<114>	Lead	1	PM	Whistle; small
-	<113>	Lead	1	UN	Plumb bob
-	<115>	Lead	1	MD	Plug; for use in a ceramic vessel/
-	<116>	Lead	6	PM	Musket-balls; 2 complete and 4 distorted
-	<117>	Lead	15	PM	Seals; presumably from agricultural supplies; one reads 'MANURE'
332/sq. 45	<118>	Lead	1	PM	Seal; '? & A 288' on one side
362/sq. 114	<66>	Silver	1	PM	Thimble; squashed; decorated
-	<57>	Silver	1	PM	Thimble; flattened; decorated
-	<56>	Silver	1	PM	Spoon; end of handle with small acorn knob

4. Provenance

- 4.1 The following are the only metal finds recovered from ARC 330 98 work in Zone 3. The fragmentary hinge <89> came from the same context as the modern coin, [1], the fill of a modern field boundary, ditch 2. It is, therefore, possibly quite modern. A large iron staple <1> came from [234], a fill of ditch 22, as did <5> [270], a small iron ring. A small and incomplete rove <75> was recovered from [323] a disturbed deposit at Down's Road. Accession <91> [314] also came from Down's Road, from a pit fill.
- 4.2 The following contexts/sub-groups at ARC HRD 99 produced interesting groups of finds:
 - Sub-group 725 (demolition spread over Roman malting oven): Context [14] produced three fragments from two decorated copper alloy bracelets. Both bracelets probably date to the 3rd or 4th century AD (Crummy 1983, 37). Two small fragments of vessel glass were also found and part of a possible knife blade. Context [152], also in this sub-group, contained part of a stone hone and context [153] a coin.
- 4.3 Most of the stratified metal work from ARC WNB 98 appears to come from early Roman contexts. It is interesting to note that very few Roman artefacts were recovered from the metal detecting/field-walking project. The finds recovered dated largely to the post-medieval period with a few of medieval and Roman date.
- 4.4 Overall the copper alloy is in quite good condition. The copper alloy brooch from ARC 330 98 has been conserved and appears to be in a stable condition. The state of the ironwork from the various sites in this Zone varied. All of the iron from ARC 330 98 and ARC WNB 98 is in a very corroded state and, for the most part, could only be identified with the aid of X-radiography. The iron from ARC HRD 99, although corroded, survived in a reasonably stable state. It is therefore difficult to estimate the extent to which problems of preservation will have biased the recovery of the finds.

5. Conservation

- 5.1 This assessment considers requirements for finds analysis, illustration and investigative conservation of the metal finds from CTRL Zone 3. It also includes work necessary to produce a stable archive in accordance with MAP2 (English Heritage 1992), and to the level required by the Museum of London's standards for archive preparation. (Museum of London 1999).
- 5.2 Treatments are carried out under guiding principles of minimum intervention and reversibility. Whenever possible preventative rather than interventive conservation strategies are implemented. Procedures aim to obtain and retain the maximum archaeological potential of each object.
- 5.3 Most conservation work on metal artefacts involves visual examination under a binocular microscope followed by cleaning using a scalpel and other hand tools. Occasionally other mechanical devices such as air abrasive and ultrasonic devices are used. Mechanical cleaning will reveal detail and a conservation surface beneath often voluminous corrosion products enabling the shape and

purpose of the artefact to be understood. After cleaning to reveal detail copper alloys are stabilised with a corrosion inhibitor (benzotriazole) and coated with a protective and unobtrusive lacquer (Incralac).

- 5.4 All conserved objects are packed in archive quality materials and stored in suitable environmental conditions. Records of all conservation work are prepared on paper and on the Museum of London collections management system (Multi MIMSY) and stored at the Museum of London.
- 5.5 The accessioned metal finds were assessed by visual examination of the objects using a binocular microscope where necessary, and by examining their related X-radiographs. The finds were reviewed with reference to the above assessment by Jackie Keily.
- 5.6 *Investigative cleaning/Analysis.* A number of objects (including some from the metal detecting project) would benefit from investigative cleaning by the conservation department and from analysis. Some of these items will then require conservation treatment:
 - The five bracelets from ARC HRD 99 were recommended for further examination and would require cleaning prior to this. They should be treated post-cleaning. Two of them are actively corroding and require further stabilisation.
 - Confirmation of the “gold” identification from ARC HRD 99 <69>[77] is also required. XRF analysis is recommended for this.
 - 2 stratified accessions were identified for further investigation:
 - <125> [994] iron knife from ARC WNB 98 – clean and analyse to check identification of the metal inlay which shows up on the X-radiograph. XRF analysis is recommended for this.
 - <60> [0] (find no. 305, sq. 8) Roman brooch from ARC WNB 98 – clean to check for inlay
 - 2 unstratified accessions were identified for further investigation. Both would need to be degreased and respectively treated and lacquered post cleaning:
 - <63> [+] copper pendant – clean to check for decoration
 - <105> [414] copper finger ring – clean to clarify bezel.
- 5.7 *Preparation for archive deposition* One unidentified copper item ARC WNB 98 <120> [1158] is corroding and requires further stabilisation. All the other metal items from these sites are stable and packed appropriately for archive.
- 5.8 It is recommended that all of the accessioned metal work be retained, including that from the metal detecting survey.

6. Comparative material

- 6.1 *Prehistoric:* The only definitely prehistoric metal artefact from Zone 3 is the La Tène brooch from ARC 330 98. It is of particular interest as it is complete and in very good condition. It is similar to examples illustrated by Hattatt (1985, 11, fig 3, no. 219) and dates generally to the 4th to 3rd centuries BC. It has a disc terminal with faint dotted decoration. It corresponds to Hull’s type 1A or Hattatt’s basic type and may be quite early in date (possibly more 4th or even 5th century BC rather than 3rd) (Hattatt 1985, 10). Further research is required to try and refine the dating. Comparison should be made with other Iron Age

assemblages in the area to see if this type of brooch is a common type of find in this region.

- 6.2 *Roman:* Work at ARC HRD 99 and ARC WNB 98 produced a number of Roman metal objects. Comparison with other sites in the general area is recommended. The early Roman finds from ARC WNB 98 should be compared with those recovered from surrounding sites. A number of early Roman brooches were found, as well as a stud and a number of other objects. Two of the brooches are of types that are frequently found on sites associated with an early military presence. This association is not surprising, however, given their date and the fact that most early Romano-British sites by necessity had a military presence. No other objects that could be associated with a military presence were found at the present site and therefore a military presence cannot be inferred by the brooches alone. It is, however, interesting to note the discovery of a number of objects with possible military associations during excavation of Thurnham Roman villa (ARC THM 98) by the Oxford Archaeological Unit. These included early brooches, as well as a harness pendant and the handle of a bowl, both of which may have military associations (Cool 2001, 116). It is therefore recommended that at the analysis stage the early Roman metalwork from Zone 3 is compared to the metalwork assemblage from Thurnham and other surrounding sites.
- 6.3 The relatively high incidence of items of personal jewellery at ARC HRD 99 is also of interest. Many of appear to date to the 3rd and 4th centuries AD, a pattern also seen in the Roman coins recovered from the site. Other rural Roman site assemblages from the general area should be checked for similar patterns.
- 6.4 *Post-Roman:* Relatively little post-Roman metalwork was recovered from the excavations in Zone 3. Quite a large amount, however, was recovered from the metal detecting project and this is also of interest. How does it compare with surrounding sites and can it be related to any specific activities or features?

7. **Potential for further work**

- 7.1 The following fieldwork event aims may be addressed by the accessioned finds from ARC 330 98:
- *To determine the spatial organisation of the landscape, and changes through time*
- 7.2 The majority of the accessioned finds (as outlined above) have little to add to this aim.
- *To recover dating evidence from the features located to enable a chronology for the division of the landscape to be established*
- 7.3 Most of the metal work found is probably associated with structural or other fittings (ring, rove, hinge and staple) and as such is difficult to date or to interpret without other datable material recovered from the same contexts. The Iron Age La Tène brooch is of interest since it is in quite good condition and may be of use in building up a chronology of activity in the area.

- *To determine the ritual and ceremonial uses of the landscape*
- 7.4 The brooch is in good condition and is virtually complete; its loss may, therefore, be either accidental or due to a purposeful deposition, such as in a burial or as a votive offering. It is recorded as recovered from a pit fill, the content and function of which should be further analysed.
- 7.5 The accessioned metal work from ARC HRD 99 may assist the following fieldwork event aims:
- *To recover dating evidence from the features located to enable a chronology for the division of the landscape to be established.*
- 7.6 Some of the accessioned metal finds may be of use in dating the contexts that they occur in, as well as aiding in the interpretation of the site, for example the Iron Age and early Roman brooches and the later Roman bracelets.
- *To determine the late and immediate post-Roman landscape.*
- 7.7 The dateable Roman finds are largely late Roman in date and may therefore, be of use in interpreting the uses to which the site was put to during this period and the sort of population that was using it. It is interesting to note the relatively high occurrence of objects of personal adornment amongst the copper alloy. Of a total of 10 accessions, five are Roman bracelets, one is a pin from a Roman brooch and one is a fragment of wire which may come from a pin or a brooch. Although the copper alloy assemblage is quite small, this bias should be analysed and compared with surrounding sites. The surrounding area is rich in Roman sites, for example, the Roman small town of Springhead lies approximately two kilometres to the west of the site, Thurnham villa lies to the south-east and a suspected villa lies just to the south-west of the present site. Part of the cemetery at Springhead has recently been excavated by the Oxford Archaeological Unit as part of the CTRL project. It is thought to date from the late 1st to mid 3rd century AD but produced few grave goods. Amongst those recovered, however, were bracelets and other personal items (Current Archaeology 168, 459). The relationship of the present sites to these surrounding sites will require further analysis and may be of interest in the analysis of the finds.
- 7.8 The following fieldwork event aim can be assisted by the metal finds from ARC WNB 98:
- *To determine the function of these areas and changes through time (e.g. the effect of the imposition and decline of Roman administration)*
- 7.9 The finds, when fully integrated with the stratigraphic information, should be able to help with this aim. It is interesting that the excavation produced mainly Roman finds, whereas the metal detecting survey produced medieval and later material (with some Roman). All of the identifiable Roman brooches are early in date (early to mid 1st century AD and mid- to late 1st century AD). Both Aucissa and Hod Hill brooches are found predominantly on military sites in Britain (Hattatt 1985, 52; Crummy 1983, 10). The presence of two of these brooches, along with the slightly later (but still 1st century AD) Colchester brooches, is of interest and should be compared with the early brooch assemblages from the surrounding sites mentioned above. Although the material from the metal detecting survey is unstratified, it included material dating from the Roman to the post-medieval periods (and some potentially earlier objects). It is recommended that more work should be done on tying it in with broad areas of activity on the site.

- 7.10 The metalwork finds from ARC 330 98 can aid the following landscape zone aim:
- *The socio-economic landscape of the later agriculturalists (2000-100BC)*
- 7.11 The most interesting metal artefact dating to this period is the La Tène brooch, dating broadly to the 4th to 3rd centuries BC. Comparison should be made with other Iron Age assemblages in the area to see if this type of brooch is a common type of find in the region. However, as this is only a single object it is unlikely to be able to greatly aid this landscape zone aim.
- 7.12 The accessioned metal work from ARC HRD 99 can assist with the following landscape zone aims:
- *The character, function and development of the rural urban fringe*
- 7.13 The presence of items of personal adornment is of interest and may indicate the presence of a settlement site nearby. These objects may be able to aid in the interpretation of the types of activities that were going on and the type of population that was present in the later Roman period.
- 7.14 The metal work from ARC WNB 98 can assist with the following landscape zone aim:
- *Towns and their rural landscapes (100 BC-AD 1700)*
- 7.15 A number of early Roman artefacts were recovered. These are largely items of personal adornment and as such can contribute little to identifying what types of activities were taking place on the site. They may, however, be able to indicate something about the population of the area and the types of people who were living and working there. As mentioned above two of the early brooches are types often found associated with military sites. A brief consideration of other local early Roman sites is recommended to see if similar brooches occur there as well.
- 7.16 The excavation produced little metal dating to the medieval to post-medieval periods, whilst the metal detected material dates largely to the medieval and post-medieval periods. . Few Roman artefacts were recovered but they include the possible Hod Hill brooch. The medieval and post-medieval objects whilst including a number of interesting individual items, can contribute little to the above landscape zone aim. A few of the medieval objects can be related to specific activities or uses, for example, the suspension mount and harness and some of the small rumbler bells may have come from horse harness. The post-medieval material is largely made up of small objects lost accidentally, such as thimbles, buttons, and small, fragmentary mounts or fittings.
- *The recent landscape (AD 1700-1945)*
- 7.17 A number of the finds recovered from the metal detecting survey can be directly related to the main activities taking place here from the 18th to the 20th centuries. A number of objects relating to agriculture were recovered (the lead seals, buckles possibly from harness) as well as a number of other objects, such as the buttons (a number of which have identifiable insignias on them).
- 7.18 Refined research aims for Zone 3:
- What do the finds indicate about the nature of settlement and activity in the area in the Iron Age?

- What can the finds indicate about the nature of the early Roman activity in this area?
- There are concentrations of later Roman material on ARC HRD 99 – can this material be related to a building or activity?
- Can any patterns or trends be identified by a brief re-analysis of the metal detected material from ARC WNB 98, in the light of what we know about the site from the excavation?

7.19 It is recommended that the accessioned metal finds be further analysed as part of this project.

- Further identification of finds – a number of the Roman brooches will require further analysis and comparative work to see if their identifications can be refined; this also applies to the bracelets and to a number of the queried identifications
- Integration with stratigraphic information
- Comparison with similar assemblages: as outlined above, the La Tène brooch should be compared with others from the surrounding region; the Roman brooches require further comparative work both to refine or confirm their identifications and to identify how common such brooches are in this region; the later Roman bracelets require similar comparative work with surrounding sites.
- Selection of finds for inclusion in a publication catalogue
- Liaison with stratigraphic team s
- Conservation
- Compile finds catalogue
- Text for integration with publication text
- Two items are recommended for analysis: (1) Confirmation of the “gold” identification from ARC HRD 99 <69>[77] is required. XRF analysis is recommended for this; and (2) <125> [994] iron knife from ARC WNB 98 – clean and analyse to check identification of the metal inlay which shows up on the X-radiograph. XRF analysis is recommended for this.
- It is recommended that c 26 artefacts are illustrated.

8. Bibliography

Cool, H, 2001, ‘Assessment of the Roman Metalwork – Copper Alloy, Iron and Lead’ in *Channel Tunnel Rail Link, Assessment of Area 420 Thurnham Roman Villa, ARC THM 98*, Oxford Archaeological Unit

Crummy, N, 1983 *The Roman Finds from Excavations in Colchester 1971-9*, Colchester Archaeological Report 2

English Heritage 1992 *Management of Archaeological Projects II*

Hattatt, R, 1985 *Iron Age and Roman Brooches*, Oxford

Museum of London 1999 *General standards for the preparation of archaeological archives to be deposited with the Museum of London*

Oxford Archaeological Unit 2000 *Springhead Roman Cemetery*, Current Archaeology, No. 168, May 2000, 458-9

APPENDIX 7: ASSESSMENT OF COINS

Jackie Keily (coin identifications by Mike Hammerson)

Conservation by Liz Barham

1. Introduction

- 1.1 A total of 51 coins (41 copper alloy, five lead and five silver) were recovered during archaeological work in Zone 3. Of these, 20 coins were recovered from the metal detecting/field walking project at ARC WNB 98, prior to the start of the excavation and one from the actual excavation. Twenty-nine copper alloy coins were recovered from the excavation at ARC HRD 99. Only one coin was recovered from ARC 330 98 in Zone 3, a modern two pence piece.
- 1.2 It is not thought that the coin from ARC 330 98 or the metal detected coins from ARC WNB 98 can add much to the fieldwork event aims.
- 1.3 The coins from ARC HRD 99 can assist the following fieldwork event aim:
- To recover dating evidence from the features located to enable a chronology for the division of the landscape to be established.

2. Methodology

- 2.1 The coins were accessioned in accordance with the Museum of London system. The records have been entered onto the MoLAS Oracle relational database and subsequently have been transferred to RLE Datasets.
- 2.2 The majority of the coins (see Conservation, below) have been treated and X-rayed. They have been identified and dated by Mike Hammerson.
- 2.3 No sampling was undertaken of the accessioned finds.

3. Quantification

- 3.1 The coins have been quantified in the tables below:

Table 38: Assessment of Coins from ARC 330 98

Context	Special Number	Count	Period	Comments
1	88	1	MO	New two-pence coin (Elizabeth II)

Table 39: Assessment of Coins from ARC HRD 99

Context	Special Number	Count	Period	Comments
102	1	1	RO	Constantius II Caesar; c 340- c 350; irregular
CH39.605	2	1	RO	Helena; c 340- c 350; irregular
153	3	1	RO	Valentinian II; 375-392
53	4	1	RO	Constantine II; 335-341; poss irregular
178	5	1	RO	Constantius II; c 355- c 365
9	6	1	RO	Constans; c 347- c 350; prob irregular
88	7	1	RO	Constantinopolis; 330-335; prob regular
131	8	1	RO	Constantine II; c 340- c 350; irregular
135	9	1	RO	Helena; c 340- c 350; irregular
135	10	1	RO	Prob Constantius II; c 355- c 365; probably irregular
135	11	1	RO	Urbs Roma; c 340- c 350; irregular
7	12	1	RO	Prob Constantius II; c 355- c 365; irregular
7	13	1	RO	Constantinian; c 340- c 350; irregular
178	14	1	RO	Constantius II; c 340- c 350; irregular
32	15	1	RO	Constantine I; c 340- c 350; probably irregular
32	16	1	RO	Constantius II; c 340- c 350; irregular
32	17	1	RO	Constantinian; c 347- c 350; irregular
32	18	1	RO	Constantius II; c 355- c 365; irregular
7	19	1	RO	Urbs Roma; 330-335
7	20	1	RO	Constantine II; c 340- c 350; irregular
7	21	1	RO	Constantinian; c 340- c 350; irregular
7	22	1	RO	Constantinian; c 340- c 365; illegible
7	23	1	RO	Gratian; 367-378
7	24	1	RO	Valens; 364-378
7	25	1	RO	Urbs Roma; 330-335
7	26	1	RO	Constantinopolis; c 340- c 350; good irregular copy
7	27	1	RO	Urbs Roma; c 340- c 350; good irregular copy
7	28	1	RO	Urbs Roma; c ?340- c ?350; possible copy
CH39.720	43	1	RO	Urbs Roma; c 175- c 225; silver plated bronze copy of a denarius

Table 40: Assessment of Coins from ARC WNB 98:

Context	Special Number	Count	Period	Comments
1167	30	1	RO	Silver; Faustina I; c 141- c 161
0	35	1	RO	Silver; Julia Soemias; c 218- c 222
0	34	1	PM	Silver; George IV; 1824-1829
0	36	1	MD	Silver; 'long cross' penny
0	48	1	PM	Silver; to date
0	33	1	RO	Copper alloy; Constantine I; c 340- c 350
0	28	1	PM	Copper alloy; 1760-1830
0	29	1	RO	Copper alloy; Nerva; c 96- c 98
0	32	1	RO	Copper alloy; Constantine II; c 347- c 350; very rare
0	31	1	PM	Copper alloy; illegible; probably 18th/19th c.
0	50	1	RO	Copper alloy; Constantine I; c 320- c 340
0	51	1	PM	Copper alloy; Victoria; 1877; one penny
0	52	1	PM	Copper alloy; Victoria; 1866; farthing
0	53	1	PM	Copper alloy; very corroded
0	54	1	RO	Copper alloy; to clean & to date
0	49	1	PM	Copper alloy; early post-medieval; to date
0	37	1	PM	Lead; token (to date)
0	38	1	PM	Lead; token (to date)
0	47	1	PM	Lead; to date
0	45	1	PM	Lead; to date
0	46	1	PM	Lead; to date

4. Provenance

4.1 The coin from ARC 330 98, <88>, was recovered from context [1], the fill of a modern field boundary, ditch 2.

4.2 Coins were recovered from the following contexts at ARC HRD 99:

- [7] (sub-group 788) rubbish deposit containing Roman pottery,
- [9] (sub-group 789) ruts,
- [32] (802) build up over track,
- [53] (sub-group 712) ditch fill,
- [88] (sub-group 798) ditch fill,
- [102] (sub-group 809) demolition deposit between walls of malting oven,
- [131] (sub-group 775) ditch fill,
- [135] (sub-group 788) rubbish deposit,
- [153] (sub-group 725) demolition spread over medieval kilns
- [178] (sub-group 814) possible building demolition deposit or collapse.

4.3 A number of the coins occur with Roman pottery of a similar later Roman date.

- 4.4 The only stratified coin from ARC WNB 98 is from context [1167] (sub-group 93), the fill of a pit and dates to the 2nd century AD.

5. Conservation

- 5.1 All of the coins from ARC HRD 99 have been conserved by the Museum of London conservation department; no further conservation work or analysis is required on these.
- 5.2 Please refer to the metalwork assessment for details of the aims of conservation of metal finds and an overview of their treatment. All the coins from ARC WNB 98 should be X-rayed prior to archive as a permanent record for deposition in the archive. Nine coins require dating. Coin <54> requires cleaning for dating and would be treated post-dating. Of the remaining coins for dating, the copper [+]<49>, the five lead and one silver coin should be degreased and lacquered post-dating.
- 5.3 It is recommended that all of the coins should be retained in accordance with national guidelines.

6. Comparative material

- 6.1 No comparative work is required for the coin from ARC 330 98.
- 6.2 It is of interest that ARC HRD 99 produced the most coins of all the sites in Zone 3, and that the ARC HRD 99 coins virtually all date to the 4th century AD. This pattern was not noted amongst the coin assemblages recovered from the other archaeological work in this zone. The ARC HRD 99 coin assemblage should be compared with other rural sites of a similar nature (ie a possible work area or road) in the area and elsewhere. Are there any interesting patterns of coin loss? Nearly all of the coins are 4th century AD in date and there is a particular concentration of mid-4th century coins: this should be compared/contrasted with other CTRL sites in Area 330, particularly ARC NBR 98. Very few late Roman coins have been found elsewhere in Area 330 Zones 1 to 6.
- 6.3 Little can be done in terms of comparative work with the coins from ARC WNB 98 since most of the coins are unstratified. The unstratified coin <32> of Constantine II, is very unusual and rare.

7. Potential for further work

- 7.1 There is no potential for further work with the coin from ARC 330 98.
- 7.2 The coins from ARC HRD 99 may assist the following landscape zone aim:
- *The character, function and development of the rural urban fringe*
- 7.3 Is the quantity of late Roman coinage present on the site unusual or is it larger than may be expected to be found? If so, what does this say about the area during the late Roman period? ARC HRD 99 produced evidence for human activity dating to the later Roman period. A brief comparison with other sites in the

surrounding area is recommended and a discussion of how the coin loss on the present site compares with those. Assessment results suggest that other sites in Area 330 have not contained such a large amount of Late Roman coinage.

- 7.4 The coins from ARC HRD 99 may assist in the following fieldwork event aim:
- *To recover dating evidence from the features located to enable a chronology for the division of the landscape to be established*
- 7.5 The majority of the coins date to the mid-4th century AD. Closer analysis of the features and coins may refine the dating of those features.
- 7.6 The coins from ARC WNB 98 are only of use for dating purposes and as only one of them can be related to a stratified feature, this potential is rather limited.
- 7.7 It is recommended that the following work should be undertaken:
- ARC HRD 99:*
- further investigation of the coin assemblages. This will include comparative work with other sites in the region as outlined above and the writing of a report on the assemblage and what it infers about the site.
 - It is recommended that 10 coins should be photographed.
- ARC WNB 98:*
- Nine coins require precise dating
 - Conservation pre & post-dating
 - The unusual coin <32> may require further work
 - It is recommended that 5 coins require illustration.

APPENDIX 8: ASSESSMENT OF GLASS

Jackie Keily

Conservation by Liz Barham

1. Introduction

- 1.1 One glass accession was recovered from ARC 330 98 in Zone 3, seven from ARC HRD 99 and three from ARC WNB 98.
- 1.2 All of the glass accessions were recovered by hand excavation.
- 1.3 It is not thought that the glass has any potential to aid the fieldwork event aims, except as further evidence, with the other Roman finds from Zone 3, for the presence of human settlement in the area. The glass bead from ARC HRD 99 is of interest but is unstratified.

2. Methodology

- 2.1 All of the glass was accessioned in accordance with the Museum of London system.
- 2.2 The records were entered onto the MoLAS Oracle relational database, subsequently transferred to RLE Datasets.
- 2.3 No sampling of the glass was undertaken.

3. Quantification

- 3.1 The glass may be quantified using the following tables:

Table 41: Assessment of Glass from ARC 330 98

Context	Count	Type	Period	Comments (Description)
134	1	Bottle	RO	<9> Base of a square bottle, decorated with moulded rings

Table 42: Assessment of Glass from ARC WNB 98

Context	Count	Type	Period	Comments (Description)
205	1	Bottle?	RO?	Natural green glass; cylindrical body fragment
489	13	Vessel	?	A tiny fragment of dark olive-green glass – intrusive?
647	12	Vessel	?	Small abraded fragment; natural green glass

Table 43: Assessment of Glass from ARC HRD 99

Context	Count	Type	Period	Comments (Description)
CH39.600	1	Bead	RO?	<35> complete dark blue, biconical bead
14	1	Vessel		<38> very small fragment of colourless glass
14	1	Vessel		<48> small fragment of natural green glass
53	1	Vessel?		<56> small fragment of natural green glass
60	1	Vessel		<68> small fragment of natural green glass
69	1	Vessel	RO?	<36> small fragment, possibly of a flat concave base, in colourless glass
114	1	Vessel		<37> very small fragment of natural green glass

4. Provenance

- 4.1 The glass recovered from ARC 330 98 came from context [134], (sub-group 3112), the fill of a probable, eroded track [135]. This context also produced pottery dating to the early Roman period, *c* AD50 to *c* AD100. Mould-blown square bottles are found from the 1st to the late 2nd century AD (Price and Cottam 1998, 195).
- 4.2 The glass from ARC HRD 99 was recovered from demolition spread over the kilns (sub-group 725), a rubbish deposit (sub-group 788) and various ditch fills (sub-groups 712, 717 and 784). The contexts all produced pottery dating to the late Roman period.
- 4.3 The glass from ARC WNB 98 is all thought to be probably intrusive; the contexts and their dating will have to be checked more closely.
- 4.4 The vessel glass is only represented by small undiagnostic fragments and as such has little potential for the site. The glass is in a stable condition.
- 4.5 The only glass artefact of interest is the complete dark blue glass bead <35> which is from CH39.600 at ARC HRD 99 and, therefore, is basically unstratified. It is biconical in shape and is thought to be Roman in date.

5. Conservation

- 5.1 The three fragments from ARC WNB 98 are mildly iridescent but no active conservation work is necessary. All the glass accessions are relatively stable and packed appropriately for archive.
- 5.2 It is recommended that all of the glass accessions should be retained, in accordance with national guidelines.
- 5.3 It is recommended that all of the glass accessions should be retained, in accordance with national guidelines.

6. Comparative material

- 6.1 Little Roman glass was recovered from the sites in Zone 3. A brief analysis of Roman glass assemblages from other CTRL sites in the vicinity appears to suggest that this is a general trend.
- 6.2 All of the glass is in relatively good condition but in most cases only very small fragments survived. This appears to indicate that it is probably redeposited domestic rubbish.

7. Potential for further work

- 7.1 There is little potential for further work, as it is not thought that the glass assemblage can be of use to either the landscape zone aims or the fieldwork event aims. However, as outlined in 6.1 above, it is of interest to see that the general lack of Roman glass from the sites in Area 330 is not unusual. Although the fragmentary nature of the glass would indicate that it was redeposited rubbish, it was probably not redeposited from very far away (most of the glass is in good condition and not highly abraded). Therefore the small size of the glass assemblage is still of interest. It is recommended that there is a brief scan of the quantities of glass present from other sites in the wider region. The bead is also of interest and may be more closely dateable.
- 7.2 It is recommended that the following work is undertaken:
- Catalogue and report on glass bead; including checking for parallels
 - A short amount of time for comparative study of glass assemblages
 - Bead to be illustrated.

8. Bibliography

Price, J, & Cottam, S, 1998 *Romano-British Glass Vessels: a handbook*, CBA Practical Handbook in Archaeology 14

APPENDIX 9: ASSESSMENT OF CERAMIC ARTEFACTS

Jackie Keily

Conservation by Liz Barham

1. Introduction

- 1.1 Nine ceramic artefacts were recovered from ARC 330 98 and six were recovered from ARC WNB 98. All are in a fragmentary state.
- 1.2 The ceramic artefacts were recovered by means of hand excavation.
- 1.3 The loom weights and other ceramic artefacts from ARC 330 98 may assist the following landscape event aim:
- To determine the spatial organisation of the landscape, and changes through time
 - To recover dating evidence from the features located to enable a chronology for the division of the landscape to be established
- 1.4 The loom weights from ARC WNB 98 may assist with the following fieldwork event aim:
- To determine the function of these areas and changes through time

2. Methodology

- 2.1 The ceramic artefacts were accessioned in accordance with the Museum of London system.
- 2.2 The records have been entered onto the Oracle relational database and transferred to the RLE Datasets.
- 2.3 No sampling of these finds was undertaken.

3. Quantification

- 3.1 The ceramic registered finds are quantified below:

Table 44: Assessment of Ceramic Artefacts from ARC 330 98

Context	Special Number	Count	Period	Comments
1419	94	1	MIA/LIA	Top corner of a triangular loom weight with rounded corners and one perforation remaining
108	99	1	MIA/LIA	Part of the surface of a triangular loom weight with the remains of one perforation
108	101	1	BA?	Possibly part of a cylindrical loom weight
108	98	1	MIA/LIA	Part of a triangular loom weight

Context	Special Number	Count	Period	Comments
108	97	6	BA/IA	Small fragments; possible loom weight
108	96	1	BA?	Part of a cylindrical loom weight
108	95	1	PR	A fragment of fired clay with a curving outer surface
108	100	2	PR	Small fragments with one smoothed outer surface
108	102	1	PR	Fired clay object with smoothed surfaces

Table 45: Assessment of Ceramic Artefacts from ARC WNB 98

Context	Special Number	Count	Period	Comments (Description)
413	133	5	MIA/LIA	Five joining fragments from a triangular loom weight with rounded corners and the remains of at least one perforation
413	136	1	MIA/LIA	One small fragment from the rounded corner of a triangular loom-weight
565	9	1	BA?	Part of a cylindrical loom weight with a central hole
565	134	2	MIA/LIA	A small fragment, probably from a triangular loom weight
586	135	1	MIA/LIA	Part of a triangular loom weight
586	137	1	MIA/LIA	Part of a triangular loom weight

4. Provenance

- 4.1 A fragment of loom weight from ARC 330 98 was recovered from context [1419], the fill of a furnace/work hollow. It dates to the mid- to late Iron Age (3rd to 1st centuries BC). The remaining eight ceramic artefacts came from [102], Group 65, 3101, the fill of ditch [91].
- 4.2 The loom weight fragments from ARC WNB 98 were recovered from three contexts: [413] (sub-group 357) the upper fill of a pit, [565] (sub-group 305) the main fill of a pit, and [586] (sub-group 179) a ditch or gully. Context [565] produced one fragment of a possibly Bronze Age cylindrical loom weight and part of a mid- to late Iron Age triangular loom weight. This pit also contained disarticulated human bone and may have been associated with some form of ritual. The Bronze Age loom weight would, therefore, appear to be redeposited.
- 4.3 All of the loom weight fragments and the other ceramic artefacts are in a reasonable condition.

5. Conservation

- 5.1 The loom weight fragments <133> [413] from ARC WNB 98 should be re-adhered for illustration purposes.
- 5.2 No conservation work is required on the remaining loom weights as they appear to be stable and are packed appropriately for archive.
- 5.3 All the ceramic accessions should be retained.

6. Comparative material

- 6.1 The mid- to late Iron Age loom weights from ARC 330 98 and ARC WNB 98 in Zone 3 are all of the same form, triangular with rounded corners and three or more perforations. This is the most common type found in the Iron Age (Poole 1984, 406) and they were probably used either on looms or in some other largely in-door function such as weaving.
- 6.2 This assemblage should be compared to other Bronze Age and Iron Age material recovered from surrounding sites. It is of interest to note the presence of other Iron Age objects (a La Tène brooch and two bone implements) from ARC 330 98 (Zone 3).

7. Potential for further work

- 7.1 The ceramic loom weights can assist the following landscape zone aim:
 - *Farming communities (2000-100 BC)*
- 7.2 The loom weights supply further evidence for human settlement in the area in the prehistoric period. The earliest fragments are probably Bronze Age, but all of these occur with later material. The remaining loom weights all appear to be triangular with rounded corners and three or more perforations. They belong to the most commonly found type of Iron Age loom weights (Poole 1984, 406). They indicate the presence of a settlement in the vicinity, as these weights are thought to have been used either for looms or for some other in-door based activity, such as weaving (ibid, 406).
- 7.3 The loom weights from ARC 330 98 can assist the following fieldwork event aims:
 - *To determine the spatial organisation of the landscape, and changes through time*
- 7.4 The presence of the loom weight fragments is indicative of a mid- to late Iron Age settlement in the vicinity, as well as possible Bronze Age activity. It is interesting to note that more fragments of the same type of triangular and cylindrical loom weights were recovered from ARC WNB 98, also in Zone 3.

- *To recover dating evidence from the features located to enable a chronology for the division of the landscape to be established*

7.5 The triangular loom weight fragments are of a type that was common during the mid- to late Iron Age and may, therefore, be of use for dating purposes. It adds to the Iron Age pottery and other Iron Age artefacts found elsewhere in Zone 3. The cylindrical fragments may come from Bronze Age loom weights but will require further work on their identification.

7.6 The ceramic loom weights from ARC WNB 98 can assist the following fieldwork event aim:

- *To determine the function of these areas and changes through time*

7.7 The ceramic loom weights are further evidence of human activity and settlement at or near the site in the Bronze Age and Iron Age. The presence of these weights, whether intended for looms, weaving or some other function, indicate that a settled community existed in the vicinity.

7.8 It is recommended that the following further work is undertaken:

- A number of different fabrics were identified by eye during the assessment; it is recommended that these are fully identified and described. The study of the fabrics may aid the identification of the source of these ceramic objects. Comparison should be made with the fabrics of the pottery from the same period to identify any similarities.
- Short report on the loom weights and their contexts, and a discussion on the uses to which they may have been put. The latter will include a consideration of the scale of this activity, if it is possible to indicate.
- Comparison with other nearby sites in the region and other assemblages of a similar nature may aid the identification and sourcing of the fabrics. Cylindrical loomweights were also found in Area 330 Zone 5.
- Conservation of loom weight
- It is recommended that eight of the loom weights be illustrated.

8. Bibliography

Poole, C, 1984 'Clay weights' in B. Cunliffe, et al *Danebury: an Iron Age hillfort in Hampshire; volume 2; the excavations, 1969-78: the finds*
Council for British Archaeology Research Report 52, 401-6

APPENDIX 10: ASSESSMENT OF WORKED BONE

Jackie Keily

Conservation by Liz Barham

1. Introduction

- 1.1 Two bone artefacts were recovered from ARC 330 98 and one from ARC WNB 98.
- 1.2 The bone accessions were recovered by means of hand excavation.
- 1.3 The bone artefacts may assist with the following fieldwork event aims:
- To recover dating evidence from the features located to enable a chronology for the division of the landscape to be established
 - To determine the function of these areas and changes through time

2. Methodology

- 2.1 All of the bone artefacts from the Zone 3 sites were retained and no sampling was undertaken.
- 2.2 All of the bone artefacts from the sites in Zone 3 were accessioned and the records entered onto the MoLAS Oracle relational database, subsequently transferred to RLE Datasets.

3. Quantification

- 3.1 The worked animal bone from Zone 3 are quantified in the tables below:

Table 46: Assessment of Worked Bone from ARC 330 98

Context	Special Number	Material	Count	Period	Comments (Description)
250	70	Bone	1	IA	Pin/needle; the lower half and point of a shaft with a slightly flattened oval section
250	86	Bone	1	IA	Tool or point; a hollowed sheep/goat metacarpus cut diagonally across the shaft to form a scoop-type blade. The head is perforated

Table 47: Assessment of Worked Bone from ARC WNB 98

Context	Special Number	Material	Count	Period	Comments (Description)
413	132	Bone	1	UN	Waste; horse metacarpus, distal end (identification by Kevin Rielly); sawn through with a metal blade

4. Provenance

- 4.1 The bone pin/needle and the tool from ARC 330 98, were both recovered from context [250], the fill of a pit, which produced pottery dating to the 3rd to 1st century BC. The fragment of bone waste from ARC WNB 98 was recovered from context [413], the fill of a pit and may be rubbish cleared from elsewhere. The pit fill also contained a mid- to late Iron Age loom weight fragment.
- 4.2 The bone is in a stable condition.

5. Conservation

- 5.1 The worked bone is stable and packed appropriately for archive.
- 5.2 All of the bone accessions should be retained.

6. Comparative material

- 6.1 Both the pin/needle and the tool/point are objects commonly found on Iron Age sites (Coles 1987, 51). Comparison should be made with other Iron Age assemblages recovered both from the surrounding area and elsewhere. It would also be of interest to see if there is any evidence for bone working from sites in the vicinity.

7. Potential for further work

- 7.1 The bone accessions may assist the following landscape zone aim:
- *Farming communities: determine how settlements were arranged and functioned over time (2000 – 100BC)*
- 7.2 The two bone artefacts provide further evidence, along with the pottery and the other Iron Age finds from sites within Zone 3, of human activity and occupation in the area. Both are types frequently found on Iron Age sites and, therefore, would probably have been common implements in use at that time. The tool or point was probably a multi-functional implement, summed up by Coles as ‘the prehistoric Swiss army knife’ (1987, 53) and similar implements have been found in large numbers on other Iron Age sites (ibid, 51).

- 7.3 The bone artefacts from ARC 330 98 may assist with the following fieldwork event aim:
- *To recover dating evidence from the features located to enable a chronology for the division of the landscape to be established*
- 7.4 The two artefacts provide further evidence of the occupation and use of this area during the mid- to late Iron Age. They are both common types of artefacts found in the Iron Age and together with the pottery provide dating for the pit fill from which they came. Further investigation of similar bone artefacts may be able to refine their dating.
- 7.5 The bone waste from ARC WNB 98 can assist the following fieldwork event aim:
- *To determine the function of these areas and changes through time*
- 7.6 The bone waste would suggest that bone working was taking place in the vicinity of the site.
- 7.7 It is recommended that the following further work is undertaken:
- Compare the artefacts with other published assemblages
 - Catalogue and text
 - It is recommended that all three bone accessions are illustrated.

8. Bibliography

Coles, J, M, 1987 *Meare Village East; the excavations of A. Bulleid and H. St. George Gray 1932-1956* Somerset Levels Papers no. 13

APPENDIX 11: ASSESSMENT OF HUMAN BONE

Bill White

1. Introduction

- 1.1 Area 330 Zone 3 (specifically Northumberland Bottom ARC WNB 98) contained burials dating to the early Bronze Age and the Roman period. Excavation had revealed two beaker inhumations and also a small grave containing unburnt human bone from a neonate associated with a pottery vessel of Roman date. A small pit proved to contain the remains of another neonate.
- 1.2 Cremated human bone occurred in two contexts [316] (undated) and [2012] (associated with an early Bronze Age pottery vessel).

2. Methodology

- 2.1 The human skeletal material was scanned and assessed in accordance with the MoLSS Environmental Archaeology Manual (in preparation).
- 2.2 Preservation/bone condition, the rough percentage of completeness, general age (child/adult) and obvious pathology/sex were noted and these details are summarised in the table below. The data has been entered onto the MoLAS Oracle database for human bone and transferred to RLE Datasets.

3. Quantifications

Early Bronze Age

- 3.1 Double burial with beakers from Northumberland Bottom Area C (Figure 16, Plates 1 and 2). In addition skeletal material of an unburnt child burial was recovered from the grave fill.
- 3.2 An early Bronze Age cremation urn was recovered from the area to the north of Hazells Farm (Figure 5). The bone from this vessel had, however, almost totally disintegrated and it was not possible to study this material.

Late Bronze Age

- 3.3 A late Bronze age cremation was recovered from Area A/B at Northumberland Bottom (Figure 13). A nearby cremation was undated but may be from this period.

Late Iron Age – Early Roman

- 3.4 Disarticulated human bone (part of a cranium) was recovered from the fill of the 'ritual pit' [564] (Figure 10).
- 3.5 Cremated bone and a vessel were recovered from pit [232] (Figure 10).

Roman

- 3.6 Two neonate burials were recovered from Northumberland Bottom Area C (Figure 16).

4. Provenance

- 4.1 The two individuals buried with beakers were both adult. One was male, the other female (Plates 1 and 2). The grave fill also contained unburned human bone, probably a child [1069] (see table below). The bone in the beaker burials was in moderate condition. At least some metric data should be available on further analysis. Both skeletons were almost entirely complete.
- 4.2 Cremated bone occurred in two contexts [316] (Late Iron Age/Early Romano-British date, Cremation [232], Figure 10) and [2012] (Late Bronze Age date, Figure 13). The bone from the cremations is comminuted and unlikely to provide information on demography or pathology.
- 4.3 The Roman grave contained an immature skeleton, probably a neonate; the head was missing (Figure 16). A small pit nearby also contained a neonate [1037] (Figure 16). The Roman skeletal remains were also in a moderate state of bone preservation. The skeletons were more than 75% complete.
- 4.4 Disarticulated adult human bone was found in two contexts [565] (the large 'ritual' pit in the Late Iron Age/Early Romano British enclosure) (Figure 10) and fill [2163] of pit [2164] (Figure 13) (see table below).

5. Conservation

- 5.1 Under Schedule 11 of the CTRL act 1996 all human bone is to be reburied.

6. Comparative material

- 6.1 There are many examples of beaker burials in southern England including Thanet and the north coast of Kent but little of note has been published. The closest parallel for a double interment of the period comes from Chilbolton in Hampshire (Russell 1990). An Early Bronze Age inhumation was located as the (secondary) barrow burial at Whitehill Road (ARC WHR 99, Area 330 Zone1). This burial will provide good comparative material. Unfortunately other Bronze Age burials from the CTRL project tended to be comminuted cremations, with which little, beyond the estimated number of individuals, can be compared.
- 6.2 There are many Romano-British sites in southern England that have produced comparative material for child burial, even within a settlement. A local parallel is the occurrence of child burials found associated with Temple IV in the earlier excavations at Springhead (Penn 1960). Within the CTRL project two infant burials and a deposit of human bone were recovered from Thurnham Roman Villa (ARC THM 98). Within southern England settlement sites, where infant burial occurs, include Colchester, Verulamium and Winchester.

7. Potential for further work

- 7.1 The human skeletal material recovered from this zone has good potential to inform on the CTRL research aims:

Farming communities (2000–100 BC)

- *Determine spatial organisation of the landscape in terms of settlement location in relation to fields, pasture, woodland, enclosed areas and ways of moving between these*
- *Ritual and ceremonial use of the landscape*

- 7.2 Bronze Age burials are typically placed in areas of high visibility, usually to be seen from both the associated settlement (perhaps within 0.5km) and any nearby routeway. The burials perhaps indicate the presence of both these associated features in the vicinities of Hazells Farm and Northumberland Bottom. In addition the beakers and cremation urns place the contexts of the individuals and, perhaps, the direction of the local influences (eastward rather than westward). As a result the burials have good contexts from which further research can be directed. They can be compared with the nearby, unexcavated, Neolithic Mortuary enclosure at Tollgate; the (secondary) barrow burial at Whitehill Road (ARC WHR 99, Area 330 Zone1); and the potential barrow and the early Bronze Age Collared Urn from Cobham Golf Course (ARC CGC 98 Area 330 Zone 5).
- 7.3 Disarticulated human bone is not uncommonly found on Late Iron Age/Early Roman sites and may be partly connected to a general absence of burial grounds for this date; perhaps indicating a different burial rite than inhumation/cremation. It is also not uncommon to find Roman neonate burials on settlement sites, as the Romans did not, generally, consider infants to be worthy of full and proper burial in cemeteries.
- 7.4 Cremated human bone occurred in two contexts [316] and [2012]. Given that all cremation burials are only samples of the body interred (Jackie McKinley pers. comm.) the “samples” here were rather small in quantity. Any subsequent discussion of the site ought to consider possible locations of the original cremation pyres.
- Further work*
- 7.5 The inhumation beaker burials are extremely important due to their relative completeness and potential for pathology study. The sex of these individuals has already been determined (one male and one female). The presence of the beaker pottery gives a reasonably good date for the double burial.
- 7.6 The Northumberland Bottom burials are of great importance due to the paucity of publications in this area for this date. As a consequence of this rarity, it is recommended that these two skeletons be analysed and recorded to publication level. Analysis of bone for stable chemical isotopes and DNA, both human and that of pathological organisms, ought to be considered, even though it is possible they would not produce significant results, in order to maximise any information that can be gathered from these individuals. Any information would add to the corpus of knowledge for human populations during this period.
- 7.7 Similarly, the Romano-British burial (s) ought to be analysed for completion, especially as they can be compared with other Roman neonate burials found on the project.
- 7.8 It is felt that little more can be accomplished for the cremation burials although, obviously, with regard to minimum number of individuals present they need to be included in the discussion in the report from the analysis phase. The same is true of the disarticulated bone.

7.9 Therefore further work should include:

- DNA analysis, stable chemical isotope analysis (using two teeth from each individual which would be returned) and recording of the skeletons
- Data input
- Writing the report

8 Bibliography

Penn W S 1960 Springhead: Temples III and IV *Arch. Cant.* **74** 113-140

Russell A 1990 Two beaker burials from Chilbolton, Hampshire *Proceedings of the Prehistoric Society* **56** 153-172

Table 48: ARC WNB 98 Assessment of Human Bone, Inhumations

Context	Context type	Period	Preservation (high/medium/low)	Completeness %	Age	Comments (pathology noted/sex)
1070	Burial	EBA	medium	90	adult	male,
1203	Burial	EBA	medium	90	adult	female,
1069	Burial	EBA	low	10	child	?
1037	Burial	UN	medium	90	neonate	?
1190	Burial	RO	medium	75	neonate	?

Table 49: ARC WNB 98 Assessment of Human Bone, Cremated Bone

Context	Context type	Period	Weight	Identifiable fragments	Colour	Minimum no of individuals
316	Cremation	UN	25g	none	white	?
2012	Cremation	LBA	50g	none	white	?

APPENDIX 12: ASSESSMENT OF ANIMAL BONE

Kevin Rielly, Alan Pipe and Jane Liddle

1. Introduction

- 1.1 Animal bones were recovered during excavation works at West of Northumberland Bottom (ARC WNB 98), Hazells Road Diversion (ARC HRD 99) and also from the Package 330 Watching brief (ARC 330 98).
- 1.2 The study of the material was carried out to study the following fieldwork event aims,
- to determine the palaeo-economy of settlement through the recovery of charred plant material and other palaeo-economic indicators;
 - to establish changes in the local environment through the recovery of suitable palaeo-environmental samples from the fills of cut features.
 - to determine the ritual and ceremonial uses of the landscape.
 - to establish if the medieval building located at the western end of the excavation at Northumberland Bottom (ARC WNB 98) is associated with activity of a similar date.

2. Methodology

- 2.1 Animal bones were recovered by hand-collection on site and through wet-sieving bulk samples taken in the field. All hand-collected animal bones were washed and air-dried, then bagged and labelled as context groups. Bulk samples were washed using a modified Siraf tank fitted with 1.0mm and 0.25mm flexible nylon mesh to retain the residue and flot fractions respectively. These fractions were visually sorted for floral and faunal remains and labelled as individual sample groups.
- 2.2 All contexts containing faunal remains were analysed and recorded onto the ORACLE CTRL animal bone database, subsequently transferred to RLE Datasets. No sub-sampling of contexts was carried out.

3. Quantification

- 3.1 The quantities of bones recovered from Area 330 Zone 3 are shown in Table 50. Included with the basic quantities are the overall numbers of identifiable (to species), ageable and measurable bones, as well as those which have been worked or show butchery marks. This overall data has been divided into the various areas/features within each sub-zone (Tables 51 to 57) by a selection procedure based on the quantities of bones recovered.
- 3.2 The Table 58 shows the percentage of identifiable fragments represented by all the specified species groups, within a selection of deposits. Those selected are meant as a representative sample of the sites. It is evident that the majority of the identifiable bones belong to cattle, sheep/goat, pig and horse. The percentage abundance of these species is obviously somewhat variable throughout the sites and site areas.

4. Provenance

4.1 Most of the bone assemblages from Zone 3 are in moderate to good preservation, while the level of fragmentation can be described as moderate to high. There is perhaps a greater quantity of poorly preserved assemblages within ARC WNB 98 and ARC 330 98, with such assemblages comprising about 15% of the total number (33 out of 207, and 9 out of 54 deposits respectively - Table 50). In comparison, ARC HRD 99 produced just 1 assemblage (out of 42) with a majority of poorly preserved bones. It can be conjectured that this difference could be related to a combination of factors. Notably the Hazells Road deposits include a relatively larger proportion dated to the medieval period, where the other two sites are largely composed of prehistoric or Roman levels. In addition, there is an obvious difference in the abundance of bone concentrations, as seen by the total quantity of bones in relation to the number of deposits. In contrast to Hazells Road, the vast majority of the Northumberland Bottom and Watching Brief deposits provided very few bones. Here it is assumed that the quantity of bones is in direct proportion to the level of disturbance.

4.2 It can be seen that the make-up of the assemblages is very clearly related to the noted levels of preservation and fragmentation. The great majority of the bones from most deposits were unidentifiable to species, and where they were identifiable, they invariably include a large proportion, or are solely composed, of tooth fragments. The low representations of identifiable bones and the associated low abundance's of age and size data, throughout the Zone 3 excavations, can be seen in Table 57.

4.3 Most of the bones were from Northumberland Bottom (Figures 8-15) and from the Hazells Farm Watching Brief excavations (Figure 5). Each of these two sites feature concentrations of assemblages dated to the prehistoric, particularly the Middle Iron Age, and Roman periods, while the Hazells Road (Figure 7) assemblages are mainly divided between those dated to the Roman and medieval periods. There are some differences between the assemblages recovered from the various areas/features within these sites. The following descriptions, will refer to each of these major areas/features, travelling from west to east across Zone 3 (Tables 51 to 56).

North of Hazells Farm (ARC 330 98)

4.4 The watching brief ARC 330 98, in the area to the north of Hazells Farm (Figures 4 and 5), provided a range of bone-bearing deposits (Table 51). This area comprised the post-medieval brick clamp [345], a work-hollow/waterhole [1427] with Late Bronze Age and Iron Age deposits, and two groups of pits dated to the mid to late Iron Age (Figure 5). The brick clamp and the work-hollow provided very few bones, and each provided just one and two identifiable fragments respectively.

4.5 A noticeably larger quantity of bones were recovered from the pit groups dated to the mid to late Iron Age. The identifiable portions of these assemblages were largely composed of the major domesticates, and mainly cattle and sheep/goat fragments (Table 58). Noticeably there were examples of very young lambs within two pits (one in each group), which strongly suggests local production. The samples provided very few bones, of which the great majority were unidentifiable to species. A few samples did, however, produce small rodent bones, probably a mouse or vole. An unusual aspect of a number of pits was the high proportion of calcined bones. These are clearly animal, rather than human,

remains. Nevertheless, there is the possibility that they may represent the partial remains of cremations or the by-products of cooking.

- 4.6 Of great interest within this area to the north of Hazells Farm was the recovery of a particularly large collection of bones from the basal deposit from one of the pits [147] (Plate 3) in the above mentioned eastern group (Table 51). This, dated to the mid-late Iron Age and provided a very unusual assemblage, composed of a series of partial, and apparently disarticulated (jointed), skeletons. These included at least six relatively complete calves and at least three juvenile red deer. The age of the calves is perhaps more likely to be juvenile, rather than infant, and so it is perhaps unlikely that these would represent infant mortalities. There is, however, no butchery on the bones (either the calves or the deer), which suggests they were deposited as entire carcasses or perhaps as partial articulations (noticeably there are no red deer cranial fragments). The same deposit also produced an abundance of small rodent bones, clearly comprising a large number of mouse and vole skeletons (Table 58).

Hazells Road Diversion (ARC HRD 99)

- 4.7 At Hazells Road (ARC HRD 99), the bones were concentrated between Roman and medieval features. In particular they occur amongst the demolition deposits within the Roman malting kiln [229]; disuse levels over the bank associated with the metalled road; and a colluvial deposit, each of these dated to the Late Roman period. They also occurred in a series of Late Roman and early medieval pits and ditches.
- 4.8 The assemblages throughout these deposits are typically composed of the major domesticates, largely cattle and sheep/goat but, including some horse and dog bones. The Roman contexts, from which the majority of the bones within this site were recovered, provided a larger range of species, including chicken, small passer, small rodents and amphibian (all from samples). In addition there was a single piece of red deer antler from the road bank. One other antler fragment was recovered, unfortunately from an undated feature, which clearly represents antler working waste. It can be seen that the Roman levels generally produced greater concentrations of bones, the typical medieval deposit producing less than 5 bone fragments (Table 52). Of interest, amongst the malting kiln deposits, was a small assemblage composed almost entirely of cattle head and foot parts. This can perhaps be interpreted as processing waste. Also of interest, regarding the organisation of the food supply, was the recovery of the remains of a very young calf and piglet, both from Roman ditches.

West of Northumberland Bottom ARC WNB 98 – Western part of Area A/B

- 4.9 The Northumberland Bottom excavations (ARC WNB 98) can be divided into 6 areas, 5 within Area A/B, the sixth being Area C. At the westernmost end of Area A/B there is the remains of a ?medieval timber structure, largely composed of an extensive series of post-pits. Small quantities of bones were found within a number of these features (Table 53), in each case providing very few identifiable bones (Table 57). The latter bones were invariably identified from tooth fragments. The species represented include the major domesticates as well as horse. Amongst a series of small assemblages from the Iron Age features to the south, there were a few larger collections from middle/late Iron Age ditch fills.

West of Northumberland Bottom, ARC WNB 98 – Central part of Area A/B

- 4.10 In this area are a series of enclosures, typified by middle-late Iron Age dated deposits. Reasonably sized assemblages were recovered principally from ditch fills, but these contained a rather large proportion of unidentifiable fragments

(Table 57). For example, one of the ditch fills mentioned in Table 58 produced 180 bone fragments, out of which just four were identifiable. The species represented include the major domesticates and small quantities of horse and dog.

- 4.11 The adjacent area, with Late Iron Age/Early Roman enclosures (Figure 10), also provided good quantities of animal bones. Most of the bones were recovered from the ditch and pit fills dated to the Early Roman period.
- 4.12 One otherwise undated pit, situated within the main Iron Age enclosure, contained a complete, articulated, adult horse skeleton (Plate 4). This skeleton is in a rather unusual position, with both front legs flexed and both hind legs extended, such that the feet of this animal overlap; the overlap suggesting that the lower limbs had been tied. In the absence of any other bones, apart from a single sheep tooth, it is perhaps likely that this animal was deliberately and ritually buried, as against casually deposited.
- 4.13 There were examples of other possible articulations, with the remains of at least two partial horse skeletons being found within a late Iron Age/early Roman ditch fill, situated just to the north of the horse burial pit.
- 4.14 Overall, the bone assemblages within this area provided the usual low proportion of identifiable fragments, with the major domesticates providing most of the identified portion. As well as horse, there were also single occurrences of dog, chicken and crow. Finally, a fragment of bone-working waste was recovered from an undated pit fill. This bone, a horse metacarpus, had been sawn through the shaft. It also showed signs of skinning marks, clearly suggesting that some horses at this site were used for their skins and possibly also for their meat.

West of Northumberland Bottom, ARC WNB 98 – Eastern part of Area A/B

- 4.15 The medieval enclosure at the eastern end of Area A/B provided a notable concentration of bones within ditch and pit fills, dated to the early medieval period (Table 53). A large proportion of the bones from this area were taken from undated fills, which perhaps, given their position, are more likely to be medieval than prehistoric or Roman. Most of the assemblages recovered from this area are comparable to those from the previously described areas, except that there is a noticeably smaller proportion of horse bones. The range of species is again rather small, with the major domesticates accompanied by small quantities of chicken, rat and, very unusually, fish. Just two fish bones were recovered, neither of which are likely to be identifiable to species.

West of Northumberland Bottom, ARC WNB 98 – Area C

- 4.16 Area C provided a reasonable quantity of bones from the various ditch fills which formed the boundaries of the east to west trackway and the field boundaries to the north (Table 55). Good assemblages were also recovered from a series of pits, in particular from those positioned to the north of the trackway. The majority, if not all of these features, would appear to date to the Early Roman period.
- 4.17 The ubiquitous major domesticates are accompanied, throughout these deposits, by small collections of horse and dog bones. The horse species is represented, within one of the pitfills, by a partial articulation, comprising a near complete pelvis and femur. Unusually for this site, a number of samples provided moderate quantities of bones; mainly from the pitfills. As well as the major

domesticates, these contributed a few small rodent bones, identified as mouse/vole, with one definite field vole fragment.

Watching Brief ARC 330 98 at Northumberland Bottom Army Camp

- 4.18 Several small bone assemblages were recovered from various watching brief excavations (ARC 330 98) (Tables 54 and 56). Each provided the usual poor representation of identifiable bones, comprising the typical mix of major domesticates. The largest assemblages were recovered from trenches to the west of Area C (as described above), the bones arising from ditches which are clearly extensions of those either side of the trackway in this Area. These were dated to the Early Roman period. Of interest in these ditches was the recovery of two partial dog skeletons and a single bone representing the remains of an infant lamb.

5. Conservation

- 5.1 No specific conservation requirements are necessary on the animal bone assemblages. They are packed appropriately for medium and long term storage.
- 5.2 It is recommended that all material be retained until the analysis stage when final decisions regarding retention and discard can be made.

6. Comparative material

- 6.1 The material from these sites can be compared with similarly dated deposits from other sites within this project. There is, for example, a large quantity of bones from the medieval moated farmstead from Parsonage Farm (ARC PFM 98). It would certainly be of interest to compare the bones from this apparently higher status site with those from the medieval enclosures within Northumberland Bottom and Hazells Road.
- 6.2 There are a number of Iron Age and Roman sites within the general North Kent area including the Iron Age farmstead at Farningham Hill in the Darent Valley (Locker 1984. 71) and the Roman villa at Keston within the London Borough of Bromley (Locker 1999). There is obvious potential, as with the previously mentioned medieval comparison, in a study of the bone assemblages from a possibly low status area, as located amongst the Zone 3 sites, and a high status villa economy.
- 6.3 Further comparisons should include the use of animals for ritual purposes, where the horse burial at Northumberland Bottom can be compared to the 'shaft' assemblages at Keston, which feature a series of articulated horse, cattle and dog skeletons. During the Iron Age there was undoubtedly an extensive use of animals for such purposes, as shown by, for example, the large number of pits with 'foundation deposits' composed of sheep skeletons at Danebury (Grant 1984).

7. Potential for further work

- 7.1 The potential value of these bones must take into account the limiting factors, as described above, concerning the effects of disturbance and also perhaps of soil conditions. This is shown by the very large proportions of unidentifiable fragments and the abundance of teeth fragments amongst the identified portions. There would appear to be large assemblages of bones at these sites, but the great majority of these can provide little to no information regarding animal usage through the occupation periods within this general area. The sample assemblages are particularly disappointing, these either providing very few bones or a mass of unidentifiable fragments.
- 7.2 However, the animal bone assemblages do have the potential to inform on the following CTRL research and fieldwork aims:
- *to determine the palaeo-economy of settlement through the recovery of charred plant material and other palaeo-economic indicators;*
- 7.3 Regarding the palaeo-economy of the various settlements represented at these sites, there are moderately large assemblages dated to the Middle to Late Iron Age, Late Iron Age/early Roman, Roman and medieval periods. These can be used to provide information on which animals were exploited within each period and area, and to a limited extent, how they were exploited, as suggested by the relatively good representation of ageable bones. The condition of the bones suggest that the younger individuals are likely to be underrepresented. However, the presence of older individuals does at least suggest that secondary products, as milk and wool, were important. It should also be pointed out that there was a scattering of very young individuals, usually calves or lambs, within these assemblages. Considering the poor survival potential of such bones, it can be assumed that these represent only a small proportion of all that were originally deposited. These bones clearly show, if proof were needed, that these sites represent production centres.
- *to establish changes in the local environment through the recovery of suitable palaeo-environmental samples from the fills of cut features.*
- 7.4 Establishing changes in the local environment is perhaps beyond the scope of most of these bone assemblages. Environmental indicators, as some birds, the smaller rodents and amphibians, were rarely recovered from these sites. There is, however, one notable exception, the Middle to Late Iron Age pit within the Hazells Farm site (ARC 330 98). This provided hundreds of small rodent bones, clearly representing a large number of mouse and vole skeletons. A closer study of these bones could result in the identification of species, which could then provide some information concerning local environmental conditions during this prehistoric period.
- *to determine the ritual and ceremonial uses of the landscape.*
- 7.5 There are at least two deposits which can be viewed as ritual in origin, these being the Middle to Late Iron Age pit with numerous skeletons at Hazells Farm (ARC 330 98) and the horse burial within the Late Iron Age/early Roman enclosure at Northumberland Bottom (ARC WNB 98). Both clearly deserve further study, including research into comparisons from other contemporary sites on the CTRL project (for example Fawkhams Junction ARC 330 98 Area 330 Zone 1; Springhead Roman Town; ARC SSR 99 - Area 330 Zone 2; White Horse stone ARC WHR 98; and Boarley Farm ARC BFM 98).

- *to establish if the medieval building located at the western end of the excavation at Northumberland Bottom (ARC WNB 98) is associated with activity of a similar date.*

7.6 The aim concerned with determining contemporary activity with the medieval building situated within Zone 3, can obviously be answered with reference to the medieval activity within other parts of this site as well as within the Hazells Road excavation. Relatively few bones were recovered from the post-pits making up this building, and it would appear that few similarly dated deposits were found in the immediate vicinity. There is, however, a reasonable quantity of bones from the medieval enclosure area situated at the eastern end of Area A/B.

7.7 It can be seen that the stated fieldwork event aims do not cover the full research potential of the information available from the Zone 3 bone assemblages. An additional aim should include an analysis of the stature of the major domesticates throughout the occupation periods. This study will be especially useful regarding the Iron Age/Roman transition, where evidence from other sites clearly shows an increase in cattle overall stature (Maltby 1981. 185). While the quantity of size data amongst these assemblages is not large, it is certainly adequate for this type of study where the aim is to deduce the presence/absence of larger animals.

8. Bibliography

- Grant, A. 1984. The animal remains. In Cunliffe, B. 1984. Danebury: an Iron Age hillfort in Hampshire. Vol.2. The excavations 1969-1978: the finds. *CBA Res.Rep.52*. (London). 496-526.
- Locker, A. 1984. Finds and environmental reports 5-8. 5. The Animal Bone. In Philp, B. *Excavations in the Darent Valley, Kent*. Fourth Research Report in the Kent Monograph Series. Kent Archaeological rescue Group. 71 and Microfiche M1 to M6.
- Locker, A. 1999. The animal bone. In Philp, B., Parfitt, K, Willson, J and Williams, W. *The Roman villa site at Keston, Kent. Second Report (Excavations 1967 and 1978-1990)*. Eighth Research Report in the Kent Monograph Series. The Kent Archaeological Rescue Group. 145-159.
- Maltby, M. 1981. Iron Age, Romano-British and Anglo-Saxon animal husbandry - a review of the faunal evidence. In M. Jones and G. Dimbleby (eds). *The environment of man: the Iron Age to the Anglo-Saxon period*. B.A.R. British Series 87. 155-203.

Table 50: Animal bone assemblages – overall quantities and the proportions of useful data

Event code	Hand collected				Soil samples			
	N. contexts	Weight (kg)	N. bones	N. iden.	N. samples	Weight (kg)	N. bones	N. iden
ARC WNB 98	207	41.56	2685	832	29	0.84	513	29
ARC HRD 99	42	6.76	380	210	25	0.82	130	32
ARC 330 98	54	21.42	1431	605	24	0.13	1205	600

Event code	Hand collected			
	N. Age-able	N. Meas	N. Butch	N. Worked
ARC WNB 98	279	70	7	1
ARC HRD 99	67	17	7	2
ARC 330 98	493	25	20	0

Table 51: Distribution of animal bones in Zone 3. North of Hazells Farm (ARC 330 98)

Site Area/ Features	Period	Interp	H.c.			Siv		
			N.cont	N.	Wt	N. Samp	N	Wt
Brick clamp	PM	floor	1	1	0.01			
Furnace/work hollow and assoc. features:								
- spread	LBA/EIA	Ext. dump	1	1	0.02			
- levelling over hollow	EIA/MIA	Make-up	1	1	0.02			
- fills	LBA/EIA	fill	3	3	0.12			
- backfill assoc waterhole	LBA/EIA	fill	1	8	0.07			
Pits to north-east:								
2 pits	LBA/EIA	pitfills	2	19	0.16	3	8	0.008
4 pits	MIA	pitfills	3	33	0.20	3	10	0.012
1 pit	MIA/LIA	pitfills	1	14	0.10	1	5	0.003
1 pit	RO	pitfills	1	10	0.05			
1 pit	?date	pitfills	2	16	1.02	1	3	0.002
Pits to east:								
1 pit	LBA/EIA	pitfills	3	60	1.05	4	29	0.021
1 pit	MIA	pitfills	6	48	0.52			
1 pit	MIA/LIA	pitfills	3	1015	14.78	4	1016	0.057
Ditches:								
W of brick clamp		ditch	1	1	0.05			
- adj brick clamp	?RO	ditch	1	1	0.03			
- ?associated ARC HRD 99		ditch				3	6	0.01
- just W Downs Rd	RO	ditch	1	5	0.45	2	17	0.01
Misc. features:								
?mine	?LPR	pitfill				1	2	0.01
?quarry pit	?LIA/RO	pitfill				1	5	0.01

Table 52: Hazells Road Diversion (ARC HRD 99)

Site Area/ Features	Period	Interp	H.c.			Siv		
			N.cont	N.	Wt	N. Samp	N	Wt
Malting kiln – demolition	RO	dumps	4	64	1.51	2	3	0.02
Metalled road:								
- ruts		fill	1	2	0.08			
- dump over road	RO	dump	3	24	0.39			
Bank assoc. with road:								
- make-up of bank	RO	dump	1	3	0.05			
- dump over bank	RO	dump	3	57	0.97	1	10	0.02
Oven/kiln – disuse levels	MD	dumps	5	17	0.36	2	8	0.02
Oven structures	RO	Hearths	4	4	0.09	2	9	0.02
Series ditches:								
– earliest, cut by oven structures	RO	ditchfill				2	6	0.02
- other Roman ditches (5)	RO	ditchfill	8	72	0.75	4	9	0.04
– lots recuts, 3 ditches	MD	ditchfill	4	21	0.65	6	17	0.08
- other med ditches (4)	MD	ditchfill	3	13	0.26	2	15	0.02
Pits:								
- cut through Roman kiln	RO	pitfill	1	15	0.12	1	25	0.18
- undated		pitfill	1	5	0.12	1	3	0.02
Misc features:								
Series of 2 postholes	RO	fills	2	38	0.62	2	27	0.38
Colluvial deposit	RO	dump	1	40	0.67			

Table 53: Northumberland Bottom (ARC WNB 98) – Area A/B

Site Area/ Features	Period	Interp	H.c.			Siv		
			N.cont	N.	Wt	N. Samp	N	Wt
Med. timber structure with 13 post-pits	MD	fills	13	55	0.45			
Features adj. med bldg:								
- pit	MD	fills	1	5	0.01			
- hollows (2)	MD	fills	2	6	0.04			
- pit	?LPR	fill	1	12	0.04			
- pit	Undated	fill	1	10	0.11			
Features med bldg:								
- boundary ditch	MIA/LIA	fills	3	60	0.95			
- other ditches (1)	MIA	fills	3	8	0.07			
- quarry pit	?MIA	fill	1	3	0.02			
- pits (2)	LIA/RO	fill	2	25	0.14			
- hollow way	MIA/LIA	fill	1	3	0.01			
- natural hollow	MIA	fill	1	10	0.03			
M/LIA enclosures:								
- boundary ditches	MIA	fills	9	150	0.79	2	45	0.035
	MIA/LIA	fills	3	217	1.63	2	5	0.251
	?LIA/RO	fills	3	36	0.25			
- pits (2)	Undated	fills	1			1	5	0.001
- pit	RO	fills	3	14	0.29			
- pit	MD	fill	1	5	0.01			
LIA/ER enclosures:								
- boundary ditches	LIA/RO	fills	6	59	0.85	2	20	0.10
	RO	fills	9	190	3.69	1	9	0.01
	Undated	fills	9	39	0.66	2	21	0.041
- pit	LIA	fills	2	15	0.30			
- pits (2)	LIA/RO	fills	2	32	0.50			
- pits (5)	RO	fills	6	50	0.43			
- pit	RO	fill	1	8	0.05			
- pits (6)	Undated	fills	10	616	15.09			
- kiln (disuse)	RO	fill	2	2	0.03			
- oven (2) (disuse)	RO	fill	3	12	0.03			
- hollow way	LIA/RO	fill	2	13	0.73			
- external dump	Undated	dump	1	30	0.48			

Site Area/ Features	Period	Interp	H.c.			Siv		
			N.cont	N.	Wt	N. Samp	N	Wt
Medieval enclosures:								
- boundary ditches	MIA	fills	1	1	0.19			
	LIA/RO	fills	1	1	0.02			
	MD	fills	15	245	1.83			
	Undated	fills	5	92	1.06	1	10	0.01
- pits (3)	LIA/RO	fills	3	17	0.41			
- pits (3)	MD	fills	3	43	0.36			
- pits (2)	Undated	fills	2	11	0.16			
- post-pits (2)	Undated	fills	2	2	0.16			
- ?sunken building	MD	dumps	4	17	0.08	2	13	0.011
		pitfills	2	12	0.11			
- cremation	Undated	fill				1	25	0.04

Table 54: Watching brief adjacent Northumberland Bottom Area A/B (ARC 330 98)

Site Area/ Features	Period	Interp	H.c.			Siv		
			N.cont	N.	Wt	N. Samp	N	Wt
Boundary ditches north of M/LIA enclosures	RO	ditchfill	1	5	0.03			
Complex field ditches north of LIA/ER enclosures	Undated	ditchfill	1	1	0.06			

Table 55: Location of features with reference to Site Area/Features described for ARC WNB 98. Northumberland Bottom (ARC WNB 98) – Area C

Site Area/ Features	Period	Interp	H.c.			Siv		
			N.cont	N.	Wt	N. Samp	N	Wt
Enclosure ditches	RO	fills	25	268	4.83	4	62	0.045
Pits	RO	fills	21	91	2.67	10	294	0.291
Dumps	RO	dumps	2	5	0.06			
Eroded hollows	RO	dumps	4	45	0.25			
Trackway	RO	dump	1	2	0.04			
Base oven	RO	fill				1	7	0.01

Scatter of Early Roman dates throughout these deposits. It is assumed that this is the general date for the majority of features within this area

Table 56: Watching brief adjacent Northumberland Bottom Area C (ARC 330 98)

Site Area/ Features	Period	Interp	H.c.			Siv		
			N.cont	N.	Wt	N. Samp	N	Wt
W of Area C:								
- Extension encl. Ditches	RO	fills	5	64	1.01			
- N-S ditches	MIA	fills	4	24	0.49			
	RO	fills	2	19	0.20			
	Undated	fills	2	12	0.09			
- pit (1)	Undated	fills	2	10	0.08	1	2	0.006
- trackway	RO	dump	1	2	0.02			
N of Area C:								
- field ditches	LIA/RO	fill	1	1	0.04			
	RO	fill	1	21	0.34			
- modern test- pit	PM	fill	1	1	0.03			

Table 57: Quantities of identified bones, and age and size data, within selected groups of deposits (Hand collected bones only)

Event Code/ Features	Period	N. Bones	N. Iden.	N. Ageable	N. Meas.	N. Butch.	N. Worked
ARC 330 98							
North of Hazells Farm							
Pits to north-east :							
2 pits	LBA/EIA	19	3	1	0	0	0
4 pits	MIA	33	7	4	0	0	0
Pits to east:							
1 pit	LBA/EIA	60	21	6	2	5	0
1 pit	MIA	48	22	8	2	7	0
1 pit	MIA/LIA	1015	434	418	5	2	0
ARC HRD 99							
Malting kiln-demolition	RO	64	37	17	6	0	0
Bank assoc. with road:							
- dump over bank	RO	57	30	9	1	0	1
Ditches:							
- other Roman ditches (5)	RO	72	49	5	0	0	0
Misc features:							
Series of 2 postholes	RO	38	15	6	3	2	0
Colluvial deposit	RO	40	10	4	1	0	0
ARC WNB 98							
Area A/B:							
Med. Timber structure with 13 post-pits	MD	55	14	7	1	0	0
Features South of med bldg:							
- boundary ditch	MIA/LIA	60	4	1	0	0	0
M/LIA enclosures:							
- boundary ditches	MIA	150	26	8	0	0	0
	MIA/LIA	217	9	1	1	0	0
	?LIA/RO	36	20	3	1	0	0
LIA/ER enclosures:							
- boundary ditches	LIA/RO	59	7	4	0	0	0
	RO	190	71	22	7	1	0

Event Code/ Features	Period	N. Bones	N. Iden.	N. Ageable	N. Meas.	N. Butch.	N. Worked
- pits (5)	RO	50	17	6	5	0	0
- pits (6)	Undated	616	264	91	28	0	1
Medieval enclosures:							
- boundary ditches	MD	245	63	16	5	1	0
	Undated	92	21	9	1	0	0
- pits (3)	MD	43	17	6	0	1	0
Area C:							
Enclosure ditches	RO	268	104	23	9	1	0
Pits	RO	91	29	10	1	0	0
Eroded hollows	RO	45	15	2	0	0	0
ARC 330 98							
W of ARC WNB 98 Area C:							
- Extension encl. Ditches	RO	64	33	14	6	0	0

Table 58: Quantity and species range in selected contexts.

ARC 330 98

Context	Sample	Area	Interp.	Period	% identified fragments									Count	Weight
					S/G	Cattle	Pig	Horse	Dog	S. mam	Bird	Fish	Other		
108	0	HF	P	LPR	0	0	0	0	0	0	0	0	0	15	0.04
110	0	HF	P	MIA	25	75	0	0	0	0	0	0	0	30	0.16
130	0	NB-C	D	RO	20	40	40	0	0	0	0	0	0	15	0.08
141	0	HF	P	M/LIA	20	0	80	0	0	0	0	0	0	14	0.1
146	0	HF	P		0	10	0	90	0	0	0	0	0	25	1.15
146	44	HF	P		0	0	0	0	0	0	0	0	0	30	0.016
150	0	HF	P	LBA/EIA	40	30	30	0	0	0	0	0	0	20	0.35
202	0	HF	P		0	74	0	0	0	13	0	0	13	990	13.58
202	47	HF	P		0	0	0	0	0	100	0	0	0	1000	0.005
250	0	HF	P	MIA	58	34	8	0	0	0	0	0	0	30	0.346
268	0	NB-C	D		0	0	0	0	100	0	0	0	0	15	0.065
274	0	NB-C	D	RO	100	0	0	0	0	0	0	0	0	25	0.25
282	0	NB-C	D	RO	30	0	0	0	70	0	0	0	0	10	0.03
314	0	HF	P		50	40	10	0	0	0	0	0	0	10	0.42
315	0	HF	P		0	100	0	0	0	0	0	0	0	6	0.6
57	0	NB-C	D		60	20	20	0	0	0	0	0	0	20	0.32

NB-C deposits adjacent to Northumberland Bottom (ARC WNB 98) Area C; HF Hazells Farm

cont.

ARC HRD 99

Context	Sample	Interp	Period	% identified fragments									Count	Weight
				S/G	Cattle	Pig	Horse	Dog	S. mam	Bird	Fish	Other		
71	0	PK	RO	33	33	0	34	0	0	0	0	0	35	0.6
71	21	PK	RO	20	80	0	0	0	0	0	0	0	25	0.3
53	0	D		10	40	10	40	0	0	0	0	0	10	0.6
156	0	D	RO	50	50	0	0	0	0	0	0	0	10	0.2
131	0	D		20	40	40	0	0	0	0	0	0	25	0.3
75	0	D	RO	33	33	34	0	0	0	0	0	0	25	0.1
7	0	EO		45	45	0	10	0	0	0	0	0	35	0.77
67	0	EU	RO	0	33	33	34	0	0	0	0	0	40	0.67
86	0	ED	RO	0	0	0	100	0	0	0	0	0	15	0.3
80	0	P	RO	0	50	0	0	50	0	0	0	0	15	0.12
80	40	P	RO	16	26	16	0	16	26	0	0	0	25	0.18
178	0	DS		40	40	10	10	0	0	0	0	0	30	0.53
191	0	DB	RO	35	35	0	20	10	0	0	0	0	18	0.6

Cont.
ARC WNB 98

Context	Sample	Area	Interp.	Period	% identified fragments									Count	Weight
					S/G	Cattle	Pig	Horse	Dog	S. mam	Bird	Fish	Other		
2037	0	1	SP	MD	0	100	0	0	0	0	0	0	0	6	0.04
751	0	1	SP	MD	0	34	0	66	0	0	0	0	0	20	0.17
822	0	1	SP	MD	100	0	0	0	0	0	0	0	0	3	0.01
601	0	2	D		34	66	0	0	0	0	0	0	0	40	0.335
612	0	2	P	LIA/RO	40	0	40	20	0	0	0	0	0	15	0.105
258	0	3	D	M/LIA	0	20	20	20	40	0	0	0	0	35	0.41
268	0	3	D	MIA	0	5	95	0	0	0	0	0	0	60	0.265
268	35	3	D	MIA	0	0	100	0	0	0	0	0	0	40	0.03
296	0	3	D	M/LIA	0	50	0	50	0	0	0	0	0	180	1.2
417	0	3	D	?LIA/ RO	0	66	34	0	0	0	0	0	0	25	0.2
495	0	3	D	MIA	0	100	0	0	0	0	0	0	0	60	0.315
251	0	4	P	RO	0	75	0	25	0	0	0	0	0	30	0.24
385	0	4	SE	LIA	0	66	34	0	0	0	0	0	0	3	0.525
413	0	4	P		50	25	0	25	0	0	0	0	0	15	0.17
414	0	4	P		33	33	34	0	0	0	0	0	0	45	0.7
528	61	4	D		0	50	50	0	0	0	0	0	0	20	0.04
533	0	4	SK	?IA	0	0	0	100	0	0	0	0	0	525	13.81
568	0	4	D	RO	34	0	66	0	0	0	0	0	0	40	0.04
686	0	4	SE	RO	0	100	0	0	0	0	0	0	0	10	0.215
709	0	4	D	RO	21	16	0	63	0	0	0	0	0	45	2.215
710	0	4	D	RO	0	50	0	50	0	0	0	0	0	40	0.33
2163	81	5	G		0	0	0	0	0	0	0	0	0	25	0.04

Cont.

ARC WNB 98

Context	Sample	Area	Interp.	Period	% identified fragments									Count	Weight
					S/G	Cattle	Pig	Horse	Dog	S. mam	Bird	Fish	Other		
237	0	5	D		0	100	0	0	0	0	0	0	0	20	0.115
262	0	5	D	MD	20	60	20	0	0	0	0	0	0	150	0.965
319	0	5	PR	MD	80	10	10	0	0	0	0	0	0	40	0.23
885	0	5	D	MD	66	34	0	0	0	0	0	0	0	20	0.16
887	0	5	PR	LIA/RO	25	25	25	0	0	0	0	25	0	15	0.37
906	0	5	D	MD	0	50	50	0	0	0	0	0	0	20	0.22
947	0	5	D		0	80	20	0	0	0	0	0	0	85	0.89
997	0	5	P		34	33	0	33	0	0	0	0	0	10	0.145
1009	7	C	P		0	0	0	0	0	100	0	0	0	150	0.21
1036	0	C	P		0	0	0	100	0	0	0	0	0	10	0.45
1036	14	C	P		0	0	0	0	0	100	0	0	0	60	0.03
1051	0	C	D		50	25	25	0	0	0	0	0	0	50	0.21
1063	0	C	D		34	0	0	66	0	0	0	0	0	30	0.29
1113	0	C	D		0	0	0	100	0	0	0	0	0	10	0.12
1201	0	C	P		0	100	0	0	0	0	0	0	0	1	0.02
1201	68	C	P		0	0	0	0	0	0	0	0	0	20	0.001
1240	0	C	P		0	33	0	33	34	0	0	0	0	3	0.6
1262	69	C	D		0	0	0	0	0	0	0	0	0	30	0.02
1315	0	C	D	RO	0	0	0	100	0	0	0	0	0	10	0.68

Northumberland Bottom (ARC WNB 98) divided into the following areas: 1. Medieval timber structure; 2. Features to the south of this structure; 3. Mid/Late Iron Age enclosures; 4. Late Iron Age/Early Roman enclosures; 5. Medieval enclosures and C. referring to Area C at the extreme eastern end of this site, with features generally dated to the Early Roman period.

APPENDIX 13: ASSESSMENT OF MOLLUSCS

Alan Pipe

1. Introduction

- 1.1 Mollusc shells were recovered during excavation works at West of Tollgate (ARC TGW 97), West of Northumberland Bottom (ARC WNB 98), the Area 330 watching brief (ARC 330 98) and Hazells Road diversion (ARC HRD 99).
- 1.2 Study of the molluscan shell was intended to assist the following Fieldwork Event Aims:
- to determine the palaeo-economy of settlement through recovery of palaeo-economic indicators
 - to establish changes in the local environment through the recovery of suitable palaeo-environmental samples from the fills of cut features
 - to determine the late and immediate post-Roman landscape.

2. Methodology

- 2.1 In each case, the soil was processed using a modified Siraf-type tank fitted with 1.0mm and 0.25mm flexible nylon meshes to retain the residue and flot fractions respectively. The flot and residue fractions were air-dried in a warm drying cabinet and then visually sorted for mollusc shell.
- 2.2 Each sample was roughly quantified and then scanned under a binocular microscope to determine the species-composition of the assemblage. Taxonomic identifications were made using the MoLSS reference collection in conjunction with Cameron & Redfern 1976; and Kerney & Cameron 1979. Allocation of identified taxa to habitat groups, as specified by the CTRL post-excavation assessment report template, followed these sources together with Kerney 1999.
- 2.3 All mollusc groups were examined; no sub-sampling was required.

3. Quantification

- 3.1 ARC TGW 97 produced nine sample groups containing approximately 160 shells from cut features. The mollusc group from the monolith sequence was, in general poorly preserved, but still produced identifiable species remains.
- 3.2 ARC 330 98 produced six sample groups containing approximately 80 shells from cut features.
- 3.3 ARC WNB 98 provided a total of 14 column sample groups containing approximately 402 shells from ditch [332]; the fills of which dated to the Middle/Late Iron Age. These groups were recovered from column samples taken at measured depths at 0.1m intervals. A further 41 sample groups containing approximately 4,900 shells, were wet-sieved/floated from bulk samples from pits, postholes, ditches and other cut features.

- 3.4 ARC HRD 99 produced a total of 18 sample groups containing approximately 160 shells from cut features.
- 3.5 The material derived almost entirely from terrestrial species with a very minor component of edible marine species; there were no freshwater species.
- 3.6 Identified terrestrial taxa recovered were *Oxychilus* sp., *Vallonia* sp., *Vallonia pulchella*, *Vallonia costata*, *Cepaea nemoralis*, *Helix aspersa*, *Hygromia* sp., *Retinella* sp., *Helicella* sp., *Helicigona lapicida*, *Ena montana*, *Cochlicopa lubrica*, *Pupilla muscorum*, *Columella edentula*, *Pomatias elegans*, *Clausilia* sp., *Balaea perversa*, *Cecilioides acicula* and *Discus rotundatus*. Shells of common whelk *Buccinum undatum*, common mussel *Mytilus edulis*, common cockle *Cardium edule*, and common/flat oyster *Ostrea edulis* were also recovered.
- 3.7 The Table (below) groups this material in terms of habitat preference and relative abundance as specified by the CTRL assessment template.

4. Provenance

- 4.1 The material comprised almost entirely of terrestrial species with no freshwater forms, with minor recovery of edible marine species. The terrestrial assemblage included catholic, shade loving, open country, and burrowing species.
- 4.2 The material is, in general, from well dated Iron Age, Roman and medieval features (see tables below), is in good condition and presents no difficulty in terms of species identification. The value of the assemblage will not be affected by factors of preservation.

5. Conservation

- 5.1 Further analysis of this material would involve more detailed examination under a binocular microscope in order to ensure identification and quantification of all species present. There is no reason why such work would damage the shells or impose any restriction on long-term storage procedures.
- 5.2 The shells are mainly small and fragile and therefore liable to accidental damage by crushing. They should therefore all be stored by context/sample groups in glass tubes or clear plastic boxes, each contained within labelled plastic bags. The complete assemblage should then be stored in an archive quality 'shoe-box'.
- 5.3 There is no reason to discard any of the mollusc assemblage.

6. Comparative material

- 6.1 The material from these sites can be compared directly with similarly dated deposits from other sites within the CTRL project.
- 6.2 Comparison may also be made with north Kent sites summarised in Philp 1984; and Philp, Parfitt, Willson & Williams 1999.

7. Potential for further work

- 7.1 The assemblage has some potential to contribute to study of each of the listed Fieldwork Event Aims related to the nature of local habitats and landuse. The molluscs have considerable potential for further study in terms of species identification and accurate quantification. Once this work is done, it will then be possible to detect spatial and temporal variation resulting from changes in local conditions, such as shading, and to consider their implications for changes in landuse.
- 7.2 It may also be possible to obtain Accelerator Mass Spectrometry (AMS) radiocarbon dates on the snails obtained from the bulk samples (Contexts [2] and [3] from ARC TGW 97), if required. AMS dating of the snails would probably be the best way of dating the sediment sequence seen in the monolith sequence. Unfortunately there were no snails preserved in the lowest redeposited soil material.
- 7.3 The very sparse marine fauna does not generally provide potential for further study although the large group of oyster shell from ARC WNB 98 [238] subgroup (38) has some potential for metrical analysis which may give an insight into the nature of the exploited oyster population.

8. Bibliography

- Cameron, R A D & Redfern, M, 1976 British land snails *Linnean Society synopses of the British fauna no.6* London
- Kerney, M, 1999 *Atlas of the land and freshwater molluscs of Britain and Ireland* Colchester
- Kerney, M P, & Cameron, R A D, 1979 *A field guide to the land snails of Britain and north-west Europe* London
- Philp, B, 1984 Excavations in the Darent Valley, Fourth Report in the Kent Monograph Series. *Kent Archaeological Rescue Group 71*
- Philp, B; Parfitt, K; Wilson, J & Williams, W, 1999 The Roman villa site at Keston, Kent. *Eighth Research Report in the Kent Monograph Series*

Table 59: Assessment of molluscs from ARC TGW 97

+ present (0-5 items), ++ some (6-10 items), +++ many (11+).

Event code	ARC TGW 97	ARC TGW 97	ARC TGW 97	ARC TGW 97	ARC TGW 97	ARC TGW 97	ARC TGW 97	ARC TGW 97	ARC TGW 97
Column/Section									
Sample	5	6	7	8	9	14	16	13	15
Date/interpretation	natural	Natural	natural	natural	natural	/ditch	/ditch		/ditch
Context	2	2	2	3	3	101	124	154	170
Depth (m)									
Catholic species				+			+		
Open country species	++	+++	+		+		+		++
Shade-loving species							+++	+	+++
Burrowing species									
Aquatic species									
Marine species									
Approx totals	10	25	5	1	1	0	50	1	65

Table 60: Assessment of molluscs from ARC WNB 98

Event code	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98
Column/Section							
Sample							
Date/interpretation	IA/ditch	IA/ditch	IA/ditch	IA/ditch	IA/ditch	IA/ditch	IA/ditch
Context	[332]	[332]	[332]	[332]	[332]	[332]	[332]
Depth (m)	0-0.1	0.1-0.2	0.2-0.3	0.3-0.4	0.4-0.5	0.5-0.6	0.6-0.7
Catholic species	+++	+	+	+		+	+
Open country species				+			+
Shade-loving species	+++	+	+++	+++	+++	++	+++
Burrowing species							
Aquatic species							
Approx totals	110	2	21	25	16	12	36

Event code	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB98
Column/Section							
Sample							
Date/interpretation	IA/ditch	IA/ditch	IA/ditch	IA/ditch	IA/ditch	IA/ditch	IA/ditch
Context	[332]	[332]	[332]	[332]	[332]	[332]	[332]
Depth (m)	0.7-0.8	0.8-0.9	0.9 –1.0	1.0-1.1	1.1-1.2	1.2-1.3	1.3-1.4
Catholic species					+	+	+
Open country species						+	
Shade-loving species	+++	+++	+++	+++	+++	+++	+++
Burrowing species							
Aquatic species							
Approx totals	30	25	25	13	16	34	37

Event code	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98
Column/Section									
Sample	38	35	34	75	77	36	1	37	2
Date/interpretation	/ditch	/ditch	/ditch	/oven	/oven	/ditch		/ditch	
Context	238	268	269	292	292	296	302	362	372
Depth (m)									
Catholic species	+++					+++		+++	
Open country species						+			
Shade-loving species	+++	+	+++			+++		+++	
Burrowing species		+++	+++	+	+++		+++		+++
Aquatic species									
Marine species	+++								
Approx totals	320	150	40	5	120	755	25	80	20

Event code	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98
Column/Section								
Sample	3	10	17	18	24	28	30	16
Date/interpretation	/ditch	/ditch	/ditch	/ditch	/pit	/pit	/pit	/crem
Context	381	392	397	421	447	451	510	518
Depth (m)								
Catholic species				+				
Open country species			+					
Shade-loving species	++		+++	++	++			++
Burrowing species	++	+++			++	+++		
Aquatic species								
Marine species	+++						+++	
Approx totals	45	20	50	20	20	50	75	10

Event code	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98
Column/Section									
Sample	59	73	5	6	7	8	11	12	13
Date/interpretation	/ditch	/fill	/phole	/pit	/pit	/pit	/pit	/pit	/pit
Context	526	565	1004	1008	1009	1026	1027	1032	1033
Depth (m)									
Catholic species		+							
Open country species	+								
Shade-loving species	+++	+++			+++	+++		+++	
Burrowing species	++	+++	+++	+++	+++			+++	+++
Aquatic species									
Marine species	+						+		
Approx totals	30	120	30	500	400	30	3	200	50

Event code	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98
Column/Sectn										
Sample	14		26	27	55	54	65	56	58	63
Date/interpretation	/pit		/pit	/pit	/ditch	/ditch	/kiln	/ditch	/phole	/grave
Context	1036	1037	1043	1046	1048	1051	1056	1063	1099	1191
Depth (m)										
Catholic species					+			+		
Open country species	+				++	+		++		
Shade-loving species	+++	+	+++	+++	+++	+++	+++	+++	++	+
Burrowing species	+++	+	+++	+++	+++	+++	+++	+++	++	+
Aquatic species										
Marine species	+					+				
Approx totals	600	10	200	95	240	120	40	140	25	10

Event code	ARC WNB 98	ARC WNB 98	ARC WNB 98	ARC WNB 98
Column/Section				
Sample		70	78	81
Date/interpretation		/ditch	/oven	/?crem
Context	1202	1279	1281	2163
Depth (m)				
Catholic species		+		
Open country species		+		
Shade-loving species		++	+	
Burrowing species	+++	+++	+++	+++
Aquatic species				
Approx totals	100	40	20	75

Table 61 : Assessment of molluscs from ARC 330 98

Event code	ARC 330 98	ARC 330 98	ARC 330 98	ARC 330 98	ARC 330 98	ARC 330 98
Column/Section						
Sample	21	80		57	67	144
Date/interpretation	M/LIA/pit	M/LIA/pit				/quarry pit
Context	141	324	325	338	344	561
Depth (m)						
Catholic species	+				+	+
Open country species						
Shade-loving species			+++	+		++
Burrowing species		+		+		
Aquatic species						
Marine species						
Approx totals	5	1	50	5	1	15

Table 62: Assessment of molluscs from ARC HRD 99

Event code	ARC HRD 99	ARC HRD 99	ARC HRD 99	ARC HRD 99	ARC HRD 99	ARC HRD 99	ARC HRD 99	ARC HRD 99	ARC HRD 99	ARC HRD 99
Column/Section										
Sample	1	2	43	5	6	10	34	16	35	40
Date/interpretation	Rom/hearth	/hearth	ext.occ				med/ditch	med/ditch	med/ditch	LRom/pit
Context	2	3	7	15	20	26	53	60	77	80
Depth (m)										
Catholic species	+							+		+
Open country species					+					
Shade-loving species		+	++		+++	+	+	+	+	+
Burrowing species				+						+
Aquatic species										
Marine species							+			
Approx totals	1	5	10	2	25	3	5	5	5	10

Event code	ARC HRD 99	ARC HRD 99	ARC HRD 99	ARC HRD 99	ARC HRD 99	ARC HRD 99	ARC HRD 99	ARC HRD 99
Column/Section								
Sample	27	36	37	38	53	45	46	54
Date/interpretation		/ditch	med/ditch	LRom/ditch	LRom/ditch	med/ditch	med/ext.surf	
Context	98	104	105	106	131	156	163	213
Depth (m)								
Catholic species	+	+			+	++	+	
Open country species	+			+	+	++		
Shade-loving species	+	+	+	+	+	++		+
Burrowing species	+							
Aquatic species								
Marine species						+	+	
Approx totals	15	10	5	10	5	30	5	5

APPENDIX 14: ASSESSMENT OF CHARRED PLANT REMAINS & CHARCOAL

Anne Davis

1. Introduction

- 1.1 A total of 167 bulk soil samples were taken for environmental analysis during the excavation of the three sites in Zone 3; 64 came from ARC WNB 98, 51 from ARC HRD 99, and 52 from ARC 330 98. The sampled deposits came from a wide variety of features and ranged from late Bronze Age to medieval in date. Sample sizes ranged from 5 to 30 litres. An interim assessment report had been written previously on twelve of the samples from ARC WNB 98 (Giorgi 1997), and information from this has been included here.
- 1.2 The study of botanical material from this site should assist in determining the palaeo-economy of the settlement. This could include the functions of features and settlement areas, and the activities taking place there, in each of the periods represented.

2. Methodology

- 2.1 The samples were processed by flotation, using a Siraf flotation tank, with meshes of 0.25mm and 1.0mm to catch the flot and residue respectively. All flots and residues, were dried. The residues were fully sorted by eye for artefacts and biological material, except in a few cases, where substantial numbers of charred seeds and grains remained in the residue after processing. In these samples, the larger residue fraction (>2mm) was fully sorted, and the smaller retained for sorting at the post-assessment stage of the project. The flots were briefly scanned using a low-powered microscope, and the abundance, and general nature of plant macrofossils and any faunal remains were recorded, using the following scale for the number of charred items per sample:

+ = 1-10, ++ = 11-50, +++ = 51-100, ++++ = 101-1000, 1000+ = >1000.
- 2.2 Results were recorded on the MoLAS ORACLE CTRL botany database, subsequently translated onto RLE Datasets.
- 2.3 All samples with flots were included in the assessment. Most of the flots were less than 100ml in volume, but where they exceeded this, 100ml sub-samples were assessed. In a few cases, where samples were very rich and the plant remains quite uniform, these sub-samples were reduced to 50ml, but in all cases the estimated quantities are for the entire sample. Occasionally plant remains were recovered from the residues of samples with no flots, and these were also included.

3. Quantification

- 3.1 Of 167 samples processed, 81 produced flots and a total of 134 included charred plant material in flots and/or residues, although in many cases this consisted only of flecks of charcoal. Charred cereal grains were seen in 73 samples, and 23 of

these contained over 50 grains, although many other samples had fewer than ten grains. Cereal chaff was recorded from 30 samples (over 50 items in nine), and charred seeds from 58 samples (over 50 seeds in 11 samples). Preservation of the plant remains ranged from moderate to very poor. In the majority of samples charcoal was reduced to very small fragments, but pieces large enough for species identification were recorded from ten samples. No waterlogged plant remains were recovered from these sites. Assessment data for the more productive samples from each site are shown in the tables below.

- 3.2 In almost all samples wheat (*Triticum* spp.) seemed to be the predominant grain, with both glume wheats and free-threshing species present. Grains of barley (*Hordeum sativum*), rye (*Secale cereale*) and oats (*Avena* spp.) were also seen in some samples. Cereal chaff also came mainly from species of wheat and included glume bases, spikelet forks, and rachis fragments. The majority of charred weed seeds were from disturbed-ground species, with corn gromwell (*Lithospermum arvense*) seen in very great numbers in some samples from ARC WNB 98. Fragments of hazelnut (*Corylus avellana*) shell and stones of *Prunus* sp. were seen occasionally, and pulses, probably peas (*Pisum sativum*) or horse beans (*Vicia faba*) were quite abundant in some of the medieval samples.
- 3.3 The majority of samples included variable amounts of rootlets and/or moss, and sometimes uncharred seeds, presumably of modern origin. It is therefore possible that some of the charred plant remains are also intrusive. This is unlikely to be a problem where large and relatively uniform assemblages are concerned.

4. Provenance

- 4.1 Samples from late Bronze Age and Iron Age features in the area of Hazell's Farm on ARC 330 98 (Figure 5), and mid-late Iron Age deposits in Area A/B on ARC WNB 98 (Figure 6), were mostly devoid of any plant remains except charcoal flecks. Twelve samples from pit fills at the former site however, and five from ditch- and pit fills at the latter, contained very low numbers (less than 10) of charred cereal remains and/or weed seeds. A charred fruit of ?*Prunus* sp. was also found in a ARC WNB 98 pit fill. Four of the ARC 330 98 samples included a few identifiable fragments of charcoal.
- 4.2 Over 50 cereal grains, and smaller quantities of chaff and weed seeds were found in three samples from the late Iron Age/early Roman ovens/hearths/firepit fills in Area A/B on ARC WNB 98 (Figure 10). Six samples from ditch fills and other contemporary features in this area contained smaller charred assemblages, and a cremation sample included a little identifiable charcoal.
- 4.3 A number of very large assemblages of charred plant remains were recovered from Roman features in Area C, ARC WNB 98 (Figure 16). Two of these, from the fill of a roadside ditch, and a pit fill at the eastern end of the area, consisted predominantly of cereal chaff and may represent local crop-processing activities. A further seven samples, from pit fills within a square enclosure to the north of the east to west driveway, each contained many hundreds of cereal grains, chaff and weed seeds. Varying amounts of charred material were found in four samples associated with clay oven (Plate 5), but one, possibly a rake-out deposit, contained very many chaff fragments, with a smaller number of cereal grains. Some of these remains are likely to represent fuel used in the oven, but others

may also provide clues as to its function. Samples from the enclosure ditches in this area contained very few plant remains.

- 4.4 Abundant charred plant remains were again found in samples associated with the partially excavated Roman malting oven or 'corn dryer' at ARC HRD 99 (Figure 7, Plate 6). Cereal grains predominated in the ten samples from this feature, and in four of these many hundreds or thousands of grains were estimated to be present. All these samples included very many weed seeds, and two also had many chaff fragments. Around 100 grains, and identifiable charcoal, were seen in a sample from a hearth or kiln on the same site, and there were occasional charred remains in samples from other features, including ditch and pit fills.
- 4.5 Two of the three samples from a tread deposit within a medieval sunken building in Area A/B, ARC WNB 98 (Figure 13), contained many charred cereal grains, mostly wheat. A substantial number of charred pulses were also seen, most of them probably peas, as well as occasional fruit stones.
- 4.6 At ARC HRD 99 five samples associated with a medieval malting oven or kiln contained very many charred cereal grains, rachis fragments and weed seeds (Figure 7, Plate 7). Two of these samples also contained identifiable charcoal. Occasional charred plant remains were also present in medieval ditch fills from this area.

5. Conservation

- 5.1 The dried flots, and plant material from the residues, have no particular conservation requirements.

6. Comparative material

- 6.1 Very little comparative material has been found in the area. A few grains of spelt wheat and six-row, hulled barley were recovered from four Iron Age pits at Farningham Hill in the Darent Valley (Vaughan 1984), and similar remains were found in a late Roman ditch at the Keston Roman villa site. These also included several grains of spelt, as well as a few glume bases and spikelet forks from the same species, one oat grain, and a grass seed (Hillman 1991). While these remains are very limited, they are similar to those found from the same periods at the Zone 3 sites, and on other sites in southern England. A charcoal sample from Keston contained mostly pieces of probable hawthorn (*Crataegus* sp.) (Straker 1999).

7. Potential for further work

- 7.1 Few plant remains were recovered from the Bronze Age and Iron Age samples within Zone 3, so their value in answering the project aims is limited. Very little material of this date, and from this area of Kent, has been previously studied however, and analysis of the 12 samples will improve our knowledge of cereal use and cultivation in these periods. Identification of the four charcoal samples will give an idea of the wood species being exploited.

- 7.2 Many of the samples from Roman (and possibly late Iron Age) features, in different parts of the study area, were very rich in charred plant remains, and have the potential to contribute substantially to our knowledge about the palaeo-economy of the settlements. Oven and hearth features in ARC WNB 98 Areas A/B, C, and on ARC HRD 99 all contain rich assemblages of charred plant remains, which can be used to investigate their functions, and to compare the nature of the materials used as fuel. Very large assemblages from ten pitfills inside the square enclosure in ARC WNB 98 Area C, and from a ditch fill and pit fill nearby will help to determine the nature and economy of this settlement, and also what crop-related activities were taking place. Samples with moderate-sized assemblages from Roman ditch and pit fills will provide extra background data on cereal use and processing.
- 7.3 Charred plant remains from the medieval sunken building in ARC WNB 98 Area A/B, which included pulses and fruit stones as well as cereal remains, may be useful in determining the function of the feature. These remains will also provide information on the economy of the site and, to a limited extent, the diet of its inhabitants. The function of the medieval oven/kiln in ARC HRD 99 may be revealed by analysis of the plant remains associated with it. Plant materials used as fuel in this feature can also reflect aspects of the site economy.
- 7.4 Comparisons should be made between the settlement areas, both within and between periods. In addition to exploring the importance of different cereals, and the implications of cereal chaff, to the functions of features and the economy of the site, assemblages of arable weed seeds should also be compared. Analysis of their soil and habitat preferences may indicate possible areas of origin for the crops, and may vary between periods or settlement areas.
- 7.5 Due to the very large assemblages in many samples, it may be desirable to select representative samples for analysis, where several samples have been taken from the same, or closely related contexts. It is suggested that all 17 of the prehistoric samples (which contain few plant remains) should be analysed, together with five from the late Iron Age/early Roman settlement (ARC WNB 98, Area A/B), ten from Roman levels in Area C, and six from ARC HRD 99. From medieval deposits it is suggested that two samples from area A/B and three from ARC HRD 99 should be analysed. Final selection should take place in consultation with stratigraphic specialists, prior to the commencement of analysis.
- 7.6 Flots from the selected samples will be sorted, and macrofossils from flots and residues identified and counted, using a low-powered microscope. Large flots and assemblages will be sub-sampled, and sufficient sub-samples sorted to produce at least 500 items. The remaining flot will then be rapidly scanned for any new species not seen in the sub-samples. Where partially sorted residues containing charred remains have been retained, these too will be sub-sampled if necessary, and the same proportions of flot and residue sorted. Analysis of the results will include calculating the relative abundance of each cereal, and of grains, chaff and weed seeds, in each sample and within features and areas. The environmental preferences and soil requirements of weed species will also be investigated. Charcoal samples would be identified to species where possible, using an epi-illuminating microscope.
- 7.7 The tasks may be itemised as the requirement to complete the recording and analysis of the 43 suggested samples, and preparation of the report:

- Sorting and identification of charred remains from 43 flots and retained residues
- data entry
- preparation of tables
- analysis
- preparation of publication report

8. Bibliography

Giorgi 1997 *An interim report on the assessment of charred plant remains from twelve environmental bulk samples*. MoLAS archive report.

Hillman G. 1991 'A sample of carbonised plant remains' in B. Philp et al *The Roman villa site at Keston, Kent. First report (excavations 1968-1978)*. The Kent Archaeological Rescue Unit. p.292.

Straker V. 1999 'The carbonised plant remains from shaft E' in B. Philp et al *The Roman villa site at Keston, Kent. Second report (excavations 1967 and 1978-1990)*. The Kent Archaeological Rescue Unit. p.179.

Vaughan D. 1984 'The charred grains from Farningham Hill' in B. Philp *Excavations in the Darent Valley, Kent*. The Kent Archaeological Rescue Unit. microfiche 6.

Table 63: Assessment of Charred Plant Remains & Charcoal from ARC WNB 98

Key: gp: Group; SG: Subgroup

sample details						flot and residue details							residue	
gp	SG	Context no.	sample no.	Feature type	sample vol (l)	flot vol (ml)	grain	chaff	charred seeds	unch'd seeds	charcoal	comments	size (ml)	% sorted
22	452	268	35	Ditch	10	10			+	+	+	Modern moss.	4000	100
22	452	269	34	Ditch	20	20			+	+	++	Modern moss.	3000	100
22	454	278	33	Ditch	5	2			+	+	++	Some rootlets.	2000	100
23	446	510	30	Pit	5	30	+		+	++	+	1 complete charred fruit - Prunus? Mostly unch'd roots, pods, stems, wheat rachis.	4000	100
23	447	451	28	Posthole	5	30	+		+	++	++	Mostly rootlets.	2000	100
38	167	2163	81	Grave	10	50			+		++++	Cremation? Flot all charcoal, few frags identifiable.	1500	100
74	57	818	72	Pit	5	5	+		+		++	Rootlets.	800	100
81	299	518	16	Grave	10	20	+		+		1000+	Lithospermum seeds, few grains.	200	100
81	309	372	2	Oven	10	20	+++	++	++	+	+++	>50 grains. Rootlets.	300	100
81	312	302	1	Oven	10	20	+++	++	++	+	++	C.50 grains, mostly wheat. Rootlets.	300	100
82	267	381	3	Ditch	20	20	++	+	+		+++	C. 12 grains, poor condition. Many rootlets.	5000	100
82	278	426	19	Ditch	?	10	+		+		++	Rootlets	2000	100
82	279	392	10	Ditch	20	10	++		++	+	+++	Grains mostly wheat. Few rootlets.	2000	100
82	286	526	59	Ditch	20	10	+	++	+		++	C.10 glume bases; grass & legume seeds.	4000	100

sample details						flot and residue details							residue	
gp	SG	Context no.	sample no.	Feature type	sample vol (l)	flot vol (ml)	grain	chaff	charred seeds	unch'd seeds	charcoal	comments	size (ml)	% sorted
85	306	916	74	Pit	20	20	+++	++	++		++	C.70 grains-poor cond. Weeds eg Centaurea, Lathyrus/Vicia, Rumex spp. Rootlets.	1500	100
95	64	1051	54	Ditch	10	30	+	+	+		++	V. few wheat grains, glume bases, legumes. Many rootlets.	2000	100
97	102	1009	7	Pit	30	200	++	++	++	++	+++	Grain poorly preserved. Wheat glume bases, barley rachis. Rootlets. 3000		100
97	108	1008	6	Pit	30	25	++			++	++	10-20 grains. Rootlets.	300	100
97	111	1026	8	Pit	30	100	++	+	+	++	++	10-20 grains, poor preservation. Rootlets.	4000	100
97	114	1027	11	Pit	30	0	++++	++++	1000+	+	++++	Lithospermum &g rass seeds. Grain poor, most wheat.<4mm res. unsorted. Rootlets.	2000	85
97	114	1056	65	Pit	30	60	++++	++++	++++		++	Wheat. Lithospermum & grass seeds. Gl bases, sp forks, rachis. Rootlets.	1500	90
97	114	1032	12	Pit	30	150	++++	++++	++++		++++	Mainly wheat grains, glume bases. Lithospermum seeds. Rootlets. 3500		100
97	114	1033	13	Pit	30	100	++++	++++	++++		++++	Mainly wheat grains, glume bases. Lithospermum seeds. Rootlets. 1000		100

sample details						flot and residue details							residue	
gp	SG	Context no.	sample no.	Feature type	sample vol (l)	flot vol (ml)	grain	chaff	charred seeds	unch'd seeds	charcoal	comments	size (ml)	% sorted
97	117	1036	14	Pit	30	200	++++	++++	++++	++		Mainly wheat grains, glume bases. Lithospermum seeds. Rootlets. 2000		100
97	117	1043	26	Pit	30	150	+++	++	+++		+++	Mainly wheat grains, glume bases. Weed seeds. Prunus sp. Rootlets. 4000		100
97	118	1046	27	Pit	30	50	++++	++	++	++	++	100+grain, most wheat, poor cond. Many mollsc.<4mm res unsorted. Rootlets.	3500	90
98	4	1262	69	Ditch	20	30	+++	1000+	++		++	>1000 chaff frags, c80 grains, mostly wheat. Rootlets.	500	100
111	8	1201	68	Pit	10	40	+++	1000+	++	+	++	1000s gl bases, sp forks. c100 grains, mostly wheat. Rootlets.	500	100
114	68	1281	78	Oven	10	20	++	+	++		+	C.20 grains, hazelnut, weed seeds. Rootlets.	500	100
114	69	1270	71	Oven	10	10	+	+	+	+		Rootlets.	2000	100
114	70	1279	70	Ditch	10	40	+++	++++	++	+	++	C.50 grains, >100 chaff. Weeds Lithospermum, Ranunculus, Rumex spp.	1000	100
	231	292	75	Floor	20	50	+++	++	+++	++	++	>50 ?peas, few ?beans, Prunus sp., weed seeds. Uncharred seeds.	1500	100
	231	292	76	Floor	20	2	++		+		++	Few pulse fragments. c.10 grain including rye.	1500	100
	231	292	77	Floor	20	30	++++		+++		++	Much wheat. C.40 ?peas, ?beans, Prunus sp.,weed seeds.	1000	100

Table 64: Assessment of Charred Plant Remains & Charcoal from ARC HRD 99

Sample details					flot and residue details							residue	
SG	context no.	Sample no.	Feature type	Sample vol (l)	flot vol (ml)	grain	chaff	charred seeds	unch'd seeds	charcoal	comments	vol (ml)	% sorted
725	14	19	Demolition	20	40	+++		+++		>1000	c.50 grains -wheat, rye, oats. c.50 weeds. Few id ch'cl frags. Moss.	500	100
727	163	46	Layer	10	50	++++	+++	+++		>1000	c.800 grains+frags. Rachis frags. Arable weeds + <i>Prunus</i> sp. Moss.	4000	100
738	184	49	Occupation	10	40	>1000	+++	+++		>1000	>1000 grains, most ?bread wheat. Rachis frags. 400ml unsorted res. ?id ch'cl. Moss.	500	20
741	187	50	Occupation	10	40	++++	+	++		>1000	c.200 grains, most ?bread wheat. Moss.	400	100
747	169	47	Oven	10	10	++++		++		>1000	c.150 grains, most ?rye & ?bread wheat.	1500	100
758	3	2	Hearth	5	2	+++				+++	c.100 grains, most wheat - poor cond. ID charcoal. Modern moss.	500	100
800	18	41	Pit	10		++		+		++	10-15 grains, 1 large legume.	1500	100
805	63	24	Layer	10		++					20-30 grains, most wheat & oats. Poor condition.	1000	100
809	102	29	Demolition	30	10	++		+		++	c.15 grains, few legume seeds. Rootlets.	2000	100
809	102	30	Demolition	20	20	+	+	+		+++	1 wheat rachis. Much moss.	1000	100
810	103	31	Layer	10	30	>1000	+	++++		>1000	>300 grains + more in 300ml unsorted res.>300weeds,most legumes. Little moss.	800	60
810	103	32	Layer	10	10	++				++++	25-30 grains - poor condition. Moss.	500	100
810	132	42	Layer	10	15	++		+		+++	c.15 wheat & barley grains, fragmentary. Moss.	1000	100
810	132	44	Layer	10	5	+		+			Flot mainly clinker.	500	100
810	132	57	Layer	10	10	+++		++		+++	c.100 grains - most wheat. Frag of <i>Prunus</i> sp.	1000	100

sample details					flot and residue details							residue	
SG	context no.	sample no.	Feature type	sample vol (l)	flot vol (ml)	grain	chaff	charred seeds	unch'd seeds	charcoal	comments	vol (ml)	% sorted
810	217	58	Layer	10	300	>1000	++++	++++		>1000	Flot 90% grain. Most ?spelt/emmer. Glume bases,sp forks. 600ml unsorted res.	3000	80
810	218	59	Layer	10	100	>1000	+++	+++		>1000	Flot 99% grain. Most wheat. Glume bases, sp forks. 600ml uns res. Id ch'cl. Moss.	2500	75
819	219	61	Oven	5	30	++++	++	+++		>1000	c.400 grains, mostly wheat. Glume bases.100ml unsorted res. Moss.	300	67

Table 65: Assessment of Charred Plant Remains & Charcoal from ARC 330 98

sample details					flot and residue details							residue	
SG	context no.	sample no.	feature type	sample vol (l)	flot vol (ml)	grain	chaff	charred seeds	unch'd seeds	charcoal	comments	vol. (ml)	% sorted
	no.	no.		vol. (l)	vol. (ml)			seeds	seeds				sorted
3002	112	13	Pit	20						++	?id charcoal	1000	100
3004	110	9	Pit	20						+	Id charcoal	300	100
3008	121	20	Pit	10	10	+	+	+	+	++	Wheat grains	200	100
3009	141	21	Pit	8	10	+	+			+++	Few grains, glume base. Rootlets, moss.	500	100
3011	315	60	Pit	10	15	+			+	++	Few grains. Rootlets.	1000	100
3012	138	16	Pit	4		+				+	1 grain, 1 frag.	2000	100
3013	561	144	Pit	30				+		+++	Hazelnut shell frag.	500	100
3014	146	44	Pit	30	20	++		+		++++	C.6 grains. Charcoal sample. Roots & moss.	1000	100
3014	264	53	Pit	20	80	+	+			>1000	Few grains & glume base. Some id charcoal. Rootlets.	500	100
3015	148	22	Pit					+			2 frags hazelnut shell	300	100
3015	149	23	Pit	7	30	+	+	++	+	++++	Few wheat grains+glume bases. Moss & rootlets	1500	100
3036	325	65	Pit	10		+				+	3-4 grains	2000	100
3039	344	67	Ditch	10		+			+	+	2 grains	200	100
4162	225	54	Pit							+++	Id charcoal	200	100

APPENDIX 15: ASSESSMENT OF GEO-ARCHAEOLOGY - DOWNS ROAD

Jane Corcoran

1. Introduction

- 1.1 One monolith sample was obtained from slightly down-slope of a multi period area which showed evidence for burning on a north-facing slope to the north of Hazell's Farm. The monolith assessment aimed to investigate whether the deposits had accumulated as a result of Iron Age activity or rake-out from the post-medieval kiln and the processes that may have been involved.
- 1.2 The monolith sample was obtained by hammering a 500mm x 50mm x 50mm tin into the cleaned section face. The sediments and stratigraphy visible in section were described and drawn by the excavators on site. The monolith location was marked on the section drawing and a level, related to Ordnance Datum was taken on the top of the tin.

2. Methodology

- 2.1 The sediments sampled in the tin were cleaned and described using standard sedimentary criteria (Jones, 1999). This attempts to characterise the visible properties of each deposit, in particular relating to its colour, compaction, texture, structure, bedding, inclusions, clast-size and dip.
- 2.2 Every distinct unit was given a separate letter and the nature of the contact between each unit was noted. The units identified during description are related to the contexts described on site in the profile description and, where possible, the profile is discussed in terms of contexts as opposed to the units identified in the monolith tin, in section 4.

3. Quantification

- 3.1 This section gives the results of the monolith assessment. The sequence is described in the table below. In this table the elevation (in m OD) is given for the contacts between the units and brackets denote the thickness of the individual units.

Table 66: Assessment of Geo-Archaeology: ARC 330 98

Unit	Elevation of contact (m OD)	Description and Contacts Sample <68>	Context
	23.57	TOP OF MONOLITH SEQUENCE	
1	[0.15m thick]	Dark yellowish brown 10YR4/4 compact, slightly clayey fine sandy silt. Occasional angular and sub-angular chalk granules and very occasional granular sized flint gravel. Charcoal flecks are moderately abundant and increase but become more minute with depth. This unit has a slightly greyer colour than units 2 & 3 and may be derived from charcoal and clay. Very occasional iron concretions and CBM flecks.	[339]
		diffuse contact to:	
2	[0.20m thick]	Dark yellowish brown 10YR4/6 compact sandy silt. Colour becomes gradually paler downwards. Frequent minute charcoal speckles, more minute than in unit 1 and become less abundant downwards. Diffuse speckled patches of carbonate (?precipitations).	none
		sharp contact (follows irregular crack) to:	
3	[0.15m thick]	Yellowish brown 10YR5/4 sandy silt. Humic stained root channels terminate at contact with unit 2, some contain chalk granules. Fewer charcoal flecks and very occasional diffuse carbonate precipitations than in units 1 & 2.	none
	23.07	BASE OF MONOLITH SEQUENCE	

4. Provenance

- 4.1 The sediments are not specifically dated. However, they are from a sequence that appears to include the first evidence for human activity from this section, above a colluvial deposit. It is therefore likely that the humanly derived material relates to the Mid to Late Iron Age activity recorded further upslope, where there is extensive evidence for burnt material (furnaces [1427], charcoal, burnt daub, burnt flint).
- 4.2 Unit 3 at the base of the monolith sample appears to be a lower horizon of a soil, which developed in brickearth-like parent material (probably derived from colluvial processes).
- 4.3 This has been truncated, perhaps by the same activity or process that deposited unit 2. Although unit 2 is also brickearth-like it does not have root channels and contains many charcoal speckles, together with diffuse carbonate patches, which may be derived from ash. Unit 2 also becomes a darker, slightly greyer colour upwards.

- 4.4 This trend is continued into the upper unit (unit 1, context [339]) which is greyer, slightly clayey and contains larger charcoal flecks together with chalk and flint granules.
- 4.5 The monolith description suggests that there may have been deliberate truncation of the former vegetated ground surface. The sediment accumulation above this appears to have built up as a result of sediment movement down slope and inclusions of charcoal and possibly ash imply that at least some of the sediment may have been derived from burning. Larger particles of charcoal occur in the upper unit, which has a greyer colour, which may be caused by a soot or a finely comminuted charcoal component. This may have been washed down through the profile, or it may indicate an intensification or slight change in the activities and processes undertaken up slope.

5. Conservation

- 5.1 If thin sections are made of the monolith they will take up less storage space, stand a better chance of long term preservation and be amenable to a similar method of archiving to that for finds and environmental samples. As monoliths, samples are not easily stored, need to be kept in a cool to cold and dark environment and will be likely to deteriorate with time. Thin sections are easily available for further research and can be examined frequently without loss of information. Stored monoliths are less accessible and will gradually lose their potential for preserving information, especially as each time they are examined further cleaning will wear away the surface.
- 5.2 In the same way, processed sub-samples taken from the monolith will be easier to store and are less likely to deteriorate than the original soil material and will provide supporting information to the thin sections.
- 5.3 Long term storage as a monolith sample is likely to be costly and is not an efficient use of space or archive material. After analysis, if not impregnated with resin and converted to thin sections, the sample should be discarded.

6. Comparative material

- 6.1 The thin sections produced should be compared to those from the colluvial sediments from other parts of the CTRL route, including those from the dry valley in the eastern part of Zone 3, the Medway Valley and Whitehorse Stone. These thin sections would act as a control, representing the products of colluviation in 'un-modified' soil materials in this area. They should also be compared to thin sections of burnt brickearth (eg: floor slabs, as found in Boudican and Hadrianic fire deposits from London) and to slides of trampling and ash deposits (typically those from cave sediments). These comparisons would enable the characteristics of the deposits from the present site to be identified and interpreted.
- 6.2 The magnetic susceptibility results should also be compared to magnetic susceptibility values from other sites along the CTRL route, to provide a background level against which the values from the present site can be

compared. Interpretation of the results should be made in the light of relevant published literature (Dearing 1999; Oldfield *et al* 1984)

7. Potential for further work

7.1 The data from the monolith samples has potential to address the following research objectives:

- *Farming communities (2,000 – 100BC): Consider environmental change resulting from landscape organisation and re-organisation*

7.2 The sediments sampled from ARC 330 98 would appear to have potential for further investigation into the activities occurring in the vicinity of Hazells Farm (Figure 5). This should involve thin section analysis and magnetic susceptibility determinations. The analysis should attempt to determine the mechanisms that deposited units 1 and 2: was it ‘natural’ erosion of waste materials as a result of hillwash or soil creep and wind blowing charcoal and ash? Or were they deliberately dumped deposits? It should also attempt to establish whether the changes in the characteristics of units 1 and 2 are the result of slightly different activities. Or are they a result of subsequent soil formation and weathering of waste materials, translocating the fine components down through the profile.

7.3 The magnetic susceptibility of a sediment is enhanced by burning (amongst other things). Thus the products of burning activities which produced the charcoal and burnt daub should, even if disintegrated and redeposited produce higher values than un-modified brickearth. As magnetic susceptibility is also enhanced by weathering, a soil will have higher values than un-modified brickearth.

7.4 Thus by comparison of the values obtained through the monolith profile with those for local unmodified brickearth and results would give an indication of if the sediment is derived from occupation burnings or industrial activities might be inferred.

7.5 If thin sections were to be made of the monolith sediments a more reliable indication of their components would be obtained. High incidence of components such as phytoliths (often found as the main component of ash) and burnt clay might indicate a brick-clamp and their micro-stratigraphic relationships may be able to suggest whether they have been dumped and become weathered *in situ* or transported downslope by hillwash or soil creep processes. Examination of the thin sections may also be able to interpret the difference that appears to exist between units 1 and 2. This may be a result of soil formation or different inputs or depositional processes.

7.6 Recommendations for further work:

Task
Further sedimentological work (Geo-archaeologist): <ul style="list-style-type: none"> Scrape continuous 20mm sub-samples from the surface of the monolith for magnetic susceptibility and other analysis as required, to support the micromorphological results. Carry out: magnetic susceptibility by pot sensor method (and possibly loss on ignition, phosphate and particle size analysis of these sub-samples as discussed with the micromorphologist) Make the results of these techniques available to the soil micromorphologist
c) Thin section analysis (Soil micromorphologist): <ul style="list-style-type: none"> Set monolith sample in resin Manufacture thin sections, each 35mm x 90mm covering: 1 / 2 and 2/3 interfaces Examination of these thin sections and production of a report
d) Interpretation of the results (Geoarchaeologist) <ul style="list-style-type: none"> integration of the results of (a) with the results of (b), other CTRL sites, especially ARC-TGW97, published sources and this assessment report.

8. Bibliography

- Dearing, J, 1999 'Magnetic susceptibility' in *Environmental magnetism: a practical guide* Quaternary Research Association Technical Guide, 6, 35-62
- Jones A *et al*, 1999 *The description and analysis of Quaternary Stratigraphic Field Sections*
- Oldfield, F, Krawiecki, A, Maher, BA, Taylor, JT & Twigger, S, 1984 'The role of mineral magnetic measurements in archaeology' in *Palaeoenvironmental Investigations: Research Design and Interpretations* BAR International Series S258, 29-53

APPENDIX 16: ASSESSMENT OF GEO-ARCHAEOLOGY – WEST OF TOLLGATE

Jane Corcoran

1. Introduction

- 1.1 This report presents the results of the assessment of four monolith samples recovered from the east-facing section of ARC TGW 97 trench 1472TT, located towards the base of the dry valley at the eastern end of Zone 3. The sediments sampled were provisionally interpreted as colluvial slope deposits during excavation.
- 1.2 The objective of the geoarchaeological assessment is to examine the depositional and post-depositional processes that have taken place on the site. In particular, this might enable periods of erosion landscape stability to be identified. Periods of erosion (and landscape instability) might be marked by accumulations of colluvial sediment transported downslope by gravity and water-aided slope processes. Periods of stability may be characterised by episodes of soil formation and vegetation growth. If these processes can be dated, they may be linked to episodes of human activity on the site and its environs. Thus it may be possible to investigate the impact and repercussions of human disturbance on the changing landscape in the environs of the site.
- 1.3 Each monolith sample was obtained by hammering a 500mm x 50mm x 50mm tin into the cleaned section face. The sediments and stratigraphy visible in section were described and drawn by the excavators on site. The monolith locations were marked on the section drawing and a level, related to Ordnance Datum was taken on the top of each tin. A column of associated bulk samples was taken adjacent to the monolith sequence for landsnail analysis.

2. Methodology

- 2.1 The sediments sampled in each tin were cleaned and described using standard sedimentary criteria. This attempts to characterise the visible properties of each deposit, in particular relating to its colour, compaction, texture, structure, bedding, inclusions, clast-size and dip.
- 2.2 The 4 monoliths were described as one profile. Every distinct unit was given a separate letter and the nature of the contact between each unit was noted. The units identified during description are related to the contexts described on site in the profile description (Table below) and, where possible, the profile is discussed in terms of contexts as opposed to the units identified in the monolith tins, in section 4.

3. Quantification

- 3.1 This section gives the results of the monolith assessment. The sequence is described in the table below. In this table the elevation (in m OD) is given for the contacts between the units and brackets denote the thickness of the individual units.

Table 67: Assessment of Geo-Archaeology: ARC TGW 97

tin	Unit	Elevation of contact (m OD)	Description and Contacts	context	Assoc. samples
		34.89	TOP OF MONOLITH SEQUENCE		
<4>	1	[0.05m thick]	Dark greyish brown 10YR4/2 sandy clay silt. Cloddy. Slightly humic and contains frequent modern roots. Crumbly blocky structure. Occasional flint and chalk clasts.	[001]	
			diffuse contact to:		
<4>	2	[0.40m thick]	Dark yellowish brown 10YR4/6 slightly sandy silt. Frequent chalk and flint granule to small pebble sized gravel. Crumbly blocky structure.	[002]	<5> <6>
			diffuse contact to:		
<4> + <1>	3	[0.23m thick]	Dark yellowish brown 10YR4/6 slightly sandy silt. Frequent chalk granule to small pebble sized gravel. Compact and cohesive. Occasional diffuse carbonate precipitations.	[002]	<7>
			Gradual contact to:		
<1>	4	[0.15m thick]	Dark yellowish brown 10YR4/4 slightly sandy silt. Slightly darker and less cohesive than unit 3. Frequent chalk granule to small pebble sized gravel.	[002]	<8>
			Sharp contact followed by pebble-sized gravel clasts and marked by chalk granules above the contact and none below.		
<1> + <2>	5	[0.22m thick]	Dark yellowish brown 10YR4/6 slightly sandy silt. Compact and cohesive. Occasional faint and diffuse carbonate precipitations. Occasional manganese speckles.	[003]	<9>
			Gradual contact to:		
<2> + <3>	6	[0.54m thick]	Dark yellowish brown 10YR4/6 slightly sandy silt. Compact and cohesive. Darker than unit 5 and characterised by a more clayey matrix with common charcoal flecks, occasional flint gravel <0.10m diameter and no carbonate precipitations.	[003]	<10> <11>
			Distinct contact to:		
<3>	7	[0.12m thick to base of profile]	Yellowish brown 10YR5/6 (ie: paler) silty fine sand. Very occasional manganese flecks, grit and possible rooting marked by white ?carbonate or bleached sand channels.	[010]	
		33.18	BASE OF MONOLITH SEQUENCE		

4. Provenance

- 4.1 Below the sampled sediments was a rubbly deposit of flint nodules in a reddish silty clay matrix [007] that may be derived from clay-with-flints, redeposited by solifluction processes in a periglacial environment at the end of the Pleistocene.
- 4.2 Unit 7 (context [010]) overlay context [007] and was at the base of the profile sampled. It was a very fine sand that may have been deposited by fluvial or aeolian processes as it was very well sorted. If of fluvial origin it probably accumulated during a period of swift river discharge in the late Pleistocene, as a result of seasonal snow-melt. If aeolian (it is too coarse for loess) it was probably the result of harsh winds redepositing loessic and fluvially derived sediments during the arctic winters of the late Pleistocene.
- 4.3 There is slight evidence that vegetation developed in this fine sand prior to the accumulation of unit 6 (context [003]).
- 4.4 Unit 6 represents the lower part of context [003]. This appears to be redeposited brown-earth soil material. The common charcoal flecks within it suggest that human deforestation activities may have been responsible for the erosion event, which transported it downslope.
- 4.5 The gradual contact between units 6 and 5 implies that further sediment gradually accumulated above the initially eroded topsoil material. This may have been the result of a prolonged period of agricultural activity on the cleared land (as discussed in Allen 1992). It would appear that, during this period, an accretionary soil developed in sediment gradually accumulating by soil creep processes, as indicated by the slightly leached upper part of context [003] and the faint carbonate precipitations observed within it.
- 4.6 A much higher magnitude erosion event appears to mark the contact between contexts [002] and [003] (units 4 and 5). This probably truncated the upper part of the soil that had developed in the earlier colluvium and the gravel found along the contact may be the lag deposit left by valley side gully erosion, which probably took place during the erosion event.
- 4.7 It is possible that human activities may have triggered this event. Adoption of winter ploughing has been proposed as a cause of accelerated soil erosion during the Iron Age and Romano British periods elsewhere (Allen 1992).
- 4.8 The loose and possibly humic deposit (unit 4) directly above the interface of contexts [002] and [003] is probably soil material redeposited as a result of this second more dramatic erosion event. However it is different in character to the lower soil material (unit 6) as it contains chalk granules, indicative of shallower soils and possibly ploughing activities biting into the chalk bedrock.
- 4.9 This suggests that considerable erosion of soil material in the intervening period had denuded the valley sides, perhaps as a result of continued agricultural activity. Because of this soil deterioration, the soils available for exploitation on the valley sides had become shallower and more gravelly.
- 4.10 Further gradual soil erosion and deposition is indicated by the accumulation of the upper part of context [002] again perhaps as a result of soil creep mechanisms.

- 4.11 A later period of landscape stability is indicated by the (recent) soil [001] developed in these colluvial sediments.

5. Conservation

- 5.1 If thin sections are made of the monolith blocks they will take up less storage space, stand a better chance of long term preservation and be amenable to a similar method of archiving to that for finds and environmental samples. As monoliths the samples are not easily stored, need to be kept in a cool to cold and dark environment and will be likely to deteriorate with time. In addition thin sections are easily available for further research and can be examined frequently without loss of information. Stored monoliths are less accessible and will gradually lose their potential for preserving information, especially as each time they are examined further cleaning will wear away the surface.
- 5.2 In the same way, processed sub-samples taken from the monoliths will be easier to store and less likely to deteriorate than the original soil material and will provide supporting information to the thin sections.
- 5.3 Long term storage as monolith samples is likely to be costly and is not an efficient use of space or archive material. After analysis, for those monoliths not impregnated with resin and converted to thin sections, what remains of the samples should be discarded.

6. Comparative material

- 6.1 Similar studies elsewhere on the North and South Downs (Bell and Boardman 1992; Bell 1983) have been able to link periods of erosion with human activity, especially deforestation and agriculture, up-slope. However other causes of erosion such as those triggered by climatic fluctuations and general landscape evolution (eg weathering, soil deterioration and time) are likely to have contributed to the downslope movement of sediment. The nature, timing and duration of any colluvial processes identified must therefore be viewed in the light of other evidence for human activity and the geomorphology of the site and what is known of climatic trends, as obtained from published sources (Lamb 1981, Evans 1975, Bell & Walker 1992).
- 6.2 Colluvial deposits have been found in many of the CTRL sites along the North Downs (especially at White Horse Stone, near Aylesford). The erosion events represented should be compared in terms of their timing and characteristics, in a similar fashion as was done in Wessex (Allen 1992). This may provide valuable insights into the activities and impact of prehistoric and early historic people on the landscape in this area and the changing resource potential of the environment to successive human groups.
- 6.3 The evidence should also be compared with samples taken recently by MoLAS through colluvial sequences on sites during A2/M2 widening work alongside the CTRL corridor in Kent.

7. Potential for further work

- 7.1 The data from the monolith samples has potential to address the following research objectives:
- *Early Agriculturalists (4,500-2,000BC): Define nature of contemporary environment; and determine nature and effect of clearance for agricultural activity.*
 - *Farming communities (2,000 – 100BC): Consider environmental change resulting from landscape organisation and re-organisation*
- 7.2 In order to refine the model for local environmental and landscape change on the site suggested here, it is suggested that thin sections be made from the monolith tins. The examination of these thin sections might enable ephemeral evidence of soil formation within the sedimentary sequence to be more reliably identified and interpreted (Rose *et al* 2000). It may also allow the causes of colluviation (such as agriculture up slope) to be identified (Macphail *et al*, 1990; Macphail 1992) and the characteristics of the redeposited soil material to be inferred.
- 7.3 The landscape evolution and possible causes outlined in Section 4 above might be tested and enhanced by pollen and soil micromorphological analysis, together with further analysis of the samples taken for mollusc analysis adjacent to the monolith profile. If preserved, pollen could reconstruct the changing vegetation of the valley. This might enable a better understanding of the causes of the colluvial events to be gained. Pollen assemblages might be able to tie in episodes of woodland clearance with colluvial events and perhaps link them to evidence for agriculture. Similarly evidence for different crop types or more intensive agriculture might be observed that would tie in with the second dramatic erosion event. Although these inferences have been obtained from analysis of colluvial sequences elsewhere (Bell & Boardman 1992) they need to be tested before they can be assumed to be the cause of the erosion events on the present site.
- 7.4 Pollen is not often preserved in calcareous soils, however the carbonate content of these sediments seems to be low. It is therefore suggested that, in order to tie in the erosion events with vegetation change and possibly correlate it with evidence for agricultural activity, pollen analysis be undertaken. This should preliminarily identify whether pollen is preserved within these sediments and if it is, analysis of pollen sub-samples should proceed.
- 7.5 The results of pollen assessment and soil micromorphology should be compared to the results of further analysis of the adjacent snail samples. This will allow a more reliable reconstruction the changing landscape processes and the changing environment of the dry valley and adjacent interfluvies.
- 7.6 However unless datable materials (such as pottery or charcoal) have been found stratified within contexts [002] and [003] the episodes of erosion and stability identified would not be able to be tied in to a specific time frame. Nevertheless, if dateable inclusions were found within context [002] and [003] they should allow the possibility of a high magnitude erosion event immediately pre-dating the accumulation of context [002] to be related to other evidence for human activity or natural events in the environs of the site.
- 7.7 It may also be possible to obtain Accelerator Mass Spectrometry (AMS) radiocarbon dates on the snails obtained from the bulk samples, if required. As a

sequence of samples for snail analysis was taken adjacent to the monolith sequence, AMS dating of the snails would probably be the best way of dating the sediment sequence. Unfortunately there were no snails preserved in the lowest redeposited soil material and it will not be possible to date the charcoal from the unit as there is insufficient, and the monoliths will be set in resin.

7.8 This evidence should be compared with samples taken recently by MoLAS through colluvial sequences on sites during A2/M2 widening work alongside the CTRL corridor in Kent and with previous work undertaken on colluvial deposits in Wessex (Allen 1992). This will help indicate any trends/anomalies over the wider region of southern England.

7.9 Further work can be summarised as a table:

Task
<p>(a) Further sedimentological work (Geoarchaeologist):</p> <ul style="list-style-type: none"> • Sub-sample the monoliths for pollen at 40mm intervals. • Scrape continuous 40mm sub-samples from the surface of the monoliths for further sedimentological analysis, to support the micromorphological results. • Carry out: loss on ignition and possibly magnetic susceptibility, phosphate and particle size analysis of these sub-samples as discussed with the micromorphologist • Make the results of these techniques available to the soil micromorphologist
<p>b) Pollen analysis at 80mm intervals through the profile (16 samples: units 3-7) and production of a report (following preliminary scanning of the samples to ensure that pollen is preserved)</p>
<p>c) Thin section analysis (Soil micromorphologist):</p> <ul style="list-style-type: none"> • Set monolith samples <1, 2 & 3> in resin • Manufacture 6 thin sections each 35mm x 90mm covering: ³/₄, 4/5, 5/6, 6/7 interfaces and from within units 6 & 7 • Examination of these thin sections and production of a report
<p>d) Radiocarbon (AMS) on snails taken from samples <9> and <8> from the adjacent snail sample column.</p>
<p>d) Interpretation of the results (Geoarchaeologist) Integrate the results of (a) with:</p> <ul style="list-style-type: none"> • The results of (b & c) • This assessment report • Other specialist reports from the site (especially the results of any further landsnail analysis if undertaken) • Data from other CTRL sites and work undertaken on colluvial sequences in the area <p>Aim: to report on the sequence of colluvial and soil forming events and possible linkages and implications for human activity on the site and within the region.</p>

8. Bibliography

- Allen, MJ, 1992 products of erosion and the Prehistoric land-use of the Wessex chalk in *Past and Present Soil Erosion: Archaeological and Geographical Perspectives* Oxbow Monograph 22, 37-51 Eds. Bell & Boardman
- Bell, M, & Boardman, J, 1992 *Past and Present Soil Erosion: Archaeological and Geographical Perspectives* Oxbow Monograph 22
- Bell, M, & Walker, MJC, 1992 *Late Quaternary Environmental Change: Physical and Human Perspectives* Longman Scientific and Technical
- Bell, M, 1983 'Valley sediments as evidence of prehistoric land-use on the South Downs' *Proceedings of the Prehistoric Society* 49, 119-150
- Evans, J, 1975 *The Environment of Man in British Prehistory*
- Lamb, HH, 1981 'Climate from 1000BC to 1000AD' in *The environment of man: Iron Age to Anglo Saxon period* BAR (British) 87
- Macphail, RI, 1992 'Soil micromorphological evidence of ancient soil erosion' in *Past and Present Soil Erosion: Archaeological and Geographical Perspectives* Oxbow Monograph 22, 197-215 Eds. Bell & Boardman
- Macphail, RI, Courty, MA, & Gebhardt, A 1990 'Soil micromorphological evidence for early agriculture in north-west Europe. *World Archaeology* 22(1) 53-69
- Rose, J, Lee, J, Kemp RA & Harding, PA 2000 'Palaeoclimate, sedimentation and soil development during the Last Glacial Stage (Devensian), Heathrow Airport, London, UK' in *Quaternary Science Reviews* 19, 827-847