Channel Tunnel Rail Link
Union Railways (South) Limited

Project Area 410

NASHENDEN VALLEY, BORSTAL, KENT
ARC NSH 98

DETAILED ARCHAEOLOGICAL WORKS ASSESSMENT REPORT
FINAL

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LIST OF CONTENTS

1. INTRODUCTION 1
1.1 Project Background 1
1.2 Geology and Topography 2
1.3 Archaeological and Historical Background 2

2. ORIGINAL PRIORITIES, AIMS AND METHODOLOGY 4
2.1 Landscape Zone Priorities 4
2.2 Fieldwork Event Aims 4
2.3 Fieldwork Methodology and Summary of Excavation Results 5
2.4 Assessment Methodology 5

3. FACTUAL DATA AND QUANTIFICATION 6
3.1 The Stratigraphic Record 6
3.2 The Artefactual Record 7
3.3 The Environmental Record 7
3.4 Archive Storage and Curation 8

4. STATEMENT OF POTENTIAL 10
4.1 Stratigraphic Potential 10
4.2 Artefactual Potential 10
4.3 Environmental Potential 11
4.4 Dating 12
4.5 Conservation 12
4.6 Overall Potential 12
4.7 Realisation of Priorities and Aims 12
4.8 Additional Research Potential 12

5. BIBLIOGRAPHY 13

APPENDIX 1 - CERAMICS 14
1.1 Assessment of the Prehistoric Pottery 14
1.2 Assessment of the Roman and Post-Roman Pottery 15
1.3 Assessment of Fired Clay and Building Material 16

APPENDIX 2 - LITHICS 18
2.1 Assessment of the Worked Flint 18

APPENDIX 3 - FAUNAL REMAINS 20
3.1 Assessment of the Animal Bone 20

APPENDIX 4 - PLANT REMAINS 23
4.1 Assessment of the Charred Plant Remains and Charcoal 23

APPENDIX 5 - MOLLUSCS 25
5.1 Assessment of the Molluscs 25

APPENDIX 6 - GEOARCHAEOLOGY 28
6.1 Assessment of the Geoarchaeology 28

APPENDIX 7 - SHELL 33
7.1 Assessment of the Oysters 33

LIST OF TABLES

Table 1: List of fieldwork events 1
Table 2: Archive index 9

LIST OF FIGURES

Figure 1: Location of Nashenden Valley excavation and features found during the watching brief

Figure 2: Nashenden Valley (South): location of watching brief features

Figure 3: Nashenden Valley (North): location of watching brief features

SUMMARY

As part of an extensive programme of investigation carried out in advance of the construction of the Channel Tunnel Rail Link (CTRL), a series of archaeological works consisting of fieldwalking, geophysical survey, evaluation, excavation and watching brief were undertaken between 1993-2000 in the Nashenden Valley near Rochester in Kent. The evaluation identified the presence of a late glacial (Allerød) soil horizon, however, further detailed investigation of the same area did not locate this deposit, nor was its presence clearly identified during the assessment of the geoarchaeological samples taken from the excavated section.

The watching brief identified a small number of features of Iron Age, Roman and post-medieval date spread along a 6.5 km stretch of the valley, which are considered to be of no more than local significance.

Areas of potential identified during the preliminary phases of archaeological works, on further investigation have been shown to be of minimal significance, and only relevant in terms of wider landscape studies.

1. INTRODUCTION

1.1 Project Background

1.1.1 The Oxford Archaeological Unit (OAU) was commissioned by Union Railways (South) Limited (URS) to undertake detailed archaeological investigation and watching brief in the Nashenden Valley, Chatham and Rochester, 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 (WSI) was prepared by Rail Link Engineering (RLE) (URL 1998a; 1998b) and agreed in consultation with English Heritage (EH) and Kent County Council (KCC) on behalf of the Local Planning Authorities.

1.1.3 A series of archaeological works was undertaken (Table 1), comprising a surface collection survey (URL 1995), evaluation trenching, detailed excavation and watching brief, along the Nashenden Valley between the River Medway and the London Portal of the CTRL North Downs Tunnel. In the light of the evaluation results, the OAU were commissioned to undertake a detailed archaeological investigation at a single location near Nashenden Farm. The detailed investigation was centred on URL grid point 53200 45580 and NGR TQ 73194 65581 and consisted of a trench 253 m² (23 m x 11 m) in extent (URS 1999). The Nashenden Valley watching brief area extends for a distance of 3.25 km (excluding the North Downs Tunnel section of the CTRL route) from URS grid point 52700E / 46400N (NGR TQ 7265 6660) to 54300E / 43540N (NGR TQ 7430 6400). The total width of the landtake area in this section ranges from c.45m to c.300m.

1.1.4 This post-excavation assessment report considers the results from the fieldwork events listed in Table 1. As the surveys and trench evaluations are described in earlier reports, assessment data is presented only for the detailed excavation and watching brief sites.

Table 1: List of fieldwork events

Fieldwork event name	Fieldwork event code	Contractor	Dates of fieldwork
Nashenden Valley surface collection survey	URL 93	OAU	1993
Nashenden Farm geophysical survey	ARC NSH 95	Bartlett-Clark Consultancy and Geophysics	1995 - 96
Nashenden Valley evaluation	ARC NSH 97	Wessex Archaeology	05/97
Upper Nashenden Farm evaluation	ARC NFM 97	Wessex Archaeology	1997
South of Medway evaluation	ARC MED 98	OAU	27/07/98 - 31/07/98
Little Monk Wood evaluation	ARC MON 98	OAU	10/08/98 - 21/8/98
Nashenden Valley detailed excavation	ARC NSH 98	OAU	07/09/98 - 21/09/98
Nashenden Valley watching brief general (WBG)	ARC 410/99 51+000-57+500	OAU	16/11/98 - 15/05/00

1.2 Geology and Topography

1.2.1 The area investigated lies along the western side of the Nashenden Valley, and forms the north-western section of CTRL Project Area 410, beginning on the east bank of the River Medway and ending at the London Portal of the North Downs Tunnel. The CTRL enters the London Portal end of the tunnel close to Nashenden Farm and exits to the south of Bluebell Hill (the Country Portal).

1.2.2 The geology of the area consists of Pleistocene head deposits along the base of the valley, associated with a relict tributary of the River Medway, and Pleistocene clay-with-flints on the higher ground. These deposits overlie the Cretaceous Upper Chalk. In some valley slope locations the Pleistocene deposits are overlain by Holocene colluvial sequences containing later prehistoric artefacts and soil horizons. Current landuse is mostly arable.

1.2.3 The topography of the valley bottom increases from approximately 10 m OD in the north, near the river Medway, to approximately 175 m OD to the south where the route goes through the North Downs, while at White Horse Stone it is around 65 m OD.

1.3 Archaeological and Historical Background

1.3.1 A desktop assessment has been conducted for the CTRL route, the results of which can be found in Union Railways Limited, Channel Tunnel Rail Link: Assessment of Historic and Cultural Impacts. Final Report (4 volumes. Prepared for URL by OAU, 1994).

Geophysical survey

1.3.2 Geophysical surveys using a variety of techniques were carried out at a number of sites within Project Area 410. The results can be found in a series of volumes produced for URL by Bartlett-Clark Consultancy and Geophysical Surveys of Bradford in 1995 and 1996.

Surface collection survey

1.3.3 Fieldwalking in Nashenden Valley identified it as an area of archaeological potential (URL 1995). This recorded surface concentrations of medieval pottery and prehistoric worked flint, and the possibility that buried land surfaces, features and deposits might be buried beneath the colluvial deposits.

Evaluation

1.3.4 Wessex Archaeology conducted an initial series of evaluations in 1997 at Nashenden Valley (24 trenches) and Upper Nashenden Farm (8 trenches) (URL 1997a and b). A further series was conducted by OAU at South of Medway (10 trenches) and Little Monk Wood (23 trenches) (URL1998c and d). The trenching identified a very low density of features, most if not all of which were of modern date or natural origin. However, a possible buried soil horizon, thought potentially to date from the Allerød Interstadial (c.11000 BC), was identified in chalk meltwater deposits in Trench 1497TT (Nashenden Valley evaluation). Later prehistoric (early and late Bronze Age) pottery was recovered from near the base of colluvial deposits in the valley floor, and burnt flint and charcoal, recovered from the interface of the colluvium and chalk meltwater deposits, produced a thermoluminescence date of 790 ± 350 BC (68% confidence level). Pleistocene and

Holocene colluvial sequences were also recorded in trenches 3113TT and 3123TT (Little Monk Wood evaluation).

Detailed archaeological investigation

1.3.5 Oxford Archaeological Unit conducted a detailed archaeological investigation, comprising a single stepped trench, to investigate an artefact-bearing colluvial sequence, and possible Allerød soil horizon, identified in Trench 1497TT during the evaluation (URS 1999) (Figure 1).

Watching brief

1.3.6 The OAU undertook a watching brief on all CTRL earthworks along a 6.5 km transect of the Nashenden Valley (Figure 1). The watching brief recorded the presence of Bronze Age pits and a ditch, two early Roman ditches and a 2nd-3rd century pit (URS 2000). The CTRL cutting created a substantial exposure of the Pleistocene/ Holocene colluvial sequence in the vicinity of the detailed excavation. Further recording was carried out and a possible continuation of the Allerød soil horizon seen in Trench 1497TT was identified, although it was very poorly preserved.

2. ORIGINAL PRIORITIES, AIMS AND METHODOLOGY

2.1 Landscape Zone Priorities

2.1.1 The WSI (URL 1998a) outlined three principal landscape priorities:

2.1.2 i) A reconstruction of the changing palaeo-environment for all time periods present, through 'on-site' and 'off-site' studies and the interaction with past economies:

- a) the interaction with hunter-foragers;
- b) changes arising from the adoption of agricultural economies;
- c) the effects of and extent of clearance of the 'Wealden Wild Wood';
- d) changes arising from early industrial economies.

2.1.3 ii) Establish the basis of the rural economy of the area for all time periods, but especially through the recovery of material and environmental remains:

- a) changes to the organisation of the landscape through time;
- b) prehistoric landscape division;
- c) settlement morphology and function;
- d) reliance on pasturalism versus arabalism;
- e) utilisation of natural resources, eg. woodland management/utilisation of riverine and coastal resources.

2.1.4 iii) ritual and ceremonial use of the landscape:

- a) evidence for continuity in the area of the Medway Megaliths;
- b) the landscape setting of the Medway Megaliths;
- c) evidence for change and continuity of burial practices between the late Iron Age and Romano-British period in east Kent.

2.2 Fieldwork Event Aims

2.2.1 The specific aims of the Nashenden Valley detailed excavation and watching brief, as stated in the WSI (URL 1998a), were as follows:

- The retrieval of palaeoenvironmental indicators and a dated sequence to define the contemporary environment and changes over time and to make comparisons with and augment colluvial deposits on the south side of the North Downs (Area 2).
- To determine the contemporary environment of the late Upper Palaeolithic and Mesolithic communities that may have been present in the area, and any changes arising from the adoption of an agricultural economy.
- To record any significant archaeological structures, features or deposits (including retrieval of environmental and economic indicators preserved therein) and retrieve isolated artefacts disturbed during construction, within the

framework of the CTRL Research Strategy, with particular reference to the Landscape Zone Priorities, as stated in the watching brief WSI.

- To record the extent and nature of construction where these may affect archaeological and Quaternary remains.
- To record any significant Quaternary deposit (including retrieval of environmental indicators preserved therein) and retrieve samples from deposits disturbed during construction, within the framework of the CTRL Research Strategy.

2.3 Fieldwork Methodology and Summary of Excavation Results

2.3.1 The methodologies for the survey and evaluation stages of work have been described in the relevant fieldwork reports (See Bibliography).

2.3.2 The detailed excavation trench was located on the site of evaluation trench 1497TT (URL 1997) where a possible Allerød soil horizon had been identified.

2.3.3 A large stepped trench was excavated to a maximum depth of 3.50 m. The section revealed a Holocene colluvial sequence and Pleistocene Coombe Rock deposits, which were of some geological interest, but produced no significant archaeological results. Mollusc and pedological samples were taken at 0.10 m intervals from the topsoil to a depth of 1.3 m (see Appendices 8 and 9).

2.3.4 The possible Allerød soil horizon recorded in the evaluation was not identified, even though the evaluation trench was clearly visible in the sides of the excavation, and the section was examined by several geological and geoarchaeological specialists (Dr Martin Bates, Dr Richard Preece, Dr Martin Bell and Dr Richard Macphail).

2.3.5 Only two worked flint flakes were recovered during sieving of spoil from a section excavated by hand through the colluvium (see Appendix 4).

2.3.6 The methods of archaeological monitoring and recording undertaken during the watching brief are detailed in the Watching Brief Interim Report (URS 2000) and were undertaken according to the specification outlined in the Archaeological Watching Brief WSI (URL 1998b). All earthmoving operations with a potential archaeological impact were monitored by an archaeologist in continuous attendance.

2.3.7 A substantial exposure of the Pleistocene/ Holocene colluvial sequence in the vicinity of Trench 1497TT, during creation of the CTRL cutting, identified a possible continuation of the Allerød soil horizon, although if such it was very poorly preserved. The sequence was recorded by Dr M Bates and additional samples were recovered.

2.4 Assessment Methodology

2.4.1 This assessment report was commissioned by URS following the specification produced by RLE (2000), as discussed with EH and KCC. This specification follows national guidelines prepared by English Heritage and provides additional information regarding level of detail required and format. The production of this assessment report was managed by Stuart Foreman (Project Manager) and Alistair Barclay (Team Leader). Specialist reports were undertaken by appropriately qualified external and in-house specialists.

3. FACTUAL DATA AND QUANTIFICATION

3.1 The Stratigraphic Record

Phasing, dating and stratigraphy

3.1.1 The stratigraphic record includes a series of sections through the dry valley sequence, recorded at various locations during evaluations, the detailed excavation and the watching brief. Occasional artefacts were recovered from the sequence, and an OSL date has been obtained at one location, but in general the sequence is poorly dated and is not directly associated with any *in situ* archaeological deposits.

3.1.2 In addition to a few features of uncertain or post-medieval date uncovered during evaluation trenching, 14 features (postholes, pits and ditches) were excavated during the watching brief. Of the identified features five are of Iron Age or Roman date and the remainder are either post-medieval, modern or of uncertain date (Figures 1-3).

Nashenden Valley detailed archaeological investigation

3.1.3 Deposits of Pleistocene and Holocene date were recorded at various locations within the valley but were most intensively investigated in evaluation trench 1497TT and the Nashenden Valley detailed excavation (ARC NSH 98). However, none of the deposits encountered were thought to be significant as both ecofactual and artefactual material were all but absent (see Appendix 8). The only artefacts recovered from the detailed excavation were two flint artefacts of Neolithic or Bronze Age date recovered by dry sieving deposits forming the upper part of the sequence (5002 and 5004).

Nashenden Valley watching brief (ARC 51+000-57+500) (Figure 1-3)

Pleistocene/Holocene colluvial sequence

3.1.4 A substantial exposure of the Pleistocene/ Holocene colluvial sequence in the vicinity of Trench 1497TT, during creation of the CTRL cutting, identified a possible continuation of the Allerød soil horizon, although if such it was very poorly preserved. The sequence was recorded by Dr M Bates and samples were recovered. However, no associated archaeological material was recovered and, given the low potential of samples from the adjacent detailed excavation, the samples have not been processed.

Iron Age

3.1.5 A total of two pits (11, 13) and a ditch (34) were associated with this period. Only one of the pits (13) contained dating evidence. However, given the proximity and similar character of the other pit, it has been assumed that both features could be contemporary. A second ditch (35) seen in the same test pit as 34, could be of a similar date.

Roman

3.1.6 The only definite feature of this date is pit 42. This is interpreted as a possible quarry pit that had been reused for the burial of rubbish. The pit contained a large group of late Roman pottery, animal bone, oyster shells, plant remains including spelt and barley, burnt flint and fired clay. This assemblage implies the presence of

a settlement in the near vicinity.

Other

3.1.7 The remaining features discovered during the watching brief are either modern (not labelled), post-medieval (24 and 26) or of uncertain date (11, 15, 17, 19, 30 and 32).

Disturbance and Residuality

3.1.8 There was no clear evidence for disturbance or residuality within the group of dated features, with the caveat that when dealing with very small quantities of material it is often difficult to assess.

3.2 The Artefactual Record

Later Prehistoric Pottery (Appendix 1)

3.2.1 A total of 16 sherds (221 g) of mid-late Iron Age pottery were found along the Nashenden Valley during the watching brief, although no pottery was recovered from the detailed excavation. The assemblage of pottery has a mid-late Iron Age date and includes only small groups of pottery and relatively few diagnostic forms.

Romano-British and Later Pottery (Appendix 2)

3.2.2 A total of 64 sherds (1395 g) of Roman, medieval and post-medieval pottery were recovered during the watching brief. The assemblage is dominated by the material recovered from Roman pit 42.

Fired clay and building material (Appendix 3)

3.2.3 Four hand excavated contexts from the watching brief produced a total of 13 small fragments (138 g). The assemblage includes tile, structural clay from walls or ovens and amorphous fragments.

Worked flint (Appendix 4)

3.2.4 The excavation and watching brief work produced 7 pieces of worked and burnt flint from eight contexts (Appendix 4, Tables 1-3). The material consisted mostly of burnt lumps, the few flakes and retouched pieces that were recovered are not closely datable.

3.3 The Environmental Record

Animal Bone (Appendix 5)

3.3.1 A total of 3 (135 g) fragments of bone were retrieved by hand during the watching brief. A further 14 (244 g) fragments of bone were recovered from environmental samples, sieved through a mesh of >10mm. *c* 30% of the hand collected and sieved bone was identified to species. All but one fragment were recovered from the Romano-British pit (42)

Charred plant remains and charcoal (Appendix 6)

3.3.2 A single sample was taken from Romano-British pit 42, dated to the 2nd - 4th century AD, for the recovery of charred plant remains. The assessment of the charred remains demonstrated that cereal grain, chaff and weeds were present in very small quantities. *Hordeum vulgare* and *Triticum spelta* were identified, the

principal cereals of the Roman period in southern Britain. The remains are likely to represent re-deposited cereal waste. Occasional monocotyledon rhizomes may have derived from cereal roots, or perhaps from turf.

Molluscan assemblage (Appendix 7)

3.3.3 A column of 13 samples was taken through the top 1.30 m of colluvial sediments exposed during the detailed archaeological investigation. Only five flots provided useful information.

Geoarchaeology (Appendix 8)

3.3.4 Three profiles have been examined through valley margin sequences in evaluation trenches 3123TT, 3113TT and the detailed excavation ARC NSH 98 (the sequences recorded in evaluation trench 1497TT and in the watching brief are located immediately adjacent to or within the detailed excavation area). The stratigraphy present in all three sequences can be subdivided into two major groups of sediments:

1: A lowermost group of deposits dominated by coarse flint and chalk rich gravels (that may contain evidence of a weathering horizon or soil development, eg in ARC 3123TT) deposited during the late Pleistocene under typically cold climate conditions (the exception to this is the buried soil horizon that would have developed under milder conditions during the late glacial interstadial 11-12ka BP);

2: An upper group of silts deposited by hillwash processes during the later part of the Holocene.

3.3.5 Although the sequences in Nashenden Valley have some limited potential to address questions regarding the nature of environmental change in the late glacial/early Holocene and later Holocene periods, better preserved sequences, containing richer assemblages of sub-fossil material, in some instances directly associated with *in situ* archaeological deposits, exist within the CTRL corridor and elsewhere in the region (URL 1997c).

Oysters and marine molluscs (Appendix 9)

3.3.6 Only a small quantity of oyster shell was recovered from the excavations at Nashenden Valley. Generally the state of preservation of the shells is good but the numbers of measurable/recordable shells are too few to permit statistical comparisons of their characteristics on either an intra-site or inter-site basis.

3.4 Archive Storage and Curation

3.4.1 The material recovered has been stored according to the United Kingdom Institute for Conservation guidelines.

3.4.2 It is recommended by certain specialists that material can be discarded (Appendices sections 7.5.1 and 9.5.3).

3.4.3 The Archive Index has been updated and the data is presented in Table 2: Archive index.

Table 2: Archive index

ITEM	**NUMBER OF ITEMS OR BOXES OR OTHER**	**NUMBER OF FRAGMENTS/ LITRES**	**CONDITION** (No. of items) (W=washed; UW=unwashed; M=marked; P=processed; UP=unprocessed; D=digitised; I=indexed)
ARC NSH 98			
Contexts records	13		
A1 plans	1		
A4 plans	1		
A1 sections	2		
A4 sections			
Small finds	2		
Films (monochrome) S=slide; PR=print	3 PR		M
Films (Colour) S=slide; PR=print	3 S		M
Flint (boxes)	1 size 4	2	W, M, I
Soil Samples (No.)	1 mollusc column 1pedology column		UP
Soil Samples (bags/tubs)	13 molluscs 13 pedology		See above
ARC 410 WBG 410/99 51+000-57+500			
Contexts records	58		
A1 plans	1		
A4 plans	11		
A1 sections	1		
A4 sections	12		
Films (monochrome) S=slide; PR=print	1 PR		
Films (Colour) S=slide; PR=print	1 S		
Flint (boxes)	*	5	W, M, I
Pottery (boxes)	1 size 2	80	W, M, I
Fired clay and CBM (boxes)	*	13	W, M, I
Animal Bone (boxes)	*	3	W, M, I
Soil Samples (No.)	1pedology column 3 Snails 1 charred remains		P
Soil Samples (bags/tubs)	4 charred remains 3 snails		P
Soil Samples (Monolith/ kubiena tin)	1 monolith		

***** All material stored in 1 size 2 box.

Key to box sizes

Size 2 = Half box 391mm x 238mm x 100mm 0.022m³
Size 4 = Eighth box 213 mm x 102 mm x 80 mm 0.002m³

4. STATEMENT OF POTENTIAL

4.1 Stratigraphic Potential

4.1.1 The Landscape Zone Priorities (i-iii) and Fieldwork Event Aims (1-5) relevant to Nashenden Valley are set out in Section 2 of this report, see above. The following is a summary of the main points of the stratigraphic analysis.

4.1.2 The detailed archaeological investigation and the watching brief present a picture of minimal archaeological activity.

4.1.3 The Holocene colluvial sequence that was identified is of relatively limited potential because of the absence of soil horizons and insignificant environmental and artefactual evidence (see Sections 4.2-3 below).

4.1.4 The watching brief identified a low frequency of archaeological activity. The stratigraphic sequence is of minimal significance and does not merit further analysis, however, the presence of features identified during the watching brief does add to the understanding of the use of the local landscape during the prehistoric to Roman period. The deposit of Roman material in pit 42, including pottery, animal bone and charred cereal remains, suggests the possibility of a settlement in the near vicinity in the later Roman period (late 2nd - 4th century AD).

4.1.5 In general, the results of the stratigraphic analysis identify little potential for further work..

4.2 Artefactual Potential

4.2.1 The artefactual assessments considered the Landscape Zone Priorities (i-iii) and Fieldwork Event Aims (1-5) detailed in Section 2 of this report, see above.

Later Prehistoric Pottery (Appendix 1)

4.2.2 The main potential of the assemblage is that it indicates small-scale domestic activity (associated with pits and postholes) of later prehistoric date within the Nashenden Valley not far from the major settlement at White Horse Stone. Its study will contribute to the identified Landscape Zone Priorities ii and iii (see Section 2.1) and Fieldwork Event Aims 1 and 3 (see Section 2.2).

Roman and Later Pottery (Appendix 2)

4.2.3 The bulk of the material was recovered from an isolated feature. The assemblage has little potential for further analysis. However, its study contributes towards the identified Landscape Zone Priorities ii and iii (see Section 2.1) and Fieldwork Event Aims 1 and 3 (see Section 2.2).

Fired clay and building material (Appendix 3)

4.2.4 The small assemblage of fired clay includes structural clay and a few fragments of Roman and Medieval tile. Mostly deriving from pit deposits, the structural clay provides indirect evidence of domestic occupation. The assemblage has limited potential for further analysis. Its study will contribute to the identified Landscape Zone Priorities ii and iii (see Section 2.1) and Fieldwork Event Aims 1 and 3 (see Section 2.2).

Worked flint (Appendix 4)

4.2.5 This small group of mainly burnt flint has very limited potential for further work. However, its presence on site does indicate prehistoric activity in the valley, although this must have been of a very limited nature. It is possible that the excavations and watching brief did not coincide with the main area of activity. No further work is recommended for this group. Its study contributes to the identified Landscape Zone Priorities i and ii (see Section 2.1) and Fieldwork Event Aims 1 and 3 (see Section 2.2).

4.3 Environmental Potential

4.3.1 The ecofactual assessments considered the Landscape Zone Priorities (i-iii) and Fieldwork Event Aims (1-5) detailed in Section 2 of this report, see above.

Animal Bone (Appendix 5)

4.3.2 The majority of the identified fragments of bone, mostly sheep and some cattle, came from a later Roman pit (42). The condition of the bones from the pit was good. The small size of the assemblage and the isolated location of the deposits, limits the potential for further analysis. Its study will make a limited contribution towards the identified Landscape Zone Priorities i-iii (see Section 2.1) and Fieldwork Event Aim 3 (see Section 2.2).

Charred plant remains and charcoal (Appendix 6)

4.3.3 The absence of good cereal remains and charcoal does not allow further analysis. The material has no useful potential for further work and therefore can not be used to address any of the Landscape Zone Priorities or Fieldwork Event Aims.

Molluscan assemblage (Appendix 7)

4.3.4 Mollusc shells are absent or sparse in a column of samples from colluvial sediments in the bottom of Nashenden Valley. The material has no useful potential for further work and therefore can not be used to address any of the Landscape Zone Priorities or Fieldwork Event Aims.

Geoarchaeology (Appendix 8)

4.3.5 Comparable material to the sedimentary units identified in the various stages of fieldwork exists at a number of locations within the CTRL corridor and beyond within southern England. Extensive sequences of late glacial and Holocene sedimentary units are being studied within the CTRL corridor at White Horse Stone and West of Boarley Farm, starting 3 km to the east of Nashenden Valley. Late Pleistocene and Holocene slope deposits have also been encountered within the Ebbsfleet Valley evaluation works. Beyond the CTRL scheme within the Medway Valley the late glacial soil horizon[1] is well known from Upper Halling and a well

[1] The late glacial interstadial soil horizon that is widely recognised in south eastern England has been given the name the Allerød soil (Kerney, 1963) and this terminology is widely used today (e.g. see Preece and Bridgland, 1998). Within the Medway catchment area the site at Upper Halling has recently been designated as the regional stratotype for the late glacial sequences (including both the late glacial soil horizon and the solifluction deposits above and below the soil horizon). This is known as the Upper Halling Bed and forms part of the Brook Formation (Gibbard and Preece, 1999). All deposits discussed in this report and assigned to the late glacial period would therefore be equated with the Upper Halling Bed. Other terms may also be used to describe the late glacial soil horizon including the Windermere Soil however, this term is inappropriate

dated sequence of late glacial/Holocene deposits were investigated at the site of the Channel Tunnel portal at Holywell Coombe (see Appendix 8).

4.3.6 The analysis was intended to address Landscape Zone Priorities i (see Section 2.1) and Fieldwork Event Aims 1-5 (see Section 2.2). However, the Nashenden Valley sequence, having little dating evidence, no directly related *in situ* archaeology and sparse environmental indicators, will not add significantly to the existing and forthcoming evidence and no further work is recommended.

Oysters (Appendix 9)

4.3.7 Given the fact that the assemblage is small no further work is recommended. The material has no useful potential for further work and therefore can not be used to address any of the Landscape Zone Priorities or Fieldwork Event Aims.

4.4 Dating

4.4.1 There is no justification for further scientific dating.

4.5 Conservation

4.5.1 The only specified conservation requirement involves the stabilisation of a soil micromorphology sample, if this is retained for archive purposes (see Appendix 8, section 8.5.1).

4.6 Overall Potential

4.6.1 Given the scarcity of stratigraphic, artefactual and ecofactual evidence it can be suggested that the collected material has little potential for further study and has only limited scope to address the identified Landscape Zone Priorities and Fieldwork Event Aims (see Sections 2.1-2).

4.7 Realisation of Priorities and Aims

4.7.1 Due to the limited archaeological evidence it is not possible to address most of the original Landscape Zone Priorities or Fieldwork Event Aims (see Section 2, above). The evidence only allows for a partial realisation of the aims in terms of the development and organisation of the landscape, mainly based on negative evidence which suggests a low level of human activity in all periods in that part of the Nashenden Valley affected by the CTRL.

4.8 Additional Research Potential

4.8.1 The original aims were not achieved and there is no additional research potential.

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due to chronological discrepancies at the type site (Prof. Mike Walker pers. comm. July 2000). In this report the term late glacial soil horizon is used and this equates with use of the term Allerød soil as proposed by Kerney (1963). (For references see Appendix 8).

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APPENDIX 1 - CERAMICS

1.1 Assessment of the Prehistoric Pottery

by Alistair Barclay

Introduction

1.1.1 A total of 16 sherds of later prehistoric pottery were found along the Nashenden Valley, although no pottery was recovered from the detailed excavation. The pottery is of mid to late Iron Age (MLIA) date. It includes only small groups of pottery and relatively few diagnostic forms. Most of the pottery comes from pits with a small number of sherds recovered from posthole fills.

1.1.2 The recovery and study of the pottery was undertaken in accordance with the Fieldwork Event Aims (see section 2, main report), in particular 1 and 3. Where applicable reference was made of the CAT fabric series (Macpherson-Grant *et al*. 1995).

Methodology

1.1.3 All of the material was examined. The assemblage was quantified by count and weight and a note was made of principal fabrics, forms and decoration. Spot dates were based on the presence of diagnostic forms and particular fabrics. Middle to Late Iron Age (MLIA) fabrics can be flint or sand tempered, while glauconitic sand is more typical of the Late Iron Age (LIA) but not exclusive to this period.

Quantification

1.1.4 Table 1.1 gives a breakdown of the total assemblage by context. The pottery is of MLIA date based on forms and fabrics.

Table 1.1: Quantification and breakdown of the assemblage of prehistoric pottery by context

Context	Count	Weight	Period	Comments
(53+300) 14	11	204 g	MLIA	Includes base with slight foot ring. Glauconitic fabrics
(51+900) 36	5	17 g	IA?	Pot or fired clay. Shell fabric
Total	16	221 g		

Provenance

1.1.5 Feature 13, fill 14, contained 11 sherds of MLIA pottery that included part of a base. Ditch 34, fill 36, contained five shell-tempered sherds of probable Iron Age date.

Conservation

1.1.6 The pottery is adequately bagged and boxed for long term storage and will require no further conservation.

Comparative material

1.1.7 There is relatively little published material from this area of Kent. Similar forms and fabrics occur at the excavated settlement site at White Horse Stone and reference should be made to this assemblage. Other published assemblages with comparable material are known from east Kent (Cunliffe 1974).

Potential for further work

1.1.8 It is recommended that a minimum record is made of the entire group, while the larger groups should be recorded in more detail.

Bibliography

Cunliffe, B, 1974, Iron Age communities in Britain

1.2 Assessment of the Roman and Post-Roman Pottery

by Paul Booth

Introduction

1.2.1 Sixty-four sherds of Roman and later pottery were recovered from various locations during watching brief work in Nashenden Valley.

1.2.2 The recovery and study of the pottery was undertaken in accordance with the Fieldwork Event Aims (see section 2, main report), in particular 1 and 3. Where applicable reference was made of the CAT fabric series (Macpherson-Grant *et al*. 1995).

Methodology

1.2.3 All of the pottery was scanned and listed by context (see Table 1.2). Major fabric groups present were noted for each context assemblage. Fabric codes listed in Table 1.2 refer to the CAT series (Macpherson-Grant *et al*. 1995).

Quantifications

1.2.4 The totals of the pottery per context are listed in Table 1.2. Five very small groups (from 1 to 4 sherds) were of medieval or post-medieval date. Context group 44 (a pit fill) at chainage 52 + 000 was a larger assemblage of Roman material, consisting almost entirely of local reduced coarse wares. This material was in quite good condition, with variable sherd size but a high overall average sherd weight.

Table 1.2: A breakdown of the assemblage of Roman and post-Roman pottery by context (CAT fabric codes listed under comments)

Context	Count	Weight	Period	Comments
(51 + 600) 1	1	5 g	late medieval - post-medieval	Green glazed
(51 + 800) 1	1	11 g	Medieval	Shell-tempered
(51 + 900) 38	4	18 g	Medieval (1 frag (3 g) poss. Roman)	Sand-tempered and flint-tempered fabrics
(52 + 000) 44 (includes material from sample 1)	55	1331 g	Range ?late 2nd-4th century, likely date late 3rd century	Mostly reduced wares, including R5 and ?R7, R14, R73 and LR1. Forms: jars & dishes
(53 + 300) 29	3	30 g	?19th century	
Total	64	1395g		

Conservation

1.2.5 The pottery is adequately bagged and boxed for long term storage and will require no further conservation.

Comparative material

1.2.6 Similar forms and fabrics occur at the excavated villa site at Thurnham and reference should be made to this assemblage.

Potential for further work

1.2.7 None of the groups are of particular significance. The post-Roman material assists only in dating the features from which it derives. The Roman pit group is a more significant assemblage but as it is isolated is again of significance principally for dating and otherwise has no further potential.

1.3 Assessment of Fired Clay and Building Material

by Alistair Barclay

Introduction

1.3.1 Three hand excavated contexts from the watching brief produced a total of 13 small fragments (138 g). The assemblage includes tile, structural clay from walls or ovens and amorphous fragments.

1.3.2 The recovery and study of the material was undertaken in accordance with the Fieldwork Event Aims (see section 2, main report), in particular 3.

Methodology

1.3.3 All of the assemblage was analysed and quantified by count and weight. A record was made of type.

Quantification

1.3.4 Table 1.3 presents a breakdown by context of the types of fired clay. The small assemblage includes tile fragments of Roman and Medieval date, structural clay with surfaces and in one case a single wattle impression and oxidised amorphous clay that probably derives from an oven or hearth.

Table 1.3: A breakdown of the assemblage of fired clay by context.

Context	Count	Weight	Type	Period	Comments
(51+400) 4	2	22g	Tile fragments	Undated	
(52+000) 44	8	110g	Structural clay	Roman	Wattle impression
(53+300) 29	3	6g	?tile, amorphous fired clay	Pmed	
Total	13	138g			

Provenance

1.3.5 There are no significant groups of material (Table 1.3). Two tile fragments of probable medieval date were found in layer 4 (natural subsoil). Pit 42 (fill 44) contained small fragments of structural clay of which one had a single wattle impression. Pit 26 (fill 29) contained amorphous fired clay and a possible tile fragment.

Conservation

1.3.6 The material has no specific requirements.

Comparative material

1.3.7 For the fired clay and tile there is comparative material within the White Horse Stone group of sites and an attempt should be made to match the fabrics.

Potential for further work

1.3.8 The structural clay from the pits provides indirect evidence for domestic occupation in the Nashenden Valley.

1.3.9 The relatively small assemblage has little potential for further work.

APPENDIX 2 - LITHICS

2.1 Assessment of the Worked Flint

by Philippa Bradley

Introduction

2.1.1 A total of five pieces of worked flint and two burnt unworked flints was recovered from the excavation at Nashenden and the watching briefs undertaken in the vicinity. Three retouched pieces were recovered, but both are minimally retouched non-diagnostic forms, although technologically they are likely to be Neolithic or early Bronze Age. The assemblages are too small to provide precise dating. The burnt flint has generally been very heavily calcined. The flint was recovered from six contexts (Tables 2.1 - 2.3).

2.1.2 The recovery and study of the material was undertaken in accordance with the Fieldwork Event Aims (see section 2, main report), in particular 1, 3 and 5.

Methodology

2.1.3 The flint was briefly scanned, with information regarding dating, technology and general condition being noted. The material was added to an Access database.

Quantification

2.1.4 The flint is summarised and quantified in Tables 2.1 - 2.3.

Table 2.1: Summary composition of flint assemblage from Nashenden (ARC NSH98), by context

Context	Count	Period	Comments
5002	1	ND	1 end scraper on an irregular flake
5004	1	ND	1 piercer, small neatly worked point, worn

Table 2.2: Summary composition of flint assemblage from Nashenden Valley (ARC 410 98 51+900), by context

Context	Count	Period	Comments
38	1	Medieval	1 piece burnt flint

Table 2.3:Summary composition of flint assemblage from (ARC 410 99 53+300), by context

Context	Count	Period	Comments
2 (410 54+442)	1	ND	1flake (possibly natural)
28 (410 53+300)	2		1 flake, 1 minimally retouched end scraper
44 (410 52+000)	1	Roman	1 burnt flint

Provenance

2.1.5 The flint was recovered from six contexts (Tables 2.1 - 2.3); there is insufficient material to examine the distribution of material across either contexts or the site as a whole.

Condition

2.1.6 All of the flint has suffered some post-depositional damage; cortication is mostly very heavy. Two pieces of burnt unworked flint were also recovered; these have been heavily calcined and have fragmented further since excavation.

Conservation

2.1.7 The burnt flint has fragmented significantly since the excavation, however there is little that can be done to prevent this fragmentation. The flint is generally packed appropriately for long term storage.

Comparative material

2.1.8 This small group of material provides evidence for some prehistoric activity in the area although its precise nature is uncertain. Comparison of this material with that from the surface collection survey may elucidate the activity, although no very marked concentrations were observed.

Potential for further work

2.1.9 This small group of material cannot be closely dated and therefore does not merit any further work.

APPENDIX 3 - FAUNAL REMAINS

3.1 Assessment of the Animal Bone

by Bethan Charles

Introduction

3.1.1 Excavations in the Nashenden Valley produced a total of 3 fragments (135 g) of hand retrieved bone, which were collected with the intention of shedding light on the agricultural economy and human exploitation of natural resources in the area. A further 14 fragments (244 g) were retrieved from environmental samples, sieved through a mesh of >10mm.

3.1.2 The recovery and study of the material was undertaken in accordance with the Fieldwork Event Aims (see section 2, main report), in particular 1-3 and 5.

Methodology

3.1.3 The assemblage was recorded through the use of a simple recording sheet. This enabled a rapid calculation of totals to be made along with a rough estimation of the number of individuals in each context and in total. With regards to the Caprine sub-family it was attempted to separate the sheep and goat bones, whose similarity often pose difficulties in identification, using the criteria of Boessneck (1969), Prummel and Frisch (1986). However, since no goat bones were identified in the collection all caprine bones are listed as sheep. The ageing of the domestic animals for the assessment was based on the epiphyseal fusion of the bone due to lack of other indicative elements. Silver's tables (1969) were used to give timing of epiphyseal closure for the cattle and sheep.

Quantifications

3.1.4 A breakdown of the assemblage by context is given in Tables 3.1 - 3.

Table 3.1: Summary table of all bone

Context	Interpretation	Count	Weight (g)	Comments
4	Layer	1	116	Horse
44	Pit	16	263	Cattle and sheep
Total		17	379	

Table 3.2:Percentage of identified fragments by context, feature and period

Context	Interpretation	Period	% of identified fragments			Count	Weight (g)
			Horse	Cattle	Sheep		
4	Layer	Undated	100	0	0	1	116
44	Pit	Late 2nd- 4th century AD	0	0	100	2	19

Table 3.3:Percentage of identified sieved bone, by context, feature and period

Context	Interpretation	Period	% of identified fragments			Count	Weight (g)
			Horse	Cattle	Sheep		
44	Pit	Late 2nd- 4th century AD	0	14	86	14	244

3.1.5 Cattle and sheep bones were the only bones identified to species from the assemblage. The majority of the identifiable fragments of bone came from the hand collected and sieved material from the late Roman pit fill 44 (pit 42) which consisted mainly of sheep bone in addition to one cattle tibia and scaphoid bone. The cattle tibia belonged to an individual over the age of 2-2.5 years (Silver 1969). The sheep long bones indicated that at least one individual was less than 1.5-16 months and that another was over 2.5-3 years of age (Silver 1969).

Provenance

3.1.6 The bones from pit fill 44 were in good condition. Only one other fragment, a horse bone from an undated layer, was recovered during the watching brief. Eleven small fragments of burnt bone were retrieved from the sieved material, all of which was from within context 44.

Conservation

3.1.7 The containment of the animal bone material within finds boxes is satisfactory for long term storage.

Comparative material

3.1.8 Comparison can be made with the much larger assemblages from the nearby White Horse Stone group, in particular the Iron Age settlement at White Horse Stone. Other sites along the CTRL are likely to provide comparable data.

Potential for further work

3.1.9 The only part of the assemblage with any value as an economic indicator is the material recovered from the later Roman pit (42). Cattle and sheep made up most of the assemblage and indicate the presence of these animals in the area in the Roman period. However, the assemblage is too small to permit any conclusions regarding the use or relative importance of the species present.

3.1.10 The variations in the age at death of the sheep indicated in the later Roman assemblage, suggest that with a larger assemblage some of the research priorities relating to agriculture and economy could have been addressed. As it is, the assemblage is too small to permit any conclusions regarding the development and practise of animal husbandry.

3.1.11 It is recommended that no further work be done on the assemblage other than the re-working of the assessment into the eventual publication.

Bibliography

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Silver, I A, 1969 The Ageing of Domestic Animals, in *Science in Archaeology* (eds D Brothwell and E Higgs), Thames and Hudson, 283-302

APPENDIX 4 - PLANT REMAINS

4.1 Assessment of the Charred Plant Remains and Charcoal

by Ruth Pelling

Introduction

4.1.1 A sample was recovered during watching brief works for the recovery of charred plant remains and charcoal, in order to characterise the isolated Romano-British (late 2nd-4th century AD) feature from which the sample was recovered.

4.1.2 The recovery and study of the material was undertaken in accordance with the Fieldwork Event Aims (see section 2, main report), in particular 1-3 and 5.

Methodology

4.1.3 A sample of 40 litres was processed by bulk water flotation and the flot collected onto a 250 μm mesh sieve. The flot was air dried slowly before being submitted for assessment. It was hoped that the sample would give some indication about the cereal economy of the site. The flot was assessed by scanning under a binocular microscope at x10 magnification. Any seeds or chaff noted were provisionally identified and an estimate of abundance made. Random fragments of charcoal were fractured and examined in transverse section at x10 and x20 magnification. The results of the assessment are noted in Table 4.1.

Table 4.1: Charred remains noted in the sample

Sample	Cxt	Vol. Deposit (l)	Vol Flot (ml)	Feature	Grain	Chaff	Weeds	Charcoal	Notes
1	44	40	250	Pit	+	+	+	++	Rhizomes

Key: +=1-10, ++= 11-50

Quantification

4.1.4 The flot measured approximately 250 ml in volume.

4.1.5 Charred plant remains were present in low numbers, with less than 10 items each of grain, chaff and weeds. The grain identified includes *Hordeum vulgare* (barley) and *Triticum spelta* (spelt wheat). Occasional monocotyledon rhizomes were noted, which could be derived from a grass, including the cereals. Their presence might indicate the use of turf as fuel, although there is no other evidence for this. Alternatively they might demonstrate the harvesting of cereals by uprooting. Two charcoal taxa were provisionally identified, Pomoideae (apple, pear, hawthorn etc) and *Quercus* sp. (oak).

Provenance

4.1.6 The sample is derived from the fill of a possible quarry pit which is likely to have been re-used for rubbish disposal. The cereal remains are likely to be derived from small-scale cereal processing, deposited with the charcoal, perhaps derived from the same burning episode, or fire.

Conservation

4.1.7 The flot is in a stable condition and can be archived for long-term storage.

Comparative Material

4.1.8 The cereal species recorded are well attested for Romano-British sites in southern Britain (see Greig 1991). Within the CTRL route, similar deposits representing small-scale cereal processing debris were also recorded at Hockers Lane. This is very different to the deposits sampled from Thurnham Villa for which much larger scale cereal processing is represented.

Potential for further work

4.1.9 Given the absence of good cereal remains and the limited charcoal, the sample offers no potential for further work. Spelt wheat and hulled barley, were the cereals most commonly cultivated during the Romano-British period in southern Britain. The samples provide no potential for extending this species list. The remains are characteristic of low levels of re-deposited remains of cereal processing activity.

Bibliography

Greig, J, 1991 The British Isles, in *Progress in Old World palaeoethnobotany*, (eds W van Zeist, K Wasylikowa and K-E Behre), 299-334

APPENDIX 5 - MOLLUSCS

5.1 Assessment of the Molluscs

by Mark Robinson

Introduction

5.1.1 A column of 13 samples, in 0.1 m units, was cut from the top 1.3 m of colluvial sediments exposed in section in a stepped trench through the bottom of Nashenden Valley. 2 kg of each sample was floated onto a 0.5 mm mesh at the Oxford Archaeological Unit and the residue sieved down to 0.5 mm.

5.1.2 The recovery and study of the material was undertaken in accordance with the Fieldwork Event Aims (see section 2, main report), in particular 1-3 and 5. The aim of the assessment is to establish the potential of molluscan analysis to provide palaeoenvironmental information extending from the Mesolithic to the late Iron Age. It is hoped that comparisons can be made with molluscan sequences from the south side of the North Downs.

Methodology

5.1.3 Concentrations of shells are low in the flots. Therefore, it was decided that all the flots would be assessed. The flots were scanned under a binocular microscope at magnifications of x10 and x20. The abundance of taxa was recorded on a scale of + (present, 1-5 individuals), ++ (some, 6-10 individuals) and +++ (many, 11+ individuals). An estimate was also made of the total number of individuals in each flot excluding *Cecilioides acicula*. This species was excluded because it burrows deeply and provides no useful information on conditions as a sediment or soil formed. The identifications are divided into species groups in the table of results (Table 5.1).

Quantifications

5.1.4 All 13 samples were assessed from the single column. Concentrations of shells (excluding *Cecilioides acicula*) are very low (Table 5.1), with useful examples being present in only five flots.

Provenance

5.1.5 What material is present is likely to be contemporaneous with the deposits when they were laid down or last worked. All the samples have little potential related to the research objectives. The preservation of shell is poor.

Conservation

5.1.6 Since the samples have no useful potential for further work, it is recommended they be discarded.

Comparative Material

5.1.7 Much better molluscan assemblages are available for comparison from the south side of the North Downs at White Horse Stone (Robinson in prep). However, there is a hint of similarity with them, with more shade-loving species from the lowest part of the sequence to contain shells, whereas the shells from the top of the sequence are almost entirely open-country species. Unfortunately, the assemblages

are too small to take this comparison further.

Potential for Further Work

5.1.8 The mollusc samples have no useful potential to address the original fieldwork aims or any new research aims. Therefore, no further work is recommended.

Bibliography

Robinson, M, (in prep.) Assessment of molluscs from White Horse Stone, Pilgrims Way, West of Boarley Farm and East of Boarley Farm (ARC WHS 98, ARC PIL 98, ARC BFW 98, ARC BFE 98).

Table 5.1: Nashenden Valley Mollusc Column

Column / Section **Sample**	**7026**	**7012**	**7011**	**7010**	**7009**	**7008**	**7007**	**7006**	**7005**	**7004**	**7003**	**7002**	**7001**
Context	**5006**	**5006**	**5006**	**5006**	**5005**	**5005**	**5005**	**5005**	**5005**	**5005**	**5004**	**5003**	**5003**
Depth (m)	**1.20-1.30**	**1.10-1.20**	**1.00-1.10**	**0.90-1.00**	**0.80-0.90**	**0.70-0.80**	**0.60-0.70**	**0.50-0.60**	**0.40-0.50**	**0.30-0.40**	**0.20-0.30**	**0.10-0.20**	**0-0.10**
Catholic Species *Cepaea* sp.	-	-	-	-	-	-	-	-	-	+	-	-	-
Open Country Species *Pupilla muscorum*	-	-	-	-	-	-	-	-	-	-	-	+	-
Vallonia costata	-	-	-	-	-	-	-	-	-	+	+	-	-
V. excentrica	-	-	-	-	-	-	-	-	-	-	+	-	+
Vallonia sp.	-	-	-	-	-	-	-	-	-	+	-	+	+
Shade-loving Species *Carychium* cf. *Tridentatum*	-	-	-	-	-	-	-	-	-	+	-	-	-
Acanthinula aculeata	-	-	-	-	-	-	-	-	-	+	-	-	-
Discus rotundatus	-	-	-	-	+	-	-	-	-	+	-	-	-
Vitrea sp.	-	-	-	-	-	-	-	-	-	+	-	-	+
Burrowing Species *Cecilioides acicula*	-	-	-	+	+	++	+++	+++	+++	+++	+++	+++	+++
Synanthropic, Exotic and Introduced Species *Candidula gigaxii*	-	-	-	-	-	-	-	-	-	-	-	+	-
Approx total (excluding *Cecilioides acicula*)	-	-	-	-	1	-	-	-	-	8	4	3	6

Key: +=1-5, ++=6-10, +++= >10

APPENDIX 6 - GEOARCHAEOLOGY

6.1 Assessment of the Geoarchaeology

by Martin R Bates

Introduction

6.1.1 Investigation of the geoarchaeology of the exposed sequences involved visits to the site to either i) log sequences and advise on procedures for sediment and soil micromorphology sampling and, where appropriate, advise field staff on the recording of sequences exposed during excavation or ii) provide verbal comment on exposed sections.

6.1.2 Where section logging was required standard geological terminology was used to record sequences (see Methodology below). As part of this work a number of samples were recovered to allow for further specialised investigation, if required.

6.1.3 The assessment was undertaken in accordance with the Fieldwork Event Aims (see section 2, main report), in particular 1, 4-5. The aims and objectives of the geoarchaeological input to this phase of works focussed on identifying and interpreting stratigraphy and buried soil horizons within contexts associated in late-glacial environments (as previously identified by Wessex Archaeology within the area (URL 1997b).

Methodology

6.1.4 This report focuses on the description and interpretation of three sequences revealed during the course of archaeological investigation of the Nashenden Valley area. Detailed profile descriptions and interpretations are presented for two investigation sequences recorded in evaluation trenches 3113TT and 3123TT (Little Monk Wood ARC MON 98). Comment is also made on the sequence of deposits revealed during the course of excavation of a major trench at ARC NSH 98.

6.1.5 Sequences were recorded down-profile using standard geological terminology used in Quaternary science (Jones *et al*. 1999). All measurements on sequences are given relative to the top of the profile.

Quantifications

6.1.6 Three profiles were examined as part of this assessment. Profile descriptions for evaluation trenches 3113TT and 3123TT are presented in Tables 6.2a-2b.

6.1.7 The profile recorded in 3123TT (Table 6.2a) produced a sequence of Pleistocene and Holocene sediments recorded to a depth of 3 m below the ground surface. Two possible palaeosol horizons were identified in this sequence at depths of 0.94 m and 2.2 m below ground surface. An important break in deposition (an unconformity) was identified at 1.48 m depth and this boundary separated the Pleistocene from Holocene sediments.

6.1.8 The lowermost buried soil horizon (at 2.2 m depth) was sampled with a single kubiena tin across the sequence boundary to provide a sample of the possible pedogenic horizon. This horizon lies within a sequence of sediments interpreted as cold climate solifluction deposits and may represent the late-glacial (or Allerød) soil horizon that has been widely reported in south east England (Kerney 1963; Preece, 1998). A similar horizon was tentatively identified in previous investigations of this part of the route corridor (URL 1997b). The buried soil horizon within the overlying

colluvium (at a depth of 0.94 m) is typical of soil horizons buried in sediments derived from slope wash processes and is likely to date to the Bronze Age or later (see similar examples in Preece 1992; Preece and Bridgland 1998).

6.1.9 The profile recorded in 3113TT (Table 8.2b) did not reveal any sediments likely to relate to the buried soil horizons seen in 3123TT. A typical Holocene colluvial sequence was identified to a depth of 1.05 m. Coarser flint and chalk rich gravels lay below this deposit. The status of the sediment between 1.05 m and 1.8 m depth remains equivocal and cold climate solifluction processes or colluvial processes eroding older Pleistocene sediments may have been responsible for the deposition of this unit.

6.1.10 A more extensive sequence of valley side deposits were exposed in excavations at ARC NSH 98. This trench was excavated at the location of the previous evaluation trench 1497TT (URL 1997b). Two major sections were drawn and described through these deposits. Similarities exist between these profiles and that described in 3123TT (see Table 6.2a). A complex series of deposits were noted to exist beneath the topsoil lying parallel to the modern ground surface (contexts 5001-5006). Bulk samples were taken from these units (Table 6.1).

Table 8.1: Context numbers and sample details: ARC NSH98

Context	Samples
5003	7001/7014 7002/7015
5004	7003/7016 7004/7017
5005	7005/7018 7006/7019 7007/7020 7008/7021 7009/7022
5006	7010/7023 7011/7024 7012/7025 7013/7026

6.1.11 The sediments are typical of valley side colluvial deposits of Holocene date, similar to those noted in 3123TT (0.00 – 1.48 m) and 3113TT (0.00 – 1.05 m) Tables 6.2a-b.

6.1.12 Sediments assigned to context numbers 5007-5008[2] appear to exhibit a sub-horizontal appearance and consist of a sequence of units containing variable quantities of gravel (both chalk and flint rich). Considerable complexity was noted within these units (see sub-divisions 1-9, context 5008). No samples were recovered from these units. These deposits are likely to date to the late Pleistocene and have been deposited by solifluction processes under cold climate conditions. No unequivocal evidence is present within these profiles to indicate the presence of a buried late glacial soil horizon similar to that noted elsewhere in Kent (Kerney 1963; Preece 1992; 1998; Preece and Bridgland, 1998) although the time interval within which this soil developed may be present within the profile. The absence of diagnostic traits makes it difficult to determine its position within the sedimentary profile.

[2] Context 5006 probably forms part of the late-glacial complex of sediments but may be a sediment reworked from the valley solifluction deposits either late in the Pleistocene or early in the Holocene.

Table 8.2. Profile descriptions: ARC 3123TT and 3113TT

a) 3123TT

Depth (metres) below ground surface	Stratigraphic description	Inferred processes of deposition
0.00 – 0.36	Mid to dark grey silt. Structureless and unconsolidated. Common modern rootlets, angular to rounded flint clasts (20-50 mm diameter). Common chalk clasts (5-10 mm).	Topsoil
	---diffuse contact---	
0.36 – 0.94	Reddish-brown silt. Homogenous, massive and structureless. Common modern roots and large empty root canals (5-10 mm). Occasional angular flint clasts (<50 mm) and occasional chalk clasts (5 mm). Chalk clasts increase in frequency with depth. Unit is dense and compact.	Holocene colluvium
	---abrupt contact---	
0.94 – 1.26	Very dark reddish-brown silt. Unit is similar to above but fewer chalk clasts than above.	Holocene colluvium with a possible buried soil developed in the upper part of the colluvium.
	---diffuse contact---	
1.26 – 1.48	Reddish-brown silt with very common to abundant small chalk clasts (<10 mm). Very rare flint clasts.	Holocene colluvium
	---sharp contact---	
1.48 – 1.52	Pale brown chalk pellet gravel.	Periglacial slope wash.
	---abrupt contact---	
1.52 – 1.65	Pale brown silt with common very small chalk clasts (1-2 mm). Structureless, massive and relatively loose.	Periglacial reworked loess.
	---abrupt contact---	
1.65 – 2.20	Very pale brown clast supported chalk pellet gravel interbedded with thin discontinuous beds of light brown silts (20-50 mm thick). Clasts are 20-40 mm near base and fine upwards to <1cm. Matrix is silt where present.	Periglacial slope wash gravels.
	---abrupt contact---	
2.20 – 2.60	Clast supported flint gravel at base becoming matrix supported upwards. Clasts are poorly sorted, <30 mm to >120 mm and typically angular. Smaller (10 mm) rounded to sub-rounded chalk clasts are common. Upper part of unit contains dark brown silt matrix with many smaller (<10 mm) chalk clasts. Unit is loose and unconsolidated. Common small, discontinuous carbonate tubules are present in the upper part of the unit.	Solifluction deposit with a pedogenic horizon in the upper part of sequence.
	---abrupt contact---	
2.60 – 2.84	White matrix supported chalk gravel with occasional flint clasts. Coarsens upwards. Clasts are 20-60 mm. Flint content also increases upwards. Dense and compact, structureless.	Solifluction deposit.
	---diffuse contact---	
2.84 -	White chalk gravel with chalky silt matrix . Matrix supported. Very dense and compact. Chalk clasts are angular (10-60 mm) . No observed flint. Structureless.	Solifluction deposit.
	---base of profile 3.00 m---	

b) 3113TT

Depth (metres) below ground surface	Stratigraphic description	Inferred processes of deposition
0.00 – 0.25	Mid greyish-brown silt. Modern roots and common. Occasional angular flint clasts. Structureless and loose.	Topsoil.
	---abrupt contact---	
0.25 – 1.05	Reddish-brown silt. Structureless and massive. Occasional angular flint clasts (20-50 mm). Occasional small (<10 mm) angular chalk clasts. Modern roots penetrate throughout unit.	Holocene colluvium.
	---undulating/abrupt contact---	
1.05 – 1.80	Reddish-brown to very dark reddish brown clast supported flint gravel. Gravel is very poorly sorted (20->100 mm) and clasts are angular. Matrix composed of silt. Occasional chalk clasts present. Structureless and massive.	Solifluction deposit or coarse colluvium
	---undulating/abrupt contact---	
1.80 -	Yellow to whitish-yellow chalk gravel. Clasts composed of flint and chalk (clasts<150 mm). Matrix is silt. Structureless and massive. Dense and compact.	Solifluction deposit.
	---base of trench 2.10m---	

Provenance

6.1.13 The stratigraphy present within the three trenches examined is representative of well known sequences that are better preserved elsewhere in Kent. The contexts described falls into two groups of sequences:

1: A lowermost group of deposits dominated by coarse flint and chalk rich gravels (that may contain evidence of a weathering horizon or soil development, e.g. in ARC 3123TT) deposited during the late Pleistocene under typically cold climate conditions (the exception to this is the buried soil horizon that would have developed under milder conditions during the late glacial interstadial 11-12ka BP);

2: An upper group of silts deposited by hillwash processes during the later part of the Holocene.

Conservation

6.1.14 Only one undisturbed sediment sample exists from these trenches (a kubiena tin for soil micromorphological analysis) from the lowermost potential pedogenic horizon in 3123TT. Desiccation of this sample will occur over time. Investigation of the soil micromorphological properties of this sample could be undertaken and this would necessitate impregnation of the sample, rendering it inappropriate for any other forms of investigation. Impregnation and preparation of a thin section through this deposit would provide a stable, long-term archive record of the nature of the buried soil horizon at this site.

Comparative material

6.1.15 Comparable material to the sedimentary units identified during the fieldwork exists at a number of locations within the CTRL corridor and beyond within southern England. Extensive sequences of late glacial and Holocene sedimentary units exist and have been the subject of assessment from the White Horse Stone and West of Boarley Farm sites to the east of Nashenden Valley within the CTRL corridor. Late Pleistocene and Holocene slope deposits have also been encountered within the Ebbsfleet Valley evaluation works (URL 1997a). Within the Medway Valley the late glacial soil horizon is well known from Upper Halling (Kerney 1963; Preece 1998) and a well dated sequence of late glacial/Holocene deposits were investigated at the site of the Channel Tunnel portal at Holywell Coombe (Preece and Bridgland 1998).

Potential for further work

6.1.16 The investigation was intended to focus on the potential of these sites for revealing new data regarding the nature of late glacial/early Holocene palaeoenvironmental change contemporary with the earliest stages of the recolonization of Britain by plants, animals and importantly humans at the end of the last cold phase. Despite the presence of sediments clearly associated with this final phase of the Pleistocene, well stratified sequences containing fossiliferous material dating to the late glacial period were not encountered in any of the sections recorded. In comparison to other sites along the CTRL (eg White Horse Stone and the Ebbsfleet Valley) the sections in Nashenden Valley do not add materially to our present understanding of the sequence of changes during the late Pleistocene/early Holocene transitional phase. Only a single kubiena tin was recovered from these horizons that could potentially be impregnated and examined or held as archive pending future investigation.

6.1.17 The samples through the overlying colluvial sequence from ARC NSH 98 provide a focus for investigations of Holocene or later Prehistoric landscape change. However, a near absence of archaeological material and environmental indicators suggests that the sequence has generally low potential for any further analysis.

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APPENDIX 7 - SHELL

7.1 Assessment of the Oysters

by Jessica M. Winder

7.1.1 Shells of the common flat oyster *Ostrea edulis* L. were recovered from the watching brief by hand retrieval and sieving of bulk samples. The shells from each context were identified, where possible, and counted. Oyster valves were separated into left and right valves, and further divided into shells suitable or unsuitable for measuring and detailed recording of features.

7.1.2 The recovery and study of the material was undertaken in accordance with the Fieldwork Event Aims (see section 2, main report), in particular 3.

7.1.3 From Nashenden Valley six valves and a few fragments of oyster were recovered from a single context (44), the fill of a later Roman pit (42). The state of preservation of the shells is fair to good but the provenance of the marine mollusc material cannot be determined because there are not enough shells.

7.1.4 Regarding retention/discard policy, it is suggested that there is little merit in retaining this assemblage of material.

7.1.5 There is no potential for assemblage to address the Landscape Zone Priorities or the Fieldwork Event Aims.

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